

AT Commands Reference Guide

80000ST10025a Rev. 23 – 2015-11-30



APPLICABILITY TABLE

PRODUCT
GT863-PY
GT864-QUAD
GT864-PY
GC864-QUAD
GC864-QUAD V2
GC864-DUAL V2
GE864-QUAD
GE864-QUAD AUTOMOTIVE V2
GE864-QUAD ATEX
GE864-QUAD V2
GE864-DUAL V2
GE864-GPS
GE865-QUAD
GE866-QUAD
GL865-DUAL
GL865-DUAL V3
GL865-QUAD V3
GL868-DUAL
GL868-DUAL V3
GL865-QUAD
GE910-QUAD
GE910-QUAD AUTO
GE910-QUAD V3
GE910-GNSS

SW Versions
10.01.xx2
16.01.xx2
13.00.xx8



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1.5. Text Conventions



Danger – This information MUST be followed or catastrophic equipment failure or bodily injury may occur.



Caution or Warning – Alerts the user to important points about integrating the module, if these points are not followed, the module and end user equipment may fail or malfunction.



Tip or Information – Provides advice and suggestions that may be useful when integrating the module.

All dates are in ISO 8601 format, i.e. YYYY-MM-DD.

1.6. Related Documents

- 3GPP TS 27.007 specification and rules
http://www.3gpp.org/ftp/Specs/archive/27_series/27.007/
- 3GPP TS 27.005 specification and rules
http://www.3gpp.org/ftp/Specs/archive/27_series/27.005/
- Hayes standard AT command set



3. AT COMMANDS

The Telit wireless module family can be controlled via the serial interface using the standard AT commands¹. The Telit wireless module family is compliant with:

1. Hayes standard AT command set, in order to maintain the compatibility with existing SW programs.
2. 3GPP TS 27.007 specific AT command and GPRS specific commands.
3. 3GPP TS 27.005 specific AT commands for SMS (Short Message Service) and CBS (Cell Broadcast Service)
4. FAX Class 1 compatible commands

Moreover Telit wireless module family supports also Telit proprietary AT commands for special purposes.

The following is a description of how to use the AT commands with the Telit wireless module family.

3.1. Definitions

The following syntactical definitions apply:

- <CR>** **Carriage return character**, is the command line and result code terminator character, which value, in decimal ASCII between 0 and 255, is specified within parameter **S3**. The default value is 13.
- <LF>** **Linefeed character**, is the character recognised as line feed character. Its value, in decimal ASCII between 0 and 255, is specified within parameter **S4**. The default value is 10. The line feed character is output after carriage return character if verbose result codes are used (**V1** option used) otherwise, if numeric format result codes are used (**V0** option used) it will not appear in the result codes.
- <...>** Name enclosed in angle brackets is a syntactical element. They do not appear in the command line.
- [...]** Optional subparameter of a command or an optional part of TA information response is enclosed in square brackets. Brackets themselves do not appear in the command line. When subparameter is not given in AT commands which have a Read command, new value equals to its previous value. In AT commands which do not store the values of any of their subparameters, and so have not a Read command, which are called *action type* commands, action should be done on the basis of the recommended default setting of the subparameter.

¹ The AT is an ATTENTION command and is used as a prefix to other parameters in a string. The AT command combined with other parameters can be set up in the communications package or typed in manually as a command line instruction. combined with other parameters can be set up in the communications package or typed in manually as a command line instruction.



- (for #SELINT=2 only)
If all the subparameters of a parameter type command +CMD are optional, issuing AT+CMD=<CR> causes the OK result code to be returned and the previous values of the omitted subparameters to be retained.

3.2.1. String Type Parameters

A string, either enclosed between quotes or not, is considered to be a valid string type parameter input. According to V25.ter space characters are ignored on the command line and may be used freely for formatting purposes, unless they are embedded in numeric or quoted string constants; therefore a string containing a space character has to be enclosed between quotes to be considered a valid string type parameter (e.g. typing AT+COPS=1,0,"A1" is the same as typing AT+COPS=1,0,A1; typing AT+COPS=1,0,"A BB" is different from typing AT+COPS=1,0,A BB).

When #SELINT=0 (or 1) mode is selected, a string not enclosed between quotes is changed in upper case (e.g. mickey become MICKEY), while a string enclosed between quotes is case sensitive.

When #SELINT=2 mode is selected, a string is always case sensitive.

A small set of commands requires always to write the input string parameters within quotes: this is explicitly reported in the specific descriptions.

3.2.2. Command Lines

A command line is made up of three elements: the **prefix**, the **body** and the **termination character**.

The **command line prefix** consists of the characters "AT" or "at", or, to repeat the execution of the previous command line, the characters "A/" or "a/" or AT#/ or at#/.

The **termination character** may be selected by a user option (parameter S3), the default being <CR>.

The basic structures of the command line are:

- ATCMD1<CR> where AT is the command line prefix, CMD1 is the body of a **basic command** (nb: the name of the command never begins with the character "+") and <CR> is the command line terminator character
- ATCMD2=10<CR> where 10 is a subparameter
- AT+CMD1;+CMD2=,10<CR> These are two examples of **extended commands** (nb: the name of the command always begins with the character "+"²). They are delimited with semicolon. In the second command the subparameter is omitted.

² The set of **proprietary AT commands** differentiates from the standard one because the name of each of them begins with either "@", "#", "\$" or "*". **Proprietary AT commands** follow the same syntax rules as **extended commands**



- **+CMD1?<CR>** This is a Read command for checking current subparameter values
- **+CMD1=?<CR>** This is a test command for checking possible subparameter values

These commands might be performed in a single command line as shown below:

ATCMD1 CMD2=10+CMD1;+CMD2=,10;+CMD1?;+CMD1=?<CR>

anyway it is always preferable to separate into different command lines the basic commands and the extended commands; furthermore it is suggested to avoid placing several action commands in the same command line, because if one of them fails, then an error message is received but it is not possible to argue which one of them has failed the execution.

If command **V1** is enabled (verbose responses codes) and all commands in a command line has been performed successfully, result code **<CR><LF>OK<CR><LF>** is sent from the TA to the TE, if subparameter values of a command are not accepted by the TA or command itself is invalid, or command cannot be performed for some reason, result code **<CR><LF>ERROR<CR><LF>** is sent and no subsequent commands in the command line are processed.

If command **V0** is enabled (numeric responses codes), and all commands in a command line has been performed successfully, result code **0<CR>** is sent from the TA to the TE, if sub-parameter values of a command are not accepted by the TA or command itself is invalid, or command cannot be performed for some reason, result code **4<CR>** and no subsequent commands in the command line are processed.

In case of errors depending on ME operation, **ERROR** (or **4**) response may be replaced by **+CME ERROR: <err>** or **+CMS ERROR: <err>**.



NOTE:

The command line buffer accepts a maximum of 400 characters. If this number is exceeded none of the commands will be executed and TA returns **ERROR**.

3.2.2.1. ME Error Result Code - +CME ERROR: <err>

This is NOT a command, it is the error response to **+Cxxx 3GPP TS 27.007** commands.

Syntax: **+CME ERROR: <err>**

Parameter: **<err>** - error code can be either numeric or verbose (see **+CMEE**).The possible values of **<err>** are reported in the table:



Numeric Format	Verbose Format
Network survey errors:	
(only if command #SELINT=0 or #SELINT=1 has been issued - see §3.5.2.1.1):	
257	Network survey error (No Carrier)*
258	Network survey error (Busy)*
259	Network survey error (Wrong request)*
260	Network survey error (Aborted)*
IP Easy related errors	
(only if command #SELINT=0 or #SELINT=1 has been issued - see §3.5.2.1.1):	
400	generic undocumented error
401	wrong state
402	wrong mode
403	context already activated
404	stack already active
405	activation failed
406	context not opened
407	cannot setup socket
408	cannot resolve DN
409	time-out in opening socket
410	cannot open socket
411	remote disconnected or time-out
412	connection failed
413	tx error
414	already listening
FTP related errors	
(only if command #SELINT=0 or #SELINT=1 has been issued - see §3.5.2.1.1):	
420	ok
421	connect
422	disconnect
423	error
424	wrong state
425	can not activate
426	can not resolve name
427	can not allocate control socket
428	can not connect control socket
429	bad or no response from server
430	not connected
431	already connected
432	context down
433	no photo available
434	can not send photo
IP Easy related errors	
(only if command #SELINT=2 has been issued - see §3.5.2.1.1):	
550	generic undocumented error
551	wrong state
552	wrong mode
553	context already activated
554	stack already active
555	activation failed
556	context not opened
557	cannot setup socket
558	cannot resolve DN
559	timeout in opening socket
560	cannot open socket



Numeric Format	Verbose Format
836	SSL not activated
837	SSL certs and keys wrong or not stored
838	SSL error enc/dec data
839	SSL error during handshake
840	SSL disconnected
PING related errors (only if command #SELINT=2 has been issued - see §3.5.2.1.1):	
900	Generic undocumented error
901	Timeout
902	Destination unreachable
903	Can not resolve name
904	Context down
SiRFInstantFix related errors	
920	SGEE update initialization stage failed
921	SGEE file is not newer than the last stored one
922	SGEE update generic error

*(values in parentheses are GSM 04.08 cause codes)

3.2.2.2. Message Service Failure Result Code - +CMS ERROR: <err>

This is NOT a command, it is the error response to +Cxxx 3GPP TS 27.005 commands.

Syntax: +CMS ERROR: <err>

Parameter: <err> - numeric error code.

The <err> values are reported in the table:

Numeric Format	Meaning
0...127	GSM 04.11 Annex E-2 values
128...255	3GPP TS 23.040 sub clause 9.2.3.22 values
300	ME failure
301	SMS service of ME reserved
302	operation not allowed
303	operation not supported
304	invalid PDU mode parameter
305	invalid text mode parameter
310	SIM not inserted
311	SIM PIN required
312	PH-SIM PIN required
313	SIM failure
314	SIM busy
315	SIM wrong
316	SIM PUK required
317	SIM PIN2 required



Numeric Format	Meaning
318	SIM PUK2 required
320	memory failure
321	invalid memory index
322	memory full
330	SMSC address unknown
331	no network service
332	network time-out
500	unknown error
512	FDN not allowed number

3.2.3. Information Responses And Result Codes

The TA response, in case of verbose response format enabled, for the previous examples command line could be as shown below:

- information response to +**CMD1?**
<CR><LF>+**CMD1:2,1,10**<CR><LF>
- information response to +**CMD1=?**
<CR><LF>+**CMD1(0-2),(0,1),(0-15)**<CR><LF>
- final result code <CR><LF>**OK**<CR><LF>

Moreover there are other two types of result codes:

- result codes* that inform about progress of TA operation (e.g. connection establishment **CONNECT**)
- result codes* that indicate occurrence of an event not directly associated with issuance of a command from TE (e.g. ring indication **RING**).

Here the basic result codes according to ITU-T V25Ter recommendation

<i>Result Codes</i>	
Numeric form	Verbose form
0	OK
1	CONNECT or CONNECT <text> ³
2	RING
3	NO CARRIER
4	ERROR
5	CONNECT 1200 ⁴

³ For SELINT 0,1 <text> is only “300”; for SELINT 2 <text> can be “300”, “1200”, “2400”, “4800”, “9600”, “14400” or “1200/75”

⁴ Valid for SELINT 0,1 only



Command	Estimated maximum time to get response (Seconds)
#STSR	10
#CCID	5
#GPRS	150
#SKTD	140 (DNS resolution + timeout set with AT#SKTCT)
#SKTOP	290 (context activation + DNS resolution + timeout set with AT#SKTCT)
#QDNS	20
#FTPOPEN	100
#FTPCLOSE	500 (timeout set with AT#FTPTO, in case no response is received from server)
#FTPTYPE	500 (timeout set with AT#FTPTO, in case no response is received from server)
#FTPDELE	500 (timeout set with AT#FTPTO, in case no response is received from server)
#FTPPWD	500 (timeout set with AT#FTPTO, in case no response is received from server)
#FTPCWD	500 (timeout set with AT#FTPTO, in case no response is received from server)
#FTPLIST	500 (timeout set with AT#FTPTO, in case no response is received from server) + time to get listing
#FTPFSIZE	500 (timeout set with AT#FTPTO, in case no response is received from server)
#FTPPUT	500 (timeout set with AT#FTPTO, in case no response is received from server)
#FTPAPP	500 (timeout set with AT#FTPTO, in case no response is received from server)
#FTPGET	500 (timeout set with AT#FTPTO, in case no response is received from server)
#FTPGETPKT	500 (timeout set with AT#FTPTO, in case no response is received from server)
#SGACT	150
#SH	3
#SD	140 (DNS resolution + connection timeout set with AT#SCFG)
#CSURV	10 to start data output; 120 seconds to complete scan
#CSURVC	10 to start data output; 120 seconds to complete



Command	Estimated maximum time to get response (Seconds)
	scan
#CSURVU	10 to start data output; 120 seconds to complete scan
#CSURVUC	10 to start data output; 120 seconds to complete scan
#CSURVB	10 to start data output; 120 seconds to complete scan
#CSURVBC	10 to start data output; 120 seconds to complete scan
#CSURVP	10 to start data output; 120 seconds to complete scan
#CSURVPC	10 to start data output; 120 seconds to complete scan
#LSCRIPT	10 (40 files, 10 Kbyte each)
#REBOOT	5
#RSCRIPT	30 seconds for a 100 Kbyte file 30 seconds timeout and ERROR message if no bytes are received on the serial line
#WSCRIPT	35 seconds for a 100 Kbyte file 30 seconds timeout and ERROR message if no bytes are sent on the serial line and the file has not been completely sent
#DSCRIPT	120

3.2.5. Command Issuing Timing

The chain Command -> Response shall always be respected and a new command must not be issued before the module has terminated all the sending of its response result code (whatever it may be).

This applies especially to applications that “sense” the **OK** text and therefore may send the next command before the complete code <CR><LF>OK<CR><LF> is sent by the module.

It is advisable anyway to wait for at least 20ms between the end of the reception of the response and the issue of the next AT command.

If the response codes are disabled and therefore the module does not report any response to the command, then at least the 20ms pause time shall be respected.

During command mode, due to hardware limitations, under severe CPU load the serial port can lose some characters if placed in autobauding at high speeds. Therefore if you encounter this problem fix the baud rate with **+IPR** command.



NOTE:

If URCs are enabled (e.g. #QSS, +CMTI, etc.), it may happen that an URC is displayed between the AT string (e.g. AT+CREG?<CR>) entered and the AT answer (e.g. <CR><LF>+CREG:0,1<CR><LF><CR><LF>OK<CR><LF>). This may happen if only A or AT are sent to the AT port; it does not happen if AT+, AT#, AT\$, etc. are sent to the AT port.



The values set by following commands are stored in the profile extended section and, if the newer AT command interface style has been selected (see **#SELINT=2**), they depend on the specific AT instance (see **+CMUX**):

+FCLASS	+ILRR	+DR
+CSCS	+CR	+CRLP
+CRC	+CSNS	+CVHU
+CREG	+CLIP	+CLIR
+CCWA	+CUSD	+CAOC
+CSSN	+CIND	+CMER
+CPBS	+CMEE	+CGREG
+CGEREP	+CMGF	+CSDH
+CNMI	#QSS	#ACAL ⁵
#TEMPMON ⁶	#ACALEXT	#ECAM
#SMOV	#MWI	#NITZ
#SKIPESC	#E2ESC	#STIA
\$GPSNMUN	#CESTHLCK	#CFLO
+CSTF	+CSDF	+CTZU
+CAPD	+CCWE	+CSIL
+CTZR	#CFF	#CODECINFO
#CMEEMODE	#MMSSNH	

The values set by following commands are stored in the profile extended section and they don't depend on the specific AT instance (see **+CMUX**):

+CALM	+CRSL	+CMUT ⁵
+CLVL ⁵	+VTD	+CSCB ⁷
#CAP ⁵	#SRS ⁵	#SRP ⁵
#STM ⁵	#DVI	#E2SMSRI
#DAC	#CODEC	#SHFEC ⁵
#HFMICG ⁵	#HSMICG	#SHFSD ⁵
#SPKMUT	#NITZ	#E2SLRI
#SIMDET	#TEMPMON ⁶	#PSEL
#HFRECG	#HSRECG	#SHFAGC
#SHSAGC	#SHSEC	#SHSNR
#SHFNR	#SHSSD	#TSVOL
#CPUMODE	#DVIEXT	#PSMRI
#STTA		

The values set by following commands are automatically stored in NVM, without issuing any storing command and independently from the profile (unique values), and are automatically restored at startup:

⁵ If **#SELINT=2** they depend on the CMUX 0 instance only

⁶ It is partially stored in NVM, moreover only a part of it can depend on the specific **CMUX** instance; see command description.

⁷ +CSCB is still stored in the profile extended section only for backward compatibility issues: its actual storing and restoring are accomplished issuing **+CSAS** and **+CRES**



#SELINT	+COPS ⁸	+CGCLASS
+CGDCONT	+CGQMIN	+CGQREQ
#REGMODE	#PLMNODE	#COPSMODE
#DIALMODE	#BND	#AUTOBND
#ENS	#SCFG	#JDR
#ENHSIM	#AUTOATT	#TXMONMODE
#TTY	#ICMP	#GSMCONT
#NWSCANTMR	#SMSMODE	#DNS
#TCPMAXDAT	#TCPREASS	#SWLEVEL
#CPASMODE	#FASTCCID	+CGSMS
#V24MODE	+CPLS	#SIMINCFG
#RS485		

The values set by following commands are stored in NVM on demand, issuing specific commands and independently from the profile:

+CSCA	+CSMP	+CSCB
-------	-------	-------

stored by +CSAS⁹ command and restored by +CRES⁹ command

#SLED		
-------	--	--

stored by #SLEDSAV¹⁰ command

#VAUX		
-------	--	--

stored by #VAUXSAV¹¹ command

#USERID	#PASSW	#PKTSZ
#DSTO	#SKTTO	#SKTSET
#SKTCT		

stored by #SKTSAV command and automatically restored at startup; factory default values are restored by #SKTRST command

#ESMTP	#EADDR	#EUSER
#EPASSW		

stored by #ESAV command and automatically restored at startup; factory default values are restored by #ERST command.

\$GPSP	\$GPSD	\$GPSAT
\$GPSCON		

stored by \$GPSSAV command and automatically restored at startup; factory default values are restored by \$GPSRST command

#BIQUADIN	# BIQUADINEX	# BIQUADOUT
# BIQUADOUTEX		

stored by #PSAV command and automatically restored at startup; factory default values are restored by #PRST command.

⁸ It is partially stored in NVM; see command description.

⁹ Both commands +CSAS (see §3.x.3.2.5) and +CRES (see §3.x.3.2.6) deal with non-volatile memory, intending for it either the NVM and the SIM storage.

¹⁰ Valid for #SELINT=2 only.

¹¹ Valid for #SELINT=2 only.



3.4. AT Commands Availability Table

The following table shows the link Software Version / Product. It is used jointly with the second reported table to verify if the selected AT command is supported by the couple Software Version / Product.

Software Version	Applicable products
<u>SW 10.01.xx0</u> <u>16.01.xx0</u>	GE865-QUAD, GE866-QUAD GC864-QUAD, GC864-QUAD V2, GC864-DUAL V2, GE864-QUAD V2, GE864-DUAL V2, GE864-QUAD AUTOMOTIVE V2, GE864-QUAD ATEX, GL865-DUAL, GL865-DUAL V3, GL865-QUAD V3, GL868-DUAL V3, GL868-DUAL, GL865-QUAD, GT863-PY, GT864-PY, GT864-QUAD, GE864-GPS, GE910-QUAD V3
<u>SW 13.00.xx6</u>	GE910-QUAD, GE910-QUAD AUTO, GE910-GNSS

The following table lists the AT commands set and matches the availability of every single command with the Telit module by means of the software version as showed on the table above.

COMMAND	<u>SW 10.01.xx2</u> <u>16.01.xx2</u>	<u>SW 13.00.xx8</u>	Function	Page
Command Line General Format – Command Line Prefixes				
AT	•	•	Starting A Command Line	52
A/	•	•	Last Comm Automatic Repetition Prefix	52
AT#	•	•	Repeat last command	52
#SELINT	•	•	Select Interface Style	54
Hayes AT Commands – Generic Modem Control				
&F	•	•	Set To Factory-Defined Configuration	55
Z	•	•	Soft Reset	55
+FCLASS	•	•	Select Active Service Class	55
&Y	•	•	Designate A Default Reset Basic Profile	56
&P	•	•	Designate A Default Reset Full Profile	56
&W	•	•	Store Current Configuration	56
&Z	•	•	Store Telephone Number In The Module Internal Phonebook	57
&N	•	•	Display Internal Phonebook Stored Numbers	57
+GMI	•	•	Manufacturer Identification	57
+GMM	•	•	Model Identification	57
+GMR	•	•	Revision Identification	58
+GCAP	•	•	Capabilities List	58
+GSN	•	•	Serial Number	58
&V	•	•	Display Current Base Configuration And Profile	58
&V0	•	•	Display Current Configuration And Profile	58
&V1	•	•	S Registers Display	59
&V3	•	•	Extended S Registers Display	59
&V2	•	•	Display Last Connection Statistics	60
\V	•	•	Single Line Connect Message	60
+GCI	•	•	Country Of Installation	60
%L	•	•	Line Signal Level	60
%Q	•	•	Line Quality	60
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M	•	•	Speaker Mode	61



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+FRM	•	•	Receive Data Modulation	271
+FTH	•	•	Transmit Data With HDLC Framing	272
+FRH	•	•	Receive Data With HDLC Framing	272
FAX AT Commands – Serial Port Control				
+FLO	•	•	Select Flow Control Specified By Type	272
+FPR	•	•	Select Serial Port Rate	273
+FDD	•	•	Double Escape Character Replacement Control	273
Custom AT Commands – General Configuration				
+PACSP	•	•	Network Selection Menu Availability	275
#CGMI	•	•	Manufacturer Identification	275
#CGMM	•	•	Model Identification	275
#CGMR	•	•	Revision Identification	276
#CGSN	•	•	Product Serial Number Identification	276
#CIMI	•	•	International Mobile Subscriber Identity (IMSI)	276
#CCID	•	•	Read ICCID (Integrated Circuit Card Identification)	276
#SPN	•	•	Service Provider Name	277
#CEER	•	•	Extended Numeric Error Report	277
#CEERNET	•	•	Extended error report for Network reject cause	279
#REGMODE	•	•	Select Registration Operation Mode	281
#SMSMODE	•	•	SMS Commands Operation Mode	281
#PLMNMODE	•	•	PLMN List Selection	282
#PLMNUPDATE	•	•	Update PLMN List	283
#FPLMN	•	•	Forbidden PLMN deletion	283
#PCT	•	•	Display PIN Counter	285
#SHDN	•	•	Software Shut Down	285
#Z	•	•	Extended Reset	286
#ENHRST	•	•	Periodic reset	286
#FASTSHDN	•	•	Fast shutdown configuration	287
#WAKE	•	•	Wake From Alarm Mode	288
#QTEMP	•	•	Query Temperature Overflow	290
#TEMPMON	•	•	Temperature Monitor	291
#TEMPCFG	•	•	Temperature Monitor configuration	294
#SGPO	•	-	Set General Purpose Output	294
#GGPI	•	-	General Purpose Input	296
#GPIO	•	•	General Purpose I/O Pin Control	296
#ALARMPIN	•	•	Alarm Pin	300
#SLED	•	•	STAT_LED GPIO Setting	301
#SLEDSAV	•	•	Save STAT_LED GPIO Setting	302
#ADC	•	•	Analog/Digital Converter Input	302
#DAC	•	-	Digital/Analog Converter Control	303
#VAUX	• ¹²	-	Auxiliary Voltage Output Control	305
#VAUXSAV	• ¹³	-	#VAUX Saving	306
#V24MODE	•	•	V24 Output pins mode	306
#V24CFG	•	•	V24 Output Pins Configuration	307
#V24	•	•	V24 Output Pins Control	308
#TXMONMODE	•	-	RF Transmission Monitor Mode	309
#CBC	•	•	Battery and Charger Status	309
#AUTOATT	•	•	GPRS Auto-Attach Property	310
#MSCLASS	•	•	Multislot Class Control	311
#MONI	•	•	Cell Monitor	312
#MONZIP	•	•	Compressed Cell Monitor	317
#SERVINFO	•	•	Serving Cell Information	319

¹² Command available only on GE864-QUAD and GC864-QUAD, GL865-DUAL, GL865-QUAD and GL868-DUAL

¹³ Not available on GL865-DUAL, GL865-DUAL V3, GL865-QUAD V3, GL868-DUAL, GL868-DUAL V3, GL865-QUAD, GE910-QUAD V3 and GE866-QUAD



COMMAND	SW 10.01.xx2 16.01.xx2	SW 13.00.xx8	Function	Page
+CCED	•	-	Cell Environment Description	321
#COPSMODE	• ¹⁴	-	+COPS Mode	322
#QSS	•	•	Query SIM Status	322
#DIALMODE	•	•	ATD Dialing Mode	324
#ACAL	•	•	Automatic Call	325
#ACALEXT	•	•	Extended Automatic Call	326
#ECAM	•	•	Extended Call Monitoring	327
#SMOV	•	•	SMS Overflow	329
#MBN	•	•	Mailbox Numbers	330
#MWI	•	•	Message Waiting Indicator	331
#CMSFW	•	•	Forward Message From Storage	332
#CODEC	•	•	Audio Codec	332
#NITZ	•	•	Network Timezone	334
#CCLK	•	•	Clock management	337
#NTP	•	•	Network Time	337
#ENS	•	•	Enhanced Network Selection	338
#BND ¹⁵	•	•	Select Band	339
#AUTOBND ¹⁵	•	•	Automatic Band Selection	341
#BNDLOCK	•	•	Lock to single band	342
#BCCHLOCK	•	•	Lock to single BCCH ARFCN	343
#NWSCANMTR	•	•	Network Selection Timer	344
#NFM	•	•	Enable Network Friendly Mode	344
#NFMC	•	•	Configure Network Friendly Mode	347
#NFMS	•	•	Reset and report status of Network Friendly Mode	349
#IMCDEN	•	-	IMSI Catcher detection enable	351
#SKIPESC	•	•	Skip Escape Sequence	341
#E2ESC	•	•	Escape Sequence Guard Time	352
#GAUTH	•	•	PPP-GPRS Connection Authentication Type	353
#GPPPCFG	•	•	PPP-GPRS Parameters Configuration	354
#GPPPCFGEXT	•	-	enables/disables PPP compression	355
#EQUPDP	•	•	Tune PDP parameters	355
#RTCSTAT	•	•	RTC Status	355
#GSMAD	•	•	GSM Antenna Detection	357
#SIMDET	•	•	SIM Detection Mode	359
#ENHSIM	•	•	SIM Enhanced Speed	359
#SNUM	•	•	Subscriber Number	360
#SIMATR	•	•	SIM Answer to reset	361
#CPUMODE	•	-	CPU Clock Mode	361
#GSMCONT	•	•	GSM Context Definition	362
#GSMCONTCFG	•	•	IPEGSM configurations	362
#CGPADDR	•	•	Show Address	363
#TCPMAXWIN	-	•	Configure TCP window size	364
#CESTHCLK	•	•	Call Establishment Lock	364
#CPASMODE	•	•	Phone activity status	365
#FASTCCID	•	•	ICCID SIM file reading mode	365
#I2CWR	•	•	I2C data via GPIO	366
#I2CRD	•	•	I2C data from GPIO	367
#SWLEVEL	•	•	Software level selection	368
#CFLO	•	•	Command flow control	369
#CMGLCONCINDEX	•	•	Report concatenated SMS indexes	369
#CODECINFO	•	•	Codec Information	369
+TRACE	•	•	Enable trace	372

¹⁴ Available only on GE864-QUAD, GE864-QUAD V2, GC864-QUAD and GC864-QUAD V2

¹⁵ Not available for GC864-DUAL, GC864-DUAL V2, GE864-DUAL V2, GL865-DUAL, GL865-DUAL V3, GL868-DUAL and GL868-DUAL V3



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COMMAND	SW 10.01.xx2 16.01.xx2	SW 13.00.xx8	Function	Page
#CSURVP	•	•	PLMN Network Survey	551
#CSURVPC	•	•	PLMN Network Survey (Numeric Format)	552
#CSURVTA	•	•	Network Survey Of Timing Advance	552
Custom AT Commands – SIM Toolkit				
#STIA	•	•	SIM Toolkit Interface Activation	555
#STGI	•	•	SIM Toolkit Get Information	561
#STSR	•	•	SIM Toolkit Send Response	567
#STTA	•	•	SIM Toolkit Terminal Attach	568
#STSA	•	•	SIM Toolkit Show Activation	569
Jammed Detect & Report AT commands				
#JDR	•	•	Jammed Detect & Report	570
#JDRENH	•	•	control Jammed Detect & Report feature	573
Custom AT Commands - Easy Script® Extension - Python Interpreter¹⁸				
#WSCRIPT	•	•	Write Script	575
#ESCRIP	•	•	Select Active Script	577
#STARTMODESCR	•	•	Script Execution Start Mode	578
#EXECSCR	•	•	Execute Active Script	580
#RSCRIPT	•	•	Read Script	580
#LSCRIPT	•	•	List Script Names	581
#LCSCRIPT	•	•	List Script Names nwith CRC16 info	582
#DSCRIPT	•	•	Delete Script	584
#DASCRIP	•	•	Delete All Scripts	585
#REBOOT	•	•	Reboot	585
#CMUXSCR	•	-	CMUX Interface Enable	586
Custom AT Commands - SAP				
#RSEN	•		Remote SIM Enable	635
Custom AT Commands - MMS				
#MMSSET	-	•	Set network parameters for MMS	587
#MMSG	-	•	General settings	588
#MMSTO	-	•	Create/Update MMS Message Mailing List	589
#MMSSEND	-	•	Send a MMS Message	589
#MMSATTD	-	•	Add MMS Attachment	589
#MMSMSG	-	•	HTTP Last Message	591
#MMSNH	-	•	Set Notification Handling	591
#MMSLN	-	•	List Notifications	593
#MMSGET	-	•	Get MMS	593
#MMSFWD	-	•	Forward MMS	594
#MMSDEL	-	•	Delete MMS from the MMS proxy server	594
#MMSLIMG	-	•	List MMS files	595
#MMSDIMG	-	•	Delete image file	595
Custom AT Commands – HTTP client				
#HTTPCFG	•	•	Configure HTTP parameters	595
#HTTPQRY	•	•	Send HTTP GET, HEAD or DELETE request	597
#HTTSPND	•	•	Send HTTP POST or PUT request	599
#HTTTPRCV	•	•	Receive HTTP server data	601
Custom AT Commands – RSA				
#RSAECDATA	•	•	Load the security data	602
#RSAENCRYPT	•	•	Encrypt data	603
#RSADECRYPT	•	•	Decrypt data	604
#RSAGETRESULT	•	•	Result of RSA calculation	605
Audio Commands				
#CAP	• ¹⁹	-	Change audio path	636
#AXE	• ²⁰	-	AXE pin reading	637

¹⁸ Python is a registered trademark of the Python Software Foundation.

¹⁹ Not available for GC864-DUAL, GC864-DUAL V2, GE864-DUAL V2, GL865-DUAL and GL868-DUAL



COMMAND	SW 10.01.xx2 16.01.xx2	SW 13.00.xx8	Function	Page
#ECHOACT	•	•	Manage of echo canceller features	663
#BIQUADIN	•	•	Cascaded filters	655
#BIQUADOUT	•	•	Cascaded filters	655
#BIQUADINEX	•	•	Extended uplink biquad filters	656
#BIQUADOUTEX	•	•	Extended downlink biquad filters	657
#DTMF	•	•	Embedded DTMF decoder enabling	666
#DTMFCFG	•	•	Embedded DTMF decoder configuration	667
Audio file and stream management Commands				
#SPCM	•	•	PCM play and receive	670
#SAMR	• ³⁰	•	AMR File Format Play	671
#SAMRCFG	• ³¹	•	SAMR Configuration	672
#ADELA	-	•	Delete all audio files	673
#ADELF	-	•	Delete audio file	673
#ALIST	-	•	List audio file	673
#APLAY	-	•	Play an audio file	674
#ARECD	-	•	Record an audio file	675
#ARECV	-	•	Receive an audio file	676
#ASEND	-	•	Send an audio file	676
#ASIZE	-	•	Audio available size	677
#AFIND	-	•	Find a specific audio file	677
#DVI	•	•	Digital voiceband interface	667
#DVIEXT	•	•	Digital Voiceband Interface Extension	668
#DVICKL	•	•	DVI Clock Activation	669
Miscellaneous Commands				
#TTY	•	•	Teletype writer	678
ECALL Commands				
#EMRGD	•	•	Dial an emergency call	679
#MSDPUSH ³²	•	•	IVS push mode activation	681
#MSDSEND ³³	•	•	Sending MSD data to IVS	681
#MSDREAD ³⁴	•	•	Read MSD	681
+CECALL ³⁵	•	•	Initiate eCall	682
#ECALL ³⁶	•	•	Enable embedded IVS inband modem	682
#EONLY	•	•	Set eCall Only mode	683
#ECALLNWTMR	•	•	Configure Network Deregister Timer	684
#ECALLTMR	•	•	Reconfigure eCall Timer	685
SSL Commands				
#SSLCFG	•	•	Config general params of a SSL socket	685
#SSLD	•	•	Opening a socket SSL to a remote server	687
#SSLEN	•	•	Enabling a SSL socket	689
#SSLFASTD	•	•	Fast redial	690
#SSLH	•	•	Closing a SSL socket	691
#SSLO	•	•	Restoring a SSL socket afte a +++	691
#SSLRECV	•	•	Reading data from a SSL socket	692
#SSLS	•	•	Reporting the status	693
#SSLSECCFG	•	•	Configuring security params of a SSL socket	694
#SSLSECDATA	•	•	Managing the security data	695
#SSLSEND	•	•	Sending data through a SSL socket	697
#SSLSENDEXT	•	•	Sending data through a secure socket in Command	697

³⁰ Available only on GL865-DUAL V3, GL865-QUAD V3, GL868-DUAL V3, GE910-QUAD V3 and GE866-QUAD

³¹ Available only on GL865-DUAL V3, GL865-QUAD V3, GL868-DUAL V3, GE910-QUAD V3 and GE866-QUAD

³² Not available on GE864-QUAD and GC864-QUAD

³³ Not available on GE864-QUAD and GC864-QUAD

³⁴ Not available on GE864-QUAD and GC864-QUAD

³⁵ Not available on GE864-QUAD and GC864-QUAD

³⁶ Not available on GE864-QUAD and GC864-QUAD



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COMMAND	<u>SW 10.01.xx2</u> <u>16.01.xx2</u>	<u>SW 13.00.xx8</u>	Function	Page
			Mode extended	
m2mAIR Cloud Commands				
#DWCFG	-	•	Configure deviceWISE parameters	699
#DWCONN	-	•	Connect to M2M Service	701
#DWSTATUS	-	•	Query connection status	701
#DWSEND	-	•	Send data to M2M Service	702
#DWSENDER	-	•	Send raw data to M2M Service	703
#DWRCV	-	•	Receive data from M2M Service	704
#DWRCVR	-	•	Receive raw data from M2M Service	705
#DWLRCV	-	•	List information on messages pending from M2M Service	706
#DWEN	-	•	Enable agent features	707



Custom AT Commands – GNSS Application						
COMMAND	GE865-QUAD, GE866-QUAD GL865-QUAD, GL865-DUAL, GL865-DUAL V3, GL865- QUAD V3, GL868-DUAL, GL868-DUAL V3, GC864-QUAD V2, GC864-DUAL V2, GE910-QUAD V3	GE864- GPS	GE910- QUAD, GE910- QUAD AUTO	GE910- GNSS	Function	Page
\$GPSD	•	•	•	•	GPS Device Type Set	606
\$GPSGPIO	•	-	•	-	GPIO Configuration for GPS control	607
\$GPSSERSPEED	•	-	•	-	Set the GPS serial port speed	609
\$GPSP	•	•	•	•	GPS Controller Power Management	610
\$GPSAT	•	•	•	-	GPS Antenna Type Definition	610
\$GPSSAV	•	•	•	•	Save GPS Parameters Configuration	611
\$GPSRST	•	•	•	•	Restore Default GPS Parameters	612
\$GPSSTCPUCLK	•	-	•	•	Set CPU Clock fir ST TESEOII	612
\$GPSPS	•	•	•	-	Set the GPS Module In Power Saving Mode	613
\$GPSWK	•	•	•	-	Wake Up GPS From Power Saving Mode	614
\$GPSMTKPPS	•	-	•	-	Set the Periodic Power Saving Mode for MTK	614
\$GPSMTKSTDBY	•	-	•	-	Set Standby Mode for MTK	615
\$GPSSW	•	•	•	•	GPS Software Version	616
\$GPSR	•	•	•	•	GPS Reset	617
\$GPSCON	•	•	•	•	Direct Access To GPS Module	617
\$GPSNMUN	•	•	•	•	Unsolicited GPS NMEA Data Configuration	618
\$GPSACP	•	•	•	•	GPS Actual Position Information	620
\$GPSIFIX	•	•	•	-	Set GPS SiRFInstantFix™ Parameters	621
\$GNSSIFIX	•	-	•	-	GNSS SiRFInstantFix™	623
\$FTPGETIFIX	•	•	•	-	Get SGEE File for SiRFInstantFix™	624
\$HTTPGETIFIX	•	•	•	-	Get SGEE File for SiRFInstantFix™	625
\$WPATCH	•	-	•	-	Write Patch on flash	626
\$EPATCH	•	-	•	-	Enable Patch	626
\$LPATCH	•	-	•	-	List Available Patch	628
\$DPATCH	•	-	•	-	Delete Patch from NVM	628
\$GPSSTAGPS	•	-	•	•	Enable STAGPSTM Usage	630
\$HTTPGETSTSEED	•	-	•	•	Get ST-AGPS seed file for ST-AGPS™	630
\$INJECTSEED	•	-	•	•	Inject decoded ST-AGPS seed file	631
\$HTTPGETEPO	•	-	•	-	Get EPO file for MT EPO Aiding	632
\$INJECTEPO	•	-	•	-	Inject EPO Aiding file	632
\$QUERYEPO	•	-	•	-	Query EPO Data Status	633
\$CLEAREPO	•	-	•	-	Delete EPO Data	634
\$EASY	•	-	•	-	Enable EASY	634



3.5. AT Commands References

3.5.1. Command Line General Format

3.5.1.1. Command Line Prefixes

3.5.1.1.1. Starting A Command Line - AT

AT - Starting A Command Line		SELINT 0 / 1 / 2
AT	The prefix AT , or at , is a two-character abbreviation (ATtention), always used to start a command line to be sent from TE to TA, with the only exception of AT#/ prefix	
Reference	3GPP TS 27.007	

3.5.1.1.2. Last Command Automatic Repetition - A/

A/ - Last Command Automatic Repetition		SELINT 0 / 1 / 2
A/	<p>If the prefix A/ or a/ is issued, the MODULE immediately execute once again the body of the preceding command line. No editing is possible and no termination character is necessary. A command line may be repeated multiple times through this mechanism, if desired.</p> <p>If A/ is issued before any command line has been executed, the preceding command line is assumed to have been empty (that results in an OK result code).</p> <p>Note: this command works only at fixed IPR.</p> <p>Note: the custom prefix AT#/ has been defined: it causes the last command to be executed again too; but it doesn't need a fixed IPR.</p>	
Reference	V25ter	

3.5.1.1.3. Repeat Last Command - AT#

AT#/ - Repeat Last Command		SELINT 0 / 1 / 2
AT#/	The prefix is used to execute again the last received command.	

3.5.2. General Configuration Commands

3.5.2.1. AT Interface Backward Compatibility

There are some slight modifications amongst the AT interfaces of Telit products. In order to keep backward compatibility and on the same time to give the opportunity to the customer to get competitor compatibility, Telit modules offer the specific command **#SELINT** to switch the behaviour of the device and its AT command interface. It is up to the user to select the AT interface he prefers.



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The following table shows which AT commands interface can be applied and is default for the specific product:

Product	#SELINT=0	#SELINT=1	#SELINT=2
GT863-PY			•(default)
GT864-QUAD			•(default)
GT864-PY			•(default)
GE864-QUAD	•	•	•(default)
GE864-QUAD V2	•	•	•(default)
GE864-GPS			•(default)
GE864-QUAD ATEX			•(default)
GE864-QUAD AUTOMOTIVE V2			•(default)
GC864-QUAD with and without SIM Holder	•	•	•(default)
GC864-QUAD V2 with and without SIM Holder	•	•	•(default)
GC864-DUAL V2			•(default)
GE864-DUAL V2			•(default)
GE865-QUAD			•(default)
GE866-QUAD			•(default)
GL865-DUAL, GL865-QUAD, GL868-DUAL			•(default)
GL865-DUAL V3, GL865-QUAD V3, GL868-DUAL V3			•(default)
GE910-QUAD, GE910-QUAD AUTO	•	•	•(default)
GE910-QUAD V3			•(default)
GE910-GNSS			•(default)



3.5.3.1.11. Revision Identification - +GMR

+GMR - Revision Identification		SELINT 0 / 1 / 2
AT+GMR	Execution command returns the software revision identification.	
Reference	V.25ter	

3.5.3.1.12. Capabilities List - +GCAP

+GCAP - Capabilities List		SELINT 0 / 1 / 2
AT+GCAP	Execution command returns the equipment supported command set list. Where: +CGSM: GSM ETSI command set +FCLASS: Fax command set +DS: Data Service common modem command set +MS: Mobile Specific command set	
Reference	V.25ter	

3.5.3.1.13. Serial Number - +GSN

+GSN - Serial Number		SELINT 0 / 1 / 2
AT+GSN	Execution command returns the device board serial number. Note: The number returned is not the IMSI, it is only the board number	
Reference	V.25ter	

3.5.3.1.14. Display Configuration And Profile - &V

&V - Display Current Base Configuration And Profile		SELINT 0 / 1 / 2
AT&V	Execution command returns some of the base configuration parameters settings. Note: this is one of the commands whose output differs depending on the last #SELINT setting. Note: the row of information about CTS (C106) OPTIONS is in the output of &V only for compatibility reasons and represents only a dummy value.	

3.5.3.1.15. Display Configuration And Profile - &V0

&V0 - Display Current Configuration And Profile		SELINT 0 / 1 / 2
AT&V0	Execution command returns all the configuration parameters settings. Note: this command is the same as &V, it is included only for backwards compatibility.	



&V0 - Display Current Configuration And Profile	SELINT 0 / 1 / 2
	<p>Note: this is one of the commands whose output differs depending on the last #SELINT setting.</p> <p>Note: the row of information about CTS (C106) OPTIONS is in the output of &V0 only for compatibility reasons and represents only a dummy value.</p>

3.5.3.1.16. S Registers Display - &V1

&V1 - S Registers Display	SELINT 0 / 1 / 2
<p>AT&V1</p>	<p>Execution command returns the value of the S registers in decimal and hexadecimal value in the format:</p> <pre style="margin-left: 40px;"> REG DEC HEX <reg0> <dec> <hex> <reg1> <dec> <hex> ... </pre> <p>where <regn> - S register number 000..005 007 012 025 038 <dec> - current value in decimal notation <hex> - current value in hexadecimal notation</p>

3.5.3.1.17. Extended S Registers Display - &V3

&V3 - Extended S Registers Display	SELINT 0 / 1 / 2
<p>AT&V3</p>	<p>Execution command returns the value of the S registers in decimal and hexadecimal value in the format:</p> <pre style="margin-left: 40px;"> REG DEC HEX <reg0> <dec> <hex> <reg1> <dec> <hex> ... </pre> <p>where <regn> - S register number 000..005 007 012 025 030 038 <dec> - current value in decimal notation <hex> - current value in hexadecimal notation</p>



3.5.3.1.23. Speaker Loudness - L

L - Speaker Loudness		SELINT 0 / 1 / 2
ATL<n>	It has no effect and is included only for backward compatibility with landline modems	

3.5.3.1.24. Speaker Mode - M

M - Speaker Mode		SELINT 0 / 1 / 2
ATM<n>	It has no effect and is included only for backward compatibility with landline modems	

3.5.3.1.25. Master Reset - +CMAR

+CMAR – Master Reset		SELINT 0 / 1
AT+CMAR=< phone lock code>	<p>This command requests the MT to reset user data. The user data in the phone will be reset to default values.</p> <p>Parameters: < phone lock code> - string type representing an 8 digits security code. It must be verified before performing the master reset.</p> <p>Note: issuing the command will cause an NVM formatting. After the formatting is completed the module will automatically reboot. It is strongly recommended to issue an AT+CFUN=4 command before starting to format NVM, in order to not interfere with the formatting process.</p> <p>Note: the command is available for SELINT 0 and 1 only in 10.00.xx3 release and onwards.</p>	
AT+CMAR=?	Test command tests for command existence.	

+CMAR – Master Reset		SELINT 2
AT+CMAR=< phone lock code>	<p>This command requests the MT to reset user data. The user data in the phone will be reset to default values.</p> <p>Parameters: < phone lock code> - string type representing an 8 digits security code. It must be verified before performing the master reset.</p> <p>Note: issuing the command will cause an NVM formatting. After the formatting is completed the module will automatically reboot. It is strongly recommended to issue an AT+CFUN=4 command before starting to format NVM, in order to not interfere with the formatting process.</p>	
AT+CMAR=?	Test command tests for command existence.	



Q - Quiet Result Codes		SELINT 0 / 1
	<p>1 - disables result codes 2 - disables result codes (only for backward compatibility)</p> <p>Note: After issuing either ATQ1 or ATQ2 every information text transmitted in response to commands is not affected</p> <p>Note: if parameter is omitted, the command has the same behaviour of ATQ0</p>	
Example	<p><i>After issuing ATQ1 or ATQ2</i></p> <p>AT+CGACT=? +CGACT: (0-1) nothing is appended to the response</p>	
Reference	V25ter	

3.5.3.2.3. Response Format - V

V - Response Format		SELINT 0 / 1 / 2								
ATV[<n>]	<p>Set command determines the contents of the header and trailer transmitted with result codes and information responses. It also determines if result codes are transmitted in a numeric form or an alphanumeric form (see [§3.2.3 Information Responses And Result Codes] for the table of result codes).</p> <p>Parameter:</p> <p><n></p> <p>0 - limited headers and trailers and numeric format of result codes</p> <table border="1" style="margin-left: 40px;"> <tr> <td>information responses</td> <td><text><CR><LF></td> </tr> <tr> <td>result codes</td> <td><numeric code><CR></td> </tr> </table> <p>1 - full headers and trailers and verbose format of result codes (factory default)</p> <table border="1" style="margin-left: 40px;"> <tr> <td>information responses</td> <td><CR><LF> <text><CR><LF></td> </tr> <tr> <td>result codes</td> <td><CR><LF> <verbose code><CR><LF></td> </tr> </table> <p>Note: the <text> portion of information responses is not affected by this setting.</p> <p>Note: if parameter is omitted, the command has the same behaviour of ATV0</p>	information responses	<text><CR><LF>	result codes	<numeric code><CR>	information responses	<CR><LF> <text><CR><LF>	result codes	<CR><LF> <verbose code><CR><LF>	
information responses	<text><CR><LF>									
result codes	<numeric code><CR>									
information responses	<CR><LF> <text><CR><LF>									
result codes	<CR><LF> <verbose code><CR><LF>									
Reference	V25ter									



&C - Data Carrier Detect (DCD) Control		SELINT 0 / 1 / 2
	<p>0 - DCD remains high always.</p> <p>1 - DCD follows the Carrier detect status: if carrier is detected DCD is high, otherwise DCD is low. (factory default)</p> <p>2 - DCD off while disconnecting</p> <p>Note: if parameter is omitted, the command has the same behaviour of AT&C0</p>	
Reference	V25ter	

3.5.3.2.7. Data Terminal Ready (DTR) Control - &D

&D - Data Terminal Ready (DTR) Control		SELINT 0 / 1
AT&D[<n>]	<p>Set command controls the Module behaviour to the RS232 DTR transitions.</p> <p>Parameter: <n></p> <p>0 - device ignores DTR transitions (factory default)</p> <p>1 - when the MODULE is connected, the High to Low transition of DTR pin sets the device in command mode, the current connection is NOT closed</p> <p>2 - when the MODULE is connected, the High to Low transition of DTR pin sets the device in command mode and the current connection is closed</p> <p>3 - device ignores DTR transitions</p> <p>4 - C108/1 operation is disabled</p> <p>5 - C108/1 operation is enabled; same behaviour as for <n>=2</p> <p>Note: if a connection has been set up issuing either #SKTD or #SKTOP, then AT&D1 has the same effect as AT&D2.</p> <p>Note: if AT&D2 has been issued and the DTR has been tied low, autoanswering is inhibited and it is possible to answer only issuing command ATA.</p> <p>Note: if parameter is omitted, the command has the same behaviour as AT&D0</p>	
Reference	V25ter	

&D - Data Terminal Ready (DTR) Control		SELINT 2
AT&D[<n>]	<p>Set command controls the Module behaviour to the RS232 DTR transitions.</p> <p>Parameter: <n></p> <p>0 - device ignores DTR transitions (factory default); if +CVHU current setting is different from 2 then every setting AT&D0 is equivalent to AT&D5</p> <p>1 - when the MODULE is connected, the High to Low transition of DTR pin sets the device in command mode, the current connection is NOT closed; if +CVHU current setting is different from 2 then issuing AT&D1 is equivalent to AT&D5</p> <p>2 - when the MODULE is connected, the High to Low transition of DTR pin sets the device in command mode and the current connection is closed; if +CVHU current setting is different from 2 then issuing AT&D2 is equivalent to</p>	



&D - Data Terminal Ready (DTR) Control		SELINT 2
	<p>AT&D5</p> <p>3 - device ignores DTR transitions; if +CVHU current setting is different from 2 then issuing AT&D3 is equivalent to AT&D5</p> <p>4 - C108/1 operation is disabled; if +CVHU current setting is different from 2 then issuing AT&D4 is equivalent to AT&D5</p> <p>5 - C108/1 operation is enabled; same behaviour as for <n>=2</p> <p>Note: if a connection has been set up issuing either #SKTD or #SKTOP, then AT&D1 has the same effect as AT&D2. If a connection has been set up issuing AT#SD then AT&D1 and AT&D2 have different effect, as described above.</p> <p>Note: if AT&D2 has been issued and the DTR has been tied Low, autoanswering is inhibited and it is possible to answer only issuing command ATA.</p> <p>Note: if parameter is omitted, the command has the same behaviour of AT&D0</p>	
Reference	V25ter	

3.5.3.2.8. Standard Flow Control - \Q

\Q - Standard Flow Control		SELINT 0 / 1 / 2
AT\Q[<n>]	<p>Set command controls the RS232 flow control behaviour.</p> <p>Parameter:</p> <p><n></p> <p>0 - no flow control</p> <p>1 - software bi-directional with filtering (XON/XOFF)</p> <p>2 - hardware mono-directional flow control (only CTS active)</p> <p>3 - hardware bi-directional flow control (both RTS/CTS active) (factory default)</p> <p>Note: if parameter is omitted, the command has the same behaviour as AT\Q0</p> <p>Note: Hardware flow control (AT\Q3) is not active in command mode.</p> <p>Note: \Q's settings are functionally a subset of &K's ones.</p>	
Reference	V25ter	

3.5.3.2.9. Flow Control - &K

&K - Flow Control		SELINT 0 / 1 / 2
AT&K[<n>]	<p>Set command controls the RS232 flow control behaviour.</p> <p>Parameter:</p> <p><n></p>	



&K - Flow Control	SELINT 0 / 1 / 2
	<p>0 - no flow control 1 - hardware mono-directional flow control (only CTS active) 2 - software mono-directional flow control (XON/XOFF) 3 - hardware bi-directional flow control (both RTS/CTS active) (factory default) 4 - software bi-directional with filtering (XON/XOFF) 5 - pass through: software bi-directional without filtering (XON/XOFF) 6 - both hardware bi-directional flow control (both RTS/CTS active) and software bi-directional flow control (XON/XOFF) with filtering</p> <p>Note: if parameter is omitted, the command has the same behaviour as AT&K0</p> <p>Note: &K has no Read Command. To verify the current setting of &K, simply check the settings of the active profile issuing AT&V.</p> <p>Note: Hardware flow control (AT&K3) is not active in command mode.</p>

3.5.3.2.10. Data Set Ready (DSR) Control - &S

&S - Data Set Ready (DSR) Control	SELINT 0 / 1 / 2
<p>AT&S[<n>]</p>	<p>Set command controls the RS232 DSR pin behaviour.</p> <p>Parameter: <n> 0 - always High 1 - follows the GSM traffic channel indication. 2 - High when connected 3 - High when device is ready to receive commands (factory default).</p> <p>Note: if option 1 is selected then DSR is tied High when the device receives from the network the GSM traffic channel indication.</p> <p>Note: in power saving mode the DSR pin is always tied Low.</p> <p>Note: if parameter is omitted, the command has the same behaviour of AT&S0</p> <p>Note: If Selint=2 is selected, and option 1 and 2 are active, DSR will not tied High in case of GSM voice connection</p>

3.5.3.2.11. Ring (RI) Control - \R

\R - Ring (RI) Control	SELINT 0 / 1 / 2
<p>AT\R[<n>]</p>	<p>Set command controls the RING output pin behaviour.</p> <p>Parameter: <n> 0 - RING on during ringing and further connection</p>



\R - Ring (RI) Control		SELINT 0 / 1 / 2
	<p>1 - RING on during ringing (factory default) 2 - RING follows the ring signal</p> <p>Note: to check the ring option status use the &V command.</p> <p>Note: if parameter is omitted, the command has the same behaviour of AT\R0</p>	

3.5.3.2.12. Fixed DTE Interface Rate - +IPR

+IPR - Fixed DTE Interface Rate		SELINT 0 / 1
AT+IPR=<rate>	<p>Set command specifies the DTE speed at which the device accepts commands during command mode operations; it may be used to fix the DTE-DCE interface speed.</p> <p>Parameter: <rate> 0 ..300 1200 2400 4800 9600 19200 38400 57600 115200</p> <p>If <rate> is set to 0, then automatic speed detection is enabled and also character format (see +ICF) is set to auto-detect. (default) If <rate> is specified and not 0, DTE-DCE speed is fixed at that speed, hence no speed auto-detection (autobauding) is enabled.</p> <p>Note: While in autobauding mode the 300 baud rate is not supported.</p>	
AT+IPR?	Read command returns the current value of +IPR parameter.	
AT+IPR=?	Test command returns the supported serial port speed list.	
Reference	V25ter	

+IPR - Fixed DTE Interface Rate		SELINT 2
AT+IPR=<rate>	<p>Set command specifies the DTE speed at which the device accepts commands during command mode operations; it may be used to fix the DTE-DCE interface speed.</p> <p>Parameter: <rate> 0 (default; not supported for 13.00.xxx SW version) ..300</p>	



+IPR - Fixed DTE Interface Rate		SELINT 2
	<p>1200 2400 4800 9600 19200 38400 57600 115200 (default for 13.00.xxx SW version) 230400 (supported only for 13.00.xxx SW version, starting from 13.00.xx2) 460800 (supported only for 13.00.xxx SW version, starting from 13.00.xx2) 921600 (supported only for 13.00.xxx SW version, starting from 13.00.xx2)</p> <p>If <rate> is set to 0, then automatic speed detection is enabled and also character format (see +ICF) is set to auto-detect. (default)</p> <p>If <rate> is specified and not 0, DTE-DCE speed is fixed at that speed, hence no speed auto-detection (autobauding) is enabled.</p> <p>Note: While in autobauding mode the 300 baud rate is not supported.</p>	
AT+IPR?	Read command returns the current value of + IPR parameter.	
AT+IPR=?	<p>Test command returns the list of supported autodetectable <rate> values and the list of fixed-only <rate> values in the format:</p> <p>+IPR:(list of supported autodetectable <rate> values), (list of fixed-only <rate> values)</p> <p>In 13.00.xxx SW version test command returns the list of fixed-only <rate> values in the format:</p> <p>+IPR: (list of fixed-only <rate> values)</p>	
Reference	V25ter	

3.5.3.2.13. DTE-Modem Local Flow Control - +IFC

+IFC - DTE-Modem Local Flow Control		SELINT 0 / 1 / 2
AT+IFC=<by_te>,<by_ta>	<p>Set command selects the flow control behaviour of the serial port in both directions: from DTE to modem (<by_ta> option) and from modem to DTE (<by_te>)</p> <p>Parameters:</p> <p><by_te> - flow control option for the data received by DTE</p> <ul style="list-style-type: none"> 0 - flow control None 1 - XON/XOFF filtered 2 - C105 (RTS) (factory default) 3 - XON/XOFF not filtered <p><by_ta> - flow control option for the data sent by modem</p> <ul style="list-style-type: none"> 0 - flow control None 	



+IFC - DTE-Modem Local Flow Control		SELINT 0 / 1 / 2
	<p>1 - XON/XOFF 2 - C106 (CTS) (factory default)</p> <p>Note: Hardware flow control (AT+IFC=2,2) is not active in command mode.</p> <p>Note: This command is equivalent to &K command.</p>	
AT+IFC?	<p>Read command returns active flow control settings.</p> <p>Note: If flow control behavior has been set with AT&Kn command with the parameter that is not allowed by AT+IFC the read command AT+IFC? will return:</p> <p>+IFC: 0,0</p>	
AT+IFC=?	Test command returns all supported values of the parameters <by_te> and <by_ta> .	
Reference	V25ter	

3.5.3.2.14. DTE-Modem Local Rate Reporting - +ILRR

+ILRR - DTE-Modem Local Rate Reporting		SELINT 0 / 1 / 2
AT+ILRR=<n>	<p>Set command controls whether or not the +ILRR: <rate> information text is transmitted from the modem (module) to the DTE.</p> <p>Parameter:</p> <p><n> 0 - local port speed rate reporting disabled (factory default) 1 - local port speed rate reporting enabled</p> <p>Note: If AT+IPR=0 (in autobauding) local port speed reported will be 0.</p> <p>Note: this information if enabled is sent upon connection.</p>	
AT+ILRR?	Read command returns active setting of <n> .	
AT+ILRR=?	Test command returns all supported values of the parameter <n>	
Reference	V25ter	

3.5.3.2.15. DTE-Modem Character Framing - +ICF

+ICF - DTE-Modem Character Framing		SELINT 0 / 1 / 2
AT+ICF=<format> [,<parity>]	<p>Set command defines the asynchronous character framing to be used when autobauding is disabled.</p> <p>Parameters:</p> <p><format> - determines the number of bits in the data bits, the presence of a parity bit, and the number of stop bits in the start-stop frame. 0 – autodetection (not available for 13.00.xxx SW releases) 1 - 8 Data, 2 Stop</p>	



+ICF - DTE-Modem Character Framing		SELINT 0 / 1 / 2
	2 - 8 Data, 1 Parity, 1 Stop 3 - 8 Data, 1 Stop 5 - 7 Data, 1 Parity, 1 Stop <parity> - determines how the parity bit is generated and checked, if present; setting this subparameter is mandatory and has a meaning only if <format> subparameter is either 2 or 5 (for 13.00.xxx SW releases meaningless <format> values are not allowed). 0 - Odd 1 - Even	
AT+ICF?	Read command returns current settings for subparameters <format> and <parity> . If current setting of subparameter <format> is neither 2 nor 5, the current setting of subparameter <parity> will always be represented as 0.	
AT+ICF=?	Test command returns the ranges of values for the parameters <format> and <parity>	
Reference	V25ter	
Example	<i>Auto detect</i> AT+ICF = 0 OK <i>8N2</i> AT+ICF = 1 OK <i>8O1</i> AT+ICF = 2,0 OK <i>8E1</i> AT+ICF = 2,1 OK <i>8N1</i> AT+ICF = 3 OK <i>7O1</i> AT+ICF = 5,0 OK <i>7E1</i> AT+ICF = 5,1 OK	



3.5.3.3. Call Control

3.5.3.3.1. Dial - D

D – Dial	SELINT 0 / 1
ATD<number>[;]	<p>Execution command starts a call to the phone number given as parameter. If “;” is present, a VOICE call to the given number is performed, regardless of the current value of the connection mode set by +FCLASS command.</p> <p>Parameter: <number> - phone number to be dialed</p> <p>Note: type of call (data, fax or voice) depends on last +FCLASS setting.</p> <p>Note: the numbers accepted are 0-9 and *,#,”A”, ”B”, ”C”, ”D”, ”+”.</p> <p>Note: for backwards compatibility with landline modems modifiers “T”, ”P”, ”R”, ”,”,”W”, “!”, “@” are accepted but have no effect.</p>
ATD><str>[;]	<p>Issues a call to phone number which corresponding alphanumeric field is <str>; all available memories will be searched for the correct entry.</p> <p>If “;” is present a voice call is performed.</p> <p>Parameter: <str> - alphanumeric field corresponding to phone number; it must be enclosed in quotation marks.</p> <p>Note: parameter <str> is case sensitive.</p> <p>Note: used character set should be the one selected with command Select TE character set +CSCS.</p>
ATD><mem><n>[;]	<p>Issues a call to phone number in phonebook memory storage <mem>, entry location <n> (available memories may be queried with AT+CPBS=?). If “;” is present a voice call is performed.</p> <p>Parameters: <mem> - phonebook memory storage SM - SIM phonebook FD - SIM fixed dialling-phonebook LD - SIM last-dialling-phonebook MC - device missed (unanswered received) calls list RC - ME received calls list</p> <p><n> - entry location; it should be in the range of locations available in the memory used.</p>
ATD><n>[;]	<p>Issues a call to phone number in entry location <n> of the active phonebook</p>



D – Dial		SELINT 0 / 1
	ATD>"Name"; OK	
Reference	V25ter.	

D – Dial		SELINT 2
ATD<number>[;]	<p>Execution command starts a call to the phone number given as parameter. If ";" is present, a voice call to the given number is performed, regardless of the current value of the connection mode set by +FCLASS command.</p> <p>Parameter: <number> - phone number to be dialed</p> <p>Note: type of call (data, fax or voice) depends on last +FCLASS setting.</p> <p>Note: the numbers accepted are 0-9 and *,#,"A", "B", "C", "D", "+".</p> <p>Note: for backwards compatibility with landline modems modifiers "T", "P", "R", ",", "W", "!", "@" are accepted but have no effect.</p>	
ATD<str>[;]	<p>Issues a call to phone number which corresponding alphanumeric field is <str>; all available memories will be searched for the correct entry.</p> <p>If ";" is present a voice call is performed.</p> <p>Parameter: <str> - alphanumeric field corresponding to phone number; it must be enclosed in quotation marks.</p> <p>Note: parameter <str> is case sensitive.</p> <p>Note: used character set should be the one selected with +CSCS.</p>	
ATD<mem><n>[;]	<p>Issues a call to phone number in phonebook memory storage <mem>, entry location <n> (available memories may be queried with AT+CPBS=?). If ";" is present a voice call is performed.</p> <p>Parameters: <mem> - phonebook memory storage SM - SIM phonebook FD - SIM fixed dialling-phonebook LD - SIM last-dialling-phonebook MC - device missed (unanswered received) calls list RC - ME received calls list MB - mailbox numbers stored on SIM, if this service is provided by the SIM (see #MBN). <n> - entry location; it should be in the range of locations available in the memory used.</p>	
ATD<n>[;]	Issues a call to phone number in entry location <n> of the active phonebook	



+MS - Modulation Selection		SELINT 0 / 1 / 2
AT+MS?	Read command returns the current value of <carrier>, <automode>, <min_rate>, <max_rate> parameters.	
AT+MS=?	Test command returns all supported values of the <carrier>, <automode>, <min_rate>, <max_rate> parameters.	

3.5.3.4.2. Line Quality And Auto Retrain - %E

%E - Line Quality Monitor And Auto Retrain Or Fallback/Fallforward		SELINT 0 / 1 / 2
AT%E<n>	Execution command has no effect and is included only for backward compatibility with landline modems.	

3.5.3.5. Compression Control

3.5.3.5.1. Data Compression - +DS

+DS - Data Compression		SELINT 0 / 1 / 2
AT+DS=[<n>]	Set command sets the V42 compression parameter. Parameter: <n> 0 - no compression, it is currently the only supported value; the command has no effect, and is included only for backward compatibility	
AT+DS?	Read command returns current value of the data compression parameter.	
AT+DS=?	Test command returns all supported values of the parameter <n>	
Reference	V25ter	

3.5.3.5.2. Data Compression Reporting - +DR

+DR - Data Compression Reporting		SELINT 0 / 1 / 2
AT+DR=<n>	Set command enables/disables the data compression reporting upon connection. Parameter: <n> 0 - data compression reporting disabled; 1 - data compression reporting enabled upon connection. Note: if enabled, the following intermediate result code is transmitted before the final result code: +DR: <compression> (the only supported value for <compression> is "NONE")	
AT+DR?	Read command returns current value of <n>.	
AT+DR=?	Test command returns all supported values of the parameter <n>	



S2 - Escape Character	SELINT 2
Note: the format of the numbers in output is always 3 digits, left-filled with 0s	

3.5.3.6.4. Command Line Termination Character - S3

S3 - Command Line Termination Character	SELINT 0 / 1
ATS3[=<char>]	<p>Set command sets the value of the character either recognized by the device as command line terminator and generated by the device as part of the header, trailer, and terminator for result codes and information text, along with S4 parameter.</p> <p>Parameter: <char> - command line termination character (decimal ASCII) 0..127 - factory default value is 13 (ASCII CR)</p> <p>Note: the “previous” value of S3 is used to determine the command line termination character for entering the command line containing the S3 setting command. However the result code issued shall use the “new” value of S3 (as set during the processing of the command line).</p>
ATS3?	Read command returns the current value of S3 parameter.
ATS3=?	Test command returns the range for <char> without command echo and parenthesis.
Note	For either Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s
Reference	V25ter

S3 - Command Line Termination Character	SELINT 2
ATS3=[<char>]	<p>Set command sets the value of the character either recognized by the device as command line terminator and generated by the device as part of the header, trailer, and terminator for result codes and information text, along with S4 parameter.</p> <p>Parameter: <char> - command line termination character (decimal ASCII) 0..127 - factory default value is 13 (ASCII <CR>)</p> <p>Note: the “previous” value of S3 is used to determine the command line termination character for entering the command line containing the S3 setting command. However the result code issued shall use the “new” value of S3 (as set during the processing of the command line)</p>
ATS3?	<p>Read command returns the current value of S3 parameter.</p> <p>Note: the format of the numbers in output is always 3 digits, left-filled with 0s</p>
Reference	V25ter

3.5.3.6.5. Response Formatting Character - S4



S4 - Response Formatting Character		SELINT 0 / 1
ATS4[=<char>]	<p>Set command sets the value of the character generated by the device as part of the header, trailer, and terminator for result codes and information text, along with the S3 parameter.</p> <p>Parameter: <char> - response formatting character (decimal ASCII) 0..127 - factory default value is 10 (ASCII LF)</p> <p>Note: if the value of S4 is changed in a command line the result code issued in response of that command line will use the new value of S4.</p>	
ATS4?	Read command returns the current value of S4 parameter.	
ATS4=?	Test command returns the range for <char> without command echo and parenthesis	
Note	For either Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s	
Reference	V25ter	

S4 - Response Formatting Character		SELINT 2
ATS4[=<char>]	<p>Set command sets the value of the character generated by the device as part of the header, trailer, and terminator for result codes and information text, along with the S3 parameter.</p> <p>Parameter: <char> - response formatting character (decimal ASCII) 0..127 - factory default value is 10 (ASCII LF)</p> <p>Note: if the value of S4 is changed in a command line the result code issued in response of that command line will use the new value of S4.</p>	
ATS4?	<p>Read command returns the current value of S4 parameter.</p> <p>Note: the format of the numbers in output is always 3 digits, left-filled with 0s</p>	
Reference	V25ter	

3.5.3.6.6. Command Line Editing Character - S5

S5 - Command Line Editing Character		SELINT 0 / 1
ATS5[=<char>]	<p>Set command sets the value of the character recognized by the device as a request to delete from the command line the immediately preceding character.</p> <p>Parameter: <char> - command line editing character (decimal ASCII) 0..127 - factory default value is 8 (ASCII BS).</p>	
ATS5?	Read command returns the current value of S5 parameter.	
ATS5=?	Test command returns the range for <char> without command echo and parenthesis.	
Note	For either Read and Test command the format of the numbers in output is always 3	



S5 - Command Line Editing Character		SELINT 0 / 1
	digits, left-filled with 0s	
Reference	V25ter	

S5 - Command Line Editing Character		SELINT 2
ATS5=[<char>]	Set command sets the value of the character recognized by the device as a request to delete from the command line the immediately preceding character. Parameter: <char> - command line editing character (decimal ASCII) 0..127 - factory default value is 8 (ASCII BS)	
ATS5?	Read command returns the current value of S5 parameter . Note: the format of the numbers in output is always 3 digits, left-filled with 0s	
Reference	V25ter	

3.5.3.6.7. Connection Completion Time-Out - S7

S7 - Connection Completion Time-Out		SELINT 0 / 1
ATS7=[<tout>]	Set command sets the amount of time, in seconds, that the device shall allow between either answering a call (automatically or by A command) or completion of signalling of call addressing information to network (dialling), and establishment of a connection with the remote device. Parameter: <tout> - number of seconds 1..255 - factory default value is 60.	
ATS7?	Read command returns the current value of S7 parameter .	
ATS7=?	Test command returns the range for <tout> without command echo and parenthesis.	
Note	For either Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s	
Reference	V25ter	

S7 - Connection Completion Time-Out		SELINT 2
ATS7=[<tout>]	Set command sets the amount of time, in seconds, that the device shall allow between either answering a call (automatically or by A command) or completion of signalling of call addressing information to network (dialling), and establishment of a connection with the remote device. Parameter: <tout> - number of seconds 1..255 - factory default value is 60	
ATS7?	Read command returns the current value of S7 parameter .	



S7 - Connection Completion Time-Out		SELINT 2
	Note: the format of the numbers in output is always 3 digits, left-filled with 0s	
Reference	V25ter	

3.5.3.6.8. Carrier Off With Firm Time - S10

S10 - Carrier Off With Firm Time		SELINT 0 / 1 / 2
ATS10	Execution command has no effect and is included only for backward compatibility with landline modems	

3.5.3.6.9. Escape Prompt Delay - S12

S12 - Escape Prompt Delay		SELINT 0 / 1
ATS12[=<time>]	<p>Set command sets:</p> <ol style="list-style-type: none"> 1) the minimum period, before receipt of the first character of the three escape character sequence, during which no other character has to be detected in order to accept it as valid first character; 2) the maximum period allowed between receipt of first, or second, character of the three escape character sequence and receipt of the next; 3) the minimum period, after receipt of the last character of the three escape character sequence, during which no other character has to be detected in order to accept the escape sequence as a valid one. <p>Parameter: <time> - expressed in fiftieth of a second 20..255 - factory default value is 50.</p> <p>Note: after CONNECT result code it is possible to accept the first character of the three escape character sequence without having to wait for a minimum period to be passed.</p>	
ATS12?	Read command returns the current value of S12 parameter.	
ATS12=?	Test command returns the range for <time> without command echo and parenthesis.	
Note	For either Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s	

S12 - Escape Prompt Delay		SELINT 2
ATS12=[<time>]	<p>Set command sets:</p> <ol style="list-style-type: none"> 1) the minimum period, before receipt of the first character of the three escape character sequence, during which no other character has to be detected in order to accept it as valid first character; 2) the maximum period allowed between receipt of first or second character of 	



S12 - Escape Prompt Delay		SELINT 2
	<p>the three escape character sequence and receipt of the next;</p> <p>3) the minimum period, after receipt of the last character of the three escape character sequence, during which no other character has to be detected in order to accept the escape sequence as a valid one.</p> <p>Parameter: <time> - expressed in fiftieth of a second 2..255 - factory default value is 50.</p> <p>Note: the minimum period S12 has to pass after CONNECT result code too, before a received character is accepted as valid first character of the three escape character sequence.</p>	
ATS12?	<p>Read command returns the current value of S12 parameter.</p> <p>Note: the format of the numbers in output is always 3 digits, left-filled with 0s</p>	

3.5.3.6.10. Delay To DTR Off - S25

S25 - Delay To DTR Off		SELINT 0 / 1
ATS25[=<time>]	<p>Set command defines the amount of time, in hundredths of second, that the device will ignore the DTR for taking the action specified by command &D.</p> <p>Parameter: <time> - expressed in hundredths of a second 0..255 - factory default value is 5.</p> <p>Note: the delay is effective only if its value is greater than 5.</p>	
ATS25?	Read command returns the current value of S25 parameter .	
ATS25=?	<p>Test command returns the range for <time> without command echo and parenthesis.</p> <p>Note: the output depends on the choice made through #SELINT command.</p>	
Note	For either Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s	

S25 -Delay To DTR Off		SELINT 2
ATS25=[<time>]	<p>Set command defines the amount of time, in hundredths of second, that the device will ignore the DTR for taking the action specified by command &D.</p> <p>Parameter: <time> - expressed in hundredths of a second 0..255 - factory default value is 5.</p> <p>Note: the delay is effective only if its value is greater than 5.</p>	
ATS25?	Read command returns the current value of S25 parameter .	



S25 -Delay To DTR Off	SELINT 2
Note: the format of the numbers in output is always 3 digits, left-filled with 0s	

3.5.3.6.11. Disconnect Inactivity Timer - S30

S30 - Disconnect Inactivity Timer	SELINT 0 / 1
ATS30[=<tout>]	Set command defines the inactivity time-out in minutes. The device disconnects if no characters are exchanged for a time period of at least <tout> minutes. Parameter: <tout> - expressed in minutes 0 - disabled, disconnection due to inactivity is disabled (factory default). 1..255 - inactivity time-out value.
ATS30?	Read command returns the current value of S30 parameter.
ATS30=?	Test command returns the range for <tout> without command echo and parenthesis. Note: the output depends on the choice made through #SELINT command.
Note	For either Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s

S30 -Disconnect Inactivity Timer	SELINT 2
ATS30=[<tout>]	Set command defines the inactivity time-out in minutes. The device disconnects if no characters are exchanged for a time period of at least <tout> minutes. Parameter: <tout> - expressed in minutes 0 - disabled, disconnection due to inactivity is disabled (factory default). 1..127 - inactivity time-out value
ATS30?	Read command returns the current value of S30 parameter. Note: the format of the numbers in output is always 3 digits, left-filled with 0s

3.5.3.6.12. Delay Before Forced Hang Up - S38

S38 -Delay Before Forced Hang Up	SELINT 0 / 1
ATS38[=<delay>]	Set command sets the delay, in seconds, between the device's receipt of H command (or ON-to-OFF transition of DTR if device is programmed to follow the signal) and the disconnect operation. Parameter: <delay> - expressed in seconds 0..254 - the device will wait <delay> seconds for the remote device to acknowledge all data in the device buffer before disconnecting (factory default value is 0). 255 - the device doesn't time-out and continues to deliver data in the buffer until



S38 -Delay Before Forced Hang Up		SELINT 0 / 1
	the connection is lost or the data is delivered.	
	Note: <delay> parameter can be used to ensure that data in device buffer is sent before device disconnects.	
ATS38?	Read command returns the current value of S38 parameter.	
ATS38=?	Test command returns the range of supported values for <delay> without command echo and parenthesis.	
Note	For either Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s	

S38 -Delay Before Forced Hang Up		SELINT 2
ATS38=[<delay>]	<p>Set command sets the delay, in seconds, between the device's receipt of H command (or ON-to-OFF transition of DTR) and the disconnect operation.</p> <p>Parameter:</p> <p><delay> - acknowledge timer in units of seconds</p> <p>0..254 - the device will wait <delay> seconds for the remote device to acknowledge all data in the device buffer before disconnecting (factory default value is 0).</p> <p>255 - the device doesn't time-out and continues to attempt to deliver data in the buffer until the connection is lost or the data is delivered.</p> <p>Note: <delay> parameter can be used to ensure that data in device buffer is sent before device disconnects.</p>	
ATS38?	<p>Read command returns the current value of S38 parameter.</p> <p>Note: the format of the numbers in output is always 3 digits, left-filled with 0s</p>	



3.5.4. 3GPP TS 27.007 AT Commands

3.5.4.1. General

3.5.4.1.1. Request Manufacturer Identification - +CGMI

+CGMI - Request Manufacturer Identification		SELINT 0 / 1
AT+CGMI	Execution command returns the device manufacturer identification code without command echo. The output depends on the choice made through #SELINT command.	
AT+CGMI?	Read command has the same behaviour as Execution command	
Reference	3GPP TS 27.007	

+CGMI - Request Manufacturer Identification		SELINT 2
AT+CGMI	Execution command returns the device manufacturer identification code without command echo. The output depends on the choice made through #SELINT command.	
AT+CGMI=?	Test command returns OK result code.	
Reference	3GPP TS 27.007	

3.5.4.1.2. Request Model Identification - +CGMM

+CGMM - Request Model Identification		SELINT 0 / 1
AT+CGMM	Execution command returns the device model identification code without command echo.	
Reference	3GPP TS 27.007	

+CGMM - Request Model Identification		SELINT 2
AT+CGMM	Execution command returns the device model identification code without command echo.	
AT+CGMM=?	Test command returns OK result code.	
Reference	3GPP TS 27.007	

3.5.4.1.3. Request Revision Identification - +CGMR

+CGMR - Request Revision Identification		SELINT 0 / 1
AT+CGMR	Execution command returns device software revision number without command echo.	
AT+CGMR?	Read command has the same behaviour as Execution command	
Reference	3GPP TS 27.007	

+CGMR - Request Revision Identification		SELINT 2
AT+CGMR	Execution command returns device software revision number without command echo.	
AT+CGMR=?	Test command returns OK result code.	



+CGMR - Request Revision Identification		SELINT 2
Reference	3GPP TS 27.007	

3.5.4.1.4. Request Product Serial Number Identification - +CGSN

+CGSN - Request Product Serial Number Identification		SELINT 0 / 1
AT+CGSN	Execution command returns the product serial number, identified as the IMEI of the mobile, without command echo.	
AT+CGSN?	Read command has the same behaviour as Execution command	
Reference	3GPP TS 27.007	

+CGSN - Request Product Serial Number Identification		SELINT 2
AT+CGSN	Execution command returns the product serial number, identified as the IMEI of the mobile, without command echo.	
AT+CGSN=?	Test command returns OK result code.	
Reference	3GPP TS 27.007	

3.5.4.1.5. Select TE Character Set - +CSCS

+CSCS - Select TE Character Set		SELINT 0 / 1
AT+CSCS [=<chset>]	Set command sets the current character set used by the device. Parameter: <chset> - character set "IRA" - ITU-T.50 "8859-1" - ISO 8859 Latin 1 "PCCP437" - PC character set Code Page 437. "UCS2" - 16-bit universal multiple-octet coded character set (ISO/IEC10646) Note: If parameter is omitted then the behaviour of Set command is the same as Read command.	
AT+CSCS?	Read command returns the current value of the active character set.	
AT+CSCS=?	Test command returns the supported values of the parameter <chset>. For compatibility with previous versions, Test command returns +CSCS: ("IRA") An enhanced version of Test command has been defined: AT+CSCS=?? , that provides the complete range of values for <chset>.	
AT+CSCS=??	Enhanced test command returns the supported values of the parameter <chset>	
Reference	3GPP TS 27.007	

+CSCS - Select TE Character Set		SELINT 2
AT+CSCS= [<chset>]	Set command sets the current character set used by the device. Parameter:	



	+CMUX: <mode>,<subset>,<port_speed>,<N1> Note: the <port_speed> will be reported only if it has a supported value.
AT+CMUX=?	Test command returns the range of supported values for parameters <mode>, <subset>, <port_speed> and <N1>.
Reference	3GPP TS 27.007, 3GPP TS 27.010, 3GPP TS 07.10

3.5.4.1.8. Select Wireless Network - +WS46

+WS46 - PCCA STD-101 Select Wireless Network		SELINT 2
AT+WS46=[<n>]	Set command selects the cellular network (Wireless Data Service, WDS) to operate with the TA (WDS-Side Stack Selection). Parameter: <n> - integer type, it is the WDS-Side Stack to be used by the TA. 12 - GSM digital cellular	
AT+WS46?	Read command reports the currently selected cellular network, in the format: + WS46: <n>	
AT+WS46=?	Test command reports the range for the parameter <n>.	
Reference	3GPP TS 27.007	

3.5.4.1.9. Select preferred MT power class - +CPWC

+CPWC – Select preferred MT power class		SELINT 2
AT+CPWC= [<class> [,<band>]]	The set command is used to select the preferred MT power class for each GSM frequency band supported. <class>: numeric parameter which indicates the power class preference to be used; its possible values are: 0 - default power class for the relevant band 1, 2 - allowable power classes on DCS1800 and PCS1900 bands; 4, 5 - allowable power classes on GSM900 and GSM850 bands; <band>: numeric parameter which indicates the band to apply the power class setting; its possible values are: 0 - GSM900 and GSM850; 1 - DCS1800; 2 - PCS1900; Using this command is possible to reduce the Nominal Maximum output power according to the following tables: GSM900 and GSM850	



	<table border="1"> <thead> <tr> <th>Power class</th> <th>Nominal Maximum output power</th> </tr> </thead> <tbody> <tr> <td>4 (default)</td> <td>2 W (33 dBm)</td> </tr> <tr> <td>5</td> <td>0,8 W (29 dBm)</td> </tr> </tbody> </table> <p>DCS1800</p> <table border="1"> <thead> <tr> <th>Power class</th> <th>Nominal Maximum output power</th> </tr> </thead> <tbody> <tr> <td>1 (default)</td> <td>1 W (30 dBm)</td> </tr> <tr> <td>2</td> <td>0,25 W (24 dBm)</td> </tr> </tbody> </table> <p>PCS1900</p> <table border="1"> <thead> <tr> <th>Power class</th> <th>Nominal Maximum output power</th> </tr> </thead> <tbody> <tr> <td>1 (default)</td> <td>1 W (30 dBm)</td> </tr> <tr> <td>2</td> <td>0,25 W (24 dBm)</td> </tr> </tbody> </table> <p>Note: it is advisable to use this command for reducing power consumption when the received signal strength is high (about -70 dBm) and the module is working in static conditions.</p> <p>Note: if <class> is given but <band> is left out, the power class setting is applied to GSM900 and GSM850 bands.</p> <p>Note: the setting is saved in NVM (and available on following reboot).</p>	Power class	Nominal Maximum output power	4 (default)	2 W (33 dBm)	5	0,8 W (29 dBm)	Power class	Nominal Maximum output power	1 (default)	1 W (30 dBm)	2	0,25 W (24 dBm)	Power class	Nominal Maximum output power	1 (default)	1 W (30 dBm)	2	0,25 W (24 dBm)
Power class	Nominal Maximum output power																		
4 (default)	2 W (33 dBm)																		
5	0,8 W (29 dBm)																		
Power class	Nominal Maximum output power																		
1 (default)	1 W (30 dBm)																		
2	0,25 W (24 dBm)																		
Power class	Nominal Maximum output power																		
1 (default)	1 W (30 dBm)																		
2	0,25 W (24 dBm)																		
AT+CPWC?	<p>The read command returns the currently output power class and default output power class for each supported frequency band in the format:</p> <p>+CPWC: <curr_class1>,<def_class1>,<band1> [<curr_class2>,<def_class2>,<band2> [...]]</p> <p>Note: <band1> parameter and its associated power class parameters refer to the currently used frequency band.</p>																		
AT+CPWC=?	<p>Test command returns supported bands and their power classes in the format:</p> <p>+CPWC: list of supported (<band> , (list of <class>s)) pairs</p>																		
Reference	3GPP TS 27.007 and GSM 05.05																		



+CBST - Select Bearer Service Type		SELINT 0 / 1
	<p>Note: If all parameters are omitted then the behaviour of Set command is the same as Read command.</p> <p>Note: the following settings are recommended AT+CBST=71,0,1 for mobile-to-mobile calls AT+CBST=7,0,1 for mobile-to-fix calls</p>	
AT+CBST?	Read command returns current value of the parameters <speed> , <name> and <ce>	
AT+CBST=?	Test command returns the supported range of values for the parameters.	
Reference	3GPP TS 27.007	

+CBST - Select Bearer Service Type		SELINT 2
AT+CBST= [<speed> [,<name> [,<ce>]]]	<p>Set command sets the bearer service <name> with data rate <speed>, and the connection element <ce> to be used when data calls are originated. This setting is also used during mobile terminated data call setup, in case of single numbering scheme calls (refer +CSNS).</p> <p>Parameters:</p> <p><speed> - data rate</p> <ul style="list-style-type: none"> 0 - autobauding (automatic selection of the speed, factory default) 1 - 300 bps (V.21) 2 - 1200 bps (V.22) 3 - 1200/75 bps (V.23) 4 - 2400 bps (V.22bis) 6 - 4800 bps (V.32) 7 - 9600 bps (V.32) 14 - 14400 bps (V.34) 65 - 300 bps (V.110) 66 - 1200 bps (V.110) 68 - 2400 bps (V.110 or X.31 flag stuffing) 70 - 4800 bps (V.110 or X.31 flag stuffing) 71 - 9600 bps (V.110 or X.31 flag stuffing) 75 - 14400 bps (V110 or X.31 flag stuffing) <p><name> - bearer service name</p> <ul style="list-style-type: none"> 0 - data circuit asynchronous (factory default) <p><ce> - connection element</p> <ul style="list-style-type: none"> 0 - transparent 1 - non transparent (default) <p>Note: the settings AT+CBST=0,0,0 AT+CBST=14,0,0 AT+CBST=75,0,0 are not supported.</p>	



+CR - Service Reporting Control		SELINT 0 / 1 / 2
	<p>quality of service will be used, before any error control or data compression reports are transmitted, and before the intermediate result code CONNECT is transmitted. Its format is:</p> <p>+CR: <serv></p> <p>where:</p> <p><serv></p> <ul style="list-style-type: none"> ASYNC - asynchronous transparent SYNC - synchronous transparent REL ASYNC - asynchronous non-transparent REL SYNC - synchronous non-transparent. <p>Note: this command replaces V.25ter [14] command Modulation Reporting Control (+MR), which is not appropriate for use with a GSM terminal.</p>	
AT+CR?	<p>Read command returns whether or not intermediate result code +CR is enabled, in the format:</p> <p>+CR: <mode></p>	
AT+CR=?	Test command returns the supported range of values of parameter <mode> .	
Reference	3GPP TS 27.007	

3.5.4.2.5. Extended Error Report - +CEER

+CEER - Extended Error Report		SELINT 0 / 1
AT+CEER	<p>Execution command returns one or more lines of information text <report> offering the TA user an extended error report, in the format:</p> <p>+CEER: <report></p> <p>This report regards some error condition that may occur:</p> <ul style="list-style-type: none"> • the failure in the last unsuccessful call setup (originating or answering) • the last call release <p>Note: if none of the previous conditions has occurred since power up then “No error” condition is reported</p>	
AT+CEER?	Read command reports a information text regarding some error condition that may occur	
AT+CEER=?	Test command returns OK result code.	
Reference	3GPP TS 27.007, GSM 04.08	

+CEER - Extended Error Report		SELINT 2
AT+CEER	<p>Execution command returns one or more lines of information text <report> offering the TA user an extended error report, in the format:</p>	



+CEER - Extended Error Report		SELINT 2
	<p>+CEER: <report></p> <p>This report regards some error condition that may occur:</p> <ul style="list-style-type: none"> • the failure in the last unsuccessful call setup (originating or answering) • the last call release <p>Note: if none of the previous conditions has occurred since power up then “Normal, unspecified” condition is reported</p>	
AT+CEER=?	Test command returns OK result code.	
Reference	3GPP TS 27.007, GSM 04.08	

3.5.4.2.6. Cellular Result Codes - +CRC

+CRC - Cellular Result Codes		SELINT 0 / 1
AT+CRC=<mode>	<p>Set command controls whether or not the extended format of incoming call indication is used.</p> <p>Parameter: <mode></p> <ul style="list-style-type: none"> 0 - disables extended format reporting (factory default) 1 - enables extended format reporting <p>When enabled, an incoming call is indicated to the TE with unsolicited result code:</p> <p>+CRING:<type></p> <p>instead of the normal RING.</p> <p>where <type> - call type: DATA FAX - facsimile (TS 62) VOICE - normal voice (TS 11)</p>	
AT+CRC?	Read command returns current value of the parameter <mode> .	
AT+CRC=?	Test command returns supported values of the parameter <mode> .	
Reference	3GPP TS 27.007	

+CRC - Cellular Result Codes		SELINT 2
AT+CRC=[<mode>]	<p>Set command controls whether or not the extended format of incoming call indication is used.</p> <p>Parameter: <mode></p>	



+CRC - Cellular Result Codes		SELINT 2
	<p>0 - disables extended format reporting (factory default) 1 - enables extended format reporting:</p> <p>When enabled, an incoming call is indicated to the TE with unsolicited result code</p> <p>+CRING: <type></p> <p>instead of the normal RING.</p> <p>where <type> - call type: ASYNC - asynchronous transparent data SYNC - synchronous transparent data REL ASYNC - asynchronous non-transparent data REL SYNC - synchronous non-transparent data FAX - facsimile (TS 62) VOICE - normal voice (TS 11)</p>	
AT+CRC?	Read command returns current value of the parameter <mode> .	
AT+CRC=?	Test command returns supported values of the parameter <mode> .	
Reference	3GPP TS 27.007	

3.5.4.2.7. Single Numbering Scheme - +CSNS

+CSNS - Single Numbering Scheme		SELINT 0 / 1 / 2
AT+CSNS= [<mode>]	<p>Set command selects the bearer to be used when no bearer capability information is provided within a mobile terminated call. The command has to be set before the call comes. Parameter values set with +CBST command shall be used when <mode> equals to a data service.</p> <p>Parameter: <mode> 0 - voice (factory default) 2 - fax (TS 62) 4 - data</p> <p>Note: if +CBST parameter is set to a value that is not applicable to single numbering calls, ME/TA shall map the value to the closest valid one. E.g. if user has set <speed>=71, <name>=0 and <ce>=1 (non-transparent asynchronous 9600 bps V.110 ISDN connection) for mobile originated calls, ME/TA shall map the values into non-transparent asynchronous 9600 bps V.32 modem connection when single numbering scheme call is answered.</p>	
AT+CSNS?	Read command returns current value of the parameter <mode> .	
AT+CSNS=?	Test command returns supported values of parameter <mode> .	
Reference	3GPP TS 27.007	



3.5.4.2.8. Voice Hang Up Control - +CVHU

+CVHU - Voice Hang Up Control		SELINT 0 / 1
AT+CVHU=[<mode>]	<p>Set command selects whether ATH or “drop DTR” shall cause a voice connection to be disconnected or not.</p> <p>Parameter: <mode></p> <ul style="list-style-type: none"> 0 - “Drop DTR” ignored but OK result code given. ATH disconnects. 1 - “Drop DTR” and ATH ignored but OK result code given. 2 - “Drop DTR” behaviour according to &D setting. ATH disconnects (factory default). <p>Note: if parameter <mode> is omitted the behaviour of Set command is the same as Read command.</p>	
AT+CVHU?	Read command reports the current value of the <mode> parameter, +CVHU: <mode>	
AT+CVHU=?	Test command reports the range of supported values for parameter <mode>	

+CVHU - Voice Hang Up Control		SELINT 2
AT+CVHU=[<mode>]	<p>Set command selects whether ATH or “drop DTR” shall cause a voice connection to be disconnected or not.</p> <p>Parameter: <mode></p> <ul style="list-style-type: none"> 0 - “Drop DTR” ignored but OK result code given. ATH disconnects. 1 - “Drop DTR” and ATH ignored but OK result code given. 2 - “Drop DTR” behaviour according to &D setting. ATH disconnects (factory default). 	
AT+CVHU?	Read command reports the current value of the <mode> parameter, in the format: +CVHU: <mode>	
AT+CVHU=?	Test command reports the range of supported values for parameter <mode>	

3.5.4.3. Network Service Handling

3.5.4.3.1. Subscriber Number - +CNUM

+CNUM - Subscriber Number		SELINT 0 / 1
AT+CNUM	<p>Execution command returns the MSISDN (if the phone number of the device has been stored in the SIM card) in the format:</p> <p>+CNUM: <number>,<type></p>	



+CNUM - Subscriber Number		SELINT 0 / 1
	<p>where</p> <p><number> - string containing the phone number in the format <type></p> <p><type> - type of number:</p> <p>129 - national numbering scheme</p> <p>145 - international numbering scheme (contains the character "+").</p>	
Reference	3GPP TS 27.007	

+CNUM - Subscriber Number		SELINT 2
AT+CNUM	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>If the ENS functionality has not been previously enabled (see #ENS)</p> </div> <p>Execution command returns the MSISDN (if the phone number of the device has been stored in the SIM card) in the format:</p> <p>+CNUM: <alpha>,<number>,<type></p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>If the ENS functionality has been previously enabled (see #ENS)</p> </div> <p>Execution command returns the MSISDN (if the phone number of the device has been stored in the SIM card) in the format:</p> <p>+CNUM: <alpha>,<number>,<type>[<CR><LF></p> <p>+CNUM: <alpha>,<number>,<type>[...]]</p> <p>where:</p> <p><alpha> - alphanumeric string associated to <number>; used character set should be the one selected with +CSCS.</p> <p><number> - string containing the phone number in the format <type></p> <p><type> - type of number:</p> <p>129 - national numbering scheme</p> <p>145 - international numbering scheme (contains the character "+").</p> <p>Note: in 13.00.xxx SW release the behaviour doesn't depend on ENS functionality and corresponds to the case when the ENS functionality is enabled.</p>	
AT+CNUM=?	Test command returns the OK result code	
Reference	3GPP TS 27.007	



3.5.4.3.2. Read Operator Names - +COPN

+COPN - Read Operator Names		SELINT 0 / 1
AT+COPN	<p>Execution command returns the list of operator names from the ME in the format:</p> <p>+COPN: <numeric1>,<alpha1>[<CR><LF><CR><LF> +COPN: <numeric2>,<alpha2>[...]]</p> <p>where: <numeric> - string type, operator in numeric format (see +COPS) <alphan> - string type, operator in long alphanumeric format (see +COPS)</p> <p>Note: each operator code <numeric> that has an alphanumeric equivalent <alphan> in the ME memory is returned</p>	
Reference	3GPP TS 27.007	

+COPN - Read Operator Names		SELINT 2
AT+COPN	<p>Execution command returns the list of operator names from the ME in the format:</p> <p>+COPN: <numeric1>,<alpha1>[<CR><LF> +COPN: <numeric2>,<alpha2>[...]]</p> <p>where: <numeric> - string type, operator in numeric format (see +COPS) <alphan> - string type, operator in long alphanumeric format (see +COPS)</p> <p>Note: each operator code <numeric> that has an alphanumeric equivalent <alphan> in the ME memory is returned</p>	
AT+COPN=?	Test command returns the OK result code	
Reference	3GPP TS 27.007	

3.5.4.3.3. Network Registration Report - +CREG

+CREG - Network Registration Report		SELINT 0 / 1
AT+CREG[= [<mode>]]	<p>Set command enables/disables network registration reports depending on the parameter <mode>.</p> <p>Parameter: <mode> 0 - disable network registration unsolicited result code (factory default) 1 - enable network registration unsolicited result code 2 - enable network registration unsolicited result code with network Cell identification data</p> <p>If <mode>=1, network registration result code reports:</p>	



+CREG - Network Registration Report	SELINT 0 / 1
	<p>+CREG: <stat></p> <p>where <stat></p> <ul style="list-style-type: none"> 0 - not registered, ME is not currently searching a new operator to register to 1 - registered, home network 2 - not registered, but ME is currently searching a new operator to register to 3 - registration denied 4 - unknown 5 - registered, roaming <p>If <mode>=2, network registration result code reports:</p> <p>+CREG: <stat>[,<Lac>,<Ci>]</p> <p>where: <Lac> - Local Area Code for the currently registered on cell <Ci> - Cell Id for the currently registered on cell</p> <p>Note: <Lac> and <Ci> are reported only if <mode>=2 and the mobile is registered on some network cell.</p> <p>Note: issuing AT+CREG<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT+CREG=<CR> is the same as issuing the command AT+CREG=0<CR>.</p>
AT+CREG?	<p>Read command reports the <mode> and <stat> parameter values in the format:</p> <p>+CREG: <mode>,<stat>[,<Lac>,<Ci>]</p> <p>Note: <Lac> and <Ci> are reported only if <mode>=2 and the mobile is registered on some network cell.</p>
AT+CREG=?	<p>Test command returns the range of supported <mode></p>
Example	<pre>AT OK at+creg? +CREG: 0,2 OK (the MODULE is in network searching state) at+creg? +CREG: 0,2 OK at+creg? +CREG: 0,2 OK at+creg? +CREG: 0,2</pre>



+CREG - Network Registration Report		SELINT 0 / 1
	OK at+creg? +CREG: 0,1 OK (the <i>MODULE</i> is registered) at+creg? +CREG: 0,1 OK	
Reference	3GPP TS 27.007	

+CREG - Network Registration Report		SELINT 2
AT+CREG= [<mode>]	<p>Set command enables/disables network registration reports depending on the parameter <mode>.</p> <p>Parameter: <mode> 0 - disable network registration unsolicited result code (factory default) 1 - enable network registration unsolicited result code 2 - enable network registration unsolicited result code with network Cell identification data</p> <p>If <mode>=1, network registration result code reports:</p> <p style="padding-left: 40px;">+CREG: <stat></p> <p>where <stat> 0 - not registered, ME is not currently searching a new operator to register to 1 - registered, home network 2 - not registered, but ME is currently searching a new operator to register to 3 - registration denied 4 - unknown 5 - registered, roaming</p> <p>If <mode>=2, network registration result code reports:</p> <p style="padding-left: 40px;">+CREG: <stat>[,<Lac>,<Ci>]</p> <p>where: <Lac> - Local Area Code for the currently registered on cell <Ci> - Cell Id for the currently registered on cell</p> <p>Note: <Lac> and <Ci> are reported only if <mode>=2 and the mobile is registered on some network cell.</p>	



+CREG - Network Registration Report		SELINT 2
AT+CREG?	Read command reports the <mode> and <stat> parameter values in the format: +CREG: <mode>,<stat>[,<Lac>,<Ci>] Note: <Lac> and <Ci> are reported only if <mode>=2 and the mobile is registered on some network cell.	
AT+CREG=?	Test command returns the range of supported <mode>	
Example	<pre> AT OK at+creg? +CREG: 0,2 OK (the MODULE is in network searching state) at+creg? +CREG: 0,2 OK at+creg? +CREG: 0,2 OK at+creg? +CREG: 0,1 OK (the MODULE is registered) at+creg? +CREG: 0,1 OK </pre>	
Reference	3GPP TS 27.007	
Note	There are situations in which the presentation of the URC controlled by +CREG is slightly different from ETSI specifications: e.g. it is possible to have an excessive presentation of the URC +CREG: 4 . We identified this behaviour and decided to maintain it as default for backward compatibility issues. It is indeed possible to avoid it simply issuing AT#REGMODE=1 (see #REGMODE): this puts the Operation Mode of Registration Status Commands in 'Enhanced Registration Operation Mode' which is more formal.	

3.5.4.3.4. Operator Selection - +COPS

+COPS - Operator Selection		SELINT 0 / 1
AT+COPS[= <mode> [,<format> [,<oper>]]]]	Set command forces an attempt to select and register the GSM network operator. <mode> parameter defines whether the operator selection is done automatically or it is forced by this command to operator <oper> . The operator <oper> shall be given in format <format> .	



+COPS - Operator Selection	SELINT 0 / 1
<p>The behaviour of +COPS command depends on the last #COPSMODE setting.</p> <p style="text-align: center;">(#COPSMODE=0)</p> <p>Parameters:</p> <p><mode></p> <ul style="list-style-type: none"> 0 - automatic choice (the parameter <oper> will be ignored) (factory default) 1 - manual choice unlocked (network is kept as long as available, then it can be changed with some other suited networks to guarantee the service) 2 - deregister from GSM network; the MODULE is kept unregistered until a +COPS with <mode>=0, 1, 4 or 5 is issued 3 - set only <format> parameter (the parameter <oper> will be ignored) 4 - manual/automatic (<oper> field shall be present); if manual selection fails, automatic mode (<mode>=0) is entered 5 - manual choice locked (network is kept fixed, if the chosen network is not available, then the mobile has no service) <p><format></p> <ul style="list-style-type: none"> 0 - alphanumeric long form (max length 16 digits) 1 - alphanumeric short form 2 - Numeric 5 or 6 digits [country code (3) + network code (2 or 3)] <p><oper>: network operator in format defined by <format> parameter.</p> <p style="text-align: center;">(#COPSMODE=1)</p> <p>Parameters:</p> <p><mode></p> <ul style="list-style-type: none"> 0 - automatic choice (the parameter <oper> will be ignored) (default) 1 - manual choice (<oper> field shall be present) 2 - deregister from GSM network; the MODULE is kept unregistered until a +COPS with <mode>=0, 1 or 4 is issued 3 - set only <format> parameter (the parameter <oper> will be ignored) 4 - manual/automatic (<oper> field shall be present); if manual selection fails, automatic mode (<mode>=0) is entered <p><format></p> <ul style="list-style-type: none"> 0 - alphanumeric long form (max length 16 digits) 2 - Numeric 5 or 6 digits [country code (3) + network code (2 or 3)] <p><oper>: network operator in format defined by <format> parameter.</p> <p>Note: <mode> parameter setting is stored in NVM and available at next reboot, if it is not 3 (i.e.: set only <format> parameter).</p>	



+COPS - Operator Selection	SELINT 0 / 1
	<p>Note: if <mode>=1 or 4 (or 5 if #COPSMODE=0), the selected network is stored in NVM too and is available at next reboot (this will happen even with a new SIM inserted)</p> <p>Note: <format> parameter setting is never stored in NVM</p> <p>Note: issuing AT+COPS<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT+COPS=<CR> is the same as issuing the command AT+COPS=0<CR>.</p>
AT+COPS?	<p>Read command returns current value of <mode>, <format> and <oper> in format <format>; if no operator is selected, <format> and <oper> are omitted</p> <p>+COPS: <mode>[, <format>, <oper>]</p>
AT+COPS=?	<p>Test command returns a list of quadruplets, each representing an operator present in the network.</p> <p>The behaviour of Test command depends on the last #COPSMODE setting.</p> <p style="text-align: center;">(#COPSMODE=0)</p> <p>The command outputs as many rows as the number of quadruplets, each of them in the format:</p> <p>+COPS: (<stat> ,<oper (in <format>=0)>,"",<oper (in <format>=2)>)</p> <p>where <stat> - operator availability 0 - unknown 1 - available 2 - current 3 - forbidden</p> <p style="text-align: center;">(#COPSMODE=1)</p> <p>The quadruplets in the list are separated by commas:</p> <p>+COPS: [list of supported (<stat> ,<oper (in <format>=0)>),<oper (in <format>=2)>)s][, ,(list of supported <mode>s), (list of supported<format>s)]</p> <p>where <stat> - operator availability 0 - unknown 1 - available 2 - current</p>



+COPS - Operator Selection		SELINT 0 / 1
	<p>3 - forbidden</p> <p>Note: since with this command a network scan is done, this command may require some seconds before the output is given.</p> <p>Note: The value of parameter <oper> (in <format>=0) is the same as the former GM862 family products.</p>	
Reference	3GPP TS 27.007	

+COPS - Operator Selection		SELINT 2
AT+COPS= [<mode> [,<format> [,<oper>]]]	<p>Set command forces an attempt to select and register the GSM network operator. <mode> parameter defines whether the operator selection is done automatically or it is forced by this command to operator <oper>. The operator <oper> shall be given in format <format>.</p> <p>Parameters:</p> <p><mode></p> <ul style="list-style-type: none"> 0 - automatic choice (the parameter <oper> will be ignored) (factory default) 1 - manual choice (<oper> field shall be present) 2 - deregister from GSM network; the MODULE is kept unregistered until a +COPS with <mode>=0, 1 or 4 is issued 3 - set only <format> parameter (the parameter <oper> will be ignored) 4 - manual/automatic (<oper> field shall be present); if manual selection fails, automatic mode (<mode>=0) is entered <p><format></p> <ul style="list-style-type: none"> 0 - alphanumeric long form (max length 16 digits) 2 - Numeric 5 or 6 digits [country code (3) + network code (2 or 3)] <p><oper>: network operator in format defined by <format> parameter.</p> <p>Note: <mode> parameter setting is stored in NVM and available at next reboot, if it is not 3 (i.e.: set only <format> parameter).</p> <p>Note: if <mode>=1 or 4, the selected network is stored in NVM too and is available at next reboot (this will happen even with a new SIM inserted)</p> <p>Note: <format> parameter setting is never stored in NVM</p>	
AT+COPS?	<p>Read command returns current value of <mode>,<format> and <oper> in format <format>; if no operator is selected, <format> and <oper> are omitted</p> <p>+COPS: <mode>[,<format>,<oper>]</p>	
AT+COPS=?	<p>Test command returns a list of quadruplets, each representing an operator present in the network.</p> <p>The quadruplets in the list are separated by commas:</p> <p>+COPS: [list of supported (<stat>,<oper (in <format>=0)>),,<oper (in <format>=2)>]s[,(list of supported <mode>s),</p>	



+COPS - Operator Selection		SELINT 2
	<p>(list of supported<format>s)]</p> <p>where</p> <p><stat> - operator availability</p> <p>0 - unknown</p> <p>1 - available</p> <p>2 - current</p> <p>3 - forbidden</p> <p>Note: since with this command a network scan is done, this command may require some seconds before the output is given.</p>	
Reference	3GPP TS 27.007	

3.5.4.3.5. Facility Lock/Unlock - +CLCK

+CLCK - Facility Lock/Unlock		SELINT 0 / 1
<p>AT+CLCK= <fac>,<mode> [,<passwd> [,<class>]]</p>	<p>Execution command is used to lock or unlock a ME o a network facility.</p> <p>Parameters:</p> <p><fac> - facility</p> <p>"SC" - SIM (PIN request) (device asks SIM password at power-up and when this lock command issued)</p> <p>"AO" - BAO (Barr All Outgoing Calls)</p> <p>"OI" - BOIC (Barr Outgoing International Calls)</p> <p>"OX" - BOIC-exHC (Barr Outgoing International Calls except to Home Country)</p> <p>"AI" - BAIC (Barr All Incoming Calls)</p> <p>"IR" - BIC-Roam (Barr Incoming Calls when Roaming outside the home country)</p> <p>"AB" - All Barring services (applicable only for <mode>=0)</p> <p>"AG" - All outGoing barring services (applicable only for <mode>=0)</p> <p>"AC" - All inComing barring services (applicable only for <mode>=0)</p> <p>"FD" - SIM fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>)</p> <p>"PN" - network Personalisation</p> <p>"PU" - network subset Personalisation</p> <p><mode> - defines the operation to be done on the facility</p> <p>0 - unlock facility</p> <p>1 - lock facility</p> <p>2 - query status</p> <p><passwd> - shall be the same as password specified for the facility from the DTE user interface or with command Change Password +CPWD</p> <p><class> - sum of integers each representing a class of information (default is 7)</p> <p>1- voice (telephony)</p> <p>2 - data (refers to all bearer services)</p>	



+CLCK - Facility Lock/Unlock		SELINT 0 / 1
	<p>4 - fax (facsimile services) 8 - short message service 16 - data circuit sync 32 - data circuit async 64 - dedicated packet access 128 - dedicated PAD access</p> <p>Note: when <mode>=2 and command successful, it returns:</p> <p>+CLCK: <status></p> <p>where <status> - current status of the facility 0 - not active 1 - active</p>	
AT+CLCK=?	Test command reports all the facility supported by the device.	
Reference	3GPP TS 27.007	
Note	The improving command @CLCK has been defined.	

+CLCK - Facility Lock/Unlock		SELINT 2
<p>AT+CLCK= <fac>,<mode> [,<passwd> [,<class>]]</p>	<p>Execution command is used to lock or unlock a ME o a network facility.</p> <p>Parameters: <fac> - facility "PS" - PH-SIM (lock PHone to SIM card) MT asks password when other than current SIM card inserted; MT may remember certain amount of previously used cards thus not requiring password when they are inserted "PF" - lock Phone to the very First inserted SIM card (MT asks password when other than the first SIM card is inserted) "SC" - SIM (PIN request) (device asks SIM password at power-up and when this lock command issued) "AO"- BAOC (Barr All Outgoing Calls) "OI" - BOIC (Barr Outgoing International Calls) "OX" - BOIC-exHC (Barr Outgoing International Calls except to Home Country) "AI" - BAIC (Barr All Incoming Calls) "IR" - BIC-Roam (Barr Incoming Calls when Roaming outside the home country) "AB" - All Barring services (applicable only for <mode>=0) "AG" - All outGoing barring services (applicable only for <mode>=0) "AC" - All inComing barring services (applicable only for <mode>=0) "FD" - SIM fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>) "PN" - network Personalisation "PU" - network subset Personalisation "PP" - service Provider Personalization</p>	



+CLCK - Facility Lock/Unlock	SELINT 2
	<p>"PC" - Corporate Personalization "MC" – Multi Country Lock³⁸ <mode> - defines the operation to be done on the facility 0 - unlock facility 1 - lock facility 2 - query status <passwd> - shall be the same as password specified for the facility from the DTE user interface or with command Change Password +CPWD <class> - sum of integers each representing a class of information (default is 7) 1 - voice (telephony) 2 - data (refers to all bearer services) 4 - fax (facsimile services) 8 - short message service 16 - data circuit sync 32 - data circuit async 64 - dedicated packet access 128 - dedicated PAD access</p> <p>Note: when <mode>=2 and command successful, it returns: +CLCK: <status>[,<class1>[<CR><LF>+CLCK: <status>,<class2> [...]]</p> <p>where <status> - the current status of the facility 0 - not active 1 - active <classn> - class of information of the facility</p>
AT+CLCK=?	Test command reports all the facilities supported by the device.
Reference	3GPP TS 27.007
Example	<p><i>Querying such a facility returns an output on three rows, the first for voice, the second for data, the third for fax:</i></p> <pre>AT+CLCK="AO",2 +CLCK: <status>,1 +CLCK: <status>,2 +CLCK: <status>,4</pre>

3.5.4.3.6. Facility Improved Lock/Unlock - @CLCK

@CLCK - Facility Improved Lock/Unlock	SELINT 0 / 1
AT@CLCK= <fac>,<mode> [,<passwd> [,<class>]]	<p>Execution command is used to lock or unlock a ME or a network facility.</p> <p>Parameters: <fac> - facility "SC" - SIM (PIN request) (device asks SIM password at power-up and when this</p>

³⁸ Only available on software version 10.00.00x



@CLCK - Facility Improved Lock/Unlock	SELINT 0 / 1
	<p>lock command issued)</p> <p>"AO"- BAOC (Barr All Outgoing Calls) "OI" - BOIC (Barr Outgoing International Calls) "OX" - BOIC-exHC (Barr Outgoing International Calls except to Home Country) "AI" - BAIC (Barr All Incoming Calls) "IR" - BIC-Roam (Barr Incoming Calls when Roaming outside the home country) "AB" - All Barring services (applicable only for <mode>=0) "AG" - All outGoing barring services (applicable only for <mode>=0) "AC" - All inComing barring services (applicable only for <mode>=0) "FD" - SIM fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>) "PN" - network Personalisation "PU" - network subset Personalisation</p> <p><mode> - defines the operation to be done on the facility 0 - unlock facility 1 - lock facility 2 - query status</p> <p><passwd> - shall be the same as password specified for the facility from the DTE user interface or with command Change Password +CPWD</p> <p><class> - sum of integers each representing a class of information (default is 7) 1- voice (telephony) 2 - data (refers to all bearer services) 4 - fax (facsimile services) 8 - short message service 16 - data circuit sync 32 - data circuit async 64 - dedicated packet access 128 - dedicated PAD access</p> <p>Note: when <mode>=2 and command successful, it returns: @CLCK: <status>[,<class1> [<CR><LF>@CLCK: <status>,<class2>[...]]</p> <p>where <status> - the current status of the facility 0 - not active 1 - active <classn> - class of information of the facility</p>
AT@CLCK=?	Test command reports all the facilities supported by the device.
Reference	3GPP TS 27.007
Example	<i>Querying such a facility returns an output on three rows, the first for voice, the second for data, the third for fax:</i>



@CLCK - Facility Improved Lock/Unlock		SELINT 0 / 1
	AT@CLCK="AO",2 @CLCK: <status>,1 @CLCK: <status>,2 @CLCK: <status>,4 OK	

3.5.4.3.7. Change Facility Password - +CPWD

+CPWD - Change Facility Password		SELINT 0 / 1
AT+CPWD=<fac>,<oldpwd>,<newpwd>	Execution command changes the password for the facility lock function defined by command Facility Lock +CLCK. Parameters: <fac> - facility "SC" - SIM (PIN request) "AB" - All barring services "P2" - SIM PIN2 <oldpwd> - string type, it shall be the same as password specified for the facility from the ME user interface or with command +CPWD. <newpwd> - string type, it is the new password Note: parameter <oldpwd> is the old password while <newpwd> is the new one.	
AT+CPWD=?	Test command returns a list of pairs (<fac>,<pwdlength>) which presents the available facilities and the maximum length of their password (<pwdlength>)	
Example	at+cpwd=? +CPWD: ("SC",8),("AB",4),("P2",4) OK	
Reference	3GPP TS 27.007	

+CPWD - Change Facility Password		SELINT 2
AT+CPWD=<fac>,<oldpwd>,<newpwd>	Execution command changes the password for the facility lock function defined by command Facility Lock +CLCK. Parameters: <fac> - facility "SC" - SIM (PIN request) "AB" - All barring services "P2" - SIM PIN2 "PS" - SIM VO <oldpwd> - string type, it shall be the same as password specified for the facility from the ME user interface or with command +CPWD. <newpwd> - string type, it is the new password Note: parameter <oldpwd> is the old password while <newpwd> is the new one.	



+CPWD - Change Facility Password		SELINT 2
AT+CPWD=?	Test command returns a list of pairs (<fac>,<pwdlength>) which presents the available facilities and the maximum length of their password (<pwdlength>)	
Example	at+cpwd=? +CPWD: ("SC",8),("AB",4),("P2",8),("PS",8) OK	
Reference	3GPP TS 27.007	

3.5.4.3.8. Calling Line Identification Presentation - +CLIP

+CLIP - Calling Line Identification Presentation		SELINT 0 / 1
AT+CLIP[=[<n>]]	<p>Set command enables/disables the presentation of the CLI (Calling Line Identity) at the TE. This command refers to the GSM supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to get the CLI of the calling party when receiving a mobile terminated call.</p> <p>Parameters: <n> 0 - disables CLI indication (factory default) 1 - enables CLI indication</p> <p>If enabled the device reports after each RING the response: +CLIP: <number>,<type>,"",128,<alpha>,<CLI_validity></p> <p>where: <number> - string type phone number of format specified by <type> <type> - type of address octet in integer format 128 - both the type of number and the numbering plan are unknown 129 - unknown type of number and ISDN/Telephony numbering plan 145 - international type of number and ISDN/Telephony numbering plan (contains the character "+") <alpha> - string type; alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command Select TE character set +CSCS. <CLI_validity> 0 - CLI valid 1 - CLI has been withheld by the originator. 2 - CLI is not available due to interworking problems or limitation or originating network.</p> <p>Note: in the +CLIP: response they are currently not reported either the subaddress information (it's always "" after the 2nd comma) and the subaddress type information (it's always 128 after the 3rd comma)</p> <p>Note: issuing AT+CLIP<CR> is the same as issuing the Read command.</p>	



+CLIP - Calling Line Identification Presentation		SELINT 0 / 1
	Note: issuing AT+CLIP=<CR> is the same as issuing the command AT+CLIP=0<CR> .	
AT+CLIP?	Read command returns the presentation status of the CLI in the format: +CLIP: <n>,<m> where: <n> 0 - CLI presentation disabled 1 - CLI presentation enabled <m> - status of the CLIP service on the GSM network 0 - CLIP not provisioned 1 - CLIP provisioned 2 - unknown (e.g. no network is present) Note: This command issues a status request to the network, hence it may take a few seconds to give the answer due to the time needed to exchange data with it.	
AT+CLIP=?	Test command returns the supported values of the parameter <n>	
Reference	3GPP TS 27.007	
Note	The command changes only the report behaviour of the device, it does not change CLI supplementary service setting on the network.	

+CLIP - Calling Line Identification Presentation		SELINT 2
AT+CLIP=[<n>]	Set command enables/disables the presentation of the CLI (Calling Line Identity) at the TE . This command refers to the GSM supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to get the CLI of the calling party when receiving a mobile terminated call. Parameters: <n> 0 - disables CLI indication (factory default) 1 - enables CLI indication If enabled the device reports after each RING the response: +CLIP: <number>,<type>,"",128,<alpha>,<CLI_validity> where: <number> - string type phone number of format specified by <type> <type> - type of address octet in integer format 128 - both the type of number and the numbering plan are unknown 129 - unknown type of number and ISDN/Telephony numbering plan	



+CLIP - Calling Line Identification Presentation	SELINT 2
	<p>145 - international type of number and ISDN/Telephony numbering plan (contains the character "+")</p> <p><alpha> - string type; alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command Select TE character set +CSCS.</p> <p><CLI_validity></p> <p>0 - CLI valid</p> <p>1 - CLI has been withheld by the originator.</p> <p>2 - CLI is not available due to interworking problems or limitation or originating network.</p> <p>Note: in the +CLIP: response they are currently not reported either the subaddress information (it's always " " after the 2nd comma) and the subaddress type information (it's always 128 after the 3rd comma)</p>
AT+CLIP?	<p>Read command returns the presentation status of the CLI in the format:</p> <p>+CLIP: <n>,<m></p> <p>where:</p> <p><n></p> <p>0 - CLI presentation disabled</p> <p>1 - CLI presentation enabled</p> <p><m> - status of the CLIP service on the GSM network</p> <p>0 - CLIP not provisioned</p> <p>1 - CLIP provisioned</p> <p>2 - unknown (e.g. no network is present)</p> <p>Note: This command issues a status request to the network, hence it may take a few seconds to give the answer due to the time needed to exchange data with it.</p>
AT+CLIP=?	Test command returns the supported values of parameter <n>
Reference	3GPP TS 27.007
Note	The command changes only the report behaviour of the device, it does not change CLI supplementary service setting on the network.

3.5.4.3.9. Calling Line Identification Restriction - +CLIR

+CLIR - Calling Line Identification Restriction	SELINT 0 / 1
AT+CLIR[=[<n>]]	<p>Set command overrides the CLIR subscription when temporary mode is provisioned as a default adjustment for all following outgoing calls. This adjustment can be revoked by using the opposite command.</p> <p>This command refers to CLIR-service (GSM 02.81) that allows a calling subscriber to enable or disable the presentation of the CLI to the called party when originating a call.</p> <p>Parameter:</p> <p><n> - facility status on the Mobile</p>



+CLIR - Calling Line Identification Restriction		SELINT 0 / 1
	<p>0 - CLIR facility according to CLIR service network status 1 - CLIR facility active (CLI not sent) 2 - CLIR facility not active (CLI sent)</p> <p>Note: issuing AT+CLIR<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT+CLIR=<CR> is the same as issuing the command AT+CLIR=0<CR>.</p>	
AT+CLIR?	<p>Read command gives the default adjustment for all outgoing calls (<n>) and also triggers an interrogation of the provision status of the CLIR service (<m>), where</p> <p><n> - facility status on the Mobile 0 - CLIR facility according to CLIR service network status 1 - CLIR facility active (CLI not sent) 2 - CLIR facility not active (CLI sent)</p> <p><m> - facility status on the Network 0 - CLIR service not provisioned 1 - CLIR service provisioned permanently 2 - unknown (e.g. no network present, etc.) 3 - CLI temporary mode presentation restricted 4 - CLI temporary mode presentation allowed</p>	
AT+CLIR=?	Test command reports the supported values of parameter <n>.	
Reference	3GPP TS 27.007	
Note	This command sets the default behaviour of the device in outgoing calls.	

+CLIR - Calling Line Identification Restriction		SELINT 2
AT+CLIR=[<n>]	<p>Set command overrides the CLIR subscription when temporary mode is provisioned as a default adjustment for all following outgoing calls. This adjustment can be revoked by using the opposite command. This command refers to CLIR-service (GSM 02.81) that allows a calling subscriber to enable or disable the presentation of the CLI to the called party when originating a call.</p> <p>Parameter: <n> - facility status on the Mobile 0 - CLIR facility according to CLIR service network status 1 - CLIR facility active (CLI not sent) 2 - CLIR facility not active (CLI sent)</p>	
AT+CLIR?	<p>Read command gives the default adjustment for all outgoing calls (<n>) and also triggers an interrogation of the provision status of the CLIR service (<m>), where</p> <p><n> - facility status on the Mobile 0 - CLIR facility according to CLIR service network status 1 - CLIR facility active (CLI not sent) 2 - CLIR facility not active (CLI sent)</p> <p><m> - facility status on the Network</p>	



+CLIR - Calling Line Identification Restriction		SELINT 2
	0 - CLIR service not provisioned 1 - CLIR service provisioned permanently 2 - unknown (e.g. no network present, etc.) 3 - CLI temporary mode presentation restricted 4 - CLI temporary mode presentation allowed	
AT+CLIR=?	Test command reports the supported values of parameter <n>.	
Reference	3GPP TS 27.007	
Note	This command sets the default behaviour of the device in outgoing calls.	

3.5.4.3.10. Call Forwarding Number And Conditions - +CCFC

+CCFC - Call Forwarding Number And Condition		SELINT 0 / 1 / 2
AT+CCFC= <reason> , <cmd> [,<number>[,< type> [,<class> [,,<time>]]]	<p>Execution command controls the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported.</p> <p>Parameters:</p> <p><reason></p> <ul style="list-style-type: none"> 0 - unconditional 1 - mobile busy 2 - no reply 3 - not reachable 4 - all calls (not with query command) 5 - all conditional calls (not with query command) <p><cmd></p> <ul style="list-style-type: none"> 0 - disable 1 - enable 2 - query status 3 - registration 4 - erasure <p><number> - string type phone number of forwarding address in format specified by <type> parameter</p> <p><type> - type of address octet in integer format :</p> <ul style="list-style-type: none"> 129 - national numbering scheme 145 - international numbering scheme (contains the character "+") <p><class> - sum of integers each representing a class of information which the command refers to; default 7 (voice + data + fax)</p> <ul style="list-style-type: none"> 1 - voice (telephony) 2 - data 4 - fax (facsimile services) 8 - short message service 16 - data circuit sync 32 - data circuit async 	



+CCFC - Call Forwarding Number And Condition		SELINT 0 / 1 / 2
	<p>64 - dedicated packet access 128 - dedicated PAD access</p> <p><time> - time in <i>seconds</i> to wait before call is forwarded; it is valid only when <reason> "no reply" is enabled (<cmd>=1) or queried (<cmd>=2) 1..30 - automatically rounded to a multiple of 5 seconds (default is 20)</p> <p>Note: when <cmd>=2 and command successful, it returns:</p> <p>+CCFC: <status>,<class1>[,<number>,<type>[,,,<time>]]<CR><LF> +CCFC: <status>,<class2>[,<number>,<type>[,,,<time>]] [...]</p> <p>where: <status> - current status of the network service 0 - not active 1 - active <classn> - same as <class> <time> - it is returned only when <reason>=2 ("no reply") and <cmd>=2.</p> <p>The other parameters are as seen before.</p>	
AT+CCFC=?	Test command reports supported values for the parameter <reason>.	
Reference	3GPP TS 27.007	
Note	When querying the status of a network service (<cmd>=2) the response line for 'not active' case (<status>=0) should be returned only if service is not active for any <class>.	

3.5.4.3.11. Call Waiting - +CCWA

+CCWA - Call Waiting		SELINT 0 / 1
<p>AT+CCWA[= [<n>[,<cmd> [,<class>]]]]</p>	<p>Set command allows the control of the call waiting supplementary service. Activation, deactivation, and status query are supported.</p> <p>Parameters: <n> - enables/disables the presentation of an unsolicited result code: 0 - disable 1 - enable <cmd> - enables/disables or queries the service at network level: 0 - disable 1 - enable 2 - query status <class> - is a sum of integers each representing a class of information which the command refers to; default is 7 (voice + data + fax) 1 - voice (telephony) 2 - data 4 - fax (facsimile services) 8 - short message service</p>	



+CCWA - Call Waiting	SELINT 0 / 1
<p>16 - data circuit sync 32 - data circuit async 64 - dedicated packet access 128 - dedicated PAD access</p> <p>Note: the response to the query command is in the format:</p> <p>+CCWA: <status>,<class1>[<CR><LF> +CCWA: <status>,<class2>[...]]</p> <p>where <status> represents the status of the service: 0 - inactive 1 - active <classn> - same as <class></p> <p>Note: the unsolicited result code enabled by parameter <n> is in the format:</p> <p>+CCWA: <number>,<type>,<class>,<alpha>,<cli_validity></p> <p>where <number> - string type phone number of calling address in format specified by <type> <type> - type of address in integer format <class> - see before <alpha> - string type; alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with +CSCS. <cli_validity> 0 - CLI valid 1 - CLI has been withheld by the originator 2 - CLI is not available due to interworking problems or limitations of originating network</p> <p>Note: if parameter <cmd> is omitted then network is not interrogated.</p> <p>Note: in the query command the class parameter must not be issued.</p> <p>Note: the difference between call waiting report disabling (AT+CCWA = 0,1,7) and call waiting service disabling (AT+CCWA = 0,0,7) is that in the first case the call waiting indication is sent to the device by network but this last one does not report it to the DTE; instead in the second case the call waiting indication is not generated by the network. Hence the device results busy to the third party in the 2nd case while in the 1st case a ringing indication is sent to the third party.</p> <p>Note: The command AT+CCWA=1,0 has no effect a non sense and must not be</p>	



+CCWA - Call Waiting		SELINT 0 / 1
	<p>issued.</p> <p>Note: issuing AT+CCWA<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT+CCWA=<CR> is the same as issuing the command AT+CCWA=0<CR>.</p>	
AT+CCWA?	Read command reports the current value of the parameter <n> .	
AT+CCWA=?	Test command reports the supported values for the parameter <n> .	
Reference	3GPP TS 27.007	

+CCWA - Call Waiting		SELINT 2
<p>AT+CCWA= [<n>[,<cmd> [,<class>]]]</p>	<p>Set command allows the control of the call waiting supplementary service. Activation, deactivation, and status query are supported.</p> <p>Parameters:</p> <p><n> - enables/disables the presentation of an unsolicited result code: 0 - disable 1 - enable</p> <p><cmd> - enables/disables or queries the service at network level: 0 - disable 1 - enable 2 - query status</p> <p><class> - is a sum of integers each representing a class of information which the command refers to; default is 7 (voice + data + fax) 1 - voice (telephony) 2 - data 4 - fax (facsimile services) 8 - short message service 16 - data circuit sync 32 - data circuit async 64 - dedicated packet access 128 - dedicated PAD access</p> <p>Note: the response to the query command is in the format:</p> <p>+CCWA: <status>,<class1>[<CR><LF> +CCWA: <status>,<class2>[...]]</p> <p>where</p> <p><status> represents the status of the service: 0 - inactive 1 - active</p> <p><classn> - same as <class></p> <p>Note: the unsolicited result code enabled by parameter <n> is in the format::</p>	



+CCWA - Call Waiting	SELINT 2
	<p>+CCWA: <number>,<type>,<class>,[<alpha>][,<cli_validity>]</p> <p>where:</p> <p><number> - string type phone number of calling address in format specified by <type></p> <p><type> - type of address in integer format</p> <p><class> - see before</p> <p><alpha> - string type; alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with +CSCS.</p> <p><cli_validity></p> <p>0 - CLI valid</p> <p>1 - CLI has been withheld by the originator</p> <p>2 - CLI is not available due to interworking problems or limitations of originating network</p> <p>Note: if parameter <cmd> is omitted then network is not interrogated.</p> <p>Note: in the query command the class parameter must not be issued.</p> <p>Note: the difference between call waiting report disabling (AT+CCWA = 0,1,7) and call waiting service disabling (AT+CCWA = 0,0,7) is that in the first case the call waiting indication is sent to the device by network but this last one does not report it to the DTE; instead in the second case the call waiting indication is not generated by the network. Hence the device results busy to the third party in the 2nd case while in the 1st case a ringing indication is sent to the third party.</p> <p>Note: The command AT+CCWA=1,0 has no effect a non sense and must not be issued..</p>
AT+CCWA?	Read command reports the current value of the parameter <n>.
AT+CCWA=?	Test command reports the supported values for the parameter <n>.
Reference	3GPP TS 27.007

3.5.4.3.12. Call Holding Services - +CHLD

+CHLD - Call Holding Services	SELINT 0 / 1
AT+CHLD=<n>	<p>Execution command controls the network call hold service. With this service it is possible to disconnect temporarily a call and keep it suspended while it is retained by the network, contemporary it is possible to connect another party or make a multiparty connection.</p> <p>Parameter:</p> <p><n></p> <p>0 - releases all held calls, or sets the UDUB (User Determined User Busy) indication for a waiting call.</p> <p>1 - releases all active calls (if any exist), and accepts the other (held or waiting) call</p>



+CHLD - Call Holding Services		SELINT 0 / 1
	<p>1X - releases a specific active call X</p> <p>2 - places all active calls (if any exist) on hold and accepts the other (held or waiting) call.</p> <p>2X - places all active calls on hold except call X with which communication shall be supported</p> <p>3 - adds an held call to the conversation</p> <p>Note: "X" is the numbering (starting with 1) of the call given by the sequence of setting up or receiving the calls (active, held or waiting) as seen by the served subscriber. Calls hold their number until they are released. New calls take the lowest available number.</p> <p>Note: where both a held and a waiting call exist, the above procedures apply to the waiting call (i.e. not to the held call) in conflicting situation.</p>	
AT+CHLD=?	<p>Test command returns the list of supported <n>s.</p> <p>+CHLD: (0,1,2,3)</p> <p>Note: consider what has been written about the Set command relating the actions on a specific call (X).</p>	
Reference	3GPP TS 27.007	
Note	ONLY for VOICE calls	

+CHLD - Call Holding Services		SELINT 2
AT+CHLD=[<n>]	<p>Execution command controls the network call hold service. With this service it is possible to disconnect temporarily a call and keep it suspended while it is retained by the network, contemporary it is possible to connect another party or make a multiparty connection.</p> <p>Parameter: <n></p> <p>0 - releases all held calls, or sets the UDUB (User Determined User Busy) indication for a waiting call.</p> <p>1 - releases all active calls (if any exist), and accepts the other (held or waiting) call</p> <p>1X - releases a specific active call X</p> <p>2 - places all active calls (if any exist) on hold and accepts the other (held or waiting) call.</p> <p>2X - places all active calls on hold except call X with which communication shall be supported.</p> <p>3 - adds an held call to the conversation</p> <p>4 - connects the two calls and disconnects the subscriber from both calls (Explicit Call Transfer (ECT))</p> <p>Note: "X" is the numbering (starting with 1) of the call given by the sequence of setting up or receiving the calls (active, held or waiting) as seen by the served</p>	



+CHLD - Call Holding Services		SELINT 2
	<p>subscriber. Calls hold their number until they are released. New calls take the lowest available number.</p> <p>Note: where both a held and a waiting call exist, the above procedures apply to the waiting call (i.e. not to the held call) in conflicting situation.</p>	
AT+CHLD=?	<p>Test command returns the list of supported <n>s.</p> <p>+CHLD: (0,1,1X,2,2X,3,4)</p>	
Reference	3GPP TS 27.007	
Note	ONLY for VOICE calls	

3.5.4.3.13. Unstructured Supplementary Service Data - +CUSD

+CUSD - Unstructured Supplementary Service Data		SELINT 0 / 1
AT+CUSD[= [<n>[,<str> [,<dcs>]]]]	<p>Set command allows control of the Unstructured Supplementary Service Data (USSD [GSM 02.90]).</p> <p>Parameters:</p> <p><n> - is used to disable/enable the presentation of an unsolicited result code.</p> <p>0 - disable the result code presentation in the DTA</p> <p>1 - enable the result code presentation in the DTA</p> <p><str> - USSD-string (when <str> parameter is not given, network is not interrogated)</p> <ul style="list-style-type: none"> - If <dcs> indicates that GSM338 default alphabet is used ME/TA converts GSM alphabet into current TE character set (see +CSCS) - If <dcs> indicates that 8-bit data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number; e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65). <p><dcs> - GSM 3.38 Cell Broadcast Data Coding Scheme in integer format (default is 0).</p> <p>Note: the unsolicited result code enabled by parameter <n> is in the format:</p> <p>+CUSD: <m>[,<str>,<dcs>] to the TE</p> <p>where:</p> <p><m>:</p> <ul style="list-style-type: none"> 0 - no further user action required (network initiated USSD-Notify, or no further information needed after mobile initiated operation). 1 - further user action required (network initiated USSD-Request, or further information needed after mobile initiated operation) 	



+CUSD - Unstructured Supplementary Service Data		SELINT 0 / 1
	<p>2 - USSD terminated by the network 3 - other local client has responded 4 - operation not supported 5 - network time out</p> <p>Note: in case of successful mobile initiated operation, DTA waits the USSD response from the network and sends it to the DTE before the final result code. This will block the AT command interface for the period of the operation.</p> <p>Note: issuing AT+CUSD<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT+CUSD=<CR> is the same as issuing the command AT+CUSD=0<CR>.</p>	
AT+CUSD?	Read command reports the current value of the parameter <n>	
AT+CUSD=?	Test command reports the supported values for the parameter <n>	
Reference	3GPP TS 27.007	

+CUSD - Unstructured Supplementary Service Data		SELINT 2
AT+CUSD= [<n>[,<str> [,<dcs>]]]	<p>Set command allows control of the Unstructured Supplementary Service Data (USSD [GSM 02.90]).</p> <p>Parameters:</p> <p><n> - is used to disable/enable the presentation of an unsolicited result code. 0 - disable the result code presentation in the DTA 1 - enable the result code presentation in the DTA 2 - cancel an ongoing USSD session (not applicable to read command response)</p> <p><str> - USSD-string (when <str> parameter is not given, network is not interrogated)</p> <ul style="list-style-type: none"> - If <dcs> indicates that GSM338 default alphabet is used: <ul style="list-style-type: none"> - if TE character set other than "HEX" (refer command Select TE Character Set +CSCS): ME/TA converts GSM alphabet into current TE character set (see +CSCS) - if TE character set is "HEX": MT/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number (e.g. character Π (GSM 23) is presented as 17 (IRA 49 and 55)) - If <dcs> indicates that 8-bit data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number; e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65). <p><dcs> - GSM 3.38 Cell Broadcast Data Coding Scheme in integer format (default is 0).</p>	



+CUSD - Unstructured Supplementary Service Data	SELINT 2
	<p>Note: the unsolicited result code enabled by parameter <n> is in the format:</p> <p>+CUSD: <m>[,<str>,<dcs>] to the TE</p> <p>where:</p> <p><m>:</p> <ul style="list-style-type: none"> 0 - no further user action required (network initiated USSD-Notify, or no further information needed after mobile initiated operation). 1 - further user action required (network initiated USSD-Request, or further information needed after mobile initiated operation) 2 - USSD terminated by the network 3 - other local client has responded 4 - operation not supported 5 - network time out
AT+CUSD?	Read command reports the current value of the parameter <n>
AT+CUSD=?	Test command reports the supported values for the parameter <n>
Reference	3GPP TS 27.007

3.5.4.3.14. Advice Of Charge - +CAOC

+CAOC - Advice Of Charge	SELINT 0 / 1
<p>AT+CAOC[= [<mode>]]</p>	<p>Set command refers to the Advice of Charge supplementary services that enable subscriber to get information about the cost of calls; the command also includes the possibility to enable an unsolicited event reporting of the Current Call Meter (CCM) information.</p> <p>Parameter:</p> <p><mode></p> <ul style="list-style-type: none"> 0 - query CCM value 1 - disables unsolicited CCM reporting 2 - enables unsolicited CCM reporting <p>Note: the unsolicited result code enabled by parameter <mode> is in the format:</p> <p>+CCCM: <ccm></p> <p>where:</p> <p><ccm> - current call meter in home units, string type: three bytes of the CCM value in hexadecimal format (e.g. "00001E" indicates decimal value 30)</p> <p>Note: the unsolicited result code +CCCM is sent when the CCM value changes, but not more than every 10 seconds.</p> <p>Note: issuing AT+CAOC<CR> is the same as issuing the Read command.</p>



+CAOC - Advice Of Charge		SELINT 0 / 1
	Note: issuing AT+CAOC=<CR> is the same as issuing the command AT+CAOC=0<CR> .	
AT+CAOC?	Read command reports the value of parameter <mode> in the format: +CAOC: <mode>	
AT+CAOC=?	Test command reports the supported values for <mode> parameter. Note: the representation format doesn't match the v.25ter §5.7.3 "Information text formats for test commands". The output is: +CAOC: 0, 1, 2	
Reference	3GPP TS 27.007	
Note	+CAOC command returns an estimate of the cost of the current call only, produced by the MS and based on the information provided by either AoCI or AOCC supplementary services; it is not stored in the SIM.	

+CAOC - Advice Of Charge		SELINT 2
AT+CAOC=<mode>	Set command refers to the Advice of Charge supplementary services that enable subscriber to get information about the cost of calls; the command also includes the possibility to enable an unsolicited event reporting of the Current Call Meter (CCM) information. Parameter: <mode> 0 - query CCM value 1 - disables unsolicited CCM reporting 2 - enables unsolicited CCM reporting Note: the unsolicited result code enabled by parameter <mode> is in the format: +CCCM: <ccm> where: <ccm> - current call meter in home units, string type: three bytes of the CCM value in hexadecimal format (e.g. "00001E" indicates decimal value 30) Note: the unsolicited result code +CCCM is sent when the CCM value changes, but not more than every 10 seconds.	
AT+CAOC?	Read command reports the value of parameter <mode> in the format: +CAOC: <mode>	
AT+CAOC=?	Test command reports the supported values for <mode> parameter.	
Reference	3GPP TS 27.007	
Note	+CAOC command returns an estimate of the cost of the current call only, produced by the MS and based on the information provided by either AoCI or AOCC supplementary services; it is not stored in the SIM.	



3.5.4.3.15. List Current Calls - +CLCC

+CLCC - List Current Calls		SELINT 0 / 1
AT+CLCC	<p>Execution command returns the list of current calls and their characteristics in the format:</p> <pre>[+CLCC:<id1>,<dir>,<stat>,<mode>,<mpty>,<number>,<type> [<CR><LF>+CLCC:<id2>,<dir>,<stat>,<mode>,<mpty>,<number>,<type>[...]]]</pre> <p>where:</p> <p><idn> - call identification number</p> <p><dir> - call direction 0 - mobile originated call 1 - mobile terminated call</p> <p><stat> - state of the call 0 - active 1 - held 2 - dialling (MO call) 3 - alerting (MO call) 4 - incoming (MT call) 5 - waiting (MT call)</p> <p><mode> - call type 0 - voice 1 - data 2 - fax 9 - unknown</p> <p><mpty> - multiparty call flag 0 - call is not one of multiparty (conference) call parties 1 - call is one of multiparty (conference) call parties</p> <p><number> - string type phone number in format specified by <type></p> <p><type> - type of phone number octet in integer format 129 - national numbering scheme 145 - international numbering scheme (contains the character "+")</p> <p>Note: If no call is active then only OK message is sent. This command is useful in conjunction with command +CHLD to know the various call status for call holding.</p>	
Reference	3GPP TS 27.007	

+CLCC - List Current Calls		SELINT 2
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+CLCC - List Current Calls		SELINT 2
AT+CLCC	<p>Execution command returns the list of current calls and their characteristics in the format:</p> <pre>[+CLCC:<id1>,<dir>,<stat>,<mode>,<mpty>,<number>,<type>,<alpha>[<CR><LF>+CLCC:<id2>,<dir>,<stat>,<mode>,<mpty>,<number>,<type>,<alpha>[...]]]</pre> <p>where:</p> <ul style="list-style-type: none"> <idn> - call identification number <dir> - call direction <ul style="list-style-type: none"> 0 - mobile originated call 1 - mobile terminated call <stat> - state of the call <ul style="list-style-type: none"> 0 - active 1 - held 2 - dialing (MO call) 3 - alerting (MO call) 4 - incoming (MT call) 5 - waiting (MT call) <mode> - call type <ul style="list-style-type: none"> 0 - voice 1 - data 2 - fax 9 - unknown <mpty> - multiparty call flag <ul style="list-style-type: none"> 0 - call is not one of multiparty (conference) call parties 1 - call is one of multiparty (conference) call parties <number> - string type phone number in format specified by <type> <type> - type of phone number octet in integer format <ul style="list-style-type: none"> 129 - national numbering scheme 145 - international numbering scheme (contains the character "+") <alpha> - string type; alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with +CSCS. <p>Note: If no call is active then only OK message is sent. This command is useful in conjunction with command +CHLD to know the various call status for call holding.</p>	
AT+CLCC=?	Test command returns the OK result code	
Reference	3GPP TS 27.007	

3.5.4.3.16. SS Notification - +CSSN

+CSSN - SS Notification		SELINT 0 / 1
AT+CSSN=[<n>[,<m>]]]	<p>It refers to supplementary service related network initiated notifications.</p> <p>Set command enables/disables the presentation of notification result codes from TA</p>	



+CSSN - SS Notification	SELINT 0 / 1
	<p>to TE.</p> <p>Parameters:</p> <p><n> - sets the +CSSI result code presentation status</p> <ul style="list-style-type: none"> 0 - disable 1 - enable <p><m> - sets the +CSSU result code presentation status</p> <ul style="list-style-type: none"> 0 - disable 1 - enable <p>When <n>=1 and a supplementary service notification is received after a mobile originated call setup, an unsolicited code:</p> <p>+CSSI: <code1></p> <p>is sent to TE before any other MO call setup result codes, where:</p> <p><code1>:</p> <ul style="list-style-type: none"> 0 - unconditional call forwarding is active 1 - some of the conditional call forwarding are active 2 - call has been forwarded 3 - call is waiting 5 - outgoing calls are barred 6 - incoming calls are barred <p>When <m>=1 and a supplementary service notification is received during a mobile terminated call setup or during a call, an unsolicited result code</p> <p>+CSSU: <code2></p> <p>is sent to TE, where:</p> <p><code2>:</p> <ul style="list-style-type: none"> 0 - this is a forwarded call (MT call setup) 2 - call has been put on hold (during a voice call) 3 - call has been retrieved (during a voice call) <p>Note: issuing AT+CSSN<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT+CSSN=<CR> is the same as issuing the command AT+CSSN=0<CR>.</p>
AT+CSSN?	Read command reports the current value of the parameters.
AT+CSSN=?	Test command reports the supported range of values for parameters <n> , <m> .
Reference	3GPP TS 27.007

+CSSN - SS Notification	SELINT 2
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+CSSN - SS Notification		SELINT 2
AT+CSSN=[<n>[,<m>]]	<p>It refers to supplementary service related network initiated notifications. Set command enables/disables the presentation of notification result codes from TA to TE.</p> <p>Parameters: <n> - sets the +CSSI result code presentation status 0 - disable 1 - enable <m> - sets the +CSSU result code presentation status 0 - disable 1 - enable</p> <p>When <n>=1 and a supplementary service notification is received after a mobile originated call setup, an unsolicited code:</p> <p>+CSSI: <code1> is sent to TE before any other MO call setup result codes, where: <code1>: 0 - unconditional call forwarding is active 1 - some of the conditional call forwardings are active 2 - call has been forwarded 3 - call is waiting 5 - outgoing calls are barred 6 - incoming calls are barred</p> <p>When <m>=1 and a supplementary service notification is received during a mobile terminated call setup or during a call, an unsolicited result code:</p> <p>+CSSU: <code2> is sent to TE, where: <code2>: 0 - this is a forwarded call (MT call setup) 2 - call has been put on hold (during a voice call) 3 - call has been retrieved (during a voice call).</p>	
AT+CSSN?	Read command reports the current value of the parameters.	
AT+CSSN=?	Test command reports the supported range of values for parameters <n>, <m>.	
Reference	3GPP TS 27.007	

3.5.4.3.17. Closed User Group - +CCUG

+CCUG - Closed User Group Supplementary Service Control		SELINT 0 / 1
AT+CCUG=[<n>[,<index>[,<info>]]]	<p>Set command allows control of the Closed User Group supplementary service [GSM 02.85].</p> <p>Parameters:</p>	



+CCUG - Closed User Group Supplementary Service Control		SELINT 0 / 1
	<p><n> 0 - disable CUG temporary mode (factory default). 1 - enable CUG temporary mode: it enables to control the CUG information on the air interface as a default adjustment for all following outgoing calls.</p> <p><index> 0..9 - CUG index 10 - no index (preferential CUG taken from subscriber data) (default)</p> <p><info> 0 - no information (default) 1 - suppress Outgoing Access (OA) 2 - suppress preferential CUG 3 - suppress OA and preferential CUG</p> <p>Note: issuing AT+CCUG<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT+CCUG=<CR> is the same as issuing the command AT+CCUG=0<CR>.</p>	
AT+CCUG?	Read command reports the current value of the parameters	
AT+CCUG=?	Test command reports the supported range of values for the parameters <n> , <index> , <info>	
Reference	3GPP TS 27.007	

+CCUG - Closed User Group Supplementary Service Control		SELINT 2
AT+CCUG= [<n>[,<index>[,<info>]]]	<p>Set command allows control of the Closed User Group supplementary service [GSM 02.85].</p> <p>Parameters:</p> <p><n> 0 - disable CUG temporary mode (factory default). 1 - enable CUG temporary mode: it enables to control the CUG information on the air interface as a default adjustment for all following outgoing calls.</p> <p><index> 0..9 - CUG index 10 - no index (preferential CUG taken from subscriber data) (default)</p> <p><info> 0 - no information (default) 1 - suppress Outgoing Access (OA) 2 - suppress preferential CUG 3 - suppress OA and preferential CUG</p>	
AT+CCUG?	Read command reports the current value of the parameters	
AT+CCUG=?	Test command returns the OK result code	
Reference	3GPP TS 27.007	



3.5.4.3.18. Preferred Operator List - +CPOL

+CPOL - Preferred Operator List		SELINT 2
AT+CPOL= [<index>][,<format>] [,<oper>]	Execution command writes an entry in the SIM list of preferred operators. Parameters: <index> - integer type; the order number of operator in the SIM preferred operator list 1..n <format> 2 - numeric <oper> <oper> - string type Note: if <index> is given but <oper> is left out, entry is deleted. If <oper> is given but <index> is left out, <oper> is put in the next free location. If only <format> is given, the format of the <oper> in the read command is changed.	
AT+CPOL?	Read command returns all used entries from the SIM list of preferred operators.	
AT+CPOL=?	Test command returns the whole <index> range supported by the SIM and the range for the parameter <format>	
Reference	3GPP TS 27.007	

3.5.4.3.19. Selection of preferred PLMN list - +CPLS

+CPLS – Selection of preferred PLMN list		SELINT 2
AT+CPLS=<list>	The execution command is used to select a list of preferred PLMNs in the SIM/USIM. Parameters: <list>: 0 - User controlled PLMN selector with Access Technology EFPLMNwAcT, if not found in the SIM/UICC then PLMN preferred list EFPLMNsel (this file is only available in SIM card or GSM application selected in UICC) 1 - Operator controlled PLMN selector with Access Technology EFOPLMNwAcT 2 - HPLMN selector with Access Technology EFHPLMNwAcT Note: the value set by command is directly stored in NVM and doesn't depend on the specific CMUX instance.	
AT+CPLS?	Read command returns the selected PLMN selector <list> from the SIM/USIM.	
AT+CPLS=?	Test command returns the whole index range supported <list>s by the SIM/USIM.	



+CPAS - Phone Activity Status		SELINT 2
	<p>+CPAS: <pas></p> <p>Where: <pas> - phone activity status 0 - ready (device allows commands from TA/TE) 1 - unavailable (device does not allow commands from TA/TE) 2 - unknown (device is not guaranteed to respond to instructions) 3 - ringing (device is ready for commands from TA/TE, but the ringer is active) 4 - call in progress (device is ready for commands from TA/TE, but a call is in progress)</p>	
AT+CPAS=?	<p>Test command reports the supported range of values for <pas>.</p> <p>Note: although +CPAS is an execution command, ETSI 07.07 requires the Test command to be defined.</p>	
Example	<pre>ATD03282131321; OK AT+CPAS +CPAS: 4</pre> <p style="text-align: right;"><i>the called phone has answered to your call</i></p> <pre>OK ATH OK</pre>	
Reference	3GPP TS 27.007	

3.5.4.4.2. Set Phone Functionality - +CFUN

+CFUN - Set Phone Functionality		SELINT 0 / 1
AT+CFUN=<fun>	<p>Set command selects the level of functionality in the ME.</p> <p>Parameter: <fun> - is the power saving function mode 0 - minimum functionality, NON-CYCLIC SLEEP mode: in this mode, the AT interface is not accessible. Consequently, once you have set <fun> level 0, do not send further characters. Otherwise these characters remain in the input buffer and may delay the output of an unsolicited result code. The first wake-up event, or rising RTS line, stops power saving and takes the ME back to full functionality level <fun>=1. 1 - mobile full functionality with power saving disabled (factory default) 2 - disable TX 4 - disable either TX and RX 5 - mobile full functionality with power saving enabled</p> <p>Note: issuing AT+CFUN=4 actually causes the module to perform either a network deregistration and a SIM deactivation.</p>	



+CFUN - Set Phone Functionality		SELINT 0 / 1
	<p>Note: if power saving enabled, it reduces the power consumption during the idle time, thus allowing a longer standby time with a given battery capacity.</p> <p>Note: to place the module in power saving mode, set the <fun> parameter at value = 5 and the line DTR (RS232) must be set to OFF. Once in power saving, the CTS line switch to the OFF status to signal that the module is really in power saving condition.</p> <p>During the power saving condition, before sending any AT command on the serial line, the DTR must be set to ON (0V) to exit from power saving and must be waited for the CTS (RS232) line to go in ON status.</p> <p>Until the DTR line is ON, the module will not return back in the power saving condition.</p> <p>Note: the power saving function does not affect the network behavior of the MODULE, even during the power save condition the module remains registered on the network and reachable for incoming calls or SMS. If a call arrives during the power save, then the module will wake up and proceed normally with the unsolicited incoming call code</p>	
AT+CFUN?	Read command reports the current level of functionality.	
AT+CFUN=?	Test command returns the list of supported values for <fun> For compatibility with previous versions, Test command returns +CFUN: (1, 5) An enhanced version of Test command has been defined: AT+CFUN=?? , that provides the complete range of values for <fun> .	
AT+CFUN=??	Enhanced test command returns the list of supported values for <fun>	
Reference	3GPP TS 27.007	

+CFUN - Set Phone Functionality		SELINT 2
AT+CFUN=[<fun>[,<rst>]]	Set command selects the level of functionality in the ME. Parameters: <fun> - is the power saving function mode 0 - minimum functionality, NON-CYCLIC SLEEP mode: in this mode, the AT interface is not accessible. Consequently, once you have set <fun> level 0, do not send further characters. Otherwise these characters remain in the input buffer and may delay the output of an unsolicited result code. The first wake-up event, or toggling RTS line, stops power saving and takes the ME back to full functionality level <fun>=1 . 1 - mobile full functionality with power saving disabled (factory default) 2 - disable TX 4 - disable both TX and RX 5 - mobile full functionality with power saving enabled 7 - CYCLIC SLEEP mode: in this mode, the serial interface is periodically enabled while CTS is active. If characters are recognized on	



	<p>the serial interface, the ME stays active for 2 seconds after the last character was sent or received. ME exits SLEEP mode only, if AT+CFUN=1 is entered</p> <p>9 – just as 0 but with different wake-up events (see SW User Guide)</p> <p><i>The following two values are supported only for 10.01.xxx, 16.01.xxx and 13.00.xxx SW versions, starting respectively from 10.01.xx1, 16.01.xx1 and 13.00.xx7.</i></p> <p>10 – disable both TX and RX with power saving enabled</p> <p>11- disable both TX and RX and automatically the module goes in power saving. The AT interface is not accessible. Consequently, once you have set <fun> level 11, it do not send further characters. Toggling RTS line, stops power saving and takes the ME back awake. In order to restore full functionality, the user must send +CFUN command with <fun>=1</p> <p>The module sleeps about 20 seconds, verifies the RTS state and then it returns to sleep.</p> <p><rst> - reset flag</p> <p>0 - do not reset the ME before setting it to <fun> functionality level</p> <p>1 – reset the device. The device is fully functional after the reset. This value is available only for <fun> = 1. The parameter <rst> is not supported by all products or software versions; to be sure check it with the test command.</p> <p>Note: issuing AT+CFUN=4[,0] (or 10[,0], 11[,0]) actually causes the module to perform either a network deregistration and a SIM deactivation.</p> <p>Note: if power saving enabled, it reduces the power consumption during the idle time, thus allowing a longer standby time with a given battery capacity.</p> <p>Note: to place the module in power saving mode, set the <fun> parameter at value = 5 or = 10 and the line DTR (RS232) must be set to OFF. Once in power saving, the CTS line switch to the OFF status to signal that the module is really in power saving condition.</p> <p>During the power saving condition, before sending any AT command on the serial line, the DTR must be set to ON (0V) to exit from power saving and it must be waited for the CTS (RS232) line to go in ON status.</p> <p>Until the DTR line is ON, the module will not return back in the power saving condition.</p> <p>Note: the power saving function does not affect the network behaviour of the MODULE, even during the power save condition the module remains registered on the network and reachable for incoming calls or SMS. If a call incomes during the power save, then the module will wake up and proceed normally with the unsolicited incoming call code</p>
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AT+CFUN?	Read command reports the current setting of <fun> .
AT+CFUN=?	Test command returns the list of supported values for <fun> and <rst> .
Reference	3GPP TS 27.007

3.5.4.4.3. Enter PIN - +CPIN

+CPIN - Enter PIN	SELINT 0 / 1
AT+CPIN[=<pin>[,<newpin>]]	<p>Set command sends to the device a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.).</p> <p>If the PIN required is SIM PUK or SIM PUK2, the <newpin> is required. This second pin, <newpin>, will replace the old pin in the SIM.</p> <p>The command may be used to change the SIM PIN by sending it with both parameters <pin> and <newpin>.</p> <p>Parameters: <pin> - string type value <newpin> - string type value.</p> <p>To check the status of the PIN request use the command AT+CPIN?</p> <p>Note: If all parameters are omitted then the behaviour of Set command is the same as Read command.</p>
AT+CPIN?	<p>Read command reports the PIN/PUK/PUK2 request status of the device in the form:</p> <p>+CPIN:<code> where: <code> - PIN/PUK/PUK2 request status code READY - ME is not pending for any password SIM PIN - ME is waiting SIM PIN to be given SIM PUK - ME is waiting SIM PUK to be given PH-SIM PIN - ME is waiting phone-to-SIM card password to be given PH-FSIM PIN - ME is waiting phone-to-very first SIM card password to be given PH-FSIM PUK - ME is waiting phone-to-very first SIM card unblocking password to be given SIM PIN2 - ME is waiting SIM PIN2 to be given; this <code> is returned only when the last executed command resulted in PIN2 authentication failure (i.e. +CME ERROR: 17) SIM PUK2 - ME is waiting SIM PUK2 to be given; this <code> is returned only when the last executed command resulted in PUK2 authentication failure (i.e. +CME ERROR: 18) PH-NET PIN - ME is waiting network personalization password to be given PH-NET PUK - ME is waiting network personalization unblocking password to be given PH-NETSUB PIN - ME is waiting network subset personalization password to be given PH-NETSUB PUK - ME is waiting network subset personalization unblocking</p>



+CPIN - Enter PIN	SELINT 0 / 1																																																																																								
	<p>password to be given PH-SP PIN - ME is waiting service provider personalization password to be given PH-SP PUK - ME is waiting service provider personalization unblocking password to be given PH-CORP PIN - ME is waiting corporate personalization password to be given PH-CORP PUK - ME is waiting corporate personalization unblocking password to be given PH-MCL PIN – ME is waiting Multi Country Lock password to be given</p> <p>Note: Pin pending status at startup depends on PIN facility setting, to change or query the default power up setting use either the AT+CLCK=SC,<mode>, <pin> command or the AT@CLCK=SC,<mode>, <pin> command.</p>																																																																																								
AT+CPIN=?	Test command returns OK result code.																																																																																								
Example	<pre>AT+CMEE=1 OK AT+CPIN? +CME ERROR: 10 error: you have to insert the SIM AT+CPIN? +CPIN: READY you inserted the SIM and device is not waiting for PIN to be given OK</pre>																																																																																								
Note	<p>What follows is a list of the commands which are accepted when ME is pending SIM PIN or SIM PUK</p> <table border="1" data-bbox="528 1189 1406 1960"> <thead> <tr> <th>A</th> <th>#GPIO</th> <th>#CSURVB</th> <th>+CPIN</th> </tr> </thead> <tbody> <tr><td>D</td><td>#ADC</td><td>#CSURVBC</td><td>+CSQ</td></tr> <tr><td>H</td><td>#DAC</td><td>#CSURVF</td><td>+CCLK</td></tr> <tr><td>O</td><td>#VAUX</td><td>#CSURVNL</td><td>+CALA</td></tr> <tr><td>E</td><td>#CBC</td><td>#CSURVEXT</td><td>+CRSM</td></tr> <tr><td>I</td><td>#AUTOATT</td><td>#JDR</td><td>+CALM</td></tr> <tr><td>L</td><td>#MONI</td><td>#WSCRIPT</td><td>+CRSL</td></tr> <tr><td>M</td><td>#SERVINFO</td><td>#ESCRIP</td><td>+CLVL</td></tr> <tr><td>P</td><td>#COPSMODE</td><td>#RSCRIPT</td><td>+CMUT</td></tr> <tr><td>Q</td><td>#QSS</td><td>#LSCRIPT</td><td>+CMEE</td></tr> <tr><td>S</td><td>#DIALMODE</td><td>#DSCRIPT</td><td>+CGREG</td></tr> <tr><td>T</td><td>#ACAL</td><td>#REBOOT</td><td>+CBC</td></tr> <tr><td>V</td><td>#ACALEXT</td><td>#STARTMODESCR</td><td>+CSDH</td></tr> <tr><td>X</td><td>#CODEC</td><td>#EXECSCR</td><td>+CNMI</td></tr> <tr><td>Z</td><td>#SHFEC</td><td></td><td>+FMI</td></tr> <tr><td>&C</td><td>#HFMICG</td><td>#PLMNMODE</td><td>+FMM</td></tr> <tr><td>&D</td><td>#HSMICG</td><td>+FCLASS</td><td>+FMR</td></tr> <tr><td>&F</td><td>#SHFSD</td><td>+GCAP</td><td>+FTS</td></tr> <tr><td>&K</td><td>#BND</td><td>+GCI</td><td>+FRS</td></tr> <tr><td>&N</td><td>#AUTOBND</td><td>+IPR</td><td>+FTM</td></tr> <tr><td>&P</td><td>#RTCSTAT</td><td>+IFC</td><td>+FRM</td></tr> <tr><td>&S</td><td>#USERID</td><td>+ILRR</td><td>+FTH</td></tr> </tbody> </table>	A	#GPIO	#CSURVB	+CPIN	D	#ADC	#CSURVBC	+CSQ	H	#DAC	#CSURVF	+CCLK	O	#VAUX	#CSURVNL	+CALA	E	#CBC	#CSURVEXT	+CRSM	I	#AUTOATT	#JDR	+CALM	L	#MONI	#WSCRIPT	+CRSL	M	#SERVINFO	#ESCRIP	+CLVL	P	#COPSMODE	#RSCRIPT	+CMUT	Q	#QSS	#LSCRIPT	+CMEE	S	#DIALMODE	#DSCRIPT	+CGREG	T	#ACAL	#REBOOT	+CBC	V	#ACALEXT	#STARTMODESCR	+CSDH	X	#CODEC	#EXECSCR	+CNMI	Z	#SHFEC		+FMI	&C	#HFMICG	#PLMNMODE	+FMM	&D	#HSMICG	+FCLASS	+FMR	&F	#SHFSD	+GCAP	+FTS	&K	#BND	+GCI	+FRS	&N	#AUTOBND	+IPR	+FTM	&P	#RTCSTAT	+IFC	+FRM	&S	#USERID	+ILRR	+FTH
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+CPIN - Enter PIN			SELINT 0 / 1	
	&V	#PASSW	+ICF	+FRH
	&W	#PKTSZ	+MS	+FLO
	&Y	#DSTO	+DS	+FPR
	&Z	#SKTTO	+DR	+FDD
	%E	#SKTSET	+CGMI	\$GPSP
	%L	#SKTOP	+CGMM	\$GPSPS
	%Q	#SKTCT	+CGMR	\$GPSR
	\Q	#SKTSAV	+GMI	\$GPSD
	\R	#SKTRST	+GMM	\$GPSSW
	\V	#ESMTP	+GMR	\$GPSAT
	#SELINT	#EADDR	+CGSN	\$GPSNMUN
	#CGMI	#EUSER	+GSN	\$GPSACP
	#CGMM	#EPASSW	+CHUP	\$GPSWK
	#CGMR	#SEMAIL	+CRLP	\$GPSSAV
	#CGSN	#EMAILD	+CR	\$GPSRST
	#CAP	#ESAV	+CRC	\$GPSCON
	#SRS	#ERST	+CSNS	
	#SRP	#EMAILMSG	+CREG	
	#STM	#CSURV	+COPS	
	#PCT	#CSURVC	+CLIP	
	#SHDN	#CSURVU	+CPAS	
	#WAKE	#CSURVUC	+CFUN	
	#QTEMP			

All the above commands, but the ones in the grayed cells, can be issued even if the SIM card is not inserted yet.

All the above commands, but **+CSDH** and **+CNMI**, can be issued even if ME is waiting for phone-To-SIM card password to be given

Reference 3GPP TS 27.007

+CPIN - Enter PIN		SELINT 2
<p>AT+CPIN=<pin> [,<newpin>]</p>	<p>Set command sends to the device a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.). If the PIN required is SIM PUK or SIM PUK2, the <newpin> is required. This second pin, <newpin> will replace the old pin in the SIM. The command may be used to change the SIM PIN by sending it with both parameters <pin> and <newpin>.</p> <p>Parameters: <pin> - string type value <newpin> - string type value.</p> <p>To check the status of the PIN request use the command AT+CPIN?</p>	



+CPIN - Enter PIN	SELINT 2
AT+CPIN?	<p>Read command reports the PIN/PUK/PUK2 request status of the device in the form: +CPIN: <code> where: <code> - PIN/PUK/PUK2 request status code READY - ME is not pending for any password SIM PIN - ME is waiting SIM PIN to be given SIM PUK - ME is waiting SIM PUK to be given PH-SIM PIN - ME is waiting phone-to-SIM card password to be given PH-FSIM PIN - ME is waiting phone-to-very first SIM card password to be given PH-FSIM PUK - ME is waiting phone-to-very first SIM card unblocking password to be given SIM PIN2 - ME is waiting SIM PIN2 to be given; this <code> is returned only when the last executed command resulted in PIN2 authentication failure (i.e. +CME ERROR: 17) SIM PUK2 - ME is waiting SIM PUK2 to be given; this <code> is returned only when the last executed command resulted in PUK2 authentication failure (i.e. +CME ERROR: 18) PH-NET PIN - ME is waiting network personalization password to be given PH-NET PUK - ME is waiting network personalization unblocking password to be given PH-NETSUB PIN - ME is waiting network subset personalization password to be given PH-NETSUB PUK - ME is waiting network subset personalization unblocking password to be given PH-SP PIN - ME is waiting service provider personalization password to be given PH-SP PUK - ME is waiting service provider personalization unblocking password to be given PH-CORP PIN - ME is waiting corporate personalization password to be given PH-CORP PUK - ME is waiting corporate personalization unblocking password to be given</p> <p>Note: Pin pending status at startup depends on PIN facility setting, to change or query the default power up setting use the command AT+CLCK=SC,<mode>,<pin></p>
AT+CPIN=?	Test command returns OK result code.
Example	<pre>AT+CMEE=1 OK AT+CPIN? +CME ERROR: 10 error: you have to insert the SIM AT+CPIN? +CPIN: READY you inserted the SIM and device is not waiting for PIN to be given OK</pre>
Note	What follows is a list of the commands which are accepted when ME is pending SIM PIN or SIM PUK



+CPIN - Enter PIN			SELINT 2
A	#DAC	#CSURVNL	+CPIN
D	#VAUX	#CSURVEXT	+CSQ
H	#VAUXSAV	#JDR	+CIND
O	#CBC	#WSCRIPT	+CMER
E	#AUTOATT	#ESCRIP	+CCLK
I	#MONI	#RSCRIPT	+CALA
L	#SERVINFO	#LSCRIPT	+CALD
M	#QSS	#DSCRIPT	+CRSM
P	#DIALMODE	#REBOOT	+CALM
Q	#ACAL	#CMUXSCR	+CRSL
S	#ACALEXT	#STARTMODESCR	+CLVL
T	#CODEC	#EXECSCR	+CMUT
V	#SHFEC	#RSEN	+CLAC
X	#HFMICG	#CCID	+CMEE
Z	#HSMICG		+CGREG
&C	#SHFSD	#PLMNMODE	+CBC
&D	#BND	#V24CFG	+CSDH
&F	#AUTOBND	#V24	+CNMI
&K	#RTCSTAT	+FCLASS	+FMI
&N	#USERID	+GCAP	+FMM
&P	#PASSW	+GCI	+FMR
&S	#PKTSZ	+IPR	+FTS
&V	#DSTO	+IFC	+FRS
&W	#SKTTO	+ILRR	+FTM
&Y	#SKTSET	+ICF	+FRM
&Z	#SKTOP	+MS	+FTH
%E	#SKTCT	+DS	+FRH
%L	#SKTSAV	+DR	+FLO
%Q	#SKTRST	+CGMI	+FPR
\Q	#SPKMUT	+CGMM	+FDD
\R	#ESMTP	+CGMR	\$GPSP
\V	#EADDR	+GMI	\$GPSPS
#SELINT	#EUSER	+GMM	\$GPSR
#CGMI	#EPASSW	+GMR	\$GPSD
#CGMM	#SEMAIL	+CGSN	\$GPSSW
#CGMR	#EMAILD	+GSN	\$GPSAT
#CGSN	#ESAV	+CMUX	
#CAP	#ERST	+CHUP	
#SRS	#EMAILMSG	+CRLP	
#SRP	#CSURV	+CR	
#STM	#CSURVC	+CRC	
#PCT	#CSURVU	+CSNS	
#SHDN	#CSURVUC	+CREG	



+CPIN - Enter PIN			SELINT 2																
	<table border="1"> <tr> <td>#WAKE</td> <td>#CSURVB</td> <td>+COPS</td> <td></td> </tr> <tr> <td>#QTEMP</td> <td>#CSURVBC</td> <td>+CLIP</td> <td></td> </tr> <tr> <td>#GPIO</td> <td>#CSURVF</td> <td>+CPAS</td> <td></td> </tr> <tr> <td>#ADC</td> <td></td> <td>+CFUN</td> <td></td> </tr> </table>	#WAKE	#CSURVB	+COPS		#QTEMP	#CSURVBC	+CLIP		#GPIO	#CSURVF	+CPAS		#ADC		+CFUN			
#WAKE	#CSURVB	+COPS																	
#QTEMP	#CSURVBC	+CLIP																	
#GPIO	#CSURVF	+CPAS																	
#ADC		+CFUN																	
	<p>All the above commands, but the ones in the grayed cells, can be issued even if the SIM card is not inserted yet.</p> <p>All the above commands, but +CSDH and +CNMI, can be issued even if ME is waiting for phone-To-SIM card password to be given</p>																		
Reference	3GPP TS 27.007																		

3.5.4.4.4. Signal Quality - +CSQ

+CSQ - Signal Quality	SELINT 0 / 1
AT+CSQ	<p>Execution command reports received signal quality indicators in the form:</p> <p>+CSQ: <rssi>,<ber> where <rssi> - received signal strength indication 0 - (-113) dBm or less 1 - (-111) dBm 2..30 - (-109)dBm..(-53)dBm / 2 dBm per step 31 - (-51)dBm or greater 99 - not known or not detectable</p> <p><ber> - bit error rate (in percent) 0 - less than 0.2% 1 - 0.2% to 0.4% 2 - 0.4% to 0.8% 3 - 0.8% to 1.6% 4 - 1.6% to 3.2% 5 - 3.2% to 6.4% 6 - 6.4% to 12.8% 7 - more than 12.8% 99 - not known or not detectable</p> <p>Note: this command should be used instead of the %Q and %L commands, since GSM relevant parameters are the radio link ones and no line is present, hence %Q %L and have no meaning.</p>
AT+CSQ?	Read command has the same effect as Execution command.
AT+CSQ=?	<p>Test command returns the supported range of values of the parameters <rssi> and <ber>.</p> <p>Note: although +CSQ is an execution command without parameters, ETSI 07.07</p>



+CSQ - Signal Quality	SELINT 0 / 1
Reference	requires the Test command to be defined. 3GPP TS 27.007

+CSQ - Signal Quality	SELINT 2
AT+CSQ	<p>Execution command reports received signal quality indicators in the form:</p> <p>+CSQ: <rsssi>,<ber> where <rsssi> - received signal strength indication 0 - (-113) dBm or less 1 - (-111) dBm 2..30 - (-109)dBm..(-53)dBm / 2 dBm per step 31 - (-51)dBm or greater 99 - not known or not detectable <ber> - bit error rate (in percent) 0 - less than 0.2% 1 - 0.2% to 0.4% 2 - 0.4% to 0.8% 3 - 0.8% to 1.6% 4 - 1.6% to 3.2% 5 - 3.2% to 6.4% 6 - 6.4% to 12.8% 7 - more than 12.8% 99 - not known or not detectable</p> <p>Note: this command should be used instead of the %Q and %L commands, since GSM relevant parameters are the radio link ones and no line is present, hence %Q and %L have no meaning.</p>
AT+CSQ=?	<p>Test command returns the supported range of values of the parameters <rsssi> and <ber>.</p> <p>Note: although +CSQ is an execution command without parameters, ETSI 07.07 requires the Test command to be defined.</p>
Reference	3GPP TS 27.007

3.5.4.4.5. Indicator Control - +CIND

+CIND - Indicator Control	SELINT 0/1/2
AT+CIND= [<state> [,<state>[,...]]]	<p>Set command is used to control the registration state of ME indicators, in order to automatically send the +CIEV URC, whenever the value of the associated indicator changes. The supported indicators (<descr>) and their order appear from test command AT+CIND=?</p> <p>Parameter: <state> - registration state 0 - the indicator is deregistered; there's no unsolicited result code (+CIEV URC)</p>



+CIND - Indicator Control	SELINT 0/1/2
	<p>automatically sent by the ME to the application, whenever the value of the associated indicator changes; the value can be directly queried with +CIND?</p> <p>1 - the indicator is registered: an unsolicited result code (+CIEV URC) is automatically sent by the ME to the application, whenever the value of the associated indicator changes; it is still possible to query the value through +CIND? (default)</p> <p>Note: When the ME is switched on all of the indicators are in registered mode.</p>
AT+CIND?	<p>Read command returns the current value of ME indicators, in the format: +CIND: <ind>[,<ind>[,...]]</p> <p>Note: the order of the values <ind>s is the same as that in which the associated indicators appear from test command AT+CIND=?</p>
AT+CIND=?	<p>Test command returns pairs, where string value <descr> is a description (max. 16 chars) of the indicator and compound value is the supported values for the indicator, in the format: +CIND: ((<descr>, (list of supported <ind>s))[,<descr>, (list of supported <ind>s)][,...]]</p> <p>where:</p> <p><descr> - indicator names as follows (along with their <ind> ranges)</p> <ul style="list-style-type: none"> “battchg” - battery charge level <ind> - battery charge level indicator range 0..5 99 - not measurable “signal” - signal quality <ind> - signal quality indicator range 0..7 99 - not measurable “service” - service availability <ind> - service availability indicator range 0 - not registered to any network 1 - registered “sounder” - sounder activity <ind> - sounder activity indicator range 0 - there’s no any sound activity 1 - there’s some sound activity “message” - message received <ind> - message received indicator range 0 - there is no unread short message at memory location “SM” 1 - unread short message at memory location “SM” “call” - call in progress <ind> - call in progress indicator range 0 - there’s no calls in progress 1 - at least a call has been established “roam” - roaming <ind> - roaming indicator range 0 - registered to home network or not registered



+CIND - Indicator Control		SELINT 0/1/2
	<p>1 - registered to other network</p> <p>“smsfull” - a short message memory storage in the MT has become full (1), or memory locations are available (0)</p> <p><ind> - short message memory storage indicator range</p> <p>0 - memory locations are available</p> <p>1 - a short message memory storage in the MT has become full.</p> <p>“rssi” - received signal (field) strength</p> <p><ind> - received signal strength level indicator range</p> <p>0 - signal strength \leq (-112) dBm</p> <p>1..4 - signal strength in (-97) dBm..(-66) dBm (15 dBm steps)</p> <p>5 - signal strength \geq (-51) dBm</p> <p>99 - not measurable</p>	
Example	<p><i>Next command causes all the indicators to be registered</i></p> <p>AT+CIND=1,1,1,1,1,1,1,1,1</p> <p><i>Next command causes all the indicators to be de-registered</i></p> <p>AT+CIND=0,0,0,0,0,0,0,0,0</p> <p><i>Next command to query the current value of all indicators</i></p> <p>AT+CIND?</p> <p>CIND: 4,0,1,0,0,0,0,0,2</p> <p>OK</p>	
Note	See command +CMER	
Reference	3GPP TS 27.007	

3.5.4.4.6. Mobile Equipment Event Reporting - +CMER

+CMER - Mobile Equipment Event Reporting		SELINT 0/1/2
<p>AT+CMER=</p> <p>[<mode></p> <p>[,<keyp></p> <p>[,<disp></p> <p>[,<ind></p> <p>[,<bfr>]]]]]</p>	<p>Set command enables/disables sending of unsolicited result codes from TA to TE in the case of indicator state changes (n.b.: sending of URCs in the case of key pressings or display changes are currently not implemented).</p> <p>Parameters:</p> <p><mode> - controls the processing of unsolicited result codes</p> <p>0 - discard +CIEV Unsolicited Result Codes.</p> <p>1 - discard +CIEV Unsolicited Result Codes when TA-TE link is reserved (e.g. on-line data mode); otherwise forward them directly to the TE.</p> <p>2 - buffer +CIEV Unsolicited Result Codes in the TA when TA-TE link is reserved (e.g. on-line data mode) and flush them to the TE after reservation; otherwise forward them directly to the TE.</p> <p>3 - forward +CIEV Unsolicited Result Codes directly to the TE; when TA is in on-line data mode each +CIEV URC is replaced with a Break (100 ms), and is stored in a buffer; once the ME goes into command mode (after +++ was entered), all URCs stored in the buffer will be output.</p> <p><keyp> - keypad event reporting</p> <p>0 - no keypad event reporting</p> <p><disp> - display event reporting</p>	



+CMER - Mobile Equipment Event Reporting		SELINT 0/1/2
	<p>0 - no display event reporting <ind> - indicator event reporting 0 - no indicator event reporting 2 - indicator event reporting <bfr> - TA buffer clearing 0 - TA buffer of unsolicited result codes is cleared when <mode> 1..3 is entered</p> <p>Note: After AT+CMER has been switched on, URCs for all registered indicators will be issued. Although it is possible to issue the command when SIM PIN is pending, it will answer ERROR if “message” or “smsfull” indicators are enabled in AT+CIND, because with pending PIN it is not possible to give a correct indication about SMS status. To issue the command when SIM PIN is pending you have to disable “message” and “smsfull” indicators in AT+CIND first.</p>	
AT+CMER?	<p>Read command returns the current setting of parameters, in the format:</p> <p>+CMER: <mode>,<keyp>,<disp>,<ind>,<bfr></p>	
AT+CMER=?	<p>Test command returns the range of supported values for parameters <mode>, <keyp>, <disp>, <ind>, <bfr>, in the format:</p> <p>+CMER: (list of supported <mode>s),(list of supported <keyp>s), (list of supported <disp>s),(list of supported <ind>s),(list of supported <bfr>s)</p>	
Reference	3GPP TS 27.007	

3.5.4.4.7. Select Phonebook Memory Storage - +CPBS

+CPBS - Select Phonebook Memory Storage		SELINT 0 / 1
AT+CPBS[= <storage>]	<p>Set command selects phonebook memory storage <storage>, which will be used by other phonebook commands.</p> <p>Parameter: <storage> "SM" - SIM phonebook "FD" - SIM fixed dialling-phonebook (only phase 2/2+ SIM) "LD" - SIM last-dialling-phonebook (+CPBF is not applicable for this storage) "MC" - device missed (unanswered received) calls list (+CPBF is not applicable for this storage) "RC" - ME received calls list (+CPBF is not applicable for this storage)</p> <p>Note: If parameter is omitted then Set command has the same behaviour as Read command.</p>	
AT+CPBS?	<p>Read command returns the actual values of the parameter <storage>, the number of occupied records <used> and the maximum index number <total>, in the format:</p>	



+CPBS - Select Phonebook Memory Storage		SELINT 0 / 1
	<p>+CPBS: <storage>,<used>,<total></p> <p>Note: For <storage>="MC": if there are more than one missed calls from the same number the read command will return only the last call</p>	
AT+CPBS=?	<p>Test command returns the supported range of values for the parameters <storage>.</p> <p>Note: the presentation format of the Test command output is the set of available values for <storage>, each of them enclosed in parenthesis:</p> <p>+CPBS: ("SM"),("FD"),("LD"),("MC"),("RC")</p>	
Reference	3GPP TS 27.007	

+CPBS - Select Phonebook Memory Storage		SELINT 2
AT+CPBS=<storage>	<p>Set command selects phonebook memory storage <storage>, which will be used by other phonebook commands.</p> <p>Parameter: <storage> "SM" - SIM phonebook "FD" - SIM fixed dialling-phonebook (only phase 2/2+ SIM) "LD" - SIM last-dialling-phonebook (+CPBF is not applicable for this storage) "MC" - device missed (unanswered received) calls list (+CPBF is not applicable for this storage) "RC" - ME received calls list (+CPBF is not applicable for this storage). "MB" - mailbox numbers stored on SIM; it is possible to select this storage only if the mailbox service is provided by the SIM (see #MBN).</p>	
AT+CPBS?	<p>Read command returns the actual values of the parameter <storage>, the number of occupied records <used> and the maximum index number <total>, in the format:</p> <p>+CPBS: <storage>,<used>,<total></p> <p>Note: For <storage>="MC": if there are more than one missed calls from the same number the read command will return only the last call</p>	
AT+CPBS=?	Test command returns the supported range of values for the parameters <storage>.	
Reference	3GPP TS 27.007	

3.5.4.4.8. Read Phonebook Entries - +CPBR

+CPBR - Read Phonebook Entries		SELINT 0 / 1
AT+CPBR=<index1>[,<index2>]	<p>Execution command returns phonebook entries in location number range <index1>..<index2> from the current phonebook memory storage selected with +CPBS. If <index2> is omitted, only location <index1> is returned.</p> <p>Parameters: <index1> - integer type value in the range of location numbers of phonebook memory</p>	



+CPBR - Read Phonebook Entries		SELINT 0 / 1
	<p><index2> - integer type value in the range of location numbers of phonebook memory</p> <p>The response format is: +CPBR: <index>,<number>,<type>,<text></p> <p>where: <index> - the current position number of the PB index (to see the range of values use +CPBR=?) <number> - string type phone number in format <type> <type> - type of phone number octet in integer format 129 - national numbering scheme 145 - international numbering scheme (contains the character "+") <text> - the alphanumeric text associated to the number; used character set should be the one selected with command +CSCS.</p> <p>Note: if "MC" is the current selected phonebook memory storage, all the missed calls coming from the same number will be saved as one missed call and +CPBR will show just one line of information.</p> <p>Note: If all queried locations are empty (but available), no information text lines will be returned, while if listing fails in an ME error, +CME ERROR: <err> is returned.</p>	
AT+CPBR=?	<p>Test command returns the supported range of values of the parameters in the form:</p> <p>+CPBR: (<minIndex> - <maxIndex>),<nlength>,<tlength></p> <p>where: <minIndex> - the minimum <index> number, integer type <maxIndex> - the maximum <index> number, integer type <nlength> - maximum <number> field length, integer type <tlength> - maximum <name> field length, integer type</p>	
Note	Remember to select the PB storage with +CPBS command before issuing PB commands.	
Reference	3GPP TS 27.007	

+CPBR - Read Phonebook Entries		SELINT 2
AT+CPBR= <index1> [,<index2>]	<p>Execution command returns phonebook entries in location number range <index1>..<index2> from the current phonebook memory storage selected with +CPBS. If <index2> is omitted, only location <index1> is returned.</p> <p>Parameters: <index1> - integer type, value in the range of location numbers of the currently selected phonebook memory storage (see +CPBS). <index2> - integer type, value in the range of location numbers of the currently selected phonebook memory storage (see +CPBS).</p>	



+CPBR - Read Phonebook Entries	SELINT 2
	<p>The response format is: [+CPBR: <index1>,<number>,<type>,<text>[<CR><LF> +CPBR: <index2>,<number>,<type>,<text>[...]]]</p> <p>where: <index<i>n</i>> - the location number of the phonebook entry <number> - string type phone number of format <type> <type> - type of phone number octet in integer format 129 - national numbering scheme 145 - international numbering scheme (contains the character "+") <text> - the alphanumeric text associated to the number; used character set should be the one selected with command +CSCS.</p> <p>Note: if “MC” is the currently selected phonebook memory storage, a sequence of missed calls coming from the same number will be saved as one missed call and +CPBR will show just one line of information.</p> <p>Note: If all queried locations are empty (but available), no information text lines will be returned, while if listing fails in an ME error, +CME ERROR: <err> is returned.</p>
AT+CPBR=?	<p>Test command returns the supported range of values for parameters <index<i>n</i>> and the maximum lengths of <number> and <text> fields, in the format:</p> <p>+CPBR: (<minIndex> - <maxIndex>),<nlength>,<tlength></p> <p>where: <minIndex> - the minimum <index> number, integer type <maxIndex>- the maximum <index> number, integer type <nlength> - maximum <number> field length, integer type <tlength> - maximum <name> field length, integer type</p> <p>Note: for all SW versions except 13.00.xxx, the value of <nlength> could vary, depending on whether or not the ENS functionality has been previously enabled (see #ENS), in the following situations:</p> <ol style="list-style-type: none"> 1. if “SM” memory storage has been selected (see +CPBS) and the SIM supports the Extension1 service 2. if “FD” memory storage has been selected (see +CPBS) and the SIM supports the Extension2 service 3. if “MB” memory storage has been selected (see +CPBS) and the SIM supports the Extension6 service <p>For 13.00.xxx SW version the value of <nlength> doesn’t depend on ENS functionality setting.</p>
Note	Remember to select the PB storage with +CPBS command before issuing PB commands.
Reference	3GPP TS 27.007



3.5.4.4.9. Find Phonebook Entries - +CPBF

+CPBF - Find Phonebook Entries		SELINT 0 / 1
AT+CPBF= <findtext>	<p>Execution command returns phonebook entries (from the current phonebook memory storage selected with +CPBS) which alphanumeric field start with string <findtext>.</p> <p>Parameter: <findtext> - string type, it is NOT case sensitive; used character set should be the one selected with command +CSCS.</p> <p>The command returns a report in the form:</p> <p>+CPBF: <index1>,<number>,<type>,<text>[[...]<CR><LF> +CPBF: <indexn>,<number>,<type>,<text>]</p> <p>where <indexn>, <number>, <type>, and <text> have the same meaning as in the command +CPBR report.</p> <p>Note: +CPBF is not applicable if the current selected storage (see +CPBS) is either “MC”, either “RC” or “LD”.</p> <p>Note: if no PB records satisfy the search criteria then an ERROR message is reported.</p>	
AT+CPBF=?	<p>Test command reports the maximum lengths of <number> and <text> fields.</p> <p>+CPBF: [<max_number_length>],[<max_text_length>]</p>	
Note	Remember to select the PB storage with +CPBS command before issuing PB commands.	
Reference	3GPP TS 27.007	

+CPBF - Find Phonebook Entries		SELINT 2
AT+CPBF= <findtext>	<p>Execution command returns phonebook entries (from the current phonebook memory storage selected with +CPBS) which alphanumeric field start with string <findtext>.</p> <p>Parameter: <findtext> - string type; used character set should be the one selected with command +CSCS.</p> <p>The command returns a report in the form:</p> <p>[+CPBF: <index1>,<number>,<type>,<text>[<CR><LF> +CPBF: <index2>,<number>,<type>,<text>[...]]]</p> <p>where:</p>	



+CPBF - Find Phonebook Entries		SELINT 2
	<p><index> - the location number of the phonebook entry <number> - string type phone number of format <type> <type> - type of phone number octet in integer format 129 - national numbering scheme 145 - international numbering scheme (contains the character "+") <text> - the alphanumeric text associated to the number; used character set should be the one selected with command +CSCS.</p> <p>Note: +CPBF is not applicable if the current selected storage (see +CPBS) is either "MC", either "RC" or "LD".</p> <p>Note: if <findtext>="" the command returns all the phonebook records.</p> <p>Note: if no PB records satisfy the search criteria then an ERROR message is reported.</p>	
AT+CPBF=?	<p>Test command reports the maximum lengths of <number> and <text> fields, in the format:</p> <p>+CPBF: [<nlength>],[<tlength>]</p> <p>where: <nlength> - maximum length of field <number>, integer type <tlength> - maximum length of field <text>, integer type</p> <p>Note: for all SW versions except 13.00.xxx, the value of <nlength> could vary, depending on whether or not the ENS functionality has been previously enabled (see #ENS), in the following situations:</p> <ol style="list-style-type: none"> 1. if "SM" memory storage has been selected (see +CPBS) and the SIM supports the Extension1 service 2. if "FD" memory storage has been selected (see +CPBS) and the SIM supports the Extension2 service <ol style="list-style-type: none"> 1. if "MB" memory storage has been selected (see +CPBS) and the SIM supports the Extension6 service <p>For 13.00.xxx SW version the value of <nlength> doesn't depend on ENS functionality setting.</p>	
Note	Remember to select the PB storage with +CPBS command before issuing PB commands.	
Reference	3GPP TS 27.007	

3.5.4.4.10. Write Phonebook Entry - +CPBW

+CPBW - Write Phonebook Entry		SELINT 0 / 1
AT+CPBW= [<index>] [,<number> [,<type> [,<text>]]]	<p>Execution command stores at the position <index> a phonebook record defined by <number>, <type> and <text> parameters</p> <p>Parameters:</p>	



+CPBW - Write Phonebook Entry		SELINT 0 / 1
	<p><index> - record position <number> - string type, phone number in the format <type> <type> - the type of number 129 - national numbering scheme 145 - international numbering scheme (contains the character "+") <text> - the text associated to the number, string type; used character set should be the one selected with command +CSCS.</p> <p>Note: If record number <index> already exists, it will be overwritten.</p> <p>Note: if only <index> is given, the record number <index> is deleted.</p> <p>Note: if <index> is omitted or <index>=0, the number <number> is stored in the first free phonebook location. (example at+cpbw=0,2,129,"Testo" and at+cpbw=,2,129,"Testo")</p> <p>Note: omission of all the subparameters causes an ERROR result code.</p>	
AT+CPBW=?	<p>Test command returns location range supported by the current storage as a compound value, the maximum length of <number> field, supported number format of the storage and maximum length of <text> field. The format is:</p> <p>+CPBW: (list of supported <index>s),<nlength>, (list of supported <type>s),<tlength></p> <p>where: <nlength> - integer type value indicating the maximum length of field <number> <tlength> - integer type value indicating the maximum length of field <text></p>	
Reference	3GPP TS 27.007	
Note	Remember to select the PB storage with +CPBS command before issuing PB commands.	

+CPBW - Write Phonebook Entry		SELINT 2
AT+CPBW= [< index >] [,< number > [,< type > [,< text >]]]	<p>Execution command writes phonebook entry in location number <index> in the current phonebook memory storage selected with +CPBS.</p> <p>Parameters: <index> - integer type, value in the range of location numbers of the currently selected phonebook memory storage (see +CPBS). <number> - string type, phone number in the format <type> <type> - the type of number 129 - national numbering scheme 145 - international numbering scheme (contains the character "+") <text> - the text associated to the number, string type; used character set should be the one selected with command +CSCS.</p>	



+CPBW - Write Phonebook Entry		SELINT 2
	<p>Note: If record number <index> already exists, it will be overwritten.</p> <p>Note: if either <number>, <type> and <text> are omitted, the phonebook entry in location <index> is deleted.</p> <p>Note: if <index> is omitted or <index>=0, the number <number> is stored in the first free phonebook location. (example at+cpbw=0,"+390404192701",129,"Text" and at+cpbw=,"+390404192701",129,"Text")</p> <p>Note: if either "LD", "MC" or "RC" memory storage has been selected (see +CPBS) it is possible just to delete the phonebook entry in location <index>, therefore parameters <number>, <type> and <text> must be omitted.</p>	
AT+CPBW=?	<p>Test command returns location range supported by the current storage as a compound value, the maximum length of <number> field, supported number format of the storage and maximum length of <text> field. The format is:</p> <p>+CPBW: (list of supported <index>s),<nlength>, (list of supported <type>s),<tlength></p> <p>where:</p> <p><nlength> - integer type value indicating the maximum length of field <number>.</p> <p><tlength> - integer type value indicating the maximum length of field <text></p> <p>Note: for all SW versions except 13.00.xxx, the value of <nlength> could vary, depending on whether or not the ENS functionality has been previously enabled (see #ENS), in the following situations:</p> <ol style="list-style-type: none"> 1. if "SM" memory storage has been selected (see +CPBS) and the SIM supports the Extension1 service 2. if "FD" memory storage has been selected (see +CPBS) and the SIM supports the Extension2 service <ol style="list-style-type: none"> 1. if "MB" memory storage has been selected (see +CPBS) and the SIM supports the Extension6 service <p>For 13.00.xxx SW version the value of <nlength> doesn't depend on ENS functionality setting.</p>	
Reference	3GPP TS 27.007	
Note	Remember to select the PB storage with +CPBS command before issuing PB commands.	

3.5.4.4.11. Clock Management - +CCLK

+CCLK - Clock Management		SELINT 0 / 1
AT+CCLK [=<time>]	Set command sets the real-time clock of the ME.	



+CCLK - Clock Management		SELINT 0 / 1
	<p>Parameter: <time> - current time as quoted string in the format : "yy/MM/dd,hh:mm:ss±zz" yy - year (two last digits are mandatory), range is 00..99 MM - month (two last digits are mandatory), range is 01..12 dd - day (two last digits are mandatory); The range for dd(day) depends either on the month and on the year it refers to. Available ranges are: (01..28) (01..29) (01..30) (01..31) Trying to enter an out of range value will raise an error</p> <p>hh - hour (two last digits are mandatory), range is 00..23 mm - minute (two last digits are mandatory), range is 00..59 ss - seconds (two last digits are mandatory), range is 00..59 ±zz - time zone (indicates the difference, expressed in quarter of an hour, between the local time and GMT; two last digits are mandatory), range is -47..+48</p> <p>Note: If the parameter is omitted the behaviour of Set command is the same as Read command.</p>	
AT+CCLK?	<p>Read command returns the current setting of the real-time clock, in the format <time>.</p> <p>Note: the three last characters of <time> are not returned by +CCLK? because the ME doesn't support time zone information.</p>	
AT+CCLK=?	Test command returns the OK result code.	
Example	<pre>AT+CCLK="02/09/07,22:30:00+00" OK AT+CCLK? +CCLK: "02/09/07,22:30:25" OK</pre>	
Reference	3GPP TS 27.007	

+CCLK - Clock Management		SELINT 2
AT+CCLK=<time>	<p>Set command sets the real-time clock of the ME.</p> <p>Parameter: <time> - current time as quoted string in the format: "yy/MM/dd,hh:mm:ss±zz" yy - year (two last digits are mandatory), range is 00..99 MM - month (two last digits are mandatory), range is 01..12 dd - day (two last digits are mandatory); The range for dd(day) depends either on the month and on the year it refers to. Available ranges are: (01..28) (01..29)</p>	



+CCLK - Clock Management		SELINT 2
	<p>(01..30) (01..31) Trying to enter an out of range value will raise an error</p> <p>hh - hour (two last digits are mandatory), range is 00..23 mm - minute (two last digits are mandatory), range is 00..59 ss - seconds (two last digits are mandatory), range is 00..59 ±zz - time zone (indicates the difference, expressed in quarter of an hour, between the local time and GMT; two last digits are mandatory), range is -47..+48</p>	
AT+CCLK?	<p>Read command returns the current setting of the real-time clock, in the format <time>.</p> <p>Note: the three last characters of <time>, i.e. the time zone information, are returned by +CCLK? only if the #NITZ URC '<i>extended</i>' format has been enabled (see #NITZ).</p>	
AT+CCLK=?	Test command returns the OK result code.	
Example	<pre>AT+CCLK="02/09/07,22:30:00+00" OK AT+CCLK? +CCLK: "02/09/07,22:30:25"</pre> <p>OK</p>	
Reference	3GPP TS 27.007	

3.5.4.4.12. Alarm Management - +CALA

+CALA - Alarm Management		SELINT 0 / 1
<p>AT+CALA[= <time>[,<n>[,<type> [,<text>[,<recurr> [,<silent>]]]]]</p>	<p>Set command stores in the internal Real Time Clock an alarm time with respective settings. It is possible to set up a recurrent alarm for one or more days in the week. Currently just one alarm can be set.</p> <p>When the RTC time reaches the alarm time then the alarm starts, the behaviour of the MODULE depends upon the setting <type> and if the device was already ON at the moment when the alarm time had come.</p> <p>Parameters:</p> <p><time> - current alarm time as quoted string "" - (empty string) deletes the current alarm and resets all the +CALA parameters to the "factory default" configuration "hh:mm:ss±zz" - format to be used only when issuing +CALA with parameter <recurr> too. "yy/MM/dd, hh:mm:ss±zz" - generic format: it's the same as defined for +CCLK (see)</p> <p><n> - index of the alarm 0 - The only value supported is 0.</p> <p><type> - alarm behaviour type 0 - reserved for other equipment use.</p>	



+CALA - Alarm Management	SELINT 0 / 1
	<p>1 - the MODULE simply wakes up fully operative as if the ON/OFF button had been pressed. If the device is already ON at the alarm time, then it does nothing (default).</p> <p>2 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE issues an unsolicited code every 3s:</p> <p style="text-align: center;">+CALA: <text></p> <p style="text-align: center;">where <text> is the +CALA optional parameter previously set.</p> <p>The device keeps on sending the unsolicited code every 3s until a #WAKE or #SHDN command is received or a 90 seconds timer expires. If the device is in "alarm mode" and it does not receive the #WAKE command within 90 seconds then it shuts down.</p> <p>3 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE starts playing the alarm tone on the selected path for the ringer (see #SRP) The device keeps on playing the alarm tone until a #WAKE or #SHDN command is received or a 90 seconds timer expires. If the device is in "alarm mode" and it does not receive the #WAKE command within 90s then it shuts down.</p> <p>4 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE brings the pin GPIO6 high, provided its <direction> has been set to alarm output, and keeps it in this state until a #WAKE or #SHDN command is received or a 90 seconds timer expires. If the device is in "alarm mode" and it does not receive the #WAKE command within 90s then it shuts down.</p> <p>5 - the MODULE will make both the actions as for <type>=2 and <type>=3. 6 - the MODULE will make both the actions as for <type>=2 and <type>=4. 7 - the MODULE will make both the actions as for <type>=3 and <type>=4.</p> <p><text> - unsolicited alarm code text string. It has meaning only if <type> is equal to 2 or 5 or 6.</p> <p><recurr> - string type value indicating day of week for the alarm in one of the following formats: “<1..7>[,<1..7>[, ...]]” - it sets a recurrent alarm for one or more days in the week; the digits 1 to 7 corresponds to the days in the week (Monday is 1). “0” - it sets a recurrent alarm for all days in the week.</p> <p><silent> - integer type indicating if the alarm is silent or not. 0 - the alarm will not be silent; 1 - the alarm will be silent.</p> <p>During the "alarm mode" the device will not make any network scan and will not register to any network and therefore is not able to dial or receive any call or SMS, the only commands that can be issued to the MODULE in this state are the #WAKE and #SHDN, every other command must not be issued during this state.</p>



+CALA - Alarm Management		SELINT 0 / 1
	<p>Note: If the parameter is omitted the behavior of Set command is the same as Read command.</p> <p>Note: it is mandatory to set at least once the RTC (issuing +CCLK or using the automatic date/time updating – see #NITZ) before it is possible to issue +CALA</p>	
AT+CALA?	<p>Read command returns the list of current active alarm settings in the ME, in the format:</p> <p>[+CALA: <time>,<n>,<type>,<text>,<recurr>,<silent>]</p> <p>Note: if no alarm is present a <CR><LF> is issued.</p>	
AT+CALA=?	<p>Test command returns the list of supported index values (currently just 0), alarm types and maximum length of the text to be displayed, in the format:</p> <p>+CALA: (list of supported <n>s),(list of supported <type>s),<tlength></p> <p>where: <n> and <type> as before <tlength> - maximum <text> field length, integer type</p> <p>Note: an enhanced version of Test command has been defined, AT+CALA=??, providing the range of available values for <rlength> and <silent> too.</p>	
AT+CALA=??	<p>Test command returns the list of supported index values (currently just 0), alarm types, maximum length of the text to be displayed, maximum length of <recurr> and supported <silent>s, in the format:</p> <p>+CALA: (list of supported <n>s),(list of supported <type>s),<tlength>,<rlength>,(list of supported <silent>s)</p> <p>where: <n>, <type>, <tlength> and <silent> as before <rlength> - maximum <recurr> field length, integer type</p>	
Example	AT+CALA="02/09/07,23:30:00+00" OK	
Reference	ETSI 07.07, ETSI 27.007	

+CALA - Alarm Management		SELINT 2
AT+CALA= <time>[,<n>,<type> [,<text>,<recurr> [,<silent>]]]]	<p>Set command stores in the internal Real Time Clock an alarm time with respective settings. It is possible to set up a recurrent alarm for one or more days in the week. Currently just one alarm can be set.</p> <p>When the RTC time reaches the alarm time then the alarm starts, the behaviour of the MODULE depends upon the setting <type> and if the device was already ON at</p>	



+CALA - Alarm Management	SELINT 2
	<p>the moment when the alarm time had come.</p> <p>Parameters:</p> <p><time> - current alarm time as quoted string "" - (empty string) deletes the current alarm and resets all the +CALA parameters to the “factory default” configuration "hh:mm:ss±zz" - format to be used only when issuing +CALA with parameter <recurr> too. "yy/MM/dd, hh:mm:ss±zz" - generic format: it’s the same as defined for +CCLK (see)</p> <p><n> - index of the alarm 0 - The only value supported is 0.</p> <p><type> - alarm behaviour type 0 - reserved for other equipment use. 1 - the MODULE simply wakes up fully operative as if the ON/OFF button had been pressed. If the device is already ON at the alarm time, then it does nothing (default). 2 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE issues an unsolicited code every 3s:</p> <p style="text-align: center;">+CALA: <text></p> <p style="text-align: center;">where <text> is the +CALA optional parameter previously set.</p> <p>The device keeps on sending the unsolicited code every 3s until a #WAKE or #SHDN command is received or a 90 seconds timer expires. If the device is in "alarm mode" and it does not receive the #WAKE command within 90s then it shuts down.</p> <p>3 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE starts playing the alarm tone on the selected path for the ringer (see command #SRP) The device keeps on playing the alarm tone until a #WAKE or #SHDN command is received or a 90 s time-out occurs. If the device is in "alarm mode" and it does not receive the #WAKE command within 90s then it shuts down.</p> <p>4 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE brings the pin GPIO6 high, provided its <direction> has been set to alarm output, and keeps it in this state until a #WAKE or #SHDN command is received or a 90 seconds timer expires. If the device is in "alarm mode" and it does not receive the #WAKE command within 90s then it shuts down.</p> <p>5 - the MODULE will make both the actions as for type=2 and <type>=3. 6 - the MODULE will make both the actions as for type=2 and <type>=4. 7 - the MODULE will make both the actions as for type=3 and <type>=4. 8 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE sets High the</p>



+CALA - Alarm Management	SELINT 2
	<p>RI output pin. The RI output pin remains High until next #WAKE issue or until a 90s timer expires. If the device is in "alarm mode" and it does not receive the #WAKE command within 90s. After that it shuts down.</p> <p><text> - unsolicited alarm code text string. It has meaning only if <type> is equal to 2 or 5 or 6.</p> <p><recurr> - string type value indicating day of week for the alarm in one of the following formats: “<1..7>[,<1..7>[, ...]]” - it sets a recurrent alarm for one or more days in the week; the digits 1 to 7 corresponds to the days in the week (Monday is 1). “0” - it sets a recurrent alarm for all days in the week.</p> <p><silent> - integer type indicating if the alarm is silent or not. 0 - the alarm will not be silent; 1 - the alarm will be silent.</p> <p>During the "alarm mode" the device will not make any network scan and will not register to any network and therefore is not able to dial or receive any call or SMS, the only commands that can be issued to the MODULE in this state are the #WAKE and #SHDN, every other command must not be issued during this state.</p> <p>Note: it is mandatory to set at least once the RTC (issuing +CCLK or using the automatic date/time updating – see #NITZ) before it is possible to issue +CALA</p>
AT+CALA?	<p>Read command returns the list of current active alarm settings in the ME, in the format:</p> <p>[+CALA: <time>,<n>,<type>,<text>,<recurr>,<silent>]</p>
AT+CALA=?	<p>Test command returns the list of supported index values (currently just 0), alarm types, maximum length of the text to be displayed, maximum length of <recurr> and supported <silent>s, in the format:</p> <p>+CALA: (list of supported <n>s),(list of supported <type>s),<length>,<rlength>,(list of supported <silent>s)</p>
Example	<p>AT+CALA="02/09/07,23:30:00+00" OK</p>
Reference	<p>ETSI 07.07, ETSI 27.007</p>

3.5.4.4.13. Postpone alarm - +CAPD

+CAPD – postpone or dismiss an alarm	SELINT 2
AT+CAPD=[<sec>]	<p>Set command postpones or dismisses a currently active alarm.</p> <p>Parameters: <sec>: integer type value indicating the number of seconds to postpone the alarm (maximum 60 seconds). If <sec> is set to 0 (default), the alarm is dismissed.</p>



AT+CAPD=?	Test command reports the supported range of values for parameter <sec>

3.5.4.4.14. Setting date format - +CSDF

+CSDF – setting date format		SELINT 2
AT+CSDF=[<mode>[,<auxmode>]]	<p>This command sets the date format of the date information presented to the user, which is specified by use of the <mode> parameter. The <mode> affects the date format on the phone display and doesn't affect the date format of the AT command serial interface, so it not used.</p> <p>The command also sets the date format of the TE-TA interface, which is specified by use of the <auxmode> parameter (i.e., the <auxmode> affects the <time> of AT+CCLK and AT+CALA). If the parameters are omitted then this sets the default value of <mode>.</p> <p>Parameters:</p> <p><mode>:</p> <ul style="list-style-type: none"> 1 DD-MMM-YYYY (default) 2 DD-MM-YY 3 MM/DD/YY 4 DD/MM/YY 5 DD.MM.YY 6 YYMMDD 7 YY-MM-DD <p><auxmode>:</p> <ul style="list-style-type: none"> 1 yy/MM/dd (default) 2 yyyy/MM/dd <p>Note: The <time> format of +CCLK and +CALA is "yy/MM/dd,hh:mm:ss+zz" when <auxmode>=1 and it is "yyyy/MM/dd,hh:mm:ss+zz" when <auxmode>=2.</p>	
AT+CSDF?	Read command reports the currently selected <mode> and <auxmode> in the format: +CSDF: <mode>,<auxmode>	
AT+CSDF=?	Test command reports the supported range of values for parameters <mode> and <auxmode>	

3.5.4.4.15. Setting time format - +CSTF

+CSTF – setting time format		SELINT 2
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AT+CSTF=[<mode>]	This command sets the time format of the time information presented to the user, which is specified by use of the <mode> parameter. The <mode> affects the time format on the phone display and doesn't affect the time format of the AT command serial interface, so it not actually not used. Parameters: <mode>: 1 HH:MM (24 hour clock; default) 2 HH:MM a.m./p.m.
AT+CSTF?	Read command reports the currently selected <mode> in the format: +CSTF: <mode>
AT+CSTF=?	Test command reports the supported range of values for parameter <mode>

3.5.4.4.16. Time Zone reporting - +CTZR

+CTZR – Time Zone reporting		SELINT 2
AT+CTZR=<onoff>	This command enables and disables the time zone change event reporting. If the reporting is enabled the MT returns the unsolicited result code +CTZV: <tz> whenever the time zone is changed. Parameters: <onoff>: 0 Disable time zone change event reporting (default) 1 Enable time zone change event reporting	
AT+CTZR?	Read command reports the currently selected <onoff> in the format: +CTZR: <onoff>	
AT+CTZR=?	Test command reports the supported range of values for parameter <onoff>	

3.5.4.4.17. Automatic Time Zone update - +CTZU

+CTZU – automatic Time Zone update		SELINT 2
AT+CTZU=<onoff>	This command enables and disables automatic time zone update via NITZ. Parameters: <onoff>: 0 Disable automatic time zone update via NITZ (default) 1 Enable automatic time zone update via NITZ	



	Note: despite of the name, the command AT+CTZU=1 enables automatic update of the date and time set by AT+CCLK command (not only time zone). This happens when a Network Identity and Time Zone (NITZ) message is sent by the network. This command is the ETSI standard equivalent of Telit custom command AT#NITZ=1. If command AT+CTZU=1, or AT#NITZ=1 (or both) has been issued, NITZ message will cause a date and time update.
AT+CTZU?	Read command reports the currently selected <onoff> in the format: +CTZU: <onoff>
AT+CTZU=?	Test command reports the supported range of values for parameter <onoff>

3.5.4.4.18. Restricted SIM Access - +CRSM

+CRSM - Restricted SIM Access	SELINT 0 / 1 / 2
<p>AT+CRSM= <command> [,<fileid> [,<P1>,<P2>,<P3> [,<data>]]]</p>	<p>Execution command transmits to the ME the SIM <command> and its required parameters. ME handles internally all SIM-ME interface locking and file selection routines. As response to the command, ME sends the actual SIM information parameters and response data.</p> <p>Parameters:</p> <p><command> - command passed on by the ME to the SIM 176 - READ BINARY 178 - READ RECORD 192 - GET RESPONSE 214 - UPDATE BINARY 220 - UPDATE RECORD 242 - STATUS</p> <p><fileid> - identifier of an elementary data file on SIM. Mandatory for every command except STATUS.</p> <p><P1>,<P2>,<P3> - parameter passed on by the ME to the SIM; they are mandatory for every command except GET RESPONSE and STATUS 0..255</p> <p><data> - information to be read/written to the SIM (hexadecimal character format).</p> <p>The response of the command is in the format:</p> <p>+CRSM: <sw1>,<sw2>[,<response>]</p> <p>where:</p> <p><sw1>,<sw2> - information from the SIM about the execution of the actual command either on successful or on failed execution.</p>



+CRSM - Restricted SIM Access		SELINT 0 / 1 / 2
	<p><response> - on a successful completion of the command previously issued it gives the requested data (hexadecimal character format). It's not returned after a successful UPDATE BINARY or UPDATE RECORD command.</p> <p>Note: this command requires PIN authentication. However commands READ BINARY and READ RECORD can be issued before PIN authentication and if the SIM is blocked (after three failed PIN authentication attempts) to access the contents of the Elementary Files.</p> <p>Note: use only decimal numbers for parameters <command>, <fileid>, <P1>, <P2> and <P3>.</p>	
AT+CRSM=?	Test command returns the OK result code	
Reference	3GPP TS 27.007, GSM 11.11	

3.5.4.4.19. Alert Sound Mode - +CALM

+CALM - Alert Sound Mode		SELINT 0 / 1
AT+CALM[= <mode>]	<p>Set command is used to select the general alert sound mode of the device.</p> <p>Parameter: <mode> 0 - normal mode 1 - silent mode; no sound will be generated by the device, except for alarm sound 2 - stealth mode; no sound will be generated by the device</p> <p>Note: if silent mode is selected then incoming calls will not produce alerting sounds but only the unsolicited messages RING or +CRING.</p> <p>Note: If parameter is omitted then the behaviour of Set command is the same as Read command.</p>	
AT+CALM?	Read command returns the current value of parameter <mode>.	
AT+CALM=?	<p>Test command returns the supported values for the parameter <mode> as compound value.</p> <p>For compatibility with previous versions, Test command returns +CALM: (0,1)</p> <p>An enhanced version of Test command has been defined: AT+CALM=??, that provides the complete range of values for <mode>.</p>	
AT+CALM=??	Enhanced test command returns the complete range of values for the parameter <mode> as compound value:	



+CALM - Alert Sound Mode		SELINT 0 / 1
	+CALM: (0-2)	
Reference	3GPP TS 27.007	

+CALM - Alert Sound Mode		SELINT 2
AT+CALM= <mode>	<p>Set command is used to select the general alert sound mode of the device.</p> <p>Parameter: <mode> 0 - normal mode 1 - silent mode; no sound will be generated by the device, except for alarm sound 2 - stealth mode; no sound will be generated by the device</p> <p>Note: if silent mode is selected then incoming calls will not produce alerting sounds but only the unsolicited messages RING or +CRING.</p>	
AT+CALM?	Read command returns the current value of parameter <mode> .	
AT+CALM=?	<p>Test command returns the supported values for the parameter <mode> as compound value.</p> <p>+CALM: (0-2)</p>	
Reference	3GPP TS 27.007	

3.5.4.4.20. Ringer Sound Level - +CRSL

+CRSL - Ringer Sound Level		SELINT 0
AT+CRSL[= <level>]	<p>Set command is used to select the incoming call ringer sound level of the device.</p> <p>Parameter: <level> - ringer sound level 0 - Off 1 - low 2 - middle 3 - high 4 - progressive</p> <p>Note: if parameter is omitted then the behaviour of Set command is the same as Read command</p>	
AT+CRSL?	<p>Read command reports the current <level> setting of the call ringer in the format:</p> <p>+CRSL: <level></p>	
AT+CRSL=?	<p>Test command reports <level> supported values as compound value.</p> <p>For compatibility with previous versions, Test command returns +CRSL: (0-3)</p> <p>An enhanced version of Test command has been defined: AT+CRSL=??, that provides the complete range of values for <level>.</p>	



+CRSL - Ringer Sound Level		SELINT 0
AT+CRSL=??	Enhanced Test command returns the complete range of supported values for the parameter <mode>: +CRSL: (0-4)	
Reference	3GPP TS 27.007	

+CRSL - Ringer Sound Level		SELINT 1
AT+CRSL[= <level>]	Set command is used to select the incoming call ringer sound level of the device. Parameter: <level> - ringer sound level 0 - Off 1 - low 2 - middle 3 - high 4 - progressive Note: if parameter is omitted then the behaviour of Set command is the same as Read command	
AT+CRSL?	Read command reports the current <level> setting of the call ringer in the format: +CRSL: <level>	
AT+CRSL=?	Test command reports <level> supported values as compound value, in the format: +CRSL: (0-4) Note: an enhanced version of Test command has been defined: AT+CRSL=??.	
AT+CRSL=??	Enhanced Test command returns the complete range of supported values for the parameter <mode>: +CRSL: (0-4)	
Reference	3GPP TS 27.007	

+CRSL - Ringer Sound Level		SELINT 2
AT+CRSL=<level>	Set command is used to select the incoming call ringer sound level of the device. Parameter: <level> - ringer sound level 0 - Off 1 - low 2 - middle 3 - high 4 - progressive	
AT+CRSL?	Read command reports the current <level> setting of the call ringer in the format: +CRSL: <level>	
AT+CRSL=?	Test command reports <level> supported values as compound value.	



+CRSL - Ringer Sound Level		SELINT 2
	+CRSL: (0-4)	
Reference	3GPP TS 27.007	

3.5.4.4.21. Loudspeaker Volume Level - +CLVL

+CLVL - Loudspeaker Volume Level		SELINT 0 / 1
AT+CLVL[= <level>]	Set command is used to select the volume of the internal loudspeaker audio output of the device. Parameter: <level> - loudspeaker volume 0.. <i>max</i> - the value of <i>max</i> can be read by issuing the Test command AT+CLVL=? Note: If the parameter is omitted the behavior of Set command is the same as Read command.	
AT+CLVL?	Read command reports the current <level> setting of the loudspeaker volume in the format: +CLVL: <level>	
AT+CLVL=?	Test command reports <level> supported values range in the format: +CLVL: (0-<i>max</i>)	
Reference	3GPP TS 27.007	

+CLVL - Loudspeaker Volume Level		SELINT 2
AT+CLVL=<level>	Set command is used to select the volume of the internal loudspeaker audio output of the device. Parameter: <level> - loudspeaker volume 0.. <i>max</i> - the value of <i>max</i> can be read by issuing the Test command AT+CLVL=?	
AT+CLVL?	Read command reports the current <level> setting of the loudspeaker volume in the format: +CLVL: <level>	
AT+CLVL=?	Test command reports <level> supported values range in the format: +CLVL: (0-<i>max</i>)	
Reference	3GPP TS 27.007	

3.5.4.4.22. Microphone Mute Control - +CMUT

+CMUT - Microphone Mute Control		SELINT 0 / 1
AT+CMUT[=[<n>]]	Set command enables/disables the muting of the microphone audio line during a voice call.	



+CMUT - Microphone Mute Control		SELINT 0 / 1
	<p>Parameter: <n> 0 - mute off, microphone active (factory default) 1 - mute on, microphone muted.</p> <p>Note: this command mutes/activates both microphone audio paths, internal mic and external mic.</p> <p>Note: issuing AT+CMUT<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT+CMUT=<CR> is the same as issuing the command AT+CMUT=0<CR>.</p>	
AT+CMUT?	Read command reports whether the muting of the microphone audio line during a voice call is enabled or not, in the format: +CMUT: <n>	
AT+CMUT=?	Test command reports the supported values for <n> parameter.	
Reference	3GPP TS 27.007	

+CMUT - Microphone Mute Control		SELINT 2
AT+CMUT=<n>	<p>Set command enables/disables the muting of the microphone audio line during a voice call.</p> <p>Parameter: <n> 0 - mute off, microphone active (factory default) 1 - mute on, microphone muted.</p> <p>Note: this command mutes/activates both microphone audio paths, internal mic and external mic.</p>	
AT+CMUT?	Read command reports whether the muting of the microphone audio line during a voice call is enabled or not, in the format: +CMUT: <n>	
AT+CMUT=?	Test command reports the supported values for <n> parameter.	
Reference	3GPP TS 27.007	

3.5.4.4.23. Silence command - +CSIL

+CSIL – silence command		SELINT 2
AT+CSIL=[<mode>]	<p>This command enables/disables the silent mode. When the phone is in silent mode, all signalling tones from MT are suppressed.</p> <p>Parameters:</p>	



	<p><mode>: 0 Silent mode off (default) 1 Silent mode on</p>
AT+CSIL?	Read command reports the currently selected <mode> in the format: +CSIL: <mode>
AT+CSIL=?	Test command reports the supported range of values for parameter <mode>

3.5.4.4.24. Accumulated Call Meter - +CACM

+CACM - Accumulated Call Meter		SELINT 0 / 1
AT+CACM[= <pwd>]	<p>Set command resets the Advice of Charge related Accumulated Call Meter stored in SIM (ACM): it contains the total number of home units for both the current and preceding calls.</p> <p>Parameter: <pwd> - to access this command PIN2 is required; if PIN2 has been already input once after startup, it is required no more</p> <p>Note: If the parameter is omitted the behavior of Set command is the same as Read command.</p>	
AT+CACM?	<p>Read command reports the current value of the SIM ACM in the format:</p> <p>+CACM: <acm></p> <p>where: <acm> - accumulated call meter in home units, string type: three bytes of the ACM value in hexadecimal format (e.g. "00001E" indicates decimal value 30)</p> <p>Note: the value <acm> is in units whose price and currency are defined with command +CPUC</p>	
AT+CACM=?	Test command returns the OK result code	
Reference	3GPP TS 27.007	

+CACM - Accumulated Call Meter		SELINT 2
AT+CACM=[<pwd>]	<p>Set command resets the Advice of Charge related Accumulated Call Meter stored in SIM (ACM): it contains the total number of home units for both the current and preceding calls.</p> <p>Parameter: <pwd> - to access this command PIN2; if PIN2 has been already input once after startup, it is required no more</p>	
AT+CACM?	<p>Read command reports the current value of the SIM ACM in the format:</p> <p>+CACM: <acm></p>	



+CACM - Accumulated Call Meter		SELINT 2
	<p>where: <acm> - accumulated call meter in home units, string type: three bytes of the ACM value in hexadecimal format (e.g. "00001E" indicates decimal value 30)</p> <p>Note: the value <acm> is in home units; price per unit and currency are defined with command +CPUC</p>	
AT+CACM=?	Test command returns the OK result code	
Reference	3GPP TS 27.007	

3.5.4.4.25. Accumulated Call Meter Maximum - +CAMM

+CAMM - Accumulated Call Meter Maximum		SELINT 0 / 1
AT+CAMM[= <acmmax> [,<pwd>]]	<p>Set command sets the Advice of Charge related Accumulated Call Meter Maximum Value stored in SIM (ACMmax). This value represents the maximum number of home units allowed to be consumed by the subscriber. When ACM reaches <acmmax> value further calls are prohibited.</p> <p>Parameter: <acmmax> - ACMmax value, integer type: it is the maximum number of home units allowed to be consumed by the subscriber. <pwd> - PIN2; if PIN2 has been already input once after startup, it is required no more</p> <p>Note: <acmmax>=0 value disables the feature.</p> <p>Note: if the parameters are omitted the behavior of Set command is the same as Read command.</p>	
AT+CAMM?	<p>Read command reports the ACMmax value stored in SIM in the format:</p> <p>+CAMM : <acmm></p> <p>where: <acmm> - ACMmax value in home units, string type: ACMmax value in decimal format.</p>	
Reference	3GPP TS 27.007	

+CAMM - Accumulated Call Meter Maximum		SELINT 2
AT+CAMM= [<acmmax> [,<pwd>]]	<p>Set command sets the Advice of Charge related Accumulated Call Meter Maximum Value stored in SIM (ACMmax). This value represents the maximum number of home units allowed to be consumed by the subscriber. When ACM reaches <acmmax> value further calls are prohibited.</p> <p>Parameter:</p>	



+CPUC - Price Per Unit And Currency Table		SELINT 2
	Parameters: <currency> - string type; three-character currency code (e.g. "LIT", "L.", "USD", "DEM" etc.); used character set should be the one selected with command +CSCS . <ppu> - price per unit, string type (dot is used as decimal separator) e.g. "1989.27" <pwd> - SIM PIN2; if PIN2 has been already input once after startup, it is required no more	
AT+CPUC?	Read command reports the current values of <currency> and <ppu> parameters in the format: +CPUC : <currency>,<ppu>	
AT+CPUC=?	Test command returns the OK result code	
Reference	3GPP TS 27.007	

3.5.4.4.27. Call meter maximum event - +CCWE

+CCWE – Call Meter maximum event		SELINT 2
AT+CCWE=<mode>	Set command is used to enable/disable sending of an unsolicited result code +CCWV shortly before the ACM (Accumulated Call Meter) maximum value is reached. The warning is issued approximately when 30 seconds call time remains. It is also issued when starting a call if less than 30 seconds call time remains. Parameters: <mode> : 0 Disable the call meter warning event (default) 1 Enable the call meter warning event Note: the set command will respond with an error if the Accumulated Call Meter service is not active in SIM	
AT+CCWE?	Read command reports the currently selected <mode> in the format: +CCWE: <mode>	
AT+CCWE=?	Test command reports the supported range of values for parameter <mode>	

3.5.4.4.28. Available AT Commands - +CLAC

+CLAC - Available AT Commands		SELINT 2
AT+CLAC	Execution command causes the ME to return the AT commands that are available	



+CLAC - Available AT Commands		SELINT 2
	for the user, in the following format: <AT cmd1>[<CR><LF><AT cmd2>[...]] where: <AT cmdn> - defines the AT command including the prefix AT	
AT+CLAC=?	Test command returns the OK result code	
Reference	3GPP TS 27.007	

3.5.4.4.29. Delete Alarm - +CALD

+CALD - Delete Alarm		SELINT 2
AT+CALD=<n>	Execution command deletes an alarm in the ME Parameter: <n> - alarm index 0	
AT+CALD=?	Test command reports the range of supported values for <n> parameter.	
Reference	3G TS 27.007	

3.5.4.4.30. Read ICCID - +CCID

+CCID - Read ICCID (Integrated Circuit Card Identification)		SELINT 0 / 1 / 2
AT+CCID	Execution command reads on SIM the ICCID (card identification number that provides a unique identification number for the SIM)	
AT+ CCID?	Read command has the same effect as Execution command.	
AT+CCID=?	Test command reports OK .	

3.5.4.4.31. Generic SIM access - +CSIM

+CSIM – Generic SIM access		SELINT 0 / 1 / 2
AT+CSIM=<lock>	Between two successive +CSIM command the SIM-ME interface must be locked to avoid commands can modify wrong SIM file. The locking and unlocking of the SIM-ME interface must be done explicitly respectively at the beginning and at the end of the +CSIM commands sequence. Parameters: <lock>=1 locking of the interface <lock>=0 unlocking of the interface In case that TE application does not use the unlock command in a certain timeout value, ME releases the locking.	
AT+CSIM=<length>, <command>	The ME shall send the <command> as it is to the SIM/UICC. As response to the command, ME sends back the actual SIM/UICC <response> to the TA as it is.	



+CSIM – Generic SIM access	SELINT 0 / 1 / 2
	<p>Parameters: <length>: number of the characters that are sent to TE in <command> or <response> (two times the actual length of the command or response) <command>: command passed on by the ME to the SIM/UICC in the format as described in GSM TS 11.11 or 3G TS 31.101 (hexadecimal character format)</p> <p>The response of the command is in the format: +CSIM: <length>,<response></p> <p>where: <response> : response to the command passed on by the SIM to the ME in the format as described in GSM TS 11.11 or 3G TS 31.101 (hexadecimal character format).</p> <p>Error case: +CME ERROR: <err> possible <err> values (numeric format followed by verbose format):</p> <ul style="list-style-type: none"> 3 operation not allowed (<i>operation mode is not allowed by the ME, wrong interface lock/unlock status</i>) 4 operation not supported (<i>wrong format or parameters of the command</i>) 13 SIM failure (<i>SIM no response</i>)
AT+CSIM=?	Test command returns the OK result code.
Example	<p>Lock SIM interface AT+CSIM=1 OK</p> <p>2G SIM (TS 11.11): AT#ENASIM? +ENASIM: 0</p> <p>OK</p> <p>STATUS AT+CSIM=10,A0F2000016 +CSIM:48,"000002A87F200200000000000099300220800838A838A9000"</p> <p>OK</p> <p>SELECT EF 6F07 AT+CSIM=14,A0A40000026F07 +CSIM: 4,"9F0F"</p>



+CSIM – Generic SIM access	SELINT 0 / 1 / 2
	<p>OK</p> <p><i>GET RESPONSE</i> AT+CSIM=10,A0C00000F +CSIM: 34,"00000096F0704001A001A010200009000"</p> <p>OK</p> <p><i>SELECT EF 6F30</i> AT+CSIM=14,A0A40000026F30 +CSIM: 4,"9F0F"</p> <p>OK</p> <p><i>READ BINARY</i> AT+CSIM=10,A0B00000FC +CSIM:508,"FFFFFF1300831300901300541300301300651300381300801301801 3000113110913013013009813007713005913004313008113009513014013002313 0016330420130041FFFFFFFFFFF21436542F41922F28822F201FFFFFFFFFFFF FF FF FF FF FF FF FF FFFFFFFFFFFFFFFFFFFFFFFF9000"</p> <p>OK</p> <p><u>3G UICC (3G TS 31.101):</u></p> <p>AT#ENASIM? +ENASIM: 1</p> <p>OK</p> <p><i>STATUS</i> AT+CSIM=10,A0F2000016 +CME ERROR: operation not supported</p> <p><i>STATUS</i> AT+CSIM=10,80F2000016 +CSIM:48,"623F8202782183027FF08410A000000871002FFFFFF9000"</p> <p>OK</p> <p><i>SELECT EF 6F07 No Data Returned</i></p>



+CSIM – Generic SIM access	SELINT 0 / 1 / 2
	<pre> AT+CSIM=18,00A4080C047F206F07 +CSIM: 4,"9000" OK <i>SELECT EF 6F30 Return FCP Template</i> AT+CSIM=18,00A40804047F206F30 +CSIM: 4,"6120" OK <i>GET RESPONSE</i> AT+CSIM=10,00C0000020 +CSIM:68,"621E8202412183026F30A506C00140DE01008A01058B036F060480 02006988009000" OK <i>READ BINARY</i> AT+CSIM=10,00B0000069 +CSIM:214,"02F81012F47022F83082F63082F64022F60192F31412F6031300613 2F40102F20162 F21032F23002F60182F41012F91042F41902F46102F40242F22092F52072F22062 F03062F86032F0 1032F11042F01032F80217F60127F42027F43027F44027F24337F62037F0209000 " OK <i>Unlock SIM interface</i> AT+CSIM=0 OK </pre>
Note	<p>After the locking of the SIM-ME interface (AT+CSIM=1) the SIM will be accessible only by AT+CSIM commands (#QSS: 0). The GSM and GPRS services will be automatically deregistered to avoid the TE commands alter the GSM application. They will be automatically reconditioned after the unlocking of the SIM-ME interface.</p> <p>After the unlocking of the SIM-ME interface if PIN is required it will be necessary to enter it another time.</p> <p>The locking/unlocking of the SIM/ME interface causes reset of the SIM/UICC and then the closure of all previously opened logical channels and respective applications session termination (see +CCHO).</p>



3.5.4.4.32. Set Voice Mail Number - +CSVM

+CSVM – Set Voice Mail Number	SELINT 2
<p>AT+CSVM=<mode>[,<number>[,<type>]]</p>	<p>The number to the voice mail server is set with this command. The parameters <number> and <type> can be left out if the parameter <mode> is set to 0.</p> <p>Parameters:</p> <p><mode> 0 – disable the voice mail number 1 – enable the voice mail number (factory default)</p> <p><number> - string type phone number of format specified by <type></p> <p><type> - type of address octet in integer format 129 - unknown type of number and ISDN/Telephony numbering plan 145 - international type of number and ISDN/Telephony numbering plan (contains the character "+")</p> <p>Note: Set command only checks for parameters values validity; it does not any actual write to SIM to update voice mail number.</p>
<p>AT+CSVM?</p>	<p>Read command returns the currently selected voice mail number and the status (i.e. enabled/disabled) in the format</p> <p>+CSVM:<mode>,<number>,<type></p>
<p>AT+CSVM=?</p>	<p>Test command reports the range for the parameters <mode> and <type>.</p>

3.5.4.4.33. Open Logical Channel - +CCHO

+CCHO – Open Logical Channel	SELINT 2
<p>AT+CCHO=<dfname></p>	<p>Execution of the command causes the MT to return <sessionid> to allow the TE to identify a channel that is being allocated by the currently selected UICC, which is attached to ME. The currently selected UICC will open a new logical channel; select the application identified by the <dfname> received with this command and return a session Id as the response. The ME shall restrict the communication between the TE and the UICC to this logical channel.</p> <p>This <sessionid> is to be used when sending commands with Restricted UICC Logical Channel access +CRLA or Generic UICC Logical Channel access +CGLA commands.</p> <p>Parameter:</p> <p><dfname> : all selectable applications in the UICC are referenced by a DF name coded on 1 to 16 bytes</p>



	<p>The response of the command is in the format: +CCHO: <sessionid ></p> <p>where: <sessionid> integer type; a session Id to be used in order to target a specific application on the smart card (e.g. (U)SIM, WIM, ISIM) using logical channels mechanism</p> <p>See 3GPP TS 31.101 for more information about defined values.</p> <p>Error case: +CME ERROR: <err> possible <err> values (numeric format followed by verbose format): 3 operation not allowed (<i>operation mode is not allowed by the ME</i>) 4 operation not supported (<i>wrong format or parameters of the command</i>) 13 SIM failure (<i>SIM response SW1 SW2 status byte Error</i>) 15 SIM wrong (<i>SIM response SW1 SW2 status byte Error</i>) 100 unknown (<i>generic error</i>)</p> <p>Note: The logical channel number is contained in the CLASS byte of an APDU command, thus implicitly contained in all APDU commands sent to a UICC. In this case it will be up to the MT to manage the logical channel part of the APDU CLASS byte and to ensure that the chosen logical channel is relevant to the <sessionid> indicated in the AT command. See 3GPP TS 31.101 for further information on logical channels in APDU commands protocol.</p>
AT+CCHO=?	Test command returns the OK result code.

3.5.4.4.34. Close Logical Channel - +CCHC

<p>+CCHC – Close Logical Channel</p> <p>AT+CCHC=<sessionid></p>	<p style="text-align: right;">SELINT 2</p> <p>This command asks the ME to close a communication session with the active UICC. The ME shall close the previously opened logical channel. The TE will no longer be able to send commands on this logical channel. The UICC will close the logical channel when receiving this command.</p> <p>Parameter: <sessionid> : integer type; a session Id to be used in order to target a specific application on the smart card (e.g. (U)SIM, WIM, ISIM) using logical channels mechanism.</p> <p>Error case: +CME ERROR: <err> possible <err> values (numeric format followed by verbose format): 3 operation not allowed (<i>operation mode is not allowed by the ME</i>) 4 operation not supported (<i>wrong format or parameters of the command</i>)</p>
---	--



	13 SIM failure (<i>SIM response SW1 SW2 status byte Error</i>) 15 SIM wrong (<i>SIM response SW1 SW2 status byte Error</i>) 21 invalid index (<i><sessionid> not correspond to an opened channel</i>) 100 unknown (<i>generic error</i>)
AT+CCHC=?	Test command returns the OK result code.

3.5.4.4.35. Generic UICC Logical Channel Access - +CGLA

+CGLA – Generic UICC Logical Channel Access	SELINT 2
<p>AT+CGLA=<sessionid>,<length>,<command></p>	<p>Set command transmits to the MT the <command> it then shall send as it is to the selected UICC. In the same manner the UICC <response> shall be sent back by the MT to the TA as it is.</p> <p>This command allows a direct control of the currently selected UICC by a distant application on the TE. The TE shall then take care of processing UICC information within the frame specified by GSM/UMTS.</p> <p>Parameter:</p> <p><sessionid> : integer type; this is the identifier of the session to be used in order to send the APDU commands to the UICC. It is mandatory in order to send commands to the UICC when targeting applications on the smart card using a logical channel other than the default channel (channel "0")</p> <p><length> : integer type; length of the characters that are sent to TE in <command> or <response> (two times the actual length of the command or response)</p> <p><command> : command passed on by the MT to the UICC in the format as described in 3GPP TS 31.101 (hexadecimal character format; refer +CSCS)</p> <p>The response of the command is in the format: +CGLA: <length>,<response></p> <p>where:</p> <p><response> : response to the command passed on by the SIM to the ME in the format as described in GSM TS 11.11 or 3G TS 31.101 (hexadecimal character format).</p> <p>See 3GPP TS 31.101 for more information about defined values.</p> <p>Error case: +CME ERROR: <err> possible <err> values (numeric format followed by verbose format): 3 operation not allowed (<i>operation mode is not allowed by the ME</i>) 4 operation not supported (<i>wrong format or parameters of the command</i>) 13 SIM failure (<i>SIM response SW1 SW2 status byte Error</i>) 15 SIM wrong (<i>SIM response SW1 SW2 status byte Error</i>)</p>



	<p>21 invalid index (<sessionid> not correspond to an opened channel) 100 unknown (generic error)</p> <p>Note: When the SW1 SW2 bytes received from UICC in response to <command> are “61 XX”, MT automatically send to UICC a GET RESPONSE command with length “XX” and the +CGLA <response> is that returned by GET RESPONSE command.</p>
AT+CGLA=?	Test command returns the OK result code.

3.5.4.5. Mobile Equipment Errors

3.5.4.5.1. Report Mobile Equipment Error - +CMEE

+CMEE - Report Mobile Equipment Error		SELINT 0 / 1
AT+CMEE[=[<n>]]	<p>Set command enables/disables the report of result code:</p> <p>+CME ERROR: <err></p> <p>as an indication of an error relating to the +Cxxx commands issued. When enabled, device related errors cause the +CME ERROR: <err> final result code instead of the default ERROR final result code. ERROR is anyway returned normally when the error message is related to syntax, invalid parameters, or DTE functionality.</p> <p>Parameter: <n> - enable flag 0 - disable +CME ERROR:<err> reports, use only ERROR report. 1 - enable +CME ERROR:<err> reports, with <err> in numeric format 2 - enable +CME ERROR: <err> reports, with <err> in verbose format</p> <p>Note: issuing AT+CMEE<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT+CMEE=<CR> is the same as issuing the command AT+CMEE=0<CR>.</p>	
AT+CMEE?	<p>Read command returns the current value of subparameter <n></p> <p>+CMEE: <n></p>	
AT+CMEE=?	<p>Test command returns the range of values for subparameter <n> in the format:</p> <p>+CMEE: 0, 1, 2</p> <p>Note: the representation format of the Test command output is not included in parenthesis.</p>	
Note	+CMEE has no effect on the final result code +CMS	
Reference	3GPP TS 27.007	



+CMEE - Report Mobile Equipment Error		SELINT 2
AT+CMEE=[<n>]	<p>Set command enables/disables the report of result code:</p> <p>+CME ERROR: <err></p> <p>as an indication of an error relating to the +Cxxx commands issued.</p> <p>When enabled, device related errors cause the +CME ERROR: <err> final result code instead of the default ERROR final result code. ERROR is anyway returned normally when the error message is related to syntax, invalid parameters, or DTE functionality.</p> <p>Parameter: <n> - enable flag 0 - disable +CME ERROR:<err> reports, use only ERROR report. 1 - enable +CME ERROR:<err> reports, with <err> in numeric format 2 - enable +CME ERROR: <err> reports, with <err> in verbose format</p>	
AT+CMEE?	<p>Read command returns the current value of subparameter <n>:</p> <p>+CMEE: <n></p>	
AT+CMEE=?	<p>Test command returns the range of values for subparameter <n></p>	
Note	+CMEE has no effect on the final result code +CMS	
Reference	3GPP TS 27.007	

3.5.4.5.2. Set CMEE mode - #CMEEMODE

#CMEEMODE – Set CMEE mode		SELINT 2
AT#CMEEMODE=<mode>	<p>This command allows to extend the set of error codes reported by CMEE to the GPRS related error codes.</p> <p>Parameters: <mode>: 0 – disable support of GPRS related error codes by AT+CMEE (default) 1 – enable support of GPRS related error codes by AT+CMEE</p> <p>This parameter is stored in the user profile</p>	
AT#CMEEMODE?	<p>Read command reports the currently selected < mode > in the format: #CMEEMODE: <mode></p>	
AT#CMEEMODE =?	<p>Test command reports the supported range of values for parameter < mode ></p>	



3.5.4.6. Voice Control

3.5.4.6.1. DTMF Tones Transmission - +VTS

+VTS - DTMF Tones Transmission		SELINT 0 / 1
AT+VTS= <dtmfstring> [,duration]	<p>Execution command allows the transmission of DTMF tones.</p> <p>Parameters:</p> <p><dtmfstring> - string of <dtmf>s, i.e. ASCII characters in the set (0-9), #, *, (A-D); it allows the user to send a sequence of DTMF tones, each of them with a duration that was defined through +VTD command.</p> <p><duration> - duration of a tone in 1/100 sec.; this parameter can be specified only if the length of first parameter is just one ASCII character</p> <p>0 - a single DTMF tone will be transmitted for a duration depending on the network, no matter what the current +VTD setting is.</p> <p>1..255 - a single DTMF tone will be transmitted for a time <duration> (in 10 ms multiples), no matter what the current +VTD setting is.</p> <p>Note: this commands operates in voice mode only (see +FCLASS).</p> <p>Note: the character P does not correspond to any DTMF tone, but it is interpreted as a pause of 3 seconds between the preceding and succeeding DTMF string elements</p>	
AT+VTS=?	<p>For compatibility with previous versions, Test command returns +VTS: 0,0,0</p> <p>An enhanced version of Test command has been defined: AT+VTS=??, that provides the correct range of values for <DTMF>.</p>	
AT+VTS=??	<p>Test command provides the list of supported <dtmf>s and the list of supported <duration>s in the format:</p> <p>(list of supported <dtmf>s)[,(list of supported <duration>s)]</p>	
Reference	3GPP TS 27.007 and TIA IS-101	

+VTS - DTMF Tones Transmission		SELINT 2
AT+VTS= <dtmfstring> [,duration]	<p>Execution command allows the transmission of DTMF tones.</p> <p>Parameters:</p> <p><dtmfstring> - string of <dtmf>s, i.e. ASCII characters in the set (0-9), #, *, (A-D),P; it allows the user to send a sequence of DTMF tones, each of them with a duration that was defined through +VTD command.</p> <p><duration> - duration of a tone in 1/100 sec.; this parameter can be specified only if the length of first parameter is just one ASCII character</p> <p>0 - a single DTMF tone will be transmitted for a duration depending on the network, no matter what the current +VTD setting is.</p> <p>1..255 - a single DTMF tone will be transmitted for a time <duration> (in 10 ms multiples), no matter what the current +VTD setting is.</p>	



+VTS - DTMF Tones Transmission		SELINT 2
	<p>Note: this commands operates in voice mode only (see +FCLASS).</p> <p>Note: the character P does not correspond to any DTMF tone, but it is interpreted as a pause of 3 seconds between the preceding and succeeding DTMF string elements</p>	
AT+VTS=?	<p>Test command provides the list of supported <dtmf>s and the list of supported <duration>s in the format:</p> <p>(list of supported <dtmf>s)[,(list of supported <duration>s)]</p>	
Reference	3GPP TS 27.007 and TIA IS-101	

3.5.4.6.2. Tone Duration - +VTD

+VTD - Tone Duration		SELINT 0 / 1
AT+VTD[= <duration>]	<p>Set command sets the length of tones transmitted with +VTS command.</p> <p>Parameter: <duration> - duration of a tone 0 - the duration of every single tone is dependent on the network (factory default) 1..255 - duration of every single tone in 1/10 sec.</p> <p>Note: If parameter is omitted the behavior of Set command is the same as Read command.</p>	
AT+VTD?	<p>Read command reports the current Tone Duration, in the format:</p> <p><duration></p>	
AT+VTD=?	<p>Test command provides the list of supported <duration>s in the format:</p> <p>(list of supported <duration>s)</p>	
Reference	3GPP TS 27.007 and TIA IS-101	

+VTD - Tone Duration		SELINT 2
AT+VTD= <duration>	<p>Set command sets the length of tones transmitted with +VTS command.</p> <p>Parameter: <duration> - duration of a tone 0 - the duration of every single tone is dependent on the network (factory default) 1..255 - duration of every single tone in 1/10 sec.</p>	
AT+VTD?	<p>Read command reports the current Tone Duration, in the format:</p> <p><duration></p>	
AT+VTD=?	<p>Test command provides the list of supported <duration>s in the format:</p> <p>(list of supported <duration>s)</p>	
Reference	3GPP TS 27.007 and TIA IS-101	



3.5.4.7. Commands For GPRS

3.5.4.7.1. GPRS Mobile Station Class - +CGCLASS

+CGCLASS - GPRS Mobile Station Class		SELINT 0 / 1
AT+CGCLASS [=<class>]	<p>Set command sets the GPRS class according to <class> parameter.</p> <p>Parameter: <class> - GPRS class “B” - GSM/GPRS (factory default) “CG” - class C in GPRS only mode (GPRS only) “CC” - class C in circuit switched only mode (GSM only)</p> <p>Note: the setting is saved in NVM (and available on following reboot).</p> <p>Note: if parameter <class> is omitted, then the behaviour of Set command is the same as Read command.</p>	
AT+CGCLASS?	<p>Read command returns the current value of the GPRS class in the format:</p> <p>+CGCLASS: <class></p>	
AT+CGCLASS=?	Test command reports the range for the parameter <class>	

+CGCLASS - GPRS mobile station class		SELINT 2
AT+CGCLASS= [<class>]	<p>Set command sets the GPRS class according to <class> parameter.</p> <p>Parameter: <class> - GPRS class “B” - GSM/GPRS (factory default) “CG” - class C in GPRS only mode (GPRS only) “CC” - class C in circuit switched only mode (GSM only)</p> <p>Note: the setting is saved in NVM (and available on following reboot).</p>	
AT+CGCLASS?	<p>Read command returns the current value of the GPRS class in the format:</p> <p>+CGCLASS: <class></p>	
AT+CGCLASS=?	Test command reports the range for the parameter <class>	

3.5.4.7.2. GPRS Attach Or Detach - +CGATT

+CGATT - GPRS Attach Or Detach		SELINT 0 / 1
AT+CGATT[= <state>]	<p>Execution command is used to attach the terminal to, or detach the terminal from, the GPRS service depending on the parameter <state>.</p> <p>Parameter: <state> - state of GPRS attachment 0 - detached</p>	



+CGATT - GPRS Attach Or Detach		SELINT 0 / 1
	1 - attached Note: If the parameter is omitted the behavior of Execution command is the same as Read command.	
AT+CGATT?	Read command returns the current GPRS service state.	
AT+CGATT=?	Test command requests information on the supported GPRS service states.	
Example	AT+CGATT? +CGATT: 0 OK AT+CGATT=? +CGATT: (0,1) OK AT+CGATT=1 OK	
Reference	3GPP TS 27.007	
		SELINT 2
AT+CGATT=[<state>]	Execution command is used to attach the terminal to, or detach the terminal from, the GPRS service depending on the parameter <state>. Parameter: <state> - state of GPRS attachment 0 - detached 1 - attached	
AT+CGATT?	Read command returns the current GPRS service state.	
AT+CGATT=?	Test command requests information on the supported GPRS service states.	
Example	AT+CGATT? +CGATT: 0 OK AT+CGATT=? +CGATT: (0,1) OK AT+CGATT=1 OK	
Reference	3GPP TS 27.007	

3.5.4.7.3. GPRS Event Reporting - +CGEREP

+CGEREP - GPRS Event Reporting		SELINT 2
AT+CGEREP=[<mode>[,<bfr>]]	Set command enables or disables sending of unsolicited result codes +CGEV: XXX (see below) from TA to TE in the case of certain events occurring in the TA or the network. Parameters: <mode> - controls the processing of URCs specified with this command 0 - Buffer unsolicited result codes in the TA . If TA result code buffer is full, the	



+CGEREP - GPRS Event Reporting	SELINT 2
	<p>oldest one can be discarded. No codes are forwarded to the TE.</p> <ol style="list-style-type: none"> 1 - Discard unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode); otherwise forward them directly to the TE. 2 - Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE when TA-TE link becomes available; otherwise forward them directly to the TE. <p><bfr> - controls the effect on buffered codes when <mode> 1 or 2 is entered:</p> <ol style="list-style-type: none"> 0 - TA buffer of unsolicited result codes defined within this command is cleared when <mode>=1 or 2 is entered. 1 - TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode>=1 or 2 is entered (OK response shall be given before flushing the codes) <p style="text-align: center;">Unsolicited Result Codes</p> <p>The following unsolicited result codes and the corresponding events are defined:</p> <p>+CGEV: REJECT <PDP_type>, <PDP_addr> A network request for PDP context activation occurred when the TA was unable to report it to the TE with a +CRING unsolicited result code and was automatically rejected</p> <p>+CGEV: NW REACT <PDP_type>, <PDP_addr>, [<cid>] The network has requested a context reactivation. The <cid> that was used to reactivate the context is provided if known to TA</p> <p>+CGEV: NW DEACT <PDP_type>, <PDP_addr>, [<cid>] The network has forced a context deactivation. The <cid> that was used to activate the context is provided if known to TA</p> <p>+CGEV: ME DEACT <PDP_type>, <PDP_addr>, [<cid>] The mobile equipment has forced a context deactivation. The <cid> that was used to activate the context is provided if known to TA</p> <p>+CGEV: NW DETACH The network has forced a GPRS detach. This implies that all active contexts have been deactivated. These are not reported separately</p> <p>+CGEV: ME DETACH The mobile equipment has forced a GPRS detach. This implies that all active contexts have been deactivated. These are not reported separately</p> <p>+CGEV: ME CLASS <class> The mobile equipment has forced a change of MS class. The highest available class is reported (see +CGCLASS)</p>
AT+CGEREP?	Read command returns the current <mode> and <bfr> settings, in the format:



+CGEREP - GPRS Event Reporting		SELINT 2
	+CGEREP: <mode>,<bfr>	
AT+CGEREP=?	Test command reports the supported range of values for the +CGEREP command parameters.	
Reference	3GPP TS 27.007	

3.5.4.7.4. GPRS Network Registration Status - +CGREG

+CGREG - GPRS Network Registration Status		SELINT 0 / 1
AT+CGREG[= [<n>]]	<p>Set command controls the presentation of an unsolicited result code +CGREG: (see format below).</p> <p>Parameter: <n> - result code presentation mode 0 - disable network registration unsolicited result code 1 - enable network registration unsolicited result code; if there is a change in the terminal GPRS network registration status, it is issued the unsolicited result code:</p> <p>+CGREG: <stat></p> <p>where: <stat> - registration status 0 - not registered, terminal is not currently searching a new operator to register to 1 - registered, home network 2 - not registered, but terminal is currently searching a new operator to register to 3 - registration denied 4 - unknown 5 - registered, roaming 2 - enable network registration and location information unsolicited result code; if there is a change of the network cell, it is issued the unsolicited result code:</p> <p>+CGREG: <stat>[,<lac>,<ci>]</p> <p>where: <stat> - registration status (see above for values) <lac> - location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal) <ci> - cell ID in hexadecimal format</p> <p>Note: <lac> and <ci> are reported only if <mode>=2 and the mobile is registered on some network cell.</p> <p>Note: issuing AT+CGREG<CR> is the same as issuing the Read command.</p>	



+CGREG - GPRS Network Registration Status		SELINT 0 / 1
	Note: issuing AT+CGREG=<CR> is the same as issuing the command AT+CGREG=0<CR> .	
AT+CGREG?	Read command returns the status of result code presentation mode <n> and the integer <stat> which shows whether the network has currently indicated the registration of the terminal in the format: +CGREG:<n>,<stat>[,<lac>,<ci>] Note: <lac> and <Ci> are reported only if <mode>=2 and the mobile is registered on some network cell.	
AT+CGREG=?	Test command returns supported values for parameter <n>	
Reference	3GPP TS 27.007	

+CGREG - GPRS Network Registration Status		SELINT 2
AT+CGREG=[<n>]	Set command controls the presentation of an unsolicited result code +CGREG: (see format below). Parameter: <n> - result code presentation mode 0 - disable network registration unsolicited result code 1 - enable network registration unsolicited result code; if there is a change in the terminal GPRS network registration status, it is issued the unsolicited result code: +CGREG: <stat> where: <stat> - registration status 0 - not registered, terminal is not currently searching a new operator to register to 1 - registered, home network 2 - not registered, but terminal is currently searching a new operator to register to 3 - registration denied 4 - unknown 5 - registered, roaming 2 - enable network registration and location information unsolicited result code; if there is a change of the network cell, it is issued the unsolicited result code: +CGREG: <stat>[,<lac>,<ci>] where: <stat> - registration status (see above for values) <lac> - location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)	



+CGREG - GPRS Network Registration Status		SELINT 2
	<p><ci> - cell ID in hexadecimal format.</p> <p>Note: <lac> and <Ci> are reported only if <mode>=2 and the mobile is registered on some network cell.</p>	
AT+CGREG?	<p>Read command returns the status of result code presentation mode <n> and the integer <stat> which shows whether the network has currently indicated the registration of the terminal in the format:</p> <p>+CGREG: <n>,<stat>[,<lac>,<ci>]</p> <p>Note: <lac> and <Ci> are reported only if <mode>=2 and the mobile is registered on some network cell.</p>	
AT+CGREG=?	Test command returns supported values for parameter <n>	
Reference	3GPP TS 27.007	

3.5.4.7.5. Define PDP Context - +CGDCONT

+CGDCONT - Define PDP Context		SELINT 0 / 1
<p>AT+CGDCONT[= <cid> [,<PDP_type> [,<APN> [,<PDP_addr> [,<d_comp> [,<h_comp> [,<pd1> [,...[,pdN]]]]]]]]]</p>	<p>Set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, <cid></p> <p>Parameters:</p> <p><cid> - (PDP Context Identifier) numeric parameter which specifies a particular PDP context definition.</p> <p>1..max - where the value of max is returned by the Test command</p> <p><PDP_type> - (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol</p> <p>"IP" - Internet Protocol</p> <p><APN> - (Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network. If the value is empty ("") or omitted, then the subscription value will be requested.</p> <p><PDP_addr> - a string parameter that identifies the terminal in the address space applicable to the PDP. The allocated address may be read using the +CGPADDR command.</p> <p><d_comp> - numeric parameter that controls PDP data compression</p> <p>0 - off (default if value is omitted)</p> <p>1 - on</p> <p><h_comp> - numeric parameter that controls PDP header compression</p> <p>0 - off (default if value is omitted)</p> <p>1 - on</p> <p><pd1>, ..., <pdN> - zero to N string parameters whose meanings are specific to the <PDP_type></p> <p>Note: a special form of the Set command, +CGDCONT=<cid>, causes the values for context number <cid> to become undefined.</p>	



+CGDCONT - Define PDP Context		SELINT 0 / 1
	Note: issuing AT+CGDCONT<CR> is the same as issuing the Read command.	
	Note: issuing AT+CGDCONT=<CR> returns the OK result code.	
AT+CGDCONT?	Read command returns the current settings for each defined context in the format: +CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>[,<pd1>[,...[,<pdN>]]]<CR><LF>[<CR><LF>+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>[,<pd1>[,...[,<pdN>]]]<CR><LF>[...]]	
AT+CGDCONT=?	Test command returns values supported as a compound value	
Example	<pre>AT+CGDCONT=1,"IP","APN","10.10.10.10",0,0 OK AT+CGDCONT? +CGDCONT: 1,"IP","APN","10.10.10.10",0,0 OK AT+CGDCONT=? +CGDCONT: (1-5),"IP",,,(0-1),(0-1) OK</pre>	
Reference	3GPP TS 27.007	

+CGDCONT – Define PDP Context		SELINT 2
AT+CGDCONT= [<cid> [,<PDP_type> [,<APN> [,<PDP_addr> [,<d_comp> [,<h_comp> [,<pd1> [,...[,<pdN>]]]]]]]]]	<p>Set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, <cid></p> <p>Parameters:</p> <p><cid> - (PDP Context Identifier) numeric parameter which specifies a particular PDP context definition.</p> <p>1..max - where the value of max is returned by the Test command</p> <p><PDP_type> - (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol</p> <p>"IP" - Internet Protocol</p> <p>"IPV6" - Internet Protocol version 6</p> <p><APN> - (Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network. If the value is empty ("") or omitted, then the subscription value will be requested.</p> <p><PDP_addr> - a string parameter that identifies the terminal in the address space applicable to the PDP. The allocated address may be read using the +CGPADDR command.</p> <p><d_comp> - numeric parameter that controls PDP data compression</p> <p>0 - off (default if value is omitted)</p> <p>1 - on</p> <p><h_comp> - numeric parameter that controls PDP header compression</p> <p>0 - off (default if value is omitted)</p> <p>1 - on</p> <p><pd1>, ..., <pdN> - zero to N string parameters whose meanings are</p>	



+CGQMIN - Quality Of Service Profile (Minimum Acceptable)		SELINT 0 / 1
	(list of supported <peak>s),(list of supported <mean>s) Note: only the “IP” PDP_Type is currently supported.	
Example	AT+CGQMIN=1,0,0,3,0,0 OK AT+CGQMIN? +CGQMIN: 1,0,0,5,0,0 OK AT+CGQMIN=? +CGQMIN: “IP”,(0-3),(0-4),(0-5),(0-9),(0-19,31) OK	
Reference	3GPP TS 27.007; GSM 03.60	

+CGQMIN - Quality Of Service Profile (Minimum Acceptable)		SELINT 2
AT+CGQMIN= [<cid> [,<precedence> [,<delay> [,<reliability> [,<peak> [,<mean>]]]]]]	Set command allows to specify a minimum acceptable profile which is checked by the terminal against the negotiated profile returned in the Activate PDP Context Accept message. Parameters: <cid> - PDP context identification (see +CGDCONT command). <precedence> - precedence class <delay> - delay class <reliability> - reliability class <peak> - peak throughput class <mean> - mean throughput class If a value is omitted for a particular class then this class is not checked. Note: a special form of the Set command, +CGQMIN=<cid> causes the requested profile for context number <cid> to become undefined.	
AT+CGQMIN?	Read command returns the current settings for each defined context in the format: +CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>[<CR><LF>+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>[...]]	
AT+CGQMIN=?	If no PDP context has been defined, it has no effect and OK result code is returned. Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format: +CGQMIN: <PDP_Type>,(list of supported <precedence>s), (list of supported <delay>s),(list of supported <reliability>s), (list of supported <peak>s),(list of supported <mean>s) Note: only the “IP” PDP_Type is currently supported.	
Example	AT+CGQMIN=1,0,0,3,0,0	



+CGQMIN - Quality Of Service Profile (Minimum Acceptable)		SELINT 2
	<p>OK AT+CGQMIN? +CGQMIN: 1,0,0,5,0,0</p> <p>OK AT+CGQMIN=? +CGQMIN: "IP",(0-3),(0-4),(0-5),(0-9),(0-18,31)</p> <p>OK</p>	
Reference	3GPP TS 27.007; GSM 03.60	

3.5.4.7.7. Quality Of Service Profile - +CGQREQ

+CGQREQ - Quality Of Service Profile (Requested)		SELINT 0 / 1
<p>AT+CGQREQ[= [<cid> [,<precedence> [,<delay> [,<reliability> [,<peak> [,<mean>]]]]]]]</p>	<p>Set command allows to specify a Quality of Service Profile that is used when the terminal sends an Activate PDP Context Request message to the network. It specifies a profile for the context identified by the (local) context identification parameter, <cid>.</p> <p>Parameters: <cid> - PDP context identification (see +CGDCONT command). <precedence> - precedence class <delay> - delay class <reliability> - reliability class <peak> - peak throughput class <mean> - mean throughput class</p> <p>If a value is omitted for a particular class then this class is not checked.</p> <p>Note: a special form of the Set command, +CGQREQ=<cid> causes the requested profile for context number <cid> to become undefined.</p> <p>Note: issuing AT+CGQREQ<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT+CGQREQ=<CR> returns the OK result code.</p>	
AT+CGQREQ?	<p>Read command returns the current settings for each defined context in the format:</p> <p>+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean><CR><LF>[<CR><LF>+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean><CR><LF>[...]]</p> <p>If no PDP context has been defined, it has no effect and OK result code is returned.</p>	
AT+CGQREQ=?	<p>Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format:</p> <p>+CGQREQ: <PDP_Type>,(list of supported <precedence>s), (list of supported <delay>s),(list of supported <reliability>s),</p>	



+CGQREQ - Quality Of Service Profile (Requested)		SELINT 0 / 1
	(list of supported <peak>s),(list of supported <mean>s) Note: only the "IP" PDP_Type is currently supported.	
Example	AT+CGQREQ? +CGQREQ: 1,0,0,3,0,0 OK AT+CGQREQ=1,0,0,3,0,0 OK AT+CGQREQ=? +CGQREQ: "IP",(0-3),(0-4),(0-5),(0-9),(0-19,31) OK	
Reference	3GPP TS 27.007; GSM 03.60	

+CGQREQ - Quality Of Service Profile (Requested)		SELINT 2
AT+CGQREQ= [<cid> [,<precedence> [,<delay> [,<reliability> [,<peak> [,<mean>]]]]]]	Set command allows to specify a Quality of Service Profile that is used when the terminal sends an Activate PDP Context Request message to the network. It specifies a profile for the context identified by the (local) context identification parameter, <cid>. Parameters: <cid> - PDP context identification (see +CGDCONT command). <precedence> - precedence class <delay> - delay class <reliability> - reliability class <peak> - peak throughput class <mean> - mean throughput class If a value is omitted for a particular class then this class is not checked. Note: a special form of the Set command, +CGQREQ=<cid> causes the requested profile for context number <cid> to become undefined.	
AT+CGQREQ?	Read command returns the current settings for each defined context in the format: +CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean> [<CR><LF>+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>[...]] If no PDP context has been defined, it has no effect and OK result code is returned.	
AT+CGQREQ=?	Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format: +CGQREQ: <PDP_Type>,(list of supported <precedence>s),(list of supported <delay>s),(list of supported <reliability>s),(list of supported <peak>s),(list of supported <mean>s) Note: only the "IP" PDP_Type is currently supported.	



+CGQREQ - Quality Of Service Profile (Requested)		SELINT 2
Example	AT+CGQREQ? +CGQREQ: 1,0,0,3,0,0 OK AT+CGQREQ=1,0,0,3,0,0 OK AT+CGQREQ=? +CGQREQ: "IP",(0-3),(0-4),(0-5),(0-9),(0-18,31) OK	
Reference	3GPP TS 27.007; GSM 03.60	

3.5.4.7.8. PDP Context - +CGACT

+CGACT - PDP Context Activate Or Deactivate		SELINT 0 / 1
AT+CGACT[= [<state>,<cid> [<cid>[...]]]]	Execution command is used to activate or deactivate the specified PDP context(s) Parameters: <state> - indicates the state of PDP context activation 0 - deactivated 1 - activated <cid> - a numeric parameter which specifies a particular PDP context definition (see +CGDCONT) Note: if no <cid>s are specified the activation/deactivation form of the command activates/deactivates all defined contexts. Note: issuing AT+CGACT<CR> is the same as issuing the Read command. Note: issuing AT+CGACT=<CR> returns the OK result code.	
AT+CGACT?	Read command returns the current activation state for all the defined PDP contexts in the format: +CGACT: <cid>,<state><CR><LF>[<CR><LF>+CGACT: <cid>,<state><CR><LF>[...]]	
AT+CGACT=?	Test command reports information on the supported PDP context activation states parameters in the format: +CGACT: (0-1)	
Example	AT+CGACT? +CGACT: 1,1 OK AT+CGACT=1,1 OK	
Reference	3GPP TS 27.007	

+CGACT - PDP Context Activate Or Deactivate		SELINT 2
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+CGACT - PDP Context Activate Or Deactivate		SELINT 2
AT+CGACT= [<state>,<cid> [,<cid>[,...]]]	Execution command is used to activate or deactivate the specified PDP context(s) Parameters: <state> - indicates the state of PDP context activation 0 - deactivated 1 - activated <cid> - a numeric parameter which specifies a particular PDP context definition (see +CGDCONT command) Note: if no <cid>s are specified the activation/deactivation form of the command activates/deactivates all defined contexts.	
AT+CGACT?	Read command returns the current activation state for all the defined PDP contexts in the format: +CGACT: <cid>,<state> [<CR><LF> +CGACT: <cid>,<state> [...]]	
AT+CGACT=?	Test command reports information on the supported PDP context activation states parameters in the format: +CGACT: (0,1)	
Example	AT+CGACT=1,1 OK AT+CGACT? +CGACT: 1,1 OK	
Reference	3GPP TS 27.007	

3.5.4.7.9. Show PDP Address - +CGPADDR

+CGPADDR - Show PDP Address		SELINT 0 / 1
AT+CGPADDR= [<cid>,<cid> [,...]]]	Execution command returns a list of PDP addresses for the specified context identifiers in the format: +CGPADDR: <cid>,<PDP_addr> <CR><LF>[<CR><LF> +CGPADDR: <cid>,<PDP_addr> <CR><LF>[...]]	
	Parameters: <cid> - a numeric parameter which specifies a particular PDP context definition (see +CGDCONT command). If no <cid> is specified, the addresses for all defined contexts are returned. <PDP_addr> - a string that identifies the terminal in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the +CGDCONT command when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to by <cid>; if no address is available the <PDP_addr> parameter is not shown	



+CGPADDR - Show PDP Address		SELINT 0 / 1
AT+CGPADDR=?	Test command returns a list of defined <cid>s.	
Example	<pre>AT#GPRS=1 +IP: xxx.yyy.zzz.www OK AT+CGPADDR=1 +CGPADDR: 1,"xxx.yyy.zzz.www" OK AT+CGPADDR=? +CGPADDR: (1) OK</pre>	
Reference	3GPP TS 27.007	

+CGPADDR - Show PDP Address		SELINT 2
AT+CGPADDR=[<cid>[,<cid>[,...]]]	<p>Execution command returns a list of PDP addresses for the specified context identifiers in the format:</p> <p>+CGPADDR: <cid>,<PDP_addr>[<CR><LF>+CGPADDR: <cid>,<PDP_addr>[...]]</p> <p>Parameters:</p> <p><cid> - a numeric parameter which specifies a particular PDP context definition (see +CGDCONT command). If no <cid> is specified, the addresses for all defined contexts are returned.</p> <p><PDP_addr> - a string that identifies the terminal in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the +CGDCONT command when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to by <cid>; if no address is available the empty string ("") is represented as <PDP_addr></p>	
AT+CGPADDR=?	Test command returns a list of defined <cid>s.	
Example	<pre>AT#GPRS=1 +IP: xxx.yyy.zzz.www OK AT+CGPADDR=1 +CGPADDR: 1,"xxx.yyy.zzz.www" OK AT+CGPADDR=? +CGPADDR: (1) OK</pre>	
Reference	3GPP TS 27.007	



3.5.4.7.10. Enter Data State - +CGDATA

+CGDATA - Enter Data State		SELINT 0 / 1
AT+CGDATA= [<L2P>,<cid> [,<cid>[,...]]]	Execution command causes to perform whatever actions are necessary to establish a communication with the network using one or more GPRS PDP types. Parameters: <L2P> - string parameter that indicates the layer 2 protocol to be used "PPP" - PPP Point-to-point protocol <cid> - numeric parameter which specifies a particular PDP context definition (see +CGDCONT command). Note: if parameter <L2P> is omitted, the layer 2 protocol is unspecified	
AT+CGDATA=?	Test command reports information on the supported layer 2 protocols. Note: the representation format of the Test command output is not included in parenthesis	
Example	AT+CGDATA=? +CGDATA: "PPP" OK AT+CGDATA="PPP",1 CONNECT	
Reference	3GPP TS 27.007	

+CGDATA - Enter Data State		SELINT 2
AT+CGDATA= [<L2P>,<cid> [,<cid>[,...]]]	Execution command causes to perform whatever actions are necessary to establish a communication with the network using one or more GPRS PDP types. Parameters: <L2P> - string parameter that indicates the layer 2 protocol to be used "PPP" - PPP Point-to-point protocol <cid> - numeric parameter which specifies a particular PDP context definition (see +CGDCONT command). Note: if parameter <L2P> is omitted, the layer 2 protocol is unspecified	
AT+CGDATA=?	Test command reports information on the supported layer 2 protocols.	
Example	AT+CGDATA=? +CGDATA: ("PPP") OK AT+CGDATA="PPP",1 CONNECT	
Reference	3GPP TS 27.007	

3.5.4.7.11. Modify PDP context - +CGCMOD

+CGCMOD – Modify PDP context		SELINT 2
AT+CGCMOD=[<cid1>	The execution command is used to modify the specified PDP context(s)	



<p>[,<cid2>[,...,<cidN>]]</p>	<p>with respect to QoS profiles.</p> <p>If no <cid> is specified the command modifies all active contexts.</p> <p>Parameters: <cid>: a numeric parameter which specifies a particular PDP context</p>
<p>AT+CGCMOD=?</p>	<p>Test command returns a list of <cid>s associated with active contexts.</p>



3.5.4.8. Commands For Battery Charger

3.5.4.8.1. Battery Charge - +CBC

+CBC - Battery Charge	SELINT 0 / 1
AT+CBC	<p>Execution command returns the current Battery Charge status in the format:</p> <p>+CBC: <bc>,<bl></p> <p>where:</p> <p><bc> - battery charge status</p> <ul style="list-style-type: none"> 0 - ME is powered by the battery 1 - ME has a battery connected, and charger pin is being powered 2 - ME does not have a battery connected 3 - Recognized power fault, calls inhibited <p><bl> - battery charge level, only if <bc>=0</p> <ul style="list-style-type: none"> 0 - battery is exhausted, or ME does not have a battery connected 25 - battery charge remained is estimated to be 25% 50 - battery charge remained is estimated to be 50% 75 - battery charge remained is estimated to be 75% 100 - battery is fully charged. <p>Note: <bc>=1 indicates that the battery charger supply is inserted and the battery is being recharged if necessary with it. Supply for ME operations is taken anyway from VBATT pins.</p> <p>Note: without battery/power connected on VBATT pins or during a power fault the unit is not working, therefore values <bc>=2 and <bc>=3 will never appear.</p> <p>Note: <bl> indicates battery charge level only if battery is connected and charger is not connected</p>
AT+CBC?	Read command has the same effect as Execution command.
AT+CBC=?	<p>Test command returns parameter values supported as a compound value. For compatibility with previous versions, Test command returns</p> <p>+CBC: (0-2),(0-100)</p> <p>An enhanced version of Test command has been defined: AT+CBC=??, that provides the complete range of values for <bc> and <bl>.</p> <p>Note: although +CBC is an execution command, ETSI 07.07 requires the Test command to be defined.</p>
AT+CBC=??	<p>Enhanced test command returns the complete range of values for <bc> and <bl>:</p> <p>+CBC: (0-3),(0-100)</p>
Example	<p>AT+CBC +CBC: 0,75</p>



+CBC - Battery Charge		SELINT 0 / 1
	OK	
Note	The ME does not make differences between being powered by a battery or by a power supply on the VBATT pins, so it is not possible to distinguish between these two cases.	
Reference	3GPP TS 27.007	

+ CBC - Battery Charge		SELINT 2
AT+CBC	<p>Execution command returns the current Battery Charge status in the format:</p> <p>+CBC: <bcs>,<bcl></p> <p>where:</p> <p><bcs> - battery status</p> <ul style="list-style-type: none"> 0 - ME is powered by the battery 1 - ME has a battery connected, and charger pin is being powered 2 - ME does not have a battery connected 3 - Recognized power fault, calls inhibited <p><bcl> - battery charge level, only if <bcs>=0</p> <ul style="list-style-type: none"> 0 - battery is exhausted, or ME does not have a battery connected 25 - battery charge remained is estimated to be 25% 50 - battery charge remained is estimated to be 50% 75 - battery charge remained is estimated to be 75% 100 - battery is fully charged. <p>Note: <bcs>=1 indicates that the battery charger supply is inserted and the battery is being recharged if necessary with it. Supply for ME operations is taken anyway from VBATT pins.</p> <p>Note: without battery/power connected on VBATT pins or during a power fault the unit is not working, therefore values <bcs>=2 and <bcs>=3 will never appear.</p> <p>Note: <bcl> indicates battery charge level only if battery is connected and charger is not connected</p>	
AT+CBC=?	<p>Test command returns parameter values supported as a compound value.</p> <p>+CBC: (0-3),(0-100)</p> <p>Note: although +CBC is an execution command, ETSI 07.07 requires the Test command to be defined.</p>	
Example	<p>AT+CBC +CBC: 0,75 OK</p>	
Note	The ME does not make differences between being powered by a battery or by a power supply on the VBATT pins, so it is not possible to distinguish between these two cases.	
Reference	3GPP TS 27.007	



3.5.5. 3GPP TS 27.005 AT Commands for SMS and CBS

3.5.5.1. General Configuration

3.5.5.1.1. Select Message Service - +CSMS

+CSMS - Select Message Service		SELINT 0 / 1
AT+CSMS [=<service>]	<p>Set command selects messaging service <service>. It returns the types of messages supported by the ME:</p> <p>Parameter: <service> 0 - The syntax of SMS AT commands is compatible with GSM 27.005 (factory default)</p> <p>Set command returns current service setting along with the types of messages supported by the ME:</p> <p>+CSMS: <service>,<mt>,<mo>,<bm></p> <p>where: <mt> - mobile terminated messages support 0 - type not supported 1 - type supported <mo> - mobile originated messages support 0 - type not supported 1 - type supported <bm> - broadcast type messages support 0 - type not supported 1 - type supported</p> <p>Note: If parameter is omitted then the behavior of Set command is the same as Read command.</p>	
AT+CSMS?	<p>Read command reports current service setting along with supported message types in the format:</p> <p>+CSMS: <service>,<mt>,<mo>,<bm></p> <p>where: <service> - messaging service (see above) <mt> - mobile terminated messages support (see above) <mo> - mobile originated messages support (see above) <bm> - broadcast type messages support (see above)</p>	
AT+CSMS=?	<p>Test command reports a list of all services supported by the device. The supported value of the parameter <service>.</p>	
Reference	GSM 27.005; 3GPP TS 23.040; 3GPP TS 23.041	



+CSMS - Select Message Service		SELINT 2
AT+CSMS= <service>	<p>Set command selects messaging service <service>. It returns the types of messages supported by the ME:</p> <p>Parameter: <service> 0 - The syntax of SMS AT commands is compatible with GSM 27.005 (factory default)</p> <p>Set command returns the types of messages supported by the ME:</p> <p>+CSMS: <mt>,<mo>,<bm></p> <p>where: <mt> - mobile terminated messages support 0 - type not supported 1 - type supported <mo> - mobile originated messages support 0 - type not supported 1 - type supported <bm> - broadcast type messages support 0 - type not supported 1 - type supported</p>	
AT+CSMS?	<p>Read command reports current service setting along with supported message types in the format:</p> <p>+CSMS: <service>,<mt>,<mo>,<bm></p> <p>where: <service> - messaging service (see above) <mt> - mobile terminated messages support (see above) <mo> - mobile originated messages support (see above) <bm> - broadcast type messages support (see above)</p>	
AT+CSMS=?	Test command reports the supported value of the parameter <service>.	
Reference	GSM 27.005; 3GPP TS 23.040; 3GPP TS 23.041	

3.5.5.1.2. Preferred Message Storage - +CPMS

+CPMS - Preferred Message Storage		SELINT 0 / 1
AT+CPMS[= <memr> [,<memw> [,<mems>]]]	<p>Set command selects memory storages <memr>, <memw> and <mems> to be used for reading, writing, sending and storing SMs.</p> <p>Parameters: <memr> - memory from which messages are read and deleted "SM" - SIM SMS memory storage "ME" - ME internal storage <memw> - memory to which writing and sending operations are made "SM" - SIM SMS memory storage</p>	



+CPMS - Preferred Message Storage		SELINT 0 / 1
	<p><mems> - memory to which received SMS are preferred to be stored "SM" - SIM SMS memory storage</p> <p>The command returns the memory storage status in the format:</p> <p>+CPMS: <usedr>,<totalr>,<usedw>,<totalw>,<useds>,<totals></p> <p>where</p> <p><usedr> - number of SMS stored into <memr> <totalr> - max number of SMS that <memr> can contain <usedw> - number of SMS stored into <memw> <totalw> max number of SMS that <memw> can contain <useds> - number of SMS stored into <mems> <totals> - max number of SMS that <mems> can contain</p> <p>Note: The only supported memory storage for writing and sending SMS is the SIM internal memory "SM", so <memw>=<mems>="SM".</p> <p>Note: the received class 0 SMS are stored in the "ME" memory regardless the <mems> setting and they are automatically deleted at power off.</p> <p>Note: If all parameters are omitted the behavior of Set command is the same as Read command.</p>	
AT+CPMS?	<p>Read command reports the message storage status in the format:</p> <p>+CPMS: <memr>,<usedr>,<totalr>,<memw>,<usedw>,<totalw>,<mems>,<useds>,<totals></p> <p>where <memr>, <memw> and <mems> are the selected storage memories for reading, writing and storing respectively.</p>	
AT+CPMS=?	<p>Test command reports the supported values for parameters <memr>, <memw> and <mems></p>	
Example	<p>AT+CPMS? +CPMS: "SM",5,10,"SM",5,10,"SM",5,10</p> <p>OK <i>you have 5 out of 10 SMS SIM positions occupied</i></p>	
Reference	GSM 27.005	

+CPMS - Preferred Message Storage		SELINT 2
<p>Note: the behaviour of command +CPMS differs depending on whether or not the improved SMS commands operation mode has been enabled (see #SMSMODE)</p>		
(#SMSMODE=0)		
#	AT+CPMS=	Set command selects memory storages <memr>, <memw> and <mems> to be used for reading, writing, sending and storing SMS.
S	<memr>	



+CPMS - Preferred Message Storage		SELINT 2
M S M O D E = 0	[,<memw> [,<mems>]]	<p>Parameters:</p> <p><memr> - memory from which messages are read and deleted "SM" - SIM SMS memory storage "ME" - ME internal storage</p> <p><memw> - memory to which writing and sending operations are made "SM" - SIM SMS memory storage</p> <p><mems> - memory to which received SMs are preferred to be stored "SM" - SIM SMS memory storage</p> <p>The command returns the memory storage status in the format:</p> <p>+CPMS: <usedr>,<totalr>,<usedw>,<totalw>,<useds>,<totals></p> <p>where:</p> <p><usedr> - number of SMs stored into <memr> <totalr> - max number of SMs that <memr> can contain <usedw> - number of SMs stored into <memw> <totalw> max number of SMs that <memw> can contain <useds> - number of SMs stored into <mems> <totals> - max number of SMs that <mems> can contain</p> <p>Note: The only supported memory storage for writing and sending SMs is the SIM internal memory "SM", so <memw>=<mems>="SM".</p> <p>Note: the received class 0 SMS are stored in the "ME" memory regardless the <mems> setting and they are automatically deleted at power off.</p>
# S M S M O D E = 0	AT+CPMS?	<p>Read command reports the message storage status in the format:</p> <p>+CPMS: <memr>,<usedr>,<totalr>,<memw>,<usedw>,<totalw>,<mems>,<useds>,<totals></p> <p>where <memr>, <memw> and <mems> are the selected storage memories for reading, writing and storing respectively.</p>
# S M S M O D E = 0	AT+CPMS=?	<p>Test command reports the supported values for parameters <memr>, <memw> and <mems></p>
# S M S M	Example	<p>AT+CPMS? +CPMS: "SM",5,10,"SM",5,10,"SM",5,10</p> <p>OK (you have 5 out of 10 SMS SIM positions occupied)</p>
# S M S M	Reference	GSM 27.005
(#SMSMODE=1)		
#	AT+CPMS=	Set command selects memory storages <memr>, <memw> and <mems> to



+CPMS - Preferred Message Storage		SELINT 2
S M S M O D E = 1 # S M S M O D E = 1 # S M S M O D E = 1	<p><memr> [,<memw>] [,<mems>]]</p>	<p>be used for reading, writing, sending and storing SMs.</p> <p>Parameters: <memr> - memory from which messages are read and deleted "SM" - SIM SMS memory storage <memw> - memory to which writing and sending operations are made "SM" - SIM SMS memory storage <mems> - memory to which received SMs are preferred to be stored "SM" - SIM SMS memory storage</p> <p>The command returns the memory storage status in the format:</p> <p>+CPMS: <usedr>,<totalr>,<usedw>,<totalw>,<useds>,<totals></p> <p>where: <usedr> - number of SMs stored into <memr> <totalr> - max number of SMs that <memr> can contain <usedw> - number of SMs stored into <memw> <totalw> max number of SMs that <memw> can contain <useds> - number of SMs stored into <mems> <totals> - max number of SMs that <mems> can contain</p> <p>Note: The only supported memory storage for reading, writing and sending SMs is the SIM internal memory "SM": <memr>=<memw>=<mems>="SM".</p>
	AT+CPMS?	<p>Read command reports the message storage status in the format:</p> <p>+CPMS: <memr>,<usedr>,<totalr>,<memw>,<usedw>,<totalw>,<mems>,<useds>,<totals></p> <p>where <memr>, <memw> and <mems> are the selected storage memories for reading, writing and storing respectively.</p>
	AT+CPMS=?	<p>Test command reports the supported values for parameters <memr>, <memw> and <mems></p>
	Example	<p>AT+CPMS? +CPMS: "SM",5,10,"SM",5,10,"SM",5,10</p> <p>OK (you have 5 out of 10 SMS SIM positions occupied)</p>
	Reference	GSM 27.005



3.5.5.1.3. Message Format - +CMGF

+CMGF - Message Format		SELINT 0 / 1
AT+CMGF[= [<mode>]]	<p>Set command selects the format of messages used with send, list, read and write commands.</p> <p>Parameter: <mode> 0 - PDU mode, as defined in GSM 3.40 and GSM 3.41 (factory default) 1 - text mode</p> <p>Note: issuing AT+CMGF<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT+CMGF=<CR> is the same as issuing the command AT+CMGF=0<CR>.</p>	
AT+CMGF?	Read command reports the current value of the parameter <mode> .	
AT+CMGF=?	Test command reports the supported value of <mode> parameter.	
Reference	GSM 27.005	

+CMGF - Message Format		SELINT 2
AT+CMGF= [<mode>]	<p>Set command selects the format of messages used with send, list, read and write commands.</p> <p>Parameter: <mode> 0 - PDU mode, as defined in GSM 3.40 and GSM 3.41 (factory default) 1 - text mode</p>	
AT+CMGF?	Read command reports the current value of the parameter <mode> .	
AT+CMGF=?	Test command reports the supported value of <mode> parameter.	
Reference	GSM 27.005	

3.5.5.2. Message Configuration

3.5.5.2.1. Service Center Address - +CSCA

+CSCA - Service Center Address		SELINT 0 / 1
AT+CSCA[= [<number> [,<type>]]]	<p>Set command sets the Service Center Address to be used for mobile originated SMS transmissions.</p> <p>Parameter: <number> - SC phone number in the format defined by <type> <type> - the type of number 129 - national numbering scheme 145 - international numbering scheme (contains the character "+")</p> <p>Note: to use the SM service, is mandatory to set a Service Center Address at which</p>	



+CSCA - Service Center Address		SELINT 0 / 1
	<p>service requests will be directed.</p> <p>Note: in Text mode, this setting is used by send and write commands; in PDU mode, setting is used by the same commands, but only when the length of the SMSC address coded into the <pdu> parameter equals zero.</p> <p>Note: the current settings are stored through +CSAS</p> <p>Note: issuing AT+CSCA<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT+CSCA=<CR> causes an OK result code to be issued.</p>	
AT+CSCA?	<p>Read command reports the current value of the SCA in the format:</p> <p>+CSCA: <number>,<type></p> <p>Note: if SCA is not present the device reports an error message.</p>	
AT+ CSCA=?	Test command returns the OK result code.	
Reference	GSM 27.005	

+CSCA -Service Center Address		SELINT 2
AT+CSCA= <number> [,<type>]	<p>Set command sets the Service Center Address to be used for mobile originated SMS transmissions.</p> <p>Parameter: <number> - SC phone number in the format defined by <type> <type> - the type of number 129 - national numbering scheme 145 - international numbering scheme (contains the character "+")</p> <p>Note: to use the SM service, is mandatory to set a Service Center Address at which service requests will be directed.</p> <p>Note: in Text mode, this setting is used by send and write commands; in PDU mode, setting is used by the same commands, but only when the length of the SMSC address coded into the <pdu> parameter equals zero.</p> <p>Note: the current settings are stored through +CSAS</p>	
AT+CSCA?	<p>Read command reports the current value of the SCA in the format:</p> <p>+CSCA: <number>,<type></p> <p>Note: if SCA is not present the device reports an error message.</p>	
AT+CSCA=?	Test command returns the OK result code.	
Reference	GSM 27.005	



3.5.5.2.2. Set Text Mode Parameters - +CSMP

+CSMP - Set Text Mode Parameters		SELINT 0 / 1
AT+CSMP=[<fo> ,<vp> ,<pid> ,<dcs>]]]]	<p>Set command is used to select values for additional parameters for storing and sending SMs when the text mode is used (+CMGF=1)</p> <p>Parameters: <fo> - depending on the command or result code: first octet of 3GPP TS 23.040 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format. <vp> - depending on SMS-SUBMIT <fo> setting: 3GPP TS 23.040 TP-Validity-Period either in integer format (default 167) or in quoted time-string format <pid> - 3GPP TS 23.040 TP-Protocol-Identifier in integer format (default 0). <dcs> - depending on the command or result code: 3GPP TS 23.038 SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme</p> <p>Note: the current settings are stored through +CSAS</p> <p>Note: issuing AT+CSMP<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT+CSMP=<CR> is the same as issuing the command AT+CSMP=0<CR>.</p> <p>Note: <vp>, <pid> and <dcs> default values are loaded from first SIM SMS Parameters profile, if present. If it is not present, then the default values are those above indicated.</p>	
AT+CSMP?	Read command reports the current setting in the format: +CSMP: < fo>,<vp>,<pid>,<dcs>	
AT+CSMP=?	Test command reports the supported range of values for <fo> , <vp> , <pid> and <dcs> parameters.	
Example	<p>Set the parameters for an outgoing message with 24 hours of validity period and default properties:</p> <pre>AT+CSMP=17,167,0,0 OK</pre>	
Reference	GSM 27.005; 3GPP TS 23.040; 3GPP TS 23.038	

+CSMP - Set Text Mode Parameters		SELINT 2
<p>Note: the behaviour of command +CPMS differs depending on whether or not the improved SMS commands operation mode has been enabled (see #SMSMODE)</p>		
(#SMSMODE=0)		
# S	AT+CSMP= [<fo>	Set command is used to select values for additional parameters for storing and sending SMs when the text mode is used (AT+CMGF=1)



+CSMP - Set Text Mode Parameters		SELINT 2
M S M O D E = 0 # S M S M O D E = 0 # S M S M O D E = 0 # S M S M O D E = 0	[,<vp> [,<pid> [,<dcs>]]]]	<p>Parameters:</p> <p><fo> - first octet of 3GPP TS 23.040 SMS-SUBMIT in integer format (default 17, i.e. SMS-SUBMIT with validity period in relative format). As first octet of a PDU has the following bit field description (we'll refer to bit[7]bit[6]bit[5]bit[4]bit[3]bit[2]bit[1]bit[0]):</p> <p>bit[1]bit[0]: Message Type Indicator, 2-bit field describing the message type: all the combinations are converted in [01] (default is [01]); [00] - converted in [01] [01] - SMS-SUBMIT [10] - converted in [01] [11] - converted in [01]</p> <p>bit[2]: Reject Duplicates, 1-bit field: user is not responsible for setting this bit and, if any set, it will have no meaning (default is [0]);</p> <p>bit[4]bit[3]: Validity Period Format, 2-bit field indicating whether or not the Validity Period field is present (default is [10]): [00] - Validity Period field <i>not present</i> [01] - Validity Period field present in <i>enhanced format</i>: it is currently converted in [00], i.e. <i>not present</i> [10] - Validity Period field present in <i>relative format</i>, (i.e. integer type, see below) [11] - Validity Period field present in <i>absolute format</i> (i.e. quoted time-string type); we strongly suggest to not use this format because its implementation is currently under refinement</p> <p>bit[5]: Status Report Request, 1-bit field indicating the MS is requesting a status report (default is [0]); [0] - MS is not requesting a status report [1] - MS is requesting a status report</p> <p>bit[6]: User Data Header Indicator, 1-bit field: user is not responsible for setting this bit and, if any set, it will have no meaning (default is [0]);</p> <p>bit[7]: Reply Path, 1-bit field indicating the request for Reply Path (default is [0]); [0] - Reply Path not requested [1] - Reply Path requested</p> <p><vp> - depending on <fo> setting: if <fo> asks for a Validity Period in <i>relative format</i> <vp> shall be integer type (default 167, i.e. 24 hours); if <fo> asks for a Validity Period in <i>absolute format</i> we strongly suggest to modify it in <i>relative format</i>, because the implementation of this topic is currently under refinement and it is currently not possible to set <vp> with a quoted time string type. (for <i>relative format</i> only): 0..143 - (<vp> + 1) x 5 minutes; 144..167 - 12 hours + ((<vp> - 143) x 30 minutes); 168..196 - (<vp> - 166) x 1 day; 197..255 - (<vp> - 192) x 1 week;</p>



+CSMP - Set Text Mode Parameters		SELINT 2
0		<p><pid> - 3GPP TS 23.040 TP-Protocol-Identifier in integer format (default 0). <dc> - depending on the command or result code: 3GPP TS 23.038 SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme</p> <p>Note: the current settings are stored through +CSAS Note: <vp>, <pid> and <dc> default values are loaded from first SIM <i>SMS Parameters</i> profile, if present. If it is not present, then the default values are those above indicated.</p>
# S M S M O D E = 0	AT+CSMP?	Read command reports the current setting in the format: +CSMP: <fo>,<vp>,<pid>,<dc>
	AT+CSMP=?	Test command returns the OK result code.
	Example	<p><i>Set the parameters for an outgoing message with 24 hours of validity period and default properties:</i></p> <p>AT+CSMP=17,167,0,0 OK</p>
	Reference	GSM 27.005; 3GPP TS 23.040; 3GPP TS 23.038
(#SMSMODE=1)		
# S M S M O D E = 1	AT+CSMP=[<fo> [,<vp> [,<pid> [,<dc>]]]]	<p>Set command is used to select values for additional parameters for storing and sending SMs when the text mode is used (AT+CMGF=1)</p> <p>Parameters: <fo> - first octet of 3GPP TS 23.040 SMS-SUBMIT or SMS-DELIVER, in integer format (default 17, i.e. SMS-SUBMIT with validity period in relative format). As first octet of a PDU has the following bit field description (bit[7]bit[6]bit[5]bit[4]bit[3]bit[2]bit[1]bit[0]): bit[1]bit[0]: Message Type Indicator, 2-bit field describing the message type; [00] - SMS-DELIVER; [01] - SMS-SUBMIT (default) ; bit[2]: Reject Duplicates, 1-bit field: user is not responsible for setting this bit and, if any set, it will have no meaning (default is [0]); bit[4]bit[3]: Validity Period Format, 2-bit field indicating whether or not the Validity Period field is present (default is [10]): [00] - Validity Period field <i>not present</i> [01] - Validity Period field present in <i>enhanced format</i>(i.e. quoted time-string type, see below) [10] - Validity Period field present in <i>relative format</i>, (i.e. integer type, see below) [11] - Validity Period field present in <i>absolute format</i> (i.e. quoted time-string type, see below) bit[5]: Status Report Request, 1-bit field indicating the MS is requesting</p>
# S M S M O D E = 1		



+CSMP - Set Text Mode Parameters		SELINT 2
# S M S M O D E = 1 # S M S M O D E = 1 # S M S M O D E = 1 # S M S M		<p>a status report (default is [0]); [0] - MS is not requesting a status report [1] - MS is requesting a status report</p> <p>bit[6]: User Data Header Indicator, 1-bit field: user is not responsible for setting this bit and, if any set, it will have no meaning (default is [0]);</p> <p>bit[7]: Reply Path, 1-bit field indicating the request for Reply Path (default is [0]); [0] - Reply Path not requested [1] - Reply Path requested</p> <p><vp> - depending on <fo> setting:</p> <ol style="list-style-type: none"> if <fo> asks for a <i>Not Present</i> Validity Period, <vp> can be any type and it will be not considered; if <fo> asks for a Validity Period in <i>relative format</i>, <vp> shall be integer type (default 167, i.e. 24 hours); 0..143 - (<vp> + 1) x 5 minutes 144..167 - 12 hours + ((<vp> - 143) x 30 minutes) 168..196 - (<vp> - 166) x 1 day 197..255 - (<vp> - 192) x 1 week if <fo> asks for a Validity Period in <i>absolute format</i>, <vp> shall be quoted time-string type (see +CCLK); this is the only admitted format if <fo> value defines SMS-DELIVER as message type if <fo> asks for a Validity Period in <i>enhanced format</i>, <vp> shall be the quoted hexadecimal representation (string type) of 7 octets, as follows: <ul style="list-style-type: none"> the first octet is the Validity Period Functionality Indicator, indicating the way in which the other 6 octets are used; let's consider its bit field description: <p>bit[7]: extension bit [0] - there are no more VP Functionality Indicator extension octets to follow</p> <p>bit[6]: Single Shot SM; [0] - the SC is not required to make up to one delivery attempt [1] - the SC is required to make up to one delivery attempt</p> <p>bit[5]bit[4]bit[3]: reserved [000]</p> <p>bit[2]bit[1]bit[0]: Validity Period Format [000] - No Validity Period specified [001] - Validity Period specified as for the relative format. The following octet contains the VP value as described before; all the other octets are 0's. [010] - Validity Period is relative in integer representation. The following octet contains the VP value in the range 0 to 255, representing 0 to 255 seconds; all the other octets</p>



+CSMP - Set Text Mode Parameters		SELINT 2
O D E = 1 # S M S M O D E = 1 # S M S M O D E = 1 # S M S M O D E = 1		<p>are 0's.</p> <p>[011] - Validity Period is relative in semi-octet representation. The following 3 octets contain the relative time in Hours, Minutes and Seconds, giving the length of the validity period counted from when the SMS-SUBMIT is received by the SC; all the other octets are 0's.</p> <p><pid> - 3GPP TS 23.040 TP-Protocol-Identifier in integer format (default 0).</p> <p><dcs> - depending on the command or result code: 3GPP TS 23.038 SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme</p> <p>Note: the current settings are stored through +CSAS</p> <p>Note: we're storing through +CSAS the <vp> value too, but only as integer type, i.e. only in its <i>relative format</i></p> <p>Note: <vp>, <pid> and <dcs> default values are loaded from first SIM SMS Parameters profile, if present. If it is not present, then the default values are those above indicated.</p>
	AT+CSMP?	<p>Read command reports the current setting in the format:</p> <p>+CSMP: <fo>,<vp>,<pid>,<dcs></p> <p>Note: if the Validity Period Format (<fo>'s bit[4]bit[3]) is [00] (i.e. <i>Not Present</i>), <vp> is represented just as a quoted empty string ("").</p>
	AT+CSMP=?	Test command returns the OK result code.
	Example	<p><i>Set the parameters for an outgoing message with 24 hours of validity period and default properties:</i></p> <pre>AT+CSMP=17,167,0,0 OK</pre> <p><i>Set the parameters for an outgoing message with validity period in enhanced format: the <vp> string actually codes 24 hours of validity period.</i></p> <pre>AT+CSMP=9,"01A80000000000" OK</pre> <p><i>Set the parameters for an outgoing message with validity period in enhanced format: the <vp> string actually codes 60 seconds of validity period.</i></p> <pre>AT+CSMP=9,"023C0000000000" OK</pre> <p><i>Set the parameters for an outgoing message with validity period in enhanced format: the <vp> string actually codes 29 hours 85 minutes 30 seconds of validity period.</i></p> <pre>AT+CSMP=9,"03925803000000" OK</pre>



+CSMP - Set Text Mode Parameters		SELINT 2
		OK
Reference	GSM 27.005; 3GPP TS 23.040; 3GPP TS 23.038	

3.5.5.2.3. Show Text Mode Parameters - +CSDH

+CSDH - Show Text Mode Parameters		SELINT 0 / 1
AT+CSDH=[<show>]	<p>Set command controls whether detailed header information is shown in text mode (+CMGF=1) result codes.</p> <p>Parameter: <show> 0 - do not show header values defined in commands +CSCA and +CSMP (<sca>, <tosca>, <fo>, <vp>, <pid> and <dcs>) nor <length>, <toda> or <tooa> in +CMT, +CMGL, +CMGR result codes for SMS-DELIVERs and SMS-SUBMITs in text mode. For SMS-COMMANDs in +CMGR result code do not show <pid>, <mn>, <da>, <toda>, <length> or <cdata> 1 - show the values in result codes</p> <p>Note: issuing AT+CSDH<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT+CSDH=<CR> is the same as issuing the command AT+CSDH=0<CR>.</p>	
AT+CSDH?	<p>Read command reports the current setting in the format:</p> <p>+CSDH: <show></p>	
AT+CSDH=?	<p>Test command reports the supported range of values for parameter <show></p>	
Reference	GSM 27.005	

+CSDH - Show Text Mode Parameters		SELINT 2
AT+CSDH=[<show>]	<p>Set command controls whether detailed header information is shown in text mode (AT+CMGF=1) result codes.</p> <p>Parameter: <show> 0 - do not show header values defined in commands +CSCA and +CSMP (<sca>, <tosca>, <fo>, <vp>, <pid> and <dcs>) nor <length>, <toda> or <tooa> in +CMT, +CMGL, +CMGR result codes for SMS-DELIVERs and SMS-SUBMITs in text mode. For SMS-COMMANDs in +CMGR result code do not show <pid>, <mn>, <da>, <toda>, <length> or <cdata> 1 - show the values in result codes</p>	
AT+CSDH?	<p>Read command reports the current setting in the format:</p> <p>+CSDH: <show></p>	
AT+CSDH=?	<p>Test command reports the supported range of values for parameter <show></p>	
Reference	GSM 27.005	



3.5.5.2.4. Select Cell Broadcast - +CSCB

+CSCB -Select Cell Broadcast Message Types		SELINT 0 / 1
AT+CSCB=[<mode> [,<mids> [,<dcss>]]]	<p>Set command selects which types of Cell Broadcast Messages are to be received by the device.</p> <p>Parameter: <mode> 0 - the message types defined by <mids> and <dcss> are accepted (factory default) 1 - the message types defined by <mids> and <dcss> are rejected <mids> - Message Identifiers, string type: all different possible combinations of the CBM message identifiers; default is empty string (“”). <dcss> - Data Coding Schemes, string type: all different possible combinations of CBM data coding schemes; default is empty string (“”).</p> <p>Note: the current settings are stored through +CSAS</p> <p>Note: issuing AT+CSCB<CR> is the same as issuing the Read command</p> <p>Note: issuing AT+CSCB=<CR> is the same as issuing the command AT+CSCB=0<CR>.</p>	
AT+CSCB?	Read command reports the current value of parameters <mode> , <mids> and <dcss> .	
AT+CSCB=?	Test command returns the range of values for parameter <mode> .	
Example	<p>AT+CSCB? +CSCB: 1,"", ""</p> <p>OK AT+CSCB=0,"0,1,300-315,450","0-3" OK</p> <p style="text-align: right;"><i>(all CBMs are accepted, none is rejected)</i></p>	
Reference	GSM 27.005, 3GPP TS 23.041, 3GPP TS 23.038.	

+CSCB -Select Cell Broadcast Message Types		SELINT 2
AT+CSCB=[<mode>[,<mids> [,<dcss>]]]	<p>Set command selects which types of Cell Broadcast Messages are to be received by the device.</p> <p>Parameters: <mode> 0 - the message types defined by <mids> and <dcss> are accepted (factory default) 1 - the message types defined by <mids> and <dcss> are rejected <mids> - Message Identifiers, string type: all different possible combinations of the CBM message identifiers; default is empty string (“”). <dcss> - Data Coding Schemes, string type: all different possible combinations of CBM data coding schemes; default is empty string (“”).</p>	



+CSCB -Select Cell Broadcast Message Types		SELINT 2
	Note: the current settings are stored through +CSAS	
AT+CSCB?	Read command reports the current value of parameters <mode> , <mids> and <dcss> .	
AT+CSCB=?	Test command returns the range of values for parameter <mode> .	
Example	AT+CSCB? +CSCB: 1,"", "" OK <i>(all CBMs are accepted, none is rejected)</i> AT+CSCB=0,"0,1,300-315,450","0-3" OK	
Reference	GSM 27.005, 3GPP TS 23.041, 3GPP TS 23.038.	

3.5.5.2.5. Save Settings - +CSAS

+CSAS - Save Settings		SELINT 0 / 1
AT+CSAS [=<profile>]	Execution command saves settings which have been made by the +CSCA , +CSMP and +CSCB commands in local non volatile memory. Parameter: <profile> 0 - it saves the settings to NVM (factory default). 1..n - SIM profile number; the value of n depends on the SIM and its max is 3. Note: certain settings may not be supported by the SIM and therefore they are always saved to NVM, regardless the value of <profile> . Note: If parameter is omitted the settings are saved in the non volatile memory. Note: +CSCB <mids> (Message Identifiers) parameter can be saved to SIM only if the “Cell broadcast message identifier selection” file is present on the SIM itself. This file, if present, has storage for only a single set of data. Therefore, it is not possible to save different <mids> in different SIM profiles; <mids> value, once changed and saved, will be the same for all SIM profiles.	
AT+CSAS?	Read command has the same effect as Execution command with parameter omitted.	
AT+CSAS=?	Test command returns the possible range of values for the parameter <profile> .	
Reference	GSM 27.005	

+CSAS - Save Settings		SELINT 2
AT+CSAS [=<profile>]	Execution command saves settings which have been made by the +CSCA , +CSMP and +CSCB commands in local non volatile memory. Parameter: <profile> 0 - it saves the settings to NVM (factory default). 1..n - SIM profile number; the value of n depends on the SIM and its max is 3. Note: certain settings may not be supported by the SIM and therefore they are	



+CSAS - Save Settings		SELINT 2
	<p>always saved to NVM, regardless the value of <profile>.</p> <p>Note: If parameter is omitted the settings are saved in the non volatile memory.</p> <p>Note: +CSCB <mids> (Message Identifiers) parameter can be saved to SIM only if the “Cell broadcast message identifier selection” file is present on the SIM itself. This file, if present, has storage for only a single set of data. Therefore, it is not possible to save different <mids> in different SIM profiles; <mids> value, once changed and saved, will be the same for all SIM profiles.</p>	
AT+CSAS=?	Test command returns the possible range of values for the parameter <profile> .	
Reference	GSM 27.005	

3.5.5.2.6. Restore Settings - +CRES

+CRES - Restore Settings		SELINT 0 / 1
AT+CRES [= <profile>]	<p>Execution command restores message service settings saved by +CSCA command from either NVM or SIM.</p> <p>Parameter: <profile> 0 - it restores message service settings from NVM. 1..n - it restores message service settings from SIM. The value of n depends on the SIM and its max is 3.</p> <p>Note: certain settings may not be supported by the SIM and therefore they are always restored from NVM, regardless the value of <profile>.</p> <p>Note: If parameter is omitted the command restores message service settings from NVM.</p>	
AT+CRES?	Read command has the same effect as Execution command with parameter omitted.	
AT+CRES=?	Test command returns the possible range of values for the parameter <profile> .	
Reference	GSM 27.005	

+CRES - Restore Settings		SELINT 2
AT+CRES [= <profile>]	<p>Execution command restores message service settings saved by +CSAS command from either NVM or SIM.</p> <p>Parameter: <profile> 0 - it restores message service settings from NVM. 1..n - it restores message service settings from SIM. The value of n depends on the SIM and its max is 3.</p> <p>Note: certain settings may not be supported by the SIM and therefore they are always restored from NVM, regardless the value of <profile>.</p>	



+CRES - Restore Settings		SELINT 2
	Note: If parameter is omitted the command restores message service settings from NVM.	
AT+CRES=?	Test command returns the possible range of values for the parameter <profile>.	
Reference	GSM 27.005	

3.5.5.3. Message Receiving And Reading

3.5.5.3.1. New Message Indications - +CNMI

+CNMI - New Message Indications To Terminal Equipment		SELINT 0 / 1
AT+CNMI=[<mode>[,<mt> [,<bm>[,<ds> [,<bfr>]]]]]]	<p>Set command selects the behaviour of the device on how the receiving of new messages from the network is indicated to the DTE.</p> <p>Parameter:</p> <p><mode> - unsolicited result codes buffering option</p> <ul style="list-style-type: none"> 0 - Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications. 1 - Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved, otherwise forward them directly to the TE. 2 - Buffer unsolicited result codes in the TA in case the DTE is busy and flush them to the TE after reservation. Otherwise forward them directly to the TE. 3 - if <mt> is set to 1 an indication via 100 ms break is issued when a SMS is received while the module is in GPRS online mode. It enables the hardware ring line for 1 s. too. <p><mt> - result code indication reporting for SMS-DELIVER</p> <ul style="list-style-type: none"> 0 - No SMS-DELIVER indications are routed to the TE. 1 - If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using the following unsolicited result code: +CMTI: <memr>,<index> where: <memr> - memory storage where the new message is stored "SM" "ME" <index> - location on the memory where SM is stored. 2 - SMS-DELIVERs (except class 2 messages and messages in the message waiting indication group) are routed directly to the TE using the following unsolicited result code: <p style="text-align: center;">(PDU Mode)</p> <p>+CMT: ,<length><CR><LF><pdu> where: <length> - PDU length <pdu> - PDU message</p>	



+CNMI - New Message Indications To Terminal Equipment	SELINT 0 / 1
	<p><ds> - SMS-STATUS-REPORTs reporting option 0 - status report receiving is not reported to the DTE 1 - the status report is stored and is also sent to the DTE with the following unsolicited result code:</p> <p style="text-align: center;">(PDU Mode)</p> <p>+CDS: <length><CR><LF><PDU> where: <length> - PDU length <PDU> - message PDU</p> <p style="text-align: center;">(TEXT Mode)</p> <p>+CDS: <fo>,<mr>,,,<scts>,<dt>,<st> where: <fo> - first octet of the message PDU <mr> - message reference number <scts> - arrival time of the message to the SC <dt> - sending time of the message <st> - message status as coded in the PDU</p> <p>2 - if a status report is stored, then the following unsolicited result code is sent: +CDSI: <memr>,<index> where: <memr> - memory storage where the new message is stored "SM" <index> - location on the memory where SM is stored</p> <p><bfr> - buffered result codes handling method: 0 - TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode>=1..3 is entered (OK response shall be given before flushing the codes) 1 - TA buffer of unsolicited result codes defined within this command is cleared when <mode>=1..3 is entered.</p> <p>Note: issuing AT+CNMI<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT+CNMI=<CR> is the same as issuing the command AT+CNMI=0<CR>.</p>
AT+CNMI?	<p>Read command returns the current parameter settings for +CNMI command in the form:</p> <p>+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr></p>
AT+CNMI=?	<p>Test command reports the supported range of values for the +CNMI command parameters.</p> <p>For compatibility with previous versions, Test command returns:</p>



+CNMI - New Message Indications To Terminal Equipment		SELINT 0 / 1
	+CNMI: (0-2),(0-3),(0,2),(0-2),(0,1)	
	An enhanced version of Test command has been defined: AT+CNMI=??, that provides the complete range of values for parameter <mode>.	
AT+CNMI=??	Enhanced test command reports the supported range of values for all the +CNMI command parameters.	
Reference	GSM 27.005	
Note	DTR signal is ignored, hence the indication is sent even if the DTE is inactive (DTR signal is Low). In this case the unsolicited result code may be lost so if MODULE remains active while DTE is not, at DTE startup is suggested to check whether new messages have reached the device meanwhile with command AT+CMGL=0 that lists the new messages received.	

+CNMI - New Message Indications To Terminal Equipment		SELINT 2
<i>Note: the behaviour of command +CNMI differs depending on whether or not the improved SMS commands operation mode has been enabled (see #SMSMODE)</i>		
(#SMSMODE=0)		
# S M S M O D E = 0	AT+CNMI=[<mode>[,<mt> [,<bm>[,<ds> [,<bfr>]]]]	Set command selects the behaviour of the device on how the receiving of new messages from the network is indicated to the DTE . Parameter: <mode> - unsolicited result codes buffering option 0 - Buffer unsolicited result codes in the TA . If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications. 1 - Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved, otherwise forward them directly to the TE . 2 - Buffer unsolicited result codes in the TA in case the DTE is busy and flush them to the TE after reservation. Otherwise forward them directly to the TE . 3 - if <mt> is set to 1 an indication via 100 ms break is issued when a SMS is received while the module is in GPRS online mode. It enables the hardware ring line for 1 s. too. <mt> - result code indication reporting for SMS-DELIVER 0 - No SMS-DELIVER indications are routed to the TE . 1 - If SMS-DELIVER is stored into ME/TA , indication of the memory location is routed to the TE using the following unsolicited result code: +CMTI: <mems>,<index> where: <mems> - memory storage where the new message is stored (see +CPMS) <index> - location on the memory where SMS is stored. 2 - SMS-DELIVERs (except class 2 messages and messages in the “store” message waiting indication group) are routed directly to the TE using
# S M S M O D E = 0	# S	



+CNMI - New Message Indications To Terminal Equipment		SELINT 2
M S M O D E = 0 # S M S M O D E = 0 # S M S M O D E = 0 # S M S M O D E = 0		<p>the following unsolicited result code:</p> <p style="text-align: center;">(PDU Mode)</p> <p>+CMT: <alpha>,<length><CR><LF><pdu></p> <p>where:</p> <ul style="list-style-type: none"> <alpha> - alphanumeric representation of originator/destination number corresponding to the entry found in MT phonebook; used character set should be the one selected with command +CSCS. <length> - PDU length <pdu> - PDU message <p style="text-align: center;">(TEXT Mode)</p> <p>+CMT:<oa>,<alpha>,<scts>[,<toa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data> (the information written in italics will be present depending on +CSDH last setting)</p> <p>where:</p> <ul style="list-style-type: none"> <oa> - originating address, string type converted in the currently selected character set (see +CSCS) <alpha> - alphanumeric representation of <oa>; used character set should be the one selected with command +CSCS. <scts> - arrival time of the message to the SC <toa>, <tosca> - type of number <oa> or <sca>: 129 - number in national format 145 - number in international format (contains the "+") <fo> - first octet of 3GPP TS 23.040 <pid> - Protocol Identifier <dcs> - Data Coding Scheme <sca> - Service Centre address, string type, converted in the currently selected character set (see +CSCS) <length> - text length <data> - TP-User-Data <ul style="list-style-type: none"> • If <dcs> indicates that GSM03.38 default alphabet is used and <fo> indicates that GSM03.40 TP-User-Data-Header-Indication is not set (bit 6 of <fo> is 0), each character of GSM alphabet will be converted into current TE character set (see +CSCS) • If <dcs> indicates that 8-bit or UCS2 data coding scheme is used or <fo> indicates that GSM03.40 TP-User-Data-Header-Indication is set (bit 6 of <fo> is 1), each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41) <p>Class 2 messages and messages in the “store” message waiting indication group result in indication as defined in <mt>=1.</p> <p>3 - Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in <mt>=2. Messages of other data coding schemes</p>



+CNMI - New Message Indications To Terminal Equipment		SELINT 2
0 # S M S M O D E = 0 # S M S M O D E = 0 # S M S M O D E = 0 # S M	<p>result in indication as defined in <mt>=1. <bm> - broadcast reporting option 0 - Cell Broadcast Messages are not sent to the DTE 2 - New Cell Broadcast Messages are sent to the DTE with the unsolicited result code:</p> <p style="text-align: center;">(PDU Mode)</p> <p>+CBM: <PDU> where: <PDU> - message PDU</p> <p style="text-align: center;">(TEXT Mode)</p> <p>+CBM:<sn>,<mid>,<dcs>,<pag>,<pags><CR><LF><data> where: <sn> - message serial number <mid> - message ID <dcs> - Data Coding Scheme <pag> - page number <pags> - total number of pages of the message <data> - CBM Content of Message</p> <ul style="list-style-type: none"> • If <dcs> indicates that GSM03.38 default alphabet is used , each character of GSM alphabet will be converted into current TE character set (see +CSCS) • If <dcs> indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41) <p><ds> - SMS-STATUS-REPORTs reporting option 0 - status report receiving is not reported to the DTE 1 - the status report is stored and is also sent to the DTE with the following unsolicited result code:</p> <p style="text-align: center;">(PDU Mode)</p> <p>+CDS: <length><CR><LF><PDU> where: <length> - PDU length <PDU> - message PDU</p> <p style="text-align: center;">(TEXT Mode)</p> <p>+CDS: <fo>,<mr>,,,<scts>,<dt>,<st> where: <fo> - first octet of the message PDU <mr> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format <scts> - arrival time of the message to the SC</p>	



+CNMI - New Message Indications To Terminal Equipment		SELINT 2
S M O D E = 0		<p><dt> - sending time of the message <st> - message status as coded in the PDU</p> <p>2 - if a status report is stored, then the following unsolicited result code is sent: +CDSI: <memr>,<index></p> <p>where: <memr> - memory storage where the new message is stored "SM" <index> - location on the memory where SMS is stored</p> <p><bfr> - buffered result codes handling method: 0 - TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode>=1..3 is entered (OK response shall be given before flushing the codes) 1 - TA buffer of unsolicited result codes defined within this command is cleared when <mode>=1..3 is entered.</p>
# S M S M O D E = 0	AT+CNMI?	<p>Read command returns the current parameter settings for +CNMI command in the form:</p> <p>+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr></p>
# S M S M O D E = 0	AT+CNMI=?	Test command reports the supported range of values for the +CNMI command parameters.
	Reference	GSM 27.005
	Note	DTR signal is ignored, hence the indication is sent even if the DTE is inactive (DTR signal is Low). In this case the unsolicited result code may be lost so if MODULE remains active while DTE is not, at DTE startup is suggested to check whether new messages have reached the device meanwhile with command AT+CMGL=0 that lists the new messages received.
(#SMSMODE=1)		
# S M S M O D E	AT+CNMI=[<mode>[,<mt> [,<bm>[,<ds> [,<bfr>]]]]]	<p>Set command selects the behaviour of the device on how the receiving of new messages from the network is indicated to the DTE.</p> <p>Parameter: <mode> - unsolicited result codes buffering option 0 - Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications</p>



+CNMI - New Message Indications To Terminal Equipment		SELINT 2
S M S M O D E = 1 # S M S M O D E = 1 # S M S M O D E = 1 # S M S M O D E		<p>145 - number in international format (contains the "+")</p> <p><fo> - first octet of 3GPP TS 23.040</p> <p><pid> - Protocol Identifier</p> <p><dcs> - Data Coding Scheme</p> <p><sca> - Service Centre address, string type, converted in the currently selected character set (see +CSCS)</p> <p><length> - text length</p> <p><data> - TP-User-Data</p> <ul style="list-style-type: none"> • If <dcs> indicates that GSM03.38 default alphabet is used and <fo> indicates that GSM03.40 TP-User-Data-Header-Indication is not set (bit 6 of <fo> is 0), each character of GSM alphabet will be converted into current TE character set (see +CSCS) • If <dcs> indicates that 8-bit or UCS2 data coding scheme is used or <fo> indicates that GSM03.40 TP-User-Data-Header-Indication is set (bit 6 of <fo> is 1), each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41) <p>Class 2 messages and messages in the “store” message waiting indication group result in indication as defined in <mt>=1.</p> <p>3 - Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in <mt>=2. Messages of other data coding schemes result in indication as defined in <mt>=1.</p> <p><bm> - broadcast reporting option</p> <p>0 - Cell Broadcast Messages are not sent to the DTE</p> <p>2 - New Cell Broadcast Messages are sent to the DTE with the unsolicited result code:</p> <p style="text-align: center;">(PDU Mode)</p> <p>+CBM: <length><CR><LF><PDU></p> <p>where:</p> <p><length> - PDU length</p> <p><PDU> - message PDU</p> <p style="text-align: center;">(TEXT Mode)</p> <p>+CBM:<sn>,<mid>,<dcs>,<pag>,<pags><CR><LF><data></p> <p>where:</p> <p><sn> - message serial number</p> <p><mid> - message ID</p> <p><dcs> - Data Coding Scheme</p> <p><pag> - page number</p> <p><pags> - total number of pages of the message</p> <p><data> - CBM Content of Message</p> <ul style="list-style-type: none"> • If <dcs> indicates that GSM03.38 default alphabet is used , each character of GSM alphabet will be converted into current TE character set (see +CSCS)



+CNMI - New Message Indications To Terminal Equipment		SELINT 2
= 1 # S M S M O D E = 0 # S M S M O D E = 1 # S M S M O D E = 1 #	<p>• If <dc> indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41)</p> <p><ds> - SMS-STATUS-REPORTs reporting option 0 - status report receiving is not reported to the DTE and is not stored 1 - the status report is sent to the DTE with the following unsolicited result code:</p> <p style="text-align: center;">(PDU Mode)</p> <p>+CDS: <length><CR><LF><PDU> where: <length> - PDU length <PDU> - message PDU</p> <p style="text-align: center;">(TEXT Mode)</p> <p>+CDS: <fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st> where: <fo> - first octet of the message PDU <mr> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format <ra> - recipient address, string type, represented in the currently selected character set (see +CSCS) <tora> - type of number <ra> <scts> - arrival time of the message to the SC <dt> - sending time of the message <st> - message status as coded in the PDU</p> <p>2 - if a status report is stored, then the following unsolicited result code is sent: +CDSI: <memr>,<index></p> <p>where: <memr> - memory storage where the new message is stored "SM" <index> - location on the memory where SMS is stored</p> <p><bfr> - buffered result codes handling method: 0 - TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode>=1..3 is entered (OK response shall be given before flushing the codes) 1 - TA buffer of unsolicited result codes defined within this command is cleared when <mode>=1..3 is entered.</p>	
#	AT+CNMI?	Read command returns the current parameter settings for +CNMI command in the form:



+CNMI - New Message Indications To Terminal Equipment		SELINT 2																					
S M S M O D E = 1		+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>																					
	AT+CNMI=?	Test command reports the supported range of values for the +CNMI command parameters.																					
	Reference	GSM 27.005																					
# S M S M O D E = 1	Note	DTR signal is ignored, hence the indication is sent even if the DTE is inactive (DTR signal is Low). In this case the unsolicited result code may be lost so if MODULE remains active while DTE is not, at DTE startup is suggested to check whether new messages have reached the device meanwhile with command AT+CMGL=0 that lists the new messages received.																					
	Note	<p>It has been necessary to take the following decisions to get over any incoherence problem in a multiplexed environment (see +CMUX), due to the possibility to have contemporaneous different settings of parameter <mt> in different sessions:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; text-align: center;"> Message Class or Indication group, as in the DCS <mt> settings in different sessions </td> <td style="width: 33%; text-align: center;"> SM Class is No Class OR SM Class is 0 or 1 or 3 OR SM is an Indication with group "Discard" </td> <td style="width: 33%; text-align: center;"> SM Class is 3 </td> </tr> <tr> <td style="text-align: center;"> <mt>=2 for session "0" AND <mt>=anyvalue for other session(s) </td> <td colspan="2" style="text-align: center;"> URC is shown only on session "0" </td> </tr> <tr> <td style="text-align: center;"> <mt>=3 for session "0" AND <mt>=0 or 1 for other session(s) </td> <td colspan="2" style="text-align: center;"> URC is shown only on session "0" </td> </tr> </table> <p>The URC behaviour in all the other cases follows rules reported on below table concerning <mt> parameter. Storing and acknowledgement on the other hand follow rules specified on instance 0.</p>	Message Class or Indication group, as in the DCS <mt> settings in different sessions	SM Class is No Class OR SM Class is 0 or 1 or 3 OR SM is an Indication with group " Discard "	SM Class is 3	<mt>=2 for session "0" AND <mt>=anyvalue for other session(s)	URC is shown only on session "0"		<mt>=3 for session "0" AND <mt>=0 or 1 for other session(s)	URC is shown only on session "0"													
Message Class or Indication group, as in the DCS <mt> settings in different sessions	SM Class is No Class OR SM Class is 0 or 1 or 3 OR SM is an Indication with group " Discard "	SM Class is 3																					
<mt>=2 for session "0" AND <mt>=anyvalue for other session(s)	URC is shown only on session "0"																						
<mt>=3 for session "0" AND <mt>=0 or 1 for other session(s)	URC is shown only on session "0"																						
# S M S M O D E = 1	Note	<p>The following table clarifies which URC is shown and if the DELIVER SM is stored, depending on the <mt> parameter value and the SM class.</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="2"></th> <th colspan="5">SM CLASS</th> </tr> <tr> <th colspan="2"></th> <th>0 / msg waiting discard</th> <th>1 / no class</th> <th>2</th> <th>3</th> <th>msg waiting store</th> </tr> </thead> <tbody> <tr> <th><mt></th> <th>0</th> <td>Store in <mems></td> <td>Store in <mems></td> <td>Store in SIM</td> <td>Store in <mems></td> <td>Store in <mems></td> </tr> </tbody> </table>			SM CLASS							0 / msg waiting discard	1 / no class	2	3	msg waiting store	<mt>	0	Store in <mems>	Store in <mems>	Store in SIM	Store in <mems>	Store in <mems>
			SM CLASS																				
		0 / msg waiting discard	1 / no class	2	3	msg waiting store																	
<mt>	0	Store in <mems>	Store in <mems>	Store in SIM	Store in <mems>	Store in <mems>																	



+CNMI - New Message Indications To Terminal Equipment						SELINT 2									
	1	Store in <mems> - Send ind +CMTI	Store in <mems> - Send ind +CMTI	Store in SIM - Send ind +CMTI	Store in <mems> - Send ind +CMTI	Store in <mems> - Send ind +CMTI									
	2	Route msg to TE: +CMT ³⁹	Route msg to TE: +CMT ^l	Store in SIM - Send ind +CMTI	Route msg to TE: +CMT ^l	Store in <mems> - Send ind +CMTI									
	3	Store in <mems> - Send ind +CMTI	Store in <mems> - Send ind +CMTI	Store in SIM - Send ind +CMTI	Route msg to TE: +CMT ^l	Store in <mems> - Send ind +CMTI									
		where <mems> is the memory where the received messages are stored (see +CPMS)													
Note	<p>It has been necessary to take the following decision to get over an incoherence problem in a multiplexed environment (see +CMUX), due to the possibility to have contemporaneous different settings of parameter <ds> in different sessions:</p> <table border="1"> <thead> <tr> <th colspan="2"><ds> settings in different sessions</th> <th></th> </tr> </thead> <tbody> <tr> <td><ds>=1 for session "0" AND <ds>=2 for at least one of the other sessions</td> <td></td> <td>URC +CDS is shown only on session "0" and no status report is stored on SIM</td> </tr> <tr> <td><ds>=0 for session "0" AND <ds>=2 for at least one of the other sessions</td> <td></td> <td>no URC is shown on any session and no status report is stored on SIM</td> </tr> </tbody> </table>						<ds> settings in different sessions			<ds>=1 for session "0" AND <ds>=2 for at least one of the other sessions		URC +CDS is shown only on session "0" and no status report is stored on SIM	<ds>=0 for session "0" AND <ds>=2 for at least one of the other sessions		no URC is shown on any session and no status report is stored on SIM
<ds> settings in different sessions															
<ds>=1 for session "0" AND <ds>=2 for at least one of the other sessions		URC +CDS is shown only on session "0" and no status report is stored on SIM													
<ds>=0 for session "0" AND <ds>=2 for at least one of the other sessions		no URC is shown on any session and no status report is stored on SIM													

3.5.5.3.2. List Messages - +CMGL

+CMGL - List Messages		SELINT 0 / 1
AT+CMGL [=<stat>]	<p>Execution command reports the list of all the messages with status value <stat> stored into <memr> message storage (<memr> is the message storage for read and delete SMs as last settings of command +CPMS).</p> <p>The parameter type and the command output depend on the last settings of command +CMGF (message format to be used)</p> <p style="text-align: center;">(PDU Mode)</p> <p>Parameter:</p>	

³⁹ The SM is not stored!



+CMGL - List Messages	SELINT 0 / 1
<p><stat> 0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent 4 - all messages.</p> <p>Each message to be listed is represented in the format:</p> <p>+CMGL: <index>,<stat>,<length><CR><LF><pdu></p> <p>where <index> - message position in the memory storage list. <stat> - status of the message <length> - length of the PDU in bytes <pdu> - message in PDU format according to GSM 3.40</p> <p style="text-align: center;">(Text Mode)</p> <p>Parameter: <stat> "REC UNREAD" - new message "REC READ" - read message "STO UNSENT" - stored message not yet sent "STO SENT" - stored message already sent "ALL" - all messages.</p> <p>Each message to be listed is represented in the format (the information written in italics will be present depending on +CSDH last setting):</p> <p>+CMGL: <index>,<stat>,<oa/da>,,[,<toa/toda>,<length>] <CR><LF> <data></p> <p>where <index> - message position in the storage <stat> - message status <oa/da> - originator/destination address, string type, represented in the currently selected character set (see +CSCS) <toa/toda> - type of number <oa/da> 129 - number in national format 145 - number in international format (contains the "+") <length> - text length <data> - TP-User-Data</p> <p>Each message delivery confirm is represented in the format:</p> <p>+CMGL: <index>,<stat>,<fo>,<mr>,,,<scts>,<dt>,<st></p>	



+CMGL - List Messages		SELINT 0 / 1
	<p>where</p> <p><index> - message position in the storage</p> <p><stat> - message status</p> <p><fo> - first octet of the message PDU</p> <p><mr> - message reference number</p> <p><scts> - arrival time of the message to the SC</p> <p><dt> - sending time of the message</p> <p><st> - message status as coded in the PDU</p> <p>Note: OK result code is sent at the end of the listing.</p> <p>Note: If parameter is omitted the command returns the list of sms with “REC UNREAD” status.</p>	
AT+CMGL?	Read command has the same effect as Execution command with parameter omitted	
AT+CMGL=?	Test command returns a list of supported <stat>s	
Note	If Text Mode (+CMGF=1) the Test command output is not included in parenthesis	
	<p>AT+CMGL=?</p> <p>+CMGL: "REC UNREAD","REC READ","STO UNSENT", "STO SENT","ALL"</p>	
Note	The improving command @CMGL has been defined	
Reference	GSM 27.005	

+CMGL - List Messages		SELINT 2
<p><i>Note: the behaviour of command +CMGL differs depending on whether or not the improved SMS commands operation mode has been enabled (see #SMSMODE)</i></p>		
(#SMSMODE=0)		
<p># S M S M O D E = 0</p> <p># S M S</p>	<p>AT+CMGL [=<stat>]</p>	<p>Execution command reports the list of all the messages with status value <stat> stored into <memr> message storage (<memr> is the message storage for read and delete SMs as last settings of command +CPMS).</p> <p>The parameter type and the command output depend on the last settings of command +CMGF (message format to be used)</p> <p style="text-align: center;">(PDU Mode)</p> <p>Parameter:</p> <p><stat></p> <p>0 - new message</p> <p>1 - read message</p> <p>2 - stored message not yet sent</p> <p>3 - stored message already sent</p> <p>4 - all messages.</p> <p>If there is at least one message to be listed the representation format is:</p>



+CMGL - List Messages	SELINT 2
M O D E = 0 # S M S M O D E = 0 # S M S M O D E = 0 # S M S M O D E = 0	<p>+CMGL: <index>,<stat>,<alpha>,<length><CR><LF><pdu> [<CR><LF> +CMGL: <index>,<stat>,<alpha>,<length><CR><LF><pdu>[...]]</p> <p>where: <index> - message position in the memory storage list. <stat> - status of the message <alpha> - string type alphanumeric representation of <da> or <oa>, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS. <length> - length of the PDU in bytes <pdu> - message in PDU format according to GSM 3.40</p> <p style="text-align: center;">(Text Mode)</p> <p>Parameter: <stat> "REC UNREAD" - new message "REC READ" - read message "STO UNSENT" - stored message not yet sent "STO SENT" - stored message already sent "ALL" - all messages.</p> <p>The representation format for stored messages (either sent or unsent) or received messages (either read or unread, not message delivery confirm) is (the information written in italics will be present depending on +CSDH last setting):</p> <p>+CMGL: <index>,<stat>,<oa/da>,<alpha>,<scts>[,<tooa/toda>,<length>]<CR><LF><data>[<CR><LF> +CMGL: <index>,<stat>,<oa/da>,<alpha>,<scts>[,<tooa/toda>,<length>]<CR><LF><data>[...]]</p> <p>where: <index> - message position in the storage <stat> - message status <oa/da> - originator/destination address, string type , represented in the currently selected character set (see +CSCS) <alpha> - string type alphanumeric representation of <da> or <oa>, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS. <scts> - TP-Service Centre Time Stamp in Time String Format <tooa/toda> - type of number <oa/da> 129 - number in national format 145 - number in international format (contains the "+")</p>



+CMGL - List Messages		SELINT 2
# S M S M O D E = 0		<p><length> - text length <data> - TP-User-Data</p> <ul style="list-style-type: none"> If <dc> indicates that GSM03.38 default alphabet is used ,each character of GSM alphabet will be converted into current TE character set (see +CSCS)If <dc> indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41) <p>If there is at least one message delivery confirm to be listed the representation format is:</p> <p>+CMGL: <index>,<stat>,<fo>,<mr>,,,<scts>,<dt>,<st>[<CR><LF> +CMGL: <index>,<stat>,<fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st> [...]]</p>
# S M S M O D E = 0		<p>where</p> <p><index> - message position in the storage <stat> - message status <fo> - first octet of the message PDU <mr> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format <scts> - arrival time of the message to the SC <dt> - sending time of the message <st> - message status as coded in the PDU</p> <p>Note: If parameter is omitted the command returns the list of sms with “REC UNREAD” status.</p> <p>Note: the order in which the messages are reported by +CMGL is the same order in which these messages have been processed by the module</p>
# S M S M O D E = 0	AT+CMGL?	Read command has the same effect as Execution command with parameter omitted.
# S M S M O D E = 0	AT+CMGL=?	Test command returns a list of supported <stat>s
# S M S M O D E = 0	Reference	GSM 27.005, 3GPP TS 23.040
(#SMSMODE=1)		
# S M S	AT+CMGL [=<stat>]	Execution command reports the list of all the messages with status value <stat> stored into <memr> message storage (<memr> is the message storage for read and delete SMS as last settings of command +CPMS).



+CMGL - List Messages		SELINT 2
M O D E = 1 # S M S M O D E = 1 # S M S M O D E = 1 # S M S M O D E = 1		<p>The parameter type and the command output depend on the last settings of command +CMGF (message format to be used)</p> <p style="text-align: center;">(PDU Mode)</p> <p>Parameter: <stat> 0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent 4 - all messages.</p> <p>If there is at least one message to be listed the representation format is:</p> <p>+CMGL: <index>,<stat>,<alpha>,<length><CR><LF><pdu>[<CR><LF> +CMGL: <index>,<stat>,<alpha>,<length><CR><LF><pdu>[...]]</p> <p>where: <index> - message position in the memory storage list. <stat> - status of the message <alpha> - string type alphanumeric representation of <da> or <oa>, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS. <length> - length of the PDU in bytes <pdu> - message in PDU format according to GSM 3.40</p> <p style="text-align: center;">(Text Mode)</p> <p>Parameter: <stat> "REC UNREAD" - new message "REC READ" - read message "STO UNSENT" - stored message not yet sent "STO SENT" - stored message already sent "ALL" - all messages.</p> <p>The representation format for stored messages (either sent or unsent) or received messages (either read or unread, not message delivery confirm) is (the information written in italics will be present depending on +CSDH last setting):</p> <p>+CMGL: <index>,<stat>,<oa/da>,<alpha>,<scts>[,<tooa/toda>,<length>]<CR><LF><data>[<CR><LF> +CMGL: <index>,<stat>,<oa/da>,<alpha>,<scts>[,<tooa/toda>,<length>]<CR><LF><data>[...]]</p>



+CMGL - List Messages	SELINT 2
<p># S M S M O D E = 1</p> <p># S M S M O D E = 1</p> <p># S M S M O D E = 1</p> <p># S M S M</p>	<p>where:</p> <p><index> - message position in the storage <stat> - message status <oa/da> - originator/destination address, string type , represented in the currently selected character set (see +CSCS) <alpha> - string type alphanumeric representation of <da> or <oa>, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS. <scts> - TP-Service Centre Time Stamp in Time String Format <toa/toda> - type of number <oa/da> 129 - number in national format 145 - number in international format (contains the "+") <length> - text length <data> - TP-User-Data</p> <ul style="list-style-type: none"> • If <dcs> indicates that GSM03.38 default alphabet is used: <ul style="list-style-type: none"> - if TE character set other than "HEX" (refer command Select TE Character Set +CSCS) : ME/TA converts GSM alphabet into current TE character set - if TE character set is "HEX": ME/TA converts each 7-bit character of GSM 7 bit default alphabet into two IRA character long hexadecimal number (e.g. character Π (GSM 7 bit default alphabet 23) is presented as 17 (IRA 49 and 55)) • If <dcs> indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41) • If <fo> indicates that a UDH is present each 8-bit octet will be converted into two IRA character long hexadecimal number. The <length> indicates text length in characters without UDH length. <p>If there is at least one message delivery confirm to be listed the representation format is:</p> <p>+CMGL: <index>,<stat>,<fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st> [<CR><LF> +CMGL: <index>,<stat>,<fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st> [...]]</p> <p>where</p> <p><index> - message position in the storage <stat> - message status <fo> - first octet of the message PDU <mr> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format <ra> - recipient address, string type , represented in the currently selected</p>



+CMGL - List Messages		SELINT 2
O D E = 1		<p>character set (see +CSCS)</p> <p><tora> - type of number <ra></p> <p><scts> - arrival time of the message to the SC</p> <p><dt> - sending time of the message</p> <p><st> - message status as coded in the PDU</p> <p>Note: If parameter is omitted the command returns the list of sms with “REC UNREAD” status.</p> <p>Note: the order in which the messages are reported by +CMGL corresponds to their position in the memory storage</p>
	AT+CMGL=?	Test command returns a list of supported <stat>s
	Reference	GSM 27.005, 3GPP TS 23.040

3.5.5.3.3. List Messages - @CMGL

@CMGL - List Messages Improved		SELINT 0
AT@CMGL [=<stat>]	<p>Execution command reports the list of all the messages with status value <stat> stored into <memr> message storage (<memr> is the message storage for read and delete SMs as last settings of command +CPMS).</p> <p>The parameter type and the command output depend on the last settings of command +CMGF (message format to be used)</p> <p style="text-align: center;">(PDU Mode)</p> <p>Parameter:</p> <p><stat></p> <p>0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent 4 - all messages.</p> <p>Each message to be listed is represented in the format:</p> <p>@CMGL: <index>,<stat>,<length><CR><LF><pdu></p> <p>where</p> <p><index> - message position in the memory storage list. <stat> - status of the message <length> - length of the PDU in bytes <pdu> - message in PDU format according to GSM 3.40</p> <p style="text-align: center;">(Text Mode)</p> <p>Parameter:</p>	



@CMGL - List Messages Improved	SELINT 0
	<p><stat> "REC UNREAD" - new message "REC READ" - read message "STO UNSENT" - stored message not yet sent "STO SENT" - stored message already sent "ALL" - all messages.</p> <p>Each message to be listed is represented in the format (the information written in italics will be present depending on +CSDH last setting):</p> <p>@CMGL: <index>,<stat>,<oa/da>,,[,<tooa/toda>,<length>] <CR><LF> <data></p> <p>where <index> - message position in the storage <stat> - message status <oa/da> - originator/destination address, string type, represented in the currently selected character set (see +CSCS) <tooa/toda> - type of number <oa/da> 129 - number in national format 145 - number in international format (contains the "+") <length> - text length <data> - TP-User-Data</p> <p>Each message delivery confirm is represented in the format:</p> <p>@CMGL: <index>,<stat>,<fo>,<mr>,,,<scts>,<dt>,<st></p> <p>where <index> - message position in the storage <stat> - message status <fo> - first octet of the message PDU <mr> - message reference number <scts> - arrival time of the message to the SC <dt> - sending time of the message <st> - message status as coded in the PDU</p> <p>Note: The command differs from the +CMGL because at the end of the listing a <CR><LF> is put before the OK result code.</p> <p>Note: If parameter is omitted the command returns the list of sms with "REC UNREAD" status.</p>
AT@CMGL?	Read command has the same effect as Execution command with parameter omitted
AT@CMGL=?	Test command returns a list of supported <stat>s
Note	If Text Mode (+CMGF=1) the Test command output is not included in parenthesis



@CMGL - List Messages Improved		SELINT 0
	AT@CMGL=? @CMGL: "REC UNREAD","REC READ","STO UNSENT", "STO SENT","ALL"	
Reference	GSM 27.005	

@CMGL - List Messages Improved		SELINT 1
AT@CMGL [=<stat>]	<p>Execution command reports the list of all the messages with status value <stat> stored into <memr> message storage (<memr> is the message storage for read and delete SMs as last settings of command +CPMS).</p> <p>The parameter type and the command output depend on the last settings of command +CMGF (message format to be used)</p> <p style="text-align: center;">(PDU Mode)</p> <p>Parameter: <stat> 0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent 4 - all messages.</p> <p>Each message to be listed is represented in the format:</p> <p>@CMGL: <index>,<stat>,<length><CR><LF><pdu></p> <p>where <index> - message position in the memory storage list. <stat> - status of the message <length> - length of the PDU in bytes <pdu> - message in PDU format according to GSM 3.40</p> <p style="text-align: center;">(Text Mode)</p> <p>Parameter: <stat> "REC UNREAD" - new message "REC READ" - read message "STO UNSENT" - stored message not yet sent "STO SENT" - stored message already sent "ALL" - all messages.</p> <p>Each message to be listed is represented in the format:</p> <p>@CMGL: <index>,<stat>,<oa/da>[,,<tooa/toda>,<length>] <CR><LF> <data></p>	



@CMGL - List Messages Improved		SELINT 1
	<p>where <index> - message position in the storage <stat> - message status <oa/da> - originator/destination address, string type, represented in the currently selected character set (see +CSCS) <tooa/toda> - type of number <oa/da> 129 - number in national format 145 - number in international format (contains the "+") <length> - text length <data> - TP-User-Data</p> <p>Each message delivery confirm is represented in the format:</p> <p>@CMGL: <index>,<stat>,<fo>,<mr>,,,<scts>,<dt>,<st></p> <p>where <index> - message position in the storage <stat> - message status <fo> - first octet of the message PDU <mr> - message reference number <scts> - arrival time of the message to the SC <dt> - sending time of the message <st> - message status as coded in the PDU</p> <p>Note: The command differs from the +CMGL because at the end of the listing a <CR><LF> is put before the OK result code.</p> <p>Note: If parameter is omitted the command returns the list of sms with "REC UNREAD" status.</p>	
AT@CMGL?	Read command has the same effect as Execution command with parameter omitted	
AT@CMGL=?	Test command returns a list of supported <stat>s	
Note	<p>If Text Mode (+CMGF=1) the Test command output is not included in parenthesis</p> <p>AT@CMGL=? @CMGL: "REC UNREAD","REC READ","STO UNSENT", "STO SENT","ALL"</p>	
Reference	GSM 27.005	

3.5.5.3.4. Read Message - +CMGR

+CMGR - Read Message		SELINT 0 / 1
AT+CMGR=<index>	Execution command reports the message with location value <index> from <memr> message storage (<memr> is the message storage for read and delete SMs as last settings of command +CPMS).	



+CMGR - Read Message	SELINT 0 / 1
<p>Parameter: <index> - message index.</p> <p>The output depends on the last settings of command +CMGF (message format to be used)</p> <p style="text-align: center;">(PDU Mode)</p> <p>The output has the following format:</p> <p>+CMGR: <stat>,<length><CR><LF><pdu></p> <p>where <stat> - status of the message 0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent <length> - length of the PDU in bytes. <pdu> - message in PDU format according to GSM 3.40.</p> <p>The status of the message and entire message data unit <pdu> is returned.</p> <p style="text-align: center;">(Text Mode)</p> <p>Output format for received messages (the information written in italics will be present depending on +CSDH last setting):</p> <p>+CMGR: <stat>,<oa>,<scts> [,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data></p> <p>Output format for either sent or unsent messages: +CMGR: <stat>,<da> [,<toda>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data></p> <p>Output format for message delivery confirm: +CMGR: <stat>,<fo>,<mr>,,,<scts>,<dt>,<st></p> <p>where: <stat> - status of the message "REC UNREAD" - new received message unread "REC READ" - received message read "STO UNSENT" - message stored not yet sent "STO SENT" - message stored already sent <fo> - first octet of the message PDU <mr> - message reference number <scts> - arrival time of the message to the SC <dt> - sending time of the message</p>	



+CMGR - Read Message		SELINT 0 / 1
	<p><st> - message status as coded in the PDU <pid> - Protocol Identifier <dcs> - Data Coding Scheme <oa> - Originator address, string type represented in the currently selected character set (see +CSCS) <da> - Destination address, string type represented in the currently selected character set (see +CSCS) <sca> - Service Centre number <tooa>, <toda >, <tosca> - type of number <oa>, <da>, <sca> 129 - number in national format 145 - number in international format (contains the "+") <length> - text length <data> - TP-User_data</p> <p>Note: in both cases if status of the message is 'received unread', status in the storage changes to 'received read'.</p> <p>Note: an error result code is sent on empty record <index>.</p>	
AT+CMGR=?	Test command returns the OK result code.	
Note	The improving command @CMGR has been defined	
Reference	GSM 27.005	

+CMGR - Read Message		SELINT 2
<p><i>Note: the behaviour of command +CMGR differs depending on whether or not the improved SMS commands operation mode has been enabled (see #SMSMODE)</i></p>		
(#SMSMODE=0)		
# S M S M O D E = 0 # S M S M	AT+CMGR= <index>	<p>Execution command reports the message with location value <index> from <memr> message storage (<memr> is the message storage for read and delete SMs as last settings of command +CPMS).</p> <p>Parameter: <index> - message index.</p> <p>The output depends on the last settings of command +CMGF (message format to be used)</p> <p style="text-align: center;">(PDU Mode)</p> <p>If there is a message in location <index>, the output has the following format:</p> <p>+CMGR: <stat>,<alpha>,<length><CR><LF><pdu></p> <p>where <stat> - status of the message</p>



+CMGR - Read Message		SELINT 2
O D E = 0 # S M S M O D E = 0 # S M S M O D E = 0 # S M S M O D E = 0	<p>0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent</p> <p><alpha> - string type alphanumeric representation of <da> or <oa>, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS.</p> <p><length> - length of the PDU in bytes.</p> <p><pdu> - message in PDU format according to GSM 3.40.</p> <p>The status of the message and entire message data unit <pdu> is returned.</p> <p style="text-align: center;">(Text Mode)</p> <p>If there is a Received message in location <index> the output format is (the information written in <i>italics</i> will be present depending on +CSDH last setting):</p> <p>+CMGR: <stat>,<oa>,<alpha>,<scts>[,<toa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data></p> <p>If there is either a Sent or an Unsent message in location <index> the output format is:</p> <p>+CMGR: <stat>,<da>,<alpha>[,<toda>,<fo>,<pid>,<dcs>,<vp>,<sca>,<tosca>,<length>]<CR><LF><data></p> <p>If there is a Message Delivery Confirm in location <index> the output format is:</p> <p>+CMGR: <stat>,<fo>,<mr>,,,<scts>,<dt>,<st></p> <p>where:</p> <p><stat> - status of the message "REC UNREAD" - new received message unread "REC READ" - received message read "STO UNSENT" - message stored not yet sent "STO SENT" - message stored already sent</p> <p><fo> - first octet of the message PDU <mr> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format <scts> - arrival time of the message to the SC <dt> - sending time of the message <st> - message status as coded in the PDU <pid> - Protocol Identifier <dcs> - Data Coding Scheme <vp> - Validity period; only the integer format is supported <oa> - Originator address, string type represented in the currently selected character set (see +CSCS) <da> - Destination address, string type represented in the currently selected</p>	



+CMGR - Read Message		SELINT 2
# S M S M O D E = 0		<p>character set (see +CSCS)</p> <p><alpha> - string type alphanumeric representation of <da> or <oa>, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS.</p> <p><sca> - Service Centre number</p> <p><tooa>, <toda >, <tosca> - type of number <oa>, <da>, <sca></p> <p>129 - number in national format</p> <p>145 - number in international format (contains the "+")</p> <p><length> - text length</p> <p><data> - TP-User_data</p> <ul style="list-style-type: none"> If <dcs> indicates that GSM03.38 default alphabet is used, each character of GSM alphabet will be converted into current TE character set (see +CSCS) If <dcs> indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41) <p>Note: in both cases if status of the message is 'received unread', status in the storage changes to 'received read'.</p> <p>Note: an error result code is sent on empty record <index>.</p>
# S M S M O D E = 0	AT+CMGR=?	Test command returns the OK result code
# S M S M O D E = 0	Reference	GSM 27.005
(#SMSMODE=1)		
# S M S M O D E = 1	AT+CMGR= <index>	<p>Execution command reports the message with location value <index> from <memr> message storage (<memr> is the message storage for read and delete SMs as last settings of command +CPMS).</p> <p>Parameter: <index> - message index.</p> <p>The output depends on the last settings of command +CMGF (message format to be used)</p> <p style="text-align: center;">(PDU Mode)</p> <p>If there is a message in location <index>, the output has the following format:</p> <p style="text-align: center;">+CMGR: <stat>,<alpha>,<length><CR><LF><pdu></p> <p>where <stat> - status of the message</p>
# S M S M		



+CMGR - Read Message	SELINT 2
O D E = 1 # S M S M O D E = 1 # S M S M O D E = 1 # S M S M O D E = 1	<p>0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent</p> <p><alpha> - string type alphanumeric representation of <da> or <oa>, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS.</p> <p><length> - length of the PDU in bytes.</p> <p><pdu> - message in PDU format according to GSM 3.40.</p> <p>The status of the message and entire message data unit <pdu> is returned.</p> <p style="text-align: center;">(Text Mode)</p> <p>If there is a Received message in location <index> the output format is (the information written in <i>italics</i> will be present depending on +CSDH last setting):</p> <p>+CMGR: <stat>,<oa>,<alpha>,<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data></p> <p>If there is either a Sent or an Unsent message in location <index> the output format is:</p> <p>+CMGR: <stat>,<da>,<alpha>[,<toda>,<fo>,<pid>,<dcs>,<vp>],<sca>,<tosca>,<length>]<CR><LF><data></p> <p>If there is a Message Delivery Confirm in location <index> the output format is:</p> <p>+CMGR: <stat>,<fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st></p> <p>where:</p> <p><stat> - status of the message "REC UNREAD" - new received message unread "REC READ" - received message read "STO UNSENT" - message stored not yet sent "STO SENT" - message stored already sent</p> <p><fo> - first octet of the message PDU <mr> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format <ra> - recipient address, string type, represented in the currently selected character set (see +CSCS) <tora> - type of number <ra> <scts> - arrival time of the message to the SC <dt> - sending time of the message <st> - message status as coded in the PDU <pid> - Protocol Identifier <dcs> - Data Coding Scheme <vp> - Validity Period; its format depends on SMS-SUBMIT <fo> setting (see +CSMP):</p>



+CMGR - Read Message		SELINT 2
# S M S M O D E = 1 # S M S M O D E = 1		<p>a) <i>Not Present</i> if <fo> tells that the <i>Validity Period Format</i> is Not Present</p> <p>b) <i>Integer</i> type if <fo> tells that the <i>Validity Period Format</i> is Relative</p> <p>c) <i>Quoted time-string</i> type if <fo> tells that the <i>Validity Period Format</i> is Absolute</p> <p>d) Quoted hexadecimal representation of 7 octets if <fo> tells that the <i>Validity Period Format</i> is Enhanced.</p> <p><oa> - Originator address, string type represented in the currently selected character set (see +CSCS)</p> <p><da> - Destination address, string type represented in the currently selected character set (see +CSCS)</p> <p><alpha> - string type alphanumeric representation of <da> or <oa>, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS.</p> <p><sca> - Service Centre number</p> <p><toa>, <toda >, <tosca> - type of number <oa>, <da>, <sca></p> <p>129 - number in national format</p> <p>145 - number in international format (contains the "+")</p> <p><length> - text length</p> <p><data> - TP-User_data</p> <ul style="list-style-type: none"> • If <dc> indicates that GSM03.38 default alphabet is used: <ul style="list-style-type: none"> - if TE character set other than "HEX" (refer command Select TE Character Set +CSCS) : ME/TA converts GSM alphabet into current TE character set - if TE character set is "HEX": ME/TA converts each 7-bit character of GSM 7 bit default alphabet into two IRA character long hexadecimal number (e.g. character Π (GSM 7 bit default alphabet 23) is presented as 17 (IRA 49 and 55)) • If <dc> indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41) <p>Note: in both cases if status of the message is 'received unread', status in the storage changes to 'received read'.</p>
AT+CMGR=?	Test command returns the OK result code	
Reference	GSM 27.005	

3.5.5.3.5. Read Message - @CMGR

@CMGR - Read Message Improved		SELINT 0
AT@CMGR= <index>	Execution command reports the message with location value <index> from <memr> message storage (<memr> is the message storage for read and delete SMs as last settings of command +CPMS).	



@CMGR - Read Message Improved	SELINT 0
<p>Parameter: <index> - message index.</p> <p>The output depends on the last settings of command +CMGF (message format to be used)</p> <p style="text-align: center;">(PDU Mode)</p> <p>The output has the following format:</p> <p>@CMGR: <stat>,<length><CR><LF><pdu></p> <p>where <stat> - status of the message 0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent <length> - length of the PDU in bytes. <pdu> - message in PDU format according to GSM 3.40.</p> <p>The status of the message and entire message data unit <pdu> is returned.</p> <p style="text-align: center;">(Text Mode)</p> <p>Output format for received messages (the information written in italics will be present depending on +CSDH last setting):</p> <p>@CMGR: <stat>,<oa>,,<scts> [,<toa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><text></p> <p>Output format for either sent or unsent messages: @CMGR: <stat>,<da>[,<toda>,<fo>,<pid>,<dcs>,,<sca>,<tosca>,<length>]<CR><LF><text></p> <p>Output format for message delivery confirm: @CMGR: <stat>,<fo>,<mr>,,,<scts>,<dt>,<st></p> <p>where: <stat> - status of the message "REC UNREAD" - new received message unread "REC READ" - received message read "STO UNSENT" - message stored not yet sent "STO SENT" - message stored already sent <fo> - first octet of the message PDU <mr> - message reference number <scts> - arrival time of the message to the SC</p>	



@CMGR - Read Message Improved	SELINT 0
	<p><dt> - sending time of the message <st> - message status as coded in the PDU <pid> - Protocol Identifier <dcs> - Data Coding Scheme <oa> - Originator address, string type represented in the currently selected character set (see +CSCS) <da> - Destination address, string type represented in the currently selected character set (see +CSCS) <sca> - Service Centre number <tooa>,<toda >,<tosca> - type of number <oa>,<da>,<sca> 129 - number in national format 145 - number in international format (contains the "+") <length> - text length <text> - message text</p> <p>Note: the command differs from the +CMGR because after the message <pdu> or <text> a <CR><LF> is put before the OK result code.</p> <p>Note: in both cases if status of the message is 'received unread', status in the storage changes to 'received read'.</p> <p>Note: an error result code is sent on empty record <index>.</p>
AT@CMGR=?	Test command has no effect; the answer is OK
Reference	GSM 27.005

@CMGR - Read Message Improved	SELINT 1
<p>AT@CMGR= <index></p>	<p>Execution command reports the message with location value <index> from <memr> message storage (<memr> is the message storage for read and delete SMs as last settings of command +CPMS).</p> <p>Parameter: <index> - message index.</p> <p>The output depends on the last settings of command +CMGF (message format to be used)</p> <p style="text-align: center;">(PDU Mode)</p> <p>The output has the following format:</p> <p>@CMGR: <stat>,<length><CR><LF><pdu></p> <p>where <stat> - status of the message 0 - new message 1 - read message 2 - stored message not yet sent</p>



@CMGR - Read Message Improved	SELINT 1
<p>3 - stored message already sent <length> - length of the PDU in bytes. <pdu> - message in PDU format according to GSM 3.40.</p> <p>The status of the message and entire message data unit <pdu> is returned. (Text Mode)</p> <p>Output format for received messages:</p> <p>@CMGR: <stat>,<oa>,,<scts> [,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><text></p> <p>Output format for either sent or unsent messages: @CMGR: <stat>,<da>[,<toda>,<fo>,<pid>,<dcs>,,<sca>,<tosca>,<length>]<CR><LF><text></p> <p>Output format for message delivery confirm: @CMGR: <stat>,<fo>,<mr>,,,<scts>,<dt>,<st></p> <p>where:</p> <p><stat> - status of the message "REC UNREAD" - new received message unread "REC READ" - received message read "STO UNSENT" - message stored not yet sent "STO SENT" - message stored already sent</p> <p><fo> - first octet of the message PDU <mr> - message reference number <scts> - arrival time of the message to the SC <dt> - sending time of the message <st> - message status as coded in the PDU <pid> - Protocol Identifier <dcs> - Data Coding Scheme <oa> - Originator address, string type represented in the currently selected character set (see +CSCS) <da> - Destination address, string type represented in the currently selected character set (see +CSCS) <sca> - Service Centre number <tooa>,<toda>,<tosca> - type of number <oa>,<da>,<sca> 129 - number in national format 145 - number in international format (contains the "+")</p> <p><length> - text length <text> - message text</p> <p>Note: the command differs from the +CMGR because after the message <pdu> or <text> a <CR><LF> is put before the OK result code.</p> <p>Note: in both cases if status of the message is 'received unread', status in the</p>	



3.5.5.4. Message Sending And Writing

3.5.5.4.1. Send Message - +CMGS

+CMGS - Send Message	SELINT 0 / 1
<p>(PDU Mode) AT+CMGS= <length></p>	<p style="text-align: center;">(PDU Mode)</p> <p>Execution command sends to the network a message.</p> <p>Parameter: <length> - length of the PDU to be sent in bytes (excluding the SMSC address octets). 7..164</p> <p>After command line is terminated with <CR>, the device responds sending a four character sequence prompt: <CR><LF><greater_than><space> (IRA 13, 10, 62, 32)</p> <p>and waits for the specified number of bytes.</p> <p>Note: the DCD signal shall be in ON state while PDU is given.</p> <p>Note: the echoing of given characters back from the TA is controlled by echo command E</p> <p>Note: the PDU shall be hexadecimal format (each octet of the PDU is given as two IRA character long hexadecimal number) and given in one line.</p> <p>Note: when the length octet of the SMSC address (given in the PDU) equals zero, the SMSC address set with command +CSCA is used; in this case the SMSC Type-of-Address octet shall not be present in the PDU.</p> <p>To send the message issue Ctrl-Z char (0x1A hex). To exit without sending the message issue ESC char (0x1B hex).</p> <p>If message is successfully sent to the network, then the result is sent in the format: +CMGS: <mr></p> <p>where <mr> - message reference number.</p> <p>Note: if message sending fails for some reason, an error code is reported.</p> <p>Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.</p>
<p>(Text Mode)</p>	<p style="text-align: center;">(Text Mode)</p>



+CMGS - Send Message	SELINT 0 / 1
<p>AT+CMGS=<da> [,<tda>]</p>	<p>Execution command sends to the network a message.</p> <p>Parameters: <da> - destination address, string type. <tda> - type of destination address 129 - number in national format 145 - number in international format (contains the "+")</p> <p>After command line is terminated with <CR>, the device responds sending a four character sequence prompt:</p> <p><CR><LF><greater_than><space> (IRA 13, 10, 62, 32)</p> <p>After this prompt text can be entered; the entered text should be formatted as follows:</p> <ul style="list-style-type: none"> - if current <dcs> (see +CSMP) indicates that GSM03.38 default alphabet is used and current <fo> (see +CSMP) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM alphabet, according to GSM 27.005, Annex A; backspace can be used to delete last character and carriage returns can be used. - if current <dcs> (see +CSMP) indicates that 8-bit or UCS2 data coding scheme is used or current <fo> (see +CSMP) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the ‘asterisk’ will be entered as 2A (IRA50 and IRA65) and this will be converted to an octet with integer value 0x2A) <p>Note: the DCD signal shall be in ON state while text is entered.</p> <p>Note: the echoing of entered characters back from the TA is controlled by echo command E</p> <p>To send the message issue Ctrl-Z char (0x1A hex). To exit without sending the message issue ESC char (0x1B hex).</p> <p>If message is successfully sent to the network, then the result is sent in the format:</p> <p>+CMGS: <mr> where <mr> - message reference number.</p> <p>Note: if message sending fails for some reason, an error code is reported.</p> <p>Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.</p>



+CMGS - Send Message		SELINT 0 / 1
	Note: it is possible to send a concatenation of at most 10 SMS; the maximum number of chars depends on the <dc>: 1530 chars if 3GPP TS 23.038 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used	
Note	To avoid malfunctions is suggested to wait for the +CMGS: <mr> or +CMS ERROR: <err> response before issuing further commands.	
Reference	GSM 27.005	

+CMGS - Send Message		SELINT 2
<i>Note: the behaviour of command +CMGS differs depending on whether or not the improved SMS commands operation mode has been enabled (see #SMSMODE)</i>		
(#SMSMODE=0)		
# S M S M O D E = 0 # S M S M O D E = 0 # S M S M O D	<i>(PDU Mode)</i> AT+CMGS= <length>	(PDU Mode) Execution command sends to the network a message. Parameter: <length> - length of the PDU to be sent in bytes (excluding the SMSC address octets). 7..164 After command line is terminated with <CR> , the device responds sending a four character sequence prompt: <CR><LF><greater_than><space> (IRA 13, 10, 62, 32) and waits for the specified number of bytes. Note: the DCD signal shall be in ON state while PDU is given. Note: the echoing of given characters back from the TA is controlled by echo command E Note: the PDU shall be hexadecimal format (each octet of the PDU is given as two IRA character long hexadecimal number) and given in one line. Note: when the length octet of the SMSC address (given in the PDU) equals zero, the SMSC address set with command +CSCA is used; in this case the SMSC Type-of-Address octet shall not be present in the PDU . To send the message issue Ctrl-Z char (0x1A hex). To exit without sending the message issue ESC char (0x1B hex). If message is successfully sent to the network, then the result is sent in the format:



+CMGS - Send Message		SELINT 2
E = 0 # S M S M O D E = 0 # S M S M O D E = 0 # S M S M O D E = 0 #	<p>(Text Mode) AT+CMGS=<da> [,<toda>]</p>	<p>+CMGS: <mr></p> <p>where <mr> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format.</p> <p>Note: if message sending fails for some reason, an error code is reported.</p> <p>Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.</p> <p style="text-align: center;">(Text Mode)</p> <p>Execution command sends to the network a message.</p> <p>Parameters: <da> - destination address, string type represented in the currently selected character set (see +CSCS). <toda> - type of destination address 129 - number in national format 145 - number in international format (contains the "+")</p> <p>After command line is terminated with <CR>, the device responds sending a four character sequence prompt:</p> <p><CR><LF><greater_than><space> (IRA 13, 10, 62, 32)</p> <p>After this prompt text can be entered; the entered text should be formatted as follows:</p> <ul style="list-style-type: none"> - if current <dcs> (see +CSMP) indicates that GSM03.38 default alphabet is used and current <fo> (see +CSMP) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM alphabet, according to GSM 27.005, Annex A; backspace can be used to delete last character and carriage returns can be used. - if current <dcs> (see +CSMP) indicates that 8-bit or UCS2 data coding scheme is used or current <fo> (see +CSMP) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the 'asterisk' will be entered as 2A (IRA50 and IRA65) and this will be converted to an octet with integer value 0x2A) <p>Note: the DCD signal shall be in ON state while text is entered.</p> <p>Note: the echoing of entered characters back from the TA is controlled by echo command E</p>



+CMGS - Send Message		SELINT 2
S M S M O D E = 0		<p>To send the message issue Ctrl-Z char (0x1A hex). To exit without sending the message issue ESC char (0x1B hex).</p> <p>If message is successfully sent to the network, then the result is sent in the format:</p> <p>+CMGS: <mr></p> <p>where <mr> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format.</p> <p>Note: if message sending fails for some reason, an error code is reported.</p> <p>Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.</p> <p>Note: it is possible to send a concatenation of at most 10 SMs; the maximum number of chars depends on the <dcs>: 1530 chars if 3GPP TS 23.038 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used.</p>
	AT+CMGS=?	Test command returns the OK result code.
	Note	To avoid malfunctions is suggested to wait for the +CMGS: <mr> or +CMS ERROR: <err> response before issuing further commands.
	Reference	GSM 27.005
(#SMSMODE=1)		
# S M S M O D E = 1	<i>(PDU Mode)</i> AT+CMGS= <length>	(PDU Mode)
		<p>Execution command sends to the network a message.</p> <p>Parameter: <length> - length of the PDU to be sent in bytes (excluding the SMSC address octets). 7..164</p> <p>After command line is terminated with <CR>, the device responds sending a four character sequence prompt:</p> <p><CR><LF><greater_than><space> (IRA 13, 10, 62, 32)</p> <p>and waits for the specified number of bytes.</p> <p>Note: the DCD signal shall be in ON state while PDU is given.</p>
# S M S		



+CMGS - Send Message		SELINT 2
M O D E = 1 # S M S M O D E = 1 # S M S M O D E = 1 # S M S M O D E = 1	<p>Note: the echoing of given characters back from the TA is controlled by echo command E</p> <p>Note: the PDU shall be hexadecimal format (each octet of the PDU is given as two IRA character long hexadecimal number) and given in one line.</p> <p>Note: when the length octet of the SMSC address (given in the PDU) equals zero, the SMSC address set with command +CSCA is used; in this case the SMSC Type-of-Address octet shall not be present in the PDU.</p> <p>To send the message issue Ctrl-Z char (0x1A hex). To exit without sending the message issue ESC char (0x1B hex).</p> <p>If message is successfully sent to the network, then the result is sent in the format:</p> <p>+CMGS: <mr></p> <p>where <mr> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format.</p> <p>Note: if message sending fails for some reason, an error code is reported.</p> <p>Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.</p>	
# S M S M O D E = 1	<p><i>(Text Mode)</i> AT+CMGS=<da> [,<toda>]</p>	<p style="text-align: center;">(Text Mode)</p> <p>Execution command sends to the network a message.</p> <p>Parameters: <da> - destination address, string type represented in the currently selected character set (see +CSCS). <toda> - type of destination address 129 - number in national format 145 - number in international format (contains the "+")</p> <p>After command line is terminated with <CR>, the device responds sending a four character sequence prompt:</p> <p><CR><LF><greater_than><space> (IRA 13, 10, 62, 32)</p> <p>After this prompt text can be entered; the entered text should be formatted as follows:</p> <p>- if current <dcs> (see +CSMP) indicates that GSM03.38 default alphabet is</p>



+CMGS - Send Message	SELINT 2
<p># S M S M O D E = 1</p> <p># S M S M O D E = 1</p> <p># S M S M O D E = 1</p>	<p>used and current <fo> (see +CSMP) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is not set:</p> <ul style="list-style-type: none"> - if TE character set other than "HEX" (refer command Select TE Character Set +CSCS): ME/TA converts the entered text into the GSM 7 bit default alphabet according to rules of Annex A in TS27.005; backspace can be used to delete last character and carriage returns can be used; - if TE character set is "HEX": the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into the GSM 7 bit default alphabet characters. (e.g. 17 (IRA 49 and 55) will be converted to character Π (GSM 7 bit default alphabet 23)). <p>after every <CR> entered by the user the sequence <CR><LF><greater_than><space> is sent to the TE.</p> <p>- if current <dcs> (see +CSMP) indicates that 8-bit or UCS2 data coding scheme is used or current <fo> (see +CSMP) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the 'asterisk' will be entered as 2A (IRA50 and IRA65) and this will be converted to an octet with integer value 0x2A)</p> <p>Note: the DCD signal shall be in ON state while text is entered.</p> <p>Note: the echoing of entered characters back from the TA is controlled by echo command E</p> <p>To send the message issue Ctrl-Z char (0x1A hex). To exit without sending the message issue ESC char (0x1B hex).</p> <p>If message is successfully sent to the network, then the result is sent in the format:</p> <p>+CMGS: <mr></p> <p>where <mr> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format.</p> <p>Note: if message sending fails for some reason, an error code is reported.</p> <p>Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.</p>



+CMGS - Send Message		SELINT 2
	Note: it is possible to send a concatenation of at most 10 SMS; the maximum number of chars depends on the <dc>: 1520 chars if 3GPP TS 23.038 default alphabet is used, 1330 chars if 8-bit is used, 660 chars if UCS2 is used. If entered text is longer than this maximum value an error is raised	
AT+CMGS=?	Test command returns the OK result code.	
Note	To avoid malfunctions is suggested to wait for the +CMGS: <mr> or +CMS ERROR: <err> response before issuing further commands.	
Reference	GSM 27.005	

3.5.5.4.2. Send Message From Storage - +CMSS

+CMSS - Send Message From Storage		SELINT 0 / 1
AT+CMSS= <index>[,<da> [,<tda>]]	<p>Execution command sends to the network a message which is already stored in the <memw> storage (see +CPMS) at the location <index>.</p> <p>Parameters: <index> - location value in the message storage <memw> of the message to send <da> - destination address, string type represented in the currently selected character set (see +CSCS); if it is given it shall be used instead of the one stored with the message. <tda> - type of destination address 129 - number in national format 145 - number in international format (contains the "+")</p> <p>If message is successfully sent to the network then the result is sent in the format: +CMSS: <mr> where: <mr> - message reference number.</p> <p>If message sending fails for some reason, an error code is reported: +CMS ERROR:<err></p> <p>Note: to store a message in the <memw> storage see command +CMGW.</p> <p>Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.</p>	
Note	To avoid malfunctions is suggested to wait for the +CMSS: <mr> or +CMS ERROR: <err> response before issuing further commands.	
Reference	GSM 27.005	

+CMSS - Send Message From Storage		SELINT 2
AT+CMSS=	Execution command sends to the network a message which is already stored in the	



+CMSS - Send Message From Storage		SELINT 2
<p><index>[,<da> [,<todo>]]</p>	<p><memw> storage (see +CPMS) at the location <index>.</p> <p>Parameters:</p> <p><index> - location value in the message storage <memw> of the message to send <da> - destination address, string type represented in the currently selected character set (see +CSCS); if it is given it shall be used instead of the one stored with the message. <todo> - type of destination address 129 - number in national format 145 - number in international format (contains the "+")</p> <p>If message is successfully sent to the network then the result is sent in the format:</p> <p>+CMSS: <mr> where: <mr> - message reference number.</p> <p>If message sending fails for some reason, an error code is reported:</p> <p>+CMS ERROR:<err></p> <p>Note: to store a message in the <memw> storage see command +CMGW.</p> <p>Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.</p>	
AT+CMSS=?	Test command returns the OK result code.	
Note	To avoid malfunctions is suggested to wait for the +CMSS: <mr> or +CMS ERROR: <err> response before issuing further commands.	
Reference	GSM 27.005	

3.5.5.4.3. Write Message To Memory - +CMGW

+CMGW - Write Message To Memory		SELINT 0 / 1
<p>(PDU Mode) AT+CMGW= <length> [,<stat>]</p>	<p style="text-align: center;">(PDU Mode)</p> <p>Execution command writes in the <memw> memory storage a new message.</p> <p>Parameter:</p> <p><length> - length in bytes of the PDU to be written. 7..164 <stat> - message status. 0 - new message 1 - read message 2 - stored message not yet sent (default) 3 - stored message already sent</p> <p>The device responds to the command with the prompt '>' and waits for the</p>	



+CMGW - Write Message To Memory	SELINT 0 / 1
	<p>specified number of bytes.</p> <p>To write the message issue Ctrl-Z char (0x1A hex). To exit without writing the message issue ESC char (0x1B hex).</p> <p>If message is successfully written in the memory, then the result is sent in the format:</p> <p>+CMGW: <index> where: <index> - message location index in the memory <memw>.</p> <p>If message storing fails for some reason, an error code is reported.</p> <p>Note: care must be taken to ensure that during the command execution, no other SIM interacting commands are issued.</p> <p>Note: in PDU Mode, only SUBMIT messages can be stored in memory and only with status 2 or 3.</p>
<p><i>(Text Mode)</i> AT+CMGW[=<da>[, <toda> [,<stat>]]]</p>	<p style="text-align: center;">(Text Mode)</p> <p>Execution command writes in the <memw> memory storage a new message.</p> <p>Parameters: <da> - destination address, string type represented in the currently selected character set (see +CSCS). <toda> - type of destination address. 129 - number in national format 145 - number in international format (contains the "+") <stat> - message status. "REC UNREAD" - new received message unread "REC READ" - received message read "STO UNSENT" - message stored not yet sent (default) "STO SENT" - message stored already sent</p> <p>After command line is terminated with <CR>, the device responds sending a four character sequence prompt:</p> <p><CR><LF><greater_than><space> (IRA 13, 10, 62, 32)</p> <p>After this prompt text can be entered; the entered text should be formatted as follows:</p> <p>- if current <dcs> (see +CSMP) indicates that GSM03.38 default alphabet is used and current <fo> (see +CSMP) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM</p>



+CMGW - Write Message To Memory		SELINT 0 / 1
	<p>alphabet, according to GSM 27.005, Annex A; backspace can be used to delete last character and carriage returns can be used.</p> <p>- if current <dcs> (see +CSMP) indicates that 8-bit or UCS2 data coding scheme is used or current <fo> (see +CSMP) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the 'asterisk' will be entered as 2A (IRA50 and IRA65) and this will be converted to an octet with integer value 0x2A)</p> <p>Note: the DCD signal shall be in ON state while text is entered.</p> <p>Note: the echoing of entered characters back from the TA is controlled by echo command E</p> <p>To write the message issue Ctrl-Z char (0x1A hex). To exit without writing the message issue ESC char (0x1B hex).</p> <p>If message is successfully written in the memory, then the result is sent in the format:</p> <p>+CMGW: <index> where: <index> - message location index in the memory <memw>.</p> <p>If message storing fails for some reason, an error code is reported.</p> <p>Note: care must be taken to ensure that during the command execution, no other SIM interacting commands are issued.</p> <p>Note: it is possible to save a concatenation of at most 10 SMS; the maximum number of chars depends on the <dcs>: 1530 chars if 3GPP TS 23.038 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used.</p> <p>Note: in Text Mode, only SUBMIT messages can be stored in memory and only with status "STO UNSENT" or "STO SENT".</p>	
Reference	GSM 27.005	
Note	To avoid malfunctions is suggested to wait for the +CMGW: <index> or +CMS ERROR: <err> response before issuing further commands.	

+CMGW - Write Message To Memory		SELINT 2
<p><i>Note: the behaviour of command +CMGW differs depending on whether or not the improved SMS commands operation mode has been enabled (see #SMSMODE).</i></p>		
<p>(#SMSMODE=0)</p>		
#	(PDU Mode)	(PDU Mode)



+CMGW - Write Message To Memory		SELINT 2
S M S M O D E = 0 # S M S M O D E = 0 # S M S M O D E = 0 # S M S M O D E = 0	AT+CMGW= <length> [,<stat>]	<p>Execution command writes in the <memw> memory storage a new message.</p> <p>Parameter: <length> - length in bytes of the PDU to be written. 7..164 <stat> - message status. 0 - new message 1 - read message 2 - stored message not yet sent (default) 3 - stored message already sent</p> <p>The device responds to the command with the prompt '>' and waits for the specified number of bytes.</p> <p>To write the message issue Ctrl-Z char (0x1A hex). To exit without writing the message issue ESC char (0x1B hex).</p> <p>If message is successfully written in the memory, then the result is sent in the format:</p> <p>+CMGW: <index></p> <p>where: <index> - message location index in the memory <memw>.</p> <p>If message storing fails for some reason, an error code is reported.</p> <p>Note: care must be taken to ensure that during the command execution, no other SIM interacting commands are issued.</p>
# S M S M O D E = 0	<i>(Text Mode)</i> AT+CMGW[=<da> [,<toda> [,<stat>]]]	<p style="text-align: center;">(Text Mode)</p> <p>Execution command writes in the <memw> memory storage a new message.</p> <p>Parameters: <da> - destination address, string type represented in the currently selected character set (see +CSCS). <toda> - type of destination address. 129 - number in national format 145 - number in international format (contains the "+") <stat> - message status. "REC UNREAD" - new received message unread "REC READ" - received message read "STO UNSENT" - message stored not yet sent (default) "STO SENT" - message stored already sent</p>



+CMGW - Write Message To Memory		SELINT 2
		default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used.
	AT+CMGW=?	Test command returns the OK result code.
	Reference	GSM 27.005
	Note	To avoid malfunctions is suggested to wait for the +CMGW: <index> or +CMS ERROR: <err> response before issuing further commands.
(#SMSMODE=1)		
# S M S M O D E = 1 # S M S M O D E = 1 # S M S M O D E = 1	<i>(PDU Mode)</i> AT+CMGW= <length> [,<stat>]	(PDU Mode) Execution command writes in the <memw> memory storage a new message. Parameter: <length> - length in bytes of the PDU to be written. 7..164 <stat> - message status. 0 - new message (received unread message; default for DELIVER messages (3GPP TS 23.040 SMS-DELIVER messages)) 1 - read message 2 - stored message not yet sent (default for SUBMIT messages(3GPP TS 23.040 SMS-SUBMIT messages)) 3 - stored message already sent The device responds to the command with the prompt '>' and waits for the specified number of bytes. To write the message issue Ctrl-Z char (0x1A hex). To exit without writing the message issue ESC char (0x1B hex). If message is successfully written in the memory, then the result is sent in the format: +CMGW: <index> where: <index> - message location index in the memory <memw> . If message storing fails for some reason, an error code is reported. Note: care must be taken to ensure that during the command execution, no other SIM interacting commands are issued. Note: in PDU mode, not only SUBMIT messages can be stored in SIM as per #SMSMODE=0, but also DELIVER and STATUS REPORT messages (3GPP TS 23.040 SMS-STATUS-REPORT messages). SUBMIT messages can only be stored with status 2 or 3; DELIVER and STATUS REPORT



+CMGW - Write Message To Memory		SELINT 2
# S M S M O D E = 1	(Text Mode) AT+CMGW [=<da> [,<toda> [,<stat>]]]	<p>messages can only be stored with status 0 or 1.</p> <p style="text-align: center;">(Text Mode)</p> <p>Execution command writes in the <memw> memory storage a new message.</p> <p>Parameters:</p> <p><da> - destination address, string type represented in the currently selected character set (see +CSCS).</p> <p><toda> - type of destination address. 129 - number in national format 145 - number in international format (contains the "+")</p> <p><stat> - message status. "REC UNREAD" - new received message unread (default for DELIVER messages) "REC READ" - received message read "STO UNSENT" - message stored not yet sent (default for SUBMIT messages) "STO SENT" - message stored already sent</p> <p>After command line is terminated with <CR>, the device responds sending a four character sequence prompt:</p> <p><CR><LF><greater_than><space> (IRA 13, 10, 62, 32)</p> <p>After this prompt text can be entered; the entered text should be formatted as follows:</p> <ul style="list-style-type: none"> - if current <dcs> (see +CSMP) indicates that GSM03.38 default alphabet is used and current <fo> (see +CSMP) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is not set: <ul style="list-style-type: none"> - if TE character set other than "HEX" (refer command Select TE Character Set +CSCS): ME/TA converts the entered text into the GSM 7 bit default alphabet according to rules of Annex A in TS27.005; backspace can be used to delete last character and carriage returns can be used; - if TE character set is "HEX": the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into the GSM 7 bit default alphabet characters. (e.g. 17 (IRA 49 and 55) will be converted to character Π (GSM 7 bit default alphabet 23)). <p>after every <CR> entered by the user the sequence <CR><LF><greater_than><space> is sent to the TE.</p> <ul style="list-style-type: none"> - if current <dcs> (see +CSMP) indicates that 8-bit or UCS2 data coding scheme is used or current <fo> (see +CSMP) indicates that 3GPP TS
# S M S M O D E = 1		
# S M S M O		



+CMGW - Write Message To Memory		SELINT 2
D E = 1		<p>23.040 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the 'asterisk' will be entered as 2A (IRA50 and IRA65)) and this will be converted to an octet with integer value 0x2A)</p> <p>Note: the DCD signal shall be in ON state while text is entered.</p> <p>Note: the echoing of entered characters back from the TA is controlled by echo command E</p> <p>To write the message issue Ctrl-Z char (0x1A hex).</p> <p>To exit without writing the message issue ESC char (0x1B hex).</p> <p>If message is successfully written in the memory, then the result is sent in the format:</p> <p>+CMGW: <index> where: <index> - message location index in the memory <memw>.</p> <p>If message storing fails for some reason, an error code is reported.</p> <p>Note: care must be taken to ensure that during the command execution, no other SIM interacting commands are issued.</p> <p>Note: it is possible to save a concatenation of at most 10 SMS; the maximum number of chars depends on the <dcs>: 1530 chars if 3GPP TS 23.038 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used. If entered text is longer than this maximum value an error is raised.</p> <p>Note: in text mode, not only SUBMIT messages can be stored in SIM as per #SMSMODE=0, but also DELIVER messages. The type of saved message depends upon the current <fo> parameter (see +CSMP). For a DELIVER message, current <vp> parameter (see +CSMP) is used to set the message Service Centre Time Stamp <scts>, so it has to be an absolute time string, e.g. "09/01/12,11:15:00+04". SUBMIT messages can only be stored with status "STO UNSENT" or "STO SENT"; DELIVER messages can only be stored with status "REC UNREAD" or "REC READ".</p>
	AT+CMGW=?	Test command returns the OK result code.
	Reference	GSM 27.005
	Note	To avoid malfunctions is suggested to wait for the +CMGW: <index> or +CMS ERROR: <err> response before issuing further commands.



+CMGD - Delete Message		SELINT 2
= 0 # S M S M O D E = 0		<p>messages and stored mobile originated messages (whether sent or not) untouched</p> <p>2 - delete all read messages from <memr> storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched</p> <p>3 - delete all read messages from <memr> storage, sent and unsent mobile originated messages, leaving unread messages untouched</p> <p>4 - delete all messages from <memr> storage.</p> <p>Note: if <delflag> is present and not set to 0 then, if <index> is greater than 0, <index> is ignored and ME shall follow the rules for <delflag> shown above.</p> <p>Note: if the location to be deleted is empty, an error message is reported.</p>
	AT+CMGD=?	<p>Test command shows the valid memory locations and optionally the supported values of <delflag>.</p> <p>+CMGD: (supported <index>s list)[,(supported <delflag>s list)]</p>
	Example	<p>AT+CMGD=? +CMGD: (1,2,3,6,7,17,18,19,20,37,38,39,47),(0-4)</p> <p>OK</p>
	Reference	GSM 27.005
(#SMSMODE=1)		
# S M S M O D E = 1 # S M S M O D E	AT+CMGD= <index> [,<delflag>]	<p>Execution command deletes from memory <memr> the message(s).</p> <p>Parameter:</p> <p><index> - message index in the selected storage <memr> that can have values form 1 to N, where N depends on the available space (see +CPMS)</p> <p><delflag> - an integer indicating multiple message deletion request.</p> <p>0 (or omitted) - delete message specified in <index></p> <p>1 - delete all read messages from <memr> storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched</p> <p>2 - delete all read messages from <memr> storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched</p> <p>3 - delete all read messages from <memr> storage, sent and unsent mobile originated messages, leaving unread messages untouched</p> <p>4 - delete all messages from <memr> storage.</p> <p>Note: if <delflag> is present and not set to 0 then, if <index> is greater than 0, <index> is ignored and ME shall follow the rules for <delflag> shown above.</p>



+CMGD - Delete Message		SELINT 2
= 1	AT+CMGD=?	Test command shows the valid memory locations and optionally the supported values of <delflag> . +CMGD: (supported <index>s list)[,(supported <delflag>s list)]
	Example	AT+CMGD=? +CMGD: (1,2,3,6,7,17,18,19,20,37,38,39,47),(0-4) OK
	Reference	GSM 27.005

3.5.5.4.5. Select service for MO SMS messages - +CGSMS

+CGSMS – Select service for MO SMS messages		SELINT 2
AT+CGSMS=[<service>]	<p>The set command is used to specify the service or service preference that the MT will use to send MO SMS messages.</p> <p><service>: a numeric parameter which indicates the service or service preference to be used</p> <p>0 - GPRS 1 - circuit switched (default) 2 - GPRS preferred (use circuit switched if SMS via GPRS service not available or GPRS not registered) 3 - circuit switched preferred (use GPRS if SMS via GSM service not available or GSM not registered)</p> <p>Note: the <service> value is saved on NVM as global parameter</p>	
AT+CGSMS?	<p>The read command returns the currently selected service or service preference in the form:</p> <p>+CGSMS: <service></p>	
AT+CGSMS=?	<p>Test command reports the supported list of currently available <service>s.</p>	



3.5.6. FAX Class 1 AT Commands

3.5.6.1. General Configuration

3.5.6.1.1. Manufacturer ID - +FMI

+FMI - Manufacturer ID		SELINT 0
AT+FMI?	Read command reports the manufacturer ID. The output depends on the choice made through #SELINT command.	
Example	AT+FMI? Telit_Mobile_Terminals OK	
Reference	ITU T.31 and TIA/EIA-578-A specifications	

+FMI - Manufacturer ID		SELINT 1 / 2
AT+FMI?	Read command reports the manufacturer ID. The output depends on the choice made through #SELINT command.	
Example	AT+FMI? Telit OK	
Reference	ITU T.31 and TIA/EIA-578-A specifications	

3.5.6.1.2. Model ID - +FMM

+FMM - Model ID		SELINT 0 / 1 / 2
AT+FMM?	Read command reports the model ID	
Reference	ITU T.31 and TIA/EIA-578-A specifications	

3.5.6.1.3. Revision ID - +FMR

+FMR - Revision ID		SELINT 0 / 1 / 2
AT+FMR?	Read command reports the software revision ID	
Reference	ITU T.31 and TIA/EIA-578-A specifications	



+FTM - Transmit Data Modulation		SELINT 0 / 1
	Note: the output is not bracketed and without command echo.	
Reference	ITU T.31 and TIA/EIA-578-A specifications	

+FTM - Transmit Data		SELINT 2
AT+FTM=<mod>	Execution command causes the module to transmit facsimile data using the modulation defined by the parameter <mod> . Parameter: <mod> - carrier modulation 24 - V27ter/2400 bps 48 - V27ter/4800 bps 72 - V29/7200 bps 96 - V29/9600 bps	
AT+FTM=?	Test command returns all supported values of the parameter <mod> . Note: test command result is without command echo.	
Reference	ITU T.31 and TIA/EIA-578-A specifications	

3.5.6.2.4. Receive Data Modulation - +FRM

+FRM - Receive Data Modulation		SELINT 0 / 1
AT+FRM=<mod>	Execution command causes the module to receive facsimile data using the modulation defined by the parameter <mod> . Parameter: <mod> - carrier modulation 24 - V27ter/2400 bps 48 - V27ter/4800 bps 72 - V29/7200 bps 96 - V29/9600 bps	
AT+FRM=?	Test command returns all supported values of the parameter <mod> . Note: the output is not bracketed and without command echo.	
Reference	ITU T.31 and TIA/EIA-578-A specifications	

+FRM - Receive Data Modulation		SELINT 2
AT+FRM=<mod>	Execution command causes the module to receive facsimile data using the modulation defined by the parameter <mod> . Parameter: <mod> - carrier modulation 24 - V27ter/2400 bps 48 - V27ter/4800 bps 72 - V29/7200 bps 96 - V29/9600 bps	



+FRM - Receive Data Modulation		SELINT 2
AT+FRM=?	Test command returns all supported values of the parameter <mod> . Note: test command result is without command echo.	
Reference	ITU T.31 and TIA/EIA-578-A specifications	

3.5.6.2.5. Transmit Data With HDLC Framing - +FTH

+FTH - Transmit Data With HDLC Framing		SELINT 0 / 1 / 2
AT+FTH=<mod>	Execution command causes the module to transmit facsimile data using HDLC protocol and the modulation defined by the parameter <mod> . Parameter: <mod> - carrier modulation 3 - V21/300 bps	
AT+FTH=?	Test command returns all supported values of the parameter <mod> . Note: test command result is without command echo.	
Reference	ITU T.31 and TIA/EIA-578-A specifications	

3.5.6.2.6. Receive Data With HDLC Framing - +FRH

+FRH - Receive Data With HDLC Framing		SELINT 0 / 1 / 2
AT+FRH=<mod>	Execution command causes the module to receive facsimile data using HDLC protocol and the modulation defined by the parameter <mod> . Parameter: <mod> - carrier modulation 3 - V21/300 bps	
AT+FRH=?	Test command returns all supported values of the parameter <mod> . Note: test command result is without command echo.	
Reference	ITU T.31 and TIA/EIA-578-A specifications	

3.5.6.3. Serial Port Control

3.5.6.3.1. Select Flow Control - +FLO

+FLO - Select Flow Control Specified By Type		SELINT 0 / 1 / 2
AT+FLO=<type>	Set command selects the flow control behaviour of the serial port in both directions: from DTE to DTA and from DTA to DTE . Parameter: <type> - flow control option for the data on the serial port 0 - flow control None 1 - flow control Software (XON-XOFF)	



+FLO - Select Flow Control Specified By Type		SELINT 0 / 1 / 2
	<p>2 - flow control Hardware (CTS-RTS) – (factory default)</p> <p>Note: This command is a shortcut of the +IFC command. Note: +FLO's settings are functionally a subset of &K's ones.</p>	
AT+FLO?	<p>Read command returns the current value of parameter <type></p> <p>Note: If flow control behavior has been set with AT&Kn command with the parameter that is not allowed by AT+FLO the read command AT+FLO? will return:</p> <p>+FLO: 0</p>	
AT+FLO=?	<p>Test command returns all supported values of the parameter <type>.</p> <p>Note: test command result is without command echo.</p>	
Reference	ITU T.31 and TIA/EIA-578-A specifications	

3.5.6.3.2. Serial Port Rate - +FPR

+FPR - Select Serial Port Rate		SELINT 0 / 1 / 2
AT+FPR=<rate>	<p>Set command selects the the serial port speed in both directions, from DTE to DTA and from DTA to DTE. When autobauding is selected, then the speed is detected automatically.</p> <p>Parameter: <rate> - serial port speed selection 0 – autobauding</p> <p>Note: it has no effect and is included only for backward compatibility with landline modems</p>	
AT+FPR?	Read command returns the current value of parameter <rate>	
AT+FPR=?	<p>Test command returns all supported values of the parameters <rate>.</p> <p>Note: test command result is without command echo.</p>	
Reference	ITU T.31 and TIA/EIA-578-A specifications	

3.5.6.3.3. Double Escape Character Replacement - +FDD

+FDD - Double Escape Character Replacement Control		SELINT 0 / 1 / 2
AT+FDD=<mode>	<p>Set command concerns the use of the <DLE><SUB> pair to encode consecutive escape characters (<10h><10h>) in user data.</p> <p>Parameter <mode> 0 - currently the only available value. The DCE decode of <DLE><SUB> is either <DLE><DLE> or discard. The DCE encode of <10h><10h> is</p>	



3.5.7.1.8. Service Provider Name - #SPN

#SPN - Service Provider Name		SELINT 2
AT#SPN	<p>Execution command returns the service provider string contained in the SIM field SPN, in the format:</p> <p>#SPN: <spn></p> <p>where:</p> <p><spn> - service provider string contained in the SIM field SPN, represented in the currently selected character set (see +CSCS).</p> <p>Note: if the SIM field SPN is empty, the command returns just the OK result code. Note: if the SIM field SPN is not available in the SIM card, the command returns just the ERROR result code.</p>	
AT#SPN=?	Test command returns the OK result code.	

3.5.7.1.9. Extended Numeric Error report - #CEER

#CEER – Extended numeric error report		SELINT 2																		
AT#CEER	<p>Execution command causes the TA to return a numeric code in the format</p> <p>#CEER: <code></p> <p>which should offer the user of the TA a report of the reason for</p> <ul style="list-style-type: none"> • the failure in the last unsuccessful call setup (originating or answering); • the last call release; • the last unsuccessful GPRS attach or unsuccessful PDP context activation; • the last GPRS detach or PDP context deactivation. <p>Note: if none of the previous conditions has occurred since power up then 0 is reported (i.e. No error, see below)</p> <p><code> values as follows</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Diagnostic</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>No error</td> </tr> <tr> <td>1</td> <td>Unassigned (unallocated) number</td> </tr> <tr> <td>3</td> <td>No route to destination</td> </tr> <tr> <td>6</td> <td>Channel unacceptable</td> </tr> <tr> <td>8</td> <td>Operator determined barring</td> </tr> <tr> <td>16</td> <td>Normal call clearing</td> </tr> <tr> <td>17</td> <td>User busy</td> </tr> <tr> <td>18</td> <td>No user responding</td> </tr> </tbody> </table>	Value	Diagnostic	0	No error	1	Unassigned (unallocated) number	3	No route to destination	6	Channel unacceptable	8	Operator determined barring	16	Normal call clearing	17	User busy	18	No user responding	
Value	Diagnostic																			
0	No error																			
1	Unassigned (unallocated) number																			
3	No route to destination																			
6	Channel unacceptable																			
8	Operator determined barring																			
16	Normal call clearing																			
17	User busy																			
18	No user responding																			



#CEER – Extended numeric error report		SELINT 2
19	User alerting, no answer	
21	Call rejected	
22	Number changed	
26	Non selected user clearing	
27	Destination out of order	
28	Invalid number format (incomplete number)	
29	Facility rejected	
30	Response to STATUS ENQUIRY	
31	Normal, unspecified	
34	No circuit/channel available	
38	Network out of order	
41	Temporary failure	
42	Switching equipment congestion	
43	Access information discarded	
44	Requested circuit/channel not available	
47	Resources unavailable, unspecified	
49	Quality of service unavailable	
50	Requested facility not subscribed	
55	Incoming calls barred with in the CUG	
57	Bearer capability not authorized	
58	Bearer capability not presently available	
63	Service or option not available, unspecified	
65	Bearer service not implemented	
68	ACM equal to or greater than ACMmax	
69	Requested facility not implemented	
70	Only restricted digital information bearer capability is available	
79	Service or option not implemented, unspecified	
81	Invalid transaction identifier value	
87	User not member of CUG	
88	Incompatible destination	
91	Invalid transit network selection	
95	Semantically incorrect message	
96	Invalid mandatory information	
97	Message type non-existent or not implemented	
98	Message type not compatible with protocol state	
99	Information element non-existent or not implemented	
100	Conditional IE error	
101	Message not compatible with protocol state	
102	Recovery on timer expiry	
111	Protocol error, unspecified	
127	Interworking, unspecified	
<i>GPRS related errors</i>		
224	MS requested detach	
225	NWK requested detach	



#CEER – Extended numeric error report		SELINT 2
	226	Unsuccessful attach cause NO SERVICE
	227	Unsuccessful attach cause NO ACCESS
	228	Unsuccessful attach cause GPRS SERVICE REFUSED
	229	PDP deactivation requested by NWK
	230	PDP deactivation cause LLC link activation Failed
	231	PDP deactivation cause NWK reactivation with same TI
	232	PDP deactivation cause GMM abort
	233	PDP deactivation cause LLC or SNDCP failure
	234	PDP unsuccessful activation cause GMM error
	235	PDP unsuccessful activation cause NWK reject
	236	PDP unsuccessful activation cause NO NSAPI available
	237	PDP unsuccessful activation cause SM refuse
	238	PDP unsuccessful activation cause MMI ignore
	239	PDP unsuccessful activation cause Nb Max Session Reach
	256	PDP unsuccessful activation cause wrong APN
	257	PDP unsuccessful activation cause unknown PDP address or type
	258	PDP unsuccessful activation cause service not supported
	259	PDP unsuccessful activation cause QOS not accepted
	260	PDP unsuccessful activation cause socket error
	<i>Other custom values</i>	
	240	FDN is active and number is not in FDN
	241	Call operation not allowed
	252	Call barring on outgoing calls
	253	Call barring on incoming calls
	254	Call impossible
	255	Lower layer failure
AT#CEER=?	Test command returns OK result code.	
Reference	GSM 04.08	

3.5.7.1.10. Extended error report for Network Reject cause - #CEERNET

#CEERNET – Ext error report for Network reject cause	SELINT 2				
AT#CEERNET	<p>Execution command causes the TA to return a numeric code in the format</p> <p>#CEERNET: <code></p> <p>which should offer the user of the TA a report for the last mobility management(MM) or session management(SM) procedure not accepted by the network and a report of detach or deactivation causes from network.</p> <p><code> values as follows</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Diagnostic</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>IMSI UNKNOWN IN HLR</td> </tr> </tbody> </table>	Value	Diagnostic	2	IMSI UNKNOWN IN HLR
Value	Diagnostic				
2	IMSI UNKNOWN IN HLR				



#CEERNET – Ext error report for Network reject cause	SELINT 2
3	ILLEGAL MS
4	IMSI UNKNOWN IN VISITOR LR
5	IMEI NOT ACCEPTED
6	ILLEGAL ME
7	GPRS NOT ALLOWED
8	GPRS AND NON GPRS NOT ALLOWED
9	MS IDENTITY CANNOT BE DERIVED BY NETWORK
10	IMPLICITLY DETACHED
11	PLMN NOT ALLOWED
12	LA NOT ALLOWED
13	ROAMING NOT ALLOWED
14	GPRS NOT ALLOWED IN THIS PLMN
15	NO SUITABLE CELLS IN LA
16	MSC TEMP NOT REACHABLE
17	NETWORK FAILURE
22	CONGESTION
25	LLC OR SNDPCP FAILURE
26	INSUFFICIENT RESOURCES
27	MISSING OR UNKNOWN APN
28	UNKNOWN PDP ADDRESS OR PDP TYPE
29	USER AUTHENTICATION FAILED
30	ACTIVATION REJECTED BY GGSN
31	ACTIVATION REJECTED UNSPECIFIED
32	SERVICE OPTION NOT SUPPORTED
33	REQ. SERVICE OPTION NOT SUBSCRIBED
34	SERV.OPTION TEMPORARILY OUT OF ORDER
35	NSAPI ALREADY USED
36	REGULAR DEACTIVATION
37	QOS NOT ACCEPTED
38	SMN NETWORK FAILURE
39	REACTIVATION REQUIRED
40	FEATURE NOT SUPPORTED
41	SEM ERROR IN TPF
42	SYNT ERROR IN TPF
43	UNKNOWN PDP CNTXT
44	SEM ERR IN PKT FILTER
45	SYNT ERR IN PKT FILTER
46	PDP CNTXT WITHOUT TPF ACT
48	RETRY ON NEW CELL ENTRY
81	INVALID TRANSACTION IDENTIFIER
95	SEMANTICALLY INCORRECT MESSAGE
96	INVALID MANDATORY INFORMATION
97	MSG TYPE NON EXISTENT OR NOT IMPLEMENTED
98	MSG TYPE NOT COMPATIBLE WITH PROTOCOL STATE
99	IE NON_EXISTENT OR NOT IMPLEMENTED
100	CONDITIONAL IE ERROR
101	MSG NOT COMPATIBLE WITH PROTOCOL STATE
111	PROTOCOL ERROR UNSPECIFIED

Notes:
Codes from 2 to 8 are hard MM/GMM reject causes. According with 3GPP, when these causes are used by the MNO the SIM shall be considered as invalid for non-GPRS services and/or GPRS services until switching off or the SIM is



	<p>0 - PLMN names list, currently used in commands like +COPS or #MONI, is fixed and depends upon currently selected interface (see #SELINT) (default for all products, except GE865-QUAD, GE864-DUAL V2, GL865-DUAL, GL865-QUAD, GL865-DUAL V3, GL865-QUAD V3, GL868-DUAL V3, GL868-DUAL, GE910-QUAD, GE910-QUAD V3 and GE910-GNSS)</p> <p>1 - PLMN names list is not fixed and can be updated in newer software versions (default for GE865-QUAD, GE864-DUAL V2, GL865-DUAL, GL865-QUAD, GL865-DUAL V3, GL865-QUAD V3, GL868-DUAL V3, GL868-DUAL, GE910-QUAD, GE910-QUAD V3 and GE910-GNSS)</p> <p>2 – PLMN names list is the same of 1, but updated with #PLMNUPDATE command.</p> <p>Note: <plmnlst> parameter is saved in NVM</p>
AT#PLMNMODE?	<p>Read command reports whether the currently used list of PLMN names is fixed or not, in the format:</p> <p>#PLMNMODE: <plmnlst> (<plmnlst> described above)</p>
AT#PLMNMODE=?	<p>Test command returns the supported range of values for parameter <plmnlst>.</p>

3.5.7.1.14. Update PLMN List - #PLMNUPDATE

#PLMNUPDATE – Update PLMN List	SELINT 2
<p>AT#PLMNUPDATE=[<action>,<MCC>,<MNC>[,<PLMNname>]]</p>	<p>Set command adds a new entry or updates an existing entry of the module PLMN list.</p> <p>Parameter:</p> <p><action> - command action</p> <p>0 - remove the entry with selected <MCC> and <MNC>. Parameter <PLMNname> will be ignored</p> <p>1 - update the entry with selected <MCC> and <MNC> if it is already present, otherwise add it.</p> <p>2 – remove all entries. Parameters <MCC> and <MNC> are not used in this case.</p> <p><MCC> - Mobile Country Code. String value, length 3 digits.</p> <p><MNC> - Mobile Network Code. String value, min length 2 digits, max length 3 digits.</p> <p><PLMNname> - Name of the PLMN; string value, max length 30 characters.</p>



	<p>NOTE: the entries will be saved in NVM.</p> <p>NOTE: this command supports up to 30 entries.</p> <p>NOTE: entries added or updated with #PLMNUPDATE are effective only if #PLMNMODE is set to 2.</p>
AT#PLMNUPDATE?	<p>Read command returns the list of entries added or updated with set command, in the format:</p> <p>#PLMNUPDATE: <MCC>,<MNC>,<PLMNname> #PLMNUPDATE: <MCC>,<MNC>,<PLMNname> ... OK</p> <p>NOTE: the entries are in increasing order by MCC and MNC</p>
AT#PLMNUPDATE=?	<p>Test command returns the supported range of parameters <action>, and the maximum length of <MCC>, <MNC> and <PLMNname> parameters in the format:</p> <p>#PLMNUPDATE: (list of supported <action>s),<c_length>,<n_length>,<p_length></p> <p>where:</p> <p><c_length> - integer type value indicating the maximum length of parameter <MCC>. <n_length> - integer type value indicating the maximum length of parameter <MNC>. <p_length> - integer type value indicating the maximum length of parameter <PLMNname></p>

3.5.7.1.15. Forbidden PLMN deletion - #FPLMN

#FPLMN – Forbidden PLMN deletion		SELINT 2
AT#FPLMN= <enable>[,<period>]	<p>Set command enables/disables the periodic deletion of forbidden PLMN list file in SIM.</p> <p>Parameter:</p> <p><enable></p> <ul style="list-style-type: none"> 0 - disables periodic deletion 1 – enables periodic deletion 2 – one shot deletion (deletes forbidden PLMN list) 3 – list contents of forbidden PLMN list file <p><period> - interval in minutes between forbidden PLMN list deletions (default 60)</p>	
AT#FPLMN?	Read command reports whether the periodic deletion is currently enabled or not,	



#FPLMN – Forbidden PLMN deletion		SELINT 2
	and the deletion period, in the format: #FPLMN: <enable>,<period>	
AT#FPLMN=?	Test command reports available values for parameters <enable> and <period>.	

3.5.7.1.16. Display PIN Counter - #PCT

#PCT - Display PIN Counter		SELINT 0 / 1
AT#PCT	Execution command reports the PIN/PUK or PIN2/PUK2 input remaining attempts, depending on +CPIN requested password in the format: #PCT: <n> where: <n> - remaining attempts 0 - the SIM is blocked. 1..3 - if the device is waiting either SIM PIN or SIM PIN2 to be given. 1..10 - if the device is waiting either SIM PUK or SIM PUK2 to be given.	
AT#PCT?	Read command has the same behaviour as Execution command.	

#PCT - Display PIN Counter		SELINT 2
AT#PCT	Execution command reports the PIN/PUK or PIN2/PUK2 input remaining attempts, depending on +CPIN requested password in the format: #PCT: <n> where: <n> - remaining attempts 0 - the SIM is blocked. 1..3 - if the device is waiting either SIM PIN or SIM PIN2 to be given. 1..10 - if the device is waiting either SIM PUK or SIM PUK2 to be given.	
AT#PCT=?	Test command returns the OK result code.	

3.5.7.1.17. Software Shut Down - #SHDN

#SHDN - Software Shutdown		SELINT 0 / 1
AT#SHDN	Execution command causes device detach from the network and shut down. Before definitive shut down an OK response is returned. Note: after the issuing of this command any previous activity is terminated and the device will not respond to any further command. Note: to turn it on again Hardware pin ON/OFF must be tied low .	
AT#SHDN?	Read command has the same behaviour as Execution command.	

#SHDN - Software Shutdown		SELINT 2
----------------------------------	--	-----------------



#SHDN - Software Shutdown		SELINT 2
AT#SHDN	<p>Execution command causes device detach from the network and shut down. Before definitive shut down an OK response is returned.</p> <p>Note: after the issuing of this command any previous activity is terminated and the device will not respond to any further command.</p> <p>Note: to turn it on again Hardware pin ON/OFF must be tied low.</p>	
AT#SHDN=?	Test command returns the OK result code.	

3.5.7.1.18. Extended Reset - #Z

#Z – Extended reset		SELINT 2
AT#Z=<profile>	<p>Set command loads both base section and extended section of the specified user profile stored with AT&W and selected with AT&P.</p> <p>Parameter <profile> 0 – user profile 0 1 – user profile 1</p>	
AT#Z=?	Test command tests for command existence.	

3.5.7.1.19. Periodic Reset - #ENHRST

#ENHRST – Periodic ReSeT		SELINT 2
AT#ENHRST=<mod>,<delay>	<p>Set command enables/disables the unit reset after <delay> minutes.</p> <p>Parameters: <mod> 0 – disables the unit reset (factory default) 1 – enables the unit reset only for one time 2 – enables the periodic unit reset <delay> - time interval after that the unit reboots; numeric value in minutes</p> <p>Note: the settings are saved automatically in NVM only if old or new mod is 2. Any change from 0 to 1 or from 1 to 0 is not stored in NVM</p> <p>Note: the particular case AT#ENHRST=1,0 causes the immediate module reboot. In this case if AT#ENHRST=1,0 follows an AT command that stores some parameters in NVM, it is recommended to insert a delay of at least 5 seconds before to issue AT#ENHRST=1,0, to permit the complete NVM storing.</p>	
AT#ENHRST?	Read command reports the current parameter settings for # EHRST command in the format:	



#ENHRST – Periodic ReSeT	SELINT 2
	<p># EHRST: < mod >[,<delay>,<remainTime>]</p> <p><remainTime> - time remaining before next reset</p>
AT#ENHRST=?	Test command reports supported range of values for parameters <mod> and <delay>.
Examples	<p>AT#ENHRST=1,60</p> <p>... Module reboots after 60 minutes ...</p> <p>AT#ENHRST=1,0</p> <p>... Module reboots now ...</p> <p>AT#ENHRST=2,60</p> <p>... Module reboots after 60 minutes and indefinitely after every following power on ...</p>

3.5.7.1.20. Fast shutdown configuration - #FASTSHDN

#FASTSHDN – Fast shutdown configuration	SELINT 2
<p>AT#FASTSHDN[= <Enable>[,<Gpio>[, <spare>[,<spare>[,<spare>[,<s pare>]]]]]</p>	<p>Set the GPIO fast shutdown configuration.</p> <p>Parameters:</p> <p><Enable> It is used to enable or disable the fast shutdown execution via GPIO: 0 - The fast shutdown execution via GPIO is disabled (default) 1 - The fast shutdown execution via GPIO is enabled</p> <p>This parameter is stored in NVM.</p> <p><Gpio> It sets which Gpio execute the fast shdn. When the GPIO number configured with <Gpio> goes from the High level to the low level and the <Enable> is set to 1, the module execute immediately the fast shutdown.</p> <p>This parameter is stored in NVM.</p> <p>The format AT#FASTSHDN forces the module to execute immediately the fast shutdown.</p> <p>Note: it is necessary that the Gpio set whit <Gpio> is used for the fast</p>



	<p>shutdown purpose only. If you want to use the Gpio set via AT#FASTSHDN you have to disable the fastshutdown purpose for that pin:</p> <p>AT#FASTSHDN=0,<Gpio></p> <p>Note: fast shut down doesn't perform network deregistration procedure.</p>
AT#FASTSHDN?	<p>Read command reports the currently selected configuration in the format:</p> <p>AT#FASTSHDN: <Enable>,<Gpio>,0,0,0,0</p>
AT#FASTSHDN=?	<p>Test command returns the supported range of values for all the parameters.</p>
Example	<pre>//enable fast shutdown on GPIO 5 AT#FASTSHDN=1,5 OK AT#FASTSHDN? \$GPSGPIO: 1,5,0,0,0,0 OK //force immediate fast shutdown AT#FASTSHDN OK</pre>

3.5.7.1.21. Wake From Alarm Mode - #WAKE

#WAKE - Wake From Alarm Mode	SELINT 0 / 1
<p>AT#WAKE[=<opmode>]</p>	<p>Execution command stops any eventually present alarm activity and, if the module is in alarm mode, it exits the alarm mode and enters the normal operating mode.</p> <p>Parameter: <opmode> - operating mode; any input is possible: no control is made on the <opmode> value, although it is mandatory to have it; the module exits the alarm mode, enters the normal operating mode, any alarm activity is stopped (e.g. alarm tone playing) and an OK result code is returned.</p> <p>Note: if parameter is omitted, the command returns the operating status of the device in the format:</p> <p>#WAKE: <status></p> <p>where: <status> 0 - normal operating mode 1 - alarm mode or normal operating mode with some alarm activity.</p>



#WAKE - Wake From Alarm Mode		SELINT 2
	0 - normal operating mode 1 - alarm mode or normal operating mode with some alarm activity.	
AT#WAKE=?	Test command returns OK result code.	

3.5.7.1.22. Query Temperature Overflow - #QTEMP

#QTEMP - Query Temperature Overflow		SELINT 0 / 1
AT#QTEMP [=<mode>]	Set command has currently no effect. The interpretation of parameter <mode> is currently not implemented. Note: if parameter <mode> is omitted the behaviour of Set command is the same as Read command Note: Only <mode>=0 is accepted.	
AT#QTEMP?	Read command queries the device internal temperature sensor for over temperature and reports the result in the format: #QTEMP: <temp> where <temp> - over temperature indicator 0 - the device temperature is in the <i>working range</i> 1 - the device temperature is out of the <i>working range</i> Note: typical <i>temperature working range</i> is (-10°C..+55°C); anyway you are strongly recommended to consult the “Hardware User Guide” to verify the real temperature working range of your module	
#QTEMP=?	Test command reports supported range of values for parameter <mode>.	
Note	The device should not be operated out of its <i>temperature working range</i> ; if temperature is out of range proper functioning of the device is not ensured.	

#QTEMP - Query Temperature Overflow		SELINT 2
AT#QTEMP= [<mode>]	Set command has currently no effect. The interpretation of parameter <mode> is currently not implemented: any value assigned to it will simply have no effect.	
AT#QTEMP?	Read command queries the device internal temperature sensor for over temperature and reports the result in the format: #QTEMP: <temp> where <temp> - over temperature indicator 0 - the device temperature is in the <i>working range</i> 1 - the device temperature is out of the <i>working range</i> Note: typical <i>temperature working range</i> is (-10°C..+55°C); anyway you are strongly recommended to consult the “Hardware User Guide” to verify the real	



#QTEMP - Query Temperature Overflow	SELINT 2
	temperature working range of your module
#QTEMP=?	Test command reports supported range of values for parameter <mode> .
Note	The device should not be operated out of its <i>temperature working range</i> , elsewhere proper functioning of the device is not ensured.

3.5.7.1.23. Temperature Monitor - #TEMPMON

#TEMPMON - Temperature Monitor	SELINT 2
AT#TEMPMON= <mod> [,<urcmode> [,<action> [,<hyst_time> [,<GPIO>]]]]	<p>Set command sets the behaviour of the module internal temperature monitor.</p> <p>Parameters:</p> <p><mod></p> <ul style="list-style-type: none"> 0 - sets the command parameters. 1 - triggers the measurement of the module internal temperature, reporting the result in the format: <p>#TEMPMEAS: <level>,<value></p> <p>where:</p> <ul style="list-style-type: none"> <level> - threshold level <ul style="list-style-type: none"> -2 - extreme temperature lower bound (see Note) -1 - operating temperature lower bound (see Note) 0 - normal temperature 1 - operating temperature upper bound (see Note) 2 - extreme temperature upper bound (see Note) <p><value> - actual temperature expressed in Celsius degrees.</p> <p><i>Setting of the following optional parameters has meaning only if <mod>=0</i></p> <p><urcmode> - URC presentation mode.</p> <ul style="list-style-type: none"> 0 - it disables the presentation of the temperature monitor URC 1 - it enables the presentation of the temperature monitor URC, whenever the module internal temperature reaches either operating or extreme levels; the unsolicited message is in the format: <p>#TEMPMEAS: <level>,<value></p> <p>where:</p> <p><level> and <value> are as before</p> <p><action> - sum of integers, each representing an action to be done whenever the module internal temperature reaches either operating or extreme levels (default is 0). If <action> is not zero, it is mandatory to set the</p>



	<p><hyst_time> parameter too.</p> <p>0..7 - as a sum of:</p> <ul style="list-style-type: none"> 0 - no action 1 - automatic shut-down when the temperature is beyond the extreme bounds 2 - RF TX circuits automatically disabled (using +CFUN=2) when operating temperature bounds are reached. When the temperature is back to normal the module is brought back to the previous state, before RF TX disabled. 4 - the output pin <GPIO> is tied HIGH when operating temperature bounds are reached; when the temperature is back to normal the output pin <GPIO> is tied LOW. If this <action> is required, it is mandatory to set the <GPIO> parameter too. <p><hyst_time> - hysteresis time: all the actions happen only if the extreme or operating bounds are maintained at least for this period. This parameter is needed and required if <action> is not zero.</p> <p>0..255 - time in seconds</p> <p><GPIO> - GPIO number. valid range is “any output pin” (see “Hardware User’s Guide”). This parameter is needed and required only if <action>=4 is required.</p> <p>Note: the URC presentation mode <urcmode> is related to the current AT instance only (see +cmux); last <urcmode> settings are saved for every instance as extended profile parameters, thus it is possible to restore them either if the multiplexer control channel is released and set up, back and forth.</p> <p>Note: last <action>, <hyst_time> and <GPIO> settings are saved in NVM too, but they are not related to the current CMUX instance only (see +cmux).</p>
<p>AT#TEMPMON?</p>	<p>Read command reports the current parameter settings for #TEMPMON command in the format:</p> <p>#TEMPMON: <urcmode>,<action>[,<hyst_time>[,<GPIO>]]</p>
<p>AT#TEMPMON=?</p>	<p>Test command reports the supported range of values for parameters <mod>, <urcmode>, <action>, <hyst_time> and <GPIO></p>



<p>Note</p>	<p>In the following table typical temperature bounds are represented for all products except GE864-QUAD AUTOMOTIVE V2 and GE864-QUAD ATEX</p> <table border="1" data-bbox="491 474 1257 730"> <tr> <td>Extreme Temperature Lower Bound</td> <td>-30°C</td> </tr> <tr> <td>Operating Temperature Lower Bound</td> <td>-10°C</td> </tr> <tr> <td>Operating Temperature</td> <td></td> </tr> <tr> <td>Operating Temperature Upper Bound</td> <td>55°C</td> </tr> <tr> <td>Extreme Temperature Upper Bound</td> <td>80°C</td> </tr> </table>	Extreme Temperature Lower Bound	-30°C	Operating Temperature Lower Bound	-10°C	Operating Temperature		Operating Temperature Upper Bound	55°C	Extreme Temperature Upper Bound	80°C
	Extreme Temperature Lower Bound	-30°C									
Operating Temperature Lower Bound	-10°C										
Operating Temperature											
Operating Temperature Upper Bound	55°C										
Extreme Temperature Upper Bound	80°C										
<p>In the following table typical temperature bounds are represented for GE864-QUAD AUTOMOTIVE V2 and GE864-QUAD ATEX products.</p> <table border="1" data-bbox="491 887 1257 1142"> <tr> <td>Extreme Temperature Lower Bound</td> <td>-50°C</td> </tr> <tr> <td>Operating Temperature Lower Bound</td> <td>-30°C</td> </tr> <tr> <td>Operating Temperature</td> <td></td> </tr> <tr> <td>Operating Temperature Upper Bound</td> <td>85°C</td> </tr> <tr> <td>Extreme Temperature Upper Bound</td> <td>120°C</td> </tr> </table>	Extreme Temperature Lower Bound	-50°C	Operating Temperature Lower Bound	-30°C	Operating Temperature		Operating Temperature Upper Bound	85°C	Extreme Temperature Upper Bound	120°C	
Extreme Temperature Lower Bound	-50°C										
Operating Temperature Lower Bound	-30°C										
Operating Temperature											
Operating Temperature Upper Bound	85°C										
Extreme Temperature Upper Bound	120°C										



3.5.7.1.24. Temperature monitor configuration - #TEMPCFG

#TEMPCFG – Temperature monitor configuration	SELINT 2
<p>AT#TEMPCFG= <TempExLowBound> [,<TempOpLowBound> [,<TempOpUpBound> [,<TempExUpBound>]]]</p>	<p>This parameter command manages the temperature range used by the TEMPMON command</p> <p>Parameters:</p> <p><TempExLowBound> - the extreme temperature lower limit</p> <p><TempOpLowBound> - the operating temperature lower limit</p> <p><TempOpUpBound> - the operating temperature upper limit</p> <p><TempExUpBound> - the extreme temperature upper limit</p> <p>Note 1: The extreme temperature lower limit must not be lower than lower limit (see TEMPMON for temperature limits);</p> <p>Note 2: the operating temperature lower limit must not be lower than the extreme temperature lower limit, nor lower than its minimum admitted value (see TEMPMON for temperature limits);</p> <p>Note 3: the operating temperature upper limit must not be lower than the operating temperature lower limit, nor lower than its minimum admitted value (see TEMPMON for temperature limits);</p> <p>Note 4: the extreme temperature upper limit must not be lower than the operating temperature upper limit</p> <p>Note 5: The extreme temperature upper limit must not be higher than upper limit (see TEMPMON for temperature limits).</p> <p>Note 5: the temperature set are saved in NvM, so at the next reboot the last temperature set is active instead of the factory default values.</p> <p>Note 6: a factory reset restores the factory default values.</p>
<p>AT#TEMPCFG?</p>	<p>read the currently active temperature range :</p> <p>#TEMPCFG: <TempExLowBound>, <TempOpLowBound>, <TempOpUpBound>, <TempExUpBound></p>
<p>AT#TEMPCFG =?</p>	<p>Test command returns the supported range of <TempExLowBound>, <TempOpLowBound>,</p>



	<p><TempOpUpBound>, <TempExUpBound> parameters.</p>
Example	<pre>//test the currently set values AT#TEMPCFG? #TEMPCFG: -30,-10,55,80 OK //set a new temperature range AT#TEMPCFG=-40,-15,55,85 OK //read the currently set values AT#TEMPCFG? #TEMPCFG: -40,-15,55,85 OK</pre>

3.5.7.1.25. Set General Purpose Output - #SGPO

#SGPO - Set General Purpose Output		SELINT 0 / 1
<p>AT#SGPO[= [<stat>]]</p>	<p>Set command sets the value of the general purpose output pin GPIO2.</p> <p>Parameter: <stat> 0 - output pin cleared to 0 (Low) 1 - output pin set to 1 (High)</p> <p>Note: the GPIO2 is an OPEN COLLECTOR output, the command sets the transistor base level, hence the open collector output is negated: AT#SGPO=0 sets the open collector output High AT#SGPO=1 sets the open collector output Low A pull up resistor is required on pin GPIO2.</p> <p>Note: issuing AT#SGPO<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT#SGPO=<CR> is the same as issuing the command AT#SGPO=0<CR>.</p>	
<p>AT#SGPO?</p>	<p>Read command reports the #SGPO command setting, hence the opposite status of the open collector pin in the format:</p> <p>#SGPO: <stat>.</p>	
<p>AT#SGPO=?</p>	<p>Test command reports the supported range of values of parameter <stat>.</p>	



3.5.7.1.26. General Purpose Input - #GGPI

#GGPI - General Purpose Input		SELINT 0 / 1
AT#GGPI=[<dir>]]	<p>Set command sets the general purpose input pin GPIO1.</p> <p>Parameter: <dir> - auxiliary input GPIO1 setting 0 - the Read command AT#GGPI? reports the logic input level read from GPIO1 pin.</p> <p>Note: The device has an insulated input pin (the input goes the base of an internal decoupling transistor) which can be used as a logic general purpose input. This command sets the read behaviour for this pin, since only direct read report is supported, the issue of this command is not needed. In future uses the behavior of the read input may be more complex.</p> <p>Note: If parameter is omitted then the behaviour of Set command is the same as Read command</p>	
AT#GGPI?	<p>Read command reports the read value for the input pin GPIO1, in the format:</p> <p>#GGPI: <dir>,<stat></p> <p>where <dir> - direction setting (see #GGPI=<dir>) <stat> - logic value read from pin GPIO1</p> <p>Note: Since the reading is done after the insulating transistor, the reported value is the opposite of the logic status of the GPIO1 input pin.</p>	
AT#GGPI=?	<p>Test command reports supported range of values for parameter <dir>.</p>	

3.5.7.1.27. General Purpose Input/Output Pin Control - #GPIO

#GPIO - General Purpose Input/Output Pin Control		SELINT 0/1
AT#GPIO=[<pin>,<mode>[,<dir>]]	<p>Execution command sets the value of the general purpose output pin GPIO<pin> according to <dir> and <mode> parameter. Not all configurations for the three parameters are valid.</p> <p>Parameters: <pin> - GPIO pin number; supported range is from 1 to a value that depends on the hardware. <mode> - its meaning depends on <dir> setting: 0 - no meaning if <dir>=0 - INPUT - output pin cleared to 0 (Low) if <dir>=1 - OUTPUT 1 - no meaning if <dir>=2 - ALTERNATE FUNCTION - no meaning if <dir>=3 – TRISTATE PULL DOWN 2 - no meaning if <dir>=0 - INPUT - output pin set to 1 (High) if <dir>=1 - OUTPUT</p>	



#GPIO - General Purpose Input/Output Pin Control	SELINT 0/1
	<p>- no meaning if <dir>=2 - ALTERNATE FUNCTION - no meaning if <dir>=3 – TRISTATE PULL DOWN 2 - Reports the read value from the input pin if <dir>=0 - INPUT - Reports the read value from the input pin if <dir>=1 - OUTPUT - Reports a no meaning value if <dir>=2 - ALTERNATE FUNCTION - Reports a no meaning if <dir>=3 – TRISTATE PULL DOWN</p> <p><dir> - GPIO pin direction 0 - pin direction is INPUT 1 - pin direction is OUTPUT 2 - pin direction is ALTERNATE FUNCTION (see Note). 3 - pin is set to PULL DOWN (see Note)</p> <p>Note: when <mode>=2 (and <dir> is omitted) the command reports the direction and value of pin GPIO<pin> in the format:</p> <p>#GPIO: <dir>,<stat></p> <p>where: <dir> - current direction setting for the GPIO<pin> <stat></p> <ul style="list-style-type: none"> - logic value read from pin GPIO<pin> in the case the pin <dir> is set to input; - logic value present in output of the pin GPIO<pin> in the case the pin <dir> is currently set to output; - no meaning value for the pin GPIO<pin> in the case the pin <dir> is set to alternate function or Tristate pull down <p>Note: "ALTERNATE FUNCTION" value is valid only for following pins:</p> <ul style="list-style-type: none"> - GPIO4 - alternate function is "RF Transmission Control" - GPIO5 - alternate function is "RF Transmission Monitor" - GPIO6 - alternate function is "Alarm Output" (see +CALA and #ALARMPIN) - GPIO7 - alternate function is "Buzzer Output" (see #SRP) <p>Note: while using the pins in the alternate function, the GPIO read/write access to that pin is not accessible and shall be avoided.</p> <p>Note: Tristate pull down settings is available only on some products and GPIO. In case it is not available, automatically the setting is reverted to INPUT. Check the product HW user guide to verify if Tristate pull down settings is available and if it is the default at system start-up</p>
AT#GPIO?	<p>Read command reports the read direction and value of all GPIO pins, in the format:</p> <p>#GPIO: <dir>,<stat>[<CR><LF>#GPIO: <dir>,<stat>[...]]</p>



#GPIO - General Purpose Input/Output Pin Control		SELINT 0/1
	where <dir> - as seen before <stat> - as seen before	
AT#GPIO=?	Test command reports the supported range of values of the command parameters <pin>, <mode> and <dir>.	
Example	AT#GPIO=3,0,1 OK AT#GPIO=3,2 #GPIO: 1,0 OK AT#GPIO=4,1,1 OK AT#GPIO=5,0,0 OK AT#GPIO=6,2 #GPIO: 0,1 OK	

#GPIO - General Purpose Input/Output Pin Control		SELINT 2
AT#GPIO=[<pin>,<mode>[,<dir>[,<save]]]	<p>Execution command sets the value of the general purpose output pin GPIO<pin> according to <dir> and <mode> parameter. Not all configurations for the three parameters are valid.</p> <p>Parameters:</p> <p><pin> - GPIO pin number; supported range is from 1 to a value that depends on the hardware.</p> <p><mode> - its meaning depends on <dir> setting:</p> <ul style="list-style-type: none"> 0 - no meaning if <dir>=0 - INPUT <ul style="list-style-type: none"> - output pin cleared to 0 (Low) if <dir>=1 - OUTPUT - no meaning if <dir>=2 - ALTERNATE FUNCTION - no meaning if <dir>=3 – TRISTATE PULL DOWN - no meaning if <dir>=4 – 2nd ALTERNATE FUNCTION 1 - no meaning if <dir>=0 - INPUT <ul style="list-style-type: none"> - output pin set to 1 (High) if <dir>=1 - OUTPUT - no meaning if <dir>=2 - ALTERNATE FUNCTION - no meaning if <dir>=3 – TRISTATE PULL DOWN - no meaning if <dir>=4 – 2nd ALTERNATE FUNCTION 2 - Reports the read value from the input pin if <dir>=0 - INPUT <ul style="list-style-type: none"> - Reports the read value from the input pin if <dir>=1 - OUTPUT - Reports a no meaning value if <dir>=2 - ALTERNATE FUNCTION - Reports a no meaning value if <dir>=3 – TRISTATE PULL DOWN - Reports a no meaning value if <dir>=4 – 2nd ALTERNATE FUNCTION 3 - if <dir>=0 – INPUT, enable Pull-Up 4 - if <dir>=0 – INPUT, enable Pull-Down 	



#GPIO - General Purpose Input/Output Pin Control	SELINT 2
<p><dir> - GPIO pin direction</p> <ul style="list-style-type: none"> 0 - pin direction is INPUT 1 - pin direction is OUTPUT 2 - pin direction is ALTERNATE FUNCTION (see Note). 3 - pin is set to PULL DOWN, obsolete, keep it only for retro compatibility reason. Use <mode> to set pull down 4 - pin direction is 2nd ALTERNATE FUNCTION (see Note). <p><save> - GPIO pin save configuration</p> <ul style="list-style-type: none"> 0 - pin configuration is not saved 1 - pin configuration is saved <p>Note: when <save> is omitted the configuration is stored only if user set or reset ALTERNATE function on <dir> parameter.</p> <p>Note: when <mode>=2 (and <dir> is omitted) the command reports the direction and value of pin GPIO<pin> in the format:</p> <p>#GPIO: <dir>,<stat></p> <p>where:</p> <p><dir> - current direction setting for the GPIO<pin></p> <p><stat></p> <ul style="list-style-type: none"> <input type="checkbox"/> logic value read from pin GPIO<pin> in the case the pin <dir> is set to input; <input type="checkbox"/> logic value present in output of the pin GPIO<pin> in the case the pin <dir> is currently set to output; <input type="checkbox"/> no meaning value for the pin GPIO<pin> in the case the pin <dir> is set to alternate function or Tristate pull down <p>Note: "ALTERNATE FUNCTION" value is valid only for following pins:</p> <ul style="list-style-type: none"> <input type="checkbox"/> GPIO4 - alternate function is "RF Transmission Control" <input type="checkbox"/> GPIO5 - alternate function is "RF Transmission Monitor" <input type="checkbox"/> GPIO6 - alternate function is "Alarm Output" (see +CALA and #ALARMPIN) <input type="checkbox"/> GPIO7 - alternate function is "Buzzer Output" (see #SRP) <p>Note: "2nd ALTERNATE FUNCTION" has no effect except on GE866 family, and it will return always OK, but the GPIO direction doesn't change.</p> <p>Note: while using the pins in the alternate function, the GPIO read/write access to that pin is not accessible and shall be avoided.</p> <p style="text-align: center;"><i>For GE866 family products only</i></p> <p>Note: "ALTERNATE FUNCTION" value is valid only for following pins:</p>	



#GPIO - General Purpose Input/Output Pin Control		SELINT 2
	<input type="checkbox"/> GPIO4 - alternate function is "RF Transmission Control" <input type="checkbox"/> GPIO5 - alternate function is "RF Transmission Monitor" <input type="checkbox"/> GPIO6 - alternate function is "Alarm Output" (see +CALA and #ALARMPIN)	
	<p>Note: "2nd ALTERNATE FUNCTION" value is valid only for following pin: <input type="checkbox"/> GPIO6 – 2nd alternate function is "Buzzer Output" (see #SRP) For other GPIO the command returns OK but the GPIO direction doesn't change</p> <p>Note: Tristate pull down/ pull up settings are available only on some products and GPIO. In case they are not available, automatically the setting is reverted to INPUT. Check the product HW user guide to verify if pull down/ pull up settings are available and if the pull down is the default at system start-up</p>	
AT#GPIO?	Read command reports the read direction and value of all GPIO pins, in the format: #GPIO: <dir>,<stat>[<CR><LF>#GPIO: <dir>,<stat>[...]] where <dir> - as seen before <stat> - as seen before	
AT#GPIO=?	Test command reports the supported range of values of the command parameters <pin>, <mode> and <dir>.	
Example	<pre>AT#GPIO=3,0,1 OK AT#GPIO=3,2 #GPIO: 1,0 OK AT#GPIO=4,1,1 OK AT#GPIO=5,0,0 OK AT#GPIO=6,2 #GPIO: 0,1 OK AT#GPIO=3,0,1,1 OK</pre>	

3.5.7.1.28. Alarm Pin - #ALARMPIN

#ALARMPIN – Alarm Pin	SELINT 2
AT#ALARMPIN=<pin>	Set command sets the GPIO pin for the ALARM pin



	<p>Parameters:</p> <p><pin> defines which GPIO shall be used as ALARM pin instead of GPIO6/ALARM. For the <pin> actual range check the “Hardware User Guide”. Default value is 6.</p> <p>Note: the setting is saved in NVM</p> <p>Note: setting <pin> equal to 0 disables the ALARM pin</p>
AT#ALARMPIN?	<p>Read command returns the current parameter settings for #ALARMPIN command in the format:</p> <p>#ALARMPIN: <pin></p>
AT#ALARMPIN=?	<p>Test command reports the supported range of values for parameter <pin>.</p>

3.5.7.1.29. STAT_LED GPIO Setting - #SLED

#SLED - STAT_LED GPIO Setting	SELINT 2
AT#SLED=<mode> [,<on_duration>] [,<off_duration>]]	<p>Set command sets the behaviour of the STAT_LED GPIO</p> <p>Parameters:</p> <p><mode> - defines how the STAT_LED GPIO is handled</p> <ul style="list-style-type: none"> 0 - GPIO tied Low (default for GE866-QUAD, GL865-DUAL, GL865-DUAL V3, GL865-QUAD V3, GL868-DUAL, GL868-DUAL V3, GL865-QUAD, GE910-QUAD, GE910-QUAD AUTO, GE910-QUAD V3 and GE910-GNSS) 1 - GPIO tied High 2 - GPIO handled by Module Software (factory default for all products except GE866-QUAD, GL865-DUAL, GL865-DUAL V3, GL865-QUAD V3, GL868-DUAL, GL868-DUAL V3, GL865-QUAD, GE910-QUAD, GE910-QUAD AUTO, GE910-QUAD V3 and GE910-GNSS) 3 - GPIO is turned on and off alternatively, with period defined by the sum <on_duration> + <off_duration> <p><on_duration> - duration of period in which STAT_LED GPIO is tied High while <mode>=3</p> <p>1..100 - in tenth of seconds (default is 10)</p> <p><off_duration> - duration of period in which STAT_LED GPIO is tied Low while <mode>=3</p> <p>1..100 - in tenth of seconds (default is 10)</p> <p>Note: values are saved in NVM by command #SLEDSAV</p> <p>Note: at module boot the STAT_LED GPIO is always tied High and holds this value until the first NVM reading.</p>
AT#SLED?	<p>Read command returns the STAT_LED GPIO current setting, in the format:</p> <p>#SLED: <mode>,<on_duration>,<off_duration></p>
AT#SLED=?	<p>Test command returns the range of available values for parameters <mode>,</p>



#SLED - STAT_LED GPIO Setting	SELINT 2
<on_duration> and <off_duration>.	

3.5.7.1.30. Save STAT_LED GPIO Setting - #SLEDSAV

#SLEDSAV - Save STAT_LED GPIO Setting	SELINT 2
AT#SLEDSAV	<p>Execution command saves STAT_LED setting in NVM.</p> <p>Note: if LED pin shares a user GPIO pin, AT#GPIO=<pin>,<mode>,<dir>,1 has always higher priority than AT#SLEDSAV command, therefore if customer use both commands, the AT#SLED? read command has no meaning in the above scenario. After system reboot the pin status is that stored by AT#GPIO=<pin>,<mode>,<dir>,1. Customer must choose the scope of the pin: GPIO or LED.</p>
AT#SLED=?	Test command returns OK result code.

3.5.7.1.31. Analog/Digital Converter Input - #ADC

#ADC - Analog/Digital Converter Input	SELINT 0 / 1
AT#ADC[=<adc>,<mode>[,<dir>]]	<p>Execution command reads pin<adc> voltage, converted by ADC, and outputs it in the format:</p> <p>#ADC: <value></p> <p>where: <value> - pin<adc> voltage, expressed in mV</p> <p>Parameters: <adc> - index of pin For the number of available ADCs see HW User Guide</p> <p><mode> - required action 2 - query ADC value <dir> - direction; its interpretation is currently not implemented 0 - no effect.</p> <p>If all parameters are omitted the command reports all pins voltage, converted by ADC, in the format:</p> <p>#ADC: <value>[<CR><LF>#ADC: <value>[...]]</p> <p>Note: The command returns the last valid measure.</p>
AT#ADC?	Read command has the same effect as Execution command when all parameters are omitted.
AT#ADC=?	Test command reports the supported range of values of the command parameters <adc>, <mode> and <dir>.



#ADC - Read Analog/Digital Converter input		SELINT 2
AT#ADC= [<adc>,<mode> [,<dir>]]	<p>Execution command reads pin<adc> voltage, converted by ADC, and outputs it in the format:</p> <p>#ADC: <value></p> <p>where:</p> <p><value> - pin<adc> voltage, expressed in mV</p> <p>Parameters:</p> <p><adc> - index of pin For the number of available ADCs see HW User Guide</p> <p><mode> - required action 2 - query ADC value</p> <p><dir> - direction; its interpretation is currently not implemented 0 - no effect.</p> <p>Note: The command returns the last valid measure.</p>	
AT#ADC?	<p>Read command reports all pins voltage, converted by ADC, in the format:</p> <p>#ADC: <value>[<CR><LF>#ADC: <value>[...]]</p>	
AT#ADC=?	<p>Test command reports the supported range of values of the command parameters <adc>, <mode> and <dir>.</p>	

3.5.7.1.32. Digital/Analog Converter Control - #DAC

#DAC - Digital/Analog Converter Control		SELINT 0 / 1
AT#DAC[= <enable> [,<value>]]	<p>Set command enables/disables the DAC_OUT pin.</p> <p>Parameters:</p> <p><enable> - enables/disables DAC output. 0 - disables pin; it is in high impedance status (factory default) 1 - enables pin; the corresponding output is driven</p> <p><value> - scale factor of the integrated output voltage; it must be present if <enable>=1 0..1023 - 10 bit precision</p> <p>Note: integrated output voltage = MAX_VOLTAGE * value / 1023</p> <p>Note: if all parameters are omitted then the behaviour of Set command is the same as the Read command.</p>	
AT#DAC?	<p>Read command reports whether the DAC_OUT pin is currently enabled or not, along with the integrated output voltage scale factor, in the format:</p> <p>#DAC: <enable>,<value></p>	
AT#DAC=?	<p>Test command reports the range for the parameters <enable> and <value>.</p>	



#DAC - Digital/Analog Converter Control		SELINT 0 / 1
Example	Enable the DAC out and set its integrated output to the 50% of the max value: AT#DAC=1,511 OK Disable the DAC out: AT#DAC=0 OK	
Note	With this command the DAC frequency is selected internally. D/A converter must not be used during POWERSAVING. DAC_OUT line must be integrated (for example with a low band pass filter) in order to obtain an analog voltage. For a more in depth description of the integration filter refer to the hardware user guide.	

#DAC - Digital/Analog Converter Control		SELINT 2
AT#DAC= [<enable> [,<value>]]	Set command enables/disables the DAC_OUT pin. Parameters: <enable> - enables/disables DAC output. 0 - disables pin; it is in high impedance status (factory default) 1 - enables pin; the corresponding output is driven <value> - scale factor of the integrated output voltage; it must be present if <enable>=1 0..1023 - 10 bit precision Note: integrated output voltage = MAX_VOLTAGE * value / 1023	
AT#DAC?	Read command reports whether the DAC_OUT pin is currently enabled or not, along with the integrated output voltage scale factor, in the format: #DAC: <enable>,<value>	
AT#DAC=?	Test command reports the range for the parameters <enable> and <value>.	
Example	<i>Enable the DAC out and set its integrated output to the 50% of the max value:</i> AT#DAC=1,511 OK <i>Disable the DAC out:</i> AT#DAC=0 OK	
Note	With this command the DAC frequency is selected internally. D/A converter must not be used during POWERSAVING. DAC_OUT line must be integrated (for example with a low band pass filter) in order to obtain an analog voltage. For a more in depth description of the integration filter refer to the hardware user guide.	



3.5.7.1.33. Auxiliary Voltage Output Control - #VAUX

#VAUX- Auxiliary Voltage Output Control		SELINT 0 / 1
AT#VAUX[=<n>, <stat>]	<p>Set command enables/disables the Auxiliary Voltage pins output.</p> <p>Parameters: <n> - VAUX pin index 1 - there is currently just one VAUX pin <stat> 0 - output off 1 - output on 2 - query current value of VAUX pin</p> <p>Note: when <stat>=2 and command is successful, it returns:</p> <p>#VAUX: <value></p> <p>where: <value> - power output status 0 - output off 1 - output on</p> <p>Note: If all parameters are omitted the command has the same behaviour as Read command.</p> <p>Note: for the GPS product: if the Auxiliary Voltage pin output is disabled while GPS is powered on they'll both also be turned off.</p> <p>Note: for the GPS products, at commands \$GPSP, \$GPSPS, \$GPSWK control VAUX and can interfere with AT# command.</p>	
AT#VAUX?	<p>Read command reports whether the Auxiliary Voltage pin output is currently enabled or not, in the format:</p> <p>#VAUX: <value></p>	
AT#VAUX=?	Test command reports the supported range of values for parameters <n>, <stat>.	
NOTE:	Command available only on GE864-QUAD and GC864-QUAD with SW 10.00.xxx	

#VAUX- Auxiliary Voltage Output Control		SELINT 2
AT#VAUX=[<n>,<stat>]	<p>Set command enables/disables the Auxiliary Voltage pins output.</p> <p>Parameters: <n> - VAUX pin index 1 - there is currently just one VAUX pin <stat> 0 - output off 1 - output on</p>	



#VAUX- Auxiliary Voltage Output Control		SELINT 2
	<p>2 - query current value of VAUX pin</p> <p>Note: when <stat>=2 and command is successful, it returns:</p> <p>#VAUX: <value></p> <p>where:</p> <p><value> - power output status</p> <p>0 - output off</p> <p>1 - output on</p> <p>Note: for the GPS product: if the Auxiliary Voltage pins output is disabled while GPS is powered on they'll both also be turned off.</p> <p>Note: for the GPS products, at commands \$GPSP, \$GPSPS, \$GPSWK control VAUX and can interfere with AT# command.</p> <p>Note: the current setting is stored through #VAUXSAV</p>	
AT#VAUX?	<p>Read command reports whether the Auxiliary Voltage pin output is currently enabled or not, in the format:</p> <p>#VAUX: <value></p>	
AT#VAUX=?	Test command reports the supported range of values for parameters <n>, <stat>.	
NOTE:	Command available only on GE864-QUAD and GC864-QUAD with SW 10.00.xxx	

3.5.7.1.34. Auxiliary Voltage Output Save - #VAUXSAV

#VAUXSAV - Auxiliary Voltage Output Save		SELINT 2
AT#VAUXSAV	Execution command saves the actual state of #VAUX pin to NVM. The state will be reload at power-up.	
AT#VAUXSAV=?	Test command returns the OK result code.	

3.5.7.1.35. V24 Output pins mode - #V24MODE

#V24MODE - V24 Output Pins Mode		SELINT 2
AT#V24MODE=<port>, <mode>, <when>	<p>Set command sets the <port> serial interface functioning <mode>.</p> <p>Parameters:</p> <p><port> - serial port:</p> <p>0 – ASC0 (AT command port)</p> <p>1 – ASC1 (trace port)</p> <p><mode> - AT commands serial port interface hardware pins mode:</p> <p>0 – Tx and Rx pins are set in push/pull function. (default)</p> <p>1 – Tx and Rx pins are set in open drain function.</p> <p>2 – Reserved</p>	



#V24MODE - V24 Output Pins Mode		SELINT 2
	<p><when> - When the settings expressed in <mode> are applied: 0 – Always (default) 1 – In power saving only</p>	
AT#V24MODE?	<p>Read command returns actual functioning <mode> for all ports in the format: #V24MODE: 0,<mode_port0>,<when0>[<CR><LF> #V24MODE: 1,<mode_port1>,<when1> [<CR><LF></p> <p>Where: < mode_port0> - mode of the serial port 0, < mode_port1> - mode of the serial port 1, <when0> - when setting for serial port 0, <when1> - when setting for serial port 1</p>	
AT#V24MODE=?	<p>Test command reports supported range of values for parameters <port>, <mode> and <when>.</p>	

3.5.7.1.36. V24 Output Pins Configuration - #V24CFG

#V24CFG - V24 Output Pins Configuration		SELINT 2
AT#V24CFG=<pin>,<mode>[,<save>]	<p>Set command sets the AT commands serial port interface output pins mode.</p> <p>Parameters:</p> <p><pin> - AT commands serial port interface hardware pin: 0 – DCD (Data Carrier Detect) 1 – CTS (Clear To Send) 2 – RI (Ring Indicator) 3 – DSR (Data Set Ready) 4 – DTR (Data Terminal Ready). This is not an output pin, so its state cannot be set through the AT#V24 command. 5 – RTS (Request To Send). This is not an output pin, so its state cannot be set through the AT#V24 command.</p> <p><mode> - AT commands serial port interface hardware pins mode: 0 – AT commands serial port mode: the V24 pins are controlled by the serial port device driver (default) 1 – GPIO mode: the V24 output pins can be managed through the AT#V24 command</p> <p><save> - Save V24 pin configuration: 0 – Pin configuration is not saved 1 – Pin configuration is saved</p> <p>Note: when <mode>=1, the V24 pins, both output and input, can be set to control an external GNSS receiver through the AT\$GPSGPIO command. (SW release 10.0x.xxx and 16.0x.xxx only)</p> <p>Note: when the <save> parameter is omitted, the pin configuration is NOT stored.</p>	



#AUTOATT - Auto-Attach Property		SELINT 2
	Parameter: <auto> 0 - disables GPRS auto-attach property 1 - enables GPRS auto-attach property (factory default): after the command #AUTOATT=1 has been issued (and at every following startup) the terminal will automatically try to attach to the GPRS service. 2 - disables GPRS auto-attach property (available also for class "CG")	
AT#AUTOATT?	Read command reports whether the auto-attach property is currently enabled or not, in the format: #AUTOATT: <auto>	
AT#AUTOATT=?	Test command reports available values for parameter <auto> .	

3.5.7.1.41. Multislot Class Control - #MSCLASS

#MSCLASS - Multislot Class Control		SELINT 0 / 1
AT#MSCLASS=[<class>[, <autoattach>]]	Set command sets the multislot class Parameters: <class> - multislot class; take care: class 7 is not supported. 1..6 - GPRS class 8..10 - GPRS class <autoattach> 0 - the new multislot class is enabled only at the next detach/attach or after a reboot. 1 - the new multislot class is enabled immediately, automatically forcing a detach / attach procedure. Note: if all parameters are omitted the behaviour of set command is the same as read command.	
AT#MSCLASS?	Read command reports the current value of the multislot class in the format: #MSCLASS: <class>	
AT#MSCLASS=?	Test command reports the range of available values for parameter <class> .	

#MSCLASS - Multislot Class Control		SELINT 2
AT#MSCLASS=[<class>[, <autoattach>]]	Set command sets the multislot class Parameters: <class> - multislot class; take care: class 7 is not supported. 1..6 - GPRS class 8..10 - GPRS class <autoattach> 0 - the new multislot class is enabled only at the next detach/attach or after a	



#MSCLASS - Multislot Class Control		SELINT 2
	reboot. 1 - the new multislot class is enabled immediately, automatically forcing a detach / attach procedure.	
AT#MSCLASS?	Read command reports the current value of the multislot class in the format: #MSCLASS: <class>	
AT#MSCLASS=?	Test command reports the range of available values for both parameters <class> and <autoattach>.	

3.5.7.1.42. Cell Monitor - #MONI

#MONI - Cell Monitor		SELINT 0 / 1
AT#MONI[= [<number>]]	<p>#MONI is both a set and an execution command.</p> <p>Set command sets one cell out of seven, in the neighbour list of the serving cell including it, from which we extract GSM-related information.</p> <p>Parameter: <number> 0..6 - it is the ordinal number of a cell, in the neighbour list of the serving cell (default 0, serving cell). 7 - it is a special request to obtain GSM-related informations from the whole set of seven cells in the neighbour list of the serving cell.</p> <p>Note: issuing AT#MONI<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT#MONI=<CR> is the same as issuing the command AT#MONI=0<CR>.</p>	
AT#MONI?	<p>Execution command reports GSM-related informations for selected cell and dedicated channel (if exists).</p> <p>a) When extracting data for the serving cell and the network name is known the format is: #MONI: <netname> BSIC:<bsic> RxQual:<qual> LAC:<lac> Id:<id> ARFCN:<arfcn> PWR:<dBm> dBm TA: <timadv></p> <p>b) When the network name is unknown, the format is: #MONI: <cc> <nc> BSIC:<bsic> RxQual:<qual> LAC:<lac> Id:<id> ARFCN:<arfcn> PWR:<dBm> dBm TA: <timadv></p> <p>c) When extracting data for an adjacent cell, the format is: #MONI: Adj Cell<n> [LAC:<lac> Id:<id>] ARFCN:<arfcn> PWR:<dBm> dBm</p> <p>where:</p>	



#MONI - Cell Monitor	SELINT 0 / 1
	<p> <netname> - name of network operator <cc> - country code <nc> - network operator code <n> - progressive number of adjacent cell <bsic> - base station identification code <qual> - quality of reception 0..7 <lac> - localization area code <id> - cell identifier <arfcn> - assigned radio channel <dBm> - received signal strength in dBm <timadv> - timing advance </p> <p>Note: TA: <timadv> is reported only for the serving cell.</p> <p>1. If the last setting done by #MONI is 7, the execution command produces a table-like formatted output, as follows:</p> <p>a. First row reports the identifying name of the ‘columns’ #MONI: Cell BSIC LAC CellId ARFCN Power C1 C2 TA RxQual PL MN<CR><LF></p> <p>b. Second row reports a complete set of GSM-related information for the serving cell: #MONI: S: <bsic> <lac> <id> <arfcn> <dBm> <C1value> <C2value> <timadv> <qual> <netname><CR><LF></p> <p>c. 3rd to 8th rows report a reduced set of GSM-related information for the cells in the neighbours: #MONI: N<n> <bsic> <lac> <id> <arfcn> <dBm> <C1value> <C2value>[<CR><LF>]</p> <p>where: <C1value> - C1 reselection parameter <C2value> - C2 reselection parameter <i>other parameters as before</i></p>
AT#MONI=?	<p>Test command reports the maximum number of cells, in the neighbour list of the serving cell, from which we can extract GSM-related informations, along with the ordinal number of the current selected cell, in the format:</p> <p>#MONI: (<MaxCellNo>,<CellSet>)</p> <p>where:</p>



#MONI - Cell Monitor	SELINT 0 / 1
	<p><MaxCellNo> - maximum number of cells, in the neighbour list of the serving cell, from which we can extract GSM-related informations (for compatibility with previous versions of code this value is always 5).</p> <p><CellSet> - the last setting done with command #MONI.</p> <p>An enhanced version of the Test command has been defined: AT#MONI=??</p> <p>Note: The serving cell is the current serving cell or the last available serving cell, if the module loses coverage.</p>
AT#MONI=??	<p>Enhanced test command reports the maximum number of cells, in a the neighbour list of the serving cell and including it, from which we can extract GSM-related informations, along with the ordinal number of the current selected cell, in the format:</p> <p>#MONI: (<MaxCellNo>,<CellSet>)</p> <p>where:</p> <p><MaxCellNo> - maximum number of cells, in a the neighbour list of the serving cell and including it, from which we can extract GSM-related informations. This value is always 7.</p> <p><CellSet> - the last setting done with command #MONI.</p> <p>Note: The serving cell is the current serving cell or the last available serving cell, if the module loses coverage.</p>
Example	<p><i>Set command selects the cell 0</i></p> <pre>at#moni=0 OK</pre> <p><i>Execution command reports GSM-related information for cell 0</i></p> <pre>at#moni #MONI: I WIND BSIC:70 RxQual:0 LAC:55FA Id:1D23 ARFCN:736 PWR:-83dbm TA:1 OK</pre> <p><i>Set command selects the special request to obtain GSM-related information from the whole set of seven cells in the neighbour list of the serving cell</i></p> <pre>at#moni=7 OK</pre> <p><i>Execution command reports the requested information in table-like format</i></p> <pre>at#moni #MONI: Cell BSIC LAC CellId ARFCN Power C1 C2 TA RxQual PLMN #MONI: S 70 55FA 1D23 736 -83dbm 19 33 1 0 I WIND #MONI: N1 75 55FA 1297 983 -78dbm 26 20 #MONI: N2 72 55FA 1289 976 -82dbm 22 16 #MONI: N3 70 55FA 1D15 749 -92dbm 10 18 #MONI: N4 72 55FA 1D0D 751 -92dbm 10 18</pre>



#MONI - Cell Monitor	SELINT 0 / 1
	<pre>#MONI: N5 75 55FA 1296 978 -95dbm 9 3 #MONI: N6 70 55FA 1D77 756 -99dbm 3 11</pre> <p>OK</p>
Note	The refresh time of the measures is preset to 3 sec. The timing advance value is meaningful only during calls or GPRS transfers active.
Note	The serving cell is the current serving cell or the last available serving cell, if the module loses coverage.

#MONI - Cell Monitor	SELINT 2
AT#MONI[= [<number>]]	<p>#MONI is both a set and an execution command.</p> <p>Set command sets one cell out of seven, in a the neighbour list of the serving cell including it, from which extract GSM-related information.</p> <p>Parameter: <number> 0..6 - it is the ordinal number of the cell, in a the neighbour list of the serving cell (default 0, serving cell). 7 - it is a special request to obtain GSM-related information from the whole set of seven cells in the neighbour list of the serving cell.</p> <p>Execution command (AT#MONI<CR>) reports GSM-related information for selected cell and dedicated channel (if exists).</p> <p>2. If the last setting done by #MONI is in the range [0..6], the output format is as follows:</p> <p>d) When extracting data for the serving cell and the network name is known the format is: #MONI: <netname> BSIC:<bsic> RxQual:<qual> LAC:<lac> Id:<id> ARFCN:<arfcn> PWR:<dBm> dBm TA: <timadv></p> <p>e) When the network name is unknown, the format is: #MONI: <cc> <nc> BSIC:<bsic> RxQual:<qual> LAC:<lac> Id:<id> ARFCN:<arfcn> PWR:<dBm> dBm TA: <timadv></p> <p>f) When extracting data for an adjacent cell, the format is: #MONI: Adj Cell<n> [LAC:<lac> Id:<id>] ARFCN:<arfcn> PWR:<dBm> dBm</p> <p>where: <netname> - name of network operator <cc> - country code <nc> - network operator code <n> - progressive number of adjacent cell</p>



#MONI - Cell Monitor	SELINT 2
	<p><bsic> - base station identification code <qual> - quality of reception 0..7 <lac> - localization area code <id> - cell identifier <arfcn> - assigned radio channel <dBm> - received signal strength in dBm <timadv> - timing advance</p> <p>Note: TA: <timadv> is reported only for the serving cell.</p> <p>3. If the last setting done by #MONI is 7, the execution command produces a table-like formatted output, as follows:</p> <p>a. First row reports the identifying name of the ‘columns’ #MONI: Cell BSIC LAC CellId ARFCN Power C1 C2 TA RxQual PL MN<CR><LF></p> <p>b. Second row reports a complete set of GSM-related information for the serving cell: #MONI: S: <bsic> <lac> <id> <arfcn> <dBm> <C1value> <C2value> <timadv> <qual> <netname><CR><LF></p> <p>c. 3rd to 8th rows report a reduced set of GSM-related information for the cells in the neighbours: #MONI: N<n> <bsic> <lac> <id> <arfcn> <dBm> <C1value> <C2value>[<CR><LF>]</p> <p>where: <C1value> - C1 reselection parameter <C2value> - C2 reselection parameter <i>other parameters as before</i></p>
<p>AT#MONI=?</p>	<p>Test command reports the maximum number of cells, in a-the neighbour list of the serving cell excluding it, from which we can extract GSM-related informations, along with the ordinal number of the current selected cell, in the format:</p> <p>#MONI: (<MaxCellNo>,<CellSet>)</p> <p>where: <MaxCellNo> - maximum number of cells, in a-the neighbour list of the serving cell and excluding it, from which we can extract GSM-related informations. This value is always 6. <CellSet> - the last setting done with command #MONI.</p>



#MONI - Cell Monitor	SELINT 2
<p>Example</p>	<p><i>Set command selects the cell 0</i> at#moni=0 OK</p> <p><i>Execution command reports GSM-related information for cell 0</i> at#moni #MONI: I WIND BSIC:70 RxQual:0 LAC:55FA Id:1D23 ARFCN:736 PWR:-83dbm TA:1</p> <p>OK</p> <p><i>Set command selects the special request to obtain GSM-related information from the whole set of seven cells in the neighbour list of the serving cell</i> at#moni=7 OK</p> <p><i>Execution command reports the requested information in table-like format</i> at#moni #MONI: Cell BSIC LAC CellId ARFCN Power C1 C2 TA RxQual PLMN #MONI: S 70 55FA 1D23 736 -83dbm 19 33 1 0 I WIND #MONI: N1 75 55FA 1297 983 -78dbm 26 20 #MONI: N2 72 55FA 1289 976 -82dbm 22 16 #MONI: N3 70 55FA 1D15 749 -92dbm 10 18 #MONI: N4 72 55FA 1D0D 751 -92dbm 10 18 #MONI: N5 75 55FA 1296 978 -95dbm 9 3 #MONI: N6 70 55FA 1D77 756 -99dbm 3 11</p> <p>OK</p>
<p>Note</p>	<p>The refresh time of the measures is preset to 3 sec. The timing advance value is meaningful only during calls or GPRS transfers active.</p>
<p>Note</p>	<p>The serving cell is the current serving cell or the last available serving cell, if the module loses coverage.</p>

3.5.7.1.43. Compressed Cell Monitor - #MONIZIP

#MONIZIP – Compressed Cell Monitor	SELINT 2
<p>AT#MONIZIP[= [<number>]]</p>	<p>#MONIZIP is both a set and an execution command.</p> <p>Set command sets one cell out of seven, in a the neighbour list of the serving cell including it, from which extract GSM-related information.</p> <p>Parameter: <number> 0..6 - it is the ordinal number of the cell, in a-the neighbour list of the serving cell (default 0, serving cell). 7 - it is a special request to obtain GSM-related information from the whole set of seven cells in the neighbour list of the serving cell.</p> <p>Execution command (AT#MONIZIP<CR>) reports GSM-related information for selected cell and dedicated channel (if exists).</p>



#MONIZIP – Compressed Cell Monitor	SELINT 2
	<p>4. If the last setting done by #MONIZIP is in the range [0..6], the output format is as follows:</p> <p>g)When extracting data for the serving cell the format is: #MONIZIP: <cc><nc>,<bsic>,<qual>,<lac>,<id>,<arfcn>, <dBm>,<timadv></p> <p>h)When extracting data for an adjacent cell, the format is: #MONIZIP: <lac>,<id>,<arfcn>,<dBm></p> <p>where: <cc> - country code <nc> - network operator code <n> - progressive number of adjacent cell <bsic> - base station identification code <qual> - quality of reception 0..7 <lac> - localization area code <id> - cell identifier <arfcn> - assigned radio channel <dBm> - received signal strength in dBm <timadv> - timing advance</p> <p>Note: TA: <timadv> is reported only for the serving cell.</p> <p>5. If the last setting done by #MONIZIP is 7, the execution command produces a table-like formatted output, as follows:</p> <p>a. First row reports a complete set of GSM-related information for the serving cell: #MONIZIP: <bsic>,<lac>,<id>,<arfcn>,<dBm>,<C1value>, <C2value>,<timadv>,<qual>,<cc><nc><CR><LF></p> <p>b. 2nd to 7th rows report a reduced set of GSM-related information for the cells in the neighbours: #MONIZIP: <bsic>,<lac>,<id>,<arfcn>,<dBm>,<C1value>, <C2value>[<CR><LF>]</p> <p>where: <C1value> - C1 reselection parameter <C2value> - C2 reselection parameter <i>other parameters as before</i></p>
AT#MONIZIP=?	Test command reports the maximum number of cells, in the neighbour list of the serving cell excluding it, from which we can extract GSM-related information, along with the ordinal number of the current selected cell, in the format:



#MONIZIP – Compressed Cell Monitor		SELINT 2
	<p>#MONIZIP: (<MaxCellNo>,<CellSet>)</p> <p>where:</p> <p><MaxCellNo> - maximum number of cells, in the neighbour list of the serving cell and excluding it, from which we can extract GSM-related information. This value is always 6.</p> <p><CellSet> - the last setting done with command #MONIZIP.</p>	
Note	<p>The refresh time of the measures is preset to 3 sec.</p> <p>The timing advance value is meaningful only during calls or GPRS transfers active.</p>	
Note	<p>The serving cell is the current serving cell or the last available serving cell, if the module loses coverage.</p>	

3.5.7.1.44. Serving Cell Information - #SERVINFO

#SERVINFO - Serving Cell Information	SELINT 0 / 1
AT#SERVINFO	<p>Execution command reports information about serving cell, in the format:</p> <p>#SERVINFO: <B-ARFCN>,<dBm>,<NetNameAsc>,<NetCode>,<BSIC>,<LAC>,<TA>,<GPRS>[,<PB-ARFCN>],[<NOM>],<RAC>[,<PAT>]]</p> <p>where:</p> <p><B-ARFCN> - BCCH ARFCN of the serving cell</p> <p><dBm> - received signal strength in dBm</p> <p><NetNameAsc> - operator name, quoted string type</p> <p><NetCode> - string representing the network operator in numeric format: 5 or 6 digits [country code (3) + network code (2 or 3)]</p> <p><BSIC> - Base Station Identification Code</p> <p><LAC> - Localization Area Code</p> <p><TA> - Time Advance: it's available only if a GSM or GPRS is running</p> <p><GPRS> - GPRS supported in the cell</p> <p>0 - not supported</p> <p>1 - supported</p> <p>The following information will be present only if GPRS is supported in the cell</p> <p><PB-ARFCN> -</p> <ul style="list-style-type: none"> • if PBCCH is supported by the cell <ul style="list-style-type: none"> ○ if its content is the PBCCH ARFCN of the serving cell, then <PB-ARFCN> is available ○ else the label “hopping” will be printed • else <PB-ARFCN> is not available <p><NOM> - Network Operation Mode</p> <p>”I”</p> <p>“II”</p>



#SERVINFO - Serving Cell Information	SELINT 0 / 1
	<p>”III” <RAC> - Routing Area ColoUr Code <PAT> - Priority Access Threshold 0 3..6</p> <p>Note: during a call, a SMS sending/receiving or a location update the values of <GPRS>, <PB-ARFCN>, <NOM>, <RAC> and <PAT> parameters don't make sense.</p>
AT#SERVINFO?	Read command has the same effect as Execution command
AT#SERVINFO=?	Test command tests for command existence (available only for 10.0x.xx5 and following versions)

#SERVINFO - Serving Cell Information	SELINT 2
AT#SERVINFO	<p>Execution command reports information about serving cell, in the format:</p> <p>#SERVINFO: <B-ARFCN>,<dBm>,<NetNameAsc>,<NetCode>,<BSIC>,<LAC>,<TA>,<GPRS>[,<PB-ARFCN>],[<NOM>],<RAC>[,<PAT>]]</p> <p>where:</p> <ul style="list-style-type: none"> <B-ARFCN> - BCCH ARFCN of the serving cell <dBm> - received signal strength in dBm <NetNameAsc> - operator name, quoted string type <NetCode> - string representing the network operator in numeric format: 5 or 6 digits [country code (3) + network code (2 or 3)] <BSIC> - Base Station Identification Code <LAC> - Localization Area Code <TA> - Time Advance: it's available only if a GSM or GPRS is running <GPRS> - GPRS supported in the cell <ul style="list-style-type: none"> 0 - not supported 1 - supported <p>The following information will be present only if GPRS is supported in the cell</p> <p><PB-ARFCN> -</p> <ul style="list-style-type: none"> • if PBCCH is supported by the cell <ul style="list-style-type: none"> ○ if its content is the PBCCH ARFCN of the serving cell, then <PB-ARFCN> is available ○ else the label “hopping” will be printed • else <PB-ARFCN> is not available <p><NOM> - Network Operation Mode ”I” “II” ”III”</p>



+CCED – Cell Environment Description		SELINT 2
	<p><CI> : Cell Id (string type; two bytes in hexadecimal format for <Act> equal to 0, four bytes in hexadecimal format otherwise. <BSIC>: Base Station Identity Code <BCCH Freq>: Broadcast Control CHannel Freq absolute (ARFCN) <RxLev>: RSSI level on BCCH channel <RxLev Full>: RSSI level on all TCH channel, in dedicated mode <RxLev Sub>: RSSI level on a subset of TCH channel, in dedicated mode <RxQual>: signal quality on BCCH channel, in idle mode <RxQual Full>: signal quality on all TCH channel, in dedicated mode <RxQual Sub>: signal quality on a subset of TCH channel, in dedicated mode <Idle TS>: Time Slot</p>	
AT+CCED=?	Test command returns the OK result code.	

3.5.7.1.46. +COPS Mode - #COPSMODE

#COPSMODE - +COPS Mode		SELINT 0 / 1
AT#COPSMODE [=<mode>]	<p>Set command sets the behaviour of +COPS command (<i>see</i> +COPS). Parameter: <mode> 0 - +COPS behaviour like former GM862 family products (default) 1 - +COPS behaviour compliant with ETSI format</p> <p>Note: The setting is saved in NVM (and available on following reboot). Note: if parameter <mode> is omitted the behaviour of Set command is the same as Read command.</p>	
AT#COPSMODE?	<p>Read command returns the current behaviour of +COPS command, in the format: #COPSMODE: <mode></p> <p>where <mode> - +COPS behaviour as seen before.</p>	
AT#COPSMODE=?	Test command returns the range of available values for parameter <mode>.	
Note	It's suggested to reboot the module after every #COPSMODE setting.	

3.5.7.1.47. Query SIM Status - #QSS

#QSS – Query SIM Status		SELINT 0 / 1
AT#QSS[= [<mode>]]	<p>Set command enables/disables the Query SIM Status unsolicited indication in the ME. Parameter:</p>	



	<p><mode> - type of notification</p> <p>0 - disabled (factory default): it is possible only to query the current SIM status through Read command AT#QSS?</p> <p>1 - enabled: the ME informs at every SIM status change through the following basic unsolicited indication:</p> <p>#QSS: <status></p> <p>where:</p> <p><status> - current SIM status</p> <p>0 - SIM NOT INSERTED</p> <p>1 - SIM INSERTED</p> <p>Note: issuing AT#QSS<CR> is the same as issuing the Read command.</p>
AT#QSS?	<p>Read command reports whether the unsolicited indication #QSS is currently enabled or not, along with the SIM status, in the format:</p> <p>#QSS: <mode>,<status></p> <p>(<mode> and <status> are described above)</p>
AT#QSS=?	<p>Test command returns the supported range of values for parameter <mode>.</p>

#QSS – Query SIM Status	SELINT 2
<p>AT#QSS= [<mode>]</p>	<p>Set command enables/disables the Query SIM Status unsolicited indication in the ME.</p> <p>Parameter:</p> <p><mode> - type of notification</p> <p>0 - disabled (factory default): it is possible only to query the current SIM status through Read command AT#QSS?</p> <p>1 - enabled: the ME informs at every SIM status change through the following basic unsolicited indication:</p> <p>#QSS: <status></p> <p>where:</p> <p><status> - current SIM status</p> <p>0 - SIM NOT INSERTED</p> <p>1 - SIM INSERTED</p> <p>2 - enabled; the ME informs at every SIM status change through the following unsolicited indication:</p> <p>#QSS: <status></p> <p>where:</p> <p><status> - current SIM status</p>



#DIALMODE - Dialing Mode	SELINT 2
AT#DIALMODE= [<mode>]	Set command sets dialling modality. Parameter: <mode> 0 - (voice call only) OK result code is received as soon as it starts remotely ringing (factory default) 1 - (voice call only) OK result code is received only after the called party answers. Any character typed aborts the call and OK result code is received. 2 - (voice call and data call) the following custom result codes are received, monitoring step by step the call status: DIALING (MO in progress) RINGING (remote ring) CONNECTED (remote call accepted; only for voice calls) RELEASED (after ATH) DISCONNECTED (remote hang-up; only for voice calls) Any character typed before the CONNECTED message aborts the call. Note: In case a BUSY tone is received and at the same time ATX0 is enabled ATD will return NO CARRIER instead of DISCONNECTED . Note: The setting is saved in NVM and available on following reboot.
AT#DIALMODE?	Read command returns current ATD dialling mode in the format: #DIALMODE: <mode>
AT#DIALMODE=?	Test command returns the range of values for parameter <mode>

3.5.7.1.49. Automatic Call - #ACAL

#ACAL - Automatic Call	SELINT 0 / 1
AT#ACAL[= [<mode>]]	Set command enables/disables the automatic call function. Parameter: <mode> 0 - disables the automatic call function (factory default) 1 - enables the automatic call function. If enabled (and &D2 has been issued), the transition OFF/ON of DTR causes an automatic call to the first number (position 0) stored in the internal phonebook. Note: type of call depends on the last issue of command +FCLASS . Note: issuing AT#ACAL<CR> is the same as issuing the Read command.
AT#ACAL?	Read command reports whether the automatic call function is currently enabled or



#ACAL - Automatic Call		SELINT 0 / 1
	not, in the format: #ACAL: <mode>	
AT#ACAL=?	Test command returns the supported range of values for parameter <mode>.	
Note	See &Z to write and &N to read the number on module internal phonebook.	

#ACAL - Automatic Call		SELINT 2
AT#ACAL= [<mode>]	Set command enables/disables the automatic call function. Parameter: <mode> 0 - disables the automatic call function (factory default) 1 - enables the automatic call function. If enabled (and &D2 has been issued), the transition OFF/ON of DTR causes an automatic call to the first number (position 0) stored in the internal phonebook. Note: type of call depends on the last issue of command +FCLASS.	
AT#ACAL?	Read command reports whether the automatic call function is currently enabled or not, in the format: #ACAL: <mode> Note: as a consequence of the introduction of the command #ACALEXT (Extended Automatic Call) it is possible that the Read Command returns a value supported by #ACALEXT but NOT supported by #ACAL. AT#ACAL? #ACAL : 2 OK Due to this possible situation it is strongly recommended not to use contemporaneously both commands.	
AT#ACAL=?	Test command returns the supported range of values for parameter <mode>.	
Note	See &Z to write and &N to read the number on module internal phonebook.	

3.5.7.1.50. Extended Automatic Call - #ACALEXT

#ACALEXT - Extended Automatic Call		SELINT 0 / 1 / 2
AT#ACALEXT= <mode>,<index>	Set command enables/disables the extended automatic call function. Parameters: <mode>	



#ECAM - Extended Call Monitoring	SELINT 2
	<p>2 - connecting (MO) 3 - active 4 - hold 5 - waiting (MT) 6 - alerting (MT) 7 - busy</p> <p><calltype> - call type 1 - voice 2 - data</p> <p><number> - called number, if <ccstatus>=1; calling number, if available, if <ccstatus>=6 <type> - type of <number> 129 - national number 145 - international number</p> <p>Note: the unsolicited indication is sent along with usual codes (OK, NO CARRIER, BUSY...).</p>
AT#ECAM?	<p>Read command reports whether the extended call monitoring function is currently enabled or not, in the format:</p> <p>#ECAM: <onoff></p>
AT#ECAM=?	<p>Test command returns the list of supported values for <onoff></p>

3.5.7.1.52. SMS Overflow - #SMOV

#SMOV - SMS Overflow	SELINT 0 / 1
AT#SMOV[= <mode>]]	<p>Set command enables/disables the SMS overflow signalling function.</p> <p>Parameter: <mode> 0 - disables SMS overflow signalling function(factory default) 1 - enables SMS overflow signalling function; when the maximum storage capacity has been reached, the following notification is sent:</p> <p>#SMOV: <memo></p> <p>where <memo> is a string indicating the SMS storage that has reached maximum capacity: “SM” – SIM Memory</p> <p>Note: issuing AT#SMOV<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT#SMOV=<CR> is the same as issuing the command AT#SMOV=0<CR>.</p>



#SMOV - SMS Overflow		SELINT 0 / 1
AT#SMOV?	Read command reports whether the SMS overflow signalling function is currently enabled or not, in the format: #SMOV: <mode>	
AT#SMOV=?	Test command returns the supported range of values of parameter <mode>.	

#SMOV - SMS Overflow		SELINT 2
AT#SMOV= [<mode>]	Set command enables/disables the SMS overflow signalling function. Parameter: #SMOV: <mode> 0 - disables SMS overflow signalling function (factory default) 1 - enables SMS overflow signalling function; when the maximum storage capacity has been reached, the following network initiated notification is sent: #SMOV: <memo> where <memo> is a string indicating the SMS storage that has reached maximum capacity: "SM" – SIM Memory	
AT#SMOV?	Read command reports whether the SMS overflow signalling function is currently enabled or not, in the format: #SMOV: <mode>	
AT#SMOV=?	Test command returns the supported range of values of parameter <mode>.	

3.5.7.1.53. Mailbox Numbers - #MBN

#MBN - Mailbox Numbers		SELINT 2
AT#MBN	Execution command returns the mailbox numbers stored on SIM, if this service is provided by the SIM. The response format is: [#MBN: <index>,<number>,<type>[,<text>][,<mboxtype>][<CR><LF> #MBN: <index>,<number>,<type>[,<text>][,<mboxtype>[...]]] where: <index> - record number <number> - string type mailbox number in the format <type> <type> - type of mailbox number octet in integer format 129 - national numbering scheme 145 - international numbering scheme (contains the character "+") <text> - the alphanumeric text associated to the number; used character set should be the one selected with command +CSCS <mboxtype> - the message waiting group type of the mailbox, if available: "VOICE" - voice	



#MWI - Message Waiting Indication	SELINT 2
	<p>where:</p> <p><status> 0 - no waiting message indicator is currently set: if this the case no other information is reported 1 - there are waiting messages related to the message waiting indicator <indicator>.</p> <p><indicator> 1 - either Line 1 (CPHS context) or Voice (3GPP context) 2 - Line 2 (CPHS context) 3 - Fax 4 - E-mail 5 - Other</p> <p><count> - message counter: number of pending messages related to the message waiting indicator <indicator> as it is stored on SIM.</p>
<p>AT#MWI?</p>	<p>Read command reports wheter the presentation of the message waiting indicator URC is currently enabled or not, and the current status of the message waiting indicators as they are currently stored on SIM. The format is:</p> <p>#MWI: <enable>,<status>[,<indicator>[,<count>]][<CR><LF> #MWI: <enable>,<status>,<indicator>[,<count>][...]]]</p>
<p>AT#MWI=?</p>	<p>Test command returns the range of available values for parameter <enable>.</p>

3.5.7.1.55. Forward Message From Storage - #CMSFW

#CMSFW – Forward Message From Storage	SELINT 2
<p>AT#CMSFW=<index>[,<da>[,< toda>]]</p>	<p>Execution command sends to the network a message that is already stored in the <memw> or <mems> storage (see +CPMS) at the location <index>, or a received message.</p> <p>Parameters:</p> <p><index> - location value in the message storage <memw> of the message to send <da> - destination address, string type represented in the currently selected character set (see +CSCS). <toda> - type of destination address 129 - number in national format 145 - number in international format (contains the "+")</p> <p>If message is successfully sent to the network then the result is sent in the format:</p> <p>#CMSFW: <mr> where: <mr> - message reference number.</p>



#CODEC - Audio Codec		SELINT 0 / 1
AT#CODEC?	Read command returns current audio codec mode in the format: #CODEC: <codec>	
AT#CODEC=?	Test command returns the range of available values for parameter <codec>	
Example	AT#CODEC=14 OK <i>sets the codec modes HR (4), EFR (2) and AMR-FR (8)</i>	

#CODEC - Audio Codec		SELINT 2
AT#CODEC= [<codec>]	Set command sets the audio codec mode. Parameter: <codec> 0 - all the codec modes are enabled (factory default) 1..31 - sum of integers each representing a specific codec mode: 1 - FR , full rate mode enabled (This is the only option available for SW 13.00.xxx) 2 - EFR , enhanced full rate mode enabled 4 - HR , half rate mode enabled 8 - AMR-FR , AMR full rate mode enabled 16 - AMR-HR , AMR half rate mode enabled Note: the full rate mode is added by default to any setting in the SETUP message (as specified in ETSI 04.08), but the call drops if the network assigned codec mode has not been selected by the user. Note: the setting 0 is equivalent to the setting 31. Note: The codec setting is saved in the profile parameters.	
AT#CODEC?	Read command returns current audio codec mode in the format: #CODEC: <codec>	
AT#CODEC=?	Test command returns the range of available values for parameter <codec>	
Example	AT#CODEC=14 OK <i>sets the codec modes HR (4), EFR (2) and AMR-FR (8)</i>	

3.5.7.1.57. Network Timezone - #NITZ



#NITZ - Network Timezone	SELINT 2
	<p><datetime> below) (factory default for all products except GE866-QUAD, GE865-QUAD, GE864-DUAL V2, GL865-DUAL, GL865-QUAD, GL865-DUAL V3, GL865-QUAD V3, GL868-DUAL V3, GL868-DUAL, GE910-QUAD, GE910-QUAD AUTO, GE910-QUAD V3 and GE910-GNSS)</p> <p>1..15 - as a sum of:</p> <ul style="list-style-type: none"> 1 - enables automatic date/time updating 2 - enables Full Network Name applying 4 - it sets the #NITZ URC 'extended' format (see <datetime> below) 8 - it sets the #NITZ URC 'extended' format with Daylight Saving Time (DST) support (see <datetime> below) <p>(default for GE866-QUAD, GE865-QUAD, GE864-DUAL V2, GL865-DUAL, GL865-QUAD, GL865-DUAL V3, GL865-QUAD V3, GL868-DUAL V3, GL868-DUAL, GE910-QUAD, GE910-QUAD AUTO, GE910-QUAD V3 and GE910-GNSS: 7)</p> <p><mode></p> <ul style="list-style-type: none"> 0 - disables #NITZ URC (factory default) 1 - enables #NITZ URC; after date and time updating the following unsolicited indication is sent: <p>#NITZ: <datetime></p> <p>where:</p> <p><datetime> - string whose format depends on subparameter <val></p> <ul style="list-style-type: none"> “yy/MM/dd,hh:mm:ss” - 'basic' format, if <val> is in (0..3) “yy/MM/dd,hh:mm:ss±zz” - 'extended' format, if <val> is in (4..7) “yy/MM/dd,hh:mm:ss±zz,d” - 'extended' format with DST support, if <val> is in (8..15) <p>where:</p> <ul style="list-style-type: none"> yy - year MM - month (in digits) dd - day hh - hour mm - minute ss - second zz - time zone (indicates the difference, expressed in quarter of an hour, between the local time and GMT; two last digits are mandatory, range is -47..+48) d – number of hours added to the local TZ because of Daylight Saving Time (summertime) adjustment; range is 0-3. <p>Note: If the DST information isn't sent by the network, then the <datetime> parameter has the format “yy/MM/dd,hh:mm:ss±zz”</p>
AT#NITZ?	Read command reports whether (a) automatic date/time updating, (b) Full Network Name applying, (c) #NITZ URC (as well as its format) are currently enabled or not, in the format:



#NITZ - Network Timezone	SELINT 2
	#NITZ: <val>,<mode>
AT#NITZ=?	Test command returns supported values of parameters <val> and <mode>.

3.5.7.1.58. Clock management - #CCLK

#CCLK - Clock Management	SELINT 2
AT#CCLK=<time>	<p>Set command sets the real-time clock of the ME.</p> <p>Parameter: <time> - current time as quoted string in the format: "yy/MM/dd,hh:mm:ss±zz,d" yy - year (two last digits are mandatory), range is 00..99 MM - month (two last digits are mandatory), range is 01..12 dd - day (two last digits are mandatory) The range for dd(day) depends either on the month and on the year it refers to. Available ranges are: (01..28) (01..29) (01..30) (01..31) Trying to enter an out of range value will raise an error</p> <p>hh - hour (two last digits are mandatory), range is 00..23 mm - minute (two last digits are mandatory), range is 00..59 ss - seconds (two last digits are mandatory), range is 00..59 ±zz - time zone (indicates the difference, expressed in quarter of an hour, between the local time and GMT; two last digits are mandatory), range is -47..+48 d - number of hours added to the local TZ because of Daylight Saving Time (summertime) adjustment; range is 0-2.</p>
AT#CCLK?	<p>Read command returns the current setting of the real-time clock, in the format <time>.</p> <p>Note: if the time is set by the network but the DST information is missing, or the time is set by +CCLK command, then the <time> format is: "yy/MM/dd,hh:mm:ss±zz"</p>
AT#CCLK=?	Test command returns the OK result code.
Example	<pre>AT#CCLK="02/09/07,22:30:00+04,1" OK AT#CCLK? #CCLK: "02/09/07,22:30:25+04,1" OK</pre>

3.5.7.1.59. #NTP – Network Time



#NTP – calculate and update date and time		SELINT 2
<p>AT#NTP= <NTPAddr>, <NTPPort>, <update_module_clock>, <timeout>[,<TimeZone>]</p>	<p>This command permits to calculate and update date and time through NTP protocol(RFC2030), sending a request to a NTP server.</p> <p>Parameters:</p> <p><NTPAddr> - address of the NTP server, string type. This parameter can be either:</p> <ul style="list-style-type: none"> - any valid IP address in the format: “xxx.xxx.xxx.xxx” - any host name to be solved with a DNS query <p><NTPPort> - NTP server port to contact 1..65535</p> <p><update_module_clock> 0 - no update module clock 1 – update module clock</p> <p><timeout> - waiting timeout for server response in seconds 1..10</p> <p><TimeZone> - Time Zone (indicates the difference, expressed in quarter of an hour, between the local time and GMT), range is -47..+48; default is 0.</p> <p>Note: the Time Zone is applied directly in the Date and Time received by the NTP Server, that is, by definition, GMT+0</p>	
<p>AT#NTP=?</p>	<p>Test command reports the supported range of values for parameters <NTPAddr>,<NTPPort>,<update_module_clock>, <timeout> and <TimeZone></p>	
<p>Example</p>	<pre>at#ntp="ntp1.inrim.it",123,1,2,4 #NTP: 12/01/27,14:42:38+04 OK at+cclk? +CCLK: "12/01/27,14:42:39+04" OK</pre>	

3.5.7.1.60. Enhanced Network Selection - #ENS

#ENS - Enhanced Network Selection		SELINT 2
<p>AT#ENS=[<mode>]</p>	<p>Set command is used to activate the ENS functionality.</p>	



	<p>Parameter: <mode> 0 - disable ENS functionality (default) 1 - enable ENS functionality; if AT#ENS=1 has been issued, the following values will be automatically set:</p> <ul style="list-style-type: none"> ➤ at every next power-up <ul style="list-style-type: none"> a Band GSM 850 and PCS enabled (AT#BND=3) b SIM Application Toolkit enabled on user interface 0 if not previously enabled on a different user interface (AT#STIA=2) ➤ just at first next power-up <ul style="list-style-type: none"> a Automatic Band Selection enabled (AT#AUTOBND=2) only if the previous setting was equal to AT#AUTOBND=0 b PLMN list not fixed (AT#PLMNMODE=1). <p>Note: the new setting will be available just at first next power-up.</p> <p>Note: If ‘Four Band’ Automatic Band Selection has been activated (AT#AUTOBND=2), at power-up the value returned by AT#BND? could be different from 3 when ENS functionality is enabled.</p> <p>Note: on version 10.0x.xx4 the set command AT#ENS=1 doesn’t enable the SIM Application Toolkit if the command AT#ENAUSIM? returns 1.</p>
AT#ENS?	<p>Read command reports whether the ENS functionality is currently enabled or not, in the format:</p> <p>#ENS: <mode> where: <mode> as above</p>
AT#ENS=?	<p>Test command reports the available range of values for parameter <mode>.</p>
Reference	<p>Cingular Wireless LLC Requirement</p>

3.5.7.1.61. Select Band - #BND

#BND - Select Band	SELINT 0 / 1
<p>AT#BND[= [<band>]]</p>	<p>Set command selects the current band.</p> <p>Parameter <band>:</p> <ul style="list-style-type: none"> 0 - GSM 900MHz + DCS 1800MHz 1 - GSM 900MHz + PCS 1900MHz 2 - GSM 850MHz + DCS 1800MHz (available only on quadri-band modules) 3 - GSM 850MHz + PCS 1900MHz (available only on quadri-band modules) <p>Note: This setting is maintained even after power off.</p>



3.5.7.1.62. Automatic Band Selection - #AUTOBND

#AUTOBND - Automatic Band Selection		SELINT 0 / 1
AT#AUTOBND[= <value>]	<p>Set command enables/disables the automatic band selection at power-on.</p> <p>Parameter: <value>: 0 - disables automatic band selection at power-on (default for all products) 1 - enables automatic band selection at power-on; +COPS=0 is necessary condition to effectively have automatic band selection at next power-on; the automatic band selection stops as soon as a GSM cell is found.</p> <p>Note: if automatic band selection is enabled the band changes every about 90 seconds through available bands until a GSM cell is found.</p> <p>Note: if parameter <value> is omitted the behaviour of Set command is the same as Read command.</p>	
AT#AUTOBND?	<p>Read command returns whether the automatic band selection is enabled or not in the format:</p> <p>#AUTOBND: <value></p>	
AT#AUTOBND=?	<p>Test command returns the range of supported values for parameter <value>.</p>	

#AUTOBND - Automatic Band Selection		SELINT 2
AT#AUTOBND= [<value>]	<p>Set command enables/disables the automatic band selection at power-on.</p> <p>Parameter: <value>: 0 - disables automatic band selection at <i>next</i> power-up (default for all products, except GE865-QUAD, GL865-QUAD, GE910-QUAD, GE910-QUAD AUTO, GE910-QUAD V3, GL865-QUAD-V3 and GE910-GNSS) 1 - enables automatic band selection at <i>next</i> power-up; the automatic band selection stops as soon as a GSM cell is found (deprecated). 2 –enables automatic band selection in four bands (at 850/1900 and 900/1800); differently from previous settings it takes <i>immediate</i> effect (default for GE865-QUAD, GL865-QUAD, GE910-QUAD, GE910-QUAD AUTO, GE910-QUAD V3, GL865-QUAD-V3 and GE910-GNSS)</p> <p>Note: necessary condition to <i>effectively</i> have automatic band selection at next power-up (due to either AT#AUTOBND=1 or AT#AUTOBND=2) is that AT+COPS=0 has to be previously issued</p> <p>Note: if automatic band selection is enabled (AT#AUTOBND=1) the band changes every about 90 seconds through available bands until a GSM cell is found.</p> <p>Note: if the current setting is equal to AT#AUTOBND=0 and we're issuing AT#ENS=1, at <i>first next</i> power-up after the ENS functionality has been activated (see #ENS) the automatic band selection (AT#AUTOBND=2) is enabled.</p>	



#AUTOBND - Automatic Band Selection		SELINT 2
AT#AUTOBND?	Read command returns whether the automatic band selection is enabled or not in the form: #AUTOBND: <value>	
AT#AUTOBND=?	Test command returns the range of supported values for parameter <value>.	

3.5.7.1.63. Lock to single band - #BNDLOCK

#BNDLOCK – Lock to single band		SELINT 2
AT#BNDLOCK=<LockedBand>	<p>This command allows to set the single band the device must be locked to, selectable within those allowed for the specific product.</p> <p>Parameters: <LockedBand>: 0 - disables band locking (factory default); 1 - enables band locking on GSM 900MHz; 2 - enables band locking on DCS 1800MHz; 3 - enables band locking on GSM 850MHz; 4 - enables band locking on PCS 1900MHz.</p> <p>Note: the value set by command is directly stored in NVM and doesn't depend on the specific CMUX instance.</p> <p>Note: the new setting takes effect after a new registration procedure to the network. For this reason it is strongly recommended a power cycle (power-off and power-on the device) after new setting. Another possibility is to keep the device on and to force a new registration to the network as in the following example: - set AT+COPS=1,2,00001 (manual registration to not existing real network) - wait for +CREG: 0,3 - set AT+COPS=0,0 (for automatic registration) or set AT+COPS=1,0,... (for manual registration)</p> <p>Note: in case of a four bands device with current setting AT#AUTOBND=0 there might be conflicts between AT#BND and AT#BNDLOCK stored values. It is user responsibility to set proper values avoiding conflicts (no cross check is available between the two commands).</p>	
AT#BNDLOCK?	Read command reports the currently stored parameter <LockedBand> in the format:	



	#BNDLOCK: <LockedBand>
AT#BNDLOCK=?	Test command reports the supported range of values for parameter <LockedBand> according to specific product.

3.5.7.1.64. Lock to single BCCH ARFCN – #BCCHLOCK

#BCCHLOCK – Lock to single BCCH ARFCN	SELINT 2
AT#BCCHLOCK=<LockedBch>	<p>This command allows to set the single BCCH ARFCN the device must be locked to, selectable within those allowed for the specific product.</p> <p>Parameters: <LockedBch>: 1024 - disables BCCH locking (factory default); 0-124, 975-1023 - enables BCCH locking on GSM 900MHz; 512-885 - enables BCCH locking on DCS 1800MHz; 128-251 - enables BCCH locking on GSM 850MHz; 512-810 - enables BCCH locking on PCS 1900MHz.</p> <p>Note: the value set by command is directly stored in NVM and doesn't depend on the specific CMUX instance.</p> <p>Note: if selected locked BCCH is not available, the module will be out of GSM/GPRS network service even for emergency calls and will not select an alternative BCCH.</p> <p>Note: if selected locked BCCH is available but the module is not allowed to register to the corresponding PLMN, the module will be able to perform only emergency calls and will not select an alternative BCCH.</p> <p>Note: if selected locked BCCH is available, the module, in idle and in GPRS data transfer, will not perform reselection to another cell.</p> <p>Note: if selected locked BCCH is available, the module, in GSM data transfer (voice call, data call, sms), will not perform handover to another cell.</p> <p>Note: in case of a four bands device with current setting AT#AUTOBND=0 there might be conflicts between AT#BND, AT#BNDLOCK and AT#BCCHLOCK stored values; in case of a two bands device there might be conflicts between AT#BNDLOCK and AT#BCCHLOCK stored values. It is user responsibility to set proper values avoiding conflicts (no cross check is available between the commands).</p>



AT#BCCHLOCK?	Read command reports the currently stored parameter <LockedBch> in the format: #BCCHLOCK: <LockedBch>
AT#BCCHLOCK=?	Test command reports the supported range of values for parameter <LockedBch> according to specific product.

3.5.7.1.65. Network Scan Timer - #NWSCANTMR

#NWSCANTMR - Network Scan Timer		SELINT 2
AT#NWSCANTMR=<tmr>	Set command sets the Network Scan Timer that is used by the module to schedule the next network search when it is without network coverage (no signal). Parameter: <tmr> - timer value in units of seconds 5 3600 - time in seconds (default 5 secs.)	
AT#NWSCANTMR	Execution command reports time, in seconds, when the next scan activity will be executed. The format is: #NWSCANTMREXP: <time> Note: if <time> is zero it means that the timer is not running	
AT#NWSCANTMR?	Read command reports the current parameter setting for #NWSCANTMR command in the format: #NWSCANTMR: <tmr>	
AT#NWSCANTMR=?	Test command reports the supported range of values for parameter <tmr>	
Note	How much time it takes to execute the network scan depends either on how much bands have been selected and on network configuration (mean value is 5 seconds)	

3.5.7.1.66. Enable Network Friendly Mode - #NFM

#NFM – Enable Network Friendly Mode		SELINT 2
AT#NFM=[<NFMEEnable>[,<STEnable>]]	This command enables/disables Network Friendly Mode and Start Time. Parameters: <NFMEEnable> 0 – disable Network Friendly Mode (factory default); 1 – enable Network Friendly Mode. <STEnable> 0 – disable Start Time (factory default); 1 – enable Start Time.	



	<p>Note: the values set by command are directly stored in NVM and don't depend on the specific CMUX instance.</p> <p>Network Friendly Mode. NFM applies only if enabled (<NFMEable> is 1). NFM applies to the following services:</p> <ol style="list-style-type: none"> 1. GSM registration (Location Updating); 2. GPRS registration (Attach, Routing Area Updating); 3. PDP context activation; 4. SMS mobile originated. <p>If NFM is not active for a service the corresponding iteration counter is 0. When NFM is activated for a service the corresponding iteration counter is increased up to a maximum value of 7. The values of each NFM service iteration counter are stored in NVM in case they need to be applied at next power cycle.</p> <p><u>GSM registration.</u> If GSM registration (Location Updating) is rejected by the Network with one of the following causes</p> <ol style="list-style-type: none"> 2: IMSI unknown in HLR 3: Illegal MS 6: Illegal ME <p>NFM will be activated for GSM registration service, current GSM service iteration counter will be increased and will take effect at next power on. At next power cycle the NFM timer for GSM registration service will be started and a GSM registration will be allowed only at NFM timer expiry. If GSM registration (Location Updating) is rejected by the Network with one of the following causes</p> <ol style="list-style-type: none"> 5: IMEI not accepted 17: Network failure 22: Congestion 34: Service option temporarily out of order <p>for the 4 attempts specified by ETSI/3GPP, NFM will be activated for GSM registration service, current GSM service iteration counter will be increased, the NFM timer for GSM registration service will be started and a GSM registration will be allowed only at NFM timer expiry. At next power cycle the NFM timer for GSM registration service will be started and a GSM registration will be allowed only at NFM timer expiry. If NFM is activated for GSM registration service and NFM timer is not expired ETSI/3GPP T3212 timer will be ignored. If NFM is activated for GSM registration service and NFM timer is not expired ETSI/3GPP search for another PLMN will be ignored. If GSM registration (Location Updating) is accepted by the Network GSM service iteration counter will be reset.</p> <p><u>GPRS registration.</u> If GPRS registration (Attach, Routing Area Updating) is rejected by the Network with one of the following causes</p> <ol style="list-style-type: none"> 3: Illegal MS
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	<p>6: Illegal ME 7: GPRS services not allowed 8: GPRS services and non-GPRS services not allowed NFM will be activated for GPRS registration service, current GPRS service iteration counter will be increased and will take effect at next power on. At next power cycle the NFM timer for GPRS registration service will be started and a GPRS registration will be allowed only at NFM timer expiry. If GPRS registration (Attach, Routing Area Updating) is rejected by the Network with one of the following causes 9: MS identity cannot be derived by the network 16: MSC temporarily not reachable 17: Network failure 22: Congestion for the 5 attempts specified by ETSI/3GPP, NFM will be activated for GPRS registration service, current GPRS service iteration counter will be increased, the NFM timer for GPRS registration service will be started and a GPRS registration will be allowed only at NFM timer expiry. At next power cycle the NFM timer for GPRS registration service will be started and a GPRS registration will be allowed only at NFM timer expiry. If NFM is activated for GPRS registration service and NFM timer is not expired ETSI/3GPP T3302 timer will be ignored. If NFM is activated for GPRS registration service and NFM timer is not expired ETSI/3GPP attempt in NOM1 for GSM registration will be ignored. If GPRS registration (Attach, Routing Area Updating) is accepted by the Network GPRS service iteration counter will be reset. <u>PDP context activation.</u> If PDP context activation is rejected by the Network with one of the following causes 8: Operator Determined Barring 26: insufficient resources 27: missing or unknown APN 28: unknown PDP address or PDP type 29: user authentication failed 30: activation rejected by GGSN 31: activation rejected, unspecified 32: service option not supported 33: requested service option not subscribed 34: service option temporarily out of order 35: NSAPI already used 38: network failure 39: reactivation requested NFM will be activated for PDP context activation service, current PDP service iteration counter will be increased, the NFM timer for PDP context activation service will be started and a PDP context activation will be allowed only at NFM timer expiry. At next power cycle the NFM timer for</p>
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	<p>PDP context activation service will be started and a PDP context activation will be allowed only at NFM timer expiry. If PDP context activation is accepted by the Network PDP service iteration counter will be reset.</p> <p><u>SMS mobile originated.</u> If SMS mobile originated is rejected by the Network with one of the following causes</p> <ul style="list-style-type: none"> 8: Operator Determined Barring 10: cell barred 21: short message transfer reject 22: destination out of service 28: unidentified subscriber 29: facility reject 30: unknown subscriber 38: network out of order 41: temporary failure 42: congestion 47 resource unavailable 50 requested facility not subscribed 69: requested facility not implemented 81: invalid short message transfer reference value <p>NFM will be activated for SMS mobile originated service, current SMS service iteration counter will be increased, the NFM timer for SMS mobile originated service will be started and a SMS mobile originated will be allowed only at NFM timer expiry. At next power cycle the NFM timer for SMS mobile originated service will be started and a SMS mobile originated will be allowed only at NFM timer expiry. If SMS mobile originated is accepted by the Network SMS service iteration counter will be reset.</p> <p>Start Time. ST applies only if enabled (<STEnable> is 1). If ST is enabled the ST timer will be started at every power cycle and the registration procedures will be allowed only at ST timer expiry.</p>
<p>AT#NFM?</p>	<p>Read command reports the currently stored parameters <NFMEable> and <STEnable> in the format: #NFM: <NFMEable>,<STEnable></p>
<p>AT#NFM=?</p>	<p>Test command reports the supported range of values for parameters <NFMEable> and <STEnable>.</p>

3.5.7.1.67. Configure Network Friendly Mode - #NFM



#NFMC – Configure Network Friendly Mode	SELINT 2
<p>AT#NFMC=[<NFMPar1>[,<NFMPar2>[,<NFMPar3>[,<NFMPar4>[,<NFMPar5>[,<NFMPar6>[,<NFMPar7>[,<STPar>]]]]]]]]</p>	<p>This command configures Network Friendly Mode time parameters and Start Time time parameter.</p> <p>Parameters:</p> <ul style="list-style-type: none"> <NFMPar1> - NFM iteration counter 1 time interval in seconds 1-15360 – (factory default is 60); <NFMPar2> - NFM iteration counter 2 time interval in seconds 1-15360 – (factory default is 120); <NFMPar3> - NFM iteration counter 3 time interval in seconds 1-15360 – (factory default is 240); <NFMPar4> - NFM iteration counter 4 time interval in seconds 1-15360 – (factory default is 480); <NFMPar5> - NFM iteration counter 5 time interval in seconds 1-15360 – (factory default is 960); <NFMPar6> - NFM iteration counter 6 time interval in seconds 1-15360 – (factory default is 1920); <NFMPar7> - NFM iteration counter 7 time interval in seconds 1-15360 – (factory default is 3840); <STPar> - ST time interval in seconds 1-15360 – (factory default is 60); <p>Note: the values set by command are directly stored in NVM and don't depend on the specific CMUX instance.</p> <p>Network Friendly Mode. If NFMPar[] is the array containing the seven parameters <NFMPari> NFMPar[<NFMPar1>,<NFMPar2>,<NFMPar3>,<NFMPar4>,<NFMPar5>,<NFMPar6>,<NFMPar7>] then the value of the current NFM timer is calculated depending on current iteration counter i with the following formula NFMTimer = NFMPar[i] + (IMSI % NFMPar[i]) Only last 9 IMSI digits are used in this formula to fit 32 bit integer.</p> <p>Start Time. If STPar is the number contained in the parameter <STPar> then the value of the ST timer is calculated with the following formula STTimer = 1 + (IMSI % STPar) Only last 9 IMSI digits are used in this formula to fit 32 bit integer.</p>
<p>AT#NFMC?</p>	<p>Read command reports the currently stored parameters <NFMPar1>, <NFMPar2>, <NFMPar3>, <NFMPar4>, <NFMPar5>, <NFMPar6>, <NFMPar7> and <STPar> in the format: #NFM: <NFMPar1>,<NFMPar2>,<NFMPar3>,<NFMPar4>,<NFMPar5>,<NFMPar6>,<NFMPar7>,<STPar></p>



<p>AT#NFMC=?</p>	<p>Test command reports the supported range of values for parameters <NFMPar1>, <NFMPar2>, <NFMPar3>, <NFMPar4>, <NFMPar5>, <NFMPar6>, <NFMPar7> and <STPar>.</p>
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3.5.7.1.68. Reset and report status of Network friendly Mode - #NFMS

<p>#NFMS – Reset Network Friendly Mode and report status of Network friendly Mode</p>	<p>SELINT 2</p>
<p>AT#NFMS=<NFMSMode>[,<ServiceNumber>]</p>	<p>This command allows to reset Network Friendly Mode current iteration counter and to report Network Friendly Mode current iteration counter for each service supported by Network Friendly Mode.</p> <p>Parameters:</p> <p><NFMSMode></p> <ul style="list-style-type: none"> 0 – reset Network Friendly Mode current iteration counter for specific service; 1 – report Network Friendly Mode status for all services supported by Network Friendly Mode. <p><ServiceNumber></p> <ul style="list-style-type: none"> 1 – GSM registration (Location Updating); 2 – GPRS registration (Attach, Routing Area Updating); 3 – PDP context activation; 4 – SMS mobile originated. <p>Note: the parameter <ServiceNumber> must be present if <NFMSMode> value is 0 and must not be present if <NFMSMode> value is 1.</p> <p>If <NFMSMode> value is 1 then the Network Friendly Mode status will be reported in the format</p> <p>#NFMS: <ServiceNumber1>,<NFMAActive>,<NFMPar>,<NFMTime> #NFMS: <ServiceNumber2>,<NFMAActive>,<NFMPar>,<NFMTime> #NFMS: <ServiceNumber3>,<NFMAActive>,<NFMPar>,<NFMTime> #NFMS: <ServiceNumber4>,<NFMAActive>,<NFMPar>,<NFMTime></p> <p>OK</p> <p>where</p> <p><ServiceNumberi></p> <ul style="list-style-type: none"> 1 – GSM registration (Location Updating); 2 – GPRS registration (Attach, Routing Area Updating); 3 – PDP context activation; 4 – SMS mobile originated. <p><NFMAActive></p> <ul style="list-style-type: none"> 0 – NFM not active for corresponding service; <p>if <NFMAActive> is 0 the corresponding service is available;</p>



	<p>1 – NFM active for corresponding service. <NFMpar> - NFM current iteration counter time interval in seconds for corresponding service. <NFMTIME> - NFM current remaining time for corresponding service; if <NFMACTIVE> is 0 then <NFMTIME> is 0 and the corresponding service is available; if <NFMACTIVE> is 1 and <NFMTIME> is not 0 the corresponding service is not available; if <NFMACTIVE> is 1 and <NFMTIME> is 0 the corresponding service is available and another try is allowed;</p>
<p>AT#NFMS=?</p>	<p>Test command reports the supported range of values for parameters <NFMSMode> and <ServiceNumber>.</p>
<p>Examples</p>	<p>AT#NFMS=0,1 OK Reset NFM iteration counter for GSM registration service.</p> <p>AT#NFMS=0 ERROR Not allowed.</p> <p>AT#NFMS=1 #NFMS: 1,0,0,0 #NFMS: 2,1,60,46 #NFMS: 3,0,0,0 #NFMS: 4,0,0,0 OK NFM not active for GSM registration service. NFM active for GPRS registration service, current iteration time interval 60 s, time to expiry of current iteration timer 46 s, GPRS registration service not available. NFM not active for PDP context activation service. NFM not active for SMS mobile originated service.</p> <p>AT#NFMS=1 #NFMS: 1,0,0,0 #NFMS: 2,0,0,0 #NFMS: 3,1,120,0 #NFMS: 4,0,0,0 OK NFM not active for GSM registration service. NFM not active for GPRS registration service. NFM active for PDP context activation service, current iteration time interval 120 s, current iteration timer expired, PDP context activation service available, another try is allowed. NFM not active for SMS mobile originated service.</p> <p>AT#NFMS=1,2 ERROR Not allowed.</p>



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3.5.7.1.69. IMSI Catcher detection enable - #IMCDEN

#IMCDEN – IMSI Catcher detection enable	SELINT 2
AT#IMCDEN=<mode>[,<UNUSED_1>[,<UNUSED_2>[,<UNUSED_3>[,<UNUSED_4>]]]]	<p>Set command enables/disables an unsolicited indication in the ME that can help to detect potential IMSI catchers.</p> <p>Parameter: <mode> - type of notification 0 - disabled (factory default) 1 - enabled; the ME informs at every potentially dangerous network status change through the following unsolicited indication:</p> <p>#IMCD: <status></p> <p>where: <status> - current potentially dangerous network status 0 – Location area update of any type; 1 – IMSI sent to the network 2 – Rejection error due to cause #15 (No Suitable Cells In Location Area).</p> <p>NOTE: Individual occurrence of status 0 or status 2 should not represent a risk. Occurrence of status 1 is always potentially dangerous, especially when it is preceded by status 0 and followed by status 2 in a short time.</p>
AT#IMCDEN?	<p>Read command returns the current setting in the format:</p> <p>#IMCDEN: <mode>,0,0,0,0<CR><LF></p>
AT#IMCDEN=?	<p>Test command returns the range of supported values.</p>

3.5.7.1.70. Skip Escape Sequence - #SKIPESC

#SKIPESC - Skip Escape Sequence	SELINT 0 / 1
AT#SKIPESC[=<mode>]]	<p>Set command enables/disables skipping the escape sequence +++ while transmitting during a data connection.</p> <p>Parameter: <mode> 0 - doesn't skip the escape sequence; its transmission is enabled (factory default). 1 - skips the escape sequence; its transmission is not enabled.</p> <p>Note: in case of an FTP connection, the escape sequence is not transmitted, regardless of the command setting.</p>



#SKIPESC - Skip Escape Sequence		SELINT 0 / 1
	<p>Note: issuing AT#SKIPESC<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT#SKIPESC=<CR> is the same as issuing the command AT#SKIPESC=0<CR>.</p>	
AT#SKIPESC?	<p>Read command reports whether escape sequence skipping is currently enabled or not, in the format:</p> <p>#SKIPESC: <mode></p>	
AT#SKIPESC=?	<p>Test command reports supported range of values for parameter <mode>.</p>	

#SKIPESC - Skip Escape Sequence		SELINT 2
AT#SKIPESC= [<mode>]	<p>Set command enables/disables skipping the escape sequence +++ while transmitting during a data connection.</p> <p>Parameter: <mode> 0 - doesn't skip the escape sequence; its transmission is enabled (factory default). 1 - skips the escape sequence; its transmission is not enabled.</p> <p>Note: in case of an FTP connection, the escape sequence is not transmitted, regardless of the command setting.</p>	
AT#SKIPESC?	<p>Read command reports whether escape sequence skipping is currently enabled or not, in the format:</p> <p>#SKIPESC: <mode></p>	
AT#SKIPESC=?	<p>Test command reports supported range of values for parameter <mode>.</p>	

3.5.7.1.71. Escape Sequence Guard Time - #E2ESC

#E2ESC - Escape Sequence Guard Time		SELINT 0 / 1
AT#E2ESC[= [<gt>]]	<p>Set command sets a guard time in seconds for the escape sequence in GPRS to be considered a valid one (and return to on-line command mode).</p> <p>Parameter: <gt> 0 - guard time defined by command S12 (factory default) 1..10 - guard time in seconds</p> <p>Note: if the Escape Sequence Guard Time is set to a value different from zero, it overrides the one set with S12.</p> <p>Note: issuing AT#E2ESC<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT#E2ESC=<CR> returns the OK result code.</p>	
AT#E2ESC?	<p>Read command returns current value of the escape sequence guard time, in the</p>	



#E2ESC - Escape Sequence Guard Time		SELINT 0 / 1
	format:	
	#E2ESC: <gt;	
AT#E2ESC=?	Test command returns the OK result code.	

#E2ESC - Escape Sequence Guard Time		SELINT 2
AT#E2ESC= [<gt;]	Set command sets a guard time in seconds for the escape sequence in GPRS to be considered a valid one (and return to on-line command mode).	
	Parameter: <gt; 0 - guard time defined by command S12 (factory default) 1..10 - guard time in seconds	
	Note: if the Escape Sequence Guard Time is set to a value different from zero, it overrides the one set with S12 .	
AT#E2ESC?	Read command returns current value of the escape sequence guard time, in the format: #E2ESC: <gt;	
AT#E2ESC=?	Test command returns the range of supported values for parameter <gt;.	
AT#E2ESC= [<gt;]	Set command sets a guard time in seconds for the escape sequence in GPRS to be considered a valid one (and return to on-line command mode).	
	Parameter: <gt; 0 - guard time defined by command S12 (factory default) 1..10 - guard time in seconds	
	Note: if the Escape Sequence Guard Time is set to a value different from zero, it overrides the one set with S12 .	

3.5.7.1.72. PPP-GPRS Connection Authentication Type - #GAUTH

#GAUTH - PPP-GPRS Connection Authentication Type		SELINT 0 / 1
AT#GAUTH[= <type>]	Set command sets the authentication type either for PPP-GPRS and PPP-GSM connections.	
	Parameter <type> 0 - no authentication 1 - PAP authentication (factory default) 2 - CHAP authentication	
	Note: if parameter <type> is omitted the behaviour of Set command is the same as	



#GAUTH - PPP-GPRS Connection Authentication Type		SELINT 0 / 1
	Read command.	
AT#GAUTH?	Read command reports the current PPP-GPRS connection authentication type, in the format: #GAUTH: <type>	
AT#GAUTH=?	Test command returns the range of supported values for parameter <type>.	

#GAUTH - PPP-GPRS Connection Authentication Type		SELINT 2
AT#GAUTH= [<type>]	Set command sets the authentication type either for PPP-GPRS and PPP-GSM connections. Parameter <type> 0 - no authentication 1 - PAP authentication (factory default) 2 - CHAP authentication 3 - automatic (PAP and CHAP) Note: value is automatically saved in NVM	
AT#GAUTH?	Read command reports the current PPP-GPRS connection authentication type, in the format: #GAUTH: <type>	
AT#GAUTH=?	Test command returns the range of supported values for parameter <type>.	

3.5.7.1.73. PPP-GPRS Parameters Configuration - #GPPPCFG

#GPPPCFG - PPP-GPRS Parameters Configuration		SELINT 2
AT#GPPPCFG= <hostIPaddress> [,<LCPTimeout> [,<PPPmode>]]	Set command sets three parameters for a PPP-GPRS connection. Parameters: <hostIPaddress> - Host IP Address that is assigned to the PPP server side (the host application); Sstring type, it can be any valid IP address in the format: xxx.xxx.xxx.xxx. <LCPTimeout> - LCP response timeout value in 100ms units 10..600 - hundreds of ms (factory default is 25) <PPPmode> - PPP mode (factory default is 2) 0 - passive mode the module waits the first message coming from the remote application (e.g. LCP Conf Req) before starting the LCP negotiation 1 - active mode, the module starts autonomously the LCP negotiation immediately after the CONNECT message 2 - passive mode, the module waits the first message coming from the remote application (e.g. LCP Conf Req) before starting the LCP negotiation; LCP termination is performed by the module	



#GPPPCFG - PPP-GPRS Parameters Configuration		SELINT 2
	<p>3 - active mode, the module starts autonomously the LCP negotiation immediately after the CONNECT message; LCP termination is performed by the module</p> <p>Note: values are automatically saved in NVM</p> <p>Note: if <hostIPAddress>="000.000.000.000" (factory default) the Host IP Address assigned to the host application is the previous remote IP Address obtained by the Network.</p>	
AT# GPPPCFG?	<p>Read command reports the current PPP-GPRS connection parameters in the format:</p> <p>#GPPPCFG: <hostIPAddress>,<LCPtimeout>,<PPPmode></p>	
AT# GPPPCFG=?	<p>Test command returns the range of supported values for parameter <LCPtimeout> and <PPPmode>, in the format:</p> <p>#GPPPCFG: (10-600),(0-3)</p>	

3.5.7.1.74. Enables/disables PPP compression - #GPPPCFGEXT

#GPPPCFGEXT – enables/disables PPP compression		SELINT 2
AT#GPPPCFGEXT=<Comp>[,<unused_A>[,<unused_B>[,<unused_C>]]]	<p>Set command enables/disables the use of protocol and address/control field compression in PPP.</p> <p>Parameter: < Comp > 0 – disables compression 1 – enables compression (default)</p> <p>Note: value is automatically saved in NVM</p>	
AT#GPPPCFGEXT?	<p>Read command returns the current configuration parameters value:</p> <p>#GPPPCFGEXT: < Comp >,0,0,0<CR><LF></p>	
AT#GPPPCFGEXT=?	<p>Test command returns the range of supported values for all the parameters.</p>	

3.5.7.1.75. Tune PDP parameters - #EQUQDP

#EQUQDP – tune PDP params		SELINT 2
AT#EQUQDP=<delay>,<retries>[,<abort>]	<p>This command allows to tune PDP procedure</p> <p><delay> to set PDP retry timer</p>	



#RTCSTAT - RTC Status		SELINT 2
AT#RTCSTAT= [<status>]	<p>Set command resets the RTC status flag.</p> <p>Parameter: <status> 0 - Set RTC Status to RTC HW OK</p> <p>Note: the initial value of RTC status flag is RTC HW Error and it doesn't change until a command AT#RTCSTAT=0 is issued.</p> <p>Note: if a power failure occurs and the buffer battery is down the RTC status flag is set to 1. It doesn't change until command AT#RTCSTAT=0 is issued.</p>	
AT#RTCSTAT?	<p>Read command reports the current value of RTC status flag, in the format:</p> <p>#RTCSTAT: <status></p>	
AT#RTCSTAT=?	<p>Test command returns the range of supported values for parameter <status></p>	

3.5.7.1.77. GSM Antenna Detection - #GSMAD

#GSMAD - GSM Antenna Detection		SELINT 2
AT#GSMAD= <mod>, [<urcmode> [,<interval> [,<detGPIO> [,<repGPIO>]]]]	<p>Set command sets the behaviour of antenna detection algorithm</p> <p>Parameters: <mod> 0 - antenna detection algorithm not active 1 - periodic activation of the antenna detection algorithm; detection is started every <interval> period, using <detGPIO> for detection; if the algorithm detects a change in the antenna status the module is notified by URC #GSMAD (see format below) 2 - instantaneous activation of the antenna detection algorithm; if the algorithm detects a change in the antenna status the module is notified by URC #GSMAD (see format below); this instantaneous activation doesn't affect a periodic activation eventually started before. This modality is obsolete and is maintained only for backward compatibility. We suggest to use the modality 3</p> <p>URC format:</p> <p>#GSMAD: <presence></p> <p>where: <presence> 0 - antenna connected. 1 - antenna connector short circuited to ground. 2 - antenna connector short circuited to power. 3 - antenna not detected (open).</p>	



	<p>3 - instantaneous activation of the antenna detection algorithm as modality 2 but in this case the command doesn't return until the algorithm ended. The returned value is the antenna <presence> status just detected. Format:</p> <pre>AT#GSMAD=3 #GSMAD: <presence></pre> <p>OK</p> <p>This instantaneous activation doesn't affect a periodic activation eventually started before, then the output format would be:</p> <pre>AT#GSMAD=3 #GSMAD: <presence></pre> <p>OK</p> <pre>#GSMAD: <presence> // URC resulting of previous #GSMAD=1</pre> <p><urcmode> - URC presentation mode. It has meaning and can be set only if <mod> is 1.</p> <p>0 - it disables the presentation of the antenna detection URC</p> <p>1 - it enables the presentation of the antenna detection URC, whenever the antenna detection algorithm detects a change in the antenna status; the unsolicited message is in the format:</p> <pre>#GSMAD: <presence></pre> <p>where:</p> <p><presence> is as before</p> <p><interval> - duration in seconds of the interval between two consecutive antenna detection algorithm runs (default is 120). It has meaning and can be set only if <mod> is 1.</p> <p>..1..3600 - seconds</p> <p><detGPIO> - defines which GPIO shall be used as input by the Antenna Detection algorithm. For the <detGPIO> actual range see Test Command</p> <p><repGPIO> - defines which GPIO shall be used by the Antenna Detection algorithm to report antenna condition. It has meaning only if <mod> is 1. For the <repGPIO> actual range see Test Command.</p> <p>Note: the URC presentation mode <urcmode> is related to the current AT instance only (see +cmux); last <urcmode> settings are saved for every instance as extended profile parameters, thus it is possible to restore them either if the multiplexer control channel is released and set up, back and forth.</p>
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	Note: GPIO is set to LOW when antenna is connected. Set to HIGH otherwise
	Note: #GSMAD parameters, excluding <urcmode> , are saved in NVM.
AT#GSMAD?	Read command returns the current parameter settings for #GSMAD command in the format: #GSMAD: <mod>,<urcmode>,<interval>,<detGPIO>,<repGPIO>
AT#GSMAD=?	Test command reports the supported range of values for parameters <mod> , <urcmode> , <interval> , <detGPIO> and <repGPIO> .

3.5.7.1.78. SIM Detection Mode - #SIMDET

#SIMDET - SIM Detection Mode		SELINT 2
AT#SIMDET= <mode>	Set command specifies the SIM Detection mode Parameter: <mode> - SIM Detection mode 0 - ignore SIMIN pin and simulate the status 'SIM Not Inserted' 1 - ignore SIMIN pin and simulate the status 'SIM Inserted' (default for GL865-DUAL, GL865-DUAL V3, GL865-QUAD V3, GL868-DUAL, GL868-DUAL V3, GL865-QUAD and GE866-QUAD) 2 – automatic SIM detection through SIMIN Pin (default except for GL865-DUAL, GL865-DUAL V3, GL865-QUAD V3, GL868-DUAL, GL868-DUAL V3, GL865-QUAD and GE866-QUAD) NOTE: with Sim-On-Chip products #SIMDET allows to switch between internal and external SIM, as described below: 0 – switch to internal SIM 1 – switch to external SIM, ignore SIMIN pin and simulate the status 'SIM Inserted' 2 – automatic SIM detection through SIMIN Pin and automatic switch to internal SIM in case that external SIM has not been detected (default).	
AT#SIMDET?	Read command returns the currently selected Sim Detection Mode in the format: #SIMDET: <mode>,<simin> where: <mode> - SIM Detection mode, as before <simin> - SIMIN pin real status 0 - SIM not inserted 1 - SIM inserted	
AT#SIMDET=?	Test command reports the supported range of values for parameter <mode>	

3.5.7.1.79. SIM Enhanced Speed - #ENHSIM

#ENHSIM - SIM Enhanced Speed		SELINT 2
AT#ENHSIM=	Set command activates or deactivates the Sim Enhanced Speed Functionality.	



<mod>	<p>Parameter: <mod> 0 - Not Active (default for all 7.3.xxx software release) 1 - BRF is (F=512 D=8) (default for 10.0x.xxx software release)</p> <p><i>(For BRF definition refer to ISO-7816-3)</i></p> <p>Note: value <mod> is saved in NVM and will be used since next module startup or new SIM insertion.</p> <p>Note: module will use the slowest speed between the one programmed and the one supported by the SIM.</p>
AT#ENHSIM?	<p>Read command returns whether the Sim Enhanced Speed Functionality is currently activated or not, in the format:</p> <p>#ENHSIM: <mod></p>
AT#ENHSIM=?	<p>Test command reports the supported range of values for parameter <mod>.</p>
Reference	<p>GSM 11.11, ISO-7816-3</p>
Note	<p>It is strongly suggested to verify which is the maximum speed supported by the final application</p>

3.5.7.1.80. Subscriber number - #SNUM

#SNUM – Subscriber Number	SELINT 2
<p>AT#SNUM= <index>,<number>[,<alpha>]</p>	<p>Set command writes the MSISDN information related to the subscriber (own number) in the EFmsisdn SIM file.</p> <p>Parameter: <index> - record number The number of record in the EFmsisdn depends on the SIM. If only <index> value is given, then delete the EFmsisdn record in location <index> is deleted. For all SW versions except 13.00.xxx, if the ENS functionality has not been previously enabled (see #ENS), <index>=1 is the only value admitted. For 13.00.xxx SW version all records are available, irrespective of ENS functionality setting.</p> <p><number> - string containing the phone number The string could be written between quotes. For all SW versions except 13.00.xxx, if the ENS functionality has been previously enabled (see #ENS) “+” at start only is also admitted (international numbering scheme). For 13.00.xxx SW version “+” at start only is always admitted, irrespective of ENS functionality setting.</p>



	<p><alpha> - alphanumeric string associated to <number>. Default value is empty string (“”), otherwise the used character set should be the one selected with +CSCS. The string could be written between quotes, the number of characters depends on the SIM. If empty string is given (“”), the corresponding <alpha> will be an empty string.</p> <p>Note: the command return ERROR if EFmsisdn file is not present in the SIM or if MSISDN service is not allocated and activated in the SIM Service Table (see 3GPP TS 11.11).</p>
AT#SNUM=?	Test command returns the OK result code

3.5.7.1.81. SIM Answer to Reset - #SIMATR

#SIMATR – SIM Answer To Reset		SELINT 2
AT#SIMATR	<p>This command returns the characters collected from the Reset/ATR procedure.</p> <p>Note: The ATR is the information presented by the SIM to the ME at the beginning of the card session and gives operational requirements (ISO/IEC 7816-3).</p>	

3.5.7.1.82. CPU Clock Mode - #CPUMODE

#CPUMODE - CPU Clock Mode		SELINT 2
AT#CPUMODE= <mode>	<p>Set command specifies the CPU clock mode</p> <p>Parameter: <mode></p> <ul style="list-style-type: none"> 0 - normal CPU clock @26Mhz 1 - CPU clock @52Mhz 2 - CPU clock @52Mhz, during GPRS TX/RX only 3 - CPU clock @104Mhz 4 - CPU clock @104Mhz, during GPRS TX/RX only 5 - CPU clock @52Mhz, during GPRS TX/RX and voice call 6 - CPU clock @104Mhz, during GPRS TX/RX and voice call 7 - CPU clock MAX supported, during RSA AT command <p>Note: using <mode> greater than 0, the power consumption will increase</p>	
AT#CPUMODE?	<p>Read command returns the currently selected CPU clock mode in the format:</p> <p>#CPUMODE: <mode></p>	
AT#CPUMODE=?	Test command reports the supported range of values for parameter <mode>.	



3.5.7.1.83. GSM Context Definition - #GSMCONT

#GSMCONT - GSM Context Definition		SELINT 2
AT#GSMCONT= <cid>[,<P_type>, <CSD_num>]	Set command specifies context parameter values for the only GSM context, identified by the (local) context identification parameter 0. Parameters: <cid> - context Identifier; numeric parameter which specifies the only GSM context 0 <P_type> - protocol type; a string parameter which specifies the type of protocol "IP" - Internet Protocol <CSD_num> - phone number of the internet service provider Note: issuing #GSMCONT=0 causes the values for context number 0 to become undefined.	
AT#GSMCONT?	Read command returns the current settings for the GSM context, if defined, in the format: +GSMCONT: <cid>,<P_type>,<CSD_num>	
AT#GSMCONT=?	Test command returns the supported range of values for all the parameters.	

3.5.7.1.84. IPEGSM configurations - #GSMCONTCFG

#GSMCONTCFG - IPEGSM configurations		SELINT 2
AT#GSMCONTCFG= <actTo>[,<unused_A > [,<unused_B >[,<unused_C>]]]]	Set command sets the IPEGSM configuration. Parameters: <actTo> - activation timer value 0 – no timer (default) 50..65535 – timeout value in hundreds of milliseconds Note: this timeout starts as soon as the PPP activation starts (refer to EasyGPRS User Guide). It does not include the time for the CSD call to be established. Note: the value set by command is directly stored in NVM and doesn't depend on the specific AT instance.	
AT#GSMCONTCFG?	Read command returns the current configuration parameters value: #GSMCONTCFG:<actTo>,0,0,0<CR><LF>	



Example	<pre>AT#SGACT=0,1 #SGACT: xxx.yyy.zzz.www OK AT#CGPADDR=0 #CGPADDR: 0,"xxx.yyy.zzz.www" OK AT#CGPADDR=? #CGPADDR: (0) OK</pre>
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3.5.7.1.86. Configure TCP window size - #TCPMAXWIN

#TCPMAXWIN – Configure TCP window size	SELINT 2
AT#TCPMAXWIN=[<winSize>]	<p>This command permits to configure the TCP window size</p> <p>Parameters: <winSize> - TCP window size</p> <p>0 – TCP window size is handled automatically by the module(default)</p> <p>1-65535 –TCP window size value</p> <p>Note: command has to be set before opening socket connection(#SD,#SL/SA,#FTPOPEN/GET/PUT...) to take effect</p> <p>Note: it permits to slow down TCP when application wants to retrieve data slowly(for instance: cmd mode), to avoid early RST from server</p> <p>Note: the value set by command is directly stored in NVM</p>
AT#TCPMAXWIN?	<p>Read command reports the currently selected <winSize>in the format: #TCPMAXWIN: <winSize></p>
AT#TCPMAXWIN=?	<p>Test command reports the supported range of values for parameter <winSize></p>

3.5.7.1.87. Call Establishment Lock - #CESTHLCK



#CESTHLCK – Call establishment lock		SELINT 2
AT#CESTHLCK= [<closure_type >]	<p>This command can be used to disable call abort before the DCE enters connected state.</p> <p>< closure_type >: 0 - Aborting the call setup by reception of a character is generally possible at any time before the DCE enters connected state (default)</p> <p>1 - Aborting the call setup is disabled until the DCE enters connected state</p>	
AT#CESTHLCK?	<p>Read command returns the current setting of <closure_type> parameter in the format:</p> <p>#CESTHLCK: <closure_type></p>	
AT#CESTHLCK=?	<p>Test command returns the supported range of values for the <closure_type> parameter</p>	

3.5.7.1.88. Phone Activity Status - #CPASMODE

#CPASMODE – AT+CPAS answer mode		SELINT 2
AT#CPASMODE=<mode>	<p>Set command enables/disables a modified AT+CPAS command response when the command is issued before an incoming call starts ringing (RING unsolicited code sent to the TE). If <mode> is 0, AT+CPAS response will be +CPAS: 4 otherwise the response will be +CPAS: 3</p> <p>Parameter: <mode> - AT+CPAS response selection 0 – standard AT+CPAS response (factory default) 1 – modified AT+CPAS response.</p> <p>Note: the value set by command is directly stored in NVM and doesn't depend on the specific AT instance</p>	
AT#CPASMODE?	<p>Read command reports the currently selected <mode> in the format: #CPASMODE: <mode></p>	
AT#CPASMODE=?	<p>Test command reports the supported range of values for parameter <mode></p>	

3.5.7.1.89. ICCID SIM file reading mode - #FASTCCID

#FASTCCID – Set ICCID SIM file reading mode	SELINT 2
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#FASTCCID – Set ICCID SIM file reading mode		SELINT 2
AT#FASTCCID= [<fast>]	<p>The set command is used to specify the ICCID reading mode.</p> <p><fast>: a numeric parameter which indicates the reading mode</p> <p>0 – the ICCID value is read from the SIM card each time the AT#CCID command is issued and not during SIM card initialization (default for all products, except for GE910-QUAD, GE910-QUAD AUTO and GE910-GNSS)</p> <p>1 – the ICCID value is read from the SIM card during SIM card initialization (default for GE910-QUAD, GE910-QUAD AUTO and GE910-GNSS)</p> <p>Note: the value is saved in NVM and has effect only at the next power cycle.</p>	
AT#FASTCCID?	<p>The read command returns the currently selected reading mode in the form:</p> <p>#FASTCCID: <fast></p>	
AT#FASTCCID=?	<p>Test command reports the supported list of currently available <fast>s.</p>	

3.5.7.1.90. Write to I2C - #I2CWR

#I2CWR – Write to I2C		SELINT 2
AT#I2CWR= <sdaPin>, <sclPin>, <deviceId>, <registerId>, <len>	<p>This command is used to Send Data to an I2C peripheral connected to module GPIOs</p> <p><sdaPin >: GPIO number for SDA . Valid range is “any input/output pin” (see Test Command.)</p> <p><sclPin>: GPIO number to be used for SCL. Valid range is “any output pin” (see Test Command).</p> <p><deviceId>: address of the I2C device, with the LSB, used for read/write command. It doesn't matter if the LSB is set to 0 or to 1. 10 bit addressing supported. Value has to be written in hexadecimal form (without 0x).</p> <p><registerId>: Register to write data to , range 0..255. Value has to be written in hexadecimal form (without 0x).</p> <p><len>: number of data to send. Valid range is 1-254.</p> <p>The module responds to the command with the prompt '>' and awaits for the data to send. To complete the operation send Ctrl-Z char (0x1A hex); to exit without writing the message send ESC char (0x1B hex).</p> <p>Data shall be written in Hexadecimal Form.</p>	



#I2CWR – Write to I2C	SELINT 2
	<p>If data are successfully sent, then the response is OK.</p> <p>If data sending fails for some reason, an error code is reported. Example if CheckAck is set and no Ack signal was received on the I2C bus</p> <p>E.g. AT#I2CWR=2,3,20,10,14 > 00112233445566778899AABBCCDD<ctrl-z> OK Set GPIO2 as SDA, GPIO3 as SCL; Device I2C address is 0x20; 0x10 is the address of the first register where to write I2C data; 14 data bytes will be written since register 0x10</p> <p>NOTE: At the end of the execution GPIO will be restored to the original setting (check AT#GPIO Command)</p> <p>NOTE: device address, register address where to read from\ write to, and date bytes have to be written in hexadecimal form without 0x.</p>
AT#I2CWR=?	Test command reports the supported list of currently available <service>s.

3.5.7.1.91. Read to I2C - #I2CRD

#I2CRD – Read to I2C	SELINT 2
<p>AT#I2CRD= <sdaPin>, <sclPin>, <deviceId>, <registerId>, <len></p>	<p>This command is used to Receive Data from an I2C peripheral connected to module GPIOs</p> <p><sdaPin >: GPIO number for SDA . Valid range is “any input/output pin” (see Test Command.)</p> <p><sclPin>: GPIO number to be used for SCL. Valid range is “any output pin” (see Command Test).</p> <p><deviceId>: address of the I2C device, with the LSB, used for read\write command. It doesn’t matter if the LSB is set to 0 or to 1. 10 bit addressing supported. Value has to be written in hexadecimal form (without 0x before).</p> <p><registerId>: Register to read data from, range 0..255. Value has to be written in hexadecimal form (without 0x before).</p> <p><len>: number of data to receive. Valid range is 1-254.</p> <p>Data Read from I2C will be dumped in Hex:</p>



#I2CRD – Read to I2C	SELINT 2
<p>E.g. AT#I2CRD=2,3,20,10,12 #I2CRD: 00112233445566778899AABBCC OK</p> <p>NOTE: If data requested are more than data available in the device, dummy data (normally 0x00 or 0xff) will be dumped.</p> <p>NOTE: At the end of the execution GPIO will be restored to the original setting (check AT#GPIO Command)</p> <p>NOTE: device address, register address where to read from\ write to, and date bytes have to be written in hexadecimal form without 0x.</p>	
AT#I2CRD=?	Test command reports the supported list of currently available <service>s.

3.5.7.1.92. Software level selection - #SWLEVEL

#SWLEVEL – SW Level selection	SELINT 2
AT#SWLEVEL=<level>	<p>Set command enables 2 enhanced features:</p> <ol style="list-style-type: none"> 1) It permits to get a faster indication of SIM status when the PIN is not required (see command #QSS) 2) DTMF duration (see AT+VTS;AT+VTD) can be controlled even for values shorter than 300mS. <p>Parameters: <level> - SW level</p> <p>0 - disable SW level (default for for all products, except GE866-QUAD, GE865-QUAD, GE864-DUAL V2, GL865-DUAL, GL865-QUAD, GL865-DUAL V3, GL865-QUAD V3, GL868-DUAL V3, GL868-DUAL, GE910-QUAD, GE910-QUAD AUTO, GE910-QUAD V3 and GE910-GNSS)</p> <p>1 - enable SW level (default for GE866-QUAD, GE865-QUAD, GE864-DUAL V2, GL865-DUAL, GL865-QUAD, GL865-DUAL V3, GL865-QUAD V3, GL868-DUAL V3, GL868-DUAL, GE910-QUAD, GE910-QUAD AUTO, GE910-QUAD V3 and GE910-GNSS)</p> <p>Note1: the value of <level> parameter is directly stored in NVM and doesn't depend on the specific AT instance.</p> <p>Note2: please remember that DTMFs are generated at network level, and the real duration can be operator dependant.</p>
AT#SWLEVEL?	<p>Read command reports the currently selected <level> in the format:</p> <p>#SWLEVEL: <level></p>



AT#SWLEVEL=?	Test command reports the supported range of values for parameter<level>

3.5.7.1.93. Control Command Flow - #CFLO

#CFLO – Command Flow Control		SELINT 2
AT#CFLO=<enable>	Set command enables/disables the flow control in command mode. If enabled, current flow control is applied to both data mode and command mode. Parameter: <enable> - 0 – disable flow control in command mode <default value> 1 – enable flow control in command mode Note: setting value is saved in the profile	
AT#CFLO?	Read command returns current setting value in the format #CFLO: <enable>	
AT#CFLO=?	Test command returns the range of supported values for parameter <enable>	

3.5.7.1.94. Report concatenated SMS indexes - #CMGLCONCINDEX

#CMGLCONCINDEX – Report concatenated SMS indexes		SELINT 2
AT#CMGLCONCINDEX	The command will report a line for each concatenated SMS containing: #CMGLCONCINDEX: N,i,j,k,... where N is the number of segments that form the whole concatenated SMS i,j,k are the SMS indexes of each SMS segment , 0 if segment has not been received If no concatenated SMS is present on the SIM, only OK result code will be returned.	
AT#CMGLCONCINDEX=?	Test command returns OK result code.	
Example	at#cmglconcindex #CMGLCONCINDEX: 3,0,2,3 #CMGLCONCINDEX: 5,4,5,6,0,8 OK	

3.5.7.1.95. Codec Information - #CODECINFO

#CODECINFO – Codec Information		SELINT 2
AT#CODECINFO[=<format>],	This command is both a set and an execution command.	



#CODECINFO – Codec Information	SELINT 2
<mode>]]	<p>Set command enables/disables codec information reports depending on the parameter <mode>, in the specified <format>.</p> <p>Parameters:</p> <p><format></p> <p>0 – numeric format (default) 1 – textual format</p> <p><mode></p> <p>0 - disable codec information unsolicited report (default) 1 - enable codec information unsolicited report only if the codec changes 2 - enable short codec information unsolicited report only if the codec changes</p> <p>If <mode>=1 the unsolicited channel mode information is reported in the following format:</p> <p style="padding-left: 40px;">(if <format>=0) #CODECINFO: <codec_used>,<codec_set></p> <p style="padding-left: 40px;">(if <format>=1) #CODECINFO: <codec_used>,<codec_set1> [,<codec_set2>[..,<codec_setn>]]]</p> <p>If <mode>=2 the unsolicited codec information is reported in the following format:</p> <p style="padding-left: 40px;">#CODECINFO: <codec_used></p> <p>The reported values are described below.</p> <p>Execution command reports codec information in the specified <format>.</p> <p>(if <format>=0) #CODECINFO: <codec_used>,<codec_set></p> <p>(if <format>=1) #CODECINFO: <codec_used>,<codec_set1> [,<codec_set2>[..,<codec_setn>]]]</p> <p>The reported values are:</p> <p style="padding-left: 40px;">(if <format>=0) <codec_used> - one of the following channel modes: 0 – no TCH 1 - full rate speech 1 on TCH 2 - full rate speech 2 on TCH</p>



#CODECINFO – Codec Information	SELINT 2
	<p>4 - half rate speech 1 on TCH 8 - full rate speech 3 – AMR on TCH 16 - half rate speech 3 – AMR on TCH 128 – full data 9.6 129 – full data 4.8 130 – full data 2.4 131 – half data 4.8 132 – half data 2.4 133 – full data 14.4</p> <p><codec_set> 1..31 - sum of integers each representing a specific codec mode: 1 - FR, full rate mode enabled 2 - EFR, enhanced full rate mode enabled 4 - HR, half rate mode enabled 8 - FAMR, AMR full rate mode enabled 16 - HAMR, AMR half rate mode enabled</p> <p>(if <format>=1) <codec_used> - one of the following channel modes: None – no TCH FR - full rate speech 1 on TCH EFR - full rate speech 2 on TCH HR - half rate speech 1 on TCH FAMR - full rate speech 3 – AMR on TCH HAMR - half rate speech 3 – AMR on TCH FD96 - full data 9.6 FD48 - full data 4.8 FD24 - full data 2.4 HD48 - half data 4.8 HD24 - half data 2.4 FD144 - full data 14.4</p> <p><codec_setn> FR - full rate mode enabled EFR - enhanced full rate mode enabled HR - half rate mode enabled FAMR - AMR full rate mode enabled HAMR - AMR half rate mode enabled</p> <p>Note: The command refers to codec information in speech call and to channel mode in data/fax call.</p> <p>Note: if AT#CODEC is 0, the reported codec set for <format>=0 is 31 (all codec).</p>
AT#CODECINFO?	Read command reports <format> and <mode> parameter values in the format:



#CODECINFO – Codec Information	SELINT 2
	#CODECINFO: <format>,<mode>
AT#CODECINFO=?	Test command returns the range of supported <format> and <mode>.

3.5.7.1.96. Enable trace - +TRACE

+TRACE – Enable trace	SELINT 2
AT+TRACE=<mode>[,<speed>]	<p>This command controls the trace; it allows selecting the trace mode, method and the trace data transfer rate</p> <p>Parameters:</p> <p><mode>: numeric parameter used to switch the trace on or off 0: disables the trace 1: enables the trace</p> <p><speed>: numeric parameter indicating the trace data transfer rate which may be: (115200,230400,460800,921600)</p> <p>Note: if <mode>=1 and <speed> is omitted, the trace will be run at the last trace data transfer setted.</p> <p>Note: for trace data transfer rate upper than 115200, AT#CPUMODE=1 or AT#CPUMODE=3 setting is recommended to avoid possible trace stuck.</p>
AT+TRACE?	Read command reports the currently selected parameter values in the format: +TRACE: <mode>,<speed>
AT+TRACE=?	Test command reports the supported range of values for all parameters
Examples	at+trace=0 at+trace=1,230400

3.5.7.1.97. Second Interface Instance - #SII

#SII – Second Interface Instance	SELINT 2
AT#SII=<inst>[,<rate>[,<format>[,<parity>]]]	<p>This command activates one of the three AT instances available, and assigns it to the ASC1 serial port at a particular speed and format.</p> <p>Parameters:</p>



	<p><inst>: is a number that identifies the instance that will be activated on ASC1. The parameter is mandatory and can be 0, 1 or 2: 0 – disables the other AT instance and restores the trace service; 1 – enables instance 1; 2 – enables instance 2;</p> <p><rate>: Set command specifies the DTE speed at which the device accepts commands during command mode operations; it may be used to fix the DTE-DCE interface speed. The default value is 115200. It has sense only if <inst> parameter has value either 1 or 2. Parameter: 300 1200 2400 4800 9600 19200 38400 57600 115200</p> <p><format>: determines the number of bits in the data bits, the presence of a parity bit, and the number of stop bits in the start-stop frame. The default value is 3,0, (N81) format. It has sense only if <inst> parameter has value either 1 or 2. Parameter: 1 - 8 Data, 2 Stop 2 - 8 Data, 1 Parity, 1 Stop 3 - 8 Data, 1 Stop 5 - 7 Data, 1 Parity, 1 Stop</p> <p><parity>: determines how the parity bit is generated and checked, if present. It has a meaning only if <format> parameter has value either 2 or 5 and only if <inst> parameter has value either 1 or 2. Parameter: 0 - Odd 1 - Even</p> <p>Note: the value set by command is directly stored in NVM and doesn't depend on the specific AT instance.</p> <p>Note: two sets of <rate>, <format> and <parity> parameters values are stored in NVM: one for instance 1 (<inst> = 1) and the other for instance</p>
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	<p>2 (<inst> = 2). The <rate>, <format> and <parity> parameters values are ignored when <inst> parameter has value 0.</p> <p>Note: ASC1 port doesn't support hardware flow control.</p>
AT#SII?	<p>Read command reports the currently active parameters settings in the format:</p> <p>#SII: <inst>[,<rate>,<format>,<parity>]</p> <p>Note: the <rate>, <format> and <parity> parameters values are showed only if <inst> parameter has value either 1 or 2.</p>
AT#SII=?	<p>Test command reports the supported range of values for parameter <inst>, <rate>, <format> and <parity></p>

3.5.7.1.98. SIMIN pin configuration - #SIMINCFG

#SIMINCFG – SIMIN pin configuration	SELINT 2
AT#SIMINCFG=<GPIO_pin>,<Simin_det_mode>	<p>This command allows to configure a General Purpose I/O pin as SIM DETECT input and to set Simin pin status for SIM detection</p> <p>Parameters: <GPIO_pin> - GPIO pin number: 0 – no GPIO pin is selected (default value) 1 to <i>Max_GPIO_Pin_Number</i> <Simin_det_mode> - status of Simin pin for sim detection: 0 – Simin pin to ground means SIM inserted, to Vcc means SIM removed, for normal sim holder 1 – Simin pin to ground means SIM removed, to Vcc means SIM inserted, for micro sim holder Note: <i>Max_GPIO_Pin_Number</i> is the highest GPIO pin number available: this value depends on the hardware. (See Test command or Hardware User Guide) Note: first parameter makes sense only with GL865-QUAD, GL865-DUAL, GL865-DUAL V3, GL865-QUAD V3, GL868-DUAL V3, GL868-DUAL and GE866-QUAD</p>
AT#SIMINCFG?	<p>Read command reports the selected GPIO pin in the format:</p> <p>#SIMINCFG: <GPIO_pin>,<Simin_det_mode></p>
AT#SIMINCFG=?	<p>Test command reports supported range of values for parameter <GPIO_pin> and <Simin_det_mode></p>

3.5.7.1.99. System turn-off - #SYSHALT



#SYSHALT – system turn-off		SELINT 0,1,2
AT#SYSHALT[= <GPIO_restore>, <DTR_wakeup_en>]	<p>The module is turned off. It can be awoken by reset pin, alarm or DTR pin transition to low.</p> <p>Parameters:</p> <p>< GPIO_restore >: 0 – GPIOs and serial ports pins are left unchanged (default) 1 – GPIO and serial pins are set in input with pull down</p> <p><DTR_wakeup_en>: 0 – DTR has no effect on module turned off by SYSHALT (default) 1 – DTR transition from high to low turns on again the module turned off by SYSHALT command</p>	
AT#SYSHALT?	<p>Read command reports the default state of the parameters <GPIO_restore> and <DTR_wakeup_en> in the format:</p> <p>#SYSHALT: 0,0</p>	
AT#SYSHALT=?	<p>Test command reports supported range of values for all parameters.</p>	

3.5.7.1.100. Enable USIM application - #ENASIM

#ENASIM – Enable USIM application		SELINT 2
AT#ENASIM=<enable>	<p>This command enables/disables the USIM application</p> <p>Parameters:</p> <p><enable>: 0: USIM application Disabled 1: USIM application Enabled, SIM Application Toolkit disabled 2: USIM application Enabled, SIM Application Toolkit enabled 3: USIM application Enabled, SIM Application Toolkit enabled, SIM auto detect</p> <p>Note: the value set by command is directly stored in NVM and available on following reboot. USIM application activation/deactivation is only performed at power on. Each time <enable> value is changed a power cycle is needed</p> <p>Note: when the USIM application is enabled with <enable> equal to 1, SIM Application Toolkit will be automatically disabled and cannot be activated. In particular, the request of SAT activation (see #STIA) will return ERROR and entering AT#ENS = 1 doesn't activate SAT.</p> <p>Note: when USIM application is enabled with <enable> equal to 3, if USIM reading fails the module automatically switch to <enable> equal to 0 and try to read the card with USIM application disabled. Read command returns 0 but value is not stored in NVM, i.e. on following reboot <enable> value will be equal to 3.</p>	
AT#ENASIM?	<p>Read command reports the currently selected <enable> in the format:</p>	



	#ENASIM: <enable>
AT#ENASIM=?	Test command reports the supported range of values for parameter <enable>

3.5.7.1.101. Select language - #LANG

#LANG – select language		SELINT 2
AT#LANG=<lan>	Set command selects the currently used language for displaying different messages Parameter: <lan> - selected language “en” – English (factory default) “it” – Italian	
AT#LANG?	Read command reports the currently selected <lan> in the format: #LANG: <lan>	
AT#LANG=?	Test command reports the supported range of values for parameter <lan>	

3.5.7.1.102. Call forwarding Flags - #CFF

#CFF – Call Forwarding Flags		SELINT 2
AT#CFF=<enable>	Set command enables/disables the presentation of the SIM call forwarding flags URC. Parameter: <enable> 0 - disable the presentation of the #CFF URC 1 - enable the presentation of the #CFF URC each time the Call Forwarding Unconditional (CFU) SS setting is changed or checked and, at startup, the presentation of the status of the call forwarding flags , as they are currently stored on SIM. The URC format is: #CFF: <status>,<fwdtonum> where: <status> 0 – CFU disabled 1 – CFU enabled < fwdtonum > - number incoming calls are forwarded to	



	<p><encGPRS>: 0 – no GPRS encryption algorithm 1..7 - sum of integers each representing a specific GPRS encryption algorithm: 1 – GEA1 2 – GEA2 4 – GEA3 (supported only for 13.00.xxx SW version, starting from 13.00.xx6) 255 - reset the default values</p> <p>Note: the values are stored in NVM and available on following reboot.</p> <p>Note: If no parameter is issued, the set command returns ERROR.</p>
<p>AT#ENCALG?</p>	<p>Read command reports the currently selected <encGSM> and <encGPRS>, and the last used <usedGSM> and <usedGPRS> in the format:</p> <p>#ENCALG: <encGSM>,<encGPRS>,<usedGSM>,<usedGPRS></p> <p>Parameters:</p> <p><usedGSM>: 0 – no GSM encryption algorithm 1 – A5/1 2 – A5/2 4 – A5/3</p> <p><usedGPRS>: 0 – no GPRS encryption algorithm 1 – GEA1 2 – GEA2 4 – GEA3 (supported only for 13.00.xxx SW version, starting from 13.00.xx6)</p>
<p>AT#ENCALG=?</p>	<p>Test command reports the supported range of values for parameters in the format: < encGSM > and <encGPRS>.</p>
<p>Example</p>	<p>AT#ENCALG? #ENCALG: 5,2,1,1</p> <p>OK</p> <p>AT#ENCALG=5,1 OK</p> <p><i>sets the GSM encryption algorithm A5/1 and A5/3, and the GPRS encryption algorithm GEA1.</i></p>



	<p><i>It will be available at the next reboot.</i></p> <p>AT#ENCALG? #ENCALG: 5,2,1,1</p> <p><i>The last two values indicate that the last used GSM encryption algorithm is A5/1 and the last used GPRS encryption algorithm is GEAI</i></p> <p><i>After reboot</i></p> <p>AT#ENCALG? #ENCALG: 5,1,1,1</p>
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3.5.7.1.105. RS485 enable/disable and configure - #RS485

#RS485 – RS485 enable/disable and configure	SELINT 2
<p>AT#RS485=<enable> [,<gpio>]</p>	<p>Set command enables/disables the half-RS485 standard using an additional configurable GPIO. The GPIO is set ON when the UART of module is transmitting and it is reset as soon as transmission is completed. Optionally it allows specifying the GPIO to use.</p> <p>Parameters: <enable> - enable/disable the simulation: 0 – disable half-RS485 1 – enable half-RS485</p> <p>Note: if gpio is omitted, the first available GPIO will be selected.</p> <p><gpio> - GPIO pin number: The test command returns the range of usable GPIO; this value depends on the hardware. Note: if <enable>=0, <gpio> has no meaning and can be omitted, otherwise it is mandatory to set this parameter.</p> <p>Note: the value set by command is stored in NVM.</p> <p>Note: sending two consecutive enable commands without a disable between them will produce an error; the configuration will remain the first.</p>
<p>AT#RS485?</p>	<p>Read command reports the current state and the selected GPIO in the format: #RS485: < enable >,< gpio ></p>
<p>AT#RS485=?</p>	<p>Test command reports the supported range of values for the parameters < enable > and < gpio ></p>

3.5.7.1.106. Read current network status - #RFSTS



#RFSTS – Read current network status		SELINT 2
AT#RFSTS	<p>Execution command reads current network status, in the format:</p> <p>#RFSTS:<PLMN>,<ARFCN>,<RSSI>,<LAC>,<RAC>,<TXPWR>,<MM>,<RR>,<NOM>,<CID>,<IMSI>,<NetNameAsc>,<SD>,<ABND></p> <p>Where:</p> <p><PLMN> - Country code and operator code(MCC, MNC) <ARFCN> - GSM Assigned Radio Channel <RSSI> - Received Signal Strength Indication <LAC> - Localization Area Code <RAC> - Routing Area Code <TXPWR> - Tx Power <MM> - Mobility Management State (NOT AVAILABLE) <RR> - Radio Resource State (NOT AVAILABLE) <NOM> - Network Operator Mode <CID> - Cell ID <IMSI> - International Mobile Subscriber Identity <NetNameAsc> - Operator name <SD> - Service Domain 0 - No Service 1 - CS only 2 - PS only 3 - CS+PS</p> <p><ABND> - Active Band 1 - GSM 850 2 - GSM 900 3 - DCS 1800 4 - PCS 1900</p>	
AT#RFSTS=?	Test command tests for command existence.	

3.5.7.1.107. Set CMUX Mode - #CMUXMODE

#CMUXMODE – CMUX Mode Set		SELINT 2
AT#CMUXMODE=<mode>	<p>Set command specifies the CMUX mode</p> <p>Parameter: <mode>: 0 – Old break octect format (0x01) and ignore DTR feature is disabled (default) 1 – New break octect format (0x03) and ignore DTR feature is disabled 4 – Old break octect format (0x01) and ignore DTR feature is enabled</p>	



	<p>5 – New break octect format (0x03) and ignore DTR feature is enabled</p> <p>If the ignore DTR feature is enabled, then the DCE doesn't care the state and the transitions of the DTR line of the DTE. Otherwise a transition of the DTR instructs the DCE to disable the CMUX and switches to the normal command mode.</p> <p>Note: a software or hardware reset restores the default value.</p>
AT#CMUXMODE?	<p>Read command reports the currently selected <mode> in the format: #CMUXMODE: <mode></p>
AT#CMUXMODE=?	<p>Test command reports the supported range of values for parameter <mode></p> <p>Response: #CMUXMODE: (0,1,4,5)</p>

3.5.7.1.108. Connect physical ports to Service Access Points - #PORTCFG

#PORTCFG – connect physical ports to Service Access Points		SELINT 2
AT#PORTCFG=<Variant>	<p>Set command allows to connect Service Access Points (software anchorage points) to the external physical ports giving a great flexibility. Examples of Service Access Points: AT Parser Instance #1,#2, #3, TT(Telit Trace).</p> <p>Parameter: <Variant> - parameter range: 0, 1, 3, 4, 5, 8, 9 0 - default value 8, 9 – available only for GE910-GNSS Please, refer to “GE-910 Family Ports Arrangements User Guide” document for a detailed explanation of port configurations</p> <p>Note: in order to enable the set port configuration, the module has to be rebooted.</p>	
AT#PORTCFG?	<p>Read command reports: <requested> value shows the requested configuration that will be activated on the next power off /on of the module; <active> value shows the actual configuration.</p> <p>#PORTCFG: <requested>,<active></p>	
AT+PORTCFG=?	<p>Test command reports a brief description of the supported ports arrangement solutions. For each <Variant> parameter value are</p>	



	<p>displayed, on one row, the allowed couples formed by: a physical port and the logically connected internal software Access Point (AT, TT). On each row are reported the couples concerning both configurations: USB cable plugged into USB port or not plugged in.</p> <p>AT, indicated on each command row result, can be AT0, AT1, or AT2.</p>
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3.5.7.1.109. Change and insert file system password - #FILEPWD

#FILEPWD – Change and insert file system password	SELINT 2
<p>AT#FILEPWD=<Mode>,<Pw d>[,<NewPw>]</p>	<p>This command changes and inserts file system password. File system password is always enabled (see notes for factory default empty string “”). If current password is different from the empty string “” and password is not inserted then AT commands that make use of the file system will not work (see notes for insertion and AT response).</p> <p>Parameters: <Mode>: 1 – insert file system password; 2 – change file system password. <Pw>: current password when inserting password, old password when changing password, string type (factory default is the empty string “”). <NewPw>: new password when changing password, string type (only allowed if <Mode> parameter is 2).</p> <p>Note: maximum password length is 12 characters. Note: password is saved in NVM. Note: password value doesn’t depend on the specific CMUX instance.</p> <p>Note: in default configuration current password is equal to the empty string “” and password will be always considered inserted.</p> <p>Note: if current password is different from the empty string “”, password will be always not inserted at power on. Note: if current password is different from the empty string “”, after successful password insertion (<Mode> 1) password will remain inserted until power off. Note: after successful password change (<Mode> 2) password will be not inserted.</p> <p>Note: if current password is different from the empty string “” and password is not inserted then AT commands that make use of the file system (SCRIPT, M2M, MMS) will have either ERROR or</p>



	+CME ERROR: 16 or +CME ERROR: incorrect password response depending on AT+CMEE setting.
AT#FILEPWD=?	Test command reports the supported range of values for parameters.
Example	First time: change default password AT#FILEPWD=2,"","mynewpwd" OK and insert password AT#FILEPWD=1,"mynewpwd" OK At next power on: insert password AT#FILEPWD=1,"mynewpwd" OK

3.5.7.1.110. NO CARRIER Indication Handling - #NCIH

#NCIH – NO CARRIER Indication Handling		SELINT 2
AT#NCIH= <enable>	Set command enables/disables the NO CARRIER indication after an incoming call, that is ringing, is dropped by network or calling party before being answered. Parameter: <enable> 0 - disables NO CARRIER indication (default) 1 – enables NO CARRIER indication	
AT#NCIH?	Read command reports whether the indication is currently enabled or not, in the format: #NCIH: <enable>	
AT#NCIH=?	Test command reports available values for parameter <enable> .	

3.5.7.1.111. AT Command Delay – #ATDELAY

#ATDELAY – AT Command Delay		SELINT 2
AT#ATDELAY= <delay>	Set command sets a delay (in seconds) for the execution of the next AT command. Parameters: <delay> - delay in 100 milliseconds intervals; 0 means no delay Note: <delay> is only applied to first command executed after #ATDELAY	



#ATDELAY – AT Command Delay		SELINT 2
AT#ATDELAY=?	Test command returns the supported range of values for parameter <delay>	
Example	Delay “at#gpio=1,1,1” execution of 5 seconds: at#gpio=1,0,1;#atdelay=50;#gpio=1,1,1 OK	

3.5.7.1.112. Power Fix – #PCLFIX

#PCLFIX – Power Fix		SELINT 2										
AT#PCLFIX=[<pclGSM>[,<pclDCS>[,<pclPCS>]]]	Sets the fixed value of PCL (power control level) Parameters: <pclGSM> - numeric parameter indicating the fixed PCL for GSM band. Range: (5-19, 99); Default: 99 <pclDCS> - numeric parameter indicating the fixed PCL for DCS band. Range: (0-15, 99); Default: 99 <pclPCS> numeric parameter indicating the fixed PCL for PCS band. Range: (0-15, 99); Default: 99 Note: If the value is set to 99 the PCL is managed by network Note: the set values aren't stored in NVM. Note: If the network requires a PCL value, the module will use the PCLFIX value instead. Note: This is not compliant to ETSI specifications. Note: This command inhibits AT #PCLMIN settings Note: the different power control levels (PCL) shall have the nominal output power as defined in the table below. These tables are extracted from 3GPP ETSI TS 145 005 V4.19.0 (2010-07). <p style="text-align: center;">GSM 400, GSM 900, GSM 850 and GSM 700</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2">Power control level</th> <th rowspan="2">Nominal Output power (dBm)</th> <th colspan="2">Tolerance (dB) for conditions</th> </tr> <tr> <th>normal</th> <th>extreme</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		Power control level	Nominal Output power (dBm)	Tolerance (dB) for conditions		normal	extreme				
Power control level	Nominal Output power (dBm)	Tolerance (dB) for conditions										
		normal	extreme									



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0-2	39	±2	±2,5
3	37	±3	±4
4	35	±3	±4
5	33	±3	±4
6	31	±3	±4
7	29	±3	±4
8	27	±3	±4
9	25	±3	±4
10	23	±3	±4
11	21	±3	±4
12	19	±3	±4
13	17	±3	±4
14	15	±3	±4
15	13	±3	±4
16	11	±5	±6
17	9	±5	±6
18	7	±5	±6
19-31	5	±5	±6

DCS 1 800

Power control level	Nominal Output power (dBm)	Tolerance (dB) for conditions	
		normal	extreme
29	36	±2	±2,5
30	34	±3	±4
31	32	±3	±4
0	30	±3	±4
1	28	±3	±4
2	26	±3	±4
3	24	±3	±4
4	22	±3	±4
5	20	±3	±4
6	18	±3	±4
7	16	±3	±4
8	14	±3	±4
9	12	±4	±5
10	10	±4	±5
11	8	±4	±5
12	6	±4	±5
13	4	±4	±5
14	2	±5	±6
15-28	0	±5	±6

PCS1900

Power Control Level	Output Power (dBm)	Tolerance (dB) for conditions	
		Normal	Extreme
22-29	Reserved	Reserved	Reserved
30	33	±2 dB	±2,5 dB
31	32	±2 dB	±2,5 dB
0	30	±3 dB ¹	±4 dB ¹



		1	28	±3 dB	±4 dB
		2	26	±3 dB	±4 dB
		3	24	±3 dB ¹	±4 dB ¹
		4	22	±3 dB	±4 dB
		5	20	±3 dB	±4 dB
		6	18	±3 dB	±4 dB
		7	16	±3 dB	±4 dB
		8	14	±3 dB	±4 dB
		9	12	±4 dB	±5 dB
		10	10	±4 dB	±5 dB
		11	8	±4 dB	±5 dB
		12	6	±4 dB	±5 dB
		13	4	±4 dB	±5 dB
		14	2	±5 dB	±6 dB
		15	0	±5 dB	±6 dB
		16-21	Reserved	Reserved	Reserved
		NOTE: Tolerance for MS Power Classes 1 and 2 is ±2 dB normal and ±2,5 dB extreme at Power Control Levels 0 and 3 respectively.			
AT#PCLFIX?	Read command returns the current parameter settings for #PCLFIX command for all bands in the format: #PCLFIX: <pclGSM>,<pclDCS>,<pclPCS>				
AT#PCLFIX=?	Test command reports the supported range of parameters values.				

3.5.7.1.113. PCL Minimum – #PCLMIN

#PCLMIN - PCL MINimum	SELINT 0/1/2
AT#PCLMIN=<pclGSM>,<pclDCS>,<pclPCS>	<p>Set command sets the minimum PCL (power control level)</p> <p>Parameters:</p> <p><pclGSM> - numeric parameter indicating the minimum PCL for GSM band. Range: 0-31; Default: 0</p> <p><pclDCS> - numeric parameter indicating the minimum PCL for DCS band. Range: 0-28; Default: 0</p> <p><pclPCS> numeric parameter indicating the minimum PCL for PCS band. Range: 0-15; Default: 0</p> <p>Note: the set values are stored in NVM.</p> <p>Note: If the network requires a PCL lower than PCLMIN value, the module will use the PCLMIN value instead and so it will use less power in transmission: this is not compliant to ETSI specifications.</p> <p>Note: If the command #PCLFIX is issued, then the command #PCLMIN is inhibited</p>



Note: this command is not compliant to ETSI specifications

Note: the different power control levels (PCL) shall have the nominal output power as defined in the table below. These tables are extracted from 3GPP ETSI TS 145 005 V4.19.0 (2010-07).

GSM 400, GSM 900, GSM 850 and GSM 700

Power control level	Nominal Output power (dBm)	Tolerance (dB) for conditions	
		normal	extreme
0-2	39	±2	±2,5
3	37	±3	±4
4	35	±3	±4
5	33	±3	±4
6	31	±3	±4
7	29	±3	±4
8	27	±3	±4
9	25	±3	±4
10	23	±3	±4
11	21	±3	±4
12	19	±3	±4
13	17	±3	±4
14	15	±3	±4
15	13	±3	±4
16	11	±5	±6
17	9	±5	±6
18	7	±5	±6
19-31	5	±5	±6

DCS 1 800

Power control level	Nominal Output power (dBm)	Tolerance (dB) for conditions	
		normal	extreme
29	36	±2	±2,5
30	34	±3	±4
31	32	±3	±4
0	30	±3	±4
1	28	±3	±4
2	26	±3	±4
3	24	±3	±4
4	22	±3	±4
5	20	±3	±4
6	18	±3	±4
7	16	±3	±4
8	14	±3	±4
9	12	±4	±5
10	10	±4	±5
11	8	±4	±5
12	6	±4	±5



		13	4	±4	±5	
		14	2	±5	±6	
		15-28	0	±5	±6	
PCS1900						
		Power Control Level	Output Power (dBm)	Tolerance (dB) for conditions		
				Normal	Extreme	
		22-29	Reserved	Reserved	Reserved	
		30	33	±2 dB	±2,5 dB	
		31	32	±2 dB	±2,5 dB	
		0	30	±3 dB ¹	±4 dB ¹	
		1	28	±3 dB	±4 dB	
		2	26	±3 dB	±4 dB	
		3	24	±3 dB ¹	±4 dB ¹	
		4	22	±3 dB	±4 dB	
		5	20	±3 dB	±4 dB	
		6	18	±3 dB	±4 dB	
		7	16	±3 dB	±4 dB	
		8	14	±3 dB	±4 dB	
		9	12	±4 dB	±5 dB	
		10	10	±4 dB	±5 dB	
		11	8	±4 dB	±5 dB	
		12	6	±4 dB	±5 dB	
		13	4	±4 dB	±5 dB	
		14	2	±5 dB	±6 dB	
		15	0	±5 dB	±6 dB	
		16-21	Reserved	Reserved	Reserved	
		NOTE: Tolerance for MS Power Classes 1 and 2 is ±2 dB normal and ±2,5 dB extreme at Power Control Levels 0 and 3 respectively.				
AT#PCLMIN?	Read command returns the current parameter settings for #PCLMIN command for all bands in the format: #PCLMIN: <pclGSM>,<pclDCS>,<pclPCS>					
AT#PCLMIN=?	Test command reports the supported range of parameters values.					

3.5.7.1.114. Enable Test Mode command in not signalling mode – #TESTMODE

#TESTMODE – Enable Test Mode command in not signalling mode		SELINT 2
AT#TESTMODE=<command>	The command allows setting module in not signaling mode. The functionality has to be first activated by sending AT#TESTMODE="TM" , which sets the module in Test Mode. Only after this set, AT#TESTMODE can be used with the other allowed CT commands. To exit from Test Mode and go back to Operative Mode,	



the command **AT#TESTMODE =”OM”** has to be sent.

Parameter:

<command>

this string corresponds to a CT command. To be accepted by **AT#TESTMODE**, the CT command has to belong to the following list of CT commands enabled for this use:

- “*TM*” → forces the module in Test Mode;
- “*OM*” → forces the module in Operative Mode
- “*TCH*” → starts the non-stop module transmission. It enables one Tx Slot
- “*TCH2*” → starts the non-stop module transmission. It enables two TX slots
- “*TQ* *<training_sequence>*” → sets the training sequence; *<training_sequence>* has the range: 0 ÷ 7
- “*PL* *<power_lev>*” → sets the Power Control Level for lower and upper bands; *power_lev* has the range: 0 ÷ 19
- “*PL2* *<power_lev0>* *<power_lev1>*” → sets the Power Control Level for both TX slots; *power_lev0* is related to the first slot and *power_lev1* to the second one; *power_lev0* and *power_lev1* has the range: 0 ÷ 19
- “*RL*” → Read Rx power level
- “*BERON*” and “*BEROFF*” to enable/disable BER with Test SIM card
- “*ESC*” → exits the current non-stop sequence. It must be used to stop TCH/TCH2 transmission
- “*SetPCSBand* *<band>*” → sets the PCS band;

band	Band
0	850/900/1800
1	850/900/1900

- “*CH* *<GSM_ETSI_Index>*” → sets the ARFCH;

GSM_ETSI_Index	Band
1 ÷ 124	GSM (Standard Band)
975 ÷ 1023	E GSM (Extended Band)
955 ÷ 974	R GSM (Railway Band)
512 ÷ 885	DCS Band (1800 MHz)
512 ÷ 810	PCS Band (1900 MHz)
128 ÷ 251	GSM 850 (850 MHz)

The string of the enabled CT command must have the correct number of parameters supported by the CT command.

The parameter is not case sensitive



	<p>Note 1: in Test Mode the other AT commands doesn't work.</p> <p>Note 2: in Test Mode the only allowed DTE speed is 115200 (see +IPR)</p> <p>Note 3: in Test Mode the multiplexing protocol control channel can't be enabled (see +CMUX)</p> <p>Note 4: in 13.00.xxx SW version, after issuing AT#TESTMODE="TM" or "OM", the module reboots.</p>
AT# TESTMODE?	<p>Read command reports the currently selected <command> in the format:</p> <p>#TESTMODE: <TestModeStatus></p> <p>Where:</p> <p><TestModeStatus> can assume the following values:</p> <ul style="list-style-type: none"> - 1 if the module is in Test Mode - 0 if the module is in Operative Mode
AT# TESTMODE=?	Test command returns the OK result code



3.5.7.1.115. Select the GSM paging number to skip – #IDLEPAGING

#IDLEPAGING - Select the GSM paging number to skip	
AT#IDLEPAGING =[<mode>]	<p>The set command is used to specify how many GSM paging to skip mode</p> <p><mode>: a numeric parameter which corresponds to the number of GSM paging will be skip</p> <p>0 – GSM paging not skip. Every paging will be received (default) 1 – One GSM paging will be skip every two paging received (50%) 2 – Two GSM paging will be skip every three paging received (33% paging received) 3 – Three GSM paging will be skip every four paging received (25%)</p> <p>Note: This feature is useful in power saving mode, because paging skip allow to reduce the module power consumptions.</p> <p>Note: values greater than 0 for parameter <mode> deviate from 3GPP standard.</p>
AT#IDLEPAGING?	<p>The read command returns the currently selected number GSM paging to skip in the form:</p> <p>#IDLEPAGING: <mode></p>
AT#IDLEPAGING =?	<p>Test command reports the supported list of currently available <mode>s.</p>

3.5.7.1.116. Initialize modem serial port with SPI protocol – #SPIOOPEN

#SPIOOPEN – Initializes modem serial port with SPI protocol	SELINT 2
AT#SPIOOPEN=<ID>,<speed>,<mode>	<p>This command initializes the provided modem serial port for SPI protocol.</p> <p>Parameters:</p> <p><ID> - supported value is 3 <speed> - supported speed value: 1 for 1 Mhz 2 for 3 Mhz 3 for 6 Mhz 4 for 12 Mhz <mode> - CPOL CPH setting: 0 Clock signal is active high and data is sampled in rising edge. 1 Clock signal is active high and data is sampled in falling edge. 2 Clock signal is active low and data is sampled in rising edge. 3 Clock signal is active low and data is sampled in falling edge</p> <p>Note:</p>
AT#SPIOOPEN?	<p>Read command Returns last provided Parameters values (0,0,0 as</p>



	default)
AT#SPIOPEN=?	Test command reports available values for parameters <ID>, <speed> and <mode>.

3.5.7.1.117. De-initialize modem serial port for SPI protocol – #SPICLOSE

#SPICLOSE – De-initializes modem serial port for SPI protocol		SELINT 2
AT#SPICLOSE=<ID>	<p>This command de-initializes the provided modem serial port for the SPI protocol .</p> <p>Parameters: <ID> - supported value is 3</p> <p>Note: returns OK if de-initialization complete, ERROR otherwise</p>	
AT#SPICLOSE?	Read command returns last de-initialized <ID> (0 as default).	
AT#SPICLOSE=?	Test command reports available values for parameter <ID>.	

3.5.7.1.118. Write a buffer to the SPI and prints the read data – #SPIRW

#SPIRW – Writes a buffer to the SPI and prints the read data		SELINT 2
AT#SPIRW=[<length>]	<p>This command writes a buffer to the SPI and prints the read data.</p> <p>Parameters: <length> - buffer length : MIN 1 byte MAX 128 bytes</p> <p>The module responds to the command with the prompt <greater_than><space> and waits for the data to send. When <length> bytes have been sent, operation is automatically completed.</p> <p>If data are successfully sent, the module answer with the bytes read on the SPI RX channel.</p> <p>The received data can be read on the AT console, the amount of printed data is the same received that is the length of the sent data.</p> <p>Note: the modem serial port on which the SPI data must be sent has to be initialized previously with a AT#SPIOPEN command, otherwise it will return ERROR.</p>	
AT#SPIRW=?	Test command reports available value for parameter <length>.	



3.5.7.2. Ring Indicator Commands

3.5.7.2.1. Event Ring Indicator - #E2RI

#E2RI – Event Ring Indicator	SELINT 2
AT#E2RI=<event_mask>,<duration>	<p>Set command enables/disables the Ring Indicator pin response to one or more events. If an event has been enabled, a negative going pulse is generated when event happens. The duration of this pulse is determined by the value of <duration>.</p> <p>Parameters: <event_mask> : 0 – disables all events hexadecimal number representing the list of events: 1 – Power Saving Mode (same as AT#PSMRI=<duration>) 2 – Socket Listen (same as AT#E2SLRI=<duration>) 4 – OTA firmware upgrade (same as AT#OTASETRI=<duration>) 8 – MT SMS has been received (same as AT#E2SMSRI=<duration>) 10 – +CREG will change status 20 – +CGREG will change status 40 – #QSS become 2 (SIM INSERTED and PIN UNLOCKED) 80 – MO SMS has been delivered 100 – Jamming Detection & Reporting (JDR)</p> <p>The hexadecimal number is actually a bit mask, where each bit, when set/not set, indicates that the corresponding event has been enabled/disabled.</p> <p><duration> : 50..1150 - the duration in ms of the pulse generated</p> <p>Note: The values set by the command are stored in the profile extended section and they don't depend on the specific AT instance.</p> <p>Note: Enabling JDR event when the Enhanced Jamming Detection & Reporting feature has been previously enabled (see #JDRE and #JDRENH)</p>
AT#E2RI?	<p>Read command reports a line for each event and the duration in ms of the pulse generated, in the format:</p> <p>#E2RI: <event_mask>,<duration></p>
AT#E2RI=?	<p>Test command returns supported values of parameters <event_mask> and <duration></p>

3.5.7.2.2. Socket Listen Ring Indicator - #E2SLRI

#E2SLRI - Socket Listen Ring Indicator	SELINT 0 / 1 / 2
--	------------------



#E2SMSRI - SMS Ring Indicator	SELINT 2
AT#E2SMSRI= [<n>]	<p>Set command enables/disables the Ring Indicator pin response to an incoming SMS message. If enabled, a negative going pulse is generated on receipt of an incoming SMS message. The duration of this pulse is determined by the value of <n>.</p> <p>Parameter: <n> - RI enabling 0 - disables RI pin response for incoming SMS messages (factory default) 50..1150 - enables RI pin response for incoming SMS messages. The value of <n> is the duration in ms of the pulse generated on receipt of an incoming SM.</p> <p>Note: if +CNMI=3,1 command is issued and the module is in a GPRS connection, a 100 ms break signal is sent and a 1 sec. pulse is generated on RI pin, no matter if the RI pin response is either enabled or not.</p>
AT#E2SMSRI?	<p>Read command reports the duration in ms of the pulse generated on receipt of an incoming SM, in the format:</p> <p>#E2SMSRI: <n></p> <p>Note: as seen before, the value <n>=0 means that the RI pin response to an incoming SM is disabled.</p>
AT#E2SMSRI=?	Reports the range of supported values for parameter <n>

3.5.7.2.4. Power saving mode ring - #PSMRI

#PSMRI – Power Saving Mode Ring	SELINT 2
AT#PSMRI= <x>	<p>Set command enables/disables the Ring Indicator pin response to an URC message while modem is in power saving mode. If enabled, a negative going pulse is generated, when URC message for specific event is invoked.</p> <p>The duration of this pulse is determined by the value of <x>.</p> <p>Parameter: <x> - RI enabling 0 - disables RI pin response for URC message(factory default) 50-1150 - enables RI pin response for URC messages.</p> <p>Note: when RING signal from incoming call/SMS/socket listen is enabled, the behaviour for #PSMRI will be ignored.</p> <p>Note: to avoid missing of URC messages while modem is in power saving mode flow control has to be enabled in command mode (AT#CFLO=1)</p> <p>Note: the behavior for #PSMRI is invoked, only when modem is in sleep mode (AT+CFUN=5 and DTR Off on Main UART)</p> <p>Note: the value set by command is stored in the profile extended section and doesn't depend on the specific AT instance</p>



AT#PSMRI?	Read command reports the duration in ms of the pulse generated, in the format: #PSMRI: <x>
AT#PSMRI=?	Test command reports the supported range of values for parameter <x>

3.5.7.2.5. OTA Set Ring Indicator - #OTASETRI

#OTASETRI - OTA Set Ring Indicator		SELINT 0/1
AT#OTASETRI= [<n>]	<p>Set command enables/disables the Ring Indicator pin response to a manual OTA server request to start the firmware upgrade. If enabled, a negative going pulse is generated when the URC “#OTAEV: Do you want to upgrade the firmware?” is prompted (see AT#OTASUAN command). The duration of this pulse is determined by the value of <n>.</p> <p>Parameter: <n> - RI enabling 0 - disables RI pin response when the URC “#OTAEV: Do you want to upgrade the firmware?” is prompted (factory default) 50..1150 - enables RI pin response. The value of <n> is the duration in ms of the pulse generated when the URC “#OTAEV: Do you want to upgrade the firmware?” is prompted.</p> <p>Note: if the <response> parameter of the AT#OTASUAN command has the value 2, then the URC is prompted indefinitely until the Fw update request is accepted or reject and, for every URC, a pulse is generated.</p> <p>Note: the setting is saved in the profile parameters</p>	
AT#OTASETRI?	<p>Read command reports the duration in ms of the pulse generated when the URC “#OTAEV: Do you want to upgrade the firmware?” is prompted, in the format:</p> <p>#OTASETRI: <n></p> <p>Note: as seen before, the value <n>=0 means that the RI pin response to the URC is disabled.</p>	
AT#OTASETRI	Execution command has the same effect as the Read command	
AT#OTASETRI=?	Reports the range of supported values for parameter <n>	

#OTASETRI - OTA Set Ring Indicator		SELINT 2
AT#OTASETRI= [<n>]	<p>Set command enables/disables the Ring Indicator pin response to a manual OTA server request to start the firmware upgrade. If enabled, a negative going pulse is generated when the URC “#OTAEV: Do you want to upgrade the firmware?” is prompted (see AT#OTASUAN command). The duration of this pulse is determined by the value of <n>.</p>	



3.5.7.3. AT Run Commands

3.5.7.3.1. Enable SMS Run AT Service - #SMSATRUN

#SMSATRUN – Enable SMS AT Run service		SELINT 2
AT#SMSATRUN= <mod>	Set command enables/disables the SMS AT RUN service. Parameter: < mod > 0: Service Disabled 1: Service Enabled Note1: When the service is active on a specific AT instance (see AT#SMSATRUNCFG), that instance cannot be used for any other scope, except for OTA service that has the highest priority. For example in the multiplexer request to establish the Instance, the request will be rejected. Note2: the current settings are stored in NVM.	
AT#SMSATRUN?	Read command returns the current settings of <mode> and the value of <stat> in the format: # SMSATRUN: <mod>,<stat> where: <stat> - service status 0 – not active 1 - active	
AT#SMSATRUN =?	Test command returns the supported values for the SMSATRUN parameters	
Notes:	<ul style="list-style-type: none"> By default the SMS ATRUN service is disabled It can be activated either by the command AT#SMSATRUN or receiving a special SMS that can be sent from a Telit server. 	

3.5.7.3.2. Set SMS Run AT Service parameters - #SMSATRUNCFG

#SMSATRUNCFG – Set SMS AT Run Parameters	
AT#SMSATRUNCFG= <instance> [,<urcmod> [,<timeout>]]	Set command configures the SMS AT RUN service. Parameter: <instance>: AT instance that will be used by the service to run the AT Command. Range 2 – 5, default 3. <urcmod>:



#SMSATRUNCFG – Set SMS AT Run Parameters	
	<p>0 – disable unsolicited message 1 - enable an unsolicited message when an AT command is requested via SMS (default).</p> <p>When unsolicited is enabled, the AT Command requested via SMS is indicated to TE with unsolicited result code:</p> <p>#SMSATRUN: <Text></p> <p>e.g.: #SMSATRUN: AT+CGMR;+CGSN;+GSN;+CCLK</p> <p>Unsolicited is dumped on the instance that requested the service activation.</p> <p><timeout>: It defines in minutes the maximum time for a command execution. If timeout expires the module will be rebooted. Range 1 – 60, default 5.</p> <p>Note 1: the current settings are stored in NVM.</p> <p>Note 2: the instance used for the SMS AT RUN service is the same used for the EvMoni service. Therefore, when the #SMSATRUNCFG sets the <instance> parameter, the change is reflected also in the <instance> parameter of the #ENAEVMONICFG command, and viceversa.</p> <p>Note 3: the set command returns ERROR if the command AT#ENAEVMONI? returns 1 as <mod> parameter or the command AT#SMSATRUN? returns 1 as <mod> parameter</p>
AT#SMSATRUNCFG?	<p>Read command returns the current settings of parameters in the format:</p> <p>#SMSATRUNCFG:<instance>,<urcmod>,<timeout></p>
AT#SMSATRUNCFG=?	<p>Test command returns the supported values for the SMSATRUNCFG parameters</p>

3.5.7.3.3. SMS AT Run White List - #SMSATWL

#SMSATWL – SMS AT Run White List	SELINT 2
<p>AT#SMSATWL= <action> ,<index> [,<entryType> [,<string>]]</p>	<p>Set command to handle the white list.</p> <p><action >:</p> <p>0 – Add an element to the WhiteList 1 – Delete an element from the WhiteList 2 – Print and element of the WhiteList</p> <p>< index >: Index of the WhiteList. Range 1-8</p>



#SMSATWL – SMS AT Run White List	SELINT 2
	<p>< entryType >: 0 – Phone Number 1 – Password</p> <p>NOTE: A maximum of two Password Entry can be present at same time in the white List</p> <p><string>: string parameter enclosed between double quotes containing or the phone number or the password</p> <p>Phone number shall contain numerical characters and/or the character “+” at the beginning of the string and/or the character “*” at the end of the string. Password shall be 16 characters length</p> <p>NOTE: When the character “*” is used, it means that all the numbers that begin with the defined digit are part of the white list.</p> <p>E.g. “+39*” All Italian users can ask to run AT Command via SMS “+39349*” All vodafone users can ask to run AT Command via SMS.</p>
AT#SMSATWL?	<p>Read command returns the list elements in the format:</p> <p>#SMSATWL: [<entryType>,<string>]</p>
AT#SMSATWL=?	<p>Test command returns the supported values for the parameter <action>, <index> and <entryType></p>

3.5.7.3.4. Set TCP Run AT Service parameter - #TCPATRUNCFG

#TCPATRUNCFG – Set TCP AT Run Service Parameters	SELINT 2
<p>AT#TCPATRUNCFG= <connId> ,<instance> ,<tcpPort> ,<tcpHostPort> ,<tcpHost> [,<uremod> [,<timeout> [,<authMode> [,<retryCnt> [,<retryDelay>]]]]]</p>	<p>Set command configures the TCP AT RUN service Parameters:</p> <p><connId> socket connection identifier. Default 1.</p> <p>Range 1..6. This parameter is mandatory.</p> <p><instance>: AT instance that will be used by the service to run the AT Command. Default 2. Range 2 – 5. This parameter is mandatory.</p> <p><tcpPort> Tcp Listen port for the connection to the service in server mode. Default 1024. Range 1...65535. This parameter is mandatory.</p>



#TCPATRUNCFG – Set TCP AT Run Service Parameters	SELINT 2
<p><tcpHostPort> Tcp remote port of the Host to connect to, in client mode. Default 1024. Range 1...65535. This parameter is mandatory.</p> <p><tcpHost> IP address of the Host, string type. This parameter can be either:</p> <ul style="list-style-type: none"> - any valid IP address in the format: “xxx.xxx.xxx.xxx” - any host name to be solved with a DNS query <p>This parameter is mandatory. Default “”.</p> <p><urcmoD>:</p> <ul style="list-style-type: none"> 0 – disable unsolicited messages 1 - enable an unsolicited message when the TCP socket is connected or disconnect (default). <p>When unsolicited is enabled, an asynchronous TCP Socket connection is indicated to TE with unsolicited result code:</p> <p>#TCPATRUN: <iphostaddress></p> <p>When unsolicited is enabled, the TCP socket disconnection is indicated to TE with unsolicited result code:</p> <p>#TCPATRUN: <DISCONNECT></p> <p>Unsolicited is dumped on the instance that requested the service activation.</p> <p><timeout>: Define in minutes the maximum time for a command execution. If timeout expires the module will be rebooted. The default value is 5 minutes. Range 1...5.</p> <p><authMode>: determines the authentication procedure in server mode:</p> <ul style="list-style-type: none"> 0 – (default) when connection is up, username and password (in this order and each of them followed by a Carriage Return) have to be sent to the module before the first AT command. 1 – when connection is up, the user receives a request for username and, if username is correct, a request for password. Then a message of ”Login successful” will close authentication phase. <p>Note: if username and/or password are not allowed (see AT#TCPATRUNAUTH) the connection will close immediately.</p>	



#TCPATRUNCFG – Set TCP AT Run Service Parameters		SELINT 2
	<p><retryCnt>: in client mode, at boot or after a socket disconnection, this parameter represents the number of attempts that are made in order to re-connect to the Host. Default: 0. Range 0...5.</p> <p><retryDelay>: in client mode, delay between one attempt and the other. In minutes. Default: 2. Range 1...3600.</p> <p>Note2: the current settings are stored in NVM.</p> <p>Note3: to start automatically the service when the module is powered-on, the automatic PDP context activation has to be set (see AT#SGACTCFG command).</p> <p>Note 4: the set command returns ERROR if the command AT#TCPATRUND? returns 1 as <mod> parameter or the command AT#TCPATRUND? returns 1 as <mod> parameter</p>	
AT#TCPATRUNCFG?	<p>Read command returns the current settings of parameters in the format:</p> <p>#TCPATRUNCFG: <connId>,<instance>,<tcpPort>,<tcpHostPort>,<tcpHost>,<urcmmod>,<timeout>,<authMode>,<retryCnt>,<retryDelay></p>	
AT#TCPATRUNCFG=?	<p>Test command returns the supported values for the TCPATRUNCFG parameters</p>	

3.5.7.3.5. TCP Run AT Service in listen (server) mode - #TCPATRUND

#TCPATRUND – Enables TCP AT Run Service in listen (server) mode		SELINT 2
AT#TCPATRUND= <mod>	<p>Set command enables/disables the TCP AT RUN service in server mode. When this service is enabled, the module tries to put itself in TCP listen state.</p> <p>Parameter: < mod > 0: Service Disabled 1: Service Enabled</p> <p>Note1: If SMSATRUND is active on the same instance (see AT#TCPATRUNCFG) the command will return ERROR.</p> <p>Note2: when the service is active it is on a specific AT instance (see AT#TCPATRUNCFG), that instance cannot be used for any other scope. For example, if the multiplexer requests to establish the Instance, the request will</p>	



#TCPATRNL – Enables TCP AT Run Service in listen (server) mode		SELINT 2
	<p>be rejected.</p> <p>Note3: the current settings are stored in NVM.</p> <p>Note4: to start automatically the service when the module is powered-on, the automatic PDP context activation has to be set (see AT#SGACTCFG command).</p>	
AT#TCPATRNL?	<p>Read command returns the current settings of <mode> and the value of <stat> in the format:</p> <p>#TCPATRNL: <mod>,<stat></p> <p>where:</p> <p><stat> - connection status 0 – not in listen 1 - in listen or active</p>	
AT#TCPATRNL =?	Test command returns the supported values for the TCPATRNL parameters	

3.5.7.3.6. TCP AT Run Firewall List - #TCPATRUNFRWL

#TCPATRUNFRWL – TCP AT Run Firewall List		SELINT 2
<p>AT#TCPATRUNFRWL = <action>, <ip_addr>, <net_mask></p>	<p>Set command controls the internal firewall settings for the TCPATRUN connection.</p> <p>Parameters:</p> <p><action> - command action 0 - remove selected chain 1 - add an ACCEPT chain 2 - remove all chains (DROP everything); <ip_addr> and <net_mask> has no meaning in this case.</p> <p><ip_addr> - remote address to be added into the ACCEPT chain; string type, it can be any valid IP address in the format: xxx.xxx.xxx.xxx</p> <p><net_mask> - mask to be applied on the <ip_addr>; string type, it can be any valid IP address mask in the format: xxx.xxx.xxx.xxx</p> <p>Command returns OK result code if successful.</p> <p>Firewall general policy is DROP, therefore all packets that are not included into an ACCEPT chain rule will be silently discarded.</p> <p>When a packet comes from the IP address incoming_IP, the firewall chain rules will be scanned for matching with the following criteria:</p>	



#TCPATRUNFRWL – TCP AT Run Firewall List	SELINT 2
	<p>incoming_IP & <net_mask> = <ip_addr> & <net_mask></p> <p>If criteria is matched, then the packet is accepted and the rule scan is finished; if criteria is not matched for any chain the packet is silently dropped.</p> <p>Note1: A maximum of 5 firewall can be present at same time in the List.</p> <p>Note2: the firewall list is saved in NVM</p>
AT#TCPATRUNFRWL?	<p>Read command reports the list of all ACCEPT chain rules registered in the Firewall settings in the format:</p> <pre>#TCPATRUNFRWL: <ip_addr>,<net_mask> #TCPATRUNFRWL: <ip_addr>,<net_mask> ... OK</pre>
AT#TCPATRUNFRWL=?	Test command returns the allowed values for parameter <action> .

3.5.7.3.7. TCP AT Run Authentication Parameters List - #TCPATRUNAATH

#TCPATRUNAATH – TCP AT Run Authentication Parameters List	SELINT 2
AT#TCPATRUNAATH = <action>, <userid>, <passw>	<p>Execution command controls the authentication parameters for the TCPATRUN connection.</p> <p>Parameters:</p> <ul style="list-style-type: none"> <action> - command action <ul style="list-style-type: none"> 0 - remove selected chain 1 - add an ACCEPT chain 2 - remove all chains (DROP everything); <userid > and <passw > has no meaning in this case. <userid > - user to be added into the ACCEPT chain; string type, maximum length 50 <passw > - password of the user on the <userid >; string type, maximum length 50 <p>Command returns OK result code if successful.</p> <p>Note1: A maximum of 3 entry (password and userid) can be present at same time in the List.</p> <p>Note2: the Authentication Parameters List is saved in NVM.</p>
AT#TCPATRUNAATH?	Read command reports the list of all ACCEPT chain rules registered in the Authentication settings in the format:



#TCPATRUNAATH – TCP AT Run Authentication Parameters List		SELINT 2
	<pre>#TCPATRUNAATH: <user_id>,<passw> #TCPATRUNAATH: <user_id>,<passw> ... OK</pre>	
AT#TCPATRUNAATH=?	Test command returns the allowed values for parameter <action>.	

3.5.7.3.8. TCP AT Run in dial (client) mode - #TCPATRUND

#TCPATRUND – Enables TCP Run AT Service in dial (client) mode		SELINT 2
AT#TCPATRUND=<mod>	<p>Set command enables/disables the TCP AT RUN service in client mode. When this service is enabled, the module tries to open a connection to the Host (the Host is specified in AT#TCPATRUNCFG).</p> <p>Parameter: < mod ></p> <ul style="list-style-type: none"> 0: Service Disabled 1: Service Enabled <p>Note1: If SMSATRUN is active on the same instance (see AT#TCPATRUNCFG) the command will return ERROR.</p> <p>Note2: when the service is active it is on a specific AT instance (see AT#TCPATRUNCFG), that instance cannot be used for any other scope. For example if the multiplexer request to establish the Instance, the request will be rejected.</p> <p>Note3: the current setting are stored in NVM</p> <p>Note4: to start automatically the service when the module is powered-on, the automatic PDP context activation has to be set (see AT#SGACTCFG command).</p> <p>Note5: if the connection closes or at boot, if service is enabled and context is active, the module will try to reconnect for the number of attempts specified in AT#TCPATRUNCFG; also the delay between one attempt and the other will be the one specified in AT#TCPATRUNCFG.</p>	
AT# TCPATRUND?	<p>Read command returns the current settings of <mode> and the value of <stat> in the format:</p> <p>#TCPATRUND: <mod>,<stat></p> <p>where:</p> <ul style="list-style-type: none"> <stat> - connection status 0 - not connected 1 – connected or connecting at socket level 	



#TCPATRUND – Enables TCP Run AT Service in dial (client) mode		SELINT 2
	2 - not connected but still trying to connect, attempting every delay time (specified in AT#TCPATRUNCFG)	
AT#TCPATRUND =?	Test command returns the supported values for the TCPATRUND parameters	

3.5.7.3.9. Closing TCP Run AT Socket - #TCPATRUNCLOSE

#TCPATRUNCLOSE – Closes TCP Run AT Socket		SELINT 2
AT#TCPATRUNCLOSE	Closes the socket used by TCP ATRUN service. Note: TCP ATRUN status is still enabled after this command, so the service re-starts automatically.	
AT#TCPATRUNCLOSE =?	Test command returns OK	

3.5.7.3.10. TCP AT Run Command Sequence - #TCPATCMDSEQ

#TCPATCMDSEQ – For TCP Run AT Service, allows the user to give AT commands in sequence		SELINT 2
AT#TCPATCMDSEQ= <mod>	Set command enable/disable, for TCP Run AT service, a feature that allows giving more than one AT command without waiting for responses. It does not work with commands that uses the prompt '>' to receive the message body text (e.g. "at+cmgs", "at#semail") Parameter: < mod > 0: Service Disabled (default) 1: Service Enabled	
AT# TCPATCMDSEQ?	Read command returns the current settings of parameters in the format: #TCPATCMDSEQ: <mod>	
AT# TCPATCMDSEQ =?	Test command returns the supported values for the TCPATCMDSEQ parameters	

3.5.7.3.11. TCP Run AT service to a serial port - #TCPATCONSER

#TCPATCONSER – Connects the TCP Run AT service to a serial port		SELINT 2
AT#TCPATCONSER= <port>,<rate>	Set command sets the TCP Run AT in transparent mode, in order to have direct access to the serial port specified. Data will be transferred directly, without being elaborated, between the TCP Run AT service and the serial port specified. If the CMUX protocol is running the command will return ERROR. Parameter: < port >	



#TCPATCONSER – Connects the TCP Run AT service to a serial port		SELINT 2
	<p>0 – 1. Serial port to connect to.</p> <p>< rate > baud rate for data transfer. Allowed values are 300,1200,2400,4800,9600,19200,38400,57600,115200.</p> <p>Note1: the command has to be issued from the TCP ATRUN instance Note2: After this command has been issued, if no error has occurred, then a “CONNECT” will be returned by the module to advise that the TCP ATRUN instance is in <i>online mode</i> and connected to the port specified. Note3: To exit from online mode and close the connection, the escape sequence (+++) has to be sent on the TCP ATRUN instance</p>	
AT# TCPATCONSER =?	Test command returns the supported values for the TCPATCONSER parameters	

3.5.7.3.12. Run AT command execution - #ATRUNDELAY

#ATRUNDELAY – Set the delay on Run AT command execution		SELINT 2
AT#ATRUNDELAY= <srv>,<delay>	<p>Set command enables the use of a delay before the execution of AT command received by Run AT service (TCP and SMS). It affects just AT commands given through Run AT service.</p> <p><srv> 0 – TCP Run AT service 1 - SMS Run AT service</p> <p><delay> Value of the delay, in seconds. Range 0..30. Default value 0 for both services (TCP and SMS).</p> <p>Note1 - The use of the delay is recommended to execute some AT commands that require network interaction or switch between GSM and GPRS services. For more details see the RUN AT User Guide.</p> <p>Note2: The delay is valid till a new AT#ATRUNDELAY is set.</p>	
AT#ATRUNDELAY?	<p>Read command returns the current settings of parameters in the format:</p> <p>#ATRUNDELAY: 0, <delayTCP> #ATRUNDELAY: 1, <delaySMS> OK</p>	
AT#ATRUNDELAY=?	Test command returns the supported values for the ATRUNDELAY parameters	



3.5.7.4. Event Monitor Commands

3.5.7.4.1. Enable EvMoni Service - #ENAEVMONI

#ENAEVMONI – Enable EvMoni Service		SELINT 2
AT#ENAEVMONI= <mod>	<p>Set command enables/disables the EvMoni service.</p> <p>Parameter: < mod ></p> <p>0: Service Disabled (default) 1: Service Enabled</p> <p>Note1: When the service is active on a specific AT instance, that instance cannot be used for any other scope, except for OTA service that has the highest priority. For example in the multiplexer request to establish the Instance, the request will be rejected.</p> <p>Note2: the current settings are stored in NVM.</p>	
AT#ENAEVMONI?	<p>Read command returns the current settings of <mode> and the value of <stat> in the format:</p> <p># ENAEVMONI: <mod>,<stat></p> <p>where: <stat> - service status 0 – not active (default) 1 - active</p>	
AT#ENAEVMONI =?	Test command returns the supported values for the ENAEVMONI parameters	

3.5.7.4.2. EvMoni Service parameter - #ENAEVMONICFG

#ENAEVMONICFG – Set EvMoni Service Parameters		SELINT 2
AT#ENAEVMONICFG= <instance> [,<urcmod> [,<timeout>]]	<p>Set command configures the EvMoni service.</p> <p>Parameter: <instance>: AT instance that will be used by the service to run the AT Command. Range 2 – 5. (Default: 3)</p> <p><urcmod>: 0 – disable unsolicited message 1 - enable an unsolicited message when an AT command is executed after an event is occurred (default)</p> <p>When unsolicited is enabled, the AT Command is indicated to TE with unsolicited result code:</p>	



#ENAEVMONICFG – Set EvMoni Service Parameters	SELINT 2
	<p>#EVMONI: <Text></p> <p>e.g.: #EVMONI: AT+CGMR;+CGSN;+GSN;+CCLK</p> <p>Unsolicited is dumped on the instance that requested the service activation.</p> <p><timeout>: It defines in minutes the maximum time for a command execution. If timeout expires the module will be rebooted. (Default: 5)</p> <p>Note 1: the current settings are stored in NVM.</p> <p>Note 2: the instance used for the EvMoni service is the same used for the SMS AT RUN service. Therefore, when the #ENAEVMONICFG sets the <instance> parameter, the change is reflected also in the <instance> parameter of the #SMSATRUNCFG command, and viceversa.</p> <p>Note 3: the set command returns ERROR if the command AT#ENAEVMONI? returns 1 as <mod> parameter or the command AT#SMSATRUNCFG returns 1 as <mod> parameter</p>
AT#ENAEVMONICFG?	<p>Read command returns the current settings of parameters in the format:</p> <p>#ENAEVMONICFG:<instance>,<urcmod>,<timeout></p>
AT# ENAEVMONICFG =?	<p>Test command returns the supported values for the ENAEVMONICFG parameters</p>

3.5.7.4.3. Event Monitoring - #EVMONI

#EVMONI – Set the single Event Monitoring	SELINT 2
<p>AT#EVMONI= <label>, <mode>, [,<paramType > ,<param>]</p>	<p>Set command enables/disables the single event monitoring, configures the related parameter and associates the AT command</p> <p><label>: string parameter (that has to be enclosed between double quotes) indicating the event under monitoring. It can assume the following values:</p> <ul style="list-style-type: none"> • VBATT - battery voltage monitoring (not yet implemented) • DTR - DTR monitoring (not yet implemented) • ROAM - roaming monitoring • CONTDEACT - context deactivation monitoring • RING - call ringing monitoring • STARTUP – module start-up monitoring • REGISTERED – network registration monitoring • GPIO1 – monitoring on a selected GPIO in the GPIO range



#EVMONI – Set the single Event Monitoring	SELINT 2
	<p>mV (therefore 500 corresponds to 5 V). (Default: 0)</p> <ul style="list-style-type: none"> ○ if <paramType> = 2, <param> indicates the time interval in seconds after that the voltage battery under the value specified with <paramType> = 1 causes the event. The range is 0 – 255. (Default: 0) ● If <label> is DTR, <paramType> can assume values in the range 0 - 2. <ul style="list-style-type: none"> ○ if <paramType> = 1, <param> indicates the status high or low under monitoring. The values are 0 (low) and 1 (high). (Default: 0) ○ if <paramType> = 2, <param> indicates the time interval in seconds after that the DTR in the status specified with <paramType> = 1 causes the event. The range is 0 – 255. (Default: 0) ● If <label> is ROAM, <paramType> can assume only the value 0. The event under monitoring is the roaming state. ● If <label> is CONTDEACT, <paramType> can assume only the value 0. The event under monitoring is the context deactivation. ● If <label> is RING, <paramType> can assume values in the range 0 - 1. <ul style="list-style-type: none"> ○ if <paramType> = 1, <param> indicates the numbers of call rings after that the event occurs. The range is 1-50. (Default: 1) ● If <label> is STARTUP, <paramType> can assume only the value 0. The event under monitoring is the module start-up. ● If <label> is REGISTERED, <paramType> can assume only the value 0. The event under monitoring is the network registration (to home network or in roaming) after the start-up and the SMS ordering. ● If <label> is GPIOX, <paramType> can assume values in the range 0 - 3. <ul style="list-style-type: none"> ○ if <paramType> = 1, <param> indicates the GPIO pin number; supported range is from 1 to a value that depends on the hardware. (Default: 1) ○ if <paramType> = 2, <param> indicates the status high or low under monitoring. The values are 0 (low) and 1 (high). (Default: 0) ○ if <paramType> = 3, <param> indicates the time interval in seconds after that the selected GPIO pin in the status specified with <paramType> = 1 causes the event. The range is 0 – 255. (Default: 0) ● If <label> is ADCH1, <paramType> can assume values in the range 0 - 3. <ul style="list-style-type: none"> ○ if <paramType> = 1, <param> indicates the ADC pin number; supported range is from 1 to a value that depends on the hardware. (Default: 1) ○ if <paramType> = 2, <param> indicates the ADC High voltage threshold in the range 0 – 2000 mV. (Default: 0) ○ if <paramType> = 3, <param> indicates the time interval in seconds after that the selected ADC pin above the value specified with <paramType> = 1 causes the event. The range is 0 – 255. (Default: 0) ● If <label> is ADCL1, <paramType> can assume values in the range 0 - 3. <ul style="list-style-type: none"> ○ if <paramType> = 1, <param> indicates the ADC pin number;



#EVMONI – Set the single Event Monitoring	SELINT 2
	<p>supported range is from 1 to a value that depends on the hardware. (Default: 1)</p> <ul style="list-style-type: none"> ○ if <paramType> = 2, <param> indicates the ADC Low voltage threshold in the range 0 – 2000 mV. (Default: 0) ○ if <paramType> = 3, <param> indicates the time interval in seconds after that the selected ADC pin under the value specified with <paramType> = 1 causes the event. The range is 0 – 255. (Default: 0) ● If <label> is DTMFX, <paramType> can assume values in the range 0 - 2. <ul style="list-style-type: none"> ○ if <paramType> = 1, <param> indicates the DTMF string; the single DTMF characters have to belong to the range ((0-9),#,*,(A-D)); the maximum number of characters in the string is 15 ○ if <paramType> = 2, <param> indicates the timeout in milliseconds. It is the maximum time interval within which a DTMF tone must be detected after detecting the previous one, to be considered as belonging to the DTMF string. The range is (500 – 5000). (Default: 1000) ● If <label> is SMSIN, <paramType> can assume values in the range 0-1. <ul style="list-style-type: none"> ○ if <paramType> = 1, <param> indicates the text that must be received in incoming SMS to trigger AT command execution rings after that the event occurs; the maximum number of characters in the SMS text string is 15. If no text is specified, AT command execution is triggered after each incoming SMS ● If <label> is CONSUMEX, <paramType> can assume only the value 0. <p>Note: the DTMF string monitoring is available only if the DTMF decode has been enabled (see #DTMF command)</p>
AT# EVMONI?	<p>Read command returns the current settings for each event in the format:</p> <p>#EVMONI: <label>,<mode>,<param0>[,<param1>[,<param2>[,<param3>]]]</p> <p>Where <param0>, <param1>, <param2> and <param3> are defined as before for <param> depending on <label> value</p>
AT#EVMONI=?	<p>Test command returns values supported as a compound value</p>

3.5.7.4.4. Send Message - #CMGS

#CMGS - Send Message	SELINT 2
<p>(PDU Mode) AT#CMGS= <length>,<pdu></p>	<p>(PDU Mode)</p> <p>Execution command sends to the network a message.</p> <p>Parameter: <length> - length of the PDU to be sent in bytes (excluding the SMSC address octets).</p> <p>7..164</p>



#CMGS - Send Message	SELINT 2
	<p><pdu> - PDU in hexadecimal format (each octet of the PDU is given as two IRA character long hexadecimal number) and given in one line.</p> <p>Note: when the length octet of the SMSC address (given in the <pdu>) equals zero, the SMSC address set with command +CSCA is used; in this case the SMSC Type-of-Address octet shall not be present in the <pdu>.</p> <p>If message is successfully sent to the network, then the result is sent in the format:</p> <p>#CMGS: <mr></p> <p>where <mr> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format.</p> <p>Note: if message sending fails for some reason, an error code is reported.</p>
<p>(Text Mode) AT#CMGS=<da> ,<text></p>	<p>(Text Mode)</p> <p>Execution command sends to the network a message.</p> <p>Parameters:</p> <p><da> - destination address, string type represented in the currently selected character set (see +CSCS).</p> <p><text> - text to send</p> <p>The entered text should be enclosed between double quotes and formatted as follows:</p> <ul style="list-style-type: none"> - if current <dcs> (see +CSMP) indicates that GSM03.38 default alphabet is used and current <fo> (see +CSMP) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM alphabet, according to GSM 27.005, Annex A. - if current <dcs> (see +CSMP) indicates that 8-bit or UCS2 data coding scheme is used or current <fo> (see +CSMP) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the 'asterisk' will be entered as 2A (IRA50 and IRA65) and this will be converted to an octet with integer value 0x2A) <p>If message is successfully sent to the network, then the result is sent in the format:</p> <p>#CMGS: <mr></p>



#CMGS - Send Message		SELINT 2
	<p>where</p> <p><mr> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format.</p> <p>Note: if message sending fails for some reason, an error code is reported.</p>	
AT#CMGS=?	Test command returns the OK result code.	
Note	To avoid malfunctions is suggested to wait for the #CMGS: <mr> or #CMS ERROR: <err> response before issuing further commands.	
Reference	GSM 27.005	

3.5.7.4.5. Write Message To Memory - #CMGW

#CMGW - Write Message To Memory		SELINT 2
<p>(PDU Mode)</p> <p>AT#CMGW= <length>,<pdu></p>	<p>(PDU Mode)</p> <p>Execution command writes in the <memw> memory storage a new message.</p> <p>Parameter:</p> <p><length> - length in bytes of the PDU to be written. 7..164</p> <p><pdu> - PDU in hexadecimal format (each octet of the PDU is given as two IRA character long hexadecimal number) and given in one line.</p> <p>If message is successfully written in the memory, then the result is sent in the format:</p> <p>#CMGW: <index></p> <p>where:</p> <p><index> - message location index in the memory <memw>.</p> <p>If message storing fails for some reason, an error code is reported.</p>	
<p>(Text Mode)</p> <p>AT#CMGW=<da> ,<text></p>	<p>(Text Mode)</p> <p>Execution command writes in the <memw> memory storage a new message.</p> <p>Parameters:</p> <p><da> - destination address, string type represented in the currently selected character set (see +CSCS).</p> <p><text> - text to write</p> <p>The entered text should be enclosed between double quotes and formatted as follows:</p> <p>- if current <dcs> (see +CSMP) indicates that GSM03.38 default alphabet is</p>	



3.5.7.5. CONSUME Commands

3.5.7.5.1. Configure consume parameters - #CONSUMECFG

#CONSUMECFG – configure consume parameters	SELINT 2
<p>AT#CONSUMECFG=<rule_id>[,<service_type>[,<rule_enable>[,<period>[,<limit_amount>[,<action_id>]]]]]</p>	<p>This command sets the parameters related to the consume functionality</p> <p>Parameters:</p> <p><rule_id> Index of the rule to apply to a defined <service_type> Range: (0-10) The available rules are 10 and their identifier ranges from 1 to 10. The special case of <rule_id>=0 is explained below in a note.</p> <p><service_type> Type of service to count: 0 – No service (default) 1 – SMS Sent 2 – SMS Received 3 – Total SMS 4 – CS MO Calls 5 – CS MT Calls 6 – Total CS Calls 7 – IP All Data Sent 8 – IP All Data Received 9 – IP All Data 10 – IP All Data Sent (with Header) 11 – IP All Data Received (with Header) 12 – IP All Data (with Header)</p> <p><rule_enable> Enable the counter on the rule 0 – rule disabled (default) 1 – rule enabled</p> <p><period> Time period over which the service type data are counted: 0 – life (entire module life) (default) 1 – 8760 (hours)</p> <p><limit_amount> Limit amount of data to count. 0 is default value and means no set limit: in this case only the counter is active. 0 – 4294967295 KBytes, for <service_type>=7,8,9,10,11 and 12 0 – 65535 number of SMS, for <service_type>=1,2, and 3 0 – 65535 minutes, for <service_type>=4,5 and 6</p>



	<p><action_id> Identifier of the action to trigger when the threshold limit has been reached. It corresponds to the AT command associated to the event CONSUMEX, where X=1,...5. (Refer to #EVMONI command) Range: (0-5); 0 means no action associated: in this case only the counter is active.</p> <p>Note: the Set command #CONSUMECFG=0 has a special behaviour: for all the enabled rules, the data and time of related counters are reset (<u>if they are not-life counters</u>)</p> <p>Note: the values set by command are directly stored in NVM and don't depend on the specific CMUX instance</p> <p>Note: the life counters are disabled if <enable> parameter of AT#ENACONSUME is equal to 0</p> <p>Note: a rule can be changed only setting <rule_enable>=0. The data and time of related counter are also reset (<u>if it's not a life counter</u>).</p> <p>Note: when the period expires, the counted data are reset, so the counting in the next period starts from 0.</p> <p>Note: if a service is blocked, then the related (life or not) counter is stopped also in terms of time (as well as in terms of data obviously).</p>
AT#CONSUMECFG?	<p>Read command returns the current settings for each rule in the format:</p> <p>#CONSUMECFG: <rule_id>,<service_type>,<rule_enable>,<period>,<limit_amount>,<action_id></p>
AT#CONSUMECFG=?	<p>Test command reports the supported range of values for all parameters</p>

3.5.7.5.2. Enable consume functionality - #ENACONSUME

#ENACONSUME – enable consume functionality	SELINT 2
<p>AT#ENACONSUME=<enable>[,<storing_mode>[,<storing_period>]]</p>	<p>Set command enables/disables the consume functionality.</p> <p>Parameters:</p> <p><enable> 0 – disable consume functionality (default) 1 – disable consume functionality except life counters 2 – enable consume functionality</p> <p><storing_mode>:</p>



	<p>0 – the counters are saved in NVM at every shutdown (default) 1 – the counters are saved in NVM at every shutdown and periodically at regular intervals specified by <storing_period> parameter</p> <p><storing_period> - number of hours after that the counters are saved; numeric value in hours; range (0,8-24); 0 is default value and means no set period (as <storing_mode>=0)</p> <p>Note: the values set by command are directly stored in NVM and don't depend on the specific CMUX instance</p> <p>Note: when the functionality is disabled with <enable>=0, the data counters are stopped but not reset: to reset them (<u>except life counters</u>) set <rule_enable>=0 with AT#CONSUMECFG command.</p> <p>Note: when the functionality is disabled with <enable>=1, the data counters are stopped <u>except life counters</u>.</p> <p>Note: the life counters are never reset, neither in terms of counted data nor in terms of time</p>
AT#ENACONSUME?	<p>Read command returns the current settings for all parameters in the format:</p> <p>#ENACONSUME: <enable>,<storing_mode>,<storing_period></p>
AT#ENACONSUME=?	<p>Test command reports the supported range of values for all parameters</p>

3.5.7.5.3. Report consume statistics - #STATSCONSUME

#STATSCONSUME – report consume statistics	SELINT 2
AT#STATSCONSUME[=<counter_type>]	<p>Execution command reports the values of the life counters for every type of service or the values of period counters for every rule.</p> <p>Parameter: <counter_type> Type of counter: range (0-1)</p> <p>0 – period counter: the command returns the values of period counters for every rule defined with AT#CONSUMECFG command in the format:</p> <p>#STATSCONSUME: <rule_1>,<service_type>,<counted_data>,<threshold>,<current_time>,<period><CR><LF>#STATSCONSUME: <rule_2>,<service_type>,<counted_data>,<threshold>,<current_time>,<period><CR><LF>...<CR><LF>#STATSCONSUME:</p>



	<p><life_data> Number of data counted during entire life time period</p> <p><current_time> Number of passed hours during entire life time period</p> <p>Note: issuing AT#STATSCONSUME without parameters has the same effect as AT#STATSCONSUME=0</p> <p>Note: the unit of measurement for the service are the following: 0 – 4294967295 KBytes, for <service_type>=7,8,9,10,11 and 12 0 – 65535 number of SMS, for <service_type>=1,2, and 3 0 – 65535 minutes, for <service_type>=4,5 and 6</p>
AT#STATSCONSUME=?	Test command reports the supported range of values for <counter_type> parameter

3.5.7.5.4. Block/unblock a type of service - #BLOCKSCONSUME

#BLOCKCONSUME – block/unblock a type of service	SELINT 2
AT#BLOCKCONSUME=<service_type>,<block>	<p>Execution command blocks/unblocks a type of service</p> <p>Parameter: <service_type> Type of service: 1 – SMS Sending 2 – SMS Receiving 3 – SMS Sending/ Receiving 4 – CS MO Calls 5 – CS MT Calls 6 – MO/MT CS Calls 7 – IP Data</p> <p><block> 0 – unblock the service specified in <service_type> 1 – block the service specified in <service_type></p> <p>Note: even if the service “SMS Received” has been blocked, an SMS ATRUN digest SMS can be received and managed.</p> <p>Note: the type of service 7 “IP Data” comprises all the IP services (i.e. IP ,with or without header, sent, receive and sent/receive data)</p>
AT#BLOCKCONSUME?	Read command reports the status blocked/unblocked of every type of service in the following format:



#OTASNAP – OTA Set Network Access Point		SELINT 0/1
	OK AT#OTASNAP=? #OTASNAP: 21,15 OK	

#OTASNAP – OTA Set Network Access Point		SELINT 2
AT#OTASNAP= <addr>[,<company_name>]	Set command specifies the SMS number that the module has to use to send the Remote Registration SM. If the current IMSI hasn't been yet registered, the Remote Registration SM is automatically sent. Parameters: <addr> - string parameter which specifies the phone number <company_name> - string parameter containing a client identifier Note1: a special form of the Set command, #OTASNAP="" , causes the deletion of the SMS number Note2: the value of <addr> parameter can be overwritten from the OTA server by the Provisioning SMS Note3: a change of the value of <company_name> parameter causes a new FOTA Registration procedure Note4: if the <company_name> is an empty string, an ERROR is returned Note5: the setting is saved in NVM	
AT#OTASNAP?	Read command reports the current settings in the format: #OTASNAP: <addr>[,<company_name>]	
AT#OTASNAP =?	Test command returns the maximum length of <addr> field and maximum length of <company_name> field. The format is: #OTASNAP: <nlength>,<tlength> where: <nlength> - integer type value indicating the maximum length of field <addr> <tlength> - integer type value indicating the maximum length of field <company_name>	
Example	<pre> AT#OTASNAP="SMS Number","Client Alpha" OK AT#OTASNAP? #OTASNAP:"SMS Number","Client Alpha" OK AT#OTASNAP=? #OTASNAP: 21,15 </pre>	



#OTASNAP – OTA Set Network Access Point	SELINT 2
OK	

3.5.7.6.2. OTA Set User Answer - #OTASUAN

#OTASUAN – OTA Set User Answer	SELINT 0/1
<p>AT#OTASUAN= <response>[,<mode>[,<bfr>]]</p>	<p>Set command:</p> <ul style="list-style-type: none"> a) enables or disables sending of unsolicited result code #OTAEV that asks the TE to accept or reject the Management Server request to download a firmware b) allows the TE to accept or reject the request <p>Parameters:</p> <p><response> - numeric parameter used to accept or reject the download request</p> <ul style="list-style-type: none"> 0 – the request is rejected 1 – the request is accepted 2 – the request is delayed indefinitely: the URC is prompted indefinitely until the request is accepted or reject <p><mode> - numeric parameter that controls the processing of unsolicited result code #OTAEV</p> <ul style="list-style-type: none"> 0 –buffer unsolicited result codes in the MT; if MT result code buffers is full, the oldest ones can be discarded. No codes are forwarded to the TE. 1 –discard unsolicited result codes when MT-TE link is reserved (e.g. in on-line data mode); otherwise forward them directly to the TE 2 –buffer unsolicited result codes in the MT when MT-TE link is reserved (e.g. in on-line data mode) and flush them to the TE when MT-TE link becomes available; otherwise forward them directly to the TE <p><bfr> - numeric parameter that controls the effect on buffered codes when <mode></p> <ul style="list-style-type: none"> 1 or 2 is entered 0 – MT buffer of unsolicited result codes #OTAEV is cleared when <mode> 1 or 2 is entered 1 – MT buffer of unsolicited result codes #OTAEV is flushed to TE when <mode> 1 or 2 is entered <p>Note: the following unsolicited result codes and the corresponding events are defined:</p> <p>#OTAEV: Do you want to upgrade the firmware? A management server request to start the firmware upgrade. The user answer is expected</p> <p>#OTAEV: User Answer Timeout Expected User Answer not received within server defined time interval</p> <p>#OTAEV: Automatic Fw Upgrade Requested An automatic Fw Upgrade procedure has started</p>



#OTASUAN – OTA Set User Answer	SELINT 0/1
	<p>#OTAEV: Start Fw Download The firmware download is started</p> <p>#OTAEV: Fw Download Complete The firmware download is finished</p> <p>#OTAEV: OTA Fw Upgrade Failed The Fw upgrade has failed</p> <p>#OTAEV: Module Upgraded To New Fw The Fw upgrade is successfully finished</p> <p>#OTAEV: Server notified about successfull FW Upgrade The final SMS has been sent to the server notifying the successful FW upgrade</p> <p>"#OTAEV: Registered" The module has registered itself to a server</p> <p>"#OTAEV: Not registered" The registration procedure has failed</p> <p>"#OTAEV: Company Name Registered" The company name is registered</p> <p>"#OTAEV: Company Name not registered" The company name is not registered</p> <p>"#OTAEV: Provisioned" A server has provisioned the module</p> <p>"#OTAEV: Notified" A server has notified the module</p>
AT# OTASUAN?	<p>Read command reports the current settings in the format:</p> <p>#OTASUAN: ,<mode>,<bfr></p>
AT#OTASUAN	<p>Execution command has the same effect as the Read command</p>
AT#OTASUAN =?	<p>Test command returns values supported as a compound value</p>
Example	<p>AT#OTASUAN=,2,1 OK AT#OTASUAN? #OTASUAN: ,2,1 OK AT#OTASUAN =? #OTASUAN: (0-2),(0-2),(0,1) OK</p>



#OTASUAN – OTA Set User Answer	SELINT 2
<p>AT#OTASUAN= <response>[,<mode>[,<bfr>]]</p>	<p>Set command:</p> <ul style="list-style-type: none"> a) enables or disables sending of unsolicited result code #OTAEV that asks the TE to accept or reject the Management Server request to download a firmware b) allows the TE to accept or reject the request <p>Parameters:</p> <p><response> - numeric parameter used to accept or reject the download request</p> <ul style="list-style-type: none"> 0 – the request is rejected 1 – the request is accepted 2 – the request is delayed indefinitely: the URC is prompted indefinitely until the request is accepted or reject <p><mode> - numeric parameter that controls the processing of unsolicited result code #OTAEV</p> <ul style="list-style-type: none"> 0 –buffer unsolicited result codes in the MT; if MT result code buffers is full, the oldest ones can be discarded. No codes are forwarded to the TE. 1 –discard unsolicited result codes when MT-TE link is reserved (e.g. in on-line data mode); otherwise forward them directly to the TE 2 –buffer unsolicited result codes in the MT when MT-TE link is reserved (e.g. in on-line data mode) and flush them to the TE when MT-TE link becomes available; otherwise forward them directly to the TE <p><bfr> - numeric parameter that controls the effect on buffered codes when <mode> 1 or 2 is entered</p> <ul style="list-style-type: none"> 0 – MT buffer of unsolicited result codes #OTAEV is cleared when <mode> 1 or 2 is entered 1 – MT buffer of unsolicited result codes #OTAEV is flushed to TE when <mode> 1 or 2 is entered <p>Note: the following unsolicited result codes and the corresponding events are defined:</p> <p>#OTAEV: Do you want to upgrade the firmware? A management server request to start the firmware upgrade. The user answer is expected</p> <p>#OTAEV: User Answer Timeout Expected User Answer not received within server defined time interval</p> <p>#OTAEV: Automatic Fw Upgrade Requested An automatic Fw Upgrade procedure has started</p> <p>#OTAEV: Start Fw Download The firmware download is started</p> <p>#OTAEV: Fw Download Complete</p>



#OTASUAN – OTA Set User Answer	SELINT 2
	<p>The firmware download is finished</p> <p>#OTAEV: OTA Fw Upgrade Failed The Fw upgrade has failed</p> <p>#OTAEV: Module Upgraded To New Fw The Fw upgrade is successfully finished</p> <p>#OTAEV: Server notified about successful FW Upgrade The final SMS has been sent to the server notifying the successful FW upgrade</p> <p>"#OTAEV: Registered" The module has registered itself to a server</p> <p>"#OTAEV: Not registered" The registration procedure has failed</p> <p>"#OTAEV: Company Name Registered" The company name is registered</p> <p>"#OTAEV: Company Name not registered" The company name is not registered</p> <p>"#OTAEV: Provisioned" A server has provisioned the module</p> <p>"#OTAEV: Notified" A server has notified the module</p>
AT# OTASUAN?	<p>Read command reports the current settings in the format:</p> <p>#OTASUAN: ,<mode>,<bfr></p>
AT#OTASUAN =?	Test command returns values supported as a compound value
Example	<pre>AT#OTASUAN=,2,1 OK AT#OTASUAN? #OTASUAN: ,2,1 OK AT#OTASUAN=? #OTASUAN: (0-2),(0-2),(0,1) OK</pre>

3.5.7.6.3. Saves IP port and IP address for OTA over IP - #OTAIPCFG

#OTAIPCFG – Saves IP port and IP address for OTA over IP	SELINT 0/1
AT#OTAIPCFG=<IPport>,<IP addr>[,<unused>]	This command saves in NVM the IP port number and IP address of the OTA server.



	<p>Parameters:</p> <p><IPort >: IP port of the OTA server</p> <p><IPaddr>: IP address of the OTA server, string type. This parameter can be any valid IP address in the format: “xxx.xxx.xxx.xxx”</p> <p>Note: the values set by the command are directly stored in NVM and don’t depend on the specific CMUX instance.</p> <p>Note2: a special form of the Set command, #OTAIPCFG=<IPort>,”” sets the IP address to “0.0.0.0”.</p>
AT#OTAIPCFG?	<p>Read command reports the currently selected <IPort > and <IPaddr> in the format:</p> <p>#OTAIPCFG: <IPort >,<IPaddr>,0</p>
AT#OTAIPCFG	Execution command has the same effect as the Read command
AT#OTAIPCFG=?	Test command reports the range of supported values for parameters <IPort> and <unused>

#OTAIPCFG – Saves IP port and IP address for OTA over IP	SELINT 2
AT#OTAIPCFG=<IPort>,<IPaddr>[,<unused>]	<p>This command saves in NVM the IP port number and IP address of the OTA server.</p> <p>Parameters:</p> <p><IPort >: IP port of the OTA server</p> <p><IPaddr>: IP address of the OTA server, string type. This parameter can be any valid IP address in the format: “xxx.xxx.xxx.xxx”</p> <p>Note: the values set by the command are directly stored in NVM and don’t depend on the specific CMUX instance.</p> <p>Note2: a special form of the Set command, #OTAIPCFG=<IPort>,”” sets the IP address to “0.0.0.0”.</p>
AT#OTAIPCFG?	<p>Read command reports the currently selected <IPort > and <IPaddr> in the format:</p> <p>#OTAIPCFG: <IPort >,<IPaddr>,0</p>
AT#OTAIPCFG=?	Test command reports the range of supported values for parameters <IPort> and <unused>

3.5.7.6.4. Starts an OTA Update over IP - #OTAIPUPD



#OTASNAIPCFG – OTA Set Access Point Name for OTA over IP		SELINT 0/1
	<p><password> - string parameter, used only if the context requires it</p> <p><rspTimeout> - used when waiting for a response from OTA server, after the module has sent a message: if there's no response within this timeout period the TCP connection is closed. 0 - no timeout 1..65535 - timeout value in seconds (default 300 s.)</p> <p>Note1: if the <bearer> is set to 0, then the APN is erased. If the bearer is already 0, any <APN> or <username> or <password> will not be set</p> <p>Note2: the values of <bearer>, <APN>, <username> and <password> parameters can be overwritten from the OTA server by any SMS (Command, RSA Discovery Registration ...)</p> <p>Note3: all the settings are saved in NVM</p>	
AT#OTASNAIPCFG?	Read command reports the current settings in the format:	
	#OTASNAIPCFG: <bearer>,<APN>[,<username>[,<password>[,<rspTimeout>]]]	
AT#OTASNAIPCFG	Execution command has the same effect as the Read command	
AT#OTASNAIPCFG=?	Test command returns the range for <bearer> values, the maximum length of <APN>, <username> and <password> string parameters and the range for <rspTimeout> values. The format is:	
	#OTASNAIPCFG: (0-2),99,49,49,(0-65535)	

#OTASNAIPCFG – OTA Set Access Point Name for OTA over IP		SELINT 2
AT#OTASNAIPCFG= <bearer>,<APN>[,<username>,<password>[,<rspTimeout>]]	<p>Set command specifies the bearer (GSM or GPRS) and the APN that the module has to use to send the Remote Registration message.</p> <p>The APN is the Access Point Name in case of GPRS bearer or the internet service provider number in case of GSM bearer.</p> <p>Parameters:</p> <p><bearer> 0 – Undefined (default value) 1 – GSM 2 - GPRS</p> <p><APN> - string parameter; in case of GPRS bearer: Access Point Name, a logical name that is used to select the GGSN or the external packet data network; in case of GSM bearer: phone number of the internet service provider</p> <p><username> - string parameter, used only if the context requires it</p>	



3.5.7.7. Multisocket AT Commands

3.5.7.7.1. Socket Status - #SS

#SS - Socket Status	SELINT 2
<p>AT#SS[=<connId>]</p>	<p>Execution command reports the current status of the socket:</p> <p>Parameters: <connId> - socket connection identifier 1..6</p> <p>The response format is:</p> <p>#SS: <connId>,<state>,<locIP>,<locPort>,<remIP>,<remPort></p> <p>where: <connId> - socket connection identifier, as before <state> - actual state of the socket: 0 - Socket Closed. 1 - Socket with an active data transfer connection. 2 - Socket suspended. 3 - Socket suspended with pending data. 4 - Socket listening. 5 - Socket with an incoming connection. Waiting for the user accept or shutdown command. <locIP> - IP address associated by the context activation to the socket. <locPort> - two meanings: - the listening port if we put the socket in listen mode. - the local port for the connection if we use the socket to connect to a remote machine. <remIP> - when we are connected to a remote machine this is the remote IP address. <remPort> - it is the port we are connected to on the remote machine.</p> <p>Note: issuing #SS<CR> causes getting information about status of all the sockets; the response format is:</p> <p>#SS: <connId1>,<state1>,<locIP1>,<locPort1>,<remIP1>,<remPort1> <CR><LF> ... #SS: <connId6>,<state6>,<locIP6>,<locPort6>,<remIP6>,<remPort6></p>
<p>AT#SS=?</p>	<p>Test command reports the range for parameter <connId>.</p>



#SS - Socket Status	SELINT 2
Example	<p>AT#SS #SS: 1,3,91.80.90.162,61119,88.37.127.146,10510 #SS: 2,4,91.80.90.162,1000 #SS: 3,0 #SS: 4,0 #SS: 5,3,91.80.73.70,61120,88.37.127.146,10509 #SS: 6,0</p> <p>OK</p> <p>Socket 1: opened from local IP 91.80.90.162/local port 61119 to remote IP 88.37.127.146/remote port 10510 is suspended with pending data</p> <p>Socket 2: listening on local IP 91.80.90.162/local port 1000</p> <p>Socket 5: opened from local IP 91.80.73.70/local port 61120 to remote IP 88.37.127.146/remote port 10509 is suspended with pending data</p> <p>AT#SS=2</p> <p>#SS: 2,4,91.80.90.162,1000</p> <p>OK</p> <p>We have information only about socket number 2</p>

3.5.7.7.2. Socket Info - #SI

#SI - Socket Info	SELINT 2
AT#SI[=<connId>]	<p>Execution command is used to get information about socket data traffic.</p> <p>Parameters: <connId> - socket connection identifier 1..6</p> <p>The response format is:</p> <p>#SI: <connId>,<sent>,<received>,<buff_in>,<ack_waiting></p> <p>where: <connId> - socket connection identifier, as before <sent> - total amount (in bytes) of sent data since the last time the socket connection identified by <connId> has been opened <received> - total amount (in bytes) of received data since the last time the socket connection identified by <connId> has been opened <buff_in> - total amount (in bytes) of data just arrived through the socket connection identified by <connId> and currently buffered, not yet</p>



#SI - Socket Info	SELINT 2
	<p>read</p> <p><ack_waiting> - total amount (in bytes) of sent and not yet acknowledged data since the last time the socket connection identified by <connId> has been opened</p> <p>Note: parameters associated with a socket identified by <connId> are cleared when the socket itself is connected again(#SD or #SA after #SL).</p> <p>Until then, if previous connection has been established and closed, old values are yet available.</p> <p>Note: not yet acknowledged data are available only for TCP connections; the value <ack_waiting> is always 0 for UDP connections.</p> <p>Note: issuing #SI<CR> causes getting information about data traffic of all the sockets; the response format is:</p> <p>#SI: <connId1>,<sent1>,<received1>,<buff_in1>,<ack_waiting1> <CR><LF></p> <p>...</p> <p>#SI: <connId6>,<sent6>,<received6>,<buff_in6>,<ack_waiting6></p>
AT#SI=?	Test command reports the range for parameter <connId> .
Example	<p>AT#SI</p> <p>#SI: 1,123,400,10,50 #SI: 2,0,100,0,0 #SI: 3,589,100,10,100 #SI: 4,0,0,0,0 #SI: 5,0,0,0,0 #SI: 6,0,98,60,0</p> <p>OK</p> <p><i>Sockets 1,2,3,6 are opened with some data traffic. For example socket 1 has 123 bytes sent, 400 bytes received, 10 byte waiting to be read and 50 bytes waiting to be acknowledged from the remote side.</i></p> <p>AT#SI=1</p> <p>#SI: 1,123,400,10,50</p> <p>OK</p> <p><i>We have information only about socket number 1</i></p>



#SGACT - Context Activation		SELINT 2
AT#SGACT?	Returns the state of all the contexts that have been defined through the commands +CGDCONT or #GSMCONT #SGACT: <cid1>,<Stat1><CR><LF> ... #SGACT: <cid5>,<Stat5> where: <cidn> - as <cid> before <statn> - context status 0 - context deactivated 1 - context activated	
AT#SGACT=?	Test command reports the range for the parameters <cid> and <stat>	
Note	It is strongly recommended to use the same command (e.g. #SGACT) to activate the context, deactivate it and interrogate about its status.	

3.5.7.7.4. Socket Shutdown - #SH

#SH - Socket Shutdown		SELINT 2
AT#SH=<connId>	This command is used to close a socket. Parameter: <connId> - socket connection identifier 1..6	
AT#SH=?	Test command reports the range for parameter <connId>.	

3.5.7.7.5. Socket Configuration - #SCFG

#SCFG - Socket Configuration		SELINT 2
AT#SCFG= <connId>,<cid>, <pktSz>,<maxTo>, <connTo>,<txTo>	Set command sets the socket configuration parameters. Parameters: <connId> - socket connection identifier 1..6 <cid> - PDP context identifier 0 - specifies the GSM context 1..5 - numeric parameter which specifies a particular PDP context definition <pktSz> - packet size to be used by the TCP/UDP/IP stack for data sending. 0 - select automatically default value(300). 1..1500 - packet size in bytes. <maxTo> - exchange timeout (or socket inactivity timeout); if there's no data exchange within this timeout period the connection is closed. 0 - no timeout	



#SCFG - Socket Configuration	SELINT 2
	<p>1..65535 - timeout value in seconds (default 90 s.) <connTo> - connection timeout; if we can't establish a connection to the remote within this timeout period, an error is raised. 10..1200 - timeout value in hundreds of milliseconds (default 600) <txTo> - data sending timeout; after this period data are sent also if they're less than max packet size. 0 - no timeout 1..255 - timeout value in hundreds of milliseconds (default 50) 256 – set timeout value in 10 milliseconds 257 – set timeout value in 20 milliseconds 258 – set timeout value in 30 milliseconds 259 – set timeout value in 40 milliseconds 260 – set timeout value in 50 milliseconds 261 – set timeout value in 60 milliseconds 262 – set timeout value in 70 milliseconds 263 – set timeout value in 80 milliseconds 264 – set timeout value in 90 milliseconds Note: these values are automatically saved in NVM. Note: if DNS resolution is required, max DNS resolution time(20 sec) has to be considered in addition to <connTo></p>
AT#SCFG?	<p>Read command returns the current socket configuration parameters values for all the six sockets, in the format:</p> <p>#SCFG: <connId1>,<cid1>,<pktsz1>,<maxTo1>,<connTo1>,<txTo1> <CR><LF> ... #SCFG: <connId6>,<cid6>,<pktsz6>,<maxTo6>,<connTo6>,<txTo6> <CR><LF></p>
AT#SCFG=?	Test command returns the range of supported values for all the subparameters.
Example	<pre>at#scfg? #SCFG: 1,1,300,90,600,50 #SCFG: 2,2,300,90,600,50 #SCFG: 3,2,250,90,600,50 #SCFG: 4,1,300,90,600,50 #SCFG: 5,1,300,90,600,50 #SCFG: 6,1,300,90,600,50 OK</pre>



3.5.7.7.6. Socket Configuration Extended - #SCFGEXT

#SCFGEXT - Socket Configuration Extended	SELINT 2
<pre>AT#SCFGEXT= <conned>,<srMode>, <recvDataMode>, <keepalive>, [,<ListenAutoRsp> [,<sendDataMode>]]</pre>	<p>Set command sets the socket configuration extended parameters.</p> <p>Parameters:</p> <p><connId> - socket connection identifier 1..6</p> <p><srMode> - SRing unsolicited mode 0 - Normal (default): SRING: <connId> where <connId> is the socket connection identifier 1 – Data amount: SRING: <connId>,<recData> where <recData> is the amount of data received on the socket connection number <connId> 2 - Data view: SRING: <connId>,<recData>,<data> same as before and <data> is data received displayed following <dataMode> value 3 – Data view with UDP datagram informations: SRING: <sourceIP>,<sourcePort><connId>,<recData>,<dataLeft>,<data> same as before with <sourceIP>,<sourcePort> and <dataLeft> that means the number of bytes left in the UDP datagram</p> <p>Note: <srMode> value 3 is not available in SW 13.00.xxx</p> <p><recvDataMode> - data view mode for received data in command mode(AT#SRECV or <srMode> = 2) 0- text mode (default) 1- hexadecimal mode</p> <p><keepalive> - Set the TCP Keepalive value in minutes 0 – Deactivated (default) 1 – 240 – Keepalive time in minutes</p> <p><ListenAutoRsp> - Set the listen auto-response mode, that affects the commands AT#SL and AT#SLUDP 0 - Deactivated (default) 1 – Activated</p> <p><sendDataMode> - data mode for sending data in command mode(AT#SSEND) 0 - data represented as text (default) 1 - data represented as sequence of hexadecimal numbers (from 00 to FF) Each octet of the data is given as two IRA character long hexadecimal number</p>



	<p>Note: these values are automatically saved in NVM. Note: Keepalive is available only on TCP connections.</p> <p>Note: for the behaviour of AT#SL and AT#SLUDP in case of auto-response mode or in case of no auto-response mode, see the description of the two commands.</p>
AT#SCFGEXT?	<p>Read command returns the current socket extended configuration parameters values for all the six sockets, in the format:</p> <pre>#SCFGEXT:<connId1>, <srMode1>,<dataMode1>,<keepalive1>,<ListenAutoRsp1>,0<CR><LF> ... #SCFGEXT:<connId6>, <srMode6>,<dataMode6>,<keepalive6>,<ListenAutoRsp6>,0<CR><LF></pre>
AT#SCFGEXT=?	<p>Test command returns the range of supported values for all the subparameters.</p>
Example	<p>Socket 1 set with data view string, text data mode, a keepalive time of 30 minutes and listen auto-response set.</p> <p>Socket 3 set with data amount string, hex recv data mode, no keepalive and listen auto-response not set.</p> <p>Socket 4 set with hex recv and send data mode</p> <pre>at#scfgext? #SCFGEXT: 1,2,0,30,1,0 #SCFGEXT: 2,0,0,0,0,0 #SCFGEXT: 3,1,1,0,0,0 #SCFGEXT: 4,0,1,0,0,1 #SCFGEXT: 5,0,0,0,0,0 #SCFGEXT: 6,0,0,0,0,0 OK</pre>

3.5.7.7.7. Socket configuration Extended 2 - #SCFGEXT2

#SCFGEXT2 - Socket Configuration Extended 2	SELINT 2
<p>AT#SCFGEXT2= <connId>,<bufferStart> [,<abortConnAttempt> [,<stringLen > [,<stringTo ></p>	<p>Set command sets the socket configuration extended parameters for features not included in #SCFGEXT command.</p> <p>Parameters: <connId> - socket connection identifier</p>



<p>[,<noCarrierMode>]]]]</p>	<p>1..6</p> <p><bufferStart> - Set the sending timeout method based on new data received from the serial port. (<txTo> timeout value is set by #SCFG command) Restart of transmission timer will be done when new data are received from the serial port.</p> <p>0 - old behaviour for transmission timer (#SCFG command 6th parameter old behaviour, start only first time if new data are received from the serial port) 1 - new behaviour for transmission timer: restart when new data received from serial port</p> <p>Note: is necessary to avoid overlapping of the two methods. Enabling new method, the old method for transmission timer(#SCFG) is automatically disabled to avoid overlapping.</p> <p>Note: check if new data have been received from serial port is done with a granularity that is directly related to #SCFG <txTo> setting with a maximum period of 1 sec.</p> <p><abortConnAttempt> - Enable connection attempt(#SD/#SKTD/#SKTOP) abort before CONNECT(online mode) or OK(command mode)</p> <p>0 – Not possible to interrupt connection attempt 1 – It is possible to interrupt the connection attempt (<connTo> set by #SCFG or DNS resolution running if required)</p> <p>and give back control to AT interface by reception of a character. As soon as the control has been given to the AT interface the ERROR message will be received on the interface itself.</p> <p><sringLen> - this parameter sets the length of data received in one SRING URC in sring mode 2 or 3 (see AT#SCFGEXT)</p> <p>0 – factory default, means 64 bytes 1 – means that the length is equal to the maximum TCP payload size accepted in download in case of TCP connections, same as 0 in case of UDP connections 64..1472</p> <p><sringTo> - this parameter sets the delay among one SRING URC and</p>
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	<p>the other, in sring mode 2 or 3 (see AT#SCFGEXT)</p> <p>0 – factory default, means 10 hundreds of milliseconds 1..10: value in hundreds of milliseconds Note: values are automatically saved in NVM.</p> <p>Note2: in case AT#BASE64 has been set on the same connId, the parameter <sringLen> will affect the length of the data read from the socket at each SRING, but this length will always be a multiple of 78 or 76 (depending on the type of decoding set with AT#BASE64) and user will get less due to decoding.</p> <p><noCarrierMode> - this parameter permits to choose NO CARRIER indication format when the socket is closed as follows</p> <p>0 – NO CARRIER (default) Indication is sent as usual, without additional information</p> <p>1 – NO CARRIER:<connId> Indication of current <connId> socket connection identifier is added</p> <p>2 – NO CARRIER:<connId>,<cause> Indication of current <connId> socket connection identifier and closure <cause> are added For possible <cause> values, see also #SLASTCLOSURE</p> <p>Note: like #SLASTCLOSURE, in case of subsequent consecutive closure causes are received, the original disconnection cause is indicated.</p> <p>Note: in the case of command mode connection and remote closure with subsequent inactivity timeout closure without retrieval of all available data(#SRECV or SRING mode 2), it is indicated cause 1 for both possible FIN and RST from remote.</p>
<p>AT#SCFGEXT2?</p>	<p>Read command returns the current socket extended configuration parameters values for all the six sockets, in the format:</p> <p>#SCFGEXT2:<connId1>,<bufferStart1> <abortConnAttempt1>,<sringLen1>, <sringTo1>,<noCarrierMode1><CR><LF> ... #SCFGEXT2:<connId6>,<bufferStart6>, <abortConnAttempt6>,<sringLen6>, <sringTo6>,<noCarrierMode6><CR><LF></p>



<p>AT#SCFGEXT2=?</p>	<p>Test command returns the range of supported values for all the subparameters.</p>
<p>Example</p>	<pre> AT#SCFGEXT2=1,1 OK AT#SCFGEXT2=2,1 OK AT#SCFGEXT2? #SCFGEXT2: 1,1,0,0,0,0 #SCFGEXT2: 2,1,0,0,0,0 #SCFGEXT2: 3,0,0,0,0,0 #SCFGEXT2: 4,0,0,0,0,0 #SCFGEXT2: 5,0,0,0,0,0 #SCFGEXT2: 6,0,0,0,0,0 OK AT#SCFG? #SCFG: 1,1,300,90,600,50 #SCFG: 2,1,300,90,600,50 #SCFG: 3,1,300,90,600,50 #SCFG: 4,2,300,90,600,50 #SCFG: 5,2,300,90,600,50 #SCFG: 6,2,300,90,600,50 OK AT#SCFG=1,1,300,90,600,30 OK Current configuration: socket with connId 1 and 2 are configured with new transmission timer behaviour. <txTo> corresponding value has been changed(#SCFG) for connId 1, for connId 2 has been left to default value. </pre>

3.5.7.7.8. Socket configuration Extended 3 - #SCFGEXT3

<p>#SCFGEXT3 - Socket Configuration Extended 3</p>	<p>SELINT 2</p>
<p>AT#SCFGEXT3= <connId> ,<immRsp></p>	<p>Set command sets the socket configuration extended parameters for features not included in #SCFGEXT command nor in #SCFGEXT2 command.</p>



#SCFGEXT3 - Socket Configuration Extended 3	SELINT 2
<p>[,<closureTypeCmdModeEnabling> [,<unused_B> [,<unused_C> [,<unused_D>]]]]</p>	<p>Parameters: <connId> - socket connection identifier 1..6</p> <p><immRsp> - Enables AT#SD command mode immediate response 0 – factory default, means that AT#SD in command mode (see AT#SD) returns after the socket is connected 1 – means that AT#SD in command mode returns immediately. Then the state of the connection can be read by the AT command AT#SS</p> <p><closureTypeCmdModeEnabling> - Setting this parameter, successive #SD or #SL with <closureType> parameter 255 setting takes effect in command mode. It has been introduced due to retrocompatibility reason regarding <closureType> behaviour in command mode.</p> <p>0 – #SD or #SL <closureType> 255 in command mode has no effect 1 – #SD or SL <closureType> 255 in command mode takes effect</p> <p>Note: parameter is saved in NVM</p>
<p>AT#SCFGEXT3?</p>	<p>Read command returns the current socket extended configuration parameters values for all the six sockets, in the format:</p> <p>#SCFGEXT3:<connId1>,<immRsp1>,<closureTypeCmdModeEnabling1>, 0,0,0<CR><LF></p> <p>...</p> <p>#SCFGEXT3:<connId6>,<immRsp1>,<closureTypeCmdModeEnabling6>, 0,0,0<CR><LF></p>
<p>AT#SCFGEXT3=?</p>	<p>Test command returns the range of supported values for all the parameters.</p>

3.5.7.7.9. #APPSKTCFG – Configure monsocket parameters

#APPSKTCFG – Configure monsocket parameters	SELINT 2
<p>AT#APPSKTCFG=<connTO> [,<UNUSED_1>[,<UNUSED_2> >[,<UNUSED_3>[,<UNUSED_4>]]]]</p>	<p>This command sets the parameters needed to monsocket services (FTP, SMTP, HTTP)</p> <p>Parameters:</p> <p><connTO> - connection timeout; if we can't establish a connection to the remote within this timeout period, an error is raised. 10..1200 - timeout value in hundreds of milliseconds (default 800)</p> <p>Note: values are automatically saved in NVM.</p>



AT#APPSKTCFG?	Read command returns the current settings in the format: #APPSKTCFG: <connTO>,0,0,0,0<CR><LF>
AT#APPSKTCFG=?	Test command returns the range of supported values for all the parameters.

3.5.7.7.10. Socket Dial - #SD

#SD - Socket Dial	SELINT 2
AT#SD=<connId>,<txProt>,<rPort>,<IPaddr>[,<closureType>[,<IPort>[,<connMode>]]]	<p>Execution command opens a remote connection via socket.</p> <p>Parameters:</p> <ul style="list-style-type: none"> <connId> - socket connection identifier 1..6 <txProt> - transmission protocol 0 - TCP 1 - UDP <rPort> - remote host port to contact 1..65535 <IPaddr> - address of the remote host, string type. This parameter can be either: <ul style="list-style-type: none"> - any valid IP address in the format: "xxx.xxx.xxx.xxx" - any host name to be solved with a DNS query <closureType> - socket closure behaviour for TCP when remote host has closed 0 - local host closes immediately (default) 255 - local host closes after an AT#SH or immediately in case of an abortive disconnect from remote. <IPort> - UDP connections local port 1..65535 <connMode> - Connection mode 0 - online mode connection (default) 1 - command mode connection <p>Note: <closureType> parameter is valid for TCP connections only and has no effect (if used) for UDP connections.</p> <p>Note: <IPort> parameter is valid for UDP connections only and has no effect (if used) for TCP connections.</p> <p>Note: if we set <connMode> to online mode connection and the command is successful we enter in online data mode and we see the intermediate result code CONNECT. After the CONNECT we can suspend the direct interface to the socket connection (nb the socket stays open) using the escape sequence (+++): the module moves back to command mode and we receive the final result code OK after the suspension. After such a suspension, it's possible to resume it in every moment (unless the socket inactivity timer timeouts, see #SCFG) by using the #SO command with the corresponding <connId>.</p>



#SD - Socket Dial	SELINT 2
	<p>Note: if we set <connMode> to command mode connection and the command is successful, the socket is opened and we remain in command mode and we see the result code OK.</p> <p>Note: if there are input data arrived through a connected socket and not yet read because the module entered command mode before reading them (after an escape sequence or after #SD has been issued with <connMode> set to command mode connection), these data are buffered and we receive the SRING URC (SRING presentation format depends on the last #SCFGEXT setting); it's possible to read these data afterwards issuing #SRECV. Under the same hypotheses it's possible to send data while in command mode issuing #SEND</p> <p>Note: resume of the socket(#SO) after suspension or closure(#SH) has to be done on the same instance on which the socket was opened through #SD. In fact, suspension has been done on the instance itself.</p> <p>Note: <closureType> 255 takes effect on a command mode connection(<connMode> set to 1 or online mode connection suspended with +++) only if #SCFGEXT3 <closureTypeCmdModeEnabling> parameter has been previously enabled.</p> <p>Note: if PDP context has not properly opened through #SGACT (for instance: wrongly +CGACT command has been used), then +CME ERROR: 556(context not opened) will got</p>
AT#SD=?	Test command reports the range of values for all the parameters.
Example	<p><i>Open socket 1 in online mode</i></p> <pre>AT#SD=1,0,80,"www.google.com",0,0,0 CONNECT ...</pre> <p><i>Open socket 1 in command mode</i></p> <pre>AT#SD=1,0,80,"www.google.com",0,0,1 OK</pre>

3.5.7.7.11. Socket Restore - #SO

#SO - Socket Restore	SELINT 2
AT#SO=<connId>	<p>Execution command resumes the direct interface to a socket connection which has been suspended by the escape sequence.</p> <p>Parameter: <connId> - socket connection identifier 1..6</p>
AT#SO=?	Test command reports the range of values for <connId> parameter.



3.5.7.7.12. Socket Listen - #SL

#SL - Socket Listen	SELINT 2
<p>AT#SL=<connId>,<listenState>,<listenPort>>[,<closure type>]</p>	<p>This command opens/closes a socket listening for an incoming TCP connection on a specified port.</p> <p>Parameters:</p> <p><connId> - socket connection identifier 1..6</p> <p><listenState> - 0 - closes socket listening 1 - starts socket listening</p> <p><listenPort> - local listening port 1..65535</p> <p><closure type> - socket closure behaviour for TCP when remote host has closed 0 - local host closes immediately (default) 255 - local host closes after an AT#SH or immediately in case of an abortive disconnect from remote.</p> <p>Note: if successful, the command returns a final result code OK. If the ListenAutoRsp flag has not been set through the command AT#SCFGEXT (for the specific connId), then, when a TCP connection request comes on the input port, if the sender is not filtered by internal firewall (see #FRWL), an URC is received:</p> <p>+SRING: <connId></p> <p>Afterwards we can use #SA to accept the connection or #SH to refuse it.</p> <p>If the ListenAutoRsp flag has been set, then, when a TCP connection request comes on the input port, if the sender is not filtered by the internal firewall (see command #FRWL), the connection is automatically accepted: the CONNECT indication is given and the modem goes into online data mode.</p> <p>If the socket is closed by the network the following URC is received:</p> <p>#SL: ABORTED</p> <p>Note: when closing the listening socket <listenPort> is a don't care parameter</p> <p>Note: <closureType> 255 takes effect on a command mode connection (connection accepted through AT#SA=<connId>,1 or online mode connection suspended with +++) only if #SCFGEXT3 <closureTypeCmdModeEnabling></p>



#SLUDP - Socket Listen UDP		SELINT 2
AT#SLUDP?	Read command returns all the actual listening UDP sockets.	
AT#SLUDP=?	Test command returns the range of supported values for all the subparameters.	
Example	<p><i>Next command opens a socket listening for UDP on port 3500.</i></p> <p>AT#SLUDP=1,1,3500 OK</p>	

3.5.7.7.14. Socket Accept - #SA

#SA - Socket Accept		SELINT 2
AT#SA=<connId> [,<connMode>]	<p>Execution command accepts an incoming socket connection after an URC SRING: <connId></p> <p>Parameter: <connId> - socket connection identifier 1..6 <connMode> - Connection mode, as for command #SD. 0 - online mode connection (default) 1 - command mode connection</p> <p>Note: the SRING URC has to be a consequence of a #SL issue.</p> <p>Note: setting the command before to having received a SRING will result in an ERROR indication, giving the information that a connection request has not yet been received</p>	
AT#SA=?	Test command reports the range of values for all the parameters.	

3.5.7.7.15. Receive Data In Command Mode - #SRECV

#SRECV - Receive Data In Command Mode		SELINT 2
AT#SRECV=<connId>, <maxByte>,[<UDPInfo>]	<p>Execution command permits the user to read data arrived through a connected socket, but buffered and not yet read because the module entered command mode before reading them; the module is notified of these data by a SRING URC, whose presentation format depends on the last #SCFGEXT setting.</p> <p>Parameters: <connId> - socket connection identifier 1..6 <maxByte> - max number of bytes to read 1..1500 <UDPInfo></p>	



#SRECV - Receive Data In Command Mode	SELINT 2
	<p>0 – UDP information disabled (default) 1 – UDP information enabled: data are read just until the end of the UDP datagram and the response carries information about the remote IP address and port and about the remaining bytes in the datagram. AT#SRECV=<connId>,<maxBytes>,1 #SRECV: <sourceIP>,<sourcePort><connId>,<recData>,<dataLeft> data Note: issuing #SRECV when there's no buffered data raises an error.</p> <p>Note: The <UDPInfo> parameter is not available in SW 13.00.xxx.</p>
AT#SRECV=?	<p>Test command returns the range of supported values for parameters < connId >,< maxByte > and <UDPInfo></p>
Example	<p>SRING URC (<srMode> be 0, <dataMode> be 0) telling data have just come through connected socket identified by <connId>=1 and are now buffered SRING: 1</p> <p><i>Read in text format the buffered data</i> AT#SRECV=1,15 #SRECV: 1,15 stringa di test</p> <p>OK</p> <p><i>Or:</i> <i>if the received datagram, received from <IPaddr and <IPport> is of 60 bytes</i> AT#SRECV=1,15,1 #SRECV: <IPaddr>,<IPport>,1,15,45 stringa di test</p> <p>OK</p> <p>SRING URC (<srMode> be 1, <dataMode> be 1) telling 15 bytes data have just come through connected socket identified by <connId>=2 and are now buffered SRING: 2,15</p> <p><i>Read in hexadecimal format the buffered data</i> AT#SRECV=2,15 #SRECV: 2,15 737472696e67612064692074657374</p> <p>OK</p> <p><i>Or:</i> <i>if the received datagram, received from <IPaddr and <IPport> is of 60 bytes</i> AT#SRECV=2,15 #SRECV: <IPaddr>,<IPport>,2,15,45 737472696e67612064692074657374</p> <p>OK</p>



#SRECV - Receive Data In Command Mode	SELINT 2
	<p>SRING URC (<srMode> be 2, <dataMode> be 0) displaying (in text format) 15 bytes data that have just come through connected socket identified by <connId>=3; it's no necessary to issue #SRECV to read the data; no data remain in the buffer after this URC</p> <p>SRING: 3,15, stringa di test</p>

3.5.7.7.16. Send Data In Command Mode - #SEND

#SEND - Send Data In Command Mode	SELINT 2
<p>AT#SEND= <connId></p>	<p>Execution command permits, while the module is in command mode, to send data through a connected socket.</p> <p>Parameters: <connId> - socket connection identifier 1..6</p> <p>The device responds to the command with the prompt <greater_than> and waits for the data to send.</p> <p>To complete the operation send Ctrl-Z char (0x1A hex); to exit without writing the message send ESC char (0x1B hex).</p> <p>If data are successfully sent, then the response is OK. If data sending fails for some reason, an error code is reported</p> <p>Note: the maximum number of bytes to send is 1024 bytes for versions till 7.03.02/7.02.07 and from 10.0x.xx0 till 10.0x.xx2, 1500(TCP)/1472(UDP) bytes for versions starting from 10.0x.xx3 ; trying to send more data will cause the surplus to be discarded and lost.</p> <p>Note: it's possible to use #SEND only if the connection was opened by #SD, else the ME is raising an error.</p> <p>Note: a byte corresponding to BS char(0x08) is treated with its corresponding meaning; therefore previous byte will be cancelled(and BS char itself will not be sent)</p>
<p>AT#SEND=?</p>	<p>Test command returns the range of supported values for parameter <connId></p>
<p>Example</p>	<p>Send data through socket number 2 AT#SEND=2 >Test<CTRL-Z> OK</p>



3.5.7.7.17. Socket Info Extended - #SIEXT

#SIEXT – Socket Info Extended	SELINT 2
<p>AT#SIEXT[=<connId>]</p>	<p>Execution command is used to get information about socket data traffic.</p> <p>Parameters: <connId> - socket connection identifier 1..6</p> <p>The response format is:</p> <p>#SIEXT: <connId>,<retx>,<oos>,<rsrvd1>,<rsrvd2></p> <p>where: <connId> - socket connection identifier, as before <retx> - total amount of retransmissions of outgoing packets since the last time the socket connection identified by <connId> has been opened <oos> - total amount of ingoing out of sequence packets (packets which sequence number is greater than the next expected one) since the last time the socket connection identified by <connId> has been opened <rsrvd1/2> - reserved fields for future development of new statistics. Currently they're always equal to 0</p> <p>Note: parameters associated with a socket identified by <connId> are cleared when the socket itself is connected again (#SD or #SA after #SL). Until then, if previous connection has been established and closed, old values are yet available.</p> <p>Note: both <retx> and <oos> parameters are available only for TCP connections; their value is always 0 for UDP connections.</p> <p>Note: issuing #SIEXT<CR> causes getting information about data traffic of all the sockets; the response format is:</p> <p>#SI: <connId1>,<retx1>,<oos1>,<rsrvd1_1>,<rsrvd2_1> <CR><LF></p> <p>...</p> <p>#SI: <connId6>,<retx6>,<oos6>,<rsrvd1_6>,<rsrvd2_6></p>
<p>AT#SIEXT=?</p>	<p>Test command reports the range for parameter <connId>.</p>



3.5.7.7.18. Send data in Command Mode extended - #SSENDEXT

#SSENDEXT - Send Data In Command Mode extended		SELINT 2
AT#SSENDEXT= <connId> , <bytestosend>	<p>Execution command permits, while the module is in command mode, to send data through a connected socket including all possible octets (from 0x00 to 0xFF).</p> <p>Parameters: <connId> - socket connection identifier 1..6 < bytestosend > - number of bytes to be sent Please refer to test command for range</p> <p>The device responds to the command with the prompt <greater_than><space> and waits for the data to send. When <bytestosend> bytes have been sent, operation is automatically completed. If data are successfully sent, then the response is OK. If data sending fails for some reason, an error code is reported.</p> <p>Note: it's possible to use #SSENDEXT only if the connection was opened by #SD, else the ME is raising an error.</p> <p>Note: all special characters are sent like a generic byte. (For instance: 0x08 is simply sent through the socket and don't behave like a BS, i.e. previous character is not deleted)</p>	
AT#SSENDEXT=?	Test command returns the range of supported values for parameters < connId > and <bytestosend>	
Example	<p>Open the socket in command mode: at#sd=1,0,<port>,"IP address",0,0,1 OK</p> <p>Give the command specifying total number of bytes as second parameter: at#ssendext=1,256 > ; // Terminal echo of bytes sent is displayed here OK</p> <p>All possible bytes(from 0x00 to 0xFF) are sent on the socket as generic bytes.</p>	

3.5.7.7.19. IP Easy Authentication Type - #SGACTAUTH

#SGACTAUTH – Easy IP Authentication Type		SELINT 2
AT#SGACTAUTH= <type>	Set command sets the authentication type for IP Easy This command has effect on the authentication mode used on AT#SGACT or	



	<p>the local IP address obtained from the network. It has meaning only if <auto>=1. The unsolicited message is in the format:</p> <p>#SGACT: <ip_address></p> <p>reporting the local IP address obtained from the network.</p> <p>Note: the URC presentation mode <urcmode> is related to the current AT instance only. Last <urcmode> setting is saved for every instance as extended profile parameter, thus it is possible to restore it even if the multiplexer control channel is released and set up, back and forth.</p> <p>Note: < retry > and <delay> setting are global parameter saved in NVM</p> <p>Note: if the automatic activation is enabled on a context, then it is not allowed to modify by the command AT#SCFG the association between the context itself and the socket connection identifier; all the other parameters of command AT#SCFG are modifiable while the socket is not connected</p>
<p>AT#SGACTCFG?</p>	<p>Read command reports the state of all the five contexts, in the format:</p> <p>#SGACTCFG: <cid1>,<retry1>,<delay1> ,< urcmode >CR><LF></p> <p>...</p> <p>#SGACTCFG: <cid5>,<retry5>,<delay5>,< urcmode ></p> <p>where:</p> <p><cidn> - as <cid> before <retryn> - as <retry> before <delayn> - as <delay> before < urcmode > - as < urcmode > before</p>
<p>AT#SGACTCFG =?</p>	<p>Test command reports supported range of values for parameters <cid> ,<retry>,<delay>and < urcmode ></p>

3.5.7.7.21. Context activation and configuration extended - #SGACTCFGEXT

#SGACTCFGEXT - context activation configuration extended	SELINT 2
<p>AT#SGACTCFGEXT= <cid>, <abortAttemptEnable> [,<unused> [,<unused> [,<unused>]]]</p>	<p>Execution command is used to enable new features related to context activation.</p> <p>Parameters:</p> <p><cid> - PDP context identifier (see +CGDCONT command) 1..5 - numeric parameter which specifies a particular PDP context definition</p> <p>< abortAttemptEnable > 0 – old behaviour: no abort possible while attempting context activation</p>



3.5.7.7.23. PAD forward character - #PADFWD

#PADFWD – PAD forward character		SELINT 2
AT#PADFWD=<char> [,<mode>]	<p>This command sets the char that immediately flushes pending data to socket, opened with AT#SD command.</p> <p>Parameters:</p> <p><char>: a number, from 0 to 255, that specifies the ascii code of the char used to flush data</p> <p><mode>: flush mode, 0 – normal mode (default); 1 – reserved;</p> <p>Note: use AT#PADCMD to enable the socket char-flush activity.</p>	
AT#PADFWD?	<p>Read command reports the currently selected <char> and <mode> in the format:</p> <p>#PADFWD: <char>,mode</p>	
AT#PADFWD=?	<p>Test command reports the supported range of values for parameters <char> and <mode>.</p>	

3.5.7.7.24. Base64 encoding/decoding of data sent/received on a socket - #BASE64

#BASE64 – Base64 encoding/decoding of data sent/received on a skt		SELINT 2
AT#BASE64= <connId>,<enc>,<dec> [,<unused_B > [,<unused_C >]]	<p>Set command enables base64 encoding and/or decoding of data sent/received to/from the socket in online or in command mode.</p> <p>Parameters:</p> <p><connId> - socket connection identifier 1..6</p> <p><enc> 0 – no encoding of data received from serial port. 1 - MIME RFC2045 base64 encoding of data received from serial port that have to be sent to <connId> socket.</p> <p>Note: as indicated from RFC2045 the encoded output stream is represented in lines of no more than 76 characters each. Lines are defined as sequences of octets separated by a CRLF sequence.</p> <p>2 - RFC 3548 base64 encoding of data received from serial port that have to be sent to <connId> socket.</p>	



	<p>Note: as indicated from RFC3548 CRLF have not to be added.</p> <p><dec> 0 – no decoding of data received from socket <connId>. 1 - MIME RFC2045 base64 decoding of data received from socket <connId> and sent to serial port. (Same rule as for <enc> regarding line feeds in the received file that has to be decoded) 2 - RFC3548 base64 decoding of data received from socket <connId> and sent to serial port. (Same rule as for <enc> regarding line feeds in the received file that has to be decoded)</p> <p>Note: it is possible to use command to change current <enc>/<dec> settings for a socket already opened in command mode or in online mode after suspending it. (In this last case obviously it is necessary to set AT#SKIPESC=1).</p> <p>Note: to use #BASE64 in command mode, if data to send exceed maximum value for #SENDEXT command, they have to be divided in multiple parts. These parts have to be a multiple of 57 bytes, except for the last one, to distinguish EOF condition. (Base64 encoding rules) For the same reason if #SRECV command is used by the application to receive data, a multiple of 78 bytes has to be considered.</p> <p>Note: to use #SRECV to receive data with <dec> enabled, it is necessary to consider that: reading <maxByte> bytes from socket, user will get less due to decoding that is performed.</p> <p>Note: on version 10.0x.xx3 only <connId> 1 is available.</p> <p>Note: values are automatically saved in NVM.</p>
<p>AT# BASE64?</p>	<p>Read command returns the current <enc>/<dec> settings for all the six sockets, in the format:</p> <p># BASE64:<connId1><enc1>,<dec1>,0,0<CR><LF> ... # BASE64:<connId6>,<enc6>,<dec6>,0,0<CR><LF></p>
<p>AT# BASE64=?</p>	<p>Test command returns the range of supported values for all the subparameters.</p>



<p>Example</p>	<pre> AT#SKIPESC=1 OK AT#SD=<connId>,<txProt>,<rPort>,<IPaddr> CONNECT //Data sent without modifications(default) +++ (suspension) OK at#base64=<connId>,1,0 OK AT#SO=<connId> CONNECT // Data received from serial port are encoded // base64 before to be sent on the socket +++ (suspension) OK at#base64=<connId>,0,1 OK AT#SO=<connId> CONNECT // Data received from socket are decoded // base64 before to be sent on the serial port +++ (suspension) </pre>
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3.5.7.7.25. Send UDP data to a specific remote host - #SENDUDP

#SENDUDP – send UDP data to a specific remote host	SELINT 2
<p>AT#SENDUDP=<connId> ,<remoteIP>,<remotePort></p>	<p>This command permits, while the module is in command mode, to send data over UDP to a specific remote host.</p> <p>UDP connection has to be previously completed with a first remote host through #SLUDP / #SA.</p> <p>Then, if we receive data from this or another host, we are able to send data to it.</p> <p>Like command #SEND, the device responds with ‘> ‘ and waits for the data to send.</p>



	<p>Parameters:</p> <p><connId> - socket connection identifier 1..6</p> <p><remoteIP> - IP address of the remote host in dotted decimal notation, string type: "xxx.xxx.xxx.xxx"</p> <p><remotePort> - remote host port 1..65535</p> <p>Note: after SRING that indicates incoming UDP data and issuing #SRECV to receive data itself, through #SS is possible to check last remote host (IP/Port).</p> <p>Note: if successive resume of the socket to online mode is performed(#SO), connection with first remote host is restored as it was before.</p> <p>Note: the maximum number of bytes to send is 1472 bytes</p>
<p>AT#SSENDUDP=?</p>	<p>Test command reports the supported range of values for parameters <connId>, <remoteIP> and <remotePort></p>
<p>Example</p>	<p><i>Starts listening on <LocPort>(previous setting of firewall through #FRWL has to be done)</i></p> <p>AT#SLUDP=1,1,<LocPort> OK</p> <p>SRING: 1 // UDP data from a remote host available</p> <p>AT#SA=1,1 OK</p> <p>SRING: 1</p> <p>AT#SI=1 #SI: 1,0,0,23,0 // 23 bytes to read</p> <p>OK</p> <p>AT#SRECV=1,23 #SRECV:1,23 message from first host</p> <p>OK</p> <p>AT#SS=1</p>



	<pre>#SS: 1,2,<LocIP>,<LocPort>,<RemIP1>,<RemPort1> OK AT#SSENDUDP=1,<RemIP1>,<RemPort1> >response to first host OK SRING: 1 // UDP data from a remote host available AT#SI=1 #SI: 1,22,23,24,0 // 24 bytes to read OK AT#SRECV=1,24 #SRECV:1,24 message from second host OK AT#SS=1 #SS: 1,2,<LocIP>,<LocPort>,<RemIP2>,<RemPort2> OK Remote host has changed, we want to send a reponse: AT#SSENDUDP=1,<RemIP2>,<RemPort2> >response to second host OK</pre>
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3.5.7.7.26. Send UDP data to a specific remote host extended - #SSENDUDPEXT

#SSENDUDPEXT – send UDP data to a specific remote host extended		SELINT 2
<pre>AT#SSENDUDPEXT =<connId>,<bytestosend>, ,<remoteIP>,<remotePort></pre>	<p>This command permits, while the module is in command mode, to send data over UDP to a specific remote host including all possible octets(from 0x00 to 0xFF)</p> <p>As indicated about #SSENDUDP: UDP socket has to be previously opened through #SLUDP / #SA, then we are able to send data to different remote hosts</p> <p>Like #SSENDEXT, the device responds with the prompt '>' and waits for the data to send, operation is automatically completed when <bytestosend> have been sent.</p> <p>Parameters: <connId> - socket connection identifier</p>	



	<p>1..6</p> <p><bytestosend> - number of bytes to be sent 1-1472</p> <p><remoteIP> - IP address of the remote host in dotted decimal notation, string type: "xxx.xxx.xxx.xxx"</p> <p><remotePort> - remote host port 1..65535</p>
AT#SSENDUDPEXT=?	Test command reports the supported range of values for parameters < connId >, < bytestosend >, < remoteIP > and < remotePort >

3.5.7.7.27. Socket Type - #ST

#ST – Socket Type	SELINT 2
<p>AT#ST [=<ConnId>]</p>	<p>Set command reports the current type of the socket (TCP/UDP) and its direction (Dialer / Listener)</p> <p>Parameter: < ConnId > - socket connection identifier 1..6</p> <p>The response format is:</p> <p>#ST: <connId>,<type>,<direction></p> <p>where</p> <p>< connId > - socket connection identifier 1..6</p> <p>< type > - socket type 0 – No socket 1 – TCP socket 2 – UDP socket</p> <p>< direction > - direction of the socket 0 – No 1 – Dialer 2 – Listener</p> <p>Note: issuing #ST<CR> causes getting information about type of all the sockets; the response format is:</p> <p>#ST: <connId1>,<type1>,<direction1> <CR><LF> ...</p>



#ST – Socket Type	SELINT 2
	#ST: <connId6>,< type 6>,< direction 6>
AT#ST=?	Test command reports the range for parameter <connId>.
Example	<p>single socket:</p> <p>AT#ST=3 #ST: 3,2,1</p> <p>Socket 3 is an UDP dialer.</p> <p>All sockets:</p> <p>AT#ST #ST: 1,0,0 #ST: 2,0,0 #ST: 3,2,1 #ST: 4,2,2 #ST: 5,1,1 #ST: 6,1,2</p> <p>Socket 1 is closed. Socket 2 is closed. Socket 3 is an UDP dialer Socket 4 is an UDP listener Socket 5 is a TCP dialer Socket 6 is a TCP listener</p>

3.5.7.7.28. Detect the cause of a socket disconnection - #SLASTCLOSURE

#SLASTCLOSURE – Detect the cause of a socket disconnection	SELINT 2
AT#SLASTCLOSURE[= {<connId>}]	<p>Execution command reports socket disconnection cause</p> <p>Parameters: <connId> - socket connection identifier 1..6</p> <p>The response format is:</p> <p>#SLASTCLOSURE: <connId>,<cause></p> <p>where: <connId> - socket connection identifier, as before <cause> - socket disconnection cause:</p>



	<p>0 – not available(socket has not yet been closed)</p> <p>1.- remote host TCP connection close due to FIN/END: normal remote disconnection decided by the remote application</p> <p>2 -.remote host TCP connection close due to RST, all others cases in which the socket is aborted without indication from peer (for instance because peer doesn't send ack after maximum number of retransmissions/peer is no more alive). All these cases include all the "FATAL" errors after rcv or send on the TCP socket(named as different from EWOULDBLOCK)</p> <p>3.- socket inactivity timeout</p> <p>4.- network deactivation(PDP context deactivation from network)</p> <p>Note: issuing #SLASTCLOSURE<CR> causes getting socket disconnection reason for all the sockets</p> <p>Note: any time socket is re-opened, last disconnection cause is reset. Command report 0(not available).</p> <p>Note: user closure cause(#SH) is not considered and if a user closure is performed after remote disconnection, remote disconnection cause remains saved and is not overwritten.</p> <p>Note: if more consecutive closure causes are received, the original disconnection cause is saved. (For instance: if a TCP FIN is received from remote and later a TCP RST because we continue to send data, FIN cause is saved and not overwritten)</p> <p>Note: also in case of <closureType>(#SD) set to 255, if the socket has not yet been closed by user after the escape sequence, #SLASTCLOSURE indicates remote disconnection cause if it has been received.</p> <p>Note: in case of UDP, cause 2 indicates abnormal(local) disconnection. Cause 3 and 4 are still possible. (Cause 1 is obviously never possible)</p>
<p>AT#SLASTCLOSURE=?</p>	<p>Test command reports the supported range for parameter <connId></p>



3.5.7.7.29. Open a connection, send data and close connection - #SSENDLINE

#SSENDLINE – Open a connection,send data,close connection	SELINT 2
<p>AT#SSENDLINE=<data></p>	<p>This command permits to open a TCP/UDP connection, send specified data and close the TCP/UDP connection. The remote host/port of the connection have to be previously specified with #IPCONSUMECFG command.</p> <p>Parameters: <data> - text to send, shall be enclosed between double quotes.</p> <p>Note: maximum allowed amount of data is 380 octets</p> <p>Note: in case of UDP obviously only local opening/closure is done, datagram is sent with <data> contained in the payload.</p>
<p>AT#SSENDLINE=?</p>	<p>Test command reports the supported range of values for parameters</p>
<p>Example</p>	<pre>at+cgdcont=1,"IP","APN" OK at#ipconsumecfg=1,0,"remoteHost",remotePort OK // Socket with <connId> 1 will be used by #ssendline; // TCP will be the transmission protocol; // connection will be opened with "remoteHost"/remotePort at#sgact=1,1 #SGACT: xxx.xxx.xxx.xxx OK at#ssendline="test sample" // TCP connection with "remoteHost"/remotePort is opened , // data between double quotes are sent, // then TCP connection is closed OK</pre>

3.5.7.7.30. #SGACT and #SSENDLINE configuration - #IPCONSUMECFG

#IPCONSUMECFG – #SGACT/#SSENDLINE configuration	SELINT 2
<p>AT#IPCONSUMECFG= [<connId> [,<txProt> [,<remoteHost> [,<remotePort></p>	<p>This command configures #SGACT authentication and #SSENDLINE connection parameters.</p> <p>Parameters:</p>



<pre>[,<authIMEI/ICCIDena> [,<unused_A> [,<unused_B> [,<unused_C>]]]]]]]</pre>	<p>Following settings take effect on successive #SENDLINE command:</p> <p><connId>: - socket connection identifier 1(default)..6 Note: verify <connId> is currently available(i.e: not already connected) by multsocket commands(#SD,#SL,..) before entering successive #SENDLINE command</p> <p><txProt> - transmission protocol 0 – TCP(default) 1 – UDP</p> <p><remoteHost> - address of the remote host, string type. This parameter can be either: - any valid IP address in the format: “xxx.xxx.xxx.xxx” - any host name to be solved with a DNS query. Default “”</p> <p><remotePort> - remote host port to contact 1..65535 Default 1024</p> <p>Following setting takes effect on successive #SGACT command:</p> <p><authIMEI/ICCIDena> - enables PDP context activation (#SGACT) authentication(user/pwd) with ICCID/IMEI</p> <p>0 – disable #SGACT authentication with IMEI/ICCID as user/pwd(default) 1 – enable #SGACT authentication with with IMEI/ICCID as user/pwd Note: <authIMEI/ICCIDena> setting takes effect when successive #SGACT not indicating <userId> and <pwd> will be used</p> <p>Note: the values set by command are directly stored in NVM and doesn't depend on the specific CMUX instance.</p>
<p>AT#IPCONSUMEFCG?</p>	<p>Read command reports the currently configuration parameters in the format:</p> <p>#IPCONSUMEFCG: <connId>,<txProt>,<remoteHost>,<remotePort>,<authIMEI/ICCIDena>,<0>,<0>,<0>,<CR><LF></p>
<p>AT#IPCONSUMEFCG=?</p>	<p>Test command reports the supported range of values for all the parameters</p>





3.5.7.8. FTP AT Commands

3.5.7.8.1. FTP Time-Out - #FTPTO

#FTPTO - FTP Time-Out		SELINT 0 / 1
AT#FTPTO[= <tout>]	Set command sets the time-out used when opening either the FTP control channel or the FTP traffic channel. Parameter: <tout> - time-out in 100 ms units 100..5000 - hundreds of ms (factory default is 100) Note: The parameter is not saved in NVM. Note: if parameter <tout> is omitted the behaviour of Set command is the same as Read command.	
AT#FTPTO?	Read command returns the current FTP operations time-out, in the format: #FTPTO: <tout>	
AT#FTPTO=?	Test command returns the range of supported values for parameter <tout>	

#FTPTO - FTP Time-Out		SELINT 2
AT#FTPTO= [<tout>]	Set command sets the time-out used when opening either the FTP control channel or the FTP traffic channel. Parameter: <tout> - time-out in 100 ms units 100..5000 - hundreds of ms (factory default is 100) Note: The parameter is not saved in NVM.	
AT#FTPTO?	Read command returns the current FTP operations time-out, in the format: #FTPTO: <tout>	
AT#FTPTO=?	Test command returns the range of supported values for parameter <tout>	

3.5.7.8.2. FTP Open - #FTPOPEN

#FTPOPEN - FTP Open		SELINT 0 / 1
AT#FTPOPEN= <server:port>, <username>, <password>[, <mode>]	Execution command opens an FTP connection toward the FTP server. Parameters: <server:port> - string type, address and port of FTP server (factory default port 21). <username> - string type, authentication user identification string for FTP. <password> - string type, authentication password for FTP. <mode>	



#FTPOPEN - FTP Open	SELINT 0 / 1
<p>0 - active mode (default) 1 - passive mode</p> <p>Note: Before opening an FTP connection the GPRS context must have been activated by AT#GPRS=1</p>	

#FTPOPEN - FTP Open	SELINT 2
<p>AT#FTPOPEN= [<server:port>, <username>, <password>[, <mode>]]</p> <p>Execution command opens an FTP connection toward the FTP server.</p> <p>Parameters: <server:port> - string type, address and port of FTP server (factory default port 21). <username> - string type, authentication user identification string for FTP. <password> - string type, authentication password for FTP. <mode> 0 - active mode (factory default) 1 - passive mode</p> <p>Note: Before opening an FTP connection either the GSM context must have been activated by AT#SGACT=0,1 or the PDP context #1 must have been activated by AT#SGACT=1,1 or by AT#GPRS=1</p>	
AT#FTPOPEN=?	Test command returns the OK result code.

3.5.7.8.3. FTP Close - #FTPCLOSE

#FTPCLOSE - FTP Close	SELINT 0 / 1
AT#FTPCLOSE	Execution command closes an FTP connection.
AT#FTPCLOSE?	Read command behavior is the same as Execution command.

#FTPCLOSE - FTP Close	SELINT 2
AT#FTPCLOSE	Execution command closes an FTP connection.
AT#FTPCLOSE=?	Test command returns the OK result code.

3.5.7.8.4. FTP Put - #FTPPUT

#FTPPUT - FTP Put	SELINT 0 / 1
<p>AT#FTPPUT= <filename></p> <p>Execution command, issued during an FTP connection, opens a data connection and starts sending <filename> file to the FTP server.</p> <p>If the data connection succeeds, a CONNECT indication is sent, afterward a NO CARRIER indication is sent when the socket is closed.</p> <p>Parameter:</p>	



#FTPPUT - FTP Put	SELINT 0 / 1
	<p><filename> - string type, name of the file (maximum length 200 characters)</p> <p>Note: use the escape sequence +++ to close the data connection.</p> <p>Note: The command causes an ERROR result code to be returned if no FTP connection has been opened yet.</p>
AT#FTPPUT=?	Test command returns the OK result code.

#FTPPUT - FTP Put	SELINT 2
AT#FTPPUT= [[<filename>], [<connMode>]]	<p>Execution command, issued during an FTP connection, opens a data connection and starts sending <filename> file to the FTP server.</p> <p>If the data connection succeeds, a CONNECT indication is sent. afterward a NO CARRIER indication is sent when the socket is closed.</p> <p>Note: if we set <connMode> to 1, the data connection is opened and we remain in command mode and we see the result code OK (instead of CONNECT)</p> <p>Parameters: <filename> - string type, name of the file (maximum length 200 characters)</p> <p><connMode> 0 - online mode 1 – command mode</p> <p>Note: use the escape sequence +++ to close the data connection.</p> <p>Note: The command causes an ERROR result code to be returned if no FTP connection has been opened yet.</p> <p>Note: The <connMode> parameter is not available in SW 13.00.xxx.</p>
AT#FTPPUT=?	Test command reports the supported range of values for parameters <filename> and <connMode>

3.5.7.8.5. FTP Get - #FTPGET

#FTPGET - FTP Get	SELINT 0 / 1
AT#FTPGET= <filename>	<p>Execution command, issued during an FTP connection, opens a data connection and starts getting a file from the FTP server.</p> <p>If the data connection succeeds a CONNECT indication is sent, otherwise a NO CARRIER indication is sent.</p> <p>The file is received on the serial port.</p>



#FTPGET - FTP Get	SELINT 0 / 1
	<p>Parameter: <filename> - file name, string type.</p> <p>Note: The command causes an ERROR result code to be returned in case no FTP connection has been opened yet.</p> <p>Note: Command closure should always be handled by application. In order to avoid download stall situations a timeout should be implemented by the application.</p>

#FTPGET - FTP Get	SELINT 2
<p>AT#FTPGET= [<filename>]</p>	<p>Execution command, issued during an FTP connection, opens a data connection and starts getting a file from the FTP server. If the data connection succeeds a CONNECT indication is sent. The file is received on the serial port.</p> <p>Parameter: <filename> - file name, string type.</p> <p>Note: The command causes an ERROR result code to be returned in case no FTP connection has been opened yet.</p> <p>Note: Command closure should always be handled by application. In order to avoid download stall situations a timeout should be implemented by the application.</p>
AT#FTPGET=?	Test command returns the OK result code.

3.5.7.8.6. FTP GET in command mode - #FTPGETPKT

#FTPGETPKT - FTP Get in command mode	SELINT 2
<p>AT#FTPGETPKT= <filename> [,<viewMode>]</p>	<p>Execution command, issued during an FTP connection, opens a data connection and starts getting a file from the FTP server while remaining in command mode.</p> <p>The data port is opened and we remain in command mode and we see the result code OK. Retrieval from FTP server of “remotefile” is started, but data are only buffered in the module. It’s possible to read data afterwards issuing #FTPGETPKT command</p> <p>Parameters: <filename> - file name, string type (maximum length: 200 characters). <viewMode> - permits to choose view mode; numeric parameter: 0 – text format (default) 1 – hexadecimal format</p> <p>Note: The command causes an ERROR result code to be returned in case no FTP connection has been opened yet.</p>



#FTPGETPKT - FTP Get in command mode		SELINT 2
	Note: Command closure should always be handled by application. In order to avoid download stall situations a timeout should be implemented by the application.	
AT#FTPGETPKT?	Read command reports current download state for <filename> with <viewMode> chosen, in the format: #FTPGETPKT: <remotefile>,<viewMode>,<eof> where <eof> is a numeric parameter: 0 = file currently being transferred 1 = complete file has been transferred to FTP client	
AT#FTPGETPKT=?	Test command returns the OK result code.	

3.5.7.8.7. FTP Type - #FTPTYPE

#FTPTYPE - FTP Type		SELINT 0 / 1
AT#FTPTYPE[=<type>]	Set command, issued during an FTP connection, sets the file transfer type. Parameter: <type> - file transfer type: 0 - binary 1 - ascii Note: The command causes an ERROR result code to be returned if no FTP connection has been opened yet. Note: If the parameter is omitted then the behaviour of Set command is the same of Read command.	
#FTPTYPE?	Read command returns the current file transfer type, in the format: #FTPTYPE: <type>	
#FTPTYPE=?	Test command returns the range of available values for parameter <type>: #FTPTYPE: (0,1)	

#FTPTYPE - FTP Type		SELINT 2
AT#FTPTYPE=[<type>]	Set command, issued during an FTP connection, sets the file transfer type. Parameter: <type> - file transfer type: 0 - binary 1 - ascii Note: The command causes an ERROR result code to be returned if no FTP connection has been opened yet.	



#FTPTYPE - FTP Type		SELINT 2
#FTPTYPE?	Read command returns the current file transfer type, in the format: #FTPTYPE: <type>	
#FTPTYPE=?	Test command returns the range of available values for parameter <type>: #FTPTYPE: (0,1)	

3.5.7.8.8. FTP Read Message - #FTPMSG

#FTPMSG - FTP Read Message		SELINT 0 / 1
AT#FTPMSG	Execution command returns the last response from the server.	
AT#FTPMSG?	Read command behaviour is the same as Execution command.	

#FTPMSG - FTP Read Message		SELINT 2
AT#FTPMSG	Execution command returns the last response from the server.	
AT#FTPMSG=?	Test command returns the OK result code.	

3.5.7.8.9. FTP Delete - #FTPDELE

#FTPDELE - FTP Delete		SELINT 0 / 1
AT#FTPDELE= <filename>	<p>Execution command, issued during an FTP connection, deletes a file from the remote working directory.</p> <p>Parameter: <filename> - string type, it's the name of the file to delete.</p> <p>Note: The command causes an ERROR result code to be returned if no FTP connection has been opened yet.</p> <p>Note: In case of delayed server response, it is necessary to check if ERROR indication is temporary due to timing out while waiting. In this case #FTPMSG response will result temporary empty. (Checking later #FTPMSG response will match with delayed server response)</p>	

#FTPDELE - FTP Delete		SELINT 2
AT#FTPDELE= [<filename>]	<p>Execution command, issued during an FTP connection, deletes a file from the remote working directory.</p> <p>Parameter: <filename> - string type, it's the name of the file to delete.</p> <p>Note: The command causes an ERROR result code to be returned if no FTP connection has been opened yet.</p>	



#FTPCWD - FTP Change Working Directory		SELINT 2
AT#FTPCWD=?	Test command returns the OK result code.	

3.5.7.8.12. FTP List - #FTPLIST

#FTPLIST - FTP List		SELINT 0 / 1
AT#FTPLIST[=<name>]	<p>Execution command, issued during an FTP connection, opens a data connection and starts getting from the server the list of contents of the specified directory or the properties of the specified file.</p> <p>Parameter: <name> - string type, it's the name of the directory or file.</p> <p>Note: The command causes an ERROR result code to be returned if no FTP connection has been opened yet.</p> <p>Note: issuing AT#FTPLIST<CR> opens a data connection and starts getting from the server the list of contents of the working directory.</p>	

#FTPLIST - FTP List		SELINT 2
AT#FTPLIST[=<name>]	<p>Execution command, issued during an FTP connection, opens a data connection and starts getting from the server the list of contents of the specified directory or the properties of the specified file.</p> <p>Parameter: <name> - string type, it's the name of the directory or file.</p> <p>Note: The command causes an ERROR result code to be returned if no FTP connection has been opened yet.</p> <p>Note: issuing AT#FTPLIST<CR> opens a data connection and starts getting from the server the list of contents of the working directory.</p>	
AT#FTPLIST=?	Test command returns the OK result code.	

3.5.7.8.13. Get file size - #FTPFSIZE

#FTPFSIZE – Get file size from FTP server		SELINT 2
AT#FTPFSIZE=<filename>	<p>Execution command, issued during an FTP connection, permits to get file size of <filename> file.</p> <p>Note: FTPTYPE=0 command has to be issued before FTPFSIZE command, to set file transfer type to binary mode.</p>	
AT#FTPFSIZE=?	Test command returns the OK result code.	



3.5.7.8.14. FTP Append - #FTPAPP

#FTPAPP - FTP Append	SELINT 2
<p>AT#FTPAPP= [[<filename>], <connMode>]</p>	<p>Execution command, issued during an FTP connection, opens a data connection and append data to existing <filename> file.</p> <p>If the data connection succeeds, a CONNECT indication is sent, afterward a NO CARRIER indication is sent when the socket is closed.</p> <p>Note: if we set <connMode> to 1, the data connection is opened and we remain in command mode and we see the result code OK (instead of CONNECT)</p> <p>Parameter: <filename> - string type, name of the file.</p> <p><connMode> 0 - online mode 1 - command mode</p> <p>Note: use the escape sequence +++ to close the data connection.</p> <p>Note: The command causes an ERROR result code to be returned if no FTP connection has been opened yet.</p> <p>Note: The <connMode> parameter is not available in SW 13.00.xxx.</p>
<p>AT#FTPAPP=?</p>	<p>Test command reports the supported range of values for parameters <filename> and <connMode></p>

3.5.7.8.15. Send data on a FTP data port while the module is in command mode - #FTPAPPEXT

#FTPAPPEXT – send data on a FTP data port while the module is in command mode	SELINT 2
<p>AT#FTPAPPEXT= <bytestosend>[,< eof >]</p>	<p>This command permits to send data on a FTP data port while the module is in command mode.</p> <p>FTP data port has to be previously opened through #FTPPUT (or #FTPAPP) with <connMode> parameter set to command mode connection.</p> <p>Parameters: < bytestosend > - number of bytes to be sent 1..1500</p> <p><eof> - data port closure 0 – normal sending of data chunk 1 – close data port after sending data chunk</p>



	<p>The device responds to the command with the prompt <greater_than><space> and waits for the data to send. When <bytestosend> bytes have been sent, operation is automatically completed.</p> <p>If (all or part of the) data are successfully sent, then the response is:</p> <p>#FTPAPPEXT: <sentbytes></p> <p>OK</p> <p>Where <sentbytes> are the number of sent bytes.</p> <p>Note: <sentbytes> could be less than <bytestosend></p> <p>If data sending fails for some reason, an error code is reported.</p>
<p>AT#FTPAPPEXT=?</p>	<p>Test command reports the supported range of values for parameters <bytestosend> and <eof></p>
<p>Example</p>	<pre> AT#FTPOPEN="IP",username,password OK AT#FTPPUT=<filename>,1 -> the new param 1 means that we open the connection in command mode OK // Here data socket will stay opened, but interface will be //available(command mode) AT#FTPAPPEXT=Size >... write here the binary data. As soon Size byte are written, data are sent and OK is returned #FTPAPPEXT: <SentBytes> OK // Last #FTPAPPEXT will close the data socket, because // second(optional) parameter has this meaning: </pre>



	<p><i>AT#FTPAPPEXT=Size,1</i> <i>>...write here the binary data. As soon Size byte are written, data are sent and OK is returned</i> <i>#FTPAPPEXT: <SentBytes></i> <i>OK</i></p> <p><i>// If the user has to reopen the data port to send another</i> <i>// (or append to the same) file, he can restart with the</i> <i>// FTPPUT(or FTPAPP.)</i> <i>//Then FTPAPPEXT,... to send the data chunks on the //reopened data port.</i></p> <p><i>// Note: if while sending the chunks the data port is closed</i> <i>// from remote, user will be aware of it because #FTPAPPEXT // will indicate ERROR and cause (available if previously //issued the command AT+CMEE=2) will indicate that</i> <i>//socket has been closed.</i> <i>// Also in this case obviously, data port will have to be //reopened with FTPPUT and so on...(same sequence)</i></p>
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3.5.7.8.16. Set restart position - # FTPREST

#FTPREST – Set restart position for FTP GET		SELINT 2
<p>AT#FTPREST= <restartposition></p>	<p>Set command sets the restart position for successive FTPGET (or FTPGETPKT) command.</p> <p>It permits to restart a previously interrupted FTP download from the selected position in byte.</p> <p>Parameter: <restartposition> position in byte of restarting for successive FTPGET (or FTPGETPKT)</p> <p>Note: It's necessary to issue FTPTYPE=0 before successive FTPGET (or FTPGETPKT command) to set binary file transfer type.</p> <p>Note: Setting <restartposition> has effect on successive FTP download. After successive successfully initiated FTPGET(or FTPGETPKT) command <restartposition> is automatically reset.</p> <p>Note: value set for <restartposition> has effect on next data transfer(data port opened by FTPGET or FTPGETPKT). Then <restartposition> value is automatically assigned to 0 for next download.</p>	



#FTPREST – Set restart position for FTP GET		SELINT 2
AT# FTPREST?	Read command returns the current <restartposition> #FTPREST: <restartposition>	
AT# FTPREST=?	Test command returns the OK result code.	

3.5.7.8.17. Receive Data In Command Mode - #FTP_RECV

#FTP_RECV – Receive Data In Command Mode		SELINT 2
AT#FTP_RECV=<blocksize>	<p>Execution command permits the user to transfer at most <blocksize> bytes of remote file, provided that retrieving from the FTP server has been started with a previous #FTP_GET_PKT command, onto the serial port.</p> <p>This number is limited to the current number of bytes of the remote file which have been transferred from the FTP server.</p> <p>Parameters: < blocksize > - max number of bytes to read 1..3000</p> <p>Note: it's necessary to have previously opened FTP data port and started download and buffering of remote file through #FTP_GET_PKT command</p> <p>Note: issuing #FTP_RECV when there's no FTP data port opened raises an error.</p> <p>Note: data port will stay opened if socket is temporary waiting to receive data(FTP_RECV returns 0 and FTP_GET_PKT gives a EOF 0 indication).</p>	
AT# FTP_RECV?	<p>Read command reports the number of bytes currently received from FTP server, in the format:</p> <p>#FTP_RECV: <available></p>	



#FTPRECV – Receive Data In Command Mode		SELINT 2
AT# FTPRECV=?	Test command returns the range of supported values for <blocksize> parameter.	
Example	<p>AT#FTPRECV? #FTPRECV: 3000</p> <p>OK</p> <p>Read required part of the buffered data:</p> <p>AT#FTPRECV=400 #FTPRECV: 400</p> <p>Text row number 1 * 111111111111111111111111 * Text row number 2 * 222222222222222222222222 * Text row number 3 * 333333333333333333333333 * Text row number 4 * 444444444444444444444444 * Text row number 5 * 555555555555555555555555 * Text row number 6 * 666666666666666666666666 * Text row number 7 * 777777777777777777777777 * Text row number 8 * 888888888888888888888888</p> <p>OK</p> <p>AT#FTPRECV =200 #FTPRECV: 200 88888 *</p> <p>Text row number 9 * 999999999999999999999999 * Text row number 10 * AAAAAAAAAAAAAAAAAAAAAAAAAA * Text row number 12 * BBBBBBBBBBBBBBBBBBBBBBBBBB * Text row number 13 * CCCCCCCCCCCCCCCC</p> <p>OK</p> <p>Note: to check when you have received complete file it's possible to use AT#FTPGETPKT read command:</p> <p>AT#FTPGETPKT? #FTPGETPKT: sample.txt,0,1</p> <p>OK</p> <p>(you will get <eof> set to 1)</p>	



3.5.7.8.18. FTP configuration - #FTPCFG

#FTPCFG – ftp configuration	SELINT 2
<p>AT#FTPCFG=<tout>,<IPPignoring>[,<FTPSEn>[,<FTPSendSize>]]</p>	<p><tout> - time-out in 100 ms units 100..5000 - hundreds of ms (factory default is 100)</p> <p>Set command sets the time-out used when opening either the FTP control channel or the FTP traffic channel.</p> <p>Note: The parameter is not saved in NVM.</p> <p><IPPignoring> 0: No IP Private ignoring. During a FTP passive mode connection client uses the IP address received from server, even if it is a private IPV4 address. 1: IP Private ignoring enabled. During a FTP passive mode connection if the server sends a private IPV4 address the client doesn't consider this and connects with server using the IP address used in AT#FTPOPEN.</p> <p>Note: obviously during a FTP active mode connection, parameter doesn't take effect because it has no meaning.</p> <p>[,<FTPSEn>] 0 – Disable FTPS security: all FTP commands will perform plain FTP connections. 1 – Enable FTPS security: from now on any FTP session opened through FTP commands will be compliant to FTPS protocol, providing authentication and encrypted communication.</p> <p><FTPSendSize> - send size to be used by the TCP/IP stack for data sending. It takes effect on send size when FTP upload in online mode is running.</p> <p>Send is not called until <FTPSendSize> bytes are reached, unless internal transmission timer(5 sec) expires.</p> <p>0 – select automatically default value(300).. 1 – 1500 – send size in bytes.</p> <p>Note: in order to maintain retrocompatibility, read command (AT#FTPCFG?) doesn't show this parameter until it is set.</p> <p>Once it is set, read command includes it in the response no matter if later it is included or not in set command.</p> <p>Note: in FTPS mode, FTP commands response time is generally bigger than in normal FTP mode. This latency is mainly due to the SSL handshake that has to be done at the opening of the FTP session</p>



	<p>(#FTPOPEN) and whenever a data exchange is required (#FTPPUT, #FTPGET etcetera).</p> <p>Note: FTP security cannot be enabled if an SSL socket has been activated by means of #SSLD or #SSLFASTD. Moreover, trying to dial an SSL socket when <enable>=1 raises an error.</p> <p>Note: any <enable> change is forbidden during an open FTP connection (with or without security). Furthermore, SSL configuration settings are forbidden during FTPS connections</p>
AT#FTPCFG?	Read command reports the currently selected parameters in the format: #FTPCFG: <tout>,<IPPignoring>,<FTPSEn>
AT+FTPCFG=?	Test command reports the supported range of values for parameter(s) <tout>,<IPPignoring> and <FTPSEn>



3.5.7.9. Enhanced IP Easy Extension AT Commands

3.5.7.9.1. Authentication User ID - #USERID

#USERID - Authentication User ID		SELINT 0 / 1
AT#USERID [=<user>]	Set command sets the user identification string to be used during the authentication step. Parameter: <user> - string type, it's the authentication User Id; the max length for this value is the output of Test command, AT#USERID=? (factory default is the empty string ""). Note: If parameter is omitted then the behaviour of Set command is the same of Read command.	
AT#USERID?	Read command reports the current user identification string, in the format: #USERID: <user> .	
AT#USERID=?	Test command returns the maximum allowed length of the string parameter <user>.	
Example	AT#USERID="myName" OK AT#USERID? #USERID: "myName" OK	

#USERID - Authentication User ID		SELINT 2
AT#USERID= [<user>]	Set command sets the user identification string to be used during the authentication step. Parameter: <user> - string type, it's the authentication User Id; the max length for this value is the output of Test command, AT#USERID=? (factory default is the empty string ""). Note: this command is not allowed for sockets associated to a GSM context (see #SCFG).	
AT#USERID?	Read command reports the current user identification string, in the format: #USERID: <user>	
AT#USERID=?	Test command returns the maximum allowed length of the string parameter <user>.	
Example	AT#USERID="myName" OK AT#USERID? #USERID: "myName" OK	



3.5.7.9.2. Authentication Password - #PASSW

#PASSW - Authentication Password		SELINT 0/1
AT#PASSW= <pwd>	Set command sets the user password string to be used during the authentication step. Parameter: <pwd> - string type, it's the authentication password; the max length for this value is the output of Test command, AT#PASSW=? (factory default is the empty string "").	
AT#PASSW=?	Test command returns the maximum allowed length of the string parameter <pwd>.	
Example	AT#PASSW="myPassword" OK	

#PASSW - Authentication Password		SELINT 2
AT#PASSW= [<pwd>]	Set command sets the user password string to be used during the authentication step. Parameter: <pwd> - string type, it's the authentication password; the max length for this value is the output of Test command, AT#PASSW=? (factory default is the empty string ""). Note: this command is not allowed for sockets associated to a GSM context (see #SCFG).	
AT#PASSW=?	Test command returns the maximum allowed length of the string parameter <pwd>.	
Example	AT#PASSW="myPassword" OK	

3.5.7.9.3. Packet Size - #PKTSZ

#PKTSZ - Packet Size		SELINT 0 / 1
AT#PKTSZ[= [<size>]]	Set command sets the default packet size to be used by the TCP/UDP/IP stack for data sending. Parameter: <size> - packet size in bytes 0 - automatically chosen by the device 1..512 - packet size in bytes (factory default is 300) Note: issuing AT#PKTSZ<CR> is the same as issuing the Read command. Note: issuing AT#PKTSZ=<CR> is the same as issuing the command AT#PKTSZ=0<CR>.	
AT#PKTSZ?	Read command reports the current packet size value. Note: after issuing command AT#PKTSZ=0, the Read command reports the value automatically chosen by the device.	



#PKTSZ - Packet Size		SELINT 0 / 1
AT#PKTSZ=?	Test command returns the allowed values for the parameter <size>.	
Example	AT#PKTSZ=100 OK AT#PKTSZ? #PKTSZ: 100 OK AT#PKTSZ=0 OK AT#PKTSZ? #PKTSZ: 300 ->value automatically chosen by device OK	

#PKTSZ - Packet Size		SELINT 2
AT#PKTSZ=[<size>]	Set command sets the default packet size to be used by the TCP/UDP/IP stack for data sending. Parameter: <size> - packet size in bytes 0 - automatically chosen by the device 1..1500 - packet size in bytes (factory default is 300) Note: this command is not allowed for sockets associated to a GSM context (see #SCFG).	
AT#PKTSZ?	Read command reports the current packet size value. Note: after issuing command AT#PKTSZ=0 , the Read command reports the value automatically chosen by the device.	
AT#PKTSZ=?	Test command returns the allowed values for the parameter <size>.	
Example	AT#PKTSZ=100 OK AT#PKTSZ? #PKTSZ: 100 OK AT#PKTSZ=0 OK AT#PKTSZ? #PKTSZ: 300 ->value automatically chosen by device OK	

3.5.7.9.4. Data Sending Time-Out - #DSTO

#DSTO - Data Sending Time-Out		SELINT 0 / 1
AT#DSTO=[<tout>]	Set command sets the maximum time that the module awaits before sending anyway a packet whose size is less than the default one. Parameter:	



#DSTO - Data Sending Time-Out		SELINT 0 / 1
	<p><tout> - packet sending time-out in 100ms units (factory default is 50)</p> <p>0 - no time-out, wait forever for packets to be completed before send.</p> <p>1..255 hundreds of ms</p> <p>Note: In order to avoid low performance issues, it is suggested to set the data sending time-out to a value greater than 5.</p> <p>Note: this time-out applies to data whose size is less than packet size and whose sending would have been delayed for an undefined time until new data to be sent had been received and full packet size reached.</p> <p>Note: issuing AT#DSTO<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT#DSTO=<CR> is the same as issuing the command AT#DSTO=0<CR>.</p>	
AT#DSTO?	Read command reports the current data sending time-out value.	
AT#DSTO=?	Test command returns the allowed values for the parameter <tout> .	
Example	<pre>AT#DSTO=10 ->1 sec. time-out OK AT#DSTO? #DSTO: 10 OK</pre>	

#DSTO -Data Sending Time-Out		SELINT 2
AT#DSTO= [<tout>]	<p>Set command sets the maximum time that the module awaits before sending anyway a packet whose size is less than the default one.</p> <p>Parameter:</p> <p><tout> - packet sending time-out in 100ms units (factory default is 50)</p> <p>0 - no time-out, wait forever for packets to be completed before send.</p> <p>1..255 hundreds of ms</p> <p>Note: In order to avoid low performance issues, it is suggested to set the data sending time-out to a value greater than 5.</p> <p>Note: this time-out applies to data whose size is less than packet size and whose sending would have been delayed for an undefined time until new data to be sent had been received and full packet size reached.</p> <p>Note: this command is not allowed for sockets associated to a GSM context (see #SCFG).</p>	
AT#DSTO?	Read command reports the current data sending time-out value.	
AT#DSTO=?	Test command returns the allowed values for the parameter <tout> .	
Example	<pre>AT#DSTO=10 ->1 sec. time-out OK AT#DSTO? #DSTO: 10</pre>	



#DSTO -Data Sending Time-Out	SELINT 2
OK	

3.5.7.9.5. Socket Inactivity Time-Out - #SKTTO

#SKTTO - Socket Inactivity Time-Out	SELINT 0 / 1
AT#SKTTO[= [<tout>]]	<p>Set command sets the maximum time with no data exchanging on the socket that the module awaits before closing the socket and deactivating the GPRS context.</p> <p>Parameter: <tout> - socket inactivity time-out in seconds units 0 - no time-out. 1..65535 - time-out in sec. units (factory default is 90).</p> <p>Note: this time-out applies when no data is exchanged through the socket for a long time and therefore the socket connection has to be automatically closed; the GPRS context is deactivated only if it has been activated issuing #SKTOP; if it has been activated issuing #SKTD, now it stays activated.</p> <p>Note: issuing AT#SKTTO<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT+#SKTTO=<CR> is the same as issuing the command AT+#SKTTO=0<CR>.</p>
AT#SKTTO?	Read command reports the current socket inactivity time-out value.
AT#SKTTO=?	Test command returns the allowed values for parameter <tout> .
Example	AT#SKTTO=30 ->(30 sec. time-out) OK AT#SKTTO? #SKTTO: 30 OK

#SKTTO - Socket Inactivity Time-Out	SELINT 2
AT#SKTTO= [<tout>]	<p>Set command sets the maximum time with no data exchanging on the socket that the module awaits before closing the socket and deactivating the GPRS context.</p> <p>Parameter: <tout> - socket inactivity time-out in seconds units 0 - no time-out. 1..65535 - time-out in sec. units (factory default is 90).</p> <p>Note: this time-out applies when no data is exchanged in the socket for a long time and therefore the socket connection has to be automatically closed; the GPRS context is deactivated only if it has been activated issuing #SKTOP; if it has been activated issuing #SKTD, now it stays activated.</p> <p>Note: this command is not allowed for sockets associated to a GSM context (see</p>



#SKTTO - Socket Inactivity Time-Out	SELINT 2
	#SCFG).
AT#SKTTO?	Read command reports the current socket inactivity time-out value.
AT#SKTTO=?	Test command returns the allowed values for parameter <tout>.
Example	AT#SKTTO=30 -(30 sec. time-out) OK AT#SKTTO? #SKTTO: 30 OK

3.5.7.9.6. Socket Definition - #SKTSET

#SKTSET - Socket Definition	SELINT 0 / 1
AT#SKTSET[= <socket type>, <remote port>, <remote addr>, [<closure type>], [<local port>]]	<p>Set command sets the socket parameters values.</p> <p>Parameters:</p> <p><socket type> - socket protocol type 0 - TCP (factory default) 1 - UDP</p> <p><remote port> - remote host port to be opened 0..65535 - port number (factory default is 3333)</p> <p><remote addr> - address of the remote host, string type. This parameter can be either:</p> <ul style="list-style-type: none"> - any valid IP address in the format: xxx.xxx.xxx.xxx - any host name to be solved with a DNS query in the format: <host name> (factory default is the empty string “”) <p><closure type> - socket closure behaviour for TCP when remote host has closed 0 - local host closes immediately (default) 255 - local host closes after an escape sequence (+++) or immediately in case of an abortive disconnect from remote.</p> <p><local port> - local host port to be used on UDP socket 0..65535 - port number</p> <p>Note: <closure type> parameter is valid only for TCP socket type, for UDP sockets shall be left unused.</p> <p>Note: <local port> parameter is valid only for UDP socket type, for TCP sockets shall be left unused.</p> <p>Note: The resolution of the host name is done when opening the socket, therefore if an invalid host name is given to the #SKTSET command, then error message will be issued.</p> <p>Note: the DNS Query to be successful requests that:</p> <ul style="list-style-type: none"> - the GPRS context 1 is correctly set with +CGDCONT - the authentication parameters are set (#USERID, #PASSW) - the GPRS coverage is enough to permit a connection.



#SKTSET - Socket Definition		SELINT 0 / 1
	Note: If all parameters are omitted then the behaviour of Set command is the same as Read command.	
AT#SKTSET?	Read command reports the socket parameters values, in the format: AT#SKTSET: <socket type>,<remote port>,<remote addr>,<closure type>,<local port>	
AT#SKTSET=?	Test command returns the allowed values for the parameters.	
Example	AT#SKTSET=0,1024,"123.255.020.001" OK AT#SKTSET=0,1024,"www.telit.net" OK	
Note	Issuing command #QDNS will overwrite <remote addr> setting.	

#SKTSET - Socket Definition		SELINT 2
AT#SKTSET= [<socket type>, <remote port>, <remote addr>, [<closure type>], [<local port>]]	<p>Set command sets the socket parameters values.</p> <p>Parameters:</p> <p><socket type> - socket protocol type 0 - TCP (factory default) 1 - UDP</p> <p><remote port> - remote host port to be opened 0..65535 - port number (factory default is 3333)</p> <p><remote addr> - address of the remote host, string type. This parameter can be either:</p> <ul style="list-style-type: none"> - any valid IP address in the format: xxx.xxx.xxx.xxx - any host name to be solved with a DNS query in the format: <host name> (factory default is the empty string "") <p><closure type> - socket closure behaviour for TCP when remote host has closed 0 - local host closes immediately (default) 255 - local host closes after an escape sequence (+++) or immediately in case of an abortive disconnect from remote.</p> <p><local port> - local host port to be used on UDP socket 0..65535 - port number</p> <p>Note: <closure type> parameter is valid only for TCP socket type, for UDP sockets shall be left unused.</p> <p>Note: <local port> parameter is valid only for UDP socket type, for TCP sockets shall be left unused.</p> <p>Note: The resolution of the host name is done when opening the socket, therefore if an invalid host name is given to the #SKTSET command, then an error message will be issued.</p> <p>Note: the DNS Query to be successful requests that:</p> <ul style="list-style-type: none"> - the GPRS context 1 is correctly set with +CGDCONT 	



#QDNS - Query DNS	SELINT 2
	activated. In this case the context is deactivated after the DNS query. It also works with GSM context, but the GSM context has to be activated before.
AT#QDNS=?	Test command returns the OK result code.
Note	This command requires that the authentication parameters are correctly set and that the GPRS network is present (or GSM, if GSM context is used).
Note	Issuing command #QDNS will overwrite <remote addr> setting for command #SKTSET.
Note	This command is available only on the first virtual port of CMUX and works on the PDP context 1 and on the first ConnId (see AT#SCFG)

3.5.7.9.9. DNS Response Caching - #CACHEDNS

#CACHEDNS – DNS Response Caching	SELINT 2
AT#CACHEDNS=<mode>	<p>Set command enables caching a mapping of domain names to IP addresses, as does a resolver library.</p> <p>Parameter: <mode> 0 - caching disabled; it cleans the cache too 1 - caching enabled</p> <p>Note: the validity period of each cached entry (i.e. how long a DNS response remains valid) is determined by a value called the Time To Live (TTL), set by the administrator of the DNS server handing out the response.</p> <p>Note: If the cache is full (8 elements) and a new IP address is resolved, an element is deleted from the cache: the one that has not been used for the longest time.</p> <p>Note: it is recommended to clean the cache, if command +CCLK has been issued while the DNS Response Caching was enabled.</p>
AT#CACHEDNS?	<p>Read command reports whether the DNS Response Caching is currently enabled or not, in the format:</p> <p>#CACHEDNS: <mode></p>
AT#CACHEDNS=?	<p>Test command returns the currently cached mapping along with the range of available values for parameter <mode>, in the format:</p> <p>#CACHEDNS: [<hostnI>,<IPaddrI>,[...,<hostnn>,<IPaddrn>]](0,1)</p> <p>where: <hostnn> - hostname, string type <IPaddrn> - IP address, string type, in the format “xxx.xxx.xxx.xxx”</p>



3.5.7.9.10. Manual DNS Selection - #DNS

#DNS – Manual DNS Selection	SELINT 2
<p>AT#DNS=<cid>, <primary>, <secondary></p>	<p>Set command allows to manually set primary and secondary DNS servers either for a PDP context defined by +CGDCONT or for a GSM context defined by #GSMCONT</p> <p>Parameters: <cid> - context identifier 0 - specifies the GSM context 1..5 - numeric parameter which specifies a particular PDP context definition <primary> - manual primary DNS server, string type, in the format “xxx.xxx.xxx.xxx” used for the specified cid; we’re using this value instead of the primary DNS server come from the network (default is “0.0.0.0”) <secondary> - manual secondary DNS server, string type, in the format “xxx.xxx.xxx.xxx” used for the specified cid; we’re using this value instead of the secondary DNS server come from the network (default is “0.0.0.0”).</p> <p>Note: if <primary> is ”0.0.0.0” and <secondary> is not “0.0.0.0”, then issuing AT#DNS=... raises an error.</p> <p>Note: if <primary> is ”0.0.0.0” we’re using the primary DNS server come from the network as consequence of a context activation.</p> <p>Note: if <primary> is not ”0.0.0.0” and <secondary> is “0.0.0.0”, then we’re using only the manual primary DNS server.</p> <p>Note: the context identified by <cid> has to be previously defined, elsewhere issuing AT#DNS=... raises an error.</p> <p>Note: the context identified by <cid> has to be not activated yet, elsewhere issuing AT#DNS=... raises an error.</p>
<p>AT#DNS?</p>	<p>Read command returns the manual DNS servers set either for every defined PDP context and for the single GSM context (only if defined), in the format:</p> <p>[#DNS: <cid>,<primary>,<secondary>[<CR><LF> #DNS: <cid>,<primary>,<secondary>]]</p>
<p>AT#DNS=?</p>	<p>Test command reports the supported range of values for the <cid> parameter, only, in the format:</p> <p>#DNS: (0-5),,</p>



3.5.7.9.11. DNS from Network - #NWDNS

#NWDNS – DNS from Network	SELINT 2
<p>AT#NWDNS= [<cid>,<cid> [,...]]</p>	<p>Execution command returns either the primary and secondary DNS addresses for the GSM context (if specified) and/or a list of primary and secondary DNS addresses for the specified PDP context identifiers</p> <p>Parameters: <cid> - context identifier 0 - specifies the GSM context (see +GSMCONT). 1..5 - numeric parameter which specifies a particular PDP context definition (see +CGDCONT command).</p> <p>Note: if no <cid> is specified, the DNS addresses for all defined contexts are returned.</p> <p>Note: issuing the command with more than 6 parameters raises an error.</p> <p>Note: the command returns only one row of information for every specified <cid>, even if the same <cid> is present more than once.</p> <p>The command returns a row of information for every specified <cid> whose context has been already defined. No row is returned for a <cid> whose context has not been defined yet. Response format is:</p> <pre>#NWDNS: <cid>,<PDNSaddress>,<SDNSaddress>[<CR><LF> #NWDNS: <cid>,<PDNSaddress>,<SDNSaddress> [...]]</pre> <p>where: <cid> - context identifier, as before <PDNSaddress>,<SDNSaddress> - primary and secondary DNS addresses set through AT#DNS command. If not set, they are the primary and secondary DNS addresses assigned during the PDP(or GSM) context activation.</p>
<p>AT#NWDNS=?</p>	<p>Test command returns a list of defined <cid>s.</p>

3.5.7.9.12. Socket TCP Connection Time-Out - #SKTCT

#SKTCT - Socket TCP Connection Time-Out	SELINT 0 / 1
<p>AT#SKTCT[= <tout>]</p>	<p>Set command sets the TCP connection time-out for the first CONNECT answer from the TCP peer to be received.</p> <p>Parameter: <tout> - TCP first CONNECT answer time-out in 100ms units 10..1200 - hundreds of ms (factory default value is 600).</p>



#SKTCT - Socket TCP Connection Time-Out		SELINT 0 / 1
	<p>Note: this time-out applies only to the time that the TCP stack waits for the CONNECT answer to its connection request.</p> <p>Note: The time for activate the GPRS and resolving the name with the DNS query (if the peer was specified by name and not by address) is not counted in this time-out.</p> <p>Note: if parameter is omitted then the behaviour of Set command is the same as Read command.</p>	
AT#SKTCT?	Read command reports the current TCP connection time-out.	
AT#SKTCT=?	Test command returns the allowed values for parameter <tout> .	
Example	AT#SKTCT=600 OK <i>socket first connection answer time-out has been set to 60 s.</i>	

#SKTCT - Socket TCP Connection Time-Out		SELINT 2
AT#SKTCT= [<tout>]	<p>Set command sets the TCP connection time-out for the first CONNECT answer from the TCP peer to be received.</p> <p>Parameter: <tout> - TCP first CONNECT answer time-out in 100ms units 10..1200 - hundreds of ms (factory default value is 600).</p> <p>Note: this time-out applies only to the time that the TCP stack waits for the CONNECT answer to its connection request.</p> <p>Note: The time for activate the GPRS and resolving the name with the DNS query (if the peer was specified by name and not by address) is not counted in this time-out.</p> <p>Note: this command is not allowed for sockets associated to a GSM context (see #SCFG).</p>	
AT#SKTCT?	Read command reports the current TCP connection time-out.	
AT#SKTCT=?	Test command returns the allowed values for parameter <tout> .	
Example	AT#SKTCT=600 OK <i>socket first connection answer time-out has been set to 60 s.</i>	

3.5.7.9.13. Socket Parameters Save - #SKTSAV

#SKTSAV - Socket Parameters Save		SELINT 0 / 1
AT#SKTSAV	<p>Execution command stores the current socket parameters in the NVM of the device.</p> <p>The socket parameters to store are:</p> <ul style="list-style-type: none"> - User ID - Password 	



#SKTSAV - Socket Parameters Save		SELINT 0 / 1
	<ul style="list-style-type: none"> - Packet Size - Socket Inactivity Time-Out - Data Sending Time-Out - Socket Type (UDP/TCP) - Remote Port - Remote Address - TCP Connection Time-Out 	
Example	AT#SKTSAV OK <i>socket parameters have been saved in NVM</i>	
Note	If some parameters are not previously specified then a default value will be stored.	

#SKTSAV - Socket Parameters Save		SELINT 2
AT#SKTSAV	Execution command stores the current socket parameters in the NVM of the device. The socket parameters to store are: <ul style="list-style-type: none"> - User ID - Password - Packet Size - Socket Inactivity Time-Out - Data Sending Time-Out - Socket Type (UDP/TCP) - Remote Port - Remote Address - TCP Connection Time-Out Note: this command is not allowed for sockets associated to a GSM context (see #SCFG).	
AT#SKTSAV=?	Test command returns the OK result code.	
Example	AT#SKTSAV OK <i>socket parameters have been saved in NVM</i>	
Note	If some parameters have not been previously specified then a default value will be stored.	

3.5.7.9.14. Socket Parameters Reset - #SKTRST

#SKTRST - Socket Parameters Reset		SELINT 0 / 1
AT#SKTRST	Execution command resets the socket parameters to the “factory default” configuration and stores them in the NVM of the device. The socket parameters to reset are: <ul style="list-style-type: none"> - User ID - Password - Packet Size - Socket Inactivity Time-Out 	



#SKTRST - Socket Parameters Reset		SELINT 0 / 1
	<ul style="list-style-type: none"> - Data Sending Time-Out - Socket Type - Remote Port - Remote Address - TCP Connection Time-Out 	
Example	AT#SKTRST OK <i>socket parameters have been reset</i>	

#SKTRST - Socket Parameters Reset		SELINT 2
AT#SKTRST	Execution command resets the socket parameters to the “factory default” configuration and stores them in the NVM of the device. The socket parameters to reset are: <ul style="list-style-type: none"> - User ID - Password - Packet Size - Socket Inactivity Time-Out - Data Sending Time-Out - Socket Type - Remote Port - Remote Address - TCP Connection Time-Out 	
AT#SKTRST=?	Test command returns the OK result code.	
Example	AT#SKTRST OK <i>socket parameters have been reset</i>	

3.5.7.9.15. GPRS Context Activation - #GPRS

#GPRS - GPRS Context Activation		SELINT 0 / 1
AT#GPRS[= [<mode>]]	Execution command deactivates/activates the GPRS context, eventually proceeding with the authentication with the parameters given with #PASSW and #USERID. Parameter: <mode> - GPRS context activation mode 0 - GPRS context deactivation request 1 - GPRS context activation request In the case that the GPRS context has been activated, the result code OK is preceded by the intermediate result code: +IP: <ip_address_obtained> reporting the local IP address obtained from the network.	



#GPRS - GPRS Context Activation		SELINT 2
	OK <i>Now PDP Context #1 has been activated and our IP is 129.137.1.1</i> AT#GPRS=0 OK <i>Now PDP Context #1 has been deactivated, IP is lost.</i>	
Note	It is strongly recommended to use the same command (e.g. #GPRS) to activate the context, deactivate it and interrogate about its status.	

3.5.7.9.16. Socket Dial - #SKTD

#SKTD - Socket Dial	SELINT 0 / 1
AT#SKTD [=<socket type>, <remote port>, <remote addr>, [<closure type>], [<local port>]]	<p>Set command opens the socket towards the peer specified in the parameters.</p> <p>Parameters:</p> <p><socket type> - socket protocol type 0 - TCP (factory default) 1 - UDP</p> <p><remote port> - remote host port to be opened 0..65535 - port number (factory default is 0)</p> <p><remote addr> - address of the remote host, string type. This parameter can be either:</p> <ul style="list-style-type: none"> - any valid IP address in the format: xxx.xxx.xxx.xxx - any host name to be solved with a DNS query in the format: <host name> (factory default is the empty string "") <p><closure type> - socket closure behaviour for TCP when remote host has closed 0 - local host closes immediately (default) 255 - local host closes after an escape sequence (+++) or immediately in case of an abortive disconnect from remote.</p> <p><local port> - local host port to be used on UDP socket 0..65535 - port number</p> <p>Note: <closure type> parameter is valid only for TCP socket type, for UDP sockets shall be left unused.</p> <p>Note: <local port> parameter is valid only for UDP socket type, for TCP sockets shall be left unused.</p> <p>Note: the resolution of the host name is done when opening the socket, therefore if an invalid host name is given to the #SKTD command, then an error message will be issued.</p> <p>Note: the command to be successful requests that:</p> <ul style="list-style-type: none"> - the GPRS context 1 is correctly set with +CGDCONT - the authentication parameters are set (#USERID, #PASSW) the GPRS coverage is enough to permit a connection



#SKTD - Socket Dial		SELINT 0 / 1
	<ul style="list-style-type: none"> - the GPRS has been activated with AT#GPRS=1 <p>Note: If all parameters are omitted then the behaviour of Set command is the same as Read command.</p>	
AT#SKTD?	<p>Read command reports the socket dial parameters values, in the format:</p> <p>AT#SKTD: <socket type>,<remote port>,<remote addr>,<closure type>,<local port></p>	
AT#SKTD=?	<p>Test command returns the allowed values for the parameters.</p>	
Example	<pre>AT#SKTD=0,1024,"123.255.020.001",255 CONNECT AT#SKTD=1,1024,"123.255.020.001",,1025 CONNECT <i>In this way my local port 1025 is opened to the remote port 1024</i> AT#SKTD=0,1024,"www.telit.net", 255 CONNECT</pre>	
Note	<p>The main difference between this command and #SKTOP is that this command does not interact with the GPRS context status, leaving it ON or OFF according to the #GPRS setting, therefore when the connection made with AT#SKTD is closed the context (and hence the local IP address) is maintained.</p>	

#SKTD - Socket Dial		SELINT 2
AT#SKTD= [<socket type>, <remote port>, <remote addr>, [<closure type>], [<local port>]]	<p>Set command opens the socket towards the peer specified in the parameters.</p> <p>Parameters:</p> <p><socket type> - socket protocol type 0 - TCP (factory default) 1 - UDP</p> <p><remote port> - remote host port to be opened 1.65535 - port number</p> <p><remote addr> - address of the remote host, string type. This parameter can be either:</p> <ul style="list-style-type: none"> - any valid IP address in the format: xxx.xxx.xxx.xxx - any host name to be solved with a DNS query in the format: <host name> (factory default is the empty string "") <p><closure type> - socket closure behaviour for TCP when remote host has closed 0 - local host closes immediately (default) 255 - local host closes after an escape sequence (+++) or immediately in case of an abortive disconnect from remote.</p> <p><local port> - local host port to be used on UDP socket 0..65535 - port number</p> <p>Note: <closure type> parameter is valid only for TCP socket type, for UDP sockets shall be left unused.</p>	



#SKTD - Socket Dial	SELINT 2
	<p>Note: <local port> parameter is valid only for UDP socket type, for TCP sockets shall be left unused.</p> <p>Note: the resolution of the host name is done when opening the socket, therefore if an invalid host name is given to the #SKTD command, then an error message will be issued.</p> <p>Note: the command to be successful requests that:</p> <ul style="list-style-type: none"> - the GPRS context 1 is correctly set with +CGDCONT - the authentication parameters are set (#USERID, #PASSW) the GPRS coverage is enough to permit a connection - the GPRS has been activated with AT#GPRS=1 <p>Note: this command is not allowed for sockets associated to a GSM context (see #SCFG).</p>
AT#SKTD?	<p>Read command reports the socket dial parameters values, in the format:</p> <p>AT#SKTD: <socket type>,<remote port>,<remote addr>,<closure type>,<local port></p>
AT#SKTD=?	<p>Test command returns the allowed values for the parameters.</p>
Example	<pre>AT#SKTD=0,1024,"123.255.020.001",255 CONNECT AT#SKTD=1,1024,"123.255.020.001", ,1025 CONNECT <i>In this way my local port 1025 is opened to the remote port 1024</i> AT#SKTD=0,1024,"www.telit.net", 255 CONNECT</pre>
Note	<p>The main difference between this command and #SKTOP is that this command does not interact with the GPRS context status, leaving it ON or OFF according to the #GPRS setting, therefore when the connection made with #SKTD is closed the context (and hence the local IP address) is maintained.</p>

3.5.7.9.17. Socket Listen - #SKTL

#SKTL - Socket Listen	SELINT 0 / 1
<p>AT#SKTL [=<mode>, <socket type>, <input port>, [<closure type>]]</p>	<p>Execution command opens/closes the socket listening for connection requests.</p> <p>Parameters:</p> <p><mode> - socket mode 0 - closes socket listening 1 - starts socket listening</p> <p><socket type> - socket protocol type 0 - TCP</p> <p><input port> - local host input port to be listened</p>



#SKTL - Socket Listen	SELINT 0 / 1
	<p>0..65535 - port number <closure type> - socket closure behaviour for TCP when remote host has closed 0 - local host closes immediately (default) 255 - local host closes after an escape sequence (+++) or immediately in case of an abortive disconnect from remote.</p> <p>Command returns the OK result code if successful.</p> <p>Note: the command to be successful requests that:</p> <ul style="list-style-type: none"> - the GPRS context 1 is correctly set with +CGDCONT - the authentication parameters are set (#USERID, #PASSW) - the GPRS coverage is enough to permit a connection - the GPRS has been activated with AT#GPRS=1 <p>When a connection request comes on the input port, if the sender is not filtered by the internal firewall (see command #FRWL), an unsolicited code is reported:</p> <p style="padding-left: 40px;">+CONN FROM: <remote addr></p> <p>Where: <remote addr> - host address of the remote machine that contacted the device.</p> <p>When the connection is established the CONNECT indication is given and the modem goes into data transfer mode.</p> <p>On connection close or when context is closed with #GPRS=0 the socket is closed and no listen is anymore active.</p> <p>If the context is closed by the network while in listening, the socket is closed, no listen is anymore active and an unsolicited code is reported:</p> <p style="padding-left: 40px;">#SKTL: ABORTED</p> <p>Note: if all parameters are omitted the command returns the current socket listening status and the last settings of parameters <input port> and <closure type>, in the format:</p> <p>#SKTL: <status>,<input port>,<closure type> where <status> - socket listening status 0 - socket not listening 1 - socket listening</p>
AT#SKTL?	Read command has the same effect as Execution command when parameters are omitted.
AT#SKTL=?	Test command returns the allowed values for parameters <mode> , <input port> and <closure type> .



#SKTL - Socket Listen	SELINT 0 / 1
<p>Example</p>	<p><i>Activate GPRS</i> AT#GPRS=1 +IP: ###.###.###.###</p> <p>OK <i>Start listening</i> AT#SKTL=1,0,1024 OK or AT#SKTL=1,0,1024,255 OK</p> <p><i>Receive connection requests</i> +CONN FROM: 192.164.2.1 CONNECT</p> <p><i>exchange data with the remote host</i></p> <p><i>send escape sequence</i> +++ NO CARRIER <i>Now listen is not anymore active</i></p> <p><i>to stop listening</i> AT#SKTL=0,0,1024, 255 OK</p>
<p>Note</p>	<p>The main difference between this command and the #SKTD is that #SKTL does not contact any peer, nor does any interaction with the GPRS context status, leaving it ON or OFF according to the #GPRS setting, therefore when the connection made with #SKTL is closed the context (and hence the local IP address) is maintained.</p> <p>The improving command @SKTL has been defined.</p>

#SKTL - Socket Listen	SELINT 2
<p>AT#SKTL =[<mode>, <socket type>, <input port>, [<closure type>]]</p>	<p>Execution command opens/closes the socket listening for connection requests.</p> <p>Parameters:</p> <p><mode> - socket mode 0 - closes socket listening 1 - starts socket listening</p> <p><socket type> - socket protocol type 0 -TCP (default) 1- UDP</p> <p><input port> - local host input port to be listened 1..65535 - port number</p> <p><closure type> - socket closure behaviour for TCP when remote host has closed 0 - local host closes immediately (default) 255 - local host closes after an escape sequence (+++) or immediately in case of an abortive disconnect from remote.</p>



#SKTL - Socket Listen	SELINT 2
	<p>Command returns the OK result code if successful.</p> <p>Note: the command to be successful requests that:</p> <ul style="list-style-type: none"> - the GPRS context 1 is correctly set with +CGDCONT - the authentication parameters are set (#USERID, #PASSW) - the GPRS coverage is enough to permit a connection - the GPRS has been activated with AT#GPRS=1 <p>When a connection request comes on the input port, if the sender is not filtered by the internal firewall (see command #FRWL), an unsolicited code is reported:</p> <p style="padding-left: 40px;">+CONN FROM: <remote addr></p> <p>Where: <remote addr> - host address of the remote machine that contacted the device.</p> <p>When the connection is established the CONNECT indication is given and the modem goes into data transfer mode.</p> <p>On connection close or when context is closed with #GPRS=0 the socket is closed and no listen is anymore active.</p> <p>If the context is closed by the network while in listening, the socket is closed, no listen is anymore active and an unsolicited code is reported:</p> <p style="padding-left: 40px;">#SKTL: ABORTED</p> <p>Note: when closing the listening socket <input port> is a don't care parameter</p>
AT#SKTL?	<p>Read command returns the current socket listening status and the last settings of parameters <input port> and <closure type>, in the format:</p> <p style="padding-left: 40px;">#SKTL: <status>,<socket type>, <input port>,<closure type></p> <p>Where <status> - socket listening status 0 - socket not listening 1 - socket listening</p>
AT#SKTL=?	<p>Test command returns the allowed values for parameters <mode>, <socket type>, <input port> and <closure type>.</p>
Example	<p><i>Activate GPRS</i> AT#GPRS=1 +IP: ###.###.###.### OK</p>



@SKTL - Socket Listen Improved	SELINT 0 / 1
	<ul style="list-style-type: none"> - the authentication parameters are set (#USERID, #PASSW) - the GPRS coverage is enough to permit a connection - the GPRS has been activated with AT#GPRS=1 <p>When a connection request comes on the input port, if the sender is not filtered by the internal firewall (see command #FRWL), an unsolicited code is reported:</p> <p style="padding-left: 40px;">+CONN FROM: <remote addr></p> <p>Where: <remote addr> - host address of the remote machine that contacted the device.</p> <p>When the connection is established the CONNECT indication is given and the modem goes into data transfer mode.</p> <p>On connection close or when context is closed with #GPRS=0 the socket is closed and no listen is anymore active.</p> <p>If the context is closed by the network while in listening, the socket is closed, no listen is anymore active and an unsolicited code is reported:</p> <p style="padding-left: 40px;">@SKTL: ABORTED</p> <p>Note: if all parameters are omitted the command returns the current socket listening status and the last settings of parameters <socket type>, <input port> and <closure type>, in the format:</p> <p style="padding-left: 40px;">@SKTL: <status>,<socket type>,<input port>,<closure type></p> <p>Where <status> - socket listening status 0 - socket not listening 1 - socket listening</p>
AT@SKTL?	Read command has the same effect as Execution command when parameters are omitted.
AT@SKTL=?	Test command returns the allowed values for parameters <mode>, <socket type>, <input port> and <closure type>.
Example	<p><i>Activate GPRS</i> AT#GPRS=1 +IP: ###.###.###.###</p> <p>OK <i>Start listening</i> AT@SKTL=1,0,1024 OK</p> <p>or AT@SKTL=1,0,1024,255 OK</p>



#FRWL - Firewall Setup		SELINT 0 / 1
	<p>If criteria is matched, then the packet is accepted and the rule scan is finished; if criteria is not matched for any chain the packet is silently dropped.</p> <p>Note: If all parameters are omitted the command reports the list of all ACCEPT chain rules registered in the Firewall settings in the format: #FRWL: <ip_addr>,<net_mask> #FRWL: <ip_addr>,<net_mask> OK</p>	
AT#FRWL?	Read command has the same effect as Execution command when parameters are omitted.	
AT#FRWL=?	Test command returns the allowed values for parameter <action> .	
Example	<p>Let assume we want to accept connections only from our devices which are on the IP addresses ranging from 197.158.1.1 to 197.158.255.255</p> <p>We need to add the following chain to the firewall: AT#FRWL=1,"197.158.1.1","255.255.0.0" OK</p>	
Note	<p>For outgoing connections made with #SKTOP and #SKTD the remote host is dynamically inserted into the ACCEPT chain for all the connection duration. Therefore the #FRWL command shall be used only for defining either the #SKTL or the @SKTL behaviour, deciding which hosts are allowed to connect to the local device.</p> <p>Rules are not saved in NVM, at startup the rules list will be empty.</p>	

#FRWL - Firewall Setup		SELINT 2
AT#FRWL= [<action>, <ip_address>, <net mask>]	<p>Execution command controls the internal firewall settings.</p> <p>Parameters: <action> - command action 0 - remove selected chain 1 - add an ACCEPT chain 2 - remove all chains (DROP everything); <ip_addr> and <net_mask> has no meaning in this case. <ip_addr> - remote address to be added into the ACCEPT chain; string type, it can be any valid IP address in the format: xxx.xxx.xxx.xxx <net_mask> - mask to be applied on the <ip_addr>; string type, it can be any valid IP address mask in the format: xxx.xxx.xxx.xxx</p> <p>Command returns OK result code if successful.</p> <p>Note: the firewall applies for incoming (listening) connections only.</p> <p>Firewall general policy is DROP, therefore all packets that are not included into an</p>	



#FRWL - Firewall Setup	SELINT 2
	<p>ACCEPT chain rule will be silently discarded.</p> <p>When a packet comes from the IP address incoming_IP, the firewall chain rules will be scanned for matching with the following criteria:</p> <p>incoming_IP & <net_mask> = <ip_addr> & <net_mask></p> <p>If criteria is matched, then the packet is accepted and the rule scan is finished; if criteria is not matched for any chain the packet is silently dropped.</p>
AT#FRWL?	<p>Read command reports the list of all ACCEPT chain rules registered in the Firewall settings in the format:</p> <p>#FRWL: <ip_addr>,<net_mask> #FRWL: <ip_addr>,<net_mask> OK</p>
AT#FRWL=?	<p>Test command returns the allowed values for parameter <action>.</p>
Example	<p><i>Let assume we want to accept connections only from our devices which are on the IP addresses ranging from 197.158.1.1 to 197.158.255.255</i></p> <p><i>We need to add the following chain to the firewall:</i> AT#FRWL=1,"197.158.1.1","255.255.0.0" OK</p>
Note	<p>For outgoing connections made with #SKTOP and #SKTD the remote host is dynamically inserted into the ACCEPT chain for all the connection duration. Therefore the #FRWL command shall be used only for defining the #SKTL behaviour, deciding which hosts are allowed to connect to the local device.</p> <p>Rules are not saved in NVM, at startup the rules list will be empty.</p>

3.5.7.9.20. Firewall Setup for IPV6 addresses - #FRWLIPV6

#FRWLIPV6 - Firewall Setup for IPV6 addresses	SELINT 2
AT#FRWLIPV6= [<action>, <ip_address>, <net mask>]	<p>Execution command controls the internal firewall settings for IPV6 addresses.</p> <p>Parameters:</p> <p><action> - command action 0 - remove selected chain 1 - add an ACCEPT chain 2 - remove all chains (DROP everything); <ip_addr> and <net_mask> has no meaning in this case.</p> <p><ip_addr> - remote address to be added into the ACCEPT chain; string type, it can be any valid IP address in the format xxx.xxx.xxx.xxx.</p>



	<p>xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx</p> <p>or in the format yyyy:yyyy:yyyy:yyyy:yyyy: yyyy:yyyy:yyyy</p> <p><net_mask> - mask to be applied on the <ip_addr>; string type, it can be any valid IP address mask in the format xxx.xxx.xxx.xxx. xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx or in the format yyyy:yyyy:yyyy:yyyy:yyyy: yyyy:yyyy:yyyy</p> <p>Command returns OK result code if successful.</p> <p>Note: the firewall applies for incoming (listening) connections only.</p> <p>Firewall general policy is DROP, therefore all packets that are not included into an ACCEPT chain rule will be silently discarded.</p> <p>When a packet comes from the IP address incoming_IP, the firewall chain rules will be scanned for matching with the following criteria:</p> <p>incoming_IP & <net_mask> = <ip_addr> & <net_mask></p> <p>If criteria is matched, then the packet is accepted and the rule scan is finished; if criteria is not matched for any chain the packet is silently dropped.</p>
<p>AT#FRWLIPV6?</p>	<p>Read command reports the list of all ACCEPT chain rules registered in the Firewall settings in the format:</p> <p>#FRWLIPV6: <ip_addr>,<net_mask> #FRWLIPV6: <ip_addr>,<net_mask> OK</p>
<p>AT#FRWLIPV6=?</p>	<p>Test command returns the allowed values for parameter <action>.</p>

3.5.7.9.21. GPRS Data Volume - #GDATAVOL

#GDATAVOL - GPRS Data Volume	SELINT 2
<p>AT#GDATAVOL= [<mode>]</p>	<p>Execution command reports, for every active PDP context, the amount of data the last GPRS session (and the last GSM session, if GSM context is active) received and transmitted, or it will report the total amount of data received and transmitted during all past GPRS (and GSM) sessions, since last reset.</p> <p>Parameter: <mode> 0 - it resets the GPRS data counter for the all the available PDP contexts (1-5) and GSM data counter for GSM context 0 1 - it reports the last GPRS session data counter for the all the set PDP contexts</p>



#GDATAVOL - GPRS Data Volume	SELINT 2
	<p>(i.e. all the PDP contexts with APN parameter set using +CGDCONT) (and the last GSM session data counter for the GSM context, if set through #GSMCONT), in the format:</p> <p>#GDATAVOL: <cidn>,<totn>,<sentn>,<receivedn>[<CR><LF> #GDATAVOL: <cidm>,<totm>,<sentm>,<receivedm>[...]</p> <p>where:</p> <p><cidn> - PDP context identifier 0 - specifies the GSM context 1..5 - numeric parameter which specifies a particular PDP context definition</p> <p><totn> - number of bytes either received or transmitted in the last GPRS (or GSM) session for <cidn> PDP context; <sentn> - number of bytes transmitted in the last GPRS (or GSM) session for <cidn> PDP context; <receivedn> - number of bytes received in the last GPRS (or GSM) session for <cidn> PDP context;</p> <p>2 - it reports the total GPRS data counter, since last reset, for the all the set PDP contexts (i.e. all the PDP context with APN parameter set using +CGDCONT) and the total GSM data counter for the GSM context, if set through #GSMCONT, in the format:</p> <p>#GDATAVOL: <cidn>,<totn>,<sentn>,<receivedn>[<CR><LF> #GDATAVOL: <cidm>,<totm>,<sentm>,<receivedm>[...]</p> <p>where:</p> <p><cidn> - PDP context identifier 0 - specifies the GSM context 1..5 - numeric parameter which specifies a particular PDP context definition</p> <p><totn> - number of bytes either received or transmitted, in every GPRS (or GSM) session since last reset, for <cidn> PDP context; <sentn> - number of bytes transmitted, in every GPRS (or GSM) session since last reset, for <cidn> PDP context; <receivedn> - number of bytes received, in every GPRS (or GSM) session since last reset, for <cidn> PDP context;</p> <p>Note: last GPRS and GSM session counters are not saved in NVM so they are loosen at power off.</p> <p>Note: total GPRS and GSM session counters are saved on NVM.</p>
AT#GDATAVOL=?	Test command returns the range of supported values for parameter <mode>.

3.5.7.9.22. ICMP Ping Support - #ICMP

#ICMP - ICMP Ping Support	SELINT 2
AT#ICMP=<mode>	Set command enables/disables the ICMP Ping support.



#ICMP - ICMP Ping Support		SELINT 2
	Parameter: <mode> 0 - disable ICMP Ping support (default) 1 - enable firewalled ICMP Ping support: the module is sending a proper ECHO_REPLY only to a subset of IP Addresses pinging it; this subset of IP Addresses has been previously specified through #FRWL (see) 2 - enable free ICMP Ping support; the module is sending a proper ECHO_REPLY to every IP Address pinging it.	
AT#ICMP?	Read command returns whether the ICMP Ping support is currently enabled or not, in the format: #ICMP: <mode>	
AT#ICMP=?	Test command reports the supported range of values for the <mode> parameter.	

3.5.7.9.23. Maximum TCP Payload Size - #TCPMAXDAT

#TCPMAXDAT - Maximum TCP Payload Size		SELINT 2
AT#TCPMAXDAT= <size>	Set command allows to set the maximum TCP payload size in TCP header options. Parameter: <size> - maximum TCP payload size accepted in one single TCP/IP datagram; it is sent in TCP header options in SYN packet. 0 - the maximum TCP payload size is automatically handled by module (default). 496..1420 - maximum TCP payload size	
AT#TCPMAXDAT?	Read command reports the current maximum TCP payload size, in the format: #TCPMAXDAT: <size>	
AT#TCPMAXDAT=?	Test command reports the supported range of values for parameter <size>	

3.5.7.9.24. TCP Reassembly - #TCPREASS

#TCPREASS - TCP Reassembly		SELINT 2
AT#TCPREASS= <n>	Set command enables/disables the TCP reassembly feature , in order to handle fragmented TCP packets. Parameter: <n> 0 - disable TCP reassembly feature 1 - enable TCP reassembly feature (default)	



#TCPREASS - TCP Reassembly		SELINT 2
AT#TCPREASS?	Read command returns whether the TCP reassembly feature is enabled or not, in the format: #TCPREASS: <n>	
AT#TCPREASS=?	Test command returns the supported range of values for parameter <n>.	

3.5.7.9.25. PING request - #PING

#PING – Send PING request		SELINT 2
AT#PING= <IPaddr>[,<retryNum>[,<len>[,<timeout>[,<tll>]]]]	<p>This command is used to send Ping Echo Request messages and to receive the corresponding Echo Reply.</p> <p>Parameters:</p> <ul style="list-style-type: none"> <IPaddr> - address of the remote host, string type. This parameter can be either: <ul style="list-style-type: none"> - any valid IP address in the format: “xxx.xxx.xxx.xxx” - any host name to be solved with a DNS query <retryNum> - the number of Ping Echo Request to send 1-64 (default 4) <len> - the length of Ping Echo Request message 32-1460 (default 32) <timeout> - the timeout, in 100 ms units, waiting a single Echo Reply 1-600 (default 50) <tll> - time to live 1-255 (default 128) <p>Once the single Echo Reply message is received a string like that is displayed:</p> <p>#PING: <replyId>,<Ip Address>,<replyTime>,<tll></p> <p>Where:</p> <ul style="list-style-type: none"> <replyId> - Echo Reply number <Ip Address> - IP address of the remote host <replyTime> - time, in 100 ms units, required to receive the response <tll> - time to live of the Echo Reply message <p>Note1: when the Echo Request timeout expires (no reply received on time) the response will contain <replyTime> set to 600 and <tll> set to 255</p> <p>Note2: To receive the corresponding Echo Reply is not required to enable separately AT#ICMP</p> <p>Note3: Before send PING Request the GPRS context must have been activated by AT#SGACT=1,1</p>	



#PING – Send PING request	SELINT 2
AT#PING=?	Test command reports the supported range of values for the #PING command parameters.
Example	AT#PING="www.telit.com" #PING: 01,"81.201.117.177",6,50 #PING: 02,"81.201.117.177",5,50 #PING: 03,"81.201.117.177",6,50 #PING: 04,"81.201.117.177",5,50 OK



3.5.7.10. E-mail Management AT Commands

3.5.7.10.1. Configure SMTP parameters - #SMTPCFG

#SMTPCFG – configure SMTP parameters	SELINT 2
<p>AT#SMTPCFG=<ssl_enabled>[,<port>[,<mode>[,<charset>[,<UNUSED_1>[,<UNUSED_2>]]]]]</p>	<p>This command sets the parameters needed to the SMTP connection</p> <p>Parameters:</p> <p><ssl_enabled> - Numeric parameter indicating if the SSL encryption is enabled. 0 – SSL encryption disabled (default) 1 – SSL encryption enabled</p> <p><port>: SMTP port to contact (default 25) 25..465.</p> <p><mode> - SMTP start session command 0 – SMTP start session command HELO (default) 1 – SMTP start session command EHLO</p> <p><charset> - Numeric parameter indicating the character encoding used in e-mail text and subject 0 - US-ASCII (default) 1 - UTF-8</p> <p>Note: the SSL encryption can be enabled only if <Enable> parameter of #SSLEN is set to 0, <FTPSEn> parameter of #FTPCFG is set to 0 and <ssl_enabled> parameter of #HTTPCFG is set to 0.</p> <p>Note: values are automatically saved in NVM.</p>
<p>AT#SMTPCFG?</p>	<p>Read command returns the current settings in the format:</p> <p>#SMTPCFG: <ssl_enabled>,<port>,<mode>,<charset>,0,0<CR><LF></p>
<p>AT#SMTPCFG =?</p>	<p>Test command returns the supported range of parameters <ssl_enabled>, <port>, <mode> and <charset> in the format:</p> <p>#SMTPCFG: (list of supported <ssl_enabled>s),(list of supported <port>s),(list of supported <mode>s), (list of supported <charset>s), (0),(0)</p>



3.5.7.10.2. E-mail SMTP Server - #ESMTP

#ESMTP - E-mail SMTP Server		SELINT 0 / 1
AT#ESMTP [=<smtp>]	<p>Set command sets the SMTP server address, used for E-mail sending. SMTP server can be specified as IP address or as nick name.</p> <p>Parameter: <smtp> - SMTP server address, string type. This parameter can be either:</p> <ul style="list-style-type: none"> - any valid IP address in the format: xxx.xxx.xxx.xxx - any host name to be solved with a DNS query in the format: <host name> (factory default is the empty string "") <p>Note: the max length for <smtp> is the output of Test command.</p> <p>Note: If parameter is omitted then the behaviour of Set command is the same of Read command</p>	
AT#ESMTP?	<p>Read Command reports the current SMTP server address, in the format:</p> <p>#ESMTP: <smtp></p>	
AT#ESMTP=?	Test command returns the max length for the parameter <smtp>.	
Example	AT#ESMTP="smtp.mydomain.com" OK	
Note	The SMTP server used shall be inside the APN space (the smtp server provided by the network operator) or it must allow the Relay, otherwise it will refuse to send the e-mail.	

#ESMTP - E-mail SMTP Server		SELINT 2
AT#ESMTP= [<smtp>]	<p>Set command sets the SMTP server address, used for E-mail sending. SMTP server can be specified as IP address or as nick name.</p> <p>Parameter: <smtp> - SMTP server address, string type. This parameter can be either:</p> <ul style="list-style-type: none"> - any valid IP address in the format: xxx.xxx.xxx.xxx - any host name to be solved with a DNS query in the format: <host name> (factory default is the empty string "") <p>Note: the max length for <smtp> is the output of Test command.</p>	
AT#ESMTP?	<p>Read Command reports the current SMTP server address, in the format:</p> <p>#ESMTP: <smtp></p>	
AT#ESMTP=?	Test command returns the max length for the parameter <smtp>.	
Example	AT#ESMTP="smtp.mydomain.com" OK	
Note	The SMTP server used shall be inside the APN space (the smtp server provided by the network operator) or it must allow the Relay, otherwise it will refuse to send the e-mail.	



#EUSER - E-mail Authentication User Name		SELINT 2
	AT#EUSER? #EUSER: "myE-Name" OK	
Note	It is a different user field than the one used for GPRS authentication (see #USERID).	

3.5.7.10.5. E-mail Authentication Password - #EPASSW

#EPASSW - E-mail Authentication Password		SELINT 0 / 1
AT#EPASSW= <e-pwd>	Set command sets the password string to be used during the authentication step of the SMTP. Parameter: <e-pwd> - e-mail authentication password, string type. - any string value up to max length reported in the Test command. (factory default is the empty string "") Note: if no authentication is required then the <e-pwd> parameter shall be empty "".	
AT#EPASSW=?	Test command returns the maximum allowed length of the string parameter <e-pwd>.	
Example	AT#USERID="myPassword" OK	
Note	It is a different password field than the one used for GPRS authentication (see #PASSW).	

#EPASSW - E-mail Authentication Password		SELINT 2
AT#EPASSW= [<e-pwd>]	Set command sets the password string to be used during the authentication step of the SMTP. Parameter: <e-pwd> - e-mail authentication password, string type. - any string value up to max length reported in the Test command. (factory default is the empty string "") Note: if no authentication is required then the <e-pwd> parameter shall be empty "".	
AT#EPASSW=?	Test command returns the maximum allowed length of the string parameter <e-pwd>.	
Example	AT#EPASSW="myPassword" OK	
Note	It is a different password field than the one used for GPRS authentication (see #PASSW).	



3.5.7.10.6. E-mail Sending With GPRS Context Activation - #SEMAIL

#SEMAIL - E-mail Sending With GPRS Context Activation	SELINT 0 / 1
<p>AT#SEMAIL=<da>,<subj></p>	<p>Execution command activates a GPRS context, if not previously activated by #EMAILACT, and sends an e-mail message. The GPRS context is deactivated when the e-mail is sent.</p> <p>Parameters: <da> - destination address, string type (maximum length 100 characters). <subj> - subject of the message, string type (maximum length 100 characters).</p> <p>The device responds to the command with the prompt '>' and awaits for the message body text.</p> <p>To complete the operation send Ctrl-Z char (0x1A hex); to exit without writing the message send ESC char (0x1B hex).</p> <p>If e-mail message is successfully sent, then the response is OK. If message sending fails for some reason, an error code is reported.</p> <p>Note: if the length of one of the string type parameters exceeds the maximum length, then the string is truncated.</p> <p>Note: Care must be taken to ensure that during the command execution, no other commands are issued.</p> <p>To avoid malfunctions is suggested to wait for the OK or ERROR / +CMS ERROR:<err> response before issuing further commands.</p> <p>Note: maximum length for message body is 1024 bytes, trying to send more data will cause the surplus to be discarded and lost.</p>
<p>Example</p>	<p>AT#SEMAIL="me@myaddress.com","subject of the mail" >message body... this is the text of the mail message... CTRL-Z</p> <p>..wait.. OK</p> <p><i>Message has been sent.</i></p>
<p>Note</p>	<p>This command is obsolete. It's suggested to use the couple #EMAILACT and #EMAILD instead of it.</p>

#SEMAIL – E-mail Sending With GPRS Context Activation	SELINT 2
<p>AT#SEMAIL=[<da>,<subj>]</p>	<p>Execution command activates a GPRS context, if not previously activated by #EMAILACT, and sends an e-mail message. The GPRS context is deactivated when the e-mail is sent.</p>



	<p>Parameters:</p> <p><da> - destination address, string type. (maximum length 100 characters) <subj> - subject of the message, string type. (maximum length 200 characters)</p> <p>The device responds to the command with the prompt '>' and awaits for the message body text.</p> <p>To complete the operation send Ctrl-Z char (0x1A hex); to exit without writing the message send ESC char (0x1B hex).</p> <p>If e-mail message is successfully sent, then the response is OK. If message sending fails for some reason, an error code is reported.</p> <p>Note: if the length of one of the string type parameters exceeds the maximum length, then the string is truncated.</p> <p>Note: Care must be taken to ensure that during the command execution, no other commands are issued.</p> <p>To avoid malfunctions is suggested to wait for the OK or ERROR / +CMS ERROR:<err> response before issuing further commands.</p> <p>Note: maximum length for message body is 1024 bytes, trying to send more data will cause the surplus to be discarded and lost.</p> <p>Note: this command is not allowed if GSM context is active (see AT#SGACT=0,1).</p>
<p>AT#SEMAIL=?</p>	<p>Test command returns the OK result code.</p>
<p>Example</p>	<p>AT#SEMAIL="me@myaddress.com","subject of the mail" >message body... this is the text of the mail message... CTRL-Z</p> <p>..wait.. OK</p> <p>Message has been sent.</p>

3.5.7.10.7. E-mail GPRS Context Activation - #EMAILACT

<p>#EMAILACT - E-mail GPRS Context Activation</p>		<p>SELINT 0 / 1</p>
<p>AT#EMAILACT[= [<mode>]]</p>	<p>Execution command deactivates/activates the GPRS context, eventually proceeding with the authentication with the parameters given with #PASSW and #USERID.</p> <p>Parameter: <mode> - GPRS context activation mode</p>	



#EMAILACT - E-mail GPRS Context Ativation	SELINT 0 / 1
	<p>0 - GPRS context deactivation request 1 - GPRS context activation request</p> <p>Note: issuing AT#EMAILACT<CR> reports the current status of the GPRS context for the e-mail, in the format:</p> <p>#EMAILACT: <status></p> <p>where: <status> 0 - GPRS context deactivated 1 - GPRS context activated</p> <p>Note: issuing AT#EMAILACT=<CR> is the same as issuing the command AT#EMAILACT=0<CR>.</p> <p>Note: if you request a GPRS context deactivation during a call issuing either AT#GPRS=0 or AT#EMAILACT=0 and then, after the call termination, you want to request a GPRS context activation through #EMAILACT, you need to issue the following sequence of three commands</p> <pre>AT#EMAILACT=1 OK AT#EMAILACT=0 OK AT#EMAILACT=1 OK</pre>
AT#EMAILACT?	Read command has the same effect of the Execution command AT#EMAILACT<CR> .
AT#EMAILACT=?	Test command returns the allowed values for parameter <mode> .
Example	<pre>AT#EMAILACT=1 OK Now GPRS Context has been activated</pre> <pre>AT#EMAILACT=0 OK Now GPRS context has been deactivated.</pre>
Note	It is strongly recommended to use the same command (e.g. #EMAILACT) to activate the context, deactivate it and interrogate about its status.

#EMAILACT - E-mail GPRS Context Ativation	SELINT 2
AT#EMAILACT= [<mode>]	<p>Execution command deactivates/activates the PDP context #1, eventually proceeding with the authentication with the parameters given with #PASSW and #USERID.</p> <p>Parameter: <mode> - PDP context activation mode</p>



#EMAILACT - E-mail GPRS Context Ativation	SELINT 2
	<p>0 - GPRS context deactivation request 1 - GPRS context activation request</p> <p>Note: at least a socket identifier needs to be associated with PDP context #1 in order to every #EMAILACT action be effective; by default the PDP context #1 is associated with socket identifiers 1, 2 and 3, but it is possible to modify these associations through #SCFG. Trying to issue a #EMAILACT action when no socket identifier is associated with PDP context #1 raises an error.</p> <p>Note: if the PDP context #1 has been activated issuing AT#EMAILACT=1, then</p> <ul style="list-style-type: none"> • if you request to deactivate the PDP context #1 issuing AT#GPRS=0 DTE receives the final result code OK but nothing really happens • if you request to deactivate the PDP context #1 during a call issuing AT#EMAILACT=0 and then, after the call termination, you want to activate the PDP context #1 again through #EMAILACT, you need to issue the following sequence of three commands <pre>AT#EMAILACT=1 OK AT#EMAILACT=0 OK AT#EMAILACT=1 OK</pre> <p><i>(Analogous considerations if you want to request the activation of PDP context #1 issuing AT#GPRS=1, see #GPRS)</i></p> <p>Note: this command is not allowed if GSM context is active (see AT#SGACT=0,1).</p>
<p>AT#EMAILACT?</p>	<p>Read command reports the current status of the GPRS context for the e-mail, in the format:</p> <p>#EMAILACT: <status></p> <p>where: <status> 0 - GPRS context deactivated 1 - GPRS context activated</p>
<p>AT#EMAILACT=?</p>	<p>Test command returns the allowed values for parameter <mode>.</p>
<p>Example</p>	<pre>AT#EMAILACT=1 OK Now GPRS Context has been activated AT#EMAILACT=0 OK Now GPRS context has been deactivated.</pre>
<p>Note</p>	<p>It is strongly recommended to use the same command (e.g. #EMAILACT) to</p>



#EMAILACT - E-mail GPRS Context Ativation	SELINT 2
activate the context, deactivate it and interrogate about its status.	

3.5.7.10.8. E-mail Sending - #EMAILD

#EMAILD - E-mail Sending	SELINT 0 / 1
AT#EMAILD=<da>, <subj>	<p>Execution command sends an e-mail message if GPRS context has already been activated by either AT#EMAILACT=1 or AT#GPRS=1.</p> <p>Parameters: <da> - destination address, string type (maximum length 100 characters). <subj> - subject of the message, string type (maximum length 100 characters).</p> <p>The device responds to the command with the prompt '>' and awaits for the message body text.</p> <p>To complete the operation send Ctrl-Z char (0x1A hex); to exit without writing the message send ESC char (0x1B hex).</p> <p>If e-mail message is successfully sent, then the response is OK. If message sending fails for some reason, an error code is reported.</p> <p>Note: if the length of one of the string type parameters exceeds the maximum length, then the string is truncated.</p> <p>Note: Care must be taken to ensure that during the command execution, no other commands are issued.</p> <p>To avoid malfunctions is suggested to wait for the OK or ERROR / +CMS ERROR:<err> response before issuing further commands.</p> <p>Note: maximum length for message body is 1024 bytes, trying to send more data will cause the surplus to be discarded and lost.</p>
Example	<pre>AT#EMAILD="me@myaddress.com","subject of the mail" >message body... this is the text of the mail message... CTRL-Z ..wait.. OK Message has been sent.</pre>
Note	The only difference between this command and the #SEMAIL is that this command does not interact with the GPRS context status, leaving it ON or OFF according to the #EMAILACT setting, thus, when the connection made with #EMAILD is closed, the context status is maintained.

#EMAILD – E-mail Sending	SELINT 2
AT#EMAILD=[<da>,<subj>]	Execution command sends an e-mail message if GPRS context has already been activated by either AT#SGACT=1,1 or AT#EMAILACT=1 or



3.5.7.10.9. E-mail Parameters Save - #ESAV

#ESAV - E-mail Parameters Save		SELINT 0 / 1
AT#ESAV	<p>Execution command stores the e-mail parameters in the NVM of the device.</p> <p>The e-mail parameters to store are:</p> <ul style="list-style-type: none"> - E-mail User Name - E-mail Password - E-mail Sender Address - E-mail SMTP server 	
Note	If some parameters have not been previously specified then a default value will be taken.	

#ESAV - E-mail Parameters Save		SELINT 2
AT#ESAV	<p>Execution command stores the e-mail parameters in the NVM of the device.</p> <p>The e-mail parameters to store are:</p> <ul style="list-style-type: none"> - E-mail User Name - E-mail Password - E-mail Sender Address - E-mail SMTP server 	
AT#ESAV=?	Test command returns the OK result code.	
Note	If some parameters have not been previously specified then a default value will be taken.	

3.5.7.10.10. E-mail Parameters Reset - #ERST

#ERST - E-mail Parameters Reset		SELINT 0 / 1
AT#ERST	<p>Execution command resets the e-mail parameters to the “factory default” configuration and stores them in the NVM of the device.</p> <p>The e-mail parameters to reset are:</p> <ul style="list-style-type: none"> - E-mail User Name - E-mail Password - E-mail Sender Address - E-mail SMTP server 	

#ERST - E-mail Parameters Reset		SELINT 2
AT#ERST	<p>Execution command resets the e-mail parameters to the “factory default” configuration and stores them in the NVM of the device.</p> <p>The e-mail parameters to reset are:</p> <ul style="list-style-type: none"> - E-mail User Name - E-mail Password - E-mail Sender Address - E-mail SMTP server 	
AT#ERST=?	Test command returns the OK result code.	



3.5.7.10.11. SMTP Read Message - #EMAILMSG

#EMAILMSG - SMTP Read Message		SELINT 0 / 1
AT#EMAILMSG	Execution command returns the last response from SMTP server.	
AT#EMAILMSG?	Read command has the same behaviour as Execution command.	

#EMAILMSG - SMTP Read Message		SELINT 2
AT#EMAILMSG	Execution command returns the last response from SMTP server.	
AT#EMAILMSG=?	Test command returns the OK result code.	

3.5.7.10.12. Send mail with attachment - #SMTPCL

#SMTPCL – send mail with attachment		SELINT 2
AT#SMTPCL= <da>,<subj>,<att> [,<filename>,<encod>]	<p>This command permits to send an email with different types of attachments if GPRS context has already been activated (#SGACT,#EMAILACT or #GPRS).</p> <p>After sending message body text (as with #EMAILD), the command switch to online mode if attachment has to be sent. While in online mode data received on the serial port are transmitted on the SMTP socket as MIME attachment. The escape sequence has to be sent to close the SMTP connection.</p> <p>Encoding of data received on the serial port is performed if required (binary data), before transmission on the SMTP socket.</p> <p>Parameters:</p> <p><da> - destination address, string type. (maximum length 100 characters)</p> <p><subj> - subject of the message, string type. (maximum length 200 characters)</p> <p><att> - attached file flag</p> <p>0 – no attachment 1 – attach a txt file 2 – attach a binary file(jpg,bin,pdf,...)</p> <p><filename> - attached file name (maximum length 50 characters)</p> <p><encod> -Content-Transfer-Encoding used for attachment</p> <p>0 – “7bit” means data all represented as short lines of US-ASCII data</p> <p>1 – “base64” designed to represent arbitrary sequences of octets in a form that need not be humanly readable</p> <p>Note: if no attachment (<att> 0) has to be sent, the behavior is the same as with #EMAILD.</p> <p>OK after CTRL-Z is returned(if connection was successful), the switch to</p>	



	<p>online mode is not performed.</p> <p>Note: If a txt file (<att>=1) is attached, only <encod>0(“7bit”) is possible. If a binary file (<att>=2) is attached, only <encod>1(“base64”) is possible.</p> <p>Note: if <att>=0 and <filename> is present and not empty, the attachment won’t be considered</p> <p>Note: if <att> 1 or 2 and <filename> is not present, command will return an ERROR</p> <p>Note: default SMTP port (25) is used</p>
AT#SMTPCL=?	Test command reports the supported range of values for parameters <da>,<subj>,<att>[,<filename>,<encod>]
Examples	<pre>at#smtpcl="me@myaddress.com","test1",1,"sample.txt",0 >message body...this is the text of the mail message... Send CTRL-Z CONNECT ...data received on the serial port are sent as attachment... Send escape sequence to close the SMTP connection +++ NO CARRIER at#smtpcl="me@myaddress.com","test2",2,"image.jpg",1 >message body...this is the text of the mail message... Send CTRL-Z CONNECT ...data received on the serial port are base64-encoded and sent as attachment... Send escape sequence to close the SMTP connection +++ NO CARRIER</pre>

3.5.7.10.13. E-mail SMTP Port - #ESMTPPORT

#ESMTPPORT – E-mail SMTP Port		SELINT 2
AT#ESMTPPORT=<Port>	<p>This command permits to set SMTP port</p> <p>Parameters: <Port> - SMTP port to contact (default 25)</p>	



	25..465,587 Note: SMTP protocol is used on the selected port Note: the value set by command is directly stored in NVM
AT#ESMTPPORT?	Read command reports the currently selected <Port> in the format: #ESMTPPORT: <Port >
AT#ESMTPPORT=?	Test command reports the supported range of values for parameter < Port > >

3.5.7.10.14. E-mail sender name - #ENAME

#ENAME – E-mail sender name	SELINT 2
AT#ENAME=[<e-name>][,<charset>]	Set command sets the full name of the e-mail sender that will be displayed by the receiver in place of the sender e-mail address. Parameter: <e-name> - sender name, string type. - any string value up to max length reported in the Test command. (factory default is the empty string “”) <charset> - Numeric parameter indicating the character encoding used in <e-name> parameter 0 - US-ASCII (default) 1 - UTF-8 Note: do not use the SPACE character. In place of it, use UNDERSCORE (“_”), but only if <charset> is 0.
AT#ENAME?	Read command returns the current setting in the format: #ENAME: <e-name>,<charset><CR><LF>
AT#ENAME=?	Test command returns the maximum allowed length of the string parameter <e-name> and the range of values accepted by parameter <charset>



3.5.7.11. Easy Scan® Extension AT Commands



NOTE:

it is strongly suggested to issue all the Easy Scan® Extension AT commands with **NO SIM** inserted, to avoid a potential conflict with normal module operations, such as “incoming call”, “periodic location update”, “periodic routing area update” and so on.

3.5.7.11.1. Network Survey - #CSURV

#CSURV - Network Survey	SELINT 0 / 1
<p>AT#CSURV [=<s>,<e>]</p> <p>AT*CSURV [=<s>,<e>] <i>(both syntax are possible)</i></p>	<p>Execution command allows to perform a quick survey through band channels, starting from channel <s> to channel <e>. If parameters are omitted, a full band scan is performed.</p> <p>Parameters: <s> - starting channel <e> - ending channel</p> <p>After issuing the command the device responds with the string:</p> <p>Network survey started...</p> <p>and, after a while, a list of informations, one for each received carrier, is reported, each of them in the format:</p> <p style="text-align: center;">(For BCCH-Carrier)</p> <p>arfcn: <arfcn> bsic: <bsic> rxLev: <rxLev> ber: <ber> mcc: <mcc> mnc: <mnc> lac: <lac> cellId: <cellId> cellStatus: <cellStatus> numArfcn: <numArfcn> arfcn: [<arfcn1> ..[<arfcn64>]] [numChannels: <numChannels> array: [<ba1> ..[<ba32>]] [pbch: <pbch> [nom: <nom> rac: <rac> spgc: <spgc> pat: <pat> nco: <nco> t3168: <t3168> t3192: <t3192> drxmax: <drxmax> ctrlAck: <ctrlAck> bsCVmax: <bsCVmax> alpha: <alpha> pcMeasCh: <pcMeasCh>]]] <CR><LF><CR><LF><CR><LF></p> <p>where: <arfcn> - C0 carrier assigned radio channel (BCCH - Broadcast Control Channel) <bsic> - base station identification code <rxLev> - reception level (in dBm) <ber> - bit error rate (in %) <mcc> - mobile country code <mnc> - mobile network code <lac> - location area code <cellId> - cell identifier</p>



#CSURV - Network Survey	SELINT 0 / 1
	<p><cellStatus> - cell status ..CELL_SUITABLE - C0 is a suitable cell. CELL_LOW_PRIORITY - the cell is low priority based on the received system information. CELL_FORBIDDEN - the cell is forbidden. CELL_BARRED - the cell is barred based on the received system information. CELL_LOW_LEVEL - the cell <rxLev> is low. CELL_OTHER - none of the above e.g. exclusion timer running, no BCCH available...etc.</p> <p><numArfcn> - number of valid channels in the Cell Channel Description <arfcn> - arfcn of a valid channel in the Cell Channel Description (<i>n</i> is in the range 1..<numArfcn>)</p> <p><numChannels> - number of valid channels in the BCCH Allocation list; the output of this information for non-serving cells depends on last #CSURVEXT setting:</p> <ol style="list-style-type: none"> 1. if #CSURVEXT=0 this information is displayed only for serving cell 2. if #CSURVEXT=1 or 2 this information is displayed also for every valid scanned BCCH carrier. <p><ban> - arfcn of a valid channel in the BA list (<i>n</i> is in the range 1..<numChannels>); the output of this information for non-serving cells depends on last #CSURVEXT setting:</p> <ol style="list-style-type: none"> 1. if #CSURVEXT=0 this information is displayed only for serving cell 2. if #CSURVEXT=1 or 2 this information is displayed also for every valid scanned BCCH carrier. <p><i>(The following informations will be printed only if GPRS is supported in the cell)</i></p> <p><pbch> - packet broadcast control channel 0 - pbch not activated on the cell 1 - pbch activated on the cell</p> <p><nom> - network operation mode 1 2 3</p> <p><rac> - routing area code 0..255 -</p> <p><spgc> - SPLIT_PG_CYCLE support ..0 - SPLIT_PG_CYCLE is not supported on CCCH on this cell ..1 - SPLIT_PG_CYCLE is supported on CCCH on this cell</p> <p><pat> - priority access threshold 0 - 3..6 -</p> <p><nco> - network control order 0..2 -</p> <p><t3168> - timer 3168</p>



#CSURV - Network Survey	SELINT 0 / 1
	<p><t3192> - timer 3192 <drxmax> - discontinuous reception max time (in seconds) <ctrlAck> - packed control ack <bsCVmax> - blocked sequenc countdown max value <alpha> - alpha parameter for power control <pcMeasCh> - type of channel which shall be used for downlink measurements for power control 0 - BCCH 1 - PDCH</p> <p style="text-align: center;">(For non BCCH-Carrier)</p> <p>arfcn: <arfcn> rxLev: <rxLev></p> <p>where: <arfcn> - RF channel <rxLev> - reception level (in dBm)</p> <p>Lastly, the #CSURV output ends in two ways, depending on the last #CSURVF setting:</p> <p style="text-align: center;">if #CSURVF=0 or #CSURVF=1</p> <p>The output ends with the string:</p> <p>Network survey ended</p> <p style="text-align: center;">if #CSURVF=2</p> <p>the output ends with the string:</p> <p>Network survey ended (Carrier: <NoARFCN> BCCh: <NoBCCh>)</p> <p>where <NoARFCN> - number of scanned frequencies <NoBCCH> - number of found BCCh</p>
<p>AT#CSURV? AT*CSURV?</p>	<p>Read command has the same behaviour as Execution command with parameters omitted.</p>
<p>Example</p>	<p>AT#CSURV</p> <p>Network survey started...</p> <p>arfcn: 48 bsic: 24 rxLev: -52 ber: 0.00 mcc: 610 mnc: 1 lac: 33281 cellId: 3648 cellStatus: CELL_SUITABLE numArfcn: 2 arfcn: 30 48 numChannels: 5 array: 14 19 22 48 82</p> <p>arfcn: 14 rxLev: 8</p>



#CSURVC - Network Survey (Numeric Format)	SELINT 0 / 1
	<p><cellStatus> - cell status ..0 - C0 is a suitable cell (CELL_SUITABLE). 1 - the cell is low priority based on the received system information (CELL_LOW_PRIORITY). 2 - the cell is forbidden (CELL_FORBIDDEN). 3 - the cell is barred based on the received system information (CELL_BARRED). 4 - the cell <rxLev> is low (CELL_LOW_LEVEL). 5 - none of the above e.g. exclusion timer running, no BCCH available...etc.. (CELL_OTHER).</p> <p><numArfcn> - number of valid channels in the Cell Channel Description <arfcn> - arfcn of a valid channel in the Cell Channel Description (<i>n</i> is in the range 1..<numArfcn>)</p> <p><numChannels> - number of valid channels in the BCCH Allocation list; the output of this information for non-serving cells depends on last #CSURVEXT setting: 1. if #CSURVEXT=0 this information is displayed only for serving cell 2. if #CSURVEXT=1 or 2 this information is displayed also for every valid scanned BCCH carrier.</p> <p><ban> - arfcn of a valid channel in the BA list (<i>n</i> is in the range 1..<numChannels>); the output of this information for non-serving cells depends on last #CSURVEXT setting: 1. if #CSURVEXT=0 this information is displayed only for serving cell 2. if #CSURVEXT=1 or 2 this information is displayed also for every valid scanned BCCH carrier.</p> <p><i>(The following informations will be printed only if GPRS is supported in the cell)</i></p> <p><pbcc> - packet broadcast control channel 0 - pbcc not activated on the cell 1 - pbcc activated on the cell</p> <p><nom> - network operation mode 1 2 3</p> <p><rac> - routing area code 0..255 -</p> <p><spgc> - SPLIT_PG_CYCLE support ..0 - SPLIT_PG_CYCLE is not supported on CCCH on this cell ..1 - SPLIT_PG_CYCLE is supported on CCCH on this cell</p> <p><pat> - priority access threshold 0 - 3..6 -</p> <p><nco> - network control order 0..2 -</p> <p><t3168> - timer 3168</p>



#CSURVC - Network Survey (Numeric Format)		SELINT 0 / 1
	<p><t3192> - timer 3192 <drxmax> - discontinuous reception max time (in seconds) <ctrlAck> - packed control ack <bsCVmax> - blocked sequenc countdown max value <alpha> - alpha parameter for power control <pcMeasCh> - type of channel which shall be used for downlink measurements for power control 0 - BCCH 1 - PDCH</p> <p style="text-align: center;">(For non BCCH-Carrier)</p> <p><arfcn>,<rxLev></p> <p>where: <arfcn> - RF channel <rxLev> - reception level (in dBm)</p> <p>The output ends with the string:</p> <p>Network survey ended</p>	
AT#CSURVC?	Read command has the same behaviour as the Execution command with parameters omitted	
AT*CSURVC?		
Example	<p>AT#CSURVC</p> <p>Network survey started...</p> <p>48,24,-52,0.00,610,1,33281,3648,0,2,30 48,5,14 19 22 48 82</p> <p>14,8</p> <p>Network survey ended</p> <p>OK</p>	
Note	<p>The command is executed within max. 2 minute.</p> <p>The information provided by #CSURVC is the same as that provided by #CSURV. The difference is that the output of #CSURVC is in numeric format only.</p>	

#CSURVC - Network Survey (Numeric Format)		SELINT 2
AT#CSURVC[= <s>,<e>]]	Execution command allows to perform a quick survey through band channels, starting from channel <s> to channel <e>. Issuing AT#CSURVC<CR>, a full band scan is performed.	
AT*CSURVC[= =<s>,<e>]]	Parameters: <s> - starting channel <e> - ending channel	
(both syntax are		



#CSURVC - Network Survey (Numeric Format)	SELINT 2
	<p>1. if #CSURVEXT=0 this information is displayed only for serving cell</p> <p>2. if #CSURVEXT=1, 2 or 3 this information is displayed also for every valid scanned BCCH carrier.</p> <p><ban> - decimal number; it is the arfcn of a valid channel in the BA list (<i>n</i> is in the range 1..<numChannels>); the output of this information for non-serving cells depends on last #CSURVEXT setting:</p> <p>1. if #CSURVEXT=0 this information is displayed only for serving cell</p> <p>2. if #CSURVEXT=1, 2 or 3 this information is displayed also for every valid scanned BCCH carrier.</p> <p><i>(The following informations will be printed only if GPRS is supported in the cell)</i></p> <p><pbch> - packet broadcast control channel 0 - pbch not activated on the cell 1 - pbch activated on the cell</p> <p><nom> - network operation mode 1 2 3</p> <p><rac> - routing area code 0..255 -</p> <p><spgc> - SPLIT_PG_CYCLE support ..0 - SPLIT_PG_CYCLE is not supported on CCCH on this cell ..1 - SPLIT_PG_CYCLE is supported on CCCH on this cell</p> <p><pat> - priority access threshold 0 - 3..6 -</p> <p><nco> - network control order 0..2 -</p> <p><t3168> - timer 3168 <t3192> - timer 3192</p> <p><drxmax> - discontinuous reception max time (in seconds)</p> <p><ctrlAck> - packed control ack</p> <p><bsCVmax> - blocked sequenc countdown max value</p> <p><alpha> - alpha parameter for power control</p> <p><pcMeasCh> - type of channel which shall be used for downlink measurements for power control 0 - BCCH 1 - PDCH</p> <p><i>(The following informations will be printed only for #CSURVEXT=3 setting)</i></p> <p><mstxpwr> - decimal TX power level</p> <p><rxaccmin> - decimal RX level access min, range 0 - 63</p> <p><croffset> - decimal Cell Reselection Offset, range 0 - 63</p>



#CSURVC - Network Survey (Numeric Format)	SELINT 2
	<p><penaltyt> - decimal Penalty Time, range 0 - 31 <t3212> - decimal T3212 Periodic Location Update Timer <CRH> - decimal Cell Reselection Offset</p> <p style="text-align: center;">(For non BCCH-Carrier)</p> <p><arfcn>,<rxLev></p> <p>where: <arfcn> - decimal number; it is the RF channel <rxLev> - decimal number; it is the reception level (in dBm)</p> <p>The last information from #CSURVC depends on the last #CSURVF setting:</p> <p style="text-align: center;">#CSURVF=0 or #CSURVF=1</p> <p>The output ends with the string: Network survey ended</p> <p style="text-align: center;">#CSURVF=2</p> <p>the output ends with the string: Network survey ended (Carrier: <NoARFCN> BCCh: <NoBCCh>) where <NoARFCN> - number of scanned frequencies <NoBCCH> - number of found BCCh</p>
Example	<p>AT#CSURVC</p> <p>Network survey started...</p> <p>48,24,-52,0,00,610,1,33281,3648,0,2,30 48,5,14 19 22 48 82,5,4,4,6,,2,7</p> <p>14,8</p> <p>Network survey ended</p> <p>OK</p>
Note	<p>The command is executed within max. 2 minute.</p> <p>The information provided by #CSURVC is the same as that provided by #CSURV. The difference is that the output of #CSURVC is in numeric format only.</p>

3.5.7.11.3. Network Survey - #CSURVU

#CSURVU - Network Survey Of User Defined Channels	SELINT 0 / 1
<p>AT#CSURVU=[<ch1>[,<ch2>[,... [,<chn>]]]]</p>	<p>Execution command allows to perform a quick survey through the given channels.</p> <p>The result format is like command #CSURV.</p>



3.5.7.11.4. Network Survey - #CSURVUC

#CSURVUC - Network Survey Of User Defined Channels (Numeric Format)	SELINT 0 / 1
<p>AT#CSURVUC=[<ch1>[,<ch2>[,...[,<chn>]]]]</p> <p>AT*CSURVUC=[<ch1>[,<ch2>[,...[,<chn>]]]] <i>(both syntax are possible)</i></p>	<p>Execution command allows to perform a quick survey through the given channels.</p> <p>The result format is like command #CSURVC.</p> <p>Parameters: <chn> - channel number (arfcn)</p> <p>Note: issuing AT#CSURVUC=<CR> is the same as issuing the command AT#CSURVUC=0<CR>.</p>
Example	<p>AT#CSURVUC=59,110</p> <p>Network survey started...</p> <p>59,16,-76,0.00,546,1,54717,21093,0,2,36 59</p> <p>110,-107</p> <p>Network survey ended</p> <p>OK</p>
Note	<p>The command is executed within max. 2 minute.</p> <p>The information provided by #CSURVUC is the same as that provided by #CSURVU. The difference is that the output of #CSURVUC is in numeric format only.</p>

#CSURVUC - Network Survey Of User Defined Channels (Numeric Format)	SELINT 2
<p>AT#CSURVUC=[<ch1>[,<ch2>[,...[,<chn>]]]]</p> <p>AT*CSURVUC=[<ch1>[,<ch2>[,...[,<chn>]]]] <i>(both syntax are possible; the second syntax is maintained only for backward compatibility and will not be present in future versions)</i></p>	<p>Execution command allows to perform a quick survey through the given channels.</p> <p>The result format is like command #CSURVC.</p> <p>Parameters: <chn> - channel number (arfcn)</p> <p>Note: the maximum number of channels is 20.</p>
Example	<p>AT#CSURVUC=59,110</p> <p>Network survey started...</p> <p>59,16,-76,0.00,546,1,54717,21093,0,2,36 59,5,4,4,6,,2,7</p>



#CSURVUC - Network Survey Of User Defined Channels (Numeric Format)		SELINT 2
	110,-107 Network survey ended OK	
Note	The command is executed within max. 2 minute. The information provided by #CSURVUC is the same as that provided by #CSURVU. The difference is that the output of #CSURVUC is in numeric format only.	

3.5.7.11.5. BCCH Network Survey - #CSURVB

#CSURVB - BCCH Network Survey		SELINT 0 / 1
AT#CSURVB=<n>	Execution command performs a quick network survey through M (maximum number of available frequencies depending on last selected band) channels. The survey stops as soon as <n> BCCH carriers are found. The result format is like command #CSURV. Parameter: <n> - number of desired BCCH carriers 1..M	
AT#CSURVB=?	Test command reports the range of values for parameter <n> in the format: (1-M) where M is the maximum number of available frequencies depending on last selected band.	

#CSURVB - BCCH Network Survey		SELINT 2
AT#CSURVB=[<n>]	Execution command performs a quick network survey through M (maximum number of available frequencies depending on last selected band) channels. The survey stops as soon as <n> BCCH carriers are found. The result format is like command #CSURV. Parameter: <n> - number of desired BCCH carriers 1..M	
AT#CSURVB=?	Test command reports the range of values for parameter <n> in the format: (1-M)	



#CSURVB - BCCH Network Survey		SELINT 2
	where M is the maximum number of available frequencies depending on last selected band.	

3.5.7.11.6. BCCH Network Survey - #CSURVBC

#CSURVBC - BCCH Network Survey (Numeric Format)		SELINT 0 / 1
AT#CSURVBC=<n>	<p>Execution command performs a quick network survey through M (maximum number of available frequencies depending on last selected band) channels. The survey stops as soon as <n> BCCH carriers are found.</p> <p>The result is given in numeric format and is like command #CSURVC.</p> <p>Parameter: <n> - number of desired BCCH carriers 1..M</p>	
AT#CSURVBC=?	<p>Test command reports the range of values for parameter <n> in the format:</p> <p>(1-M)</p> <p>where M is the maximum number of available frequencies depending on last selected band.</p>	

#CSURVBC - BCCH Network Survey (Numeric Format)		SELINT 2
AT#CSURVBC=[<n>]	<p>Execution command performs a quick network survey through M (maximum number of available frequencies depending on last selected band) channels. The survey stops as soon as <n> BCCH carriers are found.</p> <p>The result is given in numeric format and is like command #CSURVC.</p> <p>Parameter: <n> - number of desired BCCH carriers 1..M</p>	
AT#CSURVBC=?	<p>Test command reports the range of values for parameter <n> in the format:</p> <p>(1-M)</p> <p>where M is the maximum number of available frequencies depending on last selected band.</p>	

3.5.7.11.7. Network Survey Format - #CSURVF

#CSURVF - Network Survey Format		SELINT 0 / 1
AT#CSURVF[=	Set command controls the format of the numbers output by all the Easy Scan®	



#CSURVF - Network Survey Format		SELINT 0 / 1
[<format>]	Parameter: <format> - numbers format 0 - Decimal 1 - Hexadecimal values, no text 2 - Hexadecimal values with text Note: issuing AT#CSURVF<CR> is the same as issuing the Read command. Note: issuing AT#CSURVF=<CR> is the same as issuing the command AT#CSURVF=0<CR> .	
AT#CSURVF?	Read command reports the current number format, as follows: <format>	
AT#CSURVF=?	Test command reports the supported range of values for the parameter <format>.	

#CSURVF - Network Survey Format		SELINT 2
AT#CSURVF= [<format>]	Set command controls the format of the numbers output by all the Easy Scan® Parameter: <format> - numbers format 0 - Decimal 1 - Hexadecimal values, no text 2 - Hexadecimal values with text	
AT#CSURVF?	Read command reports the current number format, as follows: <format>	
AT#CSURVF=?	Test command reports the supported range of values for the parameter <format>.	

3.5.7.11.8. <CR><LF> Removing On Easy Scan® Commands Family - #CSURVNLF

#CSURVNLF - <CR><LF> Removing On Easy Scan® Commands Family		SELINT 0 / 1
AT#CSURVNLF [=<value>]	Set command enables/disables the automatic <CR><LF> removing from each information text line. Parameter: <value> 0 - disables <CR><LF> removing; they'll be present in the information text (factory default) 1 - remove <CR><LF> from information text Note: if parameter is omitted the behaviour of Set command is the same as Read command.	
AT#CSURVNLF?	Read command reports whether automatic <CR><LF> removing is currently enabled or not, in the format:	



#CSURVNLF - <CR><LF> Removing On Easy Scan® Commands Family		SELINT 0 / 1
	<value>	
AT#CSURVNLF=?	Test command reports the range of values for parameter <value>.	

#CSURVNLF - <CR><LF> Removing On Easy Scan® Commands Family		SELINT 2
AT#CSURVNLF=[<value>]	Set command enables/disables the automatic <CR><LF> removing from each information text line. Parameter: <value> 0 - disables <CR><LF> removing; they'll be present in the information text (factory default) 1 - remove <CR><LF> from information text	
AT#CSURVNLF?	Read command reports whether automatic <CR><LF> removing is currently enabled or not, in the format: <value>	
AT#CSURVNLF=?	Test command reports the range of values for parameter <value>.	

3.5.7.11.9. Extended Network Survey - #CSURVEXT

#CSURVEXT - Extended Network Survey		SELINT 0 / 1
AT#CSURVEXT [=<value>]	Set command enables/disables extended network survey. Parameter: <value> 0 - disables extended network survey (factory default) 1 - enables extended network survey; all the network survey execution commands (#CSURV, #CSURVC, #CSURVU, #CSURVUC, #CSURVB, #CSURVBC) display the BAList for every valid scanned BCCh carrier 2 - enables extended network survey; all the network survey execution commands (#CSURV, #CSURVC, #CSURVU, #CSURVUC, #CSURVB, #CSURVBC) display the BAList for every valid scanned BCCh carrier and, if GPRS is supported in the cell, they report some GPRS informations carried by the System Information 13 of the BCCh Note: if parameter is omitted the behaviour of Set command is the same as Read command.	
AT#CSURVEXT?	Read command reports whether extended network survey is currently enabled or not, in the format: <value>	
AT#CSURVEXT=?	Test command reports the range of values for parameter <value>.	



#CSURVEXT - Extended Network Survey		SELINT 2
AT#CSURVEXT [=<value>]	Set command enables/disables extended network survey. Parameter: <value> 0 - disables extended network survey (factory default) 1 - enables extended network survey; all the network survey execution commands (#CSURV, #CSURVC, #CSURVU, #CSURVUC, #CSURVB, #CSURVBC) display the BAList for every valid scanned BCCh carrier 2 - enables extended network survey; all the network survey execution commands (#CSURV, #CSURVC, #CSURVU, #CSURVUC, #CSURVB, #CSURVBC) display the BAList for every valid scanned BCCh carrier and, if GPRS is supported in the cell, they report some GPRS informations carried by the System Information 13 of the BCCh 3 - enables more extended network survey; all the network survey execution commands (#CSURV, #CSURVC, #CSURVU, #CSURVUC, #CSURVB, #CSURVBC). It displays transmit power level, receiving level access min, Cell Reselection Offset, Penalty Time, T3212 Periodic Location Update Timer and Cell Reselection Offset	
AT#CSURVEXT?	Read command reports whether extended network survey is currently enabled or not, in the format: <value>	
AT#CSURVEXT=?	Test command reports the range of values for parameter <value> .	

3.5.7.11.10. PLMN Network Survey - #CSURVP

#CSURVP - PLMN Network Survey		SELINT 2
AT#CSURVP=<plmn>	Execution command performs a quick network survey through channels. The survey stops as soon as a BCCH carriers belonging to the selected PLMN is found. The result format is like command #CSURV. Parameter: <plmn> - the desired PLMN in numeric format	
AT#CSURVP=?	Test command returns OK	



3.5.7.11.11. PLMN Network Survey (Numeric Format) - #CSURVPC

#CSURVPC - PLMN Network Survey (Numeric Format)		SELINT 2
AT#CSURVPC= <plmn>	<p>Execution command performs a quick network survey through channels. The survey stops as soon as a BCCH carriers belonging to the selected PLMN is found.</p> <p>The result is given in numeric format and is like command #CSURVC.</p> <p>Parameter: <plmn> - the desired PLMN in numeric format</p>	
AT#CSURVPC=?	Test command returns OK	

3.5.7.11.12. Network Survey Of Timing Advance - #CSURVTA

#CSURVTA – Network Survey Of Timing Advance		SELINT 2
AT#CSURVTA=<ch1>,[<ch2> ,[...[,<chn>]]]	<p>Execution command allows to perform a quick survey of timing advance through the given channels or through top 6 neighbour cells.</p> <p>Parameters: <chn> - channel number (arfcn) or 1024</p> <p><u>If <ch1> is different than 1024.</u> After issuing the command the device responds with the string:</p> <p>Network survey started...</p> <p>and, after a while, a list of timing advance values, one for each received carrier, is reported, each of them in the format:</p> <p>arfcn: <arfcn> TA: <TAValue><CR><LF><CR><LF><CR><LF></p> <p>where: <arfcn> - decimal number; it is the RF channel <TAValue> - decimal number; it is the timing advance value in bit periods (1 bit period = 48/13 μs); the range of this value is 0-63; this value is -1 if time advance measurement fails</p> <p>Lastly, the #CSURVTA output ends in two ways, depending on the last #CSURVF setting:</p> <p style="text-align: center;">if #CSURVF=0 or #CSURVF=1</p> <p>The output ends with the string:</p> <p>Network survey ended</p> <p style="text-align: center;">if #CSURVF=2</p> <p>the output ends with the string:</p>	



	<p>Network survey ended (Carrier: <NoARFCN> BCCh: 0)</p> <p>where <NoARFCN> - number of scanned frequencies</p> <p>Note: the maximum number of channels is 20.</p> <p>Note: during the execution of this command calls and sms, either incoming or outgoing, are not supported.</p> <p>Note: after the end of this command it is strongly suggested to wait at least 5 seconds before sending other AT commands.</p> <p>Note: this command can only be executed when mobile is in idle state.</p> <p>Note: it is possible to measure timing advance of cells that do not belong to current selected PLMN or current neighbour cell list.</p> <p>Note: if serving cell timing advance is needed, it is strongly suggested to measure its timing advance with this command, adding serving cell ARFCN to the list, in order to have even measures.</p> <p>Note: the command may be aborted and return ERROR in case of higher priority protocol stack event.</p> <p>Note: AT#CSURVNLF configuration affects this command behaviour.</p> <p>Note: AT#CSURVEXT configuration does not affect this command behaviour.</p> <p><u>If there is only one parameter and <ch1> is equal to 1024.</u> After issuing the command the device responds with the string</p> <p>ARFCN dBm MCC MNC LAC cell TA<CR><LF></p> <p>followed by the list of top 6 neighbour ARFCN parameters, including timing advance, in the format:</p> <p><arfcn> <dBm> <mcc> <mnc> <lac> <id> <TAValue><CR><LF></p> <p>where: <arfcn> - decimal number; it is the RF channel <dBm> - decimal number; it is received signal strength in dBm <mcc> - hexadecimal number; it is mobile country code <mnc> - hexadecimal number; it is mobile network code <lac> - hexadecimal number; it is location area code</p>
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	<p><id> - hexadecimal number; it is cell id <TAValue> - decimal number; it is the timing advance value in bit periods (1 bit period = 48/13 μs); the range of this value is 0-63; this value is -1 if time advance measurement fails</p>
AT#CSURVTA=?	Test command response is OK.
Example	<p>AT#CSURVTA=9,7,4</p> <p>Network survey started ...</p> <p>arfcn: 9 TA: 2</p> <p>arfcn: 7 TA: 11</p> <p>arfcn: 4 TA: 2</p> <p>Network survey ended</p> <p>OK</p> <p>AT#CSURVTA=1024 ARFCN dBm MCC MNC LAC cell TA 1004 -75 222 01 D5BD 5265 0 25 -81 222 01 D5BD 520F 11 15 -91 222 01 D5BD 5251 7 19 -93 222 01 D5BD 5219 12 12 -96 222 01 D5BD 5266 1</p> <p>OK</p>



#STIA - SIM Toolkit Interface Activation	SELINT 2
	<p>user interaction an unsolicited code will be sent, if enabled with #STIA command, as follows:</p> <ul style="list-style-type: none"> if <mode> parameter of #STIA command has been set to 3 (reduced unsolicited indication) an unsolicited indication will be sent, indicating the type of proactive command issued by the SIM: <p>#STN: <cmdType></p> if <mode> parameter of #STIA command has been set to 2 (extended unsolicited indication) the format of the unsolicited indication depends on the specific command: <p style="text-align: center;"><i>if <cmdType>=1 (REFRESH)</i></p> <p>an unsolicited notification will be sent to the user:</p> <p>#STN: <cmdType>,<refresh type></p> <p>where:</p> <p><refresh type></p> <ul style="list-style-type: none"> 0 - SIM Initialization and Full File Change Notification; 1 - File Change Notification; 2 - SIM Initialization and File Change Notification; 3 - SIM Initialization; 4 - SIM Reset <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>In this case neither #STGI nor #STSR commands are required:</p> <ul style="list-style-type: none"> • AT#STGI is accepted anyway. • AT#STSR=<cmdType>,0 will answer OK but do nothing. </div> <p style="text-align: center;"><i>if <cmdType>=17 (SEND SS)</i> <i>if <cmdType>=19 (SEND SHORT MESSAGE)</i> <i>if <cmdType>=20 (SEND DTMF)</i> <i>if <cmdType>=32 (PLAY TONE)</i></p> <p>an unsolicited notification will be sent if allowed by SIM (see GSM 11.14):</p> <p>#STN: <cmdType>[,<text>]</p> <p>where:</p> <p><text> - (optional) text to be displayed to user</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>In these cases neither #STGI nor #STSR commands are required:</p> </div>



#STIA - SIM Toolkit Interface Activation	SELINT 2
	<ul style="list-style-type: none"> • AT#STSR=<cmdType>,0 will answer OK but do nothing. <p style="text-align: center;"><i>if <cmdType>=64 (OPEN CHANNEL)</i></p> <p>an unsolicited notification will be sent to the user:</p> <p>#STN: <cmdType>[,<text>]</p> <p>where: <text> - optional text string sent by SIM</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>In this case:</p> <ul style="list-style-type: none"> • AT#STSR=64,34 can be sent to reject request. • AT#STGI is accepted anyway. • AT#STSR=<cmdType>,0 will start connection. </div> <p>All other commands:</p> <p>the unsolicited indication will report just the proactive command type:</p> <p>#STN: <cmdType></p> <p>Note: if the call control or SMS control facility in the SIM is activated, when the customer application makes an outgoing call, or sends an SS or USSD, or an SMS, the following #STN unsolicited indication could be sent, according to GSM 11.14, to indicate whether the outgoing call has been accepted, rejected or modified by the SIM, or if the SMS service centre address or destination has been changed:</p> <p>#STN: <cmdTerminateValue>,<Result>[,<TextInfo>[,<Number>[,<MODestAddr>]]]</p> <p>where</p> <p><cmdTerminateValue> 150 - SMS control response 160 - call/SS/USSD response</p> <p><Result> 0 - Call/SMS not allowed 1 - Call/SMS allowed 2 - Call/SMS allowed with modification</p> <p><Number> - Called number, Service Center Address or SS String in ASCII format. <MODestAddr> - MO destination address in ASCII format. <TextInfo> - alpha identifier provided by the SIM in ASCII format.</p>



#STIA - SIM Toolkit Interface Activation		SELINT 2
Note	A typical SAT session on AT interface starts after an #STN: 37 unsolicited code is received, if enabled(see above). At that point usually an AT#STGI=37 command is issued (see #STGI), and after the SAT main menu has been displayed on TE an AT#STSR=37,0,x command is issued to select an item in the menu (see #STSR).	

3.5.7.12.2. SIM Toolkit Get Information - #STGI

#STGI - SIM Toolkit Get Information		SELINT 2
AT#STGI= [<cmdType>]	<p>#STGI set command is used to request the parameters of a proactive command from the ME.</p> <p>Parameter: <cmdType> - proactive command ID according to GSM 11.14 (decimal); these are only those command types that use the AT interface; SAT commands which are not using the AT interface (not MMI related SAT commands, e.g. PROVIDE LOCAL INFORMATION) are executed without sending any indication to the user</p> <ul style="list-style-type: none"> 1 - REFRESH 5 – SET UP EVENT LIST 16 - SET UP CALL 17 - SEND SS 18 - SEND USSD 19 - SEND SHORT MESSAGE 20 - SEND DTMF 32 - PLAY TONE 33 - DISPLAY TEXT 34 - GET INKEY 35 - GET INPUT 36 - SELECT ITEM 37 - SET UP MENU 40 – SET UP IDLE MODE TEXT 64 – OPEN CHANNEL <p>Requested command parameters are sent using an #STGI indication:</p> <p>#STGI: <parameters></p> <p>where <parameters> depends upon the ongoing proactive command as follows:</p> <p style="text-align: center;"><i>if <cmdType>=1 (REFRESH)</i></p> <p>#STGI: <cmdType>,<refresh type> where:</p>	



#STGI - SIM Toolkit Get Information	SELINT 2
<p><refresh type> 0 - SIM Initialization and Full File Change Notification; 1 - File Change Notification; 2 - SIM Initialization and File Change Notification; 3 - SIM Initialization; 4 - SIM Reset</p> <p style="text-align: center;"><i>if <cmdType>=5 (SET UP EVENT LIST)</i></p> <p>#STGI: <cmdType>,<event list mask></p> <p>where: <event list mask> - hexadecimal number representing the list of events to monitor (see GSM 11.14):</p> <ul style="list-style-type: none"> - '00' = MT call - '01' = Call connected - '02' = Call disconnected - '03' = Location status - '04' = User activity - '05' = Idle screen available - '06' = Card reader status (if class "a" is supported) - '07' = Language selection - '08' = Browser Termination (if class "c" is supported) - '09' = Data available (if class "e" is supported) - '0A' = Channel status (if class "e" is supported) <p>The hexadecimal number is actually a bit mask, where each bit, when set, indicates that the corresponding event has to be monitored (e.g., if <event list mask> is 0x0001, it means that MT call has to be monitored).</p> <p style="text-align: center;"><i>if <cmdType>=16 (SET UP CALL)</i></p> <p>#STGI: <cmdType>,<commandDetails>,[<confirmationText>],<calledNumber></p> <p>where: <commandDetails> - unsigned integer, used as an enumeration 0 Set up call, but only if not currently busy on another call 1 Set up call, but only if not currently busy on another call, with redial 2 Set up call, putting all other calls (if any) on hold 3 Set up call, putting all other calls (if any) on hold, with redial 4 Set up call, disconnecting all other calls (if any) 5 Set up call, disconnecting all other calls (if any), with redial <confirmationText> - string for user confirmation stage <calledNumber> - string containing called number</p>	



#STGI - SIM Toolkit Get Information	SELINT 2
	<p style="text-align: center;"> <i>if <cmdType>=17 (SEND SS)</i> <i>if <cmdType>=18 (SEND USSD)</i> <i>if <cmdType>=19 (SEND SHORT MESSAGE)</i> <i>if <cmdType>=20 (SEND DTMF)</i> <i>if <cmdType>=32 (PLAY TONE)</i> <i>if <cmdType>=40 (SET UP IDLE MODE TEXT)</i> <i>if <cmdType>=64 (OPEN CHANNEL)</i> </p> <p>#STGI: <cmdType>[,<text>]</p> <p>where: <text> - text to be displayed to user</p> <p style="text-align: center;"><i>if <cmdType>=33 (DISPLAY TEXT)</i></p> <p>#STGI: <cmdType>,<cmdDetails>[,<text>]</p> <p>where: <cmdDetails> - unsigned Integer used as a bit field. 0..255 - used as a bit field: bit 1: 0 - normal priority 1 - high priority bits 2 to 7: reserved for future use bit 8: 0 - clear message after a delay 1 - wait for user to clear message <text> - text to be displayed to user</p> <p style="text-align: center;"><i>if <cmdType>=34 (GET INKEY)</i></p> <p>#STGI: <cmdType>,<commandDetails>,<text></p> <p>where: <commandDetails> - unsigned Integer used as a bit field. 0..255 - used as a bit field: bit 1: 0 - Digits only (0-9, *, # and +) 1 - Alphabet set; bit 2: 0 - SMS default alphabet (GSM character set)</p>



#STGI - SIM Toolkit Get Information	SELINT 2
	<p>1 - UCS2 alphabet</p> <p>bit 3:</p> <p>0 - Character sets defined by bit 1 and bit 2 are enabled</p> <p>1 - Character sets defined by bit 1 and bit 2 are disabled and the "Yes/No" response is requested</p> <p>bits 4 to 7:</p> <p>0</p> <p>bit 8:</p> <p>0 - No help information available</p> <p>1 - Help information available</p> <p><text> - String as prompt for text.</p> <p style="text-align: center;"><i>if <cmdType>=35 (GET INPUT)</i></p> <p>#STGI: <cmdType>,<commandDetails>,<text>,<responseMin>,<responseMax>[,<defaultText>]</p> <p>where:</p> <p><commandDetails> - unsigned Integer used as a bit field. 0..255 - used as a bit field:</p> <p>bit 1:</p> <p>0 - Digits only (0-9, *, #, and +)</p> <p>1 - Alphabet set</p> <p>bit 2:</p> <p>0 - SMS default alphabet (GSM character set)</p> <p>1 - UCS2 alphabet</p> <p>bit 3:</p> <p>0 - ME may echo user input on the display</p> <p>1 - User input shall not be revealed in any way. Hidden entry mode (see GSM 11.14) is only available when using digit input. In hidden entry mode only characters ('0'-'9', '*' and '#') are allowed.</p> <p>bit 4:</p> <p>0 - User input to be in unpacked format</p> <p>1 - User input to be in SMS packed format</p> <p>bits 5 to 7:</p> <p>0</p> <p>bit 8:</p> <p>0 - No help information available</p> <p>1 - Help information available</p> <p><text> - string as prompt for text</p> <p><responseMin> - minimum length of user input 0..255</p> <p><responseMax> - maximum length of user input 0..255</p> <p><defaultText> - string supplied as default response text</p>



#STGI - SIM Toolkit Get Information	SELINT 2
	<p>One line follows for every item, repeated for <numOfItems>:</p> <p>#STGI: <cmdType>,<itemId>,<itemText>[,<nextActionId>]</p> <p>where:</p> <p><commandDetails> - unsigned Integer used as a bitfield 0..255 - used as a bit field:</p> <ul style="list-style-type: none"> bit 1: <ul style="list-style-type: none"> 0 - no selection preference 1 - selection using soft key preferred bit 2 to 7: <ul style="list-style-type: none"> 0 bit 8: <ul style="list-style-type: none"> 0 - no help information available 1 - help information available <p><numOfItems> - number of items in the list <titleText> - string giving menu title <itemId> - item identifier 1..<numOfItems> <itemText> - title of item <nextActionId> - the next proactive command type to be issued upon execution of the menu item. 0 - no next action information available.</p> <p>Note: upon receiving the #STGI response, the TA must send #STSR command (see below) to confirm the execution of the proactive command and provide any required user response, e.g. selected menu item.</p>
<p>AT#STGI?</p>	<p>The read command can be used to request the currently ongoing proactive command and the SAT state in the format</p> <p>#STGI: <state>,<cmdType></p> <p>where:</p> <p><state> - SAT interface state (see #STIA) <cmdType> - ongoing proactive command</p> <p>An error message will be returned if there is no pending command.</p>
<p>AT#STGI=?</p>	<p>Test command returns the range for the parameters <state> and <cmdType>.</p>
<p>Note</p>	<p>The unsolicited notification sent to the user:</p> <p>#STN: 37</p> <p>is an indication that the main menu of the SIM Application has been sent to the TA. It will be stored by the TA so that it can be displayed later at any time by issuing an</p>



#STGI - SIM Toolkit Get Information	SELINT 2
	<p>AT#STGI=37 command.</p> <p>A typical SAT session on AT interface starts after an #STN: 37 unsolicited code is received, if enabled. At that point usually an AT#STGI=37 command is issued, and after the SAT main menu has been displayed on TE an AT#STSR=37,0,x command is issued to select an item in the menu (see below). The session usually ends with a SIM action like sending an SMS, or starting a call. After this, to restart the session from the beginning going back to SAT main menu it is usually required an AT#STSR=37,16 command.</p> <p>The unsolicited notification sent to the user:</p> <p>#STN:237</p> <p>is an indication that the main menu of the SIM Application has been removed from the TA, and it is no longer available. In this case AT#STGI=37 command response will be always ERROR.</p>

3.5.7.12.3. SIM Toolkit Send Response - #STSR

#STSR - SIM Toolkit Send Response	SELINT 2
<p>AT#STSR= [<cmdType>, <userResponse> [,<data>]]</p>	<p>The write command is used to provide to SIM user response to a command and any required user information, e.g. a selected menu item.</p> <p>Parameters:</p> <p><cmdType> - integer type; proactive command ID according to GSM 11.14 (see #STGI)</p> <p><userResponse> - action performed by the user</p> <ul style="list-style-type: none"> 0 - command performed successfully (call accepted in case of call setup, start connection in case of open channel request) 16 - proactive SIM session terminated by user 17 - backward move in the proactive SIM session requested by the user 18 - no response from user 19 - help information required by the user 20 - USSD/SS Transaction terminated by user 32 - TA currently unable to process command 34 - user has denied SIM call setup request 35 - user cleared down SIM call before connection or network release <p><data> - data entered by user, depending on <cmdType>, only required if <Result> is 0:</p> <p style="text-align: center;"><i>Get Inkey</i></p> <p><data> contains the key pressed by the user; used character set should be the one selected with +CSCS.</p> <p>Note: if, as a user response, a binary choice (Yes/No) is requested by the SIM application using bit 3 of the <commandDetails> parameter the valid content of the <inputString> is:</p>



#STSR - SIM Toolkit Send Response	SELINT 2
	<p>a) "IRA", "8859-1", "PCCP437" charsets: "Y" or "y" (positive answer) and "N" or "n" (negative answer) b) UCS2 alphabet "0079" or "0059" (positive answer) and "006E" or "004E" (negative answer)</p> <p style="text-align: center;"><i>Get Input</i></p> <p><data> - contains the string of characters entered by the user (see above)</p> <p style="text-align: center;"><i>Select Item</i></p> <p><data> - contains the item identifier selected by the user</p> <p>Note: Use of icons is not supported. All icon related actions will respond with no icon available.</p>
AT#STSR?	<p>The read command can be used to request the currently ongoing proactive command and the SAT state in the format</p> <p>#STSRI: <state>,<cmdType> where: <state> - SAT interface state (see #STIA) <cmdType> - ongoing proactive command</p> <p>An error message will be returned if there is no pending command.</p>
AT#STSR=?	Test command returns the range for the parameters <state> and <cmdType>.

3.5.7.12.4. SIM Toolkit terminal Attach - #STTA

#STTA – SIM Toolkit Terminal Attach	SELINT 2
AT#STTA=<state>	<p>This command attaches/detaches the SIM Toolkit application to the AT instance reserved for this use.</p> <p>Parameters: <state>: attached state 0 – SIM Toolkit detaches 1 – SIM Toolkit attaches</p> <p>If SIM Toolkit application has been already attached/detached the command does nothing and returns OK.</p>
AT#STTA?	<p>Read command reports the current <state> in the format: #STTA: <state></p>
AT#STTA=?	Test command reports the supported range of values for parameter <state>



3.5.7.13. Jammed Detect & Report AT Commands

3.5.7.13.1. Jammed Detect & Report - #JDR

#JDR - Jammed Detect & Report	SELINT 0 / 1
<p>AT#JDR[= [<mode> [,<MNPL>, <DCMN>]]]</p>	<p>Set command allows to control the Jammed Detect & Report feature.</p> <p>The MODULE can detect if a communication Jammer is active in its range and give indication to the user of this condition either on the serial line with an unsolicited code or on a dedicated GPIO by rising it.</p> <p>Parameters:</p> <p><mode> - behaviour mode of the Jammed Detect & Report</p> <ul style="list-style-type: none"> 0 - disables Jammed Detect & Report (factory default) 1 - enables the Jammed Detect; the Jammed condition is reported on pin GPIO2/JDR GPIO2/JDR Low - Normal Operating Condition GPIO2/JDR High - Jammed Condition. 2 - enables the Jammed Detect; the Jammed condition is reported with a single unsolicited result code on serial line, in the format: <p>#JDR: <status> where: <status> JAMMED - Jammed condition detected OPERATIVE - Normal Operating condition restored. This code will be shown only after a jammed condition has occurred. <ul style="list-style-type: none"> 3 - enables the Jammed Detect; the MODULE will make both the actions as for <mode>=1 and <mode>=2. 4 - enables the Jammed Detect; the Jammed condition is reported with an unsolicited code every 3s on serial line, in the format: <p>#JDR: <status> where: <status> JAMMED - Jammed condition detected OPERATIVE - Normal Operating condition restored. This code will be shown only after a jammed condition has occurred. <ul style="list-style-type: none"> 5 - enables the Jammed Detect; the MODULE will make both the actions as for <mode>=1 and <mode>=4. <p><MNPL> - Maximum Noise Power Level 0..127 (factory default is 70)</p> <p><DCMN> - Disturbed Channel Minimum Number 0..254 (factory default is 5)</p> </p></p>



#JDR - Jammed Detect & Report		SELINT 0 / 1
	<p>Note: issuing AT#JDR<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT#JDR=<CR> is the same as issuing the command AT#JDR=0<CR>.</p>	
AT#JDR?	<p>Read command reports the current behaviour mode, Maximum Noise Power Level and Disturbed Channel Minimum Number, in the format:</p> <p>#JDR: <mode>,<MNPL>,<DCMN></p>	
AT#JDR=?	<p>Test command reports the supported range of values for the parameters <mode>, <MNPL> and <DCMN></p>	
Example	<pre>AT#JDR=2 OK ...jammer enters in the range... #JDR: JAMMED ...jammer exits the range... #JDR: OPERATIVE</pre>	
Note	<p>If the device is installed in a particular environment where the default values are not satisfactory the two parameters <MNPL> and <DCMN> permit to adapt the detection to all conditions.</p>	

#JDR - Jammed Detect & Report		SELINT 2
AT#JDR= [<mode> [,<MNPL> <DCMN>]]	<p>Set command allows to control the Jammed Detect & Report feature.</p> <p>The MODULE can detect if a communication Jammer is active in its range and give indication to the user of this condition either on the serial line with an unsolicited code or on a dedicated GPIO by rising it.</p> <p>Parameters:</p> <p><mode> - behaviour mode of the Jammed Detect & Report</p> <ul style="list-style-type: none"> 0 - disables Jammed Detect & Report (factory default) 1 - enables the Jammed Detect; the Jammed condition is reported on pin GPIO2/JDR <ul style="list-style-type: none"> GPIO2/JDR Low - Normal Operating Condition GPIO2/JDR High - Jammed Condition. 2 - enables the Jammed Detect; the Jammed condition is reported with a single unsolicited result code on serial line, in the format: <p>#JDR: <status> where: <status> JAMMED - Jammed condition detected OPERATIVE - Normal Operating condition restored. This code will be shown only after a jammed condition has occurred.</p> 3 - enables the Jammed Detect; the MODULE will make both the actions as for <mode>=1 and <mode>=2. 	



#JDR - Jammed Detect & Report	SELINT 2
	<p>4 - enables the Jammed Detect; the Jammed condition is reported with an unsolicited code every 3s on serial line, in the format:</p> <p>#JDR: <status> where: <status> JAMMED - Jammed condition detected OPERATIVE - Normal Operating condition restored. This code will be shown only after a jammed condition has occurred.</p> <p>5 - enables the Jammed Detect; the MODULE will make both the actions as for <mode>=1 and <mode>=4.</p> <p>6 - enables the Jammed Detect (this value is available only for 10.0x.xxx release); the Jammed condition is reported in the format:</p> <p>#JDR: <status> where: <status> JAMMED - Jammed condition detected OPERATIVE - Normal Operating condition restored. This code will be shown only after a jammed condition has occurred UNKNOWN – default state before first successful PLMN searching</p> <p><MNPL> - Maximum Noise Power Level 0..127 (factory default is 70) <DCMN> - Disturbed Channel Minimum Number 0..254 (factory default is 5)</p>
AT#JDR?	<p>Read command reports the current behaviour mode, Maximum Noise Power Level and Disturbed Channel Minimum Number, in the format:</p> <p>#JDR: <mode>,<MNPL>,<DCMN></p>
AT#JDR=?	<p>Test command reports the supported range of values for the parameters <mode>,<MNPL> and <DCMN></p>
Example	<pre>AT#JDR=2 OK ...jammer enters in the range... #JDR: JAMMED ...jammer exits the range... #JDR: OPERATIVE AT#JDR=6 #JDR: JAMMED //when jammed OK AT#JDR=6 #JDR: OPERATIVE //when in normal operating mode OK AT#JDR=6</pre>



#JDR - Jammed Detect & Report		SELINT 2
	#JDR: UNKNOWN // default state before 1st PLMN searching OK	
Note	If the device is installed in a particular environment where the default values are not satisfactory the two parameters <MNPL> and <DCMN> permit to adapt the detection to all conditions.	

3.5.7.13.2. Jammed detect and report enhanced - #JDRENH

#JDRENH – Enhanced Jamming Detection and Reporting		SELINT 2
AT#JDRENH[=<type>[,<mode>[,<Param1>[,<Param2>[,<Timer>]]]]	Set command allows to control the Enhanced Jamming Detection & Reporting feature, that can be considered an extension of AT#JDR.	
	Parameters: <type> - Jamming Reporting Type	
	0 - Disable the feature (factory default).	
	1 - Enable the JDRE; jamming condition is reported on pin GPIO2/JDR. GPIO/JDR Low – Normal Operating Condition. GPIO/JDR High – Jammed Condition.	
	2 - Enable the JDRE; jamming condition is reported with a single unsolicited result code on serial port, in the format: #JDRENH: <status> Where: <status> JAMMED – Jammed condition detected OPERATIVE – Normal Operating condition restored. This code will be shown only after a jammed condition has occurred.	
	3 - Enable the JDRE; the MODULE will execute both actions as for <type>=1 and <type>=2.	
	4 - Enable the JDRE; jamming condition is reported with an unsolicited code every 3s on serial port, in format: #JDRENH: <status> Where: <status> JAMMED – Jammed condition detected OPERATIVE – Normal Operating condition restored. This code will be shown only after a jammed condition has occurred.	



	<p>5 - Enable the JDRE; the MODULE will execute both actions as for <type>=1 and <type>=4.</p> <p><mode> - This parameter sets the method to be used to detect the jamming condition</p> <p>1 - Method 1 – Counter of Disturbed Channels for band 2 - Method 2 – Sudden variation of the signal strength</p> <p><Param1> - The meaning of this parameter depends by the selected <mode>.</p> <p>When <mode>=1, <Param1> is used to set the minimum number of Disturbed Channels, for Band, to be considered to measure the jamming condition. Range 1-50, default value 10. When <mode>=2, <Param1> is used to set the value of the minimum variation of received signal strength of the channel, in negative dBm, to be considered to measure the jamming condition. Range 1-20, default value 5.</p> <p><Param2> - The meaning of this parameter depends by the selected <mode>.</p> <p>When <mode>=1, <Param2> is used to set the maximum noise level, in negative dBm, to do not consider the bad channel decoding like a jamming condition. Range 35 – 127, default value 110. When <mode>=2, <Param2> is used to set the minimum number of Disturbed Channels to be considered to measure the jamming condition situation. Range 1 - 20, default value 5.</p> <p><Time> - This parameter sets, for both methods, the Jamming Reporting timer. The timer <Time> starts when the jamming condition is detected; when the timer expires, if the jamming condition is still true, the jamming is notified.</p> <p>1 – 254 (default 10) 255 - jamming is notified, if required, only at the end of the scan of all the powerful channels</p>
<p>AT#JDRENH?</p>	<p>Read command reports the current parameter settings for #JDRENH in the format:</p> <p>#JDRENH: <type>,<mode>,<Param1>,<Param2>,<Time></p>
<p>AT#JDRENH=?</p>	<p>Test command reports the supported range of values for parameters <type>,<mode>,<Param1>,<Param2>,<Time></p>



3.5.7.14. Easy Script® Extension - Python⁴⁰ Interpreter, AT Commands

3.5.7.14.1. Write Script - #WSCRIPT

#WSCRIPT - Write Script	SELINT 0 / 1
AT#WSCRIPT= <script_name> , <size> [,<hidden>]	<p>Execution command causes the MODULE to store a file in the Easy Script® related NVM, naming it <script_name></p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>The file should be sent using RAW ASCII file transfer. It is important to set properly the port settings. In particular: Flow control: hardware. Baud rate: 115200 bps</p> </div> <p>Parameters: <script_name> - name of the file in NVM, string type (max 16 chars, case sensitive). <size> - file size in bytes <hidden> - file hidden attribute 0 - file content is readable with #RSCRIPT (default). 1 - file content is hidden, #RSCRIPT command will report empty file.</p> <p>The device shall prompt a three character sequence <greater_than><greater_than><greater_than> (IRA 62, 62, 62) after command line is terminated with <CR>; after that a file can be entered from TE, sized <size> bytes.</p> <p>The operations completes when all the bytes are received.</p> <p>If writing ends successfully, the response is OK; otherwise an error code is reported.</p> <p>Note: the file name should be passed between quotes; every textual script file must have .py extension, whilst every pre-compiled executable script file must have .pyo extension; file names are case sensitive.</p> <p>Note: when sending the script be sure that the line terminator is <CR><LF> and that your terminal program does not change it.</p> <p>Note: in case of repeated unexpected ERROR response at the end of file download it is strongly suggested to set AT#CPUMODE=1 (when available).</p>
AT#WSCRIPT=?	Test command returns OK result code.
Example	AT#WSCRIPT="First.py ",54,0 >>> <i>here receive the prompt: depending on your editor settings it's possible that</i>

⁴⁰ PYTHON is a registered trademark of the Python Software Foundation.



#WSCRIPT - Write Script		SELINT 0 / 1
	<i>the prompt overrides the above line; then type or send the script, sized 54 bytes</i> OK Script has been stored.	
Note	It's recommended to use the extension .py only for textual script files and the extension .pyo only for pre-compiled executable script files.	
Note	It's recommended to use the extension .py only for textual script files and the extension .pyo only for pre-compiled executable script files.	

#WSCRIPT - Write Script		SELINT 2
AT#WSCRIPT= [<script_name> , <size> , [,<hidden>]]	<p>Execution command causes the MODULE to store a file in the Easy Script® related NVM, naming it <script_name></p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>The file should be sent using RAW ASCII file transfer. It is important to set properly the port settings. In particular: Flow control: hardware. Baud rate: 115200 bps</p> </div> <p>Parameters: <script_name> - name of the file in NVM, string type (max 16 chars, case sensitive). <size> - file size in bytes <hidden> - file hidden attribute 0 - file content is readable with #RSCRIPT (default). 1 - file content is hidden, #RSCRIPT command will report empty file.</p> <p>The device shall prompt a five character sequence <CR><LF><greater_than><greater_than><greater_than> (IRA 13, 10, 62, 62, 62) after command line is terminated with <CR>; after that a file can be entered from TE, sized <size> bytes.</p> <p>The operations completes when all the bytes are received.</p> <p>If writing ends successfully, the response is OK; otherwise an error code is reported.</p> <p>Note: the file name should be passed between quotes; every textual script file must have .py extension, whilst every pre-compiled executable script file must have .pyo extension; file names are case sensitive.</p> <p>Note: when sending the script be sure that the line terminator is <CR><LF> and that your terminal program does not change it.</p>	



#WSCRIPT - Write Script		SELINT 2
	Note: in case of repeated unexpected ERROR response at the end of file download it is strongly suggested to set AT#CPUMODE=1 (when available).	
AT#WSCRIPT=?	Test command returns OK result code.	
Example	AT#WSCRIPT="First.py ",54,0 >>> here receive the prompt; then type or send the textual script, sized 54 bytes OK <i>Textual script has been stored</i>	
Note	It's recommended to use the extension .py only for textual script files and the extension .pyo only for pre-compiled executable script files.	

3.5.7.14.2. Select Active Script - #ESCRIP

#ESCRIP - Select Active Script		SELINT 0 / 1
AT#ESCRIP[= [<script_name>]]	Set command selects either <ol style="list-style-type: none"> the name of the textual script file that will be compiled and executed by the Easy Script® compiler at startup according to last #STARTMODESCR setting, or the name of the pre-compiled executable file that will be executed at startup according to last #STARTMODESCR setting. <p>We call this file (either textual or pre-compiled) the current script.</p> <p>Parameter: <script_name> - file name, string type (max 16 chars, case sensitive).</p> <p>Note: all textual script files must have .py extension; all pre-compiled executable files must have .pyo extension.</p> <p>Note: <script_name> must match to the name of a file written by #WSCRIPT in order to have it run.</p> <p>Note: the command does not check whether a textual script named <script_name> does exist or not in the Easy Script® related NVM. If the file <script_name> is not present at startup then the compiler will not execute.</p> <p>Note: issuing AT#ESCRIP<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT#ESCRIP=<CR> is the same as issuing the command AT#ESCRIP=""<CR>.</p>	
AT#ESCRIP?	Read command reports as a quoted string the file name of the current script .	
AT#ESCRIP=?	Test command returns OK result code.	



#ESCRIP T - Select Active Script		SELINT 2
AT#ESCRIP T= [<script_name>]	<p>Set command selects either</p> <ul style="list-style-type: none"> c) the name of the textual script file that will be compiled and executed by the Easy Script® compiler at startup according to last #STARTMODESCR setting, or d) the name of the pre-compiled executable file that will be executed at startup according to last #STARTMODESCR setting. <p>We call this file (either textual or pre-compiled) the current script.</p> <p>Parameter: <script_name> - file name, string type (max 16 chars, case sensitive).</p> <p>Note: all textual script files must have .py extension; all pre-compiled executable files must have .pyo extension.</p> <p>Note: <script_name> must match to the name of a file written by #WSCRIPT in order to have it run.</p> <p>Note: the command does not check whether a textual script named <script_name> does exist or not in the Easy Script® related NVM. If the file <script_name> is not present at startup then the compiler will not execute.</p>	
AT#ESCRIP T?	Read command reports as a quoted string the file name of the current script .	
AT#ESCRIP T=?	Test command returns OK result code.	

3.5.7.14.3. Script Execution Start Mode - #STARTMODESCR

#STARTMODESCR - Script Execution Start Mode		SELINT 0 / 1
AT#STARTMODESCR[= <script_start_mode> [,<script_start_to>]]	<p>Set command sets the current script (see #ESCRIP T) execution start mode.</p> <p>Parameter: <script_start_mode> - currente script execution start mode</p> <ul style="list-style-type: none"> 0 - current script will be executed at startup only if the DTR line is found Low (that is: COM is not open on a PC), otherwise the Easy Script® interpreter will not execute and the MODULE will behave normally answering only to AT commands on the serial port (factory default). 1 - current script will be executed at startup only if the user does not send any AT command on the serial port for the time interval specified in <script_start_to> parameter, otherwise the Easy Script® interpreter will not execute and the MODULE will behave normally answering only to AT commands on the serial port. The DTR line is not tested. 2 - current script will be executed at startup in any case. DTR line and if the user does not send any AT command on the serial port have no influence on script execution. But AT command interface will be available on serial port ASC0 and connected to third AT parser instance. See "Easy Script in Python" document for further details on this execution start mode. 	



#STARTMODESCR - Script Execution Start Mode		SELINT 0 / 1
	<p><script_start_to> - current script start time-out; 10..60 - time interval in seconds; this parameter is used only if parameter <script_start_mode> is set to 1; it is the waiting time for an AT command on the serial port to disable active script execution start. If the user does not send any AT command on the serial port for the time specified in this parameter active script will be executed (default is 10).</p> <p>Note: issuing AT#STARTMODESCR<CR> is the same as issuing the Read command.</p>	
AT#STARTMODESCR?	<p>Read command reports the current script start mode and the current script start time-out, in the format:</p> <p>#STARTMODESCR= <script_start_mode>,<script_start_timeout></p>	
AT#STARTMODESCR=?	<p>Test command returns the range of available values for parameters <script_start_mode> and <script_start_timeout>, in the format:</p> <p>#STARTMODESCR: (0-2),(10-60)</p> <p>In versions 13.00.xxx: #STARTMODESCR: (0-1),(10-60)</p>	

#STARTMODESCR - Script Execution Start Mode		SELINT 2
AT#STARTMODESCR= <script_start_mode> [,<script_start_to>]	<p>Set command sets the current script (see #ESCRIP) execution start mode.</p> <p>Parameter:</p> <p><script_start_mode> - currente script execution start mode</p> <p>0 - current script will be executed at startup only if the DTR line is found Low (that is: COM is not open on a PC), otherwise the Easy Script® interpreter will not execute and the MODULE will behave normally answering only to AT commands on the serial port (factory default).</p> <p>1 - current script will be executed at startup only if the user does not send any AT command on the serial port for the time interval specified in <script_start_to> parameter, otherwise the Easy Script® interpreter will not execute and the MODULE will behave normally answering only to AT commands on the serial port. The DTR line is not tested.</p> <p>2 - current script will be executed at startup in any case. DTR line and if the user does not send any AT command on the serial port have no influence on script execution. But AT command interface will be available on serial port ASC0 and connected to third AT parser instance. See "Easy Script in Python" document for further details on this execution start mode. Not available in versions 13.00.xxx.</p> <p><script_start_to> - current script start time-out;</p>	



#STARTMODESCR - Script Execution Start Mode		SELINT 2
	10..60 - time interval in seconds; this parameter is used only if parameter <script_start_mode> is set to 1; it is the waiting time for an AT command on the serial port to disable active script execution start. If the user does not send any AT command on the serial port for the time specified in this parameter active script will be executed (default is 10).	
AT#STARTMODESCR?	Read command reports the current script start mode and the current script start time-out, in the format: #STARTMODESCR= <script_start_mode>,<script_start_timeout>	
AT#STARTMODESCR=?	Test command returns the range of available values for parameters <script_start_mode> and <script_start_timeout> , in the format: #STARTMODESCR: (0-2),(10-60)	

3.5.7.14.4. Execute Active Script - #EXECSCR

#EXECSCR - Execute Active Script		SELINT 0 / 1
AT#EXECSCR	Execution command causes the current script (see #ESCRIP) execution not at startup. This command is useful when the execution at startup has been blocked deliberately and the user wants to control execution start.	
AT#EXECSCR?	Read command has the same behaviour as execution command	
AT#EXECSCR=?	Test command returns OK result code.	

#EXECSCR - Execute Active Script		SELINT 2
AT#EXECSCR	Execution command causes the current script (see #ESCRIP) execution not at startup. This command is useful when the execution at startup has been blocked deliberately and the user wants to control execution start.	
AT#EXECSCR=?	Test command returns OK result code.	

3.5.7.14.5. Read Script - #RSCRIPT

#RSCRIPT - Read Script		SELINT 0 / 1
AT#RSCRIPT= <script_name>	Execution command reports the content of file <script_name> . Parameter: <script_name> - file name, string type (max 16 chars, case sensitive). The device shall prompt a three character sequence <less_than><less_than><less_than> (IRA 60, 60, 60) followed by the file content.	



#LSCRIPT - List Script Names		SELINT 0 / 1
	<pre>[#LSCRIPT: <script_name1> <size1>... [<CR><LF><CR><LF>#LSCRIPT: <script_namen> <size1>]] <CR><LF><CR><LF>#LSCRIPT: free bytes: <free_NVM></pre> <p>where: <script_namen> - file name, quoted string type (max 16 chars, case sensitive) <size1> - size of script in bytes <free_NVM> - size of available NVM memory in bytes</p>	
AT#LSCRIPT?	Read command has the same behavior of Execution command.	
Example	<pre>AT#LSCRIPT #LSCRIPT: First.py 51 #LSCRIPT: Second.py 178 #LSCRIPT: Third.py 95 #LSCRIPT: free bytes: 20000 OK</pre>	

#LSCRIPT - List Script Names		SELINT 2
AT#LSCRIPT	Execution command reports either the list of file names for the files currently stored in the Easy Script® related NVM and the available free NVM memory in the format: <pre>[#LSCRIPT: <script_name1>,<size1>... [<CR><LF>#LSCRIPT: <script_namen>,<size1>]] <CR><LF>#LSCRIPT: free bytes: <free_NVM></pre> <p>where: <script_namen> - file name, quoted string type (max 16 chars, case sensitive) <size1> - size of script in bytes <free_NVM> - size of available NVM memory in bytes</p>	
AT#LSCRIPT=?	Test command returns OK result code.	
Example	<pre>AT#LSCRIPT #LSCRIPT: "First.py",51 #LSCRIPT: "Second.py",178 #LSCRIPT: "Third.py",95 #LSCRIPT: free bytes: 20000 OK</pre>	

3.5.7.14.7. List Script Names with CRC16 info - #LCSCRIPT

#LCSCRIPT - List Script Names with CRC16 info		SELINT 2
AT#LCSCRIPT	Execution command reports either the list of file names for the files currently stored in the Easy Script® related NVM, adding CRC16 information, and the available free NVM memory in the format:	



#LCSCRIPT - List Script Names with CRC16 info	SELINT 2
	<p>[#LCSCRIPT: <script_name1>,<size1>[,<crc1>]... [<CR><LF>#LCSCRIPT: <script_namen>,<size>[,<crcn>]] <CR><LF>#LCSCRIPT: free bytes: <free_NVM></p> <p>where: <script_namen> - file name, quoted string type (max 16 chars, case sensitive) <size> - size of script in bytes <crcn> - CRC16 poly ($x^{16}+x^{12}+x^5+1$) of script in hex format <free_NVM> - size of available NVM memory in bytes</p> <p>Note: CRC16 is calculated using the standard reversed CRC16-CCITT $x^{16}+x^{12}+x^5+1$ polynomial (0x1021 representation reversed) with initial value FFFF.</p> <p>Note: if one file currently stored in NVM is in use than CRC16 cannot be calculated and execution command does not report <crcn> for that file. This is always true if command is executed by a Python script because at least the file pointed by #ESCRIP is in use.</p>
<p>AT#LCSCRIPT= <script_name></p>	<p>Execution command reports size and CRC16 information of file <script_name> in the format:</p> <p>[#LCSCRIPT: <script_name>,<size>[,<crc>]]</p> <p>where: <script_name> - file name, quoted string type (max 16 chars, case sensitive) <size> - size of script in bytes <crc> - CRC16 poly ($x^{16}+x^{12}+x^5+1$) of script in hex format</p> <p>Parameter: <script_name> - file name, string type (max 16 chars, case sensitive).</p> <p>Note: CRC16 is calculated using the standard reversed CRC16-CCITT $x^{16}+x^{12}+x^5+1$ polynomial (0x1021 representation reversed) with initial value FFFF.</p> <p>Note: if file <script_name> is in use than CRC16 cannot be calculated and execution command does not report <crc>.</p> <p>Note: if file <script_name> is not in the list of files stored in NVM execution command exits with error message.</p>
<p>AT#LCSCRIPT=?</p>	<p>Test command returns OK result code.</p>
<p>Example</p>	<p>AT#LCSCRIPT #LCSCRIPT: "First.py",51,8FD6 #LCSCRIPT: "Second.py",178,A034</p>



#LCSCRIPT - List Script Names with CRC16 info		SELINT 2
	#LCSCRIPT: "Third.py",120,7C48 #LCSCRIPT: free bytes: 20000 OK AT#LCSCRIPT="Second.py" #LCSCRIPT: "Second.py",178,A034 OK If file Third.py is already in use. AT#LCSCRIPT #LCSCRIPT: "First.py",51,8FD6 #LCSCRIPT: "Second.py",178,A034 #LCSCRIPT: "Third.py",120 #LCSCRIPT: free bytes: 20000 OK	

3.5.7.14.8. Delete Script - #DSCRIPT

#DSCRIPT - Delete Script		SELINT 0 / 1
AT#DSCRIPT= <script_name>	Execution command deletes a file from Easy Script® related NVM memory. Parameter: <script_name> - name of the file to delete, string type (max 16 chars, case sensitive) Note: if the file <script_name> is not present an error code is reported.	
AT#DSCRIPT=?	Test command returns OK result code.	
Example	AT#DSCRIPT="Third.py" OK	

#DSCRIPT - Delete Script		SELINT 2
AT#DSCRIPT= [<script_name>]	Execution command deletes a file from Easy Script® related NVM memory. Parameter: <script_name> - name of the file to delete, string type (max 16 chars, case sensitive) Note: if the file <script_name> is not present an error code is reported.	
AT#DSCRIPT=?	Test command returns OK result code.	
Example	AT#DSCRIPT="Third.py" OK	



3.5.7.14.9. Delete All Scripts - #DASCRIP

#DASCRIP – Delete All Scripts		SELINT 2
AT#DASCRIP	Execution command deletes all files from Easy Script® related NVM memory. Note: if product supports directories execution command deletes all files from current working directory, it does not delete directories.	
AT#DASCRIP=?	Test command returns OK result code.	

3.5.7.14.10. Reboot - #REBOOT

#REBOOT - Reboot		SELINT 0 / 1
AT#REBOOT	Execution command reboots immediately the unit. It can be used to reboot the system after a remote update of the script in order to have the new one running. Note: if AT#REBOOT follows an AT command that stores some parameters in NVM, it is recommended to insert a delay of at least 5 seconds before to issue AT#REBOOT, to permit the complete NVM storing	
AT#REBOOT?	Read command has the same behaviour of Execution command.	
AT#REBOOT=?	Test command returns OK result code.	
Example	AT#REBOOT OK ... Module Reboots ...	

#REBOOT - Reboot		SELINT 2
AT#REBOOT	Execution command reboots immediately the unit. It can be used to reboot the system after a remote update of the script in order to have the new one running. Note: if AT#REBOOT follows an AT command that stores some parameters in NVM, it is recommended to insert a delay of at least 5 seconds before to issue AT#REBOOT, to permit the complete NVM storing Note: AT#REBOOT is an obsolete AT command; please refer to AT#ENHRST to perform a module reboot	



#REBOOT - Reboot		SELINT 2
AT#REBOOT=?	Test command returns OK result code.	
Example	AT#REBOOT OK ... Module Reboots ...	

3.5.7.14.11. CMUX Interface Enable - #CMUXSCR

#CMUXSCR - CMUX Interface Enable		SELINT 2
AT#CMUXSCR= <enable>,<rate>]	Set command enables/disables the 3GPP TS 27.010 multiplexing protocol control channel (see +CMUX) at startup before the current script (see #ESCRIP) execution and specifies the DTE speed at which the device sends and receives CMUX frames (used to fix the DTE-DCE interface speed). Parameters: <enable> - enables/disables CMUX interface at startup. 0 - it disables CMUX interface at startup, before current script execution (factory default) 1 - it enables CMUX interface at startup, before current script execution <rate> 300 1200 2400 4800 9600 19200 38400 57600 115200 (default) If <rate> is omitted the value is unchanged <enable> and <rate> values are saved in NVM	
AT#CMUXSCR ?	Read command returns the current value of #CMUXSCR parameters in the format: #CMUXSCR: <enable>,<rate>	
AT#CMUXSCR =?	Test command reports the range for the parameters <enable> and <rate>	



3.5.7.15.3. Create/Update MMS Message Mailing List - #MMSTO

#MMSTO – Create/Update MMS Message Mailing List		SELINT 2
AT#MMSTO=<op>,<recipients>	<p>This command creates/updates a list of recipients for outgoing MMS.</p> <p>Parameters: <op> - operation 0 – overwrite (default) 1 - append <recipients> - string type indicating the destination addresses for outgoing MMS (phone numbers, separated by ",". There can be up to 20 subscriber numbers. Each subscriber number can be no more than 15 characters)</p> <p>Note: the value of <recipients> set by command is directly stored in NVM and doesn't depend on the specific CMUX instance.</p>	
AT#MMSTO?	Read command reports the currently selected <recipients> in the format: #MMSTO: <recipients>	
AT#MMSTO=?	Test command reports the supported range of values for parameters <op> and <recipients> (maximum number of <recipients> addresses).	
Example	<p>To clear whole recipients list:</p> <p>at#mmsto=0,"" OK</p>	

3.5.7.15.4. Send a MMS Message - #MMSSEND

#MMSSEND – Send a MMS Message		SELINT 2
AT#MMSSEND=<subject>,<attached file>,<recipients>[,<subscriber list>]	<p>This command sends an MMS.</p> <p>Parameters: <subject> - string indicating MMS subject, with maximum input size of 41 characters <attached file> - string indicating the name of the image file to be attached to MMS. The maximum allowed name size is 32 characters <recipients> - string type indicating the destination addresses for outgoing MMS (phone numbers, separated by ",". There can be up to 20 subscriber numbers. Each subscriber number can be no more than 15 characters) <subscriber list> - integer indicating whether to use or not the subscriber list created with #MMSTO 0 – do not use subscriber list (see #MMSTO), use <recipients> (default) 1 – use subscriber list (see #MMSTO) ; <recipients> is ignored</p>	



	<p>The device responds to the command with the prompt '>' and waits for the message text.</p> <p>To complete the operation send Ctrl-Z char (0x1A hex); to exit without writing the message send ESC char (0x1B hex).</p> <p>If MMS message is successfully sent, then the response is OK. If delivery report has been requested, a MMS Delivery Report must be sent from the MMS Proxy-Relay to the originator MMS Client. Upon receiving of such report, an unsolicited code will be sent:</p> <p>#MMSSEND: <msgID></p> <p>where <msgID> is the reference that was originally assigned to the MMS by the MMS Proxy-Relay and included in the corresponding M-Send.conf. The ID enables an MMS Client to match delivery reports with previously sent or forwarded MMS's.</p> <p>If message sending fails for some reason, an error code is reported.</p> <p>Note: prior to send the MMS, the PDP context <cid> (see #MMSSET command) must be defined and activated using +CGDCONT and #SGACT commands.</p> <p>Note: only .jpg or .gif images can be sent as attachment.</p>
<p>AT#MMSSEND=?</p>	<p>Test command tests for command existence.</p>
<p>Example</p>	<pre>at+cgdcont=1,"IP","mms.tim.it","0.0.0.0",0,0 OK at#sgact=1,1 #SGACT: 10.214.84.15 OK</pre>

3.5.7.15.5. Add MMS attachment - #MMSATTD

<p>#MMSATTD – Add MMS Attachment SELINT 2</p>	
<p>AT#MMSATTD=<file name>,<size></p>	<p>This command causes the MODULE to store a file in the NVM, naming it <file name>. The file is then attached to a MMS message by #MMSSEND.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>The file should be sent using RAW ASCII file transfer. It is important to set properly the port settings. In particular: Flow control: hardware.</p> </div>



#MMSGET – Get MMS		SELINT 2
<url>,<size>,<file name>	<p>MODULE NVM. Note that PDP context <cid> (see #MMSSET command) must be previously defined and activated using +CGDCONT and #SGACT commands.</p> <p>Parameters: <url> - string indicating MMS address on proxy server, as indicated by AT#MMSLN command (see above) <size>: message size <file name> - string indicating the name of the file in NVM (with extension .mms) to be used to store the retrieved MMS; maximum length is 16 characters, including file extension</p>	
AT#MMSGET=?	Test command returns the OK result code.	

3.5.7.15.10. Forward MMS - #MMSFWD

#MMSFWD – Forward MMS		SELINT 2
AT#MMSFWD=<da>,<url>	<p>This command forwards an MMS message stored in proxy server to the specified destination. Note that PDP context <cid> (see #MMSSET command) must be previously defined and activated using +CGDCONT and #SGACT commands.</p> <p>Parameters: <da> - string type indicating the destination addresses for outgoing MMS (phone numbers, separated by ",". There can be up to 20 subscriber numbers. Each subscriber number can be no more than 15 characters) <url> - string indicating MMS address on proxy server, as indicated by AT#MMSLN command (see above)</p> <p>Note: this command is based upon an MMS 1.2 or higher functionality. The forward transaction consists of the M-Forward.req message, sent from the MMS Client to the MMS Proxy-Relay in order to request an MMS to be forwarded, that is located at the MMS Proxy-Relay, and could not be supported by every MMSC.</p>	
AT#MMSFWD=?	Test command returns the OK result code.	

3.5.7.15.11. Delete MMS from the MMS proxy server - #MMSDEL

#MMSDEL – Delete MMS from the MMS proxy server		SELINT 2
AT#MMSDEL=<url>	<p>This command deletes an MMS message stored in proxy server. Note that PDP context <cid> (see #MMSSET command) must be previously defined and activated using +CGDCONT and #SGACT commands.</p> <p>Parameters: <url> - string indicating MMS address on proxy server, as indicated by</p>	



#MMSDEL – Delete MMS from the MMS proxy server		SELINT 2
	AT#MMSLN command (see above)	
	Note: this command is based upon an MMS 1.3 functionality, and could not be supported by every MMSC.	
AT#MMSDEL=?	Test command returns the OK result code.	

3.5.7.15.12. List MMS files - #MMSLIMG

#MMSLIMG - List MMS files		SELINT 2
AT#MMSLIMG	<p>Execution command reports the list of image and .mms file names for the files currently stored in the NVM in the format:</p> <p># MMSLIMG: <img_name1>,<size1>... [<CR><LF># MMSLIMG: <img_namen>,<size>]]</p> <p>where: <img-namen> - file name, quoted string type (max 16 chars, case sensitive) <size> - size of file in bytes</p>	
AT#MMSLIMG=?	Test command returns OK result code.	

3.5.7.15.13. Delete image file - #MMSDIMG

#MMSDIMG - Delete Image file		SELINT 2
AT#MMSDIMG= [<img_name>]	<p>Set command deletes a file from NVM memory.</p> <p>Parameter:</p> <p><img_name> - name of the file to delete, string type (max 16 chars, case sensitive)</p> <p>Note: if the file <img_name> is not present an error code is reported.</p>	
AT#MMSDIMG =?	Test command returns OK result code.	

3.5.7.16. HTTP client AT Command Set

3.5.7.16.1. Configure HTTP parameters - #HTTPCFG

#HTTPCFG – configure HTTP parameters		SELINT 2
AT#HTTPCFG=<prof_id>[,<server_address>[,<server_port>[,<auth_type>[,<username>[,<password>[,<ssl_enabled>[,<timeout> [,<cid>]]]]]]]	<p>This command sets the parameters needed to the HTTP connection</p> <p>Parameters:</p> <p><prof_id> - Numeric parameter indicating the profile identifier. Range: 0-2</p>	



	<p><server_address> - String parameter indicating the IP address of the HTTP server. This parameter can be either:</p> <ul style="list-style-type: none"> - any valid IP address in the format: "xxx.xxx.xxx.xxx" - any host name to be solved with a DNS query <p>Default: "" for first and second profile; "m2mlocate.telit.com" for third profile.</p> <p><server_port> - Numeric parameter indicating the TCP remote port of the HTTP server to connect to. Default: 80 for first and second profile; 9978 for third profile. Range 1...65535.</p> <p><auth_type> - Numeric parameter indicating the HTTP authentication type.</p> <ul style="list-style-type: none"> 0 – no authentication (default) 1 – basic authentication <p><username> - String parameter indicating authentication user identification string for HTTP.</p> <p><password> - String parameter indicating authentication password for HTTP.</p> <p><ssl_enabled> - Numeric parameter indicating if the SSL encryption is enabled.</p> <ul style="list-style-type: none"> 0 – SSL encryption disabled (default) 1 – SSL encryption enabled <p><timeout>: Numeric parameter indicating the time interval in seconds to wait for receiving data from HTTP server. Range: (1- 65535). Default: 120.</p> <p><cid> - Numeric parameter indicating the PDP Context Identifier. Range: (1-5). Default: 1</p> <p>Note: a special form of the Set command, #HTTPCFG=<prof_id>, causes the values for profile number <prof_id> to reset to default values.</p> <p>Note: if the SSL encryption is enabled, the <cid> parameter has to be set to 1.</p> <p>Note: the SSL encryption can be enabled only if <Enable> parameter of #SSLEN is set to 0 and <FTPSEn> parameter of #FTPCFG is set to 0.</p> <p>Note: values are automatically saved in NVM.</p>
<p>AT#HTTPCFG?</p>	<p>Read command returns the current settings for each defined profile in the</p>



	<p>format:</p> <p>#HTTPCFG: <prof_id>,<server_address>,<server_port>,<auth_type>,<username>,<password>,<ssl_enabled>,<timeout>,<cid><CR><LF>[<CR><LF>#HTTPCFG: <prof_id>,<server_address>,<server_port>,<auth_type>,<username>,<password>,<ssl_enabled>,<timeout>,<cid>]<CR><LF>[...]]</p>
<p>AT#HTTPCFG =?</p>	<p>Test command returns the supported range of parameters <prof_id>, <server_port>, <auth_type>, <ssl_enabled>, <timeout> and <cid> and the maximum length of <server_address>, <username> and <password> parameters in the format:</p> <p># HTTPCFG: (list of supported <prof_id>s),<s_length>,(list of supported <server_port>s), (list of supported <auth_type>s),<u_length>,<p_length>,(list of supported <ssl_enabled>s),(list of supported <timeout>s),(list of supported <cid>s)</p> <p>where:</p> <p><s_length> - integer type value indicating the maximum length of parameter <server_address>.</p> <p><u_length> - integer type value indicating the maximum length of parameter <username>.</p> <p><p_length> - integer type value indicating the maximum length of parameter <password></p>

3.5.7.16.2. Send HTTP GET, HEAD or DELETE request - #HTTPQRY

<p>#HTTPQRY – send HTTP GET, HEAD or DELETE request</p>	<p>SELINT 2</p>
<p>AT#HTTPQRY=<prof_id>,<command>,<resource>[,<extra_header_line>]</p>	<p>Execution command performs a GET, HEAD or DELETE request to HTTP server.</p> <p>Parameters:</p> <p><prof_id>: Numeric parameter indicating the profile identifier. Range: 0-2</p> <p><command>: Numeric parameter indicating the command requested to HTTP server: 0 – GET 1 – HEAD 2 – DELETE</p> <p><resource>: String parameter indicating the HTTP resource (uri), object of the request</p>



	<p><extra_header_line>: String parameter indicating optional HTTP header line.</p> <p>If sending ends successfully, the response is OK; otherwise an error code is reported.</p> <p>Note: the HTTP request header sent with #HTTPQRY always contains the “Connection: close” line, and it cannot be removed.</p> <p>When the HTTP server answer is received, then the following URC is put on the serial port:</p> <p>#HTTPRING: <prof_id>,<http_status_code>,<content_type>,<data_size></p> <p>Where: <prof_id> is defined as above <http_status_code> is the numeric status code, as received from the server (see RFC 2616)</p> <p><content_type> is a string reporting the “Content-Type” header line, as received from the server (see RFC 2616)</p> <p><data_size> is the byte amount of data received from the server. If the server does not report the "Content-Length:" header line, the parameter value is 0.</p> <p>Note: if there are no data from server or the server does not answer within the time interval specified in <timeout> parameter of #HTTPCFG command, then the URC #HTTPRING <http_status_code> parameter has value 0.</p> <p>Note: the time required to receive the #HTTPRING unsolicited can be greater than the one specified in <timeout> parameter of #HTTPCFG command because it also includes the time needed to send the HTTP request to the server.</p> <p>Note: after issuing #HTTPQRY command is not possible to change SSL configuration with #SSLSECCFG and #SSLSECDATA until #HTTPCFG is issued, because SSL connection remains up.</p> <p>Note: before receiving the #HTTPRING unsolicited, the following commands may answer with “+CME ERROR: Blocking read in progress”: #HTTPQRY, #HTTPSND, #SGACT, #GPRS, #EMAILACT and #SEMAIL. Therefore, it is necessary to wait the unsolicited before issuing them.</p>
<p>AT#HTTPQRY =?</p>	<p>Test command reports the supported range of values for the parameters <prof_id> and <command> and the maximum length of <resource> and <extra_header_line> parameters in the format:</p>



	<p>#HTTPQRY: (list of supported <prof_id>s),(list of supported <command>s),<r_length>,<m_length> where:</p> <p><r_length> - integer type value indicating the maximum length of parameter <resource>. <m_length> - integer type value indicating the maximum length of parameter <extra_header_line>.</p>
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3.5.7.16.3. Send HTTP POST or PUT request - #HTTPSND

#HTTPSND – send HTTP POST or PUT request	SELINT 2
<p>AT#HTTPSND=<prof_id>,<command>,<resource>,<data_len>[,<post_param>[,<extra_header_line>]]</p>	<p>Execution command performs a POST or PUT request to HTTP server and starts sending data to the server.</p> <p>The device shall prompt a three character sequence <greater_than><greater_than><greater_than> (IRA 62, 62, 62) after command line is terminated with <CR>; after that the data can be entered from TE, sized <data_len> bytes.</p> <p>Parameters:</p> <p><prof_id>: Numeric parameter indicating the profile identifier. Range: 0-2</p> <p><command>: Numeric parameter indicating the command requested to HTTP server: 0 – POST 1 – PUT</p> <p><resource>: String parameter indicating the HTTP resource (uri), object of the request</p> <p><data_len>: Numeric parameter indicating the data length to input in bytes</p> <p><post_param>: Numeric/string parameter indicating the HTTP Contenttype identifier, used only for POST command, optionally followed by colon character (:) and a string that extends with sub-types the identifier: “0[:extension]” – “application/x-www-form-urlencoded” with optional extension “1[:extension]” – “text/plain” with optional extension “2[:extension]” – “application/octet-stream” with optional extension “3[:extension]” – “multipart/form-data” with optional extension other content – free string corresponding to other content type and possible sub-types</p>



	<p><extra_header_line>: String parameter indicating optional HTTP header line</p> <p>If sending ends successfully, the response is OK; otherwise an error code is reported.</p> <p>Note: the HTTP request header sent with #HTTPSND always contains the “Connection: close” line, and it cannot be removed.</p> <p>When the HTTP server answer is received, then the following URC is put on the serial port:</p> <p>#HTTTPRING: <prof_id>,<http_status_code>,<content_type>,<data_size></p> <p>Where:</p> <p><prof_id> is defined as above</p> <p><http_status_code> is the numeric status code, as received from the server (see RFC 2616)</p> <p><content_type> is a string reporting the “Content-Type” header line, as received from the server (see RFC 2616)</p> <p><data_size> is the byte amount of data received from the server. If the server does not report the "Content-Length:" header line, the parameter value is 0.</p> <p>Note: if there are no data from server or the server does not answer within the time interval specified in <timeout> parameter of #HTTTPCFG command, then the URC #HTTTPRING <http_status_code> parameter has value 0.</p> <p>Note: the time required to receive the #HTTTPRING unsolicited can be greater than the one specified in <timeout> parameter of #HTTTPCFG command because it also includes the time needed to send the HTTP request to the server.</p> <p>Note: after issuing #HTTTPQRY command is not possible to change SSL configuration with #SSLSECCFG and #SSLSECDATA until #HTTTPCFG is issued, because SSL connection remains up.</p> <p>Note: before receiving the #HTTTPRING unsolicited, the following commands may answer with “+CME ERROR: Blocking read in progress”: #HTTTPQRY, #HTTPSND, #SGACT, #GPRS, #EMAILACT and #SEMAIL. Therefore, it is necessary to wait the unsolicited before issuing them.</p>
<p>AT#HTTPSND =?</p>	<p>Test command reports the supported range of values for the parameters <prof_id> and <command> and <data_len> and the maximum length of <resource>, <post_param> and <extra_header_line> parameters in the format:</p>



	<p>#HTTPSND: (list of supported <prof_id>s),(list of supported <command>s),<r_length>,(list of supported <data_len>s),<p_length>, <m_length></p> <p>where:</p> <p><r_length> - integer type value indicating the maximum length of parameter <resource>.</p> <p><p_length> - integer type value indicating the maximum length of parameter <post_param>.</p> <p><m_length> - integer type value indicating the maximum length of parameter <extra_header_line></p>
Example	<p>Post 100 byte without “Content-type” header AT#HTTPSND=0,0,”/”,100 >>></p> <p>Post 100 byte with “application/x-www-form-urlencoded” AT#HTTPSND=0,0,”/”,100,0 >>></p> <p>Post 100 byte with “multipart/form-data” and extension AT#HTTPSND=0,0,”/”,100,”3:boundary=----FormBoundary” >>></p>

3.5.7.16.4. Receive HTTP server data - #HTTTPRCV

#HTTTPRCV – receive HTTP server data	SELINT 2
<p>AT#HTTTPRCV=<prof_id>[,<maxByte>]</p>	<p>Execution command permits the user to read data from HTTP server in response to a previous HTTP module request. The module is notified of these data by the #HTTTPRING URC.</p> <p>The device shall prompt a three character sequence <less_than><less_than><less_than> (IRA 60, 60, 60) followed by the data.</p> <p>If reading ends successfully, the response is OK; otherwise an error code is reported.</p> <p>Parameters:</p> <p><prof_id> - Numeric parameter indicating the profile identifier. Range: 0-2</p> <p>< maxByte > - Max number of bytes to read at a time Range: 0,64-1500 (default is 0 which means infinite size)</p> <p>Note: if <maxByte> is unspecified, server data will be transferred all in once.</p> <p>Note: If the data are not present or the #HTTTPRING <http_status_code></p>



	parameter has value 0, an error code is reported.
AT#HTTTPRCV=?	<p>Test command reports the supported range of values for <prof_id> and <maxByte> parameters in the format:</p> <p># HTTPRCV: (list of supported <prof_id>s), (list of supported <maxByte>s)</p>

3.5.7.17. RSA AT Commands Set

3.5.7.17.1. Load the security data - #RSASECDATA

#RSASECDATA – Load the security data	SELINT 2
AT#RSASECDATA=<Action>[,<Size>]	<p>Execution command allows to store, delete and read security data RSA key into NVM. Parameters:</p> <p><Action> - Action to do. 0 – Delete data from NVM. 1 – Store data into NVM. 2 – Get MD5 digest of data into NVM</p> <p><Size> - Size of security data to be stored 1..2047</p> <p>If the <Action> parameter is 1 (store data into NVM) the device responds to the command with the prompt ‘>’ and waits for the data to store. To complete the operation send Ctrl-Z char (0x1A hex); to exit without writing the message send ESC char (0x1B hex). If data are successfully stored, then the response is OK; if it fails for some reason, an error code is reported.</p> <p>Note: Secured data has to be in PEM format Note: private keys with password ARE NOT supported. Note: It supports standard PKCS #1 and PKCS #8</p> <p>Note: <size> parameter is mandatory if the <write> action is issued, but it has to be omitted for <delete> or <read> actions are issued.</p>
AT#RSASECDATA?	<p>Read command return the present of security data in NVM</p> <p>#RSASECDATA: <PrivKeyIsSet></p> <p><PrivKeyIsSet> is 1 if related data are stored into NVM otherwise 0.</p>
AT#RSASECDATA=?	<p>Test command returns the range of supported values for all the parameters:</p> <p>#RSASECDATA: (0-2),(1-2047)</p>



3.5.7.17.2. Encrypt data - #RSAENCRYPT

#RSAENCRYPT – Encrypt data	SELINT 2
<p>AT#RSAENCRYPT=<KeyType>,<bytestoencrypt>[,<unsolicited>]</p>	<p>Execution command encrypts data with RSA algorithm and use for padding PKCS1 standard</p> <p>Parameters:</p> <p><KeyType> - Select the key type (Public or Private)</p> <p>0 – Public Key 1 – Private Key</p> <p><bytestoencrypt> - number of bytes to be sent</p> <p>The device responds to the command with the prompt ‘>’ <greater_than><space> and waits for the data to send. When < bytestoencrypt > bytes have been sent, operation is automatically completed.</p> <p>If data are successfully sent, then the response is OK. If data sending fails for some reason, an error code is reported</p> <p><unsolicited> - show URC when RSA has finished the encryption (If omitted is hidden)</p> <p>0: Hide 1: Show</p> <p>Note: The URC has this form:</p> <p>#RSAENCRYPT: <size_key_rsa></p> <p>where <size_key_rsa> is the size in bytes of the key used with the RSA algorithm</p> <p>The URC indicates that the calculation is finished and the buffer can be read</p> <p>Note: the maximum value of <bytestoencrypt> is:</p> <p><size_key_rsa> - 11</p> <p>(where 11 is the padding length in bytes used in PKCS#1)</p>



<p>AT#RSAENCRYPT=?</p>	<p>Test command returns the range of supported values for parameters <KeyType> , <bytestoencrypt> , <unsolicited></p> <p>Note: if RSA key isn't loaded into NVM or there is an error in the key the command returns:</p> <p>#RSAENCRYPT: (0,1),(0),(0,1)</p>
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3.5.7.17.3. Decrypt data - #RSADECRYPT

<p>#RSADECRYPT – Decrypt data</p>	<p>SELINT 2</p>
<p>AT#RSADECRYPT=<KeyType>,<bytestodecrypt>[,<unsolicited>]</p>	<p>Execution command decrypts data with RSA algorithm</p> <p>Parameters:</p> <p><KeyType> - Select the key type (Public or Private) 0 – Public Key 1 – Private Key</p> <p><bytestodecrypt> - number of bytes to be sent</p> <p>The device responds to the command with the prompt '>' <greater_than><space> and waits for the data to send. When <bytestodecrypt> bytes have been sent, operation is automatically completed. If data are successfully sent, then the response is OK. If data sending fails for some reason, an error code is reported</p> <p><unsolicited> - show URC when RSA has finished the encryption (If omitted is hidden)</p> <p>0: Hide 1: Show</p> <p>Note: the URC has this form:</p> <p>#RSADECRYPT: <size_key_rsa></p> <p>where <size_key_rsa> is the size in bytes of the key used with the RSA algorithm</p>



	<p>The URC indicates that the calculation is finished and the buffer can be read</p> <p>Note: the value of <bytestodecrypt> is the size in bytes of the key RSA</p>
AT#RSADECRYPT=?	<p>Test command returns the range of supported values for parameters <KeyType> , <bytestodecrypt> , <unsolicited></p> <p>Note: if RSA key isn't loaded into NVM or there is an error in the key the command returns:</p> <p>#RSADECRYPT: (0,1),(0),(0,1)</p>

3.5.7.17.4. Result of RSA calculation - #RSAGETRESULT

#RSAGETRESULT- Result of RSA calculation		SELINT 2
AT#RSAGETRESULT	<p>Execution command reads calculated data, result of RSA encrypt or decrypt.</p> <p>Note: If the RSA algorithm is idle or working mode, then the command returns ERROR</p>	
AT# RSAGETRESULT?	<p>Read command returns the state of RSA encrypt or decrypt previously given</p> <p>#RSAGETRESULT: <ResultRSA></p> <p>Where <ResultRSA> can assume the following values:</p> <ul style="list-style-type: none"> 0: Idle or working mode < 0: Error > 0: RSA encrypt/decrypt finished (return size of key used in bytes) 	
AT# RSAGETRESULT=?	Test command returns OK result code	



3.5.7.18. GNSS AT Commands Set

3.5.7.18.1. GNSS Receiver Configuration

3.5.7.18.1.1. GPS Device Type Set - \$GSPSD

\$GSPSD - GPS Device Type Set	SELINT 2
<p>AT\$GSPSD= <device_type> [,<sub_device_type>]</p>	<p>Set command defines which GNSS receiver is connected to the module. It reserves the Serial port #1 of the module (TRACE) to receive the data stream coming from the attached GNSS module.</p> <p>Parameter: <device type></p> <ul style="list-style-type: none"> 0 - none; the serial port is not connected to the GNSS device and available for standard use (default for all modules except for GE864-GPS and GE910-GNSS) 1 - currently has no meaning, maintained for backward compatibility 2 - serial port connected to the GNSS serial port: controlled mode (default for GE864-GPS). This configuration is for SiRF StarIV-based GNSS modules support only (JF2-FLASH, JF2-ROM and JF2-ROM+EEPROM) 3 - serial port connected to the GNSS serial port: controlled mode. This configuration is for SiRF StarIV-based GNSS modules support only (JN3-FLASH, JN3-ROM and JN3-ROM+EEPROM). <u>This value is not currently supported on GE910-GNSS.</u> 4 - serial port connected to the GNSS serial port: controlled mode (default for GE910-GNSS). This configuration is for ST TeseoII-based GPS modules support only (SL869) 5 - serial port connected to the GNSS serial port: controlled mode. This configuration is for SiRF StarV-based GNSS modules support only (SE868-V2) 6 - serial port connected to the GNSS serial port: controlled mode. This configuration is for MediaTek MT3333-based GNSS modules support only (e.g. SL871) <p><sub_device type></p> <ul style="list-style-type: none"> 0 - Flash device: Flash based module (default). 1 - ROM device: ROM based module. 2 - ROM + EEPROM (or SPI Flash) device: EEPROM (or SPI Flash) based module. <p>Note: The <sub_device type> can be used with SiRF Star-based GNSS modules (JF2/JN3/SE868-V2) only, i.e. when AT\$GSPSD=2, AT\$GSPSD=3 or AT\$GSPSD=5.</p> <p>Note: the current setting is stored through \$GPSSAV</p>
<p>AT\$GSPSD?</p>	<p>Read command reports the current value of <device_type> and <sub_device_type> parameters, in the format:</p>



\$GSPSD - GPS Device Type Set		SELINT 2
	\$GSPSD: <device_type>,<sub_device_type>	
AT\$GSPSD=?	Test command reports the range of supported values for parameter <device_type>,<sub_device_type>	
Example	AT\$GSPSD=0 OK AT\$GSPSD=2,1 OK AT\$GSPSD=4,2 ERROR	

3.5.7.18.1.2. GPIO Configuration for GPS control - \$GPSGPIO

\$GPSGPIO – GPIO Configuration for GPS control		SELINT 2
AT\$GPSGPIO= <on_off> , <system_on> , <boot> , <reset>	<p>Execution command sets the GPIO pins to be used to drive JF2 (SE868), JN3 (SL868), SL869, SE868-V2 and SL871 GNSS modules.</p> <p>Parameters:</p> <p><on_off> - GPIO pin number to be used to drive the JF2/JN3/SL869/SE868-V2's ON-OFF signal (default = 4 for SW release 10.0x.xxx and 16.0x.xxx, 1 for SW release 13.00.xxx)</p> <p><system_on> - GPIO pin number to be used to drive the JF2/SE868-V2's SYSTEM-ON signal (default = 5 for SW release 10.0x.xxx and 16.0x.xxx, 2 for SW release 13.00.xxx)</p> <p><boot> - GPIO pin number to be used to drive the JF2-Flash/JN3-Flash/SL869's BOOT signal (default = 6 for SW release 10.0x.xxx and 16.0x.xxx, 3 for SW release 13.00.xxx)</p> <p><reset> - GPIO pin number to be used to drive the JF2-Flash/JN3-Flash's RESET signal (default = 7 for SW release 10.0x.xxx and 16.0x.xxx, 4 for SW release 13.00.xxx)</p> <p>Note: the GPIO configuration specified through this command must be coherent with the specific GNSS module that has to be used, i.e. the configuration specified through the AT\$GSPSD command. Therefore the GPIOs corresponding to unnecessary signals (e.g. <system_on>, <boot> and <reset> for a JN3-ROM) should be set to zero: this allows to reserve and use the minimum number of GPIOs.</p> <p>Note: See the Hardware User Guide to check the number of available GPIO pins.</p> <p>Note: the GPIO configuration correctness and functionality (i.e. possible conflicts with the GPIO configuration applied through AT#GPIO) are under the customer's sole responsibility.</p>	



	<p>Note (SW release 10.0x.xxx and 16.0x.xxx only): if any of the V24 signals has been previously configured as GPIO through AT#V24CFG, it can be set by the extended GPIO range (GPIO # from 128 to 133) to drive the external GNSS receiver.</p> <p>Extended GPIOs and V24 signals correspondence is shown below:</p> <p>GPIO #128 → DCD GPIO #129 → CTS GPIO #130 → RING GPIO #131 → DSR GPIO #132 → DTR GPIO #133 → RTS</p> <p>See the Example section below for an example on how to set such GPIOs. An ERROR is returned whenever trying to set a GPIO, from the extended GPIO range, its corresponding V24 signal has not been previously configured as GPIO through AT#V24CFG.</p> <p>Note: the current GPIO configuration can be stored through AT\$GPSSAV</p>
<p>AT\$GPSGPIO?</p>	<p>Read command reports the currently selected configuration in the format:</p> <p>\$GPSGPIO: <on_off>,<system_on>,<boot>,<reset></p>
<p>AT\$GPSGPIO=?</p>	<p>Test command reports supported range of values for parameters <on_off>, <system_on>, <boot> and <reset></p> <p>Note (SW release 10.0x.xxx and 16.0x.xxx only): the extended GPIO range is reported along with the available customer GPIO range.</p>
<p>Example</p>	<p>- For a JF2-Flash (AT\$GPSD=2,0):</p> <p>AT\$GPSGPIO=4,5,6,7 OK</p> <p>AT\$GPSGPIO? \$GPSGPIO: 4,5,6,7</p> <p>OK</p> <p>- For a JF2-ROM (AT\$GPSD=2,1):</p> <p>AT\$GPSGPIO=4,5,0,0 OK</p> <p>OR</p> <p>AT\$GPSGPIO=4,5,6,7 OK</p>



\$GPSSERSPEED – Set the GPS serial port speed		SELINT 2
	<p>AT\$GPSD=3, AT\$GPSD=3,1, AT\$GPSD=3,2 or AT\$GPSD=5,2), and MT3333-based GNSS modules such as SL871 (AT\$GPSD=6).</p> <p>Note: the current setting is stored through \$GPSSAV.</p> <p>Note: The module must be restarted to use the new configuration</p>	
AT\$GPSSERSPEED?	<p>Read command returns the selected serial speed in the format</p> <p>\$GPSSERSPEED: <speed></p>	
AT\$GPSSERSPEED=?	<p>Test command returns the available range for <speed></p>	
Example	<p>AT\$GPSSERSPEED = 4800 OK</p>	

3.5.7.18.1.4. GPS Controller Power Management - \$GPSP

\$GPSP - GPS Controller Power Management		SELINT 2
AT\$GPSP=<status>	<p>Set command allows to manage power-up or down of the GPS controller</p> <p>Parameter: <status> 0 - GPS controller is powered down (default for all modules, except for GE864-GPS) 1 - GPS controller is powered up (default for GE864-GPS)</p> <p>Note: for the GPS product: if the GPS controller is powered down while VAUX pin is enabled they'll both be also powered off. Note: the current setting is stored through \$GPSSAV</p>	
AT\$GPSP?	<p>Read command reports the current value of the <status> parameter, in the format:</p> <p>\$GPSP: <status></p> <p>Note: the <status> parameter does not report the real power status of the GPS module but only the value set through the set command above. The <status> parameter, once stored through the AT\$GPSSAV command, specifies the power status of the GPS module (ON or OFF) at system startup</p>	
AT\$GPSP=?	<p>Test command reports the range of supported values for parameter <status></p>	
Example	<p>AT\$GPSP=0 OK</p>	
Note	<p>The command is available in “controlled mode” only</p>	

3.5.7.18.1.5. GPS Antenna Type Definition - \$GPSAT

\$GPSAT – GPS Antenna LNA Control		SELINT 2
AT\$GPSAT=	<p>Set command selects the GPS antenna used.</p>	



<type>	<p>Parameter:</p> <p><type> 0 - Disable External GPS Antenna LNA (default): GPS chip Internal LNA Gain Mode is High and GPS_EXT_LNA_EN signal is Low</p> <p>1 - Enable External GPS Antenna LNA: GPS chip Internal LNA Gain Mode is Low and GPS_EXT_LNA_EN signal is High</p> <p>Note: the current setting is stored through \$GPSSAV</p>
AT\$GPSAT?	Read command returns the current value of <type> in the format: \$GPSAT: <type>
AT\$GPSAT=?	Test command reports the range of supported values for parameter <type>
Example	AT\$GPSAT=1 OK
Note	<p>The command is available in “controlled mode” only</p> <p>This command is currently available for SirfIV-based GPS modules (JF2 and JN3) only, i.e. whenever is AT\$GPSD=2 or AT\$GPSD=3.</p> <p>This command must be issued only when the GPS receiver is operating in Full Power Mode (see \$GPSPS), otherwise it might have no effect</p> <p>Since the AT\$GPSAT command performs a hardware reconfiguration of the GPS receiver, the issuing of two consecutive AT\$GPSAT commands should be avoided, otherwise the reconfiguration might fail: an ERROR is returned in the latter case</p> <p>If the <type> parameter has been set to 1, the External GPS Antenna LNA is directly driven by the GPS receiver according to its current power mode (i.e. the External GPS Antenna LNA is turned off whenever the GPS receiver is in power saving mode)</p> <p>Please refer to the HW User Guide for the compatible GPS antennas and their usage</p>

3.5.7.18.1.6. Save GPS Parameters Configuration - \$GPSSAV

\$GPSSAV - Save GPS Parameters Configuration		SELINT 2
AT\$GPSSAV	Execution command stores the current GNSS parameters in the NVM of the GSM module.	
AT\$GPSSAV=?	Test command returns the OK result code	
Example	AT\$GPSSAV OK	
Note	The module must be restarted to use the new configuration	



3.5.7.18.1.7. Restore To Default GPS Parameters - \$GPSRST

\$GPSRST - Restore To Default GPS Parameters		SELINT 2
AT\$GPSRST	Execution command resets the GNSS parameters to “Factory Default” configuration and stores them in the NVM of the GSM module.	
AT\$GPSRST=?	Test command returns the OK result code	
Example	AT\$GPSRST OK	
Note	The module must be restarted to use the new configuration	

3.5.7.18.1.8. Set CPU Clock for ST TESEOII - \$GPSSTCPUCLK

\$GPSSTCPUCLK – Set CPU Clock for ST TESEOII		SELINT 2
AT\$GPSSTCPUCLK=<cpu_clock>	<p>Set command allows changing the CPU Clock Frequency for ST TESEOII-based GNSS modules (e.g. SL869, GE910-GNSS).</p> <p>Parameter: <cpu_clock>:</p> <ul style="list-style-type: none"> 0 – 52 MHz 1 – 104 MHz 2 – 156 MHz 3 – 208 MHz <p>Note: This command can be used with ST TESEOII-based GNSS modules only (AT\$GPSD=4).</p> <p>Note: The <cpu_clock> setting is saved into TESEOII NVM and retained until a NVM erase or a next firmware upgrade of the GNSS receiver is performed.</p>	
AT\$GPSSTCPUCLK?	<p>Read command reports the current setting for the CPU Clock Frequency in the format:</p> <p>\$GPSSTCPUCLK: <cpu_clock></p> <p>Note: An ERROR is returned if the CPU Clock Frequency has never been changed.</p> <p><i>Please refer to the Software Application Note of the GNSS receiver used for further information on the CPU Clock Frequency used by default.</i></p>	
AT\$GPSSTCPUCLK=?	<p>Test command reports the supported range of values for the parameter <cpu_clock></p>	



3.5.7.18.2. GNSS Power Saving Modes Management

3.5.7.18.2.1. Set The GPS Module In Power Saving Mode - \$GPSPS

\$GPSPS - Set The GPS Module In Power Saving Mode	SELINT 2
<p>AT\$GPSPS= <mode> [,<PTF_Period>]</p>	<p>Set command allows setting the GNSS module in Power saving mode.</p> <p>Parameters:</p> <p><mode> - the GNSS receiver can operate in four power modes:</p> <ol style="list-style-type: none"> 0 - Full Power Mode, power saving disabled (default). Full-power mode is also known as Continuous Navigation mode. This is the most accurate navigation mode and supports the most dynamic motion scenarios. 1 - TricklePower Mode. TricklePower mode is a duty cycled mode in which the system selects a minimum rate of navigation solution updates and minimizes average current. 2 - Push-To-Fix Mode. Push-to-Fix mode (PTF) is designed for applications that require infrequent position reporting. The SiRF Star receiver generally stays in the Hibernate system power state but wakes up periodically to refresh position, time, ephemeris data and RTC calibration. A pulse on the external ON_OFF line to the receiver acts as a position update request. 3 - Micro Power Mode. Micro Power mode (MPM) is a very low power maintenance mode that delivers continuous availability of the navigation solution. It is intended for low dynamics applications. It continuously maintains ephemeris data as well as a low level of uncertainty in the estimates of position, time, and receiver clock error. It achieves this by keeping the SiRFStar receiver in the Hibernate power state and leaving Hibernate only as needed to maintain these conditions. <p><PTF_Period> - Push-To-Fix update period, numeric value in seconds; when mode is Push-To-Fix, the receiver turns on periodically according to this parameter (default value is 1800 sec). This parameter does have meaning only when <mode>=2.</p> <p>Note: Push-To-Fix and Micro Power modes support is not available for JN3 because it does not have an ON_OFF input. Therefore, when AT\$GPSD=3, only Full Power and TricklePower modes are supported. In addition, in this case, the <PTF_Period> parameter is accepted but not used.</p> <p>Note: Micro Power Mode support is not currently available for SE868-V2.</p>
<p>AT\$GPSPS?</p>	<p>Read command returns the current power saving mode and push-to-fix period, in the format:</p> <p>\$GPSPS: <mode>,<PTF_Period></p>
<p>AT\$GPSPS=?</p>	<p>Test command returns the available range for <mode> and <PTF_Period></p>



\$GPSPS - Set The GPS Module In Power Saving Mode		SELINT 2
Note	<p>Available in “controlled mode” only</p> <p>This command is currently available for Sirf-based GNSS modules (JF2, JN3 and SE868-V2) only, i.e. whenever is AT\$GPSD=2, AT\$GPSD=3 or AT\$GPSD=5.</p>	

3.5.7.18.2.2. Wake Up GPS From Power Saving Mode - \$GPSWK

\$GPSWK - Wake Up GPS From Power Saving Mode		SELINT 2
AT\$GPSWK	<p>Execution command allows waking up the GNSS module when a power saving or standby mode has been enabled.</p> <p>Notes for Sirf-based GNSS modules only:</p> <p>If the GNSS module has been configured to work in TricklePower Mode, it will start up, get a fix and then continue to work in power saving mode.</p> <p>If the GNSS module has been configured to work in Push-To-Fix Mode, issuing AT\$GPSWK allows to wake up it before the Push-To-Fix update period; once a new fix will be got, the GNSS module will return to Push-To-Fix mode.</p> <p>If the GNSS module has been configured to work in Micro Power Mode, it will be set to Full Power Mode (same as issuing AT\$GPSPS=0 command).</p> <p>Notes for MediaTek MT3333-based GNSS modules only:</p> <p>If the GNSS module has been configured to work in any of the supported Standby modes, the current Standby mode will be disabled.</p>	
AT\$GPSWK=?	Test command returns the OK result code	
Note	<p>Available in “controlled mode” only</p> <p>This command is currently available for Sirf-based and MediaTek MT3333-based GNSS modules (e.g. JF2, JN3, SE868-V2 and SL871), i.e. whenever is AT\$GPSD=2, AT\$GPSD=3, AT\$GPSD=5 or AT\$GPSD=6.</p>	

3.5.7.18.2.3. Set the Periodic Power Saving Mode for MTK - \$GPSMTKPPS

\$GPSMTKPPS - Set the Periodic Power Saving Mode for MTK		SELINT 2
AT\$GPSMTKPPS= <mode>[, <runtime>, <sleeptime>, <second_runtime>, <second_sleeptime>]	<p>Set command allows setting the MediaTek MT3333-based GNSS modules' Periodic Power Saving Mode settings.</p> <p>Parameters:</p> <p><mode> - the GNSS receiver can operate in five different Periodic Power Saving modes:</p> <p>0 – Normal mode (Periodic Power Saving mode disabled)</p> <p>1 – Periodic Backup mode</p>	



\$GPSMTKPPS - Set the Periodic Power Saving Mode for MTK		SELINT 2
	<p>2 – Periodic Standby mode 8 – AlwaysLocate™ standby mode 9 – AlwaysLocate™ backup mode <runtime> - Full Power (or Normal) Period in milliseconds 1000...518400000 <sleeptime> - Low Power Period (backup/standby) in milliseconds 1000... 518400000 <second_runtime> - Full Power (or Normal) Period in milliseconds for extended acquisition if GNSS acquisition fails during <runtime> 0 – Disable 1000...518400000 – Enable (should be larger than the set <runtime> value) <second_sleeptime> - Low Power Period (backup/standby) in milliseconds for extended sleep if GNSS acquisition fails during <runtime> 0 – Disable 1000...518400000</p> <p>Note: The <runtime>, <sleeptime>, <second_runtime>, <second_sleeptime> parameters must be set if <mode> is 1 or 2 otherwise ERROR is returned</p> <p>Note: The <runtime>, <sleeptime>, <second_runtime>, <second_sleeptime> parameters must be omitted if <mode> is 0, 8 or 9 otherwise ERROR is returned</p> <p>Note: <mode> values different from 0 can be set only when the GNSS module is powered ON and operating in Full (or Normal) Power mode.</p> <p>Note: the <mode> value 0 can be set only when the GNSS module is operating in any of the Periodic Power Saving modes. Issuing AT\$GPSMTKPPS=0 the GNSS module switches back to Full (or Normal) Power mode as soon as it wakes up according to the <sleeptime> and <second_sleeptime> values set.</p>	
AT\$GPSMTKPPS?	Read command returns the current Periodic Power Saving mode in the format:	
	<p>\$GPSMTKPPS: <mode>[,<runtime>,<sleeptime>,<second_runtime>,<second_sleeptime>]</p>	
AT\$GPSMTKPPS=?	Test command reports the supported range of values for parameters <mode>,<runtime>,<sleeptime>,<second_runtime>,<second_sleeptime>	
Note	<p>Available in “controlled mode” only</p> <p>This command is currently available for MediaTek MT3333-based GNSS modules (e.g. SL871) only, i.e. whenever is AT\$GPSD=6.</p>	

3.5.7.18.2.4. Set Standby Mode for MTK - \$GPSMTKSTDBY

\$GPSMTKSTDBY - Set Standby Mode for MTK		SELINT 2
AT\$GPSMTKSTDBY=	Set command allows setting the MediaTek MT3333-based GNSS modules in	



\$GPSMTKSTDBY - Set Standby Mode for MTK		SELINT 2
<mode>	Standby mode. Parameters: <mode> - the GNSS receiver can operate in three Standby modes: 0 – Standby Mode disabled (default). This value cannot be set and may be only reported by the read command. 1 – Stop Mode 2 – Sleep Mode Note: Stop or Sleep Standby modes can be set only when the GNSS module is powered ON and operating in full power mode. Note: the GNSS module can be forced to exit from the standby modes through the AT\$GPSWK command	
AT\$GPSMTKSTDBY?	Read command returns the current Standby mode in the format: \$GPSMTKSTDBY: <mode>	
AT\$GPSMTKSTDBY=?	Test command returns the available range for <mode>	
Note	This command is available in “controlled mode” only, for MediaTek MT3333-based GNSS modules (e.g. SL871), i.e. whenever is AT\$GPSD=6.	

3.5.7.18.3. GNSS General Management

3.5.7.18.3.1. GPS Software Version - \$GPSSW

\$GPSSW - GPS Software Version		SELINT 2
AT\$GPSSW	Execution command returns the GNSS module software version in the format: \$GPSSW: <sw version>	
AT\$GPSSW?	Read command has the same meaning as the Execution command	
AT\$GPSSW=?	Test command returns the OK result code	
Example	For SiRF IV-based modules (e.g. JF2, JN3 and GE864-GPS): AT\$GPSSW \$GPSSW: GSD4e_4.0.2-P1 05/26/2010 146 OK For STM TeseoII-based modules (e.g. SL869 and GE910-GNSS): AT\$GPSSW \$GPSSW: SL869 v3.0.0.1 -STD -N96 OK For SiRF V-based modules (e.g. SE868-V2): AT\$GPSSW \$GPSSW: 5xp__5.5.2-R32+5xpt_5.5.2-R32 OK For MT3333-based modules (e.g. SL871): AT\$GPSSW	



\$GPSCON - Direct Access to GPS Module		SELINT 2
	<p>will directly transfer the received data to the GNSS module (and vice-versa), without checking or elaborating it.</p> <p>Note: the command can be used in “controlled mode” only.</p> <p>Note: in case of an incoming call from GSM, this will be visible on the RING pin of serial port.</p> <p>Note: the escape sequence is “+++”</p> <p>The suggested Serial Port Speed for SirfIV-based modules (e.g. JF2 and JN3) is 57600.</p> <p>The suggested Serial Port Speed for SirfV-based modules (e.g. SE868-V2) is 115200.</p>	
AT\$GPSCON=?	Test command returns the OK result code	

3.5.7.18.4. GNSS Positioning Information

3.5.7.18.4.1. Unsolicited NMEA Data Configuration - \$GPSNMUN

\$GPSNMUN - Unsolicited NMEA Data Configuration		SELINT 2
AT\$GPSNMUN= <enable> [,<GGA>,<GLL>, <GSA>,<GSV>, <RMC>,<VTG >]	<p>Set command allows to activate an Unsolicited stream of GNSS data (in NMEA format) through the standard cellular module serial port and defines which NMEA sentences will be relayed</p> <p>Parameters:</p> <p><enable></p> <ul style="list-style-type: none"> 0 - NMEA data stream de-activated (default) 1 - NMEA data stream activated with the following unsolicited response syntax: \$GPSNMUN: <NMEA SENTENCE><CR> 2 - NMEA data stream activated with the following unsolicited response syntax: <NMEA SENTENCE><CR> 3 - dedicated NMEA data stream; it is not possible to send AT commands; with the escape sequence ‘+++’ the user can return to command mode <p><GGA> - Global Positioning System Fix Data</p> <ul style="list-style-type: none"> 0 - disable (default) 1 - enable <p><GLL> - Geographic Position - Latitude/Longitude</p> <ul style="list-style-type: none"> 0 - disable (default) 1 - enable <p><GSA> - GNSS DOP and Active Satellites</p>	



	<p>0 - disable (default) 1 - enable</p> <p><GSV> - GNSS Satellites in View 0 - disable (default) 1 - enable</p> <p><RMC> - Recommended Minimum Specific GNSS Data 0 - disable (default) 1 - enable</p> <p><VTG> - GNSS Course Over Ground and Ground Speed 0 - disable (default) 1 - enable</p>
AT\$GPSNMUN?	<p>Read command returns whether the unsolicited GNSS NMEA data stream is currently enabled or not, along with the current NMEA mask configuration, in the format:</p> <p>\$GPSNMUN:<enable>,<GGA>,<GLL>,<GSA>,<GSV>,<RMC>,<VTG></p>
AT\$GPSNMUN=?	<p>Test command returns the supported range of values for parameters <enable>, <GGA>, <GLL>, <GSA>, <GSV>, <RMC>, <VTG></p>
Example	<p><i>Set the GSA as available sentence in the unsolicited message:</i></p> <p>AT\$GPSNMUN=2,0,0,1,0,0,0 OK</p> <p><i>Turn-off the unsolicited mode:</i></p> <p>AT\$GPSNMUN=0 OK</p> <p><i>Read the current NMEA mask configuration:</i></p> <p>AT\$GPSNMUN? \$GPSNMUN: 2,0,0,1,0,0,0 OK</p> <p><i>The unsolicited message will be:</i></p> <p>\$GPGSA,A,3,23,20,24,07,13,04,02,,,,,2.4,1.6,1.8*3C</p>
Reference	<p>For products without built-in GNSS receiver (see the Note section below)</p> <p>NMEA 0183 Specifications</p>
Note	<p>For products without built-in GNSS receiver:</p>



	<p><i>The command is available in “Controlled Mode” only</i></p> <p><i>The available NMEA sentences and their talker (GN, GP and GL) depend on the GNSS receiver used and its firmware configuration.</i></p> <p><i>Please refer to the Software Application Note of the GNSS receiver used for further information on the available NMEA data set.</i></p> <p>SirfIV-based GNSS modules (e.g. JF2, JN3):</p> <p><i>The fields PDOP and VDOP are not available</i></p> <p>Products without built-in GNSS receiver are: HE910-D, HE910-EUD, HE910-EUR, HE910-NAD, HE910-NAR, UE910-EUD, UE910-EUR, UE910-NAR, UE910-NAD, UL865-EUR, UL865-EUD, UL865-NAR, UL865-NAD.</p>
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3.5.7.18.4.2. Get Acquired Position - \$GPSACP

\$GPSACP - Get Acquired Position	SELINT 2
<p>AT\$GPSACP</p>	<p>Execution command returns information about the last GPS position in the format:</p> <p>\$GPSACP: <UTC>,<latitude>,<longitude>,<hdop>,<altitude>,<fix>,<cog>,<spkm>,<spkn>,<date>,<nsat></p> <p>where:</p> <p><UTC> - UTC time (hhmmss.sss) referred to GGA sentence</p> <p><latitude> - format is ddmm.mmmm N/S (referred to GGA sentence)</p> <p>where:</p> <p>dd - degrees 00..90</p> <p>mm.mmmm - minutes 00.0000..59.9999</p> <p>N/S: North / South</p> <p><longitude> - format is dddmm.mmmm E/W (referred to GGA sentence)</p> <p>where:</p> <p>ddd - degrees 000..180</p> <p>mm.mmmm - minutes 00.0000..59.9999</p> <p>E/W: East / West</p> <p><hdop> - x.x - Horizontal Dilution of Precision (referred to GGA sentence)</p> <p><altitude> - x.x Altitude - mean-sea-level (geoid) in meters (referred to GGA sentence)</p> <p><fix> -</p> <p>0 - Invalid Fix</p> <p>2 - 2D fix</p>



\$GPSACP - Get Acquired Position		SELINT 2
	3 - 3D fix < cog > - ddd.mm - Course over Ground (degrees, True) (referred to VTG sentence) where: ddd - degrees 000..360 mm - minutes 00..59 < spkm > - x.x Speed over ground (Km/hr) (referred to VTG sentence) < spkn > - x.x- Speed over ground (knots) (referred to VTG sentence) < date > - ddmmyy Date of Fix (referred to RMC sentence) where: dd - day 01..31 mm - month 01..12 yy - year 00..99 - 2000 to 2099 < nsat > - nn - Total number of satellites in use (referred to GGA sentence) 00..12	
AT\$GPSACP?	Read command has the same meaning as the Execution command	
AT\$GPSACP=?	Test command returns the OK result code	
Example	AT\$GPSACP \$GPSACP:080220.479,4542.82691N,01344.26820E,259.07,3,2.1,0.1,0.0,0.0,27070 5,09 OK	
Note	If the GNSS receiver is turned off or its serial line is not physically connected to the GSM, the answer might be empty as shown below. AT\$GPSACP \$GPSACP: OK GE910-GNSS only: since latitude and longitude fields are taken from the \$GPGGA5 NMEA sentence, they are reported in the format DDMM.MMMMM.	

3.5.7.18.5. GNSS SiRFInstantFix™

3.5.7.18.5.1. GPS SiRFInstantFix™ - \$GPSIFIX

\$GPSIFIX – GPS SiRFInstantFix™		SELINT 2
AT\$GPSIFIX= <enable>[, <cgee>,	Set command enables/disables SiRFInstantFix™ feature available on SiRF StarIV based modules.	



<p><sgee>[, <update>]]</p>	<p>Parameters: <enable> - SiRFInstantFix Usage 0 – Disable (default) 1 – Enable <cgee> - Client Generated Extended Ephemeris (CGEE) 0 – Disable 1 – Enable (default) <sgee> - Server Generated Extended Ephemeris (SGEE) 0 – Disable (default) 1 – Enable <update> - SGEE File Update Mode 0 – Upon Aiding Data Requests coming from GPS chip 1..168 – Update rate in hours (168 is the max update rate in case of 7-days SGEE files usage)</p> <p>Note: SiRFInstantFix parameters are stored in NVM, along with all current GPS parameters, if OK is returned (same as AT\$GPSSAV)</p> <p>Note: if <enable>=0, the rest of parameters must be omitted otherwise ERROR is returned</p> <p>Note: if <enable>=1 and the rest of parameters is omitted, the default configuration, or a previous stored one, is used</p> <p>Note: if <sgee>=1, the <update> parameter must be set otherwise ERROR is returned</p> <p>Note: if <sgee>=1 the following URC is used to warn, according to the <update> value, that the SGEE file has to be updated:</p> <p><i>\$SIFIXEV: SGEE File Update Requested</i></p> <p>Note: If <sgee>=0, the <update> parameter must be omitted otherwise ERROR is returned</p> <p>Note: SiRFInstantFix default configuration may be restored by issuing the AT\$GPSRST command</p>
<p>AT\$GPSIFIX?</p>	<p>Read command reports the currently selected SiRFInstantFix configuration in the format: \$GPSIFIX: <enable>[,<cgee>,<sgee>[,<update>]]</p>
<p>AT\$GPSIFIX=?</p>	<p>Test command reports the supported range of values for parameters <enable>, <cgee>, <sgee>,<update></p>
<p>Example</p>	<p>AT\$GPSIFIX=0 OK</p> <p>AT\$GPSIFIX=1,1,0 OK</p>



Note	The Command is available in “Controlled Mode” only
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3.5.7.18.5.2. GNSS SiRFInstantFix™ - \$GNSSIFIX

\$GNSSIFIX – GNSS SiRFInstantFix™		SELINT 2
AT\$GNSSIFIX= <navsystem>, <cgee>, <sgee>	Set command enables/disables the SiRFInstantFix™ feature available on SiRF StarV-based GNSS modules. Parameters: <navsystem> - Constellation for which the SiRFInstantFix™ feature has to be enabled 0 – GPS 1 – GLONASS <cgee> - Client Generated Extended Ephemeris (CGEE) 0 – Disable 1 – Enable <sgee> - Server Generated Extended Ephemeris (SGEE) 0 – Disable 1 – Enable Note: SE868-V2 firmware comes with CGEE and SGEE enabled by default for both GPS and GLONASS constellations. Note: if <sgee>=1 the following URC is used to warn, according to the <navsystem> value, that the SGEE file has to be updated: - For GPS <i>\$SIFIXEV: GPS SGEE File Update Requested</i> - For GLONASS <i>\$SIFIXEV: GLONASS SGEE File Update Requested</i>	
AT\$GNSSIFIX?	Read command reports the current SiRFInstantFix™ configuration, for both GPS and GLONASS, in the format: \$GNSSIFIX: 0,<cgee>,<sgee> \$GNSSIFIX: 1,<cgee>,<sgee>	
AT\$GNSSIFIX=?	Test command reports the supported range of values for parameters <navsystem>, <cgee>, <sgee>	
Example	AT\$GNSSIFIX=0,1,0 OK AT\$GNSSIFIX=1,1,1 OK	



Note	The Command is available in “Controlled Mode” only
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3.5.7.18.5.3. Get SGEE File for SiRFInstantFix™ - \$FTPGETIFIX

\$FTPGETIFIX – Get SGEE File for SiRFInstantFix™		SELINT 2
<p>AT\$FTPGETIFIX= <filename>, <filesize> [,<navsystem>]</p>	<p>Execution command, issued during an FTP connection, opens a data connection, downloads a SGEE file from the FTP server and injects it into SiRF StarIV or StarV GNSS receiver.</p> <p>Parameters: <filename> - file name, string type <filesize> - SGEE file size in bytes <navsystem> - Constellation for which the SGEE file has to be downloaded and injected 0 – GPS (default) 1 – GLONASS</p> <p>Note: whenever an FTP connection has not been opened yet, an ERROR result code is returned</p> <p>Note: whenever an error happens during the SGEE file injection stage, an ERROR result code is returned In this case the possible <i><err></i> values reported by <i>+CME ERROR</i> (numeric format followed by verbose format) may be:</p> <ul style="list-style-type: none"> 920 SGEE update initialization stage failed 921 SGEE file is not newer than the last stored one 922 SGEE update generic error 923 SGEE file open error <p>Note: The command closure should always be handled by the customer application. In order to avoid download stall situations a timeout should be implemented by the application.</p> <p>Note: the <navsystem> parameter has a meaning for Sirf StarV-based receivers (e.g. SE868-V2) only; if omitted, the default value will be used (GPS). Therefore, when a Sirf StarIV-based receiver is used, the <navsystem> parameter is accepted but it does not have any effect.</p>	
AT\$FTPGETIFIX=?	Test command returns the OK result code	
Example	<p>AT\$FTPGETIFIX="packedDifference.f2p3enc.ee",30970 OK</p> <p>AT\$FTPGETIFIX="packedDifference.f2p1enc.ee",10742 +CME ERROR: SGEE file is not newer than the last stored one</p>	
Note	The Command is available in “Controlled Mode” only	



3.5.7.18.5.4. Get SGEE File for SiRFInstantFix™ - \$HTTPGETIFIX

\$HTTPGETIFIX – Get SGEE File for SiRFInstantFix™	SELINT 2
<p>AT\$HTTPGETIFIX= < prof_id >, <filesize> [,<navsystem>]</p>	<p>Execution command, issued during an HTTP connection, downloads a SGEE file from the HTTP server and injects it into the SiRF StarIV or StarV GNSS receiver, after a HTTP query using a specific Profile Id, GET option, SGEE file name has been sent.</p> <p>Parameters: <prof_id> - Numeric parameter indicating the profile identifier. Range: 0-2 <filesize> - SGEE file size in bytes <navsystem> - Constellation for which the SGEE file has to be downloaded and injected 0 – GPS (default) 1 – GLONASS</p> <p>Note: whenever an HTTP configuration has not been done yet, an ERROR result code is returned</p> <p>Note: whenever an error happens during the SGEE file injection stage, an ERROR result code is returned In this case the possible <i><err></i> values reported by <i>+CME ERROR</i> (numeric format followed by verbose format) may be:</p> <ul style="list-style-type: none"> 920 SGEE update initialization stage failed 921 SGEE file is not newer than the last stored one 922 SGEE update generic error 923 SGEE file open error <p>Note: the <navsystem> parameter has a meaning for Sirf StarV-based receivers (e.g. SE868-V2) only; if omitted, the default value will be used (GPS). Therefore, when a Sirf StarIV-based receiver is used, the <navsystem> parameter is accepted but it does not have any effect.</p>
<p>AT\$HTTPGETIFIX=?</p>	<p>Test command returns the OK result code</p>
<p>Example</p>	<p>AT\$HTTPGETIFIX=0,30970 OK</p> <p>AT\$HTTPGETIFIX=0,10742 +CME ERROR: SGEE file is not newer than the last stored one</p>
<p>Note</p>	<p>The Command is available in “Controlled Mode” only</p>

3.5.7.18.6. GNSS Patch Management



3.5.7.18.6.1. Write Patch on flash - \$WPATCH

\$WPATCH – Write Patch on flash		SELINT 2
<p>AT\$WPATCH= <patch_file_name>,<size> ></p>	<p>Execution command allows storing a SiRF software patch onto the module's flash memory.</p> <p>The file should be sent using RAW ASCII file transfer. It is important to set properly the port settings. In particular: Flow control: hardware. Baud rate: 115200 bps</p> <p>Parameters: <patch_file_name> - name of the file in NVM, string type (max 16 chars, case sensitive). <size> - file size in bytes</p> <p>The device shall prompt a three character sequence <greater_than><greater_than><greater_than> (IRA 62, 62, 62) then the command line is terminated with a <CR>; after that a file can be sent from TE, sized <size> bytes.</p> <p>The operations completes when all the bytes are received.</p> <p>If writing ends successfully, the response is OK; otherwise an error code is reported.</p> <p>Note: This command can be used with SIRF ROM-based GPS modules only (AT\$GPSD=2,1, AT\$GPSD=2,2, AT\$GPSD=3,1, AT\$GPSD=3,2 or AT\$GPSD=5,2).</p> <p>Note: The patch file must have a “.pd2” or “.pd3” (AT\$GPSD=5,2) extension.</p>	
<p>AT\$WPATCH=?</p>	<p>Test command returns the OK result code</p>	
<p>Example</p>	<pre>AT\$WPATCH = "GSD4E_4.1.2.pd2",5472 >>> here receive the prompt: depending on your editor settings it's possible that the prompt overrides the above line; then type or send the patch, sized 54 bytes OK Patch has been stored.</pre>	

3.5.7.18.6.2. Enable Patch - \$EPATCH

\$EPATCH – Enable Patch		SELINT 2
<p>AT\$EPATCH= [<patch_file_name>]</p>	<p>Execution command allows enabling the usage of the SiRF software patch saved onto the module's flash memory.</p>	



\$EPATCH – Enable Patch		SELINT 2
	Patch Manager: Patched. -The SiRF GNSS module has been patched	

3.5.7.18.6.3. List Available Patch - \$LPATCH

\$LPATCH – List Available Patch		SELINT 2
AT\$LPATCH	Execution command displays the available SiRF software patch saved onto the module's flash memory. Note: This command can be used with SIRF ROM-based GPS modules only (AT\$GPSD=2,1, AT\$GPSD=2,2, AT\$GPSD=3,1, AT\$GPSD=3,2 or AT\$GPSD=5,2). Note: The patch file must have a ".pd2" or ".pd3" (AT\$GPSD=5,2) extension.	
AT\$LPATCH=?	Test command returns the OK result code	
Example	AT\$LPATCH \$LPATCH: "GSD4E_4.1.2.pd2" , 5472 OK	

3.5.7.18.6.4. Delete Patch from NVM - \$DPATCH

\$DPATCH – Delete Patch from NVM		SELINT 2
AT\$DPATCH=<patch_file_name>	Execution command deletes a SiRF software patch stored onto the module's flash memory. Parameters: <patch_file_name> - name of the file in NVM, string type (max 16 chars, case sensitive). The execution command returns OK. Note: This command can be used with SIRF ROM-based GNSS modules only (AT\$GPSD=2,1, AT\$GPSD=2,2, AT\$GPSD=3,1 AT\$GPSD=3,2 or AT\$GPSD=5,2).	
AT\$DPATCH=?	Test command returns the OK result code	
Example	AT\$DPATCH = "GSD4E_4.1.2.pd2" OK	





3.5.7.18.7. GNSS ST-AGPS™

3.5.7.18.7.1. Enable STAGPSTM Usage - \$GPSSTAGPS

\$GPSSTAGPS – Enable STAGPS™ Usage		SELINT 2
AT\$GPSSTAGPS= <enable>	Set command enables/disables the STAGPS™ feature available on ST TESEOII-based GNSS modules. Parameters: <enable> : 0 – Disable 1 – Enable Note: This command can be used with ST TESEOII-based GNSS modules only (AT\$GSPSD=4). Note: Since the current STAGPS™ configuration is not saved in NVM this command has to be issued at every power-cycle of both the GNSS receiver and the GSM module.	
AT\$GPSSTAGPS?	Read command reports the currently selected STAGPS™ configuration in the format: \$GPSSTAGPS: <enable>	
AT\$GPSSTAGPS=?	Test command reports the supported range of values for parameter <enable>	

3.5.7.18.7.2. Get ST-AGPS™ seed file for ST-AGPS - \$HTTPGETSTSEED

\$HTTPGETSTSEED – Get ST-AGPS seed file for ST-AGPS™		SELINT 2
AT\$HTTPGETSTSEED= <prof_id> , <filesize>	Execution command, issued during a HTTP connection, downloads a ST-AGPS seed file from the HTTP server and creates a decoded version of the file itself. The decoded seed file, is stored onto the module's NVM and can be injected later on by means of the AT\$INJECTSTSEED command. The ST-AGPS seed file size must be retrieved, before issuing the AT\$HTTPGETSTSEED command, by sending a HTTP query using a specific Profile Id, GET option and the ST-AGPS seed file name. Parameters: <prof_id> - Numeric parameter indicating the profile identifier. Range: 0-2 <filesize> - ST-AGPS seed file size in bytes Note: whenever an HTTP configuration has not been done yet, an ERROR result code is returned	



AT\$HTTPGETSTSEED=?	Test command returns the OK result code
Example	AT\$HTTPGETSTSEED=0,2199 OK
Note	The Command is available in “Controlled Mode” only

3.5.7.18.7.3. Inject decoded ST-AGPS seed file - \$INJECTSTSEED

\$INJECTSTSEED – Inject decoded ST-AGPS seed file		SELINT 2										
AT\$INJECTSTSEED	<p>Execution command injects a decoded ST-AGPS seed, previously downloaded and stored onto the module's NVM, into TESEOII-based GNSS receivers.</p> <p>Note: whenever an error happens during the decoded ST-AGPS seed file injection stage, an ERROR result code is returned In this case the possible <err> values reported by +CME ERROR (numeric format followed by verbose format) may be:</p> <table border="0"> <tr> <td>970</td> <td>STAGPS Seed file open error</td> </tr> <tr> <td>971</td> <td>STAGPS Seed file exceeds the maximum allowed one</td> </tr> <tr> <td>972</td> <td>STAGPS pre-configuration error</td> </tr> <tr> <td>973</td> <td>STAGPS seed injection error</td> </tr> <tr> <td>974</td> <td>STAGPS re-configuration error</td> </tr> </table> <p>Note: a decoded ST-AGPS seed can be injected only if the GNSS receiver has a valid UTC time from a previous fix, i.e. it is in a warm start condition.</p>		970	STAGPS Seed file open error	971	STAGPS Seed file exceeds the maximum allowed one	972	STAGPS pre-configuration error	973	STAGPS seed injection error	974	STAGPS re-configuration error
970	STAGPS Seed file open error											
971	STAGPS Seed file exceeds the maximum allowed one											
972	STAGPS pre-configuration error											
973	STAGPS seed injection error											
974	STAGPS re-configuration error											
AT\$INJECTSTSEED=?	Test command returns the OK result code											
Note	The command is available in “Controlled Mode” only											



3.5.7.18.8. GNSS MTK EPO

3.5.7.18.8.1. Get EPO file for MT EPO Aiding - \$HTTPGETEPO

\$HTTPGETEPO – Get EPO file for MT EPO Aiding		SELINT 2
AT\$HTTPGETEPO= <prof_id> , <filesize>	Execution command, issued during a HTTP connection, downloads an EPO file from the HTTP server and stores it on the cellular module's NVM for future use. The EPO file can be injected later on by means of the AT\$INJECTEPO command. The EPO file size must be retrieved, before issuing the AT\$HTTPGETEPO command, by sending a HTTP query using a specific Profile Id, GET option and the EPO file name. Parameters: <prof_id> - Numeric parameter indicating the profile identifier. Range: 0-2 <filesize> - EPO file size in bytes Note: whenever a HTTP configuration has not been done yet, an ERROR result code is returned	
AT\$HTTPGETEPO=?	Test command returns the OK result code	
Example	AT\$HTTPGETEPO=0,129024 OK	
Note	This command is available in “controlled mode” only, for MediaTek MT3333-based GNSS modules (e.g. SL871), i.e. whenever is AT\$GPSD=6.	

3.5.7.18.8.2. Inject EPO Aiding file - \$INJECTEPO

\$INJECTEPO – Inject EPO Aiding file		SELINT 2
AT\$INJECTEPO	Execution command injects an EPO file, previously downloaded and stored onto the cellular module's NVM, into MT3333-based GNSS receivers (e.g. SL871). Note: whenever an error happens during the EPO file injection stage, an ERROR result code is returned In this case the possible <err> values reported by +CME ERROR (numeric format followed by verbose format) may be:	
	980	GNSS file open error
	985	Invalid EPO file
	986	EPO MTK binary configuration error
	987	EPO injection error



	<p>988 EPO NMEA configuration error</p> <p>Note: only EPO files up to 14-days validity are currently supported. Therefore, if a 30-days EPO file is used, only data for the first 14 days will be injected.</p>
AT\$INJECTEPO=?	Test command returns the OK result code
Note	This command is available in “controlled mode” only, for MediaTek MT3333-based GNSS modules (e.g. SL871), i.e. whenever is AT\$GSPD=6.

3.5.7.18.8.3. Query EPO Data Status - \$QUERYEPO

\$QUERYEPO – Query EPO Data Status	SELINT 2
AT\$QUERYEPO	<p>Execution command queries the EPO data status, in MT3333-based GNSS receivers (e.g. SL871), whose answer will be in the form:</p> <p>\$QUERYEPO: <SET>,<FWN>,<FTOW>,<LWN>,<LTOW>,<FCWN>,<FCTOW>,<LCWN>,<LCTOW></p> <p>Where:</p> <p><SET> - Total number of EPO data set stored into the GNSS receiver. The EPO prediction for one day is made up of 4 EPO data sets. <FWN> - GPS week number of the first set of EPO data stored into the GNSS receiver. <FTOW> - GPS TOW of the first set of EPO data stored into the GNSS receiver. <LWN> - GPS week number of the last set of EPO data stored into the GNSS receiver. <LTOW> - GPS TOW of the last set of EPO data stored into the GNSS receiver. <FCWN> - GPS week number of the first set of EPO data currently used. <FCTOW> - GPS TOW of the first set of EPO data currently used. <LCWN> - GPS week number of the last set of EPO data currently used. <LCTOW> - GPS TOW of the last set of EPO data currently used.</p>
AT\$QUERYEPO=?	Test command returns the OK result code
Example	<p>AT\$QUERYEPO</p> <p>\$QUERYEPO: 56,1832,259200,1834,237600,1832,367200,1832,367200</p> <p>OK</p>
Note	This command is available in “controlled mode” only, for MediaTek MT3333-based GNSS modules (e.g. SL871), i.e. whenever is AT\$GSPD=6.



3.5.7.18.8.4. Delet EPO Data - \$CLEAREPO

\$CLEAREPO – Delete EPO Data		SELINT 2
AT\$CLEAREPO	Execution command deletes all the EPO data from MT3333-based GNSS receivers (e.g. SL871).	
AT\$CLEAREPO=?	Test command returns the OK result code	
Note	This command is available in “controlled mode” only, for MediaTek MT3333-based GNSS modules (e.g. SL871), i.e. whenever is AT\$GSPD=6.	

3.5.7.18.8.5. Enable EASY - \$EASY

\$EASY – Enable EASY		SELINT 2
AT\$EASY=<enable>	Set command allows enabling or disabling the EASY feature on MT3333-based GNSS receivers (e.g. SL871). Parameters: <enable> - Enable/Disable the EASY feature 0 – Disable 1 – Enable	
AT\$EASY?	Read command reports the current EASY status in the format: \$EASY: <enable>,<extension_day> Where: <extension_day> - Number of days for which the prediction has been already done 0 – EASY enabled and prediction not finished yet or not available 1..3 – EASY enabled and prediction finished for 1, 2 and 3 days respectively	
AT\$EASY=?	Test command reports the range of supported values for parameter <enable>	
Note	This command is available in “controlled mode” only, for MediaTek MT3333-based GNSS modules (e.g. SL871), i.e. whenever is AT\$GSPD=6. The EASY feature is supported starting from SL871 firmware version AXN_3.60_3333_14080800,C012,MT33-1.,1.106 The default EASY configuration depends on the specific SL871 firmware version used.	



#RSEN – Remote SIM Enable	SELINT 2
	<p>Note: if the Remote SIM feature has been activated the SAP connection status is signalled with the following URC:</p> <p>#RSEN: <conn> where <conn> - connection status 0 - disconnected 1 - connected</p>
AT#RSEN?	<p>Read command returns the SAP connection status in the format:</p> <p>#RSEN: <conn> where <conn> - connection status, as before</p>
AT#RSEN=?	Test command reports the range of values for all the parameters.

3.5.7.20. Telefonica OpenGate M2M AT Commands Set

For more detailed information about the AT commands dedicated for Telefonica Open Gate M2M protocol handling please consult the OpenGate M2M Protocol User Guide.

3.5.7.21. Audio Commands

These are not the only audio commands available. See par. 3.5.4.4.

3.5.7.21.1. Audio Basic configuration

3.5.7.21.1.1. Change Audio Path - #CAP

#CAP - Change Audio Path	SELINT 0 / 1
AT#CAP=[<n>]	<p>Set command switches the active audio path depending on parameter <n></p> <p>Parameter: <n> - audio path 0 - audio path follows the AXE input (factory default):</p> <ul style="list-style-type: none"> if AXE is low, handsfree is enabled; if AXE is high, internal path is enabled <p>1 - enables handsfree external mic/ear audio path 2 - enables internal mic/ear audio path</p> <p>Note: The audio path are mutually exclusive, enabling one disables the other.</p>



#CAP - Change Audio Path		SELINT 0 / 1
	<p>Note: when changing the audio path, the volume level is set at the previously stored value for that audio path (see +CLVL).</p> <p>Note: issuing AT#CAP<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT#CAP=<CR> is the same as issuing the command AT#CAP=0<CR>.</p>	
AT#CAP?	<p>Read command reports the active audio path in the format:</p> <p>#CAP: <n>.</p>	
AT#CAP=?	<p>Test command reports the supported values for the parameter <n>.</p>	

#CAP – Change Audio Path		SELINT 2
AT#CAP[=<n>]	<p>Set command switches the active audio path depending on parameter <n></p> <p>Parameter:</p> <p><n> - audio path</p> <p>0 - audio path follows the AXE input (factory default):</p> <ul style="list-style-type: none"> • if AXE is low, handsfree is enabled; • if AXE is high, internal path is enabled <p>1 - enables handsfree external mic/ear audio path</p> <p>2 - enables internal mic/ear audio path</p> <p>Note: The audio path are mutually exclusive, enabling one disables the other.</p> <p>Note: when changing the audio path, the volume level is set at the previously stored value for that audio path (see +CLVL).</p> <p>Note: #CAP=1 is not available for GE865-QUAD despite it is accepted, because GE865-QUAD has only one audio path.</p>	
AT#CAP?	<p>Read command reports the active audio path in the format:</p> <p>#CAP: <n>.</p>	
AT#CAP=?	<p>Test command reports the supported values for the parameter <n>.</p>	

3.5.7.21.1.2. AXE Pin Reading - #AXE

#AXE - AXE Pin Reading		SELINT 2
AT#AXE	<p>Execution command causes the ME to return the current state of AXE pin in the format:</p> <p>#AXE: <state></p>	



#SRS - Select Ringer Sound		SELINT 0 / 1
AT#SRS=?	Test command reports the supported values for the parameters <n> and <tout>	
#SRS - Select Ringer Sound		SELINT 2
AT#SRS= [<n>,<tout>]	<p>Set command sets the ringer sound.</p> <p>Parameters:</p> <p><n> - ringing tone 0 - current ringing tone 1..<i>max</i> - ringing tone number, where <i>max</i> can be read by issuing the Test command AT#SRS=?.</p> <p><tout> - ringing tone playing timer in units of seconds. 0 - ringer is stopped (if present) and current ringer sound is set. 1..60 - ringer sound playing for <tout> seconds and, if <n> > 0, ringer sound <n> is set as default ringer sound.</p> <p>Note: when the command is issued with <n> > 0 and <tout> > 0, the <n> ringing tone is played for <tout> seconds and stored as default ringing tone.</p> <p>Note: if command is issued with <n> > 0 and <tout> = 0, the playing of the ringing is stopped (if present) and <n> ringing tone is set as current.</p> <p>Note: if command is issued with <n> = 0 and <tout> > 0 then the current ringing tone is played for <tout> seconds.</p> <p>Note: if both <n> and <tout> are 0 then the default ringing tone is set as current and ringing is stopped.</p> <p>Note: If all parameters are omitted then the behaviour of Set command is the same as Read command</p>	
AT#SRS?	<p>Read command reports current selected ringing and its status in the form:</p> <p>#SRS: <n>,<status></p> <p>where:</p> <p><n> - ringing tone number 1..<i>max</i></p> <p><status> - ringing status 0 - selected but not playing 1 - currently playing</p>	
AT#SRS=?	Test command reports the supported values for the parameters <n> and <tout>	

3.5.7.21.1.4. Select Ringer Path - #SRP

#SRP - Select Ringer Path		SELINT 0 / 1
AT#SRP[=[<n>]]	Set command selects the ringer path towards whom sending ringer sounds and all signalling tones.	



#SRP - Select Ringer Path		SELINT 0 / 1
	<p>Parameter: <n> - ringer path number 0 - sound output towards current selected audio path (see command #CAP) 1 - sound output towards handsfree 2 - sound output towards handset 3 - sound output towards Buzzer Output pin GPIO7</p> <p>Note: In order to use the Buzzer Output an external circuitry must be added to drive it properly from the GPIO7 pin, furthermore the GPIO7 pin direction must be set to Buzzer output (Alternate function); see command #GPIO.</p> <p>Note: issuing AT#SRP<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT#SRP=<CR> is the same as issuing the command AT#SRP=0<CR>.</p>	
AT#SRP?	Read command reports the selected ringer path in the format: #SRP: <n> .	
AT#SRP=?	Test command reports the supported values for the parameter <n>.	
Example	AT#SRP=? #SRP: (0-3) OK AT#SRP=3 OK	

#SRP - Select Ringer Path		SELINT 2
AT#SRP=[<n>]	<p>Set command selects the ringer path towards whom sending ringer sounds and all signalling tones.</p> <p>Parameter: <n> - ringer path number 0 - sound output towards current selected audio path (see command #CAP) 1 - sound output towards handsfree 2 - sound output towards handset (not available for GL865-DUAL, GL868-DUAL, GE910-QUAD, GE910-QUAD AUTO and GE910-GNSS) 3 - sound output towards Buzzer Output pin GPIO7</p> <p>Note: In order to use the Buzzer Output an external circuitry must be added to drive it properly from the GPIO7 pin, furthermore the GPIO7 pin direction must be set to Buzzer output (Alternate function); see command #GPIO.</p>	
AT#SRP?	Read command reports the selected ringer path in the format:	



#HSMICG - Handset Microphone Gain		SELINT 2
AT#HSMICG= [<level>]	Set command sets the handset microphone input gain Parameter: <level>: handset microphone input gain 0..7 - handset microphone gain (+6dB/step, factory default = 0)	
AT#HSMICG?	Read command returns the current handset microphone input gain, in the format: #HSMICG: <level>	
AT#HSMICG=?	Test command returns the supported range of values of parameter <level>.	

3.5.7.21.1.9. Handsfree Receiver Gain - #HFRECG

#HFRECG - Handsfree Receiver Gain		SELINT 2
AT#HFRECG= <level>	Set command sets the handsfree analogue output gain Parameter: <level>: handsfree analogue output gain 0..6 - handsfree analogue output (-3dB/step, factory default = 0) <i>Note: This parameter is saved in NVM issuing AT&W command.</i>	
AT#HFRECG?	Read command returns the current handsfree analog output gain, in the format: #HFRECG: <level>	
AT#HFRECG =?	Test command returns the supported range of values of parameter <level>.	

3.5.7.21.1.10. Handset Receiver Gain - #HSRECG

#HSRECG - Handset Receiver Gain		SELINT 2
AT#HSRECG= <level>	Set command sets the handset analogue output gain Parameter: <level>: handset analogue output gain 0..6 - handset analogue output (-3dB/step, default value = 0) <i>Note: This parameter is saved in NVM issuing AT&W command.</i>	
AT#HSRECG?	Read command returns the current handset analog output gain, in the format: #HSRECG: <level>	
AT#HSRECG =?	Test command returns the supported range of values of parameter <level>.	

3.5.7.21.1.11. Set Headset Sidetone - #SHFSD



#SHFSD - Set Headset Sidetone		SELINT 0 / 1
AT#SHFSD=[<mode>]	<p>Set command enables/disables the sidetone on headset audio output.</p> <p>Parameter: <mode> 0 - disables the headset sidetone (factory default) 1 - enables the headset sidetone.</p> <p>Note: This setting returns to default after power off.</p> <p>Note: issuing AT#SHFSD<CR> is the same as issuing the Read command.</p> <p>Note: issuing AT#SHFSD=<CR> is the same as issuing the command AT#SHFSD=0<CR>.</p>	
AT#SHFSD?	<p>Read command reports whether the headset sidetone is currently enabled or not, in the format: #SHFSD: <mode></p>	
AT#SHFSD=?	<p>Test command returns the supported range of values of parameter <mode>.</p>	

#SHFSD - Set Headset Sidetone		SELINT 2
AT#SHFSD=[<mode>]	<p>Set command enables/disables the sidetone on headset audio output.</p> <p>Parameter: <mode> 0 - disables the headset sidetone (factory default) 1 - enables the headset sidetone.</p> <p>Note: This setting returns to default after power off.</p>	
AT#SHFSD?	<p>Read command reports whether the headset sidetone is currently enabled or not, in the format: #SHFSD: <mode></p>	
AT#SHFSD=?	<p>Test command returns the supported range of values of parameter <mode>.</p>	

3.5.7.21.1.12. Set Handset Sidetone - #SHSSD

#SHSSD - Set Handset Sidetone		SELINT 2
AT#SHSSD=<mode>	<p>Set command enables/disables the sidetone on handset audio output.</p> <p>Parameter: <mode> 0 - disables the handset sidetone 1 - enables the handset sidetone (factory default)</p>	



#SPKMUT - Speaker Mute Control		SELINT 2
	Note: this command mutes/activates both speaker audio paths, internal speaker and external speaker.	
AT#SPKMUT?	Read command reports whether the muting of the speaker audio line during a voice call is enabled or not, in the format: #SPKMUT: <n>	
AT#SPKMUT=?	Test command reports the supported values for <n> parameter.	

3.5.7.21.1.15. Open Audio Loop - #OAP

#OAP - Open Audio Loop		SELINT 2
AT#OAP=[<mode>]	Set command sets Open Audio Path. Parameter: 0 - disables Open Audio Path (default) 1 - enables Open Audio Path Note: the audio Loop will be activated on line select by the AXE pin or #CAP command.	
AT#OAP?	Read command reports whether the Open Audio Path is currently enabled or not, in the format: #OAP: <mode>	
AT#OAP=?	Test command returns the supported range of values of parameter <mode>.	
Note	The audio loop will be established between microphone and speaker using sidetone scaling value.	

3.5.7.21.1.16. HF Speaker Volume - #HFVOL

#HFVOL – HF Speaker Volume		SELINT 2
AT#HFVOL=<level>	This command sets the volume of the Loudspeaker. Parameter: <level> : 1...8 Each level corresponds to a Loudspeaker gain setting expressed in dB: 1 - HF gain = 0 dB 2 - HF gain = +3 dB 3 - HF gain = +6 dB 4 - HF gain = +9 dB (default for 16.0x.xxx SW version) 5 - HF gain = +12 dB	



	<p>6 - HF gain = +15 dB (default for 13.0x.xxx SW version) 7 - HF gain = +18 dB 8 - HF gain = +24 dB</p> <p>Note: You can use the command AT#SPKMUT to mute the audio path.</p>
AT#HFVOL?	<p>Read command returns the current settings in the format:</p> <p>#HFVOL: <level ></p>
AT#HFVOL=?	<p>Test command returns the supported range of parameter in the format:</p> <p>#HFVOL: (list of supported <level>s)</p>
Example	<p>AT#HFVOL=? # HFVOL: (1-8)</p> <p>OK AT#HFVOL=4 OK</p>

3.5.7.21.1.17.

Setting two frequency modes for buzzer - #BUZZERMODE

#BUZZERMODE – Sets two frequency modes for buzzer		SELINT 2
AT#BUZZERMODE=<mode>	<p>Set two Buzzer Frequency Modes, slow and fast.</p> <p>Parameters: <mode> 0 – fast frequency (factory default for all products except GE864-QUAD and GC864-QUAD) 1 – frequency halved (factory default for GE864-QUAD and GC864-QUAD)</p> <p>Note: the value is automatically saved in NVM.</p>	
AT#BUZZERMODE?	<p>Read command reports last setting, in the format:</p> <p>#BUZZERMODE:<mode></p>	
AT#BUZZERMODE=?	<p>Test command reports the range of supported values for parameter: <mode></p>	



3.5.7.21.2.2. Tone Playback - #TONE

#TONE - Tone Playback	SELINT 2
AT#TONE=<tone> [,<duration>]	<p>Execution command allows the reproduction of DTMF tones, standard free tone, standard busy tone and a set of user defined tones for a certain time.</p> <p>Parameters:</p> <p><tone> - ASCII characters, range is ((0-9),#,*,(A-D),(G-L),Y,Z);</p> <ul style="list-style-type: none"> - (0-9), #,*,(A-D): DTMF tone - (G-L): User Defined Tones - Y: free tone - Z: busy tone <p><duration> - Duration of current tone in 1/10 of Sec. 1..300 - tenth of seconds (default is 30)</p>
AT#TONE=?	<p>Test command returns the supported range of values for parameters <tone> and <duration>.</p>
Note:	<p>See AT#UDTSET command to set user defined tones</p>

3.5.7.21.2.3. Extended tone generation - #TONEEXT

#TONEEXT – Extended tone generation	SELINT 2
AT# TONEEXT= <toneId>,<act>	<p>Execution command allows the reproduction of DTMF tones, standard free tone, standard busy tone and a set of user defined tones for a infinite time, or stop the running tone</p> <p>Parameters:</p> <p>< toneId > - ASCII characters in the set (0-9), #,*,(A-D),(G-L),Y,Z ;</p> <ul style="list-style-type: none"> - (0-9), #,*,(A-D) : DTMF tone - (G-L) : User Defined Tones⁴¹. - y : free tone - z: busy tone <p>< act > - Action to be performed.</p> <ul style="list-style-type: none"> - 0: Stop the <toneId> if running. - 1: Start the <toneId>.
AT#TONEEXT=?	<p>Test command returns the range of supported values for parameter <toneId>,<act>.</p>

⁴¹ See also AT#UDTSET, AT#UDTRST and AT#UDTSAV command description following in this document.



3.5.7.21.2.7. User Defined Tone Reset - #UDTRST command

#UDTRST – User Defined Tone ReSeT		SELINT 2
AT#UDTRST	Execution command resets to the default set the actual values of frequency and amplitude parameters that can be set with the command #UDTSET.	
AT#UDTRST=?	Test command returns the OK result code.	
Example	AT#UDRST OK The default value tones are restored in NVM	

3.5.7.21.3. Audio profiles

3.5.7.21.3.1. Audio Profile Selection - #PSEL

#PSEL - Audio Profile Selection		SELINT 2
AT#PSEL=<prof>	Set command selects the active audio profile Parameter: <prof>: current profile 0 - standard profile 1..3 - extended profile, modifiable. <i>Note: This parameter is saved in NVM issuing AT&W command.</i>	
AT#PSEL?	The read command returns the active profile in the format: #PSEL:<prof>	
AT#PSEL=?	Test command returns the supported range of values of parameter <prof>.	

3.5.7.21.3.2. Audio Profile Configuration Save - #PSAV

#PSAV - Audio Profile Configuration Save		SELINT 2
AT#PSAV	Execution command saves the actual audio parameters in the NVM of the device. It is not allowed if active audio profile is 0. The audio parameters to store are: <ul style="list-style-type: none"> - microphone line gain - earpiece line gain - side tone gain - LMS adaptation speed - LMS filter length (number of coefficients) - speaker to micro signal power relation - noise reduction max attenuation - noise reduction weighting factor (band 300-500Hz) 	



#PSAV - Audio Profile Configuration Save		SELINT 2
	<ul style="list-style-type: none"> - noise reduction weighting factor (band 500-4000Hz) - AGC Additional attenuation - AGC minimal attenuation - AGC maximal attenuation - Uplink path biquad filters - Downlink path biquad filters 	
AT#PSAV=?	Test command returns the OK result code.	
Example	AT#PSAV OK <i>Current audio profile is saved in NVM</i>	

3.5.7.21.3.3. Audio Profile Factory Configuration - #PRST

#PRST - Audio Profile Factory Configuration		SELINT 2
AT#PRST	Execution command resets the actual audio parameters in the NVM of the device to the default set. It is not allowed if active audio profile is 0. The audio parameters to reset are: <ul style="list-style-type: none"> - microphone line gain - earpiece line gain - side tone gain - LMS adaptation speed (step size) - LMS filter length (number of coefficients) - speaker to micro signal power relation - noise reduction max attenuation - noise reduction weighting factor (band 300-500Hz) - noise reduction weighting factor (band 500-4000Hz) - AGC Additional attenuation - AGC minimal attenuation - AGC maximal attenuation 	
AT#PRST=?	Test command returns the OK result code.	
Example	AT#PRST OK <i>Current audio profile is reset</i>	



3.5.7.21.4. Audio filters

3.5.7.21.4.1. Cascaded filters - #BIQUADIN

#BIQUADIN - Uplink Path Biquad Filters	SELINT 2
<p>AT# BIQUADIN= <a_{F0}> [,<a_{F1}> [,<a_{F2}> [,<b_{F1}> [,<b_{F2}> [,<a_{S0}> [,<a_{S1}> [,<a_{S2}> [,<b_{S1}> [,<b_{S2}>]]]]]]]]]]</p>	<p>Set command allows to configure the parameters of the two cascaded digital biquad filters $H_{First}(z) \cdot H_{Second}(z)$ in Uplink path (sending). It is not allowed if active audio profile is 0.</p> <p>Parameters: <a_{F_n}>,<b_{F_n}>,<a_{S_n}>,<b_{S_n}> - they all are specific parameters for the calculation of digital biquad filters as follows:</p> $H_F(z) = \frac{a_{F0} + 2 \cdot a_{F1} \cdot z^{-1} + a_{F2} \cdot z^{-2}}{1 + 2 \cdot b_{F1} \cdot z^{-1} + b_{F2} \cdot z^{-2}}$ $H_S(z) = \frac{a_{S0} + 2 \cdot a_{S1} \cdot z^{-1} + a_{S2} \cdot z^{-2}}{1 + 2 \cdot b_{S1} \cdot z^{-1} + b_{S2} \cdot z^{-2}}$ <p>-32768..32767 - each value has to be interpreted as signed fixed point number in two's complement format with 15 fractional bits in a 16 bit word (Q15)</p> <p>Note: in the above formulas pay attention to the multiplier (2) for parameters <a_{F1}>, <a_{S1}>, <b_{F1}> and <b_{S1}> Parameters can be saved in NVM using AT#PSAV command and are available for audio profiles 1,2,3. For audio profile 0 the values are fixed.</p>
<p>AT# BIQUADIN?</p>	<p>Read command returns the parameters for the active profile in the format:</p> <p>#BIQUADIN: <a_{F0}>,<a_{F1}>,<a_{F2}>,<b_{F1}>,<b_{F2}>,<a_{S0}>,<a_{S1}>,<a_{S2}>,<b_{S1}>,<b_{S2}> It is not allowed if active audio profile is 0.</p>
<p>AT# BIQUADIN=?</p>	<p>Test command returns the supported range of values for parameters <a_{F0}>,<a_{F1}>,<a_{F2}>,<b_{F1}>,<b_{F2}>,<a_{S0}>,<a_{S1}>,<a_{S2}>,<b_{S1}>,<b_{S2}></p>

3.5.7.21.4.2. Cascaded filters - #BIQUADOUT

#BIQUADOUT - Downlink Path Biquad Filters	SELINT 2
<p>AT# BIQUADOUT= <a_{F0}> [,<a_{F1}> [,<a_{F2}> [,<b_{F1}></p>	<p>Set command allows to configure the parameters of the two cascaded digital biquad filters $H_{First}(z) \cdot H_{Second}(z)$ in Downlink path (receiving). It is not allowed if active audio profile is 0.</p>



#BIQUADOUT - Downlink Path Biquad Filters	SELINT 2
<pre>[,<bF2> [,<aS0> [,<aS1> [,<aS2> [,<bS1> [,<bS2>]]]]]]]]]]</pre>	<p>Parameters: <aF_n>,<bF_n>,<aS_n>,<bS_n> - they all are specific parameters for the calculation of digital biquad filters as follows:</p> $H_F(z) = \frac{a_{F0} + 2 \cdot a_{F1} \cdot z^{-1} + a_{F2} \cdot z^{-2}}{1 + 2 \cdot b_{F1} \cdot z^{-1} + b_{F2} \cdot z^{-2}}$ $H_S(z) = \frac{a_{S0} + 2 \cdot a_{S1} \cdot z^{-1} + a_{S2} \cdot z^{-2}}{1 + 2 \cdot b_{S1} \cdot z^{-1} + b_{S2} \cdot z^{-2}}$ <p>-32768..32767 - each value has to be interpreted as signed fixed point number in two's complement format with 15 fractional bits in a 16 bit word (Q15)</p> <p>Note: in the above formulas pay attention to the multiplier (2) for parameters <aF₁>, <aS₁>, <bF₁> and <bS₁></p> <p>Parameters can be saved in NVM using AT#PSAV command and are available for audio profiles 1,2,3. For audio profile 0 the values are fixed.</p>
<p>AT# BIQUADOUT?</p>	<p>Read command returns the parameters for the active profile in the format:</p> <p># BIQUADOUT: <aF0>,<aF1>,<aF2>,<bF1>,<bF2>,<aS0>,<aS1>,<aS2>,<bS1>,<bS2></p> <p>It is not allowed if active audio profile is 0.</p>
<p>AT# BIQUADOUT=?</p>	<p>Test command returns the supported range of values for parameters <aF0>, <aF1>, <aF2>, <bF1>, <bF2>, <aS0>, <aS1>, <aS2>, <bS1>, <bS2></p>

3.5.7.21.4.3. Extended Uplink Biquad Filters - #BIQUADINEX

#BIQUADINEX – Extended Uplink Biquad Filters	SELINT 2
<pre>AT#BIQUADINEX= <aF0> [,<aF1> [,<aF2> [,<bF1> [,<bF2> [,<aS0> [,<aS1> [,<aS2> [,<bS1> [,<bS2>]]]]]]]]]]</pre>	<p>Set command allows to configure the parameters of the two extended digital biquad filters $H_{First}(z) \cdot H_{Second}(z)$ in Uplink path (sending). It is not allowed if active audio profile is 0.</p> <p>Parameters: <aF_n>,<bF_n>,<aS_n>,<bS_n> - they all are specific parameters for the calculation of digital biquad filters as follows:</p> $H_F(z) = \frac{a_{F0} + 2 \cdot a_{F1} \cdot z^{-1} + a_{F2} \cdot z^{-2}}{1 + 2 \cdot b_{F1} \cdot z^{-1} + b_{F2} \cdot z^{-2}}$ $H_S(z) = \frac{a_{S0} + 2 \cdot a_{S1} \cdot z^{-1} + a_{S2} \cdot z^{-2}}{1 + 2 \cdot b_{S1} \cdot z^{-1} + b_{S2} \cdot z^{-2}}$



#SHFEC - Handsfree Echo Canceller		SELINT 2
	0 - disables echo canceller for handsfree mode (factory default) 1 - enables echo canceller for handsfree mode Note: This setting returns to default after power off.	
AT#SHFEC?	Read command reports whether the echo canceller function on audio handsfree output is currently enabled or not, in the format: #SHFEC: <mode>	
AT#SHFEC=?	Test command returns the supported range of values of parameter <mode>.	

3.5.7.21.5.5. Handset Echo Canceller - #SHSEC

#SHSEC - Handset Echo Canceller		SELINT 2
AT#SHSEC = <mode>	Set command enables/disables the echo canceller function on audio handset output. Parameter: <mode> 0 - disables echo canceller for handset mode (default) 1 - enables echo canceller for handset mode <i>Note: This parameter is saved in NVM issuing AT&W command.</i>	
AT#SHSEC?	Read command reports whether the echo canceller function on audio handset output is currently enabled or not, in the format: #SHSEC: <mode>	
AT#SHSEC =?	Test command returns the supported range of values of parameter <mode>.	

3.5.7.21.5.6. Echo Reducer Configuration - #ECHOCFG

#ECHOCFG – Echo Reducer Configuration		SELINT 2
AT#ECHOCFG=<par_1> [,<par_2>[,...,<par_N>]]	Set command writes values in echo reducer parameters. It is not allowed if active audio profile is 0. The module responds to the set command with the prompt '>' and waits for the data to send. Parameters: <par_1> 0 – configure all parameters, module awaits 39 values 1,2,...,39 – configure single parameters, module awaits 1 value <par_i> with i = {2;N} 1,2,...,39 – configure every parameter specified	



	<p>After '>' to complete the operation send Ctrl-Z char (0x1A hex); to exit without writing the message send ESC char (0x1B hex).</p> <p>Data shall be written in Hexadecimal Form with 4 digits for every <par_i> value provided by set command.</p> <p>If data are successfully sent, then the response is OK. If data sending fails for some reason, an error code is reported.</p> <p>Parameters can be saved in NVM using AT#PSAV command and are available for audio profiles 1,2,3. For audio profile 0 the values are fixed.</p> <p>Note: Configuring single parameters, it is allowed to enter a maximum of 32 parameters.</p> <p>Note: the default configuration is targeted for almost all common acoustic echo scenarios; if further tuning is needed the customer can change by oneself only the following parameters:</p> <p><par_14> 0..32767 - factory default value is 18384 Additional gain: increasing this parameter average echoes are more attenuated</p> <p><par_15> 0..16384 - factory default value is 2000 Total gain lower limit: increasing this parameter small echoes are more attenuated</p> <p><par_16> 0..16384 - factory default value is 10000 Total gain upper limit: increasing this parameter load echoes are more attenuated</p> <p><par_32> 0..32767 - factory default value is 6000 NR Attenuation factor: decreasing this parameter increases allowed attenuation</p> <p><par_33> 0..32767 - factory default value is 8000 Overestimation factor 0: decreasing this parameter increases noise reduction and decreases speech quality below 500Hz</p> <p><par_34> 0..32767 - factory default value is 8000 Overestimation factor 1: decreasing this parameter increases noise</p>
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	<p>reduction and decreases speech quality above 500Hz</p> <p>The remaining parameters could be changed but under the supervision of Telit Technical Support.</p>
AT#ECHOCFG?	<p>Read command reports the currently set parameters in the format:</p> <p>#ECHOCFG: <par_1><par2>...<parN></p> <p><par_i>: Full set of registers values dumped in hexadecimal form, 39 words (156 characters).</p> <p>It is not allowed if active audio profile is 0.</p>
AT#ECHOCFG=?	<p>Test command reports supported range of values for all parameters in the format:</p> <p>#ECHOCFG: <i>, (<low_i>-<high_i>)</p> <p>Where</p> <p><i>: Parameter index</p> <p><low_i>: Lower limit of <par_i></p> <p><high_i>: High limit of <par_i></p>

3.5.7.21.5.7. Manage of Echo Canceller features - #ECHOACT

#ECHOACT – Manage of Echo Canceller features	SELINT 2
<p>AT#ECHOACT=<echo mode>,<agc mode>,<nr mode>,<ser mode></p>	<p>This command enables/disables four different features. First parameter enables/disables the echo canceller function on audio handset output involving the setting of both command #SHFEC than #SHSEC. Second parameter enables/disables the automatic gain control function on audio handset output involving the setting of both command #SHFAGC than #SHSAGC. Third parameter enables/disables the noise reduction function on audio handset output involving the setting of both command #SHFNR than #SHSNR. Fourth parameter enables/disables the spectrum echo reduction function on audio handset output.</p> <p>Parameters: <echo mode> 0 - disables echo canceller (default)</p>



	<p>1 - enables echo canceller</p> <p><agc mode> 0 - disables automatic gain control (default) 1 - enables automatic gain control</p> <p><nr mode> 0 - disables noise reduction (default) 1 - enables noise reduction</p> <p><ser mode> 0 - disables spectrum echo reduction (default) 1 - enables spectrum echo reduction</p> <p>Note : All parameters set are saved in NVM issuing AT&W command.</p>
AT#ECHOACT?	<p>Read command reports whether the echo canceller function, automatic gain control function, the noise reduction function and the spectrum echo reduction function on audio handset output is currently enabled or not, in the format:</p> <p>#ECHOACT: <echo mode>, <agc mode>, <nr mode>, <ser mode></p>
AT#ECHOACT =?	<p>Test command returns the supported range of values for parameters</p> <p><echo mode>, <agc mode>, <nr mode>, <ser mode>.</p>

3.5.7.21.5.8. Handsfree Automatic Gain Control - #SHFAGC

#SHFAGC - Handsfree Automatic Gain Control		SELINT 2
AT# SHFAGC = <mode>	<p>Set command enables/disables the automatic gain control function on audio handsfree input.</p> <p>Parameter: <mode> 0 - disables automatic gain control for handsfree mode (default) 1 - enables automatic gain control for handsfree mode</p> <p><i>Note: This parameter is saved in NVM issuing AT&W command.</i></p>	
AT# SHFAGC?	<p>Read command reports whether the automatic gain control function on audio handsfree input is currently enabled or not, in the format:</p> <p>#SHFAGC: <mode></p>	
AT# SHFAGC =?	<p>Test command returns the supported range of values of parameter</p> <p><mode>.</p>	



3.5.7.21.5.9. Handset Automatic Gain Control - #SHSAGC

#SHSAGC - Handset Automatic Gain Control		SELINT 2
AT#SHSAGC = <mode>	<p>Set command enables/disables the automatic gain control function on audio handset input.</p> <p>Parameter: <mode> 0 - disables automatic gain control for handset mode (default) 1 - enables automatic gain control for handset mode</p> <p><i>Note: This parameter is saved in NVM issuing AT&W command.</i></p>	
AT#SHSAGC?	<p>Read command reports whether the automatic gain control function on audio handset input is currently enabled or not, in the format:</p> <p>#SHSAGC: <mode></p>	
AT#SHSAGC =?	<p>Test command returns the supported range of values of parameter <mode>.</p>	

3.5.7.21.5.10. Handsfree Noise Reduction - #SHFNR

#SHFNR - Handsfree Noise Reduction		SELINT 2
AT#SHFNR = <mode>	<p>Set command enables/disables the noise reduction function on audio handsfree input.</p> <p>Parameter: <mode> 0 - disables noise reduction for handsfree mode (default) 1 - enables noise reduction for handsfree mode</p> <p><i>Note: This parameter is saved in NVM issuing AT&W command.</i></p>	
AT#SHFNR?	<p>Read command reports whether the noise reduction function on audio handsfree input is currently enabled or not, in the format:</p> <p>#SHFNR: <mode></p>	
AT#SHFNR =?	<p>Test command returns the supported range of values of parameter <mode>.</p>	

3.5.7.21.5.11. Handset Noise Reduction - #SHSNR

#SHSNR - Handset Noise Reduction		SELINT 2
AT#SHSNR = <mode>	<p>Set command enables/disables the noise reduction function on audio handset input.</p> <p>Parameter: <mode> 0 - disables noise reduction for handset mode (default) 1 - enables noise reduction for handset mode</p>	



#SHSNR - Handset Noise Reduction		SELINT 2
	<i>Note: This parameter is saved in NVM issuing AT&W command.</i>	
AT# SHSNR?	Read command reports whether the noise reduction function on audio handset input is currently enabled or not, in the format: # SHSNR: <mode>	
AT# SHSNR =?	Test command returns the supported range of values of parameter <mode>.	

3.5.7.21.6. Embedded DTMF decoder

3.5.7.21.6.1. Embedded DTMF decoder enabling - #DTMF

#DTMF – Embedded DTMF decoder enabling		SELINT 2
AT#DTMF=<mode>	<p>Set command enables/disables the embedded DTMF decoder.</p> <p>Parameters: <mode>: 0 – disable DTMF decoder (default) 1 – enables DTMF decoder 2 – enables DTMF decoder without URC notify 3 – enables Enhanced DTMF decoder</p> <p>Note: This functionality has to be enabled only with AT#CPUMODE=1 (valid for 10.0x.xxx and 16.00.yyy SW releases).</p> <p>Note: if <mode>=1, the receiving of a DTMF tone is pointed out with an unsolicited message through AT interface in the following format: #DTMF EV: x with x as the DTMF digit</p> <p>Note: the duration of a tone should be not less than 50ms.</p> <p>Note: the value set by command is not saved and a software or hardware reset restores the default value. The value can be stored in NVM using profiles.</p> <p>Note: When DTMF decoder is enabled, PCM playing and recording are automatically disabled (AT#SPCM will return error).</p>	
AT#DTMF?	Read command reports the currently selected <mode> in the format: #DTMF: <mode>	
AT#DTMF =?	Test command reports supported range of values for all parameters.	



#DVI - Digital Voiceband Interface	SELINT 0/1/2
	<p>1 - enable DVI; audio is forwarded to the DVI block 2 - enable DVI; audio is forwarded both to the DVI block and to the analog lines (Note: analog input disabled); not available for SW version 13.00.xxx</p> <p><dviport> 1 - DVI port 1 will be used (factory default) 2 - DVI port 2 will be used. Available only for GE864-QUAD</p> <p><clockmode> 0 - DVI slave 1 - DVI master (factory default)</p> <p>Note: setting <clockmode>=0 has full effect only if <dviport>=1</p> <p>NOTE: DVI slave is available only on port 1 NOTE: for further information see “Digital Voice Interface Application Note”</p>
AT#DVI?	<p>Read command reports last setting, in the format:</p> <p>#DVI: <mode>,<dviport>,<clockmode></p>
AT#DVI=?	<p>Test command reports the range of supported values for parameters <mode>,<dviport> and <clockmode></p>
Example	<p>AT#DVI=2,1,1 OK</p> <p><i>Both analog and DVI activated for audio. DVI is configured as master providing on DVI Port #1</i></p>

3.5.7.21.7.2. Digital voiceband interface extension - #DVIEXT

#DVIEXT - Digital Voiceband Interface Extension	SELINT 0,1,2
<p>AT#DVIEXT=<config>[,<samplerate>,<samplewidth>,<audio mode>,<edge>]</p>	<p>Set command configures the Digital Voiceband Interface.</p> <p>Parameters:</p> <p><config> 0 – Burst Mode (factory default) 1 – Normal Mode</p> <p><samplerate> 0 – audio scheduler sample rate 8KHz (factory default) 1 - reserved</p> <p><samplewidth> 0 – 16 bits per sample 1 – reserved 2 – reserved 3 – 24 bits per sample 4 – 32 bits per sample</p>



#DVIEXT - Digital Voiceband Interface Extension	SELINT 0,1,2
	<p><audiomode> 0 – Mono Mode 1 – Dual Mono (available only in Normal Mode) 2 – reserved</p> <p><edge> 0 – data bit is transmitted on falling edge of clock and sampled on rising edge of clock (factory default) 1 – data bit is transmitted on rising edge of clock and sampled on falling edge of clock</p> <p>NOTE: in burst mode <edge> parameter doesn't have effect, and DVI has the same behaviour as <edge> = 1 NOTE: this parameter is saved in NVM issuing AT&W command</p>
AT#DVIEXT?	<p>Read command reports last setting, in the format:</p> <p>#DVIEXT:<config>,<samplerate>,<samplewidth>,<audiomode>,<edge></p>
AT#DVIEXT=?	<p>Test command reports the range of supported values for parameters: <config>,<samplerate>,<samplewidth>,<audiomode>,<edge></p>
Example	

3.5.7.21.7.3. DVI Clock Activation - #DVICKL

#DVICKL – DVI Clock Activation	SELINT 2
AT#DVICKL=<clk>	<p>Set command configures and activates the DVICKL clock signal.</p> <p>Parameters: <clk> 0 – Disable (factory default) 1 – DVI Clock activated at 256KHz 2 – DVI Clock activated at 384KHz 3 – DVI Clock activated at 512KHz</p> <p>Note: the commands #DVI, #DVIEXT, #OAP can turn off the DVICKL signal or change its frequency. Note: after setting the DVICKL frequency through #DVICKL command, a voice call does not modify the DVICKL setting.</p>
AT#DVICKL?	<p>Read command reports last setting, in the format: #DVICKL: <clk></p>
AT#DVICKL=?	<p>Test command reports the range of supported values for parameters: <clk></p>



3.5.7.21.8. Audio file and stream management commands

3.5.7.21.8.1. PCM Play and Receive - #SPCM

#SPCM - PCM Play And Receive	SELINT 2																
<p>AT#SPCM=<mode>, <dir></p>	<p>Set command allows user either to send speech samples coming from microphone or downlink audio channel to serial port in PCM format, or to play a PCM stream coming from serial port to speaker or uplink audio channel, or play speech samples coming from serial port to uplink while send speech samples coming from downlink to serial port; all modes are also available during speech calls.</p> <p>As showed in the table below if <mode> = 3 and <dir> = 1 then the speech samples coming from serial port are sent to uplink and, at the same time, the speech samples coming from downlink are sent to serial port. An active speech call is needed when sending/receiving to/from audio channel in order to have full-duplex streaming.</p> <p>Parameters:</p> <p><mode>: action to be executed;</p> <ul style="list-style-type: none"> 1 - reproduce PCM stream from serial to selected path. 2 - send speech from selected path to serial. 3 - send/receive speech to/from selected direction <dir> <p><dir>: Select the audio path.</p> <ul style="list-style-type: none"> 0 - send/receive to/from analog front end 1 - send/receive to/from audio channel 2 - send/receive to/from both analog front end and audio channel <p>Note: Execution command switches module in online mode, with flow control set by &Kx. Module moves back to command mode either after entering the escape sequence +++ or as a consequence of a DTR transition.</p> <p>Note: PCM stream format must be 8 bit, 8KHz sampling, Mono. The following table summarizes the status of audio path during a speech call for different configurations and with sidetone disabled:</p> <table border="1" data-bbox="557 1559 1406 1888"> <thead> <tr> <th></th> <th>mode = 1</th> <th>mode = 2</th> <th>mode = 3</th> </tr> </thead> <tbody> <tr> <td>dir = 0</td> <td>PCM stream to speaker</td> <td>PCM stream from microphone</td> <td>Not supported</td> </tr> <tr> <td>dir = 1</td> <td>PCM stream to Uplink</td> <td>PCM stream from Downlink</td> <td>PCM stream to/from Uplink/Downlink</td> </tr> <tr> <td>dir = 2</td> <td>PCM stream to both speaker and Uplink</td> <td>PCM stream from both microphone and Downlink</td> <td>Not supported</td> </tr> </tbody> </table>		mode = 1	mode = 2	mode = 3	dir = 0	PCM stream to speaker	PCM stream from microphone	Not supported	dir = 1	PCM stream to Uplink	PCM stream from Downlink	PCM stream to/from Uplink/Downlink	dir = 2	PCM stream to both speaker and Uplink	PCM stream from both microphone and Downlink	Not supported
	mode = 1	mode = 2	mode = 3														
dir = 0	PCM stream to speaker	PCM stream from microphone	Not supported														
dir = 1	PCM stream to Uplink	PCM stream from Downlink	PCM stream to/from Uplink/Downlink														
dir = 2	PCM stream to both speaker and Uplink	PCM stream from both microphone and Downlink	Not supported														



	<p>to command mode either after entering the escape sequence +++ or as a consequence of a DTR transition.</p> <p>Note: The AMR bit rate shall be set using AT#SAMRCFG command.</p> <p>Note: While playing, uplink and downlink speech muting can be set using AT#SAMRCFG command.</p>
AT#SAMR=?	Test command returns the supported range of values for parameters <mode> and <dir> .
Example	<pre>AT#SAMR=1,0 CONNECT +++ NO CARRIER</pre> <p>Note: after the CONNECT, audio stream in AMR format has to be sent to serial port</p>

3.5.7.21.8.3. SAMR Configuration - #SAMRCFG

#SAMRCFG – SAMR Configuration	SELINT 2
<p>AT#SAMRCFG=<frame_type>[,<play_att>[,<rec_att>[,<mute_ul>[,<mute_dl>]]]]</p>	<p>Set command configures the parameters related to the AT#SAMR command, that allows to play audio streams in the AMR file format.</p> <p>Parameters:</p> <p><frame_type> 0 - AMR 4.75 (factory default) 1 - AMR 5.15 2 - AMR 5.95 3 - AMR 6.70 4 - AMR 7.40 5 - AMR 7.95 6 - AMR 10.2 7 - AMR 12.2</p> <p><play_att> 0 - 0dB attenuation (factory default) 1..30 - 1dB/step attenuation</p> <p><rec_att> 0 - 0dB attenuation (factory default) 1..30 - 1dB/step attenuation</p> <p><mute_ul> 0 – uplink muting off (factory default)</p>



	#ARECD: (0,1)
Example	AT# ARECD =1,"rec.pcm" OK AT# ARECD =0 OK #ARECDEV: 0

3.5.7.21.8.9. Receive an audio file - #ARECV

#ARECV – Receive an audio file		SELINT 2
AT#ARECV=<filename>	<p>This command allows user to receive a PCM audio file stored in the modem file system. It's mandatory to specify the file extension and it's necessary to write file name between a couple of double inverted commas.</p> <p>Parameters:</p> <p><filename> - file name, string type with .pcm extension</p> <p>Note: The file should be sent using RAW ASCII file transfer. Hardware flow control.</p>	
AT#ARECV=?	Test command returns the OK result code	
Example	<p>AT#ARECV=<filename> CONNECT</p> <p>Note: after the CONNECT, a PCM audio file has to be received from serial port</p>	

3.5.7.21.8.10. Send an audio file - #ASEND

#ASEND – Send an audio file		SELINT 2
AT#ASEND= <filename>,<filesize>	<p>This command allows user to send a PCM audio file to serial port and store in the modem file system. It's mandatory to specify the file extension and it's necessary to write file name between a couple of double inverted commas.</p> <p>Parameters:</p> <p><filename> - file name, string type with .pcm extension</p> <p><filesize> - file size in bytes</p> <p>When the sending is stopped or an error occurs, an URC is provided with</p>	



	<p>the following format:</p> <p>#ASENDEV: <result></p> <p>Where: <result> 0 – pcm storing done 1 – pcm storing error</p> <p>Note: Filename has a maximum of 16 characters excluding double inverted commas Note: Total size of all audio files must not be over <total size> in #ASIZE Note: The file should be sent using RAW ASCII file transfer. Hardware flow control.</p>
AT#ASEND=?	Test command returns the OK result code
Example	<p>AT#ASEND="test.pcm",159182 CONNECT OK</p> <p>#ASENDEV: 0</p> <p>Note: after the CONNECT, an audio file of 159182 bytes has to be sent to serial port</p>

3.5.7.21.8.11. Audio available size - #ASIZE

#ASIZE – Audio available size	SELINT 2
AT#ASIZE	<p>This command shows residual space in bytes available to store PCM audio files.</p> <p>The response format is:</p> <p>#ASIZE: <total size>,<used size>,<free size></p> <p>Note: Some configuration files are stored in file system and with empty storage the <used_size> could be not zero. Moreover the file size on storage could differ from actual size due to block allocation.</p>
AT#ASIZE=?	Test command returns the OK result code

3.5.7.21.8.12. Find a specific audio file - #AFIND

#AFIND – Find a specific audio file	SELINT 2
AT#AFIND=<filename>	<p>This command finds a specific audio file.</p> <p>Parameter:</p>



	<filename> - file name, string type Note: filename has a maximum of 16 characters.
AT#AFIND=?	Test command returns the OK result code

3.5.7.21.9. Miscellaneous commands

3.5.7.21.9.1. TeleType Writer - #TTY

#TTY - TeleType Writer	SELINT 2
AT#TTY=<support>	Set command enables/disables the TTY functionality. Parameter: <support> 0 - disable TTY functionality (factory default) 1 - enable TTY functionality
AT#TTY?	Read command returns whether the TTY functionality is currently enabled or not, in the format: #TTY: <support>
AT#TTY=?	Test command reports the supported range of values for parameter <support>.



<p>AT#EMRGD</p>	<p>The execution command initiates an emergency call without specifying the Service Category.</p>
<p>AT#EMRGD?</p>	<p>The read command reports the emergency numbers received from the network (Rel5 feature) and the associated service categories in the format</p> <p>[#EMRGD: <num1>[,<par1>,<serv>[,<serv>..[,<serv>]]] [#EMRGD: <numn>[,<parn>,<serv>[,<serv>..[,<serv>]]]</p> <p>Where</p> <p><numn> Is the emergency number (that can be dialed with ATD command).</p> <p><parn> 1..31 - sum of integers each representing a specific Emergency Service Category: 1 - Police 2 - Ambulance 4 - Fire Brigade 8 – Marine Guard 16 - Mountain Rescue</p> <p>32 - Manually Initiated eCall (if eCall is supported – Rel8 feature) 64 - Automatically Initiated eCall (if eCall is supported– Rel8 feature)</p> <p>Example:</p> <p>AT#EMRGD? #EMRGD: 123,2,"Ambul" #EMRGD: 910,5,"Police","FireBrig"</p> <p>OK</p>
<p>AT#EMRGD=?</p>	<p>Test command reports the supported range of values for parameter <par>.</p> <p>If eCall is supported 0-32,64 If eCall is not supported 0-31</p>



	<p>Parameters:</p> <p><mode>: 0 – disable eCall Only mode, normal mode 1 - enable eCall Only mode if eCall only subscription is available (default) 2 – enable eCall Only mode even if eCall only subscription is not available</p> <p>Note: the value set by command is directly stored in NVM and doesn't depend on the specific CMUX instance.</p> <p>Note: the new setting can cause an automatic reboot of module.</p>
AT#EONLY?	<p>Read command reports the currently selected <mode> and <status> in the format:</p> <p>#EONLY: <mode>,<status></p> <p>Parameters:</p> <p><status>: 0 – eCall only mode doesn't apply 1 – eCall only mode applies 2 - eCall only mode applies, but T3242 or T3243 are running</p>
AT#EONLY=?	<p>Test command reports the supported range of values for parameter <mode>.</p>

3.5.7.22.8. Configure Network Deregister Timer - #ECALLNWTMR

#ECALLNWTMR – Configure Network Deregister Timer		SELINT 2
AT#ECALLNWTMR=[<DEREGISTER_TIMER>]	<p>Set command sets timers which are related network deregistration</p> <p>Parameters:</p> <p><DEREGISTER_TIMER> - integer Timer value in units of minutes: 1..65535 – Set the time after which the GSM and UMTS communication module terminates network registration (default value:720)</p> <p>Note: The setting is saved in NVM and available on following reboot.</p>	
AT# ECALLNWTMR?	<p>Read command reports the current parameter value.</p>	
AT# ECALLNWTMR=?	<p>Test command reports the supported range of values for parameters</p>	



3.5.7.23. Reconfigure eCall Timer - #ECALLTMR

#ECALLTMR - Reconfigure eCALL Timer	SELINT 2
<pre>AT#ECALLTMR= [<AL_ACK_PERIOD> ,<SIGNAL_DURATION> ,<SEND_MSD_PERIOD> ,<MSD_MAX_TRASMIT_TIME>] </pre>	<p>Set command sets timers related eCall.</p> <p>Parameters: <AL_ACK_PERIOD> - integer Timer value in units of milliseconds: 1000..65535 – set AL-ACK Period (default value: 5000)</p> <p><SIGNAL_DURATION> - integer Timer value in units of milliseconds: 1000.. 65535 – set the IVS initiation signal duration (default value: 2000)</p> <p><SEND_MSD_PERIOD> - integer Timer value in units of milliseconds: 1000..65535 – set the SEND_MSD duration (default value: 5000)</p> <p><MSD_MAX_TRASMIT_TIME> - integer Timer value in units of seconds: 10..65535 – set the maximum MSD transmission duration (Default value:20).</p> <p>If a value is omitted for a particular parameter then this parameter will be keep old set value</p> <p>Note: The setting is saved in NVM and available without reboot.</p>
<pre>AT# ECALLTMR?</pre>	<p>Read command reports the current parameter value.</p>
<pre>AT# ECALLTMR=?</pre>	<p>Test command reports the supported range of values for parameters</p>

3.5.7.24. SSL Commands

3.5.7.24.1. Configure general parameters of a SSL socket - #SSLCFG

#SSLCFG – Configure general parameters of a SSL socket	SELINT 2
<pre>AT#SSLCFG=<SSId>, <cid>,<pktSz>, <maxTo>, <defTo>,<txTo>[, <sslSRingMode >[, <noCarrierMode >[, <UNUSED_1>[, <UNUSED_2>]]]] </pre>	<p>This command allows configuring SSL connection parameters.</p> <p>Parameters: <SSId> - Secure Socket Identifier 1 - Until now SSL block manages only one socket</p> <p><cid> - PDP Context Identifier. 1 - Until now only context one is supported.</p> <p><pktSz> - packet size to be used by the SSL/TCP/IP stack for data sending. 0 - select automatically default value (300).</p>



	<p>1..1500 - packet size in bytes.</p> <p><maxTo> - exchange timeout (or socket inactivity timeout); in online mode, if there's no data exchange within this timeout period the connection is closed. 0 - no timeout 1..65535 - timeout value in seconds (default 90 s.)</p> <p><defTo> - Timeout that will be used by default whenever the corresponding parameter of each command is not set. 10...5000 - Timeout in tenth of seconds (default 100).</p> <p><txTo> - data sending timeout; in online mode after this period data are sent also if they're less than max packet size. 0 - no timeout 1..255 - timeout value in hundreds of milliseconds (default 50).</p> <p><sslSRingMode> - sslSRing unsolicited mode. 0 – SSLSRING disabled 1 – SSLSRING enabled in the format SSLSRING: <SSId>,<recData> where <SSId> is the secure socket identifier and <recData> is the amount of data received and decoded by the SSL socket. A new unsolicited is sent whenever the amount of data ready to be read changes. Only a record is decoded at once so, any further record is received and decoded only after the first have been read by the user by means of the #SSLRECV command. 2 – SSLSRING enabled in the format SSLSRING: <SSId>,<dataLen>,<data> where <SSId> is the secure socket identifier, <dataLen> is the length of the current chunk of data (the minimum value between the available bytes and 256) and <data> is data received (<dataLen> bytes) displayed in ASCII format.</p> <p><noCarrierMode> - this parameter permits to choose NO CARRIER indication format when the secure socket is closed as follows:</p> <p>0 – NO CARRIER (default) Indication is sent as usual, without additional information</p> <p>1 – NO CARRIER:SSL,<SSId> Indication of current <SSId> secure socket connection is added. The fixed "SSL" string allows the user to distinguish secure sockets from TCP sockets</p> <p>2 – NO CARRIER:SSL,<SSId>,<cause> Indication of current <SSId> secure socket connection and closure <cause></p>
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	<p>are added.</p> <p>Following the possible <cause> values are listed:</p> <ul style="list-style-type: none"> 0 – not available (secure socket has not yet been closed) 1 – the remote TCP connection has been closed with a fatal error (RST is included within this case) 2 – socket inactivity timeout 3 – network deactivation (PDP context deactivation from network) 4 – SSL “Close Notify Alert” message has been received 5 – SSL EOF condition occurred. It means that a TCP FIN has been received 6 – Closure due to any other SSL alert different from the previous ones. <p>Note: if secure socket is not enabled using #SSLEN only test requests can be made. Read command can be issued if at least a <SSId> is enabled.</p> <p>Note: these parameters cannot be changed if the secure socket is connected.</p> <p>Note: these values are automatically saved in NVM.</p>
AT#SSLCFG?	<p>Read command reports the currently selected parameters in the format:</p> <p>#SSLCFG: <SSId1>,<cid>,<pktSz>,<maxTo>,<defTo><txTo>,<sslSRingMode>,<noCarrierMode>,0,0</p>
AT#SSLCFG =?	<p>Test command returns the range of supported values for all the parameters.</p> <p>#SSLCFG: (1),(1),(0-1500),(0-65535),(10-5000),(0-255),(0-2),(0-2),(0),(0)</p>

3.5.7.24.2. Opening a socket SSL to a remote server - #SSLD

#SSLD – Opens a socket SSL to a remote server		SELINT 2
<p>AT#SSLD=<SSId>,<rPort>,<IPAddress>,<ClosureType>[,<connMode>[,<Timeout>]]</p>	<p>Execution command opens a remote connection via socket secured through SSL. Both command and online modes can be used.</p> <p>In the first case ‘OK’ is printed on success, and data exchange can be performed by means of #SSLSEND and #SSLRECV commands.</p> <p>In online mode ‘CONNECT’ message is printed, and data can be sent/received directly to/by the serial port. Communication can be suspended by issuing the escape sequence (by default +++) and restored with #SSLO command.</p> <p>Parameters: <SSId> - Secure Socket Identifier</p>	



	<p>1 - Until now SSL block manage only one socket</p> <p><rPort> - Remote TCP port to contact 1..65535</p> <p><IPAddress> - address of the remote host, string type. This parameter can be either:</p> <ul style="list-style-type: none"> - any valid IP address in the format: "xxx.xxx.xxx.xxx" - any host name to be solved with a DNS query <p><ClosureType> - how to close SSL socket</p> <p>0 – SSL session id and keys are free then AT#SSLFASTD can't be used to recover the last SSL session [default].</p> <p>1 – SSL session id and keys are saved and a new connection can be made without a complete handshake using AT#SSLFASTD.</p> <p><connMode> - connection mode</p> <p>0 – online mode connection.</p> <p>1 – command mode connection (factory default).</p> <p><Timeout> - time-out in 100 ms units. It represents the maximum allowed TCP inter-packet delay. It means that, when more data is expected during the handshake, the module awaits <Timeout> * 100 msecs for the next packet. If no more data can be read, the module gives up the handshake and raises an ERROR response.</p> <p>Note: IT'S NOT the total handshake timeout or, in other words, it's not the absolute maximum time between the #SSLD issue and the CONNECT/OK/ERROR response. Though by changing this parameter you can limit the handshake duration (for example in case of congested network or busy server), there's no way to be sure to get the command response within a certain amount of time, because it depends on the TCP connection time, the handshake time and the computation time (which depends on the authentication mode and on the size of keys and certificates).</p> <p>10..5000 - hundreds of ms (factory default is 100)</p> <p>Note: if secure socket is not enabled using AT#SSLEN only test requests can be made.</p> <p>Note: if timeout is not set for SSL connection the default timeout value, set by AT#SSLCFG, is used.</p> <p>Note: in online mode the socket is closed after an inactivity period (configurable with #SSLCFG, with a default value of 90 seconds), and the 'NO CARRIER' message is printed.</p> <p>Note: in online mode data are transmitted as soon as the data packet size is</p>
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	<p>reached or as after a transmission timeout. Both these parameters are configurable by using #SSLCFG.</p> <p>Note: if there are input data arrived through a connected socket and not yet read because the module entered command mode before reading them (after an escape sequence or after #SSLD has been issued with <connMode> set to command mode connection), these data are buffered and we receive the SSLSRING URC (if any of its presentation formats have been enabled by means the #SSLCFG command); it's possible to read these data afterwards issuing #SSLRECV. Under the same hypotheses it's possible to send data while in command mode issuing #SSLSEND.</p> <p>Note: Before opening a SSL connection the GPRS context must have been activated by AT#SGACT=1,1.</p> <p>Note: Before opening a SSL connection, make sure to have stored the needed secure data (Certificate, CA certificate, private key), using AT#SSLSECDATA, for the security level set through AT#SSLSECCFG.</p>
AT#SSLD=?	<p>Test command returns the range of supported values for all the parameters:</p> <p>#SSLD: (1),(1-65535),,(0,1),(0,1),(10-5000)</p>

3.5.7.24.3. Enabling a SSL socket - #SSLEN

#SSLEN – Enable a SSL socket	SELINT 2
<p>AT#SSLEN=<SSId>,<Enable></p>	<p>This command enables a socket secured by SSL</p> <p>Parameters:</p> <p><SSId> - Secure Socket Identifier</p> <p>1 – Until now SSL block manages only one socket</p> <p><Enable></p> <p>0 – deactivate secure socket [default]</p> <p>1 – activate secure socket</p> <p>Note: if secure socket is not enabled only test requests can be made for every SSL command except #SSLS (SSL status) which can be issued also if the socket is disabled.</p> <p>Read commands can be issued if at least a <SSId> is enabled.</p> <p>Note: these values are automatically saved in NVM.</p>



	<p>Note: an error is raised if #SSLEN=X,1 is issued when the socket 'X' is already enabled and if #SSLEN=X,0 is issued when the socket 'X' is already disabled.</p> <p>Note: a SSL socket cannot be disabled by issuing #SSLEN=1 if it is connected.</p>
AT#SSLEN?	<p>Read command reports the currently enable status of secure socket in the format:</p> <p>#SSLEN: <SSId>,<Enable><CR><LF> <CR><LF> OK</p>
AT#SSLEN=?	<p>Test command returns the range of supported values for all the parameters:</p> <p>#SSLEN: (1),(0,1)</p>

3.5.7.24.4. Fast redial of a SSL socket - #SSLFASTD

#SSLFASTD – Fast redial of a SSL socket	SELINT 2
<p>AT#SSLFASTD=<SSId>[, <connMode>[, <Timeout>]]</p>	<p>This command allows to restart the last SSL connection without a complete handshake. In this way the dial is performed faster and with a lower amount of tCP payload.</p> <p>Parameters:</p> <p><SSId> - Secure Socket Identifier 1 - Until now SSL block manage only one socket.</p> <p><connMode> - connection mode 0 – online mode connection. 1 – command mode connection (factory default).</p> <p>< Timeout > - time-out in 100 ms units. It represents the TCP inter-packet delay.</p> <p>Note: it DOES NOT represent the total handshake timeout. 10..5000 - hundreds of ms (factory default is 100).</p> <p>Note: if secure socket is not enabled using AT#SSLEN only test requests can be made.</p>



	<p>Note: if timeout is not set for SSL connection the default timeout value, set by AT#SSLCFG, is used.</p> <p>Note: Before opening a SSL connection the GPRS context must have been activated by AT#SGACT=X,1.</p> <p>Note: if an error occurs during reconnection, the socket can not be reconnected and then a new connection has to be done.</p> <p>Note: if the remote server cleans SessionID cache before reconnection the full handshake will be made.</p>
AT#SSLFASTD=?	<p>Test command returns the range of supported values for all the parameters:</p> <p>#SSLFASTD: (1),(0,1),(10-5000)</p>

3.5.7.24.5. Closing a SSL socket - #SSLH

#SSLH – Close a SSL socket	SELINT 2
AT#SSLH=<SSId>[,<ClosureType>]	<p>This command allows closing the SSL connection.</p> <p>Parameters: <SSId> - Secure Socket Identifier 1 - Until now SSL block manage only one socket.</p> <p>< ClosureType >: how to close SSL socket 0 – SSL session id and keys are free then AT#SSLFASTD can not be used to recover the last SSL session. 1 – SSL session id and keys are saved and a new connection can be made without a complete handshake using AT#SSLFASTD.</p> <p>Note: if secure socket is not enabled using AT#SSLEN only test requests can be made.</p> <p>Note: in client side if < ClosureType > is not set the value set into AT#SSLD is used.</p>
AT#SSLH=?	<p>Test command returns the range of supported values for all the parameters:</p> <p>#SSLH: (1),(0,1)</p>

3.5.7.24.6. Restoring a SSL socket after a +++ - #SSLO



#SSLO – Restore a SSL socket after a +++		SELINT 2
AT#SSLO=<SSId>	<p>This command allows to restore a SSL connection (online mode) suspended by an escape sequence (+++). After the connection restore, the CONNECT message is printed.</p> <p>Please note that this is possible even if the connection has been started in command mode (#SSLD with <connMode> parameter set to 1).</p> <p>Parameters: <SSId> - Secure Socket Identifier 1 - Until now SSL block manage only one socket.</p> <p>Note: if secure socket is not enabled using AT#SLEN only test requests can be made.</p> <p>Note: Before opening a SSL connection the GPRS context must have been activated by AT#SGACT=X,1.</p> <p>Note: if an error occur during reconnection the socket can not be reconnected then a new connection has to be done.</p>	
AT#SSLO=?	<p>Test command returns the range of supported values for all the parameters:</p> <p>#SSLO: (1)</p>	

3.5.7.24.7. Reading data from a SSL socket - #SSLRCV

#SSLRCV – Read data from a SSL socket		SELINT 2
AT#SSLRCV=<SSId>, <MaxNumByte> [,<TimeOut>]	<p>This command allows receiving data arrived through a connected secure socket, but buffered and not yet read because the module entered command mode before reading them. The module can be notified of these data by a SSLSRING URC, which enabling and presentation format depends on last #SSLCFG setting.</p> <p>Parameters: <SSId> - Secure Socket Identifier 1 - Until now SSL block manage only one socket.</p> <p><MaxNumByte> - max number of bytes to read 1..1000</p> <p>< Timeout > - time-out in 100 ms units 1..5000 - hundreds of ms (factory default is 100)</p> <p>If no data are received the device responds: #SSLRCV: 0<CR><LF></p>	



	<p>TIMEOUT<CR><LF> <CR><LF> OK</p> <p>If the remote host closes the connection the device responds: #SSLRCV: 0<CR><LF> DISCONNECTED<CR><LF> <CR><LF> OK</p> <p>If data are received the device responds: #SSLRCV: NumByteRead<CR><LF> ...(Data read)... <CR><LF> <CR><LF> OK</p> <p>Note: if secure socket is not enabled using AT#SSLEN only test requests can be made.</p> <p>Note: if timeout is not set for SSL connection the default timeout value, set through AT#SSLCFG, is used.</p> <p>Note: before receiving data from the SSL connection it has to be established using AT#SSLD.</p>
<p>AT#SSLRCV=?</p>	<p>Test command returns the range of supported values for all the parameters:</p> <p>#SSLRCV: (1),(1-1000),(1-5000)</p>

3.5.7.24.8. Reporting the status of a SSL socket - #SSLS

<p>#SSLS – Report the status of a SSL socket SELINT 2</p>	
<p>AT#SSLS=<SSId></p>	<p>This command reports the status of secure sockets.</p> <p>Parameters: <SSId> - Secure Socket Identifier 1 - Until now SSL block manages only one socket</p> <p>If secure socket is connected the device responds to the command:</p> <p>#SSLS: <SSId>,2,<CipherSuite></p> <p>otherwise:</p>



	<p>#SSLS: <SSId>,<ConnectionStatus></p> <p><ConnectionStatus> available values are: 0 – Socket Disabled 1 – Connection closed 2 – Connection open</p> <p>Note: this command can be issued even if the <SSId> is not enabled.</p>
AT#SSLS=?	<p>Test command returns the range of supported values for all the parameters.</p> <p>#SSLS: (1)</p>

3.5.7.24.9. Configuring security parameters of a SSL socket - #SSLSECCFG

#SSLSECCFG – Configure security parameters of a SSL socket	SELINT 2
<p>AT#SSLSECCFG= <SSId>, <CipherSuite>, <auth_mode></p>	<p>This command allows configuring SSL connection parameters.</p> <p>Parameters: <SSId> - Secure Socket Identifier 1 - Until now SSL block manage only one socket</p> <p><CipherSuite> 0 - Chiper Suite is chosen by remote Server [default] 1 - TLS_RSA_WITH_RC4_128_MD5 2 - TLS_RSA_WITH_RC4_128_SHA 3 - TLS_RSA_WITH_AES_256_CBC_SHA</p> <p><auth_mode> 0 - SSL verify none [default] 1 - Manage server authentication 2 - Manage server and client authentication if requested by the remote server</p> <p>Note: if SSL verify none is set no security data are needed(Client certificate, Server CAcertificate and Client private key).</p> <p>Note: if only server authentication is managed then Server CAcertificate has to be stored through AT#SSLSECDATA.</p> <p>Note: if server and client authentication are managed then client certificate and private key, and server CAcertificate have to be stored through AT#SSLSECDATA. Please note that private keys with password are not supported,</p>



	<p>Note: only “rsa_sign” certificates are supported by the Telit Module in client authentication. The remote server must support this certificate type, otherwise the handshake will fail.</p> <p>Note: if secure socket is not enabled using #SSLEN only test requests can be made. Read command can be issued if at least a <SSId> is enabled.</p> <p>Note: these values are automatically saved in NVM.</p>
AT#SSLSECCFG?	<p>Read command reports the currently selected parameters in the format:</p> <p>#SSLSECCFG: <SSId1>,<CipherSuite>,<auth_mode></p>
AT#SSLSECCFG =?	<p>Test command returns the range of supported values for all the parameters.</p>

3.5.7.24.10. Managing the security data - #SSLSECDATA

#SSLSECDATA – Manage the security data	SELINT 2
<p>AT#SSLSECDATA =<SSId>,<Action>, <DataType>[,<Size>]</p>	<p>This command allows to store, delete and read security data (Certificate, CA certificate, private key) into NVM.</p> <p>Parameters:</p> <p><SSId> - Secure Socket Identifier 1 - Until now SSL block manages only one socket.</p> <p><Action> - Action to do. 0 – Delete data from NVM. 1 – Store data into NVM. 2 – Read data from NVM .</p> <p><DataType> 0 – Certificate. 1 – CA certificate. 2 – RSA Private key.</p> <p><Size> - Size of security data to be stored 1..2047</p> <p>If the <Action> parameter is 1 (store data into NVM) the device responds to the command with the prompt ‘>’ and waits for the data to store. To complete the operation send Ctrl-Z char (0x1A hex); to exit without writing the message send ESC char (0x1B hex). If data are successfully stored, then the response is OK; if it fails for some</p>



	<p>reason, an error code is reported.</p> <p>If the <Action> parameter is 2 (read data from NVM), data specified by <DataType> parameter is shown in the following format: #SSLSECDATA: <connId>,<DataType> <DATA></p> <p>OK</p> <p>If <DataType> data has not been stored (or it has been deleted) the response has the following format: #SSLSECDATA: <connId>,<DataType> No data stored</p> <p>OK</p> <p>Note: Secured data has to be in PEM format.</p> <p>Note: private keys with password ARE NOT supported.</p> <p>Note: only “rsa_sign” certificates are supported by the Telit Module in client authentication. The remote server must support this certificate type, otherwise the handshake will fail.</p> <p>Note: <size> parameter is mandatory if the <write> action is issued, but it has to be omitted for <delete> or <read> actions are issued.</p> <p>Note: if secure socket is not enabled using AT#SSLEN only test requests can be made.</p> <p>Note: If socket is connected an error code is reported.</p>
<p>AT#SSLSECDATA?</p>	<p>Read command reports what security data are stored in the format:</p> <p>#SSLSECDATA: <SSId 1>,<CertIsSet>,<CAcertIsSet>,<PrivKeyIsSet></p> <p><CertIsSet>, <CAcertIsSet>, <PrivKeyIsSet> are 1 if related data are stored into NVM otherwise 0.</p>
<p>AT#SSLSECDATA =?</p>	<p>Test command returns the range of supported values for all the parameters:</p> <p>#SSLSECDATA: (1),(0-2),(0-2),(1-2047)</p>



3.5.7.24.11. Sending data through a SSL socket - #SSLSEND

#SSLSEND – Send data through a SSL socket	SELINT 2
<p>AT#SSLSEND=<SSId>[, <Timeout >]</p>	<p>This command allows sending data through a secure socket.</p> <p>Parameters: <SSId> - Secure Socket Identifier 1 - Until now SSL block manage only one socket.</p> <p><Timeout > - socket send timeout, in 100 ms units. 1..5000 - hundreds of ms (factory default is 100)</p> <p>The device responds to the command with the prompt '>' and waits for the data to send. To complete the operation send Ctrl-Z char (0x1A hex); to exit without writing the message send ESC char (0x1B hex).</p> <p>If data are successfully sent, then the response is OK. If data sending fails for some reason, an error code is reported</p> <p>Note: the maximum number of bytes to send is 1023; trying to send more data will cause the surplus to be discarded and lost.</p> <p>Note: if secure socket is not enabled using AT#SSLEN only test requests can be made.</p> <p>Note: if timeout is not set for SSL connection the default timeout value, set by AT#SSLCFG, is used.</p> <p>Note: Before sending data through the SSL connection it has to be established using AT#SSLD.</p>
<p>AT#SSLSEND=?</p>	<p>Test command returns the range of supported values for all the parameters:</p> <p>#SSLSEND: (1),(1-5000)</p>

3.5.7.24.12. Sending data through a secure socket in Command Mode extended - #SSLSENDEXT

#SSLSENDEXT – Send data through a secure socket in Command Mode extended	SELINT 2
<p>AT#SSLSENDEXT=<SSId>,<bytestosend>[, <Timeout>]</p>	<p>This command allows sending data through a secure socket.</p> <p>Parameters: <SSId> - Secure Socket Identifier 1 - Until now SSL block manage only one socket.</p>



	<p><bytestosend> - number of bytes to be sent Please refer to test command for range</p> <p><Timeout> - time-out in 100 ms units 1..5000 - hundreds of ms (factory default is 100)</p> <p>The device responds to the command with the prompt '>' <greater_than><space> and waits for the data to send. When <bytestosend> bytes have been sent, operation is automatically completed. If data are successfully sent, then the response is OK. If data sending fails for some reason, an error code is reported.</p> <p>Note: if secure socket is not enabled using AT#SLEN only test requests can be made.</p> <p>Note: if timeout is not set for SSL connection the default timeout value, set by AT#SSLCFG, is used.</p> <p>Note: Before sending data through the SSL connection it has to be established using AT#SSLD.</p> <p>Note: all special characters are sent like a generic byte. (For instance: 0x08 is simply sent through the socket and don't behave like a BS, i.e. previous character is not deleted).</p>
<p>AT#SSLSENDEXT =?</p>	<p>Test command returns the range of supported values for parameters <SSId> , <bytestosend> and <Timeout>. #SSLSENDEXT: (1),(1-1500),(1-5000)</p>
<p>Example</p>	<p>Open the socket in command mode: at#ssld=1,443,<port>,"IP address",0,1 OK Give the command specifying total number of bytes as second parameter: at#sslsendext=1,256,100</p>



	<p>(including SSL sockets, FTPS, secure SMTP and HTTPS).</p> <p><heartBeat> - If no packets are received in the number of seconds specified in the heartbeat field, a heartbeat message will be sent to keep the connection alive. Default: 60 Range: 10 - 86400</p> <p><autoReconnect> - Flag indicating if the connection manager should automatically reconnect to the service. 0 – auto-reconnect disabled 1 – auto-reconnect lazy - reconnect on next send and every 3600 seconds. 2 – auto-reconnect moderate (default) - reconnect 120 seconds, then every 3600 seconds after the first day. 3 – auto-reconnect aggressive - reconnect every 120 seconds.</p> <p><overflowHandling> - Flag indicating if the way to handle overflows in data management. 0 – FIFO (default) 1 – LIFO</p> <p><atrunInstanceId> - AT instance that will be used by the service to run the AT Command. Default 4 Range 0 – 4</p> <p><serviceTimeout> - It defines in seconds the maximum time interval for a service request to the server. Default 5 Range 1 – 120</p> <p><contextID> - the PDP context used for the network connection. Default 1 Range 1 – 5</p>
<p>AT#DWCFG?</p>	<p>Read command returns the current settings in the format:</p> <p>#DWCFG: <serverUrl>,<deviceIDSelector>,<appToken>,<security>,<heartBeat>,<autoReconnect>,<overflowHandling>,<atrunInstanceId>,<serviceTimeout>,<contextID>,,0,0</p>
<p>AT#DWCFG=?</p>	<p>Test command returns the supported range of parameters <deviceIDSelector> , <security> , <heartBeat> , <AutoReconnect>,<overflowHandling>,<atrunInstanceId> ,</p>



	<serviceTimeout> and <contextID>, and the maximum length of <serverUrl> and <appToken> parameters.
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3.5.7.25.2. Connect to M2M Service - #DWCONN

#DWCONN – connect to M2M Service	SELINT 2
AT#DWCONN=<connect>	<p>Set command connects/disconnects to the M2M Service.</p> <p>Parameters: <connect> - flag to connect/disconnect to the M2M Service 0 – disconnect (default) 1 – connect</p> <p>Note: AT#DWCONN=1 performs the socket connection and the MQTT connection. AT#DWCONN=0 performs the socket disconnection.</p> <p>Note: the PDP Context used for the network connection is the first (<cid>=1 has to be previously defined with AT+CGDCONT command and activated with AT#SGACT command)</p> <p>Note: if the secure mode connection has been enabled, it cannot be used contemporarily to any command starting an SSL connection (including SSL sockets, FTPS, secure SMTP and HTTPS).</p>
AT#DWCONN?	<p>Read command returns the current settings for all parameters in the format:</p> <p>#DWCONN: <connect>,<status></p> <p>Where:</p> <p><connect> is defined as above <status> is the real connection status. Values: 0 = disconnected 1 = trying to connect 2 = connected 3 = waiting to connect</p>
AT#DWCONN=?	Test command reports the supported range of values for all parameters

3.5.7.25.3. Query connection status - #DWSTATUS

#DWSTATUS – query connection status	SELINT 2
AT#DWSTATUS	Execution command returns the status of the connection, including some



	<p>runtime statistics. Note, all statistics should be stored in RAM, not NVM.</p> <p>The Cloud will return a generic structure</p> <p>#DWSTATUS: <code><connected><lastErrorCode>,<latency>,<pktsIn>,<pktsOut>,<bytesIn>,<bytesOut></code></p> <p><code><connected></code> : 3 = waiting to connect, 2 = connected, 1 = trying to connect, 0 = disconnected <code><lastErrorCode></code>: last error code encountered by the client <code><latency></code> : milliseconds measured between last request and reply. <code><pktsIn></code> : number of packets received, tracked by the server <code><pktsOut></code> : number of packets sent. <code><bytesIn></code> : number of bytes received, TCP/IP payload <code><bytesOut></code> : number of bytes sent.</p>
<p>AT#DWSTATUS=?</p>	<p>Test command reports OK result code</p>

3.5.7.25.4. Send data to M2M Service - #DWSEND

<p>#DWSEND – send data to M2M Service</p>	<p>SELINT 2</p>
<p>AT#DWSEND=<type>,<param_1>[,<param_2>[,...[<param_n>]]]</p>	<p>Execution command permits to send formatted data to the M2M Service.</p> <p>Parameters: <code><type></code> - type code for the type of message to send. (0 for normal request; 1 for method request; 2 for method update; 3 for method ack)</p> <p>Type 0 message format:</p> <p><code><param_1></code> - command – the api command to execute. <code><param_i></code> - string parameter indicating the i-th parameter, with i=1,...,24.</p> <p>Type 1 message format:</p> <p><code><param_1></code> - “thingKey” – the key of a thing to execute. <code><param_2></code> - timeout – time to wait in seconds before returning an error for the request. <code><param_3></code> - method – the method key of a thing to execute. <code><param_4></code> - is singleton – 0 or 1. 1 if no more than one of these instances can exist. <code><param_5+></code> - parameters for the method. String parameter indicating the</p>



	<p>i-th parameter, with i=1,...,20.</p> <p>Type 2 message format:</p> <p><param_1> - id – the identification of the method instance. <param_2> - message – a message represents the current status of the method.</p> <p>Type 3 message format:</p> <p><param_1> - id – the identification of the method instance. <param_2> - status – the integer result status for the execution. 0 is reserved for OK. <param_3 when status is set to non-zero> - error message associated with the status. <param_3 when status is set to zero> - return parameters for the method. Key value pair should be used. param_i should be the name of the element and param_i+1 should be the value of the element.</p> <p>Note: there is no limit on the length of the single <param_i>, but there is a limit in the total length of the AT command string, that cannot exceed 400 characters. If this threshold is exceeded, then an ERROR is raised. There is also a limit of 20 messages on the receive queue. If the queue is full, the consequent send will still succeed but the response for that particular request will be dropped until an item is removed from this queue (See command AT#DWRCV and AT#DWRCVR).</p> <p>Note: the response to the AT#DSEND command reports the <msgId> value that identifies the sending.</p> <p>Note: if data are successfully sent, then the response is OK. If data sending fails for some reason, an error code is reported.</p> <p>Note: it's possible to use AT#DSEND only if the connection has been opened with AT#DWCONN</p>
AT#DSEND=?	Test command reports the maximum length of <type> parameter.

3.5.7.25.5. Send raw data to deviseWISE server - #DSENDNR

<p>#DSENDNR – send raw data to M2M Service</p> <p>AT#DSENDNR=<dataLen></p>	<p style="text-align: right;">SELINT 2</p> <p>Execution command permits to send raw data to the M2M Service. Content must be valid JSON.</p> <p>Parameters: <dataLen> - number of bytes to be sent</p>
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	<p>Range: 1 - 1500</p> <p>The module responds to the command with the prompt <code><greater_than><space></code> and waits for the data to send. When <code><dataLen></code> bytes have been sent, operation is automatically completed. If data are successfully sent, then the response is OK. If data sending fails for some reason, an error code is reported.</p> <p>Note: the response to the AT#DSENDR command reports the <code><msgId></code> value that identifies the sending. There is also a limit of 20 messages on the receive queue. If the queue is full, the consequent send will still succeed but the response for that particular request will be dropped until an item is removed from this queue (See command AT#DWRCV and AT#DWRCVR).</p> <p>Note: it's possible to use AT#DSENDR only if the connection has been opened with AT#DWCONN</p>
AT#DSENDR=?	Test command reports the supported range of values for <code><dataLen></code> parameter

3.5.7.25.6. Receive data from deviseWISE server - #DWRCV

#DWRCV – Receive data from M2M Service	SELINT 2
AT#DWRCV=<msgId>	<p>Execution command permits the user to read formatted data arriving from M2M Service; the module is notified of these data by the URC #DWRING.</p> <p>Parameters: <code><msgId></code> - index of the data message to receive, as indicated in the URC #DWRING Range: ≥ 1</p> <p>If the received data are the consequence of a previous data sending issued by AT#DSEND, then the <code><msgId></code> value is the same of the <code><msgId></code> value reported in the answer of AT#DSEND.</p> <p>The incoming Server data are notified by the URC #DWRING with the following format:</p> <p>#DWRING: <type>,<msgId>,<len></p> <p>where: <code><type></code> - type of message to receive <code><msgId></code> - index of the data message to receive <code><len></code> - length of data message to receive</p>



#DWRCV – Receive data from M2M Service	SELINT 2
	<p>If the incoming data are accepted with AT#DWRCV, then the formatted data are received and showed with the following URC:</p> <p>#DWDATA: <code><msgId>,<error>,<len>,<param_1>[,<param_2>[,...[,<param_n>]]]</code></p> <p>where: <code><msgId></code> - defined as above <code><error></code> - error code of the message to receive, 0 if there is no error. <code><len></code> - defined as above <code><param_i></code> - string parameter indicating the i-th parameter associated to the type specified</p> <p>Note: it is possible to use AT#DWRCV only if the connection has been opened with AT#DWCONN, else the ME is raising an error.</p> <p>If the data received are the consequence of a previous data sending issued by AT#DSEND, then they can be read only using AT#DWRCV command and not AT#DWRCVR command (i.e.: AT#DWRCV and AT#DWRCVR are not interchangeable).</p>
AT#DWRCV=?	Test command reports the supported range of values for all parameters.

3.5.7.25.7. Receive raw data from deviseWISE server - #DWRCVR

#DWRCVR – Receive raw data from M2M Service	SELINT 2
AT#DWRCVR=<msgId>	<p>Execution command permits the user to read raw data arriving from M2M Service; the module is notified of these data by the URC #DWRING.</p> <p>Parameters: <code><msgId></code> - index of the data message to receive, as indicated in the URC #DWRING Range: ≥ 1</p> <p>If the data received are the consequence of a previous data sending (issued by AT#DSENDNR), then the <code><msgId></code> value is the same of the <code><msgId></code> value reported in the answer of AT#DSENDNR.</p> <p>The incoming Server data are notified by the URC #DWRING with the following format:</p> <p>#DWRING: <type>,<msgId>,<len></p> <p>where: <code><type></code> - type of the data message to receive</p>



#DWRCVR – Receive raw data from M2M Service	SELINT 2
	<p><msgId> - index of the data message to receive <len> - length of data message to receive</p> <p>If the incoming data are accepted with AT#DWRCVR, then the data are received and showed with the following URC:</p> <p>#DWRDATA: <msgId>,<error>,<len>,<data></p> <p>where: <msgId> - defined as above <error> - error code of the message to receive, 0 if there is no error. <len> - defined as above <data> - M2M Service data</p> <p>Note: it is possible to use AT#DWRCVR only if the connection has been opened with AT#DWCONN, else the ME is raising an error.</p> <p>If the data received are the consequence of a previous data sending issued by AT#DWSENDR, then they can be read only using AT#DWRCVR command and not AT#DWRCV command (i.e.: AT#DWRCV and AT#DWRCVR are not interchangeable).</p>
AT#DWRCVR=?	Test command reports the supported range of values for all parameters.

3.5.7.25.8. List information on messages pending from deviseWISE server - #DWLRCV

#DWLRCV – List information on messages pending from M2M Service	SELINT 2
AT#DWLRCV	<p>Execution command permits the user to obtain information regarding the messages pending from M2M Service in the following format:</p> <p>#DWLRCV: <msg_number>[,<msgId_1>,<msg_1_len>[,<msgId_2>,<msg_2_len>[,<msgId_n>,<msg_n_len>]]]</p> <p>where: <msg_number> - number of messages pending from M2M Service Range: >=0</p> <p><msgId_i> - index of the i-th data message to receive <msg_i_len> - length of the i-th data message to receive</p> <p>Note: it is possible to use AT#DWLRCV only if the connection has been opened with AT#DWCONN, else the ME is raising an error.</p>
AT#DWLRCV=?	Test command reports OK result code



3.5.7.25.9. Enable agentfeatures - #DWEN

#DWEN – enable agent features	SELINT 2
<p>AT#DWEN=<feat>,<en>[,<option1>[,<option2>[,<option3>[,<option4>[,<option5>]]]]]</p>	<p>Set command permits to enable/disable up to 8 different deviceWISE features.</p> <p>Parameters:</p> <p><feat> - feature to enable or disable; range (0-7) 0 – remote at commands 1 ... 7 – reserved for future use.</p> <p><en> - enable or disable the features 0 – disable the feature 1 – enable the feature</p> <p><optionX> where X=1,...,5 - optional parameters depending on the feature (string)</p> <p>Note: feature 0 (Remote AT commands) has no option. Note: the <en> value is considered only at the very first connection to M2M Service (AT#DWCONN=1) after a device power on or reboot.</p>
<p>AT#DWEN?</p>	<p>Read command returns the current settings for each feature in the format:</p> <p>#DWEN: <feat>,<en>,<option1>,<option2>,<option3>,<option4>,<option5></p>
<p>AT#DWEN=?</p>	<p>Test command reports the supported range of values for parameters <feat> and <en> and the maximum length of <optionX> (where X=1,...,5) parameters</p>



4. List of acronyms

ARFCN	Absolute Radio Frequency Channel Number
AT	Attention command
BA	BCCH Allocation
BCCH	Broadcast Control Channel
CA	Cell Allocation
CBM	Cell Broadcast Message
CBS	Cell Broadcast Service
CCM	Current Call Meter
CLIR	Calling Line Identification Restriction
CTS	Clear To Send
CUG	Closed User Group
DCD	Data Carrier Detect
DCE	Data Communication Equipment
DCS	Digital Cellular System
DGPS	Differential GPS, the use of GPS measurements, which are differentially corrected
DNS	Domain Name System
DSR	Data Set Ready
DTE	Data Terminal Equipment
DTMF	Dual Tone Multi Frequency
DTR	Data Terminal Ready
GGA	GPS Fix data
GLL	Geographic Position – Latitude/Longitude
GLONASS	Global positioning system maintained by the Russian Space Forces
GMT	Greenwich Mean Time
GNSS	Any single or combined satellite navigation system (GPS, GLONASS and combined GPS/GLONASS)
GPRS	Global Packet Radio Service
GPS	Global Positioning System
GSA	GPS DOP and Active satellites
GSM	Global System Mobile
GSV	GPS satellites in view
HDLC	High Level Data Link Control
HDOP	Horizontal Dilution of Precision
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
IRA	International Reference Alphabet
IWF	Interworking Function
ME	Mobile Equipment
MO	Mobile Originated



MT	<i>either Mobile Terminated or Mobile Terminal</i>
NMEA	National Marine Electronics Association
NVM	Non Volatile Memory
PCS	Personal Communication Service
PDP	Packet Data Protocol
PDU	Packet Data Unit
PIN	Personal Identification Number
PPP	Point to Point Protocol
PUK	Pin Unblocking Code
RLP	Radio Link Protocol
RMC	Recommended minimum Specific data
RTS	Request To Send
SAP	SIM Access Profile
SCA	Service Center Address
SMS	Short Message Service
SMSC	Short Message Service Center
SMTP	Simple Mail Transport Protocol
TA	Terminal Adapter
TCP	Transmission Control Protocol
TE	Terminal Equipment
UDP	User Datagram Protocol
USSD	Unstructured Supplementary Service Data
UTC	Coordinated Universal Time
VDOP	Vertical dilution of precision
VTG	Course over ground and ground speed
WAAS	Wide Area Augmentation System



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		7.02.07 SW 10.0.3	<p>#CSURVF, +CMAR, #CCLK, +CMGL, +CFUN, #FTPOPEN, #OTASNAP, #OTASUAN, #AUTOBND, #STIA, #STGI, +CLCC, +CNMI, +CPMS, +CSAS, #PLMNMODE, #SMSMODE, #REGMODE, #AUTOBND, #ENHSIM, #SWLEVEL, #NITZ, #STIA, #JDR, #TSVOL</p> <ul style="list-style-type: none"> - New commands added for SW 10.0.3: +CPLS, +CGCMOD, #STTA, #CMEEMODE, #SGACTCFGEXT, #BASE64, #CEERNET, #ENHRST, #SII, #OTASETTRI - Updated references specification from 07.05, 07.07, 03.40 to 27.005, 27.007, 23.040, etc
ISSUE#9	2010-10-04	SW 10.0.4	<ul style="list-style-type: none"> - Added GL865-DUAL to the applicability table and the matrix
ISSUE#10		SW 7.03.02 / 7.02.07 SW 10.0.4	<ul style="list-style-type: none"> - New commands added for SW 10.0.4: #MSDPUSH, #MSDSEND, +CECALL, #SYSHALT, #SIMINCFG, #EMRGD, #BIQUADINEX, #BIQUADOUTEX, #TXCNI, #DTMF, #DTMFCFG, #OTAIPCFG, #OTAIPUPD, #OTASNAPIP, #OTASNAPIPCFG, #HFCFG, #SMTPCL - Modified par 3.3.1 and 3.2.4 - Edited #DNS command description - Updated tab at 3.5.2.1 - Reorganized the matrix
ISSUE #11	2011-07-12	SW 7.03.03 / 7.02.08 SW 10.0.5	<ul style="list-style-type: none"> - Modified commands: #CAP, #CSURV, #CSURVC, #EVMONI, #FTPGETPKT, #QDNS, #DTMF, \$GPSACP, \$GPSAT, \$GPSCON, \$GPSNMUN, \$GPSP, \$GPSPTS, \$GPSR, \$GPSW, \$GPSWK - New commands: #ALARMPIN, #CFF, #SENDUDP, #SENDUDPEXT, #ST - New paragraph added “SSL commands” 3.5.7.17 : #SSLCFG, #SSLD, #SSLEN, #SSLFASTD, #SSLH, #SSLO, #SSLRECV, #SSLS, #SSLSECCFG, #SSLSECDATA, #SSLSEND
ISSUE #12	2011-09-09	SW 7.03.03 / 7.02.08 SW 10.0.5	<ul style="list-style-type: none"> - Updated #SIMDET, #JDR, #NITZ, #PLMNMODE, #REGMODE, #SERVINFORM, #SMSMODE, #SSLSECDATA, #STIA, #SWLEVEL, #TEMPMON, +CGREG, +CSSN - Edited par 3.4 Command Availability Table
ISSUE #13	2012-03-20	SW 7.03.03 / 7.02.08 SW 10.0.5 SW 13.00.000	<ul style="list-style-type: none"> - Added GE910-QUAD in the availability table. - Specified 13.00.000 parameter in AT#CODEC command description (SELINT=2)
ISSUE #14	2012-08-20	SW 7.03.03 / 7.02.08 SW 10.0.6	<ul style="list-style-type: none"> - New: #BNDLOCK, #BUZZERMODE, #CHUP, #DVIEXT, #ENCALG, #FTPAPPEXT, #FTPFCFG, #GPPPCFGEXT, #JDRENH, #RS485, #SLASTCLOSURE, +CSVM, #NTP, \$FTPGETIFIX, \$GPSGPIO, \$GPSIFIX - Updated: #AUTOBND, #AXE, #CODEC, #DTMF, #DTMFCFG,



		SW 13.00.002	#ENS, #FTPAPP, #FTPPUT, , #I2CRD, #I2CWR, #SCFGEXT, #SERVINFO, #SMSMODE, #SRECV, #SEND, #SENDUDP, #SSLD, #TXCNI, \$GPSACP, #GPSAT, \$GPSCON, \$GPSD, \$GPSNMUN, \$GPSP, \$GPS, \$GPSR, \$GPSRST, \$GPSSAV, \$GPSSW, \$GPSWK, +CGDCONT, +CMUX, +CSMP, +CSQ, #SD, #SL, #SKTSET, #SKTD, #SKTL, @SKTL, +FMI, +FMM, +FMR, +FTS, +FRS, +FTM, +FRM, +FTH, +FRH, +FLO, +FPR, +FDD, +CBST, +CRLP, #TTY
ISSUE # 15	2012-10-18	SW 7.03.03 / 7.02.08 SW 10.0.6 SW 13.00.002	<ul style="list-style-type: none"> - Edited par 3.2.2.1 ME Error Result Code - +CME ERROR: <err> - Edited par 3.3.1 Factory Profile And User Profiles - Edited par 3.4 Command Availability Table - Updated: #FTPAPP, #FTPPUT, #SCFGEXT, #SGACTAUTH, #SLED, #SRECV, +IPR, #STIA
ISSUE # 16	2013-02-07	SW 7.03.03 / 7.02.08 SW 10.0.xx7 16.00.xx2 SW 13.00.xx3	<ul style="list-style-type: none"> - Added GL865-DUAL V3, GL868-DUAL V3 in the availability table - Edited par 3.2.4 and 3.3.1 - Edited par 3.4 Command Availability Table - New: #CONSUME, #CSURVTA, #RFSTS, #HTTP*, #FRWLIPV6, #MMS*, #SSLSENDEXT, #ECHOFCG, #CMUXMODE, #PORTCFG - Updated: #DTMF, #LCSCRIPT, #NWDNS, #SCFGEXT2, #SLASTCLOSURE, #SPCM, #STARTMODESCR, #WAKE, \$FTPGETFIX, \$GPSACP, \$GPSAT, \$GPSCON, \$GPSD, \$GPSGPIO, \$GPSFIX, \$GPSNMUN, \$GPSP, \$GPS, \$GPSR, \$GPSRST, \$GPSSAV, \$GPSSW, \$GPSWK, #CSURV*, +CFUN, +CMUX, +IPR, #ENASIM, #SNUM, #SMTPCL, #FTPCFG, #JDRENH, #SGACT, #EVMONI, #SSLD, #SSLSECCFG
ISSUE # 17	2013-05-24	SW 10.0.xx7 16.00.xx2 SW 13.00.xx4	<ul style="list-style-type: none"> - Added GE910-GNSS in the availability table, deleted GM862 and GE863 families - Edited par 3.2, 3.2.4, 3.5.3.6 - Updated: #DNS, #FTPCFG, #GPIO, #MONI, #SCFGEXT2, #SPN, #WAKE, +CMUX, #MMSSNH, \$FTPGETIFIX, \$GPSACP, \$GPSAT, \$GPSCON, \$GPSD, \$GPSGPIO, \$GPSIFIX, \$GPSNMUN, \$GPSP, \$GPS, \$GPSR, \$GPSRST, \$GPSSAV, \$GPSSW, \$GPSWK, - New: \$HTTPGETIFIX, \$GPSSERSPEED, \$DPATCH, \$EPATCH, \$LPATCH, \$WPATCH
ISSUE # 18	2013-09-23	SW 10.0.xx8 16.00.xx3 SW 13.00.xx5	<ul style="list-style-type: none"> - Added GE910-QUAD V3 and GL865-QUAD V3 in the availability table - Edited par 3.4, 3.5.2.1 - Updated: #AUTOATT, #CPUMODE, #CSURVTA, #ENAEVMONICFG, #ENASIM, #FTPCFG, #SCFGEXT2, #SD, #SGACT, #SNUM, #SSLSECCFG, #SMSATRUNCFG, #TCPATRUNCFG, \$DPATCH, \$EPATCH, \$FTPGETIFIX, \$GPSACP, \$GPSAT, \$GPSCON, \$GPSD, \$GPSGPIO, \$GPSIFIX,



			#DWLRCV, #DWEN, #EQUDDP
ISSUE# 22	2015-08-05	SW 10.01.xx2 16.01.xx2 SW 13.00.xx8	<ul style="list-style-type: none"> - Updated par 3.4 AT Commands Availability Table - Updated: #EONLY, #EQUDDP, #HTTPQRY, #HTTPSND, #QSS, #SCFG, #SD, #SIMINCFG, #V24CFG, \$DPATCH, \$EPATCH, \$FTPGETIFIX, \$GPSD, \$GPSGPIO, #STATSCONSUME, \$GPSNMUM, \$GPSR, \$GPSSERSPEED, \$GPSSW, \$GPSWK, \$HTTPGETIFIX, \$LPATCH, +CFUN, +CSIM, #DWCFCG, #GPIO - New: #ANAMICG, #DIGMICG, #DASCRPT, #ECALLNWTMR, #ECALLTMR, #ECHOACT, #FASTSHDN, #MSDREAD, #SIDETG, #SPIOOPEN, #SPICLOSE, #SPIRW, #AFIND, +CCHO, +CCHC, +CGLA, \$GPSSTCPUCLK, \$GPSMTKPPS, \$GPSMTKSTDBY, \$HTTPGETEPO, \$INJECTEPO, \$QUERYEPO, \$CLEAREPO, \$EASY - Updated par 3.3.1 Factory Profile And User Profiles
ISSUE# 23	2015-11-30	SW 10.01.xx2 16.01.xx2 SW 13.00.xx8	<ul style="list-style-type: none"> - Updated: #SPIOOPEN, #SPICLOSE, +CHLD

