

The **INTERNET** of THINGS
made **Plug&Play**



LE866 SERIES AT COMMANDS REFERENCE GUIDE

APPLICABILITY TABLE

PRODUCTS	SW RELEASE
■ ■ LE866-SV1	23.00.XX3
■ ■ LE866A1-KK	23.00.XX2
■ ■ LE866A1-NA	23.00.XX3
■ ■ LE866A1-JS	23.00.XX3



NOTE: The features described by the present document are provided by the products equipped with the software versions equal or greater than the version shown in the table.

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1 INTRODUCTION

1.1 Scope

Purpose of this document is providing a detailed specification and a comprehensive listing as a reference for the whole set of AT command for the LE866 series (LTE cat.1 modules)

1.2 Audience

Readers of this document should be familiar with Telit modules and their ease of controlling by means of AT Commands.

1.3 Contact Information, Support

For general contact, technical support services, technical questions and report documentation errors contact Telit Technical Support at:

TS-EMEA@telit.com

TS-AMERICAS@telit.com

TS-APAC@telit.com

Alternatively, use:

<http://www.telit.com/support>

For detailed information about where you can buy the Telit modules or for recommendations on accessories and components visit:

<http://www.telit.com>

Our aim is to make this guide as helpful as possible. Keep us informed of your comments and suggestions for improvements.

Telit appreciates feedback from the users of our information.

1.4 List of acronyms

Acronym	Description
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

Acronym	Description
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</i> Mobile Terminated <i>or</i> Mobile Terminal
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

Acronym	Description
SMSC	Short Message Service Centre
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
LTE	Long Term Evolution

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

2 OVERVIEW

This document is to describe all AT commands implemented on the Telit wireless modules listed on the Applicability Table.



NOTICE:

(EN) The integration of the LTE **LE866** cellular module within user application shall be done according to the design rules described in this manual.

(IT) L'integrazione del modulo cellulare LTE **LE866** all'interno dell'applicazione dell'utente dovrà rispettare le indicazioni progettuali descritte in questo manuale.

(DE) Die Integration des **LE866** LTE Mobilfunk-Moduls in ein Gerät muß gemäß der in diesem Dokument beschriebenen Konstruktionsregeln erfolgen.

(SL) Integracija LTE **LE866** modula v uporabniški aplikaciji bo morala upoštevati projektna navodila, opisana v tem priročniku.

(SP) La utilización del modulo LTE **LE866** debe ser conforme a los usos para los cuales ha sido diseñado descritos en este manual del usuario.

(FR) L'intégration du module cellulaire LTE **LE866** dans l'application de l'utilisateur sera faite selon les règles de conception décrites dans ce manuel.

(HE) האינטגרציה של המודם הסלולרי **LE866** עם המוצר. האינטגרציה של המודם הסלולרי **LE866** בתוך היישום של היישום המפורט במסמך זה בתהליך האינטגרציה של המודם הסלולרי **LE866** עם המוצר.

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3 AT COMMANDS

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

- Hayes standard AT command set, in order to maintain the compatibility with existing SW programs.
- 3GPP TS 27.007 specific AT command and LTE specific commands.
- 3GPP TS 27.005 specific AT commands for SMS (Short Message Service) and CBS (Cell Broadcast Service)

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.



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.

3.1 AT Commands Exceptions

The following Table show which commands have exceptions on their applicability on the different LE866 variants:

Commands	LE866-SV1	LE866A1-NA	LE866A1-KK	LE866A1-JS
Voice Call	Y	N	N	N
GPS/GNSS	Y	Y	N	Y
Consume	Y	Y	N	Y
#HOSTODIS	N	Y	N	N
#UNIQUEDEVID	N	Y	N	N

3.2 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 sub parameter 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 sub parameter 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 sub parameters, 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 sub parameter.

3.3 AT Command Syntax

The syntax rules followed by Telit implementation of either Hayes AT commands, Modem commands are very similar to those of standard basic and extended AT commands

There are two types of extended command:

Parameter type commands. This type of commands may be “set” (to store a value or values for later use), “read” (to determine the current value or values stored), or “tested” (to determine ranges of values supported). Each of them has a test command (trailing =?) to give information about the type of its sub parameters; they also have a Read command (trailing ?) to check the current values of sub parameters.

Action type commands. This type of command may be “executed” or “tested”.

“executed” to invoke a particular function of the equipment, which generally involves more than the simple storage of a value for later use

“tested” to determine:

if sub parameters are associated with the action, the ranges of sub parameters values that are supported;

if the command has no sub parameters, issuing the correspondent Test command (trailing =?) raises the result code “**ERROR**”.

Note: issuing the Read command (trailing ?) causes the command to be executed.

whether or not the equipment implements the Action Command (in this case issuing the correspondent Test command - trailing =? - returns the **OK** result code), and, if sub parameters are associated with the action, the ranges of sub parameters values that are supported.

Action commands don't store the values of any of their possible sub parameters.

Moreover:

The response to the Test Command (trailing =?) may be changed in the future by Telit to allow the description of new values/functionalities.

If all the sub parameters 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 sub parameters to be retained.

3.3.1 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**).

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.

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



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.

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

3.3.2.1 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:

General Errors	
Numeric Format	Verbose Format
0	phone failure
1	No connection to phone
2	phone-adaptor link reserved
3	operation not allowed
4	operation not supported
5	PH-SIM PIN required
10	SIM not inserted
11	SIM PIN required
12	SIM PUK required
13	SIM failure
14	SIM busy
15	SIM wrong
16	incorrect password
17	SIM PIN2 required
18	SIM PUK2 required
20	memory full
21	invalid index
22	not found
23	memory failure
24	text string too long
25	invalid characters in text string

Numeric Format	Verbose Format
26	dial string too long
27	invalid characters in dial string
30	no network service
31	network time-out
32	network not allowed - emergency calls only
40	network personalization PIN required
41	network personalization PUK required
42	network subset personalization PIN required
43	network subset personalization PUK required
44	service provider personalization PIN required
45	service provider personalization PUK required
46	corporate personalization PIN required
47	corporate personalization PUK required
49	EAP method not supported
50	Incorrect parameters
100	unknown

GPRS related errors to a failure to perform an Attach

Numeric Format	Verbose Format
103	Illegal MS (#3)*
106	Illegal ME (#6)*
107	GPRS service not allowed (#7)*
111	PLMN not allowed (#11)*
112	Location area not allowed (#12)*
113	Roaming not allowed in this location area (#13)*

GPRS related errors to a failure to Activate a Context and others

Numeric Format	Verbose Format
132	service option not supported (#32)*
133	requested service option not subscribed (#33)*
134	service option temporarily out of order (#34)*
148	unspecified GPRS error
149	PDP authentication failure
150	invalid mobile class



NOTE:

*(values in parentheses are GSM 04.08 cause codes).

IP Easy related Errors

Numeric Format	Verbose Format
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
561	remote disconnected or time-out
562	connection failed

Numeric Format	Verbose Format
563	TX error
564	already listening
566	can not resume socket
567	wrong APN
568	wrong PDP
569	service not supported
570	QOS not accepted
571	NSAPI already used
572	LLC or SMDCP failure
573	network reject

Custom SIM Lock related errors

Numeric Format	Verbose Format
586	MCL personalization PIN required

FTP related Errors

Numeric Format	Verbose Format
600	generic undocumented error
601	wrong state
602	Can not activate
603	Can not resolve name
604	Can not allocate control socket
605	Can not connect control socket
606	Bad or no response from server
607	Not connected
608	Already connected
609	Context down
610	No photo available
611	Can not send photo
612	Resource used by other instance

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

Numeric Format	Meaning
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
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
340	no +CNMA acknowledgement expected
500	unknown error
512	FDN not allowed number

3.3.3 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:

Numeric Format	Verbose Form
0	OK
1	CONNECT or CONNECT <text>
2	RING
3	NO CARRIER
4	ERROR
6	NO DIALTONE
7	BUSY
8	NO ANSWER
10	CONNECT 2400
11	CONNECT 4800
12	CONNECT 9600
15	CONNECT 14400
23	CONNECT 1200/75



NOTE:

<text> can be "300", "1200", "2400", "4800", "9600", "14400" or "1200/75"

3.3.4 Command Response Time-Out

Every command issued to the Telit modules returns a result response, if response codes are enabled (default). The time needed to process the given command and return the response varies, depending on the command type. Commands that do not interact with the SIM or the network, and only involve internal setups or readings, have an immediate response. Commands that interact with the SIM or the network could take many seconds to send a response, depending on SIM configuration (e.g., number of contacts stored in the phonebook, number of stored SMS), or on the network the command may interact with.

3.3.5 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.

3.4 Storage

3.4.1 Factory Profile And User Profiles

The Telit wireless modules stores the values set by several commands in the internal non volatile memory (NVM), allowing to remember this setting even after power off. In the NVM these values are set either as factory profile or as user profiles: there are two customizable user profiles and one factory profile in the NVM of the device: by default the device will start with user profile 0 equal to factory profile. For backward compatibility, each profile is divided into two sections, one base section which was historically the one that was saved and restored in early releases of code, and the extended section which includes all the remaining values.

The `&W` command is used to save the actual values of both sections of profiles into the NVM user profile. Commands `&Y` and `&P` are both used to set the profile to be loaded at startup. `&Y` instructs the device to load at startup only the base section. `&P` instructs the device to load at startup the full profile: base + extended sections.

The `&F` command resets to factory profile values only the command of the base section of profile, while the `&F1` resets to factory profile values the full set of base + extended section commands.

The values set by other commands are stored in NVM outside the profile: some of them are stored always, without issuing any &W, some other are stored issuing specific commands (+CSAS, #SLEDSAV, #SKTSAV, #ESAV); all of these values are read at power-up.

The values set by following commands are stored in the profile base section; they depend on the specific AT instance:

Item	Command
DTE SPEED	+IPR
COMMAND ECHO	E
RESULT MESSAGES	Q
VERBOSE MESSAGES	V
EXTENDED MESSAGES	X
POWER SAVING	+CFUN (it does not depend on the specific AT instance)
DEFAULT PROFILE	&Y
S REGISTERS	S0;S2;S3;S4;S5;S7;S10;S12;S25

The values set by following commands are stored in the profile extended section and they depend on the specific AT instance (see +CMUX):

+FCLASS	+CSCS	+CR	+COLP	+CSDF
+CREG	+CLIP	+CRLP	+CTZR	+CCWE
+CRC	+CLIR	+CSVM	#SIMPR	#NWEN
+CCWA	+CUSD	+CAOC	+NCIH	
+CSSN	+CIND	+CMER	+CCWE	
+CPBS	+CMEE	+CGREG	#NWEN	
+CGEREP	+CMGF	+CSDH	+COLP	
+CNMI	#QSS	#ECAM	+CSIL	
#SMOV	#MWI	#NITZ	#PSNT	
#SKIPESC	#CFF	#STIA	#CESTHLCK	
+CSTF	+CSDF	+CTZU	+CSTA	

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

+CALM	+CRSL	+CMUT	#HFMICG	#HSMICG
+CLVL	+VTD	+CSCB	#SPKMUT	#NITZ
#CAP	#SRS	#SRP	#HFRECG	#HSRECG
#STM	#E2SLRI	#E2SMSRI	#SHSAGC	#SHFAGC
#DVI	#CODEC	#SHFEC	#SHFNR	#SHSSD
#SIMDET	#DVIEXT	#SHFSD	#SHSSD	

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:

#SELINT	+COPS	+CGCLASS	#DNS	#ICMP
+CGDCONT	+CGQMIN	+CGQREQ	+CGEQREQ	+CGEQMIN
#ENS	#SCFG	#AUTOATT	#SMSMODE	

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 +CSAS command and restored by +CRES command:

#SLED

stored by #SLEDSAV command

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

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

#ESMTP #EADDR #EUSER

#EPASSW

#BIQUADIN # BIQUADINEX # BIQUADOUT

BIQUADOUTEX

stored by #PSAV command and automatically restored at startup;



NOTE:

+COPS is partially stored in NVM; see command description

Both commands +CSAS and +CRES deal with non-volatile memory, intending for it either the NVM and the SIM storage.

4 AT COMMANDS REFERENCES

1.1. Command Line General Format

4.1.1 Command Line Prefixes

4.1.1.1 Starting A Command Line - AT

AT - Starting A Command Line		SELINT 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	

4.1.1.2 Last Command Automatic Repetition - A/

A/ - Last Command Automatic Repetition		SELINT 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	

4.1.2 General Configuration Commands

4.1.2.1 Select Interface Style - #SELINT

#SELINT - Select Interface Style		SELINT 2
AT#SELINT=[<v>]	Set command sets the AT command interface style depending on parameter <v>. Parameter: <v> - AT command interface style 2 - switches the AT command interface style of the product, to the new product	
AT#SELINT?	Read command reports the current interface style.	
AT#SELINT=?	Test command reports the available range of values for parameter <v>.	
Note	Issuing AT#SELINT=<v> when the 3GPP TS 27.010 multiplexing protocol control channel has been enabled (see +CMUX) causes an ERROR result code to be returned.	

4.1.3 Hayes Compliant AT Commands

4.1.3.1 Generic Modem Control

4.1.3.1.1 Set To Factory-Defined Configuration - &F

&F - Set To Factory-Defined Configuration		SELINT 2
AT&F[<value>]	<p>Execution command sets the configuration parameters to default values specified by manufacturer; it takes in consideration hardware configuration switches and other manufacturer-defined criteria.</p> <p>Parameter: <value>: 0 - just the factory profile base section parameters are considered. 1 - either the factory profile base section and the extended section are considered (full factory profile).</p> <p>Note: if parameter <value> is omitted, the command has the same behavior as AT&F0</p>	
Reference	V25ter.	

4.1.3.1.2 Soft Reset - Z

Z - Soft Reset		SELINT 2
ATZ[<n>]	<p>Execution command loads the base section of the specified user profile and the extended section of the default factory profile.</p> <p>Parameter: <n> 0..1 - user profile number</p> <p>Note: any call in progress will be terminated.</p> <p>Note: if parameter <n> is omitted, the command has the same behaviour as ATZ0.</p>	
Reference	V25ter.	

4.1.3.1.3 Default Reset Basic Profile Designation - &Y

&Y - Default Reset Basic Profile Designation		SELINT 2
AT&Y[<n>]	<p>Execution command defines the basic profiles which will be loaded on start-up.</p> <p>Parameter: <n> 0..1 - profile (default is 0): the wireless module is able to store 2 complete configurations (see &W).</p> <p>Note: differently from command Z<n>, which loads just once the desired profile, the one chosen through command &Y will be loaded on every startup.</p> <p>Note: if parameter is omitted, the command has the same behavior as AT&Y0</p>	

4.1.3.1.4 Default Reset Full Profile Designation - &P

&P - Default Reset Full Profile Designation		SELINT 2
AT&P[<n>]	<p>Execution command defines which full profile will be loaded on start-up.</p> <p>Parameter: <n></p> <p>0..1 – profile number: the wireless module is able to store 2 full configurations (see command &W).</p> <p>Note: differently from command Z<n>, which loads just once the desired profile, the one chosen through command &P will be loaded on every start-up.</p> <p>Note: if parameter is omitted, the command has the same behaviour as AT&P0</p>	
Reference	Telit Specifications	

4.1.3.1.5 Store Current Configuration - &W

&W - Store Current Configuration		SELINT 2
AT&W[<n>]	<p>Execution command stores on profile <n> the complete configuration of the device.</p> <p>Parameter: <n></p> <p>0..1 - profile</p> <p>Note: if parameter is omitted, the command has the same behaviour of AT&W0.</p>	

4.1.3.1.6 Store Telephone Number - &Z

&Z - Store Telephone Number In The Wireless Module Internal Phonebook		SELINT 2
AT&Z<n>=<nr>	<p>Execution command stores in the record <n> the telephone number <nr>. The records cannot be overwritten, they must be cleared before rewriting.</p> <p>Parameters: <n> - phonebook record <nr> - telephone number (string type)</p> <p>Note: the wireless module has a built in non volatile memory in which 10 telephone numbers of a maximum 24 digits can be stored</p> <p>Note: to delete the record <n> the command AT&Z<n>=<CR> must be issued.</p> <p>Note: the records in the module memory can be viewed with the command &N, while the telephone number stored in the record n can be dialled by giving the command ATDS=<n>.</p>	

4.1.3.1.7 Display Stored Numbers - &N

&N - Display Internal Phonebook Stored Numbers		SELINT 2
AT&N[<n>]	<p>Execution command returns the telephone number stored at the <n> position in the internal memory.</p> <p>Parameter: <n> - phonebook record number</p> <p>Note: if parameter <n> is omitted then all the internal records are shown.</p>	

4.1.3.1.8 Manufacturer Identification - +GMI

+GMI - Manufacturer Identification		SELINT 2
AT+GMI	Execution command returns the manufacturer identification.	
Reference	V.25ter	

4.1.3.1.9 Model Identification - +GMM

+GMM - Model Identification		SELINT 2
AT+GMM	Execution command returns the model identification.	
Reference	V.25ter	

4.1.3.1.10 Revision Identification - +GMR

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

4.1.3.1.11 Capabilities List - +GCAP

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

4.1.3.1.12 Serial Number - +GSN

+GSN - Serial Number		SELINT 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	

4.1.3.1.13 Display Configuration And Profile - &V

&V - Display Current Base Configuration And Profile		SELINT 2
AT&V	Execution command returns some of the base configuration parameters settings. 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.	

4.1.3.1.14 Display Configuration And Profile - &V0

&V0 - Display Current Configuration And Profile		SELINT 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. 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.	

4.1.3.1.15 S Registers Display - &V1

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

4.1.3.1.16 Extended S Registers Display - &V3

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

4.1.3.1.17 Display Last Connection Statistics - &V2

&V2 - Display Last Connection Statistics		SELINT 2
AT&V2	Execution command returns the last connection statistics & connection failure reason.	

4.1.3.1.18 Single Line Connect Message - \V

\V - Single Line Connect Message		SELINT 2
AT\V<n>	<p>Execution command set single line connect message.</p> <p>Parameter: <n> 0 - off 1 - on</p>	

4.1.3.1.19 Country Of Installation - +GCI

+GCI - Country Of Installation		SELINT 2
AT+GCI=<code>	Set command selects the installation country code according to ITU-T.35 Annex A. Parameter: <code> 59 - it currently supports only the Italy country code	
AT+GCI?	Read command reports the currently selected country code.	
AT+GCI=?	Test command reports the supported country codes.	
Reference	V25ter.	

4.1.3.2 DTE - Modem Interface Control

4.1.3.2.1 Command Echo - E

E - Command Echo		SELINT 2
ATE[<n>]	<p>Set command enables/disables the command echo.</p> <p>Parameter: <n> 0 - disables command echo 1 - enables command echo (factory default) , hence command sent to the device are echoed back to the DTE before the response is given.</p> <p>Note: if parameter is omitted, the command has the same behaviour of ATE0</p>	
Reference	V25ter	

4.1.3.2.2 Quiet Result Codes - Q

Q - Quiet Result Codes		SELINT 2
ATQ[<n>]	<p>Set command enables or disables the result codes.</p> <p>Parameter: <n> 0 - enables result codes (factory default) 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>	
Reference	V25ter	

4.1.3.2.3 Data Carrier Detect (DCD) Control - &C

&C - Data Carrier Detect (DCD) Control		SELINT 2
AT&C[<n>]	<p>Set command controls the RS232 DCD output behaviour.</p> <p>Parameter: <n> 0 - DCD remains high always. 1 - DCD follows the Carrier detect status: if carrier is detected DCD is high, otherwise DCD is low. (factory default) 2 - DCD off while disconnecting</p> <p>Note: if parameter is omitted, the command has the same behaviour of AT&C0</p>	
Reference	V25ter	

4.1.3.2.4 Data Terminal Ready (DTR) Control - &D

&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> <ul style="list-style-type: none"> 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 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 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 AT&D5 3 - device ignores DTR transitions; if +CVHU current setting is different from 2 then issuing AT&D3 is equivalent to AT&D5 4 - C108/1 operation is disabled; if +CVHU current setting is different from 2 then issuing AT&D4 is equivalent to AT&D5 5 - C108/1 operation is enabled; same behaviour as for <n>=2 <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> <p>Note: if AT&D2 has been issued the call is drop on falling DTR edge and NO CARRIER exits on rising DTR edge.</p>	
Reference	V25ter	

4.1.3.2.5 Flow Control - &K

&K - Flow Control		SELINT 2
AT&K[<n>]	<p>Set command controls the RS232 flow control behaviour.</p> <p>Parameter: <n></p> <ul style="list-style-type: none"> 0 - no flow control 3 - hardware bi-directional flow control (both RTS/CTS active) (factory default) <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>	

4.1.3.2.6 Data Set Ready (DSR) Control - &S

&S - Data Set Ready (DSR) Control	SELINT 2
AT&S[<n>]	<p>Set command controls the RS232 DSR pin behaviour.</p> <p>Parameter: <n></p> <ul style="list-style-type: none"> 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>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>

4.1.3.2.7 Response Format - V

V - Response Format	SELINT 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: <n></p> <ul style="list-style-type: none"> 0 - limited headers and trailers and numeric format of result codes <table border="1"> <tr> <td>information responses</td> <td><text><CR><LF></td> </tr> <tr> <td>result codes</td> <td><numeric code><CR></td> </tr> </table> <ul style="list-style-type: none"> 1 - full headers and trailers and verbose format of result codes (factory default) <table border="1"> <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								

4.1.3.2.8 Extended Result Codes - X

X - Extended Result Codes		SELINT 2
ATX[<n>]	<p>Set command selects the result code messages subset used by the modem to inform the DTE of the result of the commands.</p> <p>Parameter: <n> - (factory default is 1) 0 - on entering dial-mode CONNECT result code is given; OK, CONNECT, RING, NO CARRIER, ERROR, NO ANSWER result codes are enabled . Dial tone and busy detection (NO DIALTONE and BUSY result codes) are disabled. 1..4 - on entering dial-mode CONNECT <text> result code is given; all the other result codes are enabled.</p> <p>Note: If parameter is omitted, the command has the same behaviour of ATX0</p>	
Reference	V25ter	

4.1.3.2.9 Identification Information - I

I - Identification Information		SELINT 2
ATI[<n>]	<p>Execution command returns one or more lines of information text followed by a result code.</p> <p>Parameter: <n> 0 - numerical identifier 1 - module checksum 2 - checksum check result 3 - manufacturer 4 - product name 5 - DOB version</p> <p>Note: if parameter is omitted, the command has the same behaviour of ATI0</p>	
Reference	V25ter	

4.1.3.2.10 Fixed DTE Interface Rate - +IPR

+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> 300 1200 2400 4800 9600 19200 38400 57600 115200 (default value) 230400 460800 921600</p>	
AT+IPR?	Read command returns the current value of +IPR parameter.	
AT+IPR=?	Test command returns the list of fixed-only <rate> values in the format: +IPR: (list of fixed-only <rate> values)	
Reference	V25ter	

4.1.3.2.11 DTE-Modem Local Flow Control - +IFC

+IFC - DTE-Modem Local Flow Control		SELINT 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: <by_te> - flow control option for the data received by DTE 0 - flow control None 2 - C105 (RTS) (factory default) <by_ta> - flow control option for the data sent by modem 0 - flow control None 2 - C106 (CTS) (factory default)</p> <p>Note: only possible commands are AT+IFC=0,0 and AT+IFC=2,2.</p>	
AT+IFC?	Read command returns active flow control settings.	
AT+IFC=?	Test command returns all supported values of the parameters <by_te> and <by_ta>.	
Reference	V25ter	

4.1.3.2.12 DTE-Modem Character Framing - +ICF

+ICF - DTE-Modem Character Framing		SELINT 2
AT+ICF=<format> [,<parity>]	<p>Set command defines the asynchronous character framing to be used when autobauding is disabled.</p> <p>Parameters: <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. 1 - 8 Data, 2 Stop 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 otherwise is not allowed. 0 - Odd 1 - Even</p>	
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	<pre>8N2 AT+ICF = 1 OK 8O1 AT+ICF = 2,0 OK 8E1 AT+ICF = 2,1 OK 8N1 AT+ICF = 3 OK 7O1 AT+ICF = 5,0</pre>	

+ICF - DTE-Modem Character Framing		SELINT 2
	OK 7E1 AT+ICF = 5,1 OK	

4.1.3.3 *Modulation Control*

4.1.3.3.1 **Line Quality And Auto Retrain - %E**

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

4.1.3.4 S Parameters

Basic commands that begin with the letter “**S**” are known as “**S-Parameters**”. The number following the “**S**” indicates the “parameter number” being referenced. If the number is not recognized as a valid parameter number, an **ERROR** result code is issued.

If no value is given for the sub parameter of an **S-Parameter**, an **ERROR** result code will be issued and the stored value left unchanged.

Reference: V25ter



NOTE:

What follows is a special way to set and read an S-parameter:

AT=<value><CR> sets the contents of the last **S-parameter** accessed with **ATSn=<value>** command (default: S0)

Example:

AT=40<CR> sets the content of S0 to 40

AT? returns the current value of the last S-parameter accessed with **ATSn=<value>** command (default: S0)

4.1.3.4.1 Ring Counter - S1

S1 - Ring Counter		SELINT 2
ATS1	S1 is incremented each time the device detects the ring signal of an incoming call. S1 is cleared as soon as no ring occur. Note: the form ATS1 has no effect.	
ATS1?	Read command returns the value of this parameter.	

4.1.3.4.2 Escape Character - S2

S2 - Escape Character		SELINT 2
ATS2=[<char>]	Set command sets the ASCII character to be used as escape character. Parameter: <char> - escape character decimal ASCII 0..255 - factory default value is 43 (+). Note: the escape sequence consists of three escape characters preceded and followed by n ms of idle (see S12 to set n).	
ATS2?	Read command returns the current value of S2 parameter. Note: the format of the numbers in output is always 3 digits, left-filled with 0s	

4.1.3.4.3 Command Line Termination Character - S3

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	

4.1.3.4.4 Response Formatting Character - S4

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	

4.1.3.4.5 Command Line Editing Character - S5

S5 - Command Line Editing Character		SELINT 2
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?	<p>Read command returns the current value of S5 parameter.</p> <p>Note: the format of the numbers in output is always 3 digits, left-filled with 0s</p>	
Reference	V25ter	

4.1.3.4.6 Connection Completion Time-Out - S7

S7 - Connection Completion Time-Out		SELINT 2
ATS4=[<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 signaling of call addressing information to network (dialing), 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 .	
Reference	V25ter	

4.1.3.4.7 Carrier Off With Firm Time - S10

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

4.1.3.4.8 Escape Prompt Delay - S12

S12 - Escape Prompt Delay		SELINT 2
ATS12=[<time>]	Set command sets: <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. Parameter: <time> - expressed in fiftieth of a second 2..255 - factory default value is 50. 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.	
ATS12?	Read command returns the current value of S12 parameter . Note: the format of the numbers in output is always 3 digits, left-filled with 0s	

4.1.3.4.9 Delay To DTR Off - S25

S25 -Delay To DTR Off		SELINT 2
ATS25=[<time>]	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. Parameter: <time> - expressed in hundredths of a second 0..255 - factory default value is 5 for serial ports, 200 for USB ports. Note: on serial ports, the delay is effective only if its value is greater than 5; on USB ports, the delay is effective only if its value is greater than 200. Note: in power saving (e.g. CFUN 5 with DTR low) DTR has to be off at least 3	

S25 -Delay To DTR Off	SELINT 2
	seconds for taking the action specified by command &D, independently of S25 parameter.
ATS25?	Read command returns the current value of S25 parameter . Note: the format of the numbers in output is always 3 digits, left-filled with 0s

4.1.4 3GPP TS 27.007 AT Commands

4.1.4.1 General

4.1.4.1.1 Request Manufacturer Identification - +CGMI

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

4.1.4.1.2 Request Model Identification - +CGMM

+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	

4.1.4.1.3 Request Revision Identification - +CGMR

+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.	
Reference	3GPP TS 27.007	

4.1.4.1.4 Request Product Serial Number Identification - +CGSN

+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	

4.1.4.1.5 Select TE Character Set - +CSCS

+CSCS - Select TE Character Set		SELINT 2
AT+CSCS=[<chset>]	Set command sets the current character set used by the device. Parameter: <chset> - character set "GSM" - GSM default alphabet (3GPP TS 23.038) "IRA" - international reference alphabet (ITU-T T.50) "8859-1" - ISO 8859 Latin 1 character set "PCCP437" - PC character set Code Page 437 "UCS2" - 16-bit universal multiple-octet coded character set (ISO/IEC10646)	
AT+CSCS?	Read command returns the current value of the active character set.	
AT+CSCS=?	Test command returns the supported values for parameter <chset> .	
Reference	3GPP TS 27.007	

4.1.4.1.6 Request international mobile subscriber identity (IMSI) - +CIMI

+CIMI - Request International Mobile Subscriber Identify (IMSI)		SELINT 2
AT+CIMI	Execution command returns the value of the Internal Mobile Subscriber Identity stored in the SIM without command echo. Note: a SIM card must be present in the SIM card housing, otherwise the command returns ERROR .	
AT+CIMI=?	Test command returns OK result code.	
Reference	3GPP TS 27.007	

4.1.4.1.7 Multiplexing Mode – AT+CMUX

AT+CMUX – Multiplexing Mode		SELINT 2
AT+CMUX=<mode>[,<subset>[,<N1>]]	Set command is used to enable/disable the 3GPP TS 27.010 multiplexing protocol control channel. Parameters: <mode> multiplexer transparency mechanism 0 - basic option; it is currently the only supported value. <subset> 0 - UIH frames used only; it is currently the only supported value. <N1> maximum frame size 1-1500, the default is 122	
AT+CMUX?	Read command returns the current value of <mode> , <subset> and <N1> in the format: +CMUX: <mode>,<subset>,,<N1>	
AT+CMUX=?	Test command returns the range of supported values for parameters <mode> , <subset> and <N1>	
Reference	3GPP TS 27.007, 3GPP TS 27.010	

4.1.4.1.8 Read ICCID - +CCID

+CCID - Read ICCID		SELINT 2
AT+CCID	Execution command reads on SIM the ICCID (card identification number that provides a unique identification number for the SIM)	
AT+CCID=?	Test command returns the OK result code.	

4.1.4.1.9 EPS network registration status - +CEREG

+CEREG – EPS network registration status	SELINT 2
+CEREG=[<n>]	<p>The set command controls the presentation of an unsolicited result code +CEREG: <stat> when <n>=1 and there is a change in the MT's EPS network registration status in E-UTRAN, or unsolicited result code.</p> <p>+CEREG: <stat>[, [<tac>],[<ci>],[<AcT>]] when <n>=2 and there is a change of the network cell in E-UTRAN. The parameters <AcT>, <tac> and <ci> are sent only if available.</p> <p>Note: If the EPS MT in E-UTRAN also supports circuit mode services and/or GPRS services, the +CREG command and +CREG: result codes and/or the +CGREG command and +CGREG: result codes apply to the registration status and location information for those services.</p>
+CEREG?	<p>Defined values: <n>: integer type 0 - disable network registration unsolicited result code 1 - enable network registration unsolicited result code +CEREG: <stat> 2 - enable network registration and location information unsolicited result code +CEREG: <stat>[, [<tac>],[<ci>],[<AcT>]]</p> <p><stat>: integer type; indicates the EPS registration status 0 - not registered, MT is not currently searching an operator to register to. 1 - registered, home network. 2 - not registered, but MT is currently trying to attach or searching an operator to register to. 3 - registration denied. 4 - unknown (e.g. out of E-UTRAN coverage). 5 - registered, roaming.</p> <p><tac>: string type; two byte tracking area code in hexadecimal format (e.g. "00C3" equals 195 in decimal). <ci>: string type; four byte E-UTRAN cell ID in hexadecimal format. <AcT>: integer type; indicates the access technology of the serving cell. 0 - GSM 1 - GSM Compact 2 - UTRAN 3 - GSM w/EGPRS (see NOTE 3) 4 - UTRAN w/HSDPA (see NOTE 3) 5 - UTRAN w/HSUPA (see NOTE 3) 6 - UTRAN w/HSDPA and HSUPA (see NOTE 3) 7 - E-UTRAN</p> <p>Note 2: 3GPP TS 44.060 [71] specifies the System Information messages which give the information about whether the serving cell supports EGPRS. Note 3: 3GPP TS 25.331 [74] specifies the System Information blocks which give the information about whether the serving cell supports HSDPA or HSUPA.</p> <p>Note 4: The LE866 supports only the value 7 (E-UTRAN) on <AcT></p>
+CEREG=?	<p>Test command returns values supported as a compound value. +CEREG: (list of supported <n>s)</p>
Reference	3GPP TS 27.007

4.1.4.1.10 Select type of address - +CSTA

+CSTA – Select Type of Address		SELINT 2
AT+CSTA=[<type>]	<p>Set command selects the type of number for further dialing commands (D) according to 3GPP specifications.</p> <p>Parameter: <type>: type of address octet in integer format (refer TS 24.008, subclause 10.5.4.7); default 145 when dialing string includes international access code character "+", otherwise 129</p>	
AT+CSTA?	<p>Read command returns the current value of <type> in the format:</p> <p>+CSTA: <type></p>	
AT+CSTA=?	Test command reports the range for the parameter <type>	

4.1.4.1.11 Open Logical Channel - +CCHO

+CCHO – Open Logical Channel		SELINT 2
AT+CCHO=<dfname>	<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: <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>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.	

4.1.4.1.12 Close Logical Channel - +CCHC

+CCHC – Close Logical Channel		SELINT 2
AT+CCHC=<sessionid>	This command asks the ME to close a communication session with the active UICC. The ME shall close the previously opened logical channel.	

	<p>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>
AT+CCHC=?	Test command returns the OK result code.

4.1.4.1.13 Generic UICC Logical Channel Access - +CGLA

+CGLA – Generic UICC Logical Channel Access		SELINT 2
AT+CGLA=<sessionid>,<length>,<command>	<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: <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>	
AT+CGLA=?	Test command returns the OK result code.	

4.1.4.2 Network Service Handling

4.1.4.2.1 Subscriber Number - +CNUM

+CNUM - Subscriber Number		SELINT 2
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: <alpha>,<number>,<type>[<CR><LF> +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: 129 - national numbering scheme 145 - international numbering scheme (contains the character "+").</p>	
AT+CNUM=?	Test command returns the OK result code	
Reference	3GPP TS 27.007	

4.1.4.2.2 Read Operator Names - +COPN

+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:</p> <p><numericn> - string type, operator in numeric format (see +COPS)</p> <p><alphann> - string type, operator in long alphanumeric format (see +COPS)</p> <p>Note: each operator code <numericn> that has an alphanumeric equivalent <alphann> in the ME memory is returned</p>	
AT+COPN=?	Test command returns the OK result code	
Reference	3GPP TS 27.007	

4.1.4.2.3 Network Registration Report - +CREG

+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></p> <p>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: 20px;">+CREG: <stat></p> <p>where <stat></p> <p>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: 20px;">+CREG: <stat>[,<Lac>,<Ci>[,<AcT>]]</p> <p>where: <Lac> - Local Area Code (when <AcT> indicates value 0 to 6) or tracking area code (when <AcT> indicates value 7) <Ci> - Cell Id for the currently registered on cell <AcT>: access technology of the registered network:</p> <table style="margin-left: 40px; border: none;"> <tr><td>0</td><td>GSM</td></tr> <tr><td>2</td><td>UTRAN</td></tr> <tr><td>3</td><td>GSM w/EGPRS</td></tr> <tr><td>4</td><td>UTRAN w/HSDPA</td></tr> <tr><td>5</td><td>UTRAN w/HSUPA</td></tr> <tr><td>6</td><td>UTRAN w/HSDPA and HSUPA</td></tr> <tr><td>7</td><td>E-UTRAN</td></tr> </table> <p>Note: <Lac>, <Ci> and <AcT> are reported only if <mode>=2 and the mobile is registered on some network cell. Note2: The LE866 Supports only value 7 (E-UTRAN) on <AcT></p>		0	GSM	2	UTRAN	3	GSM w/EGPRS	4	UTRAN w/HSDPA	5	UTRAN w/HSUPA	6	UTRAN w/HSDPA and HSUPA	7	E-UTRAN
0	GSM															
2	UTRAN															
3	GSM w/EGPRS															
4	UTRAN w/HSDPA															
5	UTRAN w/HSUPA															
6	UTRAN w/HSDPA and HSUPA															
7	E-UTRAN															
AT+CREG?	<p>Read command reports the <mode> and <stat> parameter values in the format:</p> <p style="padding-left: 20px;">+CREG: <mode>,<stat>[,<Lac>,<Ci>[,<AcT>]]</p> <p>Note: <Lac>, <Ci> and <AcT> 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)</pre>															

+CREG - Network Registration Report		SELINT 2
	at+creg? +CREG: 0,2 OK 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	
Reference	3GPP TS 27.007	

4.1.4.2.4 Operator Selection - +COPS

+COPS - Operator Selection		SELINT 2
AT+COPS= [<mode> [,<format> [,<oper>[,<AcT>]]]]	<p>Set command forces an attempt to select and register the 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 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><AcT> access technology selected:</p> <ul style="list-style-type: none"> 0 GSM 2 UTRAN 7 E-UTRAN <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> <p>Note: The LE866 module supports <AcT> parameter value 7 only.</p>	

+COPS - Operator Selection		SELINT 2
AT+COPS?	<p>Read command returns current value of <mode>,<format>,<oper> and <Act> in format <format>; if no operator is selected, <format>, <oper> and <Act> are omitted</p> <p>+COPS: <mode>[, <format>, <oper>,< Act>]</p> <p>Where <Act> access technology selected: 0 GSM 2 UTRAN 3 GSM w/EGPRS 4 UTRAN w/HSDPA 5 UTRAN w/HSUPA 6 UTRAN w/HSDPA and HSUPA 7 E-UTRAN</p> <p>Note: The LE866 module supports <Act> parameter value 7 only.</p>	
AT+COPS=?	<p>Test command returns a list of quadruplets, each representing an operator present in the network. The quadruplets in the list are separated by commas:</p> <p>+COPS: [list of supported (<stat> ,<oper (in <format>=0)>,, <oper (in <format>=2)>,< Act>)s][,,(list of supported <mode>s), (list of supported<format>s)]</p> <p>where <stat> - operator availability 0 - unknown 1 - available 2 - current 3 - forbidden</p> <p><Act> access technology selected: 0 GSM 2 UTRAN 7 E-UTRAN</p> <p>Note: since with this command a network scan is done, this command may require some seconds before the output is given. Note: The LE866 module supports <Act> parameter value 7 only.</p>	
Reference	3GPP TS 27.007	

4.1.4.2.5 Select Wireless Network - +WS46

+WS46 - PCCA STD-101 Select Wireless Network		SELINT 2
AT+WS46=[<n>]	<p>Set command selects the cellular network (Wireless Data Service, WDS) to operate with the TA (WDS-Side Stack Selection).</p> <p>Parameter: <n> - integer type, it is the WDS-Side Stack to be used by the TA. 28 E-UTRAN only</p> <p>NOTE: <n> parameter setting is stored in NVM and available at next reboot.</p>	
AT+WS46?	<p>Read command reports the currently selected cellular network, in the format:</p> <p>+ WS46: <n></p>	
AT+WS46=?	<p>Test command reports the range for the parameter <n>.</p>	
Reference	3GPP TS 27.007	

4.1.4.2.6 Facility Lock/Unlock - +CLCK

+CLCK - Facility Lock/Unlock		SELINT 2
AT+CLCK= <fac>,<mode> [,<passwd>]	<p>Execution command is used to lock or unlock a ME facility.</p> <p>Parameters:</p> <p><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 "SC" - SIM (PIN request) (device asks SIM password at power-up and when this lock command issued) "FD" - SIM fixed dialing memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>) "PN" - network Personalization</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>Note: when <mode>=2 and command successful, it returns: +CLCK: <status></p> <p>where <status> - the current status of the facility 0 - not active 1 - active</p>	
AT+CLCK=?	Test command reports all the facilities supported by the device.	
Reference	3GPP TS 27.007	

4.1.4.2.7 Change Facility Password - +CPWD

+CPWD - Change Facility Password		SELINT 2
AT+CPWD=<fac>, <oldpwd>,<newpwd>	<p>Execution command changes the password for the facility lock function defined by command Facility Lock +CLCK.</p> <p>Parameters:</p> <p><fac> - facility "SC" - SIM (PIN request) "P2" - SIM PIN2 "PS" - SIM VO</p> <p><oldpwd> - string type, it shall be the same as password specified for the facility from the ME user interface or with command +CPWD.</p> <p><newpwd> - string type, it is the new password</p> <p>Note: parameter <oldpwd> is the old password while <newpwd> is the new one.</p>	
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),("P2",8),("PS",8) OK	
Reference	3GPP TS 27.007	

4.1.4.2.8 Connected line identification presentation - +COLP

+COLP - Connected Line Identification Presentation		SELINT 2
AT+COLP=[<n>]	<p>This command refers to the supplementary service COLP (Connected Line Identification Presentation) that enables a calling subscriber to get the connected line identity (COL) of the called party after setting up a mobile originated call. The command enables or disables the presentation of the COL at the TE. It has no effect on the execution of the supplementary service COLR in the network.</p> <p>Parameters:</p> <p><n> 0 - disables COL indication (factory default) 1 - enables COL indication</p> <p>When enabled (and called subscriber allows),</p> <p>+COLP: <number>,<type></p> <p>intermediate result code is returned from TA to TE before any +CR or ITU-T Recommendation V.250 responses, where</p> <p><number> - string type phone number of format specified by <type> <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: if COL information is needed, it is recommended to set DIALMODE to 1 (see AT#DIALMODE command), in order to have network information available for display before returning to command mode.</p>	
AT+COLP?	<p>Read command gives the status of <n>, and also triggers an interrogation of the provision status of the COLP service according 3GPP TS 22.081 (given in <m>) in the format:</p> <p>+COLP: <n>,<m></p> <p>where:</p> <p><n> 0 - COL presentation disabled 1 - COL presentation enabled</p> <p><m> - status of the COLP service on the network 0 - COLP not provisioned 1 - COLP provisioned 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+COLP=?	<p>Test command reports the range for the parameter <n></p>	

4.1.4.2.9 Connected line identification restriction status - +COLR

+COLR - Connected Line Identification Restriction status		SELINT 2
AT+COLR	<p>This command refers to the supplementary service COLR (Connected Line Identification Restriction) that enables a called subscriber to restrict the possibility of presentation of connected line identity (COL) to the calling party after receiving a mobile terminated call. The command displays the status of the COL presentation in the network. It has no effect on the execution of the supplementary service COLR in the network.</p> <p>Execution command triggers an interrogation of the activation status of the COLR service according 3GPP TS 22.081 (given in <m>):</p> <p>+COLR: <m></p> <p>where:</p> <p><m>: integer type (parameter shows the subscriber COLR service status in the network)</p> <ul style="list-style-type: none"> 0 COLR not provisioned 1 COLR provisioned 2 unknown (e.g. no network, etc.) <p>Activation, deactivation, registration and erasure of the supplementary service COLR are not applicable.</p>	
AT+COLR=?	Test command tests for command existence	

4.1.4.2.10 Call Forwarding Number And Conditions - +CCFC

+CCFC - Call Forwarding Number And Condition	SELINT 2
<p>AT+CCFC= <reason>, <cmd> [, <number>] [, <type>] [, <class>] [, <time>]]</p>	<p>Execution command controls the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported.</p> <p>Parameters:</p> <p><reason> 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> <p><cmd> 0 - disable 1 - enable 2 - query status 3 - registration 4 - erasure</p> <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 : 129 - national numbering scheme 145 - international numbering scheme (contains the character "+")</p> <p><class> - sum of integers each representing a class of information which the command refers to; default 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><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:</p> <p><status> - current status of the network service 0 - not active 1 - active</p> <p><classn> - same as <class></p> <p><time> - it is returned only when <reason>=2 ("no reply") and <cmd>=2.</p> <p>The other parameters are as seen before.</p>
<p>AT+CCFC=?</p>	<p>Test command reports supported values for the parameter <reason>.</p>
<p>Reference</p>	<p>3GPP TS 27.007</p>
<p>Note</p>	<p>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>.</p>

4.1.4.2.11 Call deflection - +CTFR

+CTFR – Call deflection		SELINT 2
AT+CTFR=<number>[,<type>]	<p>Set command is used to request a service that causes an incoming alerting call to be forwarded to a specified number. This is based on the supplementary service CD (Call Deflection; refer 3GPP TS 22.072).</p> <p>Parameters:</p> <p><number>: string type phone number of format specified by <type></p> <p><type>: type of address octet in integer format; default 145 when dialing string includes international access code character "+", otherwise 129</p> <p>Note: Call Deflection is only applicable to an incoming voice call</p>	
AT+CTFR=?	Test command tests for command existence	

4.1.4.2.12 Advice Of Charge - +CAOC

+CAOC - Advice Of Charge		SELINT 2
AT+CAOC=<mode>	<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>	
AT+CAOC?	<p>Read command reports the value of parameter <mode> in the format:</p> <p>+CAOC: <mode></p>	
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.	

4.1.4.2.13 Preferred Operator List - +CPOL

+CPOL - Preferred Operator List		SELINT 2
AT+CPOL= [<index>][,<format> [,<oper>[,<GSM_Act> <GSM_Compact_Act> <UTRAN_Act,<EUTRAN_Act>]]]	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> 0 – long format alphanumeric <oper> 2 - numeric <oper> <oper> - string type <GSM_Act> - GSM access technology 0 – access technology not selected 1 – access technology selected <GSM_Compact_Act> - GSM compact access technology 0 – access technology not selected 1 – access technology selected <UTRAN_Act> - UTRAN access technology 0 – access technology not selected 1 – access technology selected <E-UTRAN_Act> - E-UTRAN access technology: 0 access technology not selected 1 access technology selected 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. Note: The LE866 module supports only E-UTRAN . <GSM_Act> , <GSM_Compact_Act> , <UTRAN_Act> have to be set to 0.	
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	

4.1.4.2.14 Selection of preferred PLMN list - +CPLS

+CPLS – Selection of preferred PLMN list		SELINT 2
AT+CPLS=<list>	<p>The execution command is used to select a list of preferred PLMNs in the SIM/USIM.</p> <p>Parameters: <list>:</p> <ul style="list-style-type: none"> 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 <p>Note: the value set by command is directly stored in NVM and doesn't depend on the specific CMUX instance.</p>	
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.	

4.1.4.3 Mobile Equipment Control

4.1.4.3.1 Phone Activity Status - +CPAS

+CPAS - Phone Activity Status		SELINT 2
AT+CPAS	<p>Execution command reports the device status in the form:</p> <p>+CPAS: <pas></p> <p>Where: <pas> - phone activity status</p> <ul style="list-style-type: none"> 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) 	
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 the called phone has answered to your call OK ATH OK </pre>	
Reference	3GPP TS 27.007	

4.1.4.3.2 Set Phone functionality - +CFUN

+CFUN - Set Phone Functionality	SELINT 2
AT+CFUN= [<fun>[,<rst>]]	<p>Set command selects the level of functionality in the ME.</p> <p>Parameters:</p> <p><fun> - is the power saving function mode</p> <ul style="list-style-type: none"> 0 - minimum functionality, NON-CYCLIC SLEEP mode. 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) 4 - disable both TX and RX 5 - mobile full functionality with power saving enabled <p><rst> - reset flag</p> <ul style="list-style-type: none"> 0 - do not reset the ME before setting it to <fun> functionality level 1 - reset the device. The device is fully functional after the reset. This value is available only for <fun> = 1 <p>Note: issuing AT+CFUN=4[,0] actually causes the module to perform either a network deregistration.</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 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 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 incomes during the power save, then the module will wake up and proceed normally with the unsolicited incoming call code</p> <p>Note: when the module detects USB port is connected, then the power saving mode is not allowed.</p>
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

4.1.4.3.3 Enter PIN - +CPIN

+CPIN - Enter PIN		SELINT 2
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.). 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> 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>	
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=?	<p>Test command returns OK result code.</p>	
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>	
Reference	3GPP TS 27.007	

4.1.4.3.4 Signal Quality - +CSQ

+CSQ - Signal Quality		SELINT 2
AT+CSQ	<p>Execution command reports received signal quality indicators in the form: +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>	
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	

4.1.4.3.5 Extended Signal Quality - +CESQ

+CESQ – Extended Signal Quality		SELINT 2
AT+CESQ	<p>Execution command reports received signal quality parameters in the form: +CESQ: <rxlev>,<ber>,<rscp>,<ecno>,<rsrq>,<rsrp> Where <rxlev > - received received signal strength level 99 - not known or not detectable</p> <p><ber> - bit error rate (in percent) 99 - not known or not detectable <rscp> - received signal code power 255 - not known or not detectable</p> <p><ecno> - ratio of the received energy per PN chip to the total received power spectral density 255 - not known or not detectable <rsrq> - reference signal received quality (see 3GPP TS 36.133 subclause 9.1.7). 0 - rsrq < -19.5 dB 1 - -19.5 dB £ rsrq < -19 dB 2-19 dB £ rsrq < -18.5 dB ... 32 - -4 dB £ rsrq < -3.5 dB 33 - -3.5 dB £ rsrq < -3 dB 34 - -3 dB £ rsrq 255 - not known or not detectable</p> <p><rsrp> - type, reference signal received power (see 3GPP TS 36.133 subclause 9.1.4). 0 - rsrp < -140 dBm 1 - -140 dBm £ rsrp < -139 dBm 2 - -139 dBm £ rsrp < -138 dBm ... 95 - -46 dBm £ rsrp < -45 dBm 96 - -45 dBm £ rsrp < -44 dBm 97 - -44 dBm £ rsrp 255 not known or not detectable</p>	
AT+CESQ=?	Test command returns the supported range of values of the parameters <rxlev>,<ber>,<rscp>,<ecno>,<rsrq>,<rsrp>.	
Reference	3GPP TS 27.007	

4.1.4.3.6 Indicator Control - +CIND

+CIND - Indicator Control		SELINT 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) automatically sent by the ME to the application, whenever the value of the associated indicator changes; the value can be directly queried with +CIND? 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>	

+CIND - Indicator Control		SELINT 2
AT+CIND?	Read command returns the current value of ME indicators, in the format: +CIND: <ind>[,<ind>[,...]] Note: the order of the values <ind>s is the same as that in which the associated indicators appear from test command AT+CIND=?	
AT+CIND=?	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))][,...])] where: <descr> - indicator names as follows (along with their <ind> ranges) "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 1 - registered to other network "smsfull" - a short message memory storage in the MT has become full (1), or memory locations are available (0) <ind> - short message memory storage indicator range 0 - memory locations are available 1 - a short message memory storage in the MT has become full. "rsqi" - received signal (field) strength <ind> - received signal strength level indicator range 0 - signal strength ≤ (-112) dBm 1..4 - signal strength in (-97) dBm..(-66) dBm (15 dBm steps) 5 - signal strength ≥ (-51) dBm 99 - not measurable	
Example	<i>Next command causes all the indicators to be registered</i> AT+CIND=1,1,1,1,1,1,1,1,1,1 <i>Next command causes all the indicators to be de-registered</i> AT+CIND=0,0,0,0,0,0,0,0,0,0 <i>Next command to query the current value of all indicators</i> AT+CIND? CIND: 4,0,1,0,0,0,0,0,2 OK	
Note	See command +CMER	
Reference	3GPP TS 27.007	

4.1.4.3.7 Mobile Equipment Event Reporting - +CMER

+CMER - Mobile Equipment Event Reporting		SELINT 2
AT+CMER= [<mode> [,<keyp> [,<disp> [,<ind> [,<bfr>]]]]	<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 - buffer +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 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> <p>0 - no display event reporting</p> <p><ind> - indicator event reporting</p> <p>0 - no indicator event reporting</p> <p>2 - indicator event reporting</p> <p><bfr> - TA buffer clearing</p> <p>0 - TA buffer of unsolicited result codes is cleared when <mode> 1..3 is entered</p> <p>1 - TA buffer of unsolicited result codes is flushed to the TE when <mode> 1...3 is entered (OK response shall be given before flushing the codes)</p> <p>Note: After AT+CMER has been switched on with e.g. AT+CMER=2,0,0,2 command (i.e. <bfr> is 0), URCs for all registered indicators will be issued only first time, if previous <mode> was 0, for backward compatibility. Values shown by the indicators will be current indicators values, not buffered ones. Subsequent AT+CMER commands with <mode> different from 0 and <bfr> equal to 0 will not flush the codes, even if <mode> was set again to 0 before. To flush the codes, <bfr> must be set to 1.</p> <p>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	

4.1.4.3.8 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?	<p>Read command reports the currently selected <mode> and <auxmode> in the format:</p> <p>+CSDF: <mode>,<auxmode></p>	
AT+CSDF=?	<p>Test command reports the supported range of values for parameters <mode> and <auxmode></p>	

4.1.4.3.9 Setting time format - +CSTF

+CSTF – setting time format		SELINT 2
AT+CSTF=[<mode>]	<p>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.</p> <p>Parameters: <mode>: 1 HH:MM (24 hour clock; default) 2 HH:MM a.m./p.m.</p>	
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>	

4.1.4.3.10 Automatic Time Zone update - +CTZU

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

4.1.4.3.11 Restricted SIM Access - +CRSM

+CRSM - Restricted SIM Access		SELINT 2
AT+CRSM= <command> [,<fileid> [,<P1>,<P2>,<P3> [,<data>]]]	<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</p> <ul style="list-style-type: none"> 176 - READ BINARY 178 - READ RECORD 192 - GET RESPONSE 214 - UPDATE BINARY 220 - UPDATE RECORD 242 - STATUS <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</p> <p>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> <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: 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	

4.1.4.3.12 Accumulated Call Meter - +CACM

+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> <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	

4.1.4.3.13 Accumulated Call Meter Maximum - +CAMM

+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: <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>	
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: three bytes of the ACMmax value in hexadecimal format (e.g. "00001E" indicates decimal value 30)</p>	
AT+CAMM=?	Test command returns the OK result code	
Reference	3GPP TS 27.007	

4.1.4.3.14 Price per Unit and Currency Table - +CPUC

+CPUC - Price Per Unit And Currency Table		SELINT 2
AT+CPUC= <currency>, <ppu>[,<pwd>]	<p>Set command sets the values of Advice of Charge related Price per Unit and Currency Table stored in SIM (PUCT). The PUCT information can be used to convert the home units (as used in commands +CAOC, +CACM and +CAMM) into currency units.</p> <p>Parameters:</p> <p><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.</p> <p><ppu> - price per unit, string type (dot is used as decimal separator) e.g. "1989.27"</p> <p><pwd> - SIM PIN2; if PIN2 has been already input once after startup, it is required no more</p>	
AT+CPUC?	<p>Read command reports the current values of <currency> and <ppu> parameters in the format:</p> <p>+CPUC : <currency>,<ppu></p>	
AT+CPUC=?	Test command returns the OK result code	
Reference	3GPP TS 27.007	

4.1.4.3.15 Set voice mail number - +CSVM

+CSVM – Set Voice Mail Number		SELINT 2
AT+CSVM=<mode>[,<number>[,<type>]]	<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></p> <ul style="list-style-type: none"> 0 – disable the voice mail number 1 – enable the voice mail number (factory default) <p><number> - string type phone number of format specified by <type></p> <p><type> - type of address octet in integer format</p> <ul style="list-style-type: none"> 129 - unknown type of number and ISDN/Telephony numbering plan 145 - international type of number and ISDN/Telephony numbering plan (contains the character "+") <p>Note: Set command is dummy. It only checks for parameters values validity; it does not send any actual write request to SIM to update voice mail number, nor sends any request to network to enable/disable voice mail..</p>	
AT+CSVM?	<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>	
AT+CSVM=?	Test command reports the range for the parameters <mode> and <type> .	

4.1.4.3.16 Available AT Commands - +CLAC

+CLAC - Available AT Commands		SELINT 2
AT+CLAC	<p>Execution command causes the ME to return the AT commands that are available for the user, in the following format:</p> <p><AT cmd1>[<CR><LF><AT cmd2>[...]]</p> <p>where:</p> <p><AT cmdn> - defines the AT command including the prefix AT</p>	
AT+CLAC=?	Test command returns the OK result code	
Reference	3GPP TS 27.007	

4.1.4.3.17 Select Phonebook Memory Storage - +CPBS

+CPBS - Select Phonebook Memory Storage		SELINT 2
AT+CPBS=<storage>[,<password>]	<p>Set command selects phonebook memory storage <storage>, which will be used by other phonebook commands.</p> <p>Parameter:</p> <p><storage></p> <ul style="list-style-type: none"> "SM" - SIM phonebook "FD" - SIM fixed dialing-phonebook (FDN)(only phase 2/2+ SIM) "LD" - SIM last-dialing-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). "DC" - ME last-dialing-phonebook (+CPBF is not applicable for this storage). "ME" - ME phonebook "EN" - SIM emergency numbers phonebook (+CPBW and +CPBF not applicable for this storage). "ON" - SIM own numbers (MSISDNs) phonebook (+CPBF is not applicable for this storage). "SD" - SIM Service Dialling Numbers (SDN) phonebook (+CPBW is not applicable for this storage). <p><password>: string type value representing the PIN2-code required when selecting PIN2-code locked <storage> above "FD"</p> <p>Note: If "SM" is the currently selected phonebook, selecting "FD" phonebook with "AT+CPBS="FD" command simply selects the FDN as the phonebook upon which all subsequent +CPBW, +CPBF and +CPBR commands act; the command does not deactivate "SM" phonebook, and does not activate FDN</p> <p>Note: if <password> parameter is given, PIN2 will be verified, even if it is not required, i.e. it has already been inserted and verified during current session</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>	

	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
AT+CBPS=?	Test command returns the supported range of values for the parameters <storage> .

4.1.4.3.18 Read Phonebook Entries - +CPBR

+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> <p>The response format is: [+CPBR: <index1>,<number>,<type>,<text>[,<hidden>][,<group>][,<adnumber>][,<adtype>][,<secondtext>][,<email>]] [<CR><LF> +CPBR: <index2>,<number>,<type>,<text>[,<hidden>][,<group>][,<adnumber>][,<adtype>][,<secondtext>][,<email>]] [...]]]</p> <p>where: <indexn> - 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. <group>: string type field of maximum length <glength> indicating a group the entry may belong to; character set as specified by command Select TE Character Set +CSCS <adnumber>: additional number ; string type phone number of format <adtype> <adtype>: type of address octet in integer format <secondtext>: string type field of maximum length <slength> indicating a second text field associated with the number; character set as specified by command Select TE Character Set +CSCS <email>: string type field of maximum length <elength> indicating an email address; character set as specified by command Select TE Character Set +CSCS <hidden>: indicates if the entry is hidden or not 0: phonebook entry not hidden 1: phonebook entry hidden</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=?	Test command returns the supported range of values for parameters <indexn> and the maximum lengths of <number> , <text> , <group> , <secondtext> and <email> fields fields, in the format:	

+CPBR - Read Phonebook Entries		SELINT 2
	<p>+CPBR: (<minIndex> - <maxIndex>),<nlength>,<tlength>,<glength>,<slength>,<elength></p> <p>where:</p> <p><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 <glength>: integer type value indicating the maximum length of field <group> <slength>: integer type value indicating the maximum length of field <secondtext> <elength>: integer type value indicating the maximum length of field <email></p> <p>Note: the value of <nlength> could vary, depending on the availability of Extension service, 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 <p>if "MB" memory storage has been selected (see +CPBS) and the SIM supports the Extension6 service</p>	
Note	Remember to select the PB storage with +CPBS command before issuing PB commands.	
Reference	3GPP TS 27.007	

4.1.4.3.19 Find Phonebook Entries - +CPBF

+CPBF - Find Phonebook Entries		SELINT 2
<p>AT+CPBF= <findtext></p>	<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:</p> <p><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>[,<hidden>][,<group>][,<adnumber>][,<adtype>][,<secondtext>][,<email>]<CR><LF> +CPBF: <index2>,<number>,<type>,<text>[,<hidden>][,<group>][,<adnumber>][,<adtype>][,<secondtext>][,<email>][...]]]</p> <p>where:</p> <p><indexn> - 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. <group>: string type field of maximum length <glength> indicating a group the entry may belong to; character set as specified by command Select TE Character Set +CSCS <adnumber>: additional number ; string type phone number of format <adtype></p>	

+CPBF - Find Phonebook Entries		SELINT 2
	<p><adtype>: type of address octet in integer format <secondtext>: string type field of maximum length <slength> indicating a second text field associated with the number; character set as specified by command Select TE Character Set +CSCS <email>: string type field of maximum length <elength> indicating an email address; character set as specified by command Select TE Character Set +CSCS <hidden>: indicates if the entry is hidden or not 0: phonebook entry not hidden 1: phonebook entry hidden</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>,<glength>,<slength>,<elength></p> <p>where:</p> <p><nlength> - maximum length of field <number>, integer type <tlength> - maximum length of field <text>, integer type <glength>: integer type value indicating the maximum length of field <group> <slength>: integer type value indicating the maximum length of field <secondtext> <elength>: integer type value indicating the maximum length of field <email></p> <p>Note: the value of <nlength> could vary, depending on the availability of Extension service, 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 <p>if "MB" memory storage has been selected (see +CPBS) and the SIM supports the Extension6 service</p>	
Note	Remember to select the PB storage with +CPBF command before issuing PB commands.	
Reference	3GPP TS 27.007	

4.1.4.3.20 Write Phonebook Entry - +CPBW

+CPBW - Write Phonebook Entry		SELINT 2
AT+CPBW=[<index> [,<number> [,<type> [,<text>[,<group>[,<adnumber>[,<adtype>[,<secondtext>[,<email>[,<hidden>]]]]]]]]]	<p>Execution command writes phonebook entry in location number <index> in the current phonebook memory storage selected with +CPBS.</p> <p>Parameters:</p> <p><index> - integer type, value in the range of location numbers of the currently selected phonebook memory storage (see +CPBS).</p> <p><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 "+")</p> <p><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><group>: string type field of maximum length <glength> indicating a group the entry may belong to; character set as specified by command Select TE Character Set +CSCS</p> <p><adnumber>: additional number ; string type phone number of format <adtype></p> <p><adtype>: type of address octet in integer format</p> <p><secondtext>: string type field of maximum length <slength> indicating a second text field associated with the number; character set as specified by command Select TE Character Set +CSCS</p> <p><email>: string type field of maximum length <elength> indicating an email address; character set as specified by command Select TE Character Set +CSCS</p> <p><hidden>: indicates if the entry is hidden or not</p> <p>0: phonebook entry not hidden</p> <p>1: phonebook entry hidden</p> <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> <p>Note: before defining <group> string, it is recommended to check, with #CPBGR command, the predefined group names, that could be already stored in USIM in Grouping information Alpha String (GAS) file. If all records in such file are already occupied, +CPBW command will return ERROR when trying to use a new group name that is not in the predefined GAS names. To define a new custom group string, it is necessary to overwrite with it one of the old predefined strings, using #CPBGW command.</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>,<glength>,<slength>,<elength></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><glength>: integer type value indicating the maximum length of field <group></p> <p><slength>: integer type value indicating the maximum length of field <secondtext></p> <p><elength>: integer type value indicating the maximum length of field <email></p>

+CPBW - Write Phonebook Entry	SELINT 2
	<p>Note: the value of <nlength> could vary, depending on the availability of Extension service, 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 <p>if “MB” memory storage has been selected (see +CPBS) and the SIM supports the Extension6 service</p>
Note	Remember to select the PB storage with +CPBW command before issuing PB commands.
Reference	3GPP TS 27.007

4.1.4.3.21 Generic SIM access - +CSIM

+CSIM – Generic SIM access	SELINT 2
AT+CSIM=<lock>	<p>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.</p> <p>Parameters: <lock>=1 locking of the interface <lock>=0 unlocking of the interface</p> <p>In case that TE application does not use the unlock command in a certain timeout value, ME releases the locking.</p>
AT+CSIM=<length>,<command>	<p>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.</p> <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): 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>)</p>
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?</p>

+CSIM – Generic SIM access	SELINT 2
	<pre> +ENASIM: 0 OK STATUS AT+CSIM=10,A0F2000016 +CSIM:48,"000002A87F2002000000000000099300220800838A838A9000" OK SELECT EF 6F07 AT+CSIM=14,A0A40000026F07 +CSIM: 4,"9F0F" OK GET RESPONSE AT+CSIM=10,A0C000000F +CSIM: 34,"000000096F0704001A001A010200009000" OK SELECT EF 6F30 AT+CSIM=14,A0A40000026F30 +CSIM: 4,"9F0F" OK READ BINARY AT+CSIM=10,A0B00000FC +CSIM:508,"FFFFFF1300831300901300541300301300651300381300801 301801300011311091301301300981300771300591300431300811300951 30140130023130016330420130041FFFFFFFFFFFFFF21436542F41922F28 822F201FFF FFF FFF FFF FFF FFF FFFFFFFFFFFFFFFF9000" OK 3G UICC (3G TS 31.101): AT#ENASIM? +ENASIM: 1 OK STATUS AT+CSIM=10,A0F2000016 +CME ERROR: operation not supported STATUS AT+CSIM=10,80F2000016 +CSIM:48,"623F8202782183027FF08410A0000000871002FFFFFFFF9000" OK SELECT EF 6F07 No Data Returned </pre>

+CSIM – Generic SIM access	SELINT 2
	<pre> AT+CSIM=18,00A4080C047F206F07 +CSIM: 4,"9000" OK SELECT EF 6F30 Return FCP Template AT+CSIM=18,00A40804047F206F30 +CSIM: 4,"6120" OK GET RESPONSE AT+CSIM=10,00C0000020 +CSIM:68,"621E8202412183026F30A506C00140DE01008A01058B036F0 6048002006988009000" OK READ BINARY AT+CSIM=10,00B0000069 +CSIM:214,"02F81012F47022F83082F63082F64022F60192F31412F6031 3006132F40102F20162 F21032F23002F60182F41012F91042F41902F46102F40242F22092F5207 2F22062F03062F86032F0 1032F11042F01032F80217F60127F42027F43027F44027F24337F62037F 0209000" OK Unlock SIM interface 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 LTE services will be automatically deregistered to avoid the TE commands alter the LTE application. They will be automatically reconditioned after the unlocking of the SIM-ME interface. After the unlocking of the SIM-ME interface if PIN is required it will be necessary to enter it another time.</p>

4.1.4.3.22 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:</p> <p><time> - current time as quoted string in the format: "yy/MM/dd,hh:mm:ss±zz"</p> <p>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)</p> <p>Trying to enter an out of range value will raise an error</p>

+CCLK - Clock Management		SELINT 2
	<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 'extended' format has been enabled (see #NITZ).</p>	
AT+CCLK=?	<p>Test command returns the OK result code.</p>	
Example	<pre>AT+CCLK="02/09/07,22:30:00+00" OK AT+CCLK? +CCLK: "02/09/07,22:30:25" OK</pre>	

4.1.4.4 Mobile Equipment Errors

4.1.4.4.1 Report Mobile Equipment Error - +CMEE

+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	

4.1.4.5 Commands for Packet Domain

4.1.4.5.1 GPRS Attach Or Detach - +CGATT

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

4.1.4.5.2 Packet Domain Event Reporting - +CGEREP

+CGEREP - Packet Domain Event Reporting		SELINT 2
AT+CGEREP= [<mode>[,<bfr>]]	<p>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.</p> <p>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 oldest one can be discarded. No codes are forwarded to the TE. 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. <bfr> - controls the effect on buffered codes when <mode> 1 or 2 is entered: 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> <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 PDN connection 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>]</p>	

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

4.1.4.5.3 Network Registration Status - +CGREG

+CGREG - GPRS Network Registration Status		SELINT 2
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>[,<AcT>,<rac>]]</p>	

+CGREG - GPRS Network Registration Status		SELINT 2														
	<p>where:</p> <p><stat> - registration status (see above for values)</p> <p><lac> - location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)</p> <p><ci> - cell ID in hexadecimal format.</p> <p><Act>: access technology of the registered network:</p> <table border="0"> <tr><td>0</td><td>GSM</td></tr> <tr><td>2</td><td>UTRAN</td></tr> <tr><td>3</td><td>GSM w/EGPRS</td></tr> <tr><td>4</td><td>UTRAN w/HSDPA</td></tr> <tr><td>5</td><td>UTRAN w/HSUPA</td></tr> <tr><td>6</td><td>UTRAN w/HSDPA and HSUPA</td></tr> <tr><td>7</td><td>E-UTRAN</td></tr> </table> <p><rac>: string type; one byte routing area code in hexadecimal format</p> <p>Note: <lac>, <Ci>, <Act> and <rac> are reported only if <mode>=2 and the mobile is registered on some network cell.</p> <p>Note: The LE866 supports only the value 7 (E-UTRAN) on <Act></p>	0	GSM	2	UTRAN	3	GSM w/EGPRS	4	UTRAN w/HSDPA	5	UTRAN w/HSUPA	6	UTRAN w/HSDPA and HSUPA	7	E-UTRAN	
0	GSM															
2	UTRAN															
3	GSM w/EGPRS															
4	UTRAN w/HSDPA															
5	UTRAN w/HSUPA															
6	UTRAN w/HSDPA and HSUPA															
7	E-UTRAN															
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>[,<Act>,<rac>]]</p> <p>Note: <lac>, <Ci>, <Act> and <rac> 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															

4.1.4.5.4 Define PDN connection- +CGDCONT

+CGDCONT - Define PDN connection		SELINT 2
AT+CGDCONT= [<cid> [,<PDP_type> [,<APN>]]]	<p>Set command specifies PDN connection parameter values for a PDN connection identified by the (local) context identification parameter, <cid></p> <p>Parameters:</p> <p><cid> - (PDN connection Identifier) numeric parameter which specifies a particular PDN connection 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>"IPV4V6" - Virtual <PDP_type> introduced to handle dual IP stack UE capability</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>Note: LE866_SV1 cannot specify <cid> as 1 or 2</p>	
AT+CGDCONT?	<p>Read command returns the current settings for each defined context in the format:</p> <p>+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>[<CR><LF>+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>[...]</p>	
AT+CGDCONT=?	Test command returns values supported as a compound value	
Reference	3GPP TS 27.007	

4.1.4.5.5 Define EPS Quality Of Service - +CGEQOS

+CGEQOS - Define EPS Quality Of Service	
AT+CGEQOS= [<cid>[,<QCI> [,<DL_GBR> <UL_GBR> [,<DL_MBR>,<UL_M BR]]]]	<p>Possible Response(s): +CME ERROR: <err> The set command allows the TE to specify the EPS Quality of Service parameters <cid>, <QCI>, [<DL_GBR> and <UL_GBR>] and [<DL_MBR> and <UL_MBR>] for a PDN connection or Traffic Flows. Refer subclause 9.2 for <err> values. A special form of the set command, +CGEQOS= <cid> causes the values for context number <cid> to become undefined. <cid>: a numeric parameter which specifies a particular EPS Traffic Flows definition in EPS <QCI>: a numeric parameter that specifies a class of EPS QoS. (see 3GPP TS 23.203 [85]) 0 QCI is selected by network [1 – 4] value range for guranteed bit rate Traffic Flows [5 – 9] value range for non-guaranteed bit rate Traffic Flows <DL_GBR>: a numeric parameter which indicates DL GBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83]) <UL_GBR>: a numeric parameter which indicates UL GBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83]) <DL_MBR>: a numeric parameter which indicates DL MBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83]) <UL_MBR>: a numeric parameter which indicates UL MBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83])</p>
+CGEQOS?	<p>The read command returns the current settings for each defined QoS. +CGEQOS: <cid>, <QCI>, [<DL_GBR>,<UL_GBR>], [<DL_MBR>,<UL_MBR>] [<CR>>LF]+CGEQOS: <cid>, <QCI>, [<DL_GBR>,<UL_GBR>], [<DL_MBR>,<UL_MBR>] [...]</p>
+CGEQOS=?	<p>The test command returns the ranges of the supported parameters. +CGEQOS: (range of supported <cid>s) ,(list of supported <QCI>s) ,(list of supported <DL_GBR>s) ,(list of supported <UL_GBR>s) ,(list of supported <DL_MBR>s) ,(list of supported <UL_MBR>s)</p>

4.1.4.5.6 EPS Quality Of Service Read Dynamic Parameters - +CGEQOSRDP

+CGEQOSRDP - EPS Quality Of Service Read Dynamic Parameters	
AT+CGEQOSRDP=[<cid>]	<p>Possible Response(s): +CGEQOSRDP: <cid>, <QCI>, [<DL_GBR>,<UL_GBR>], [<DL_MBR>,<UL_MBR>] [<CR>>LF]+CGEQOSRDP: <cid>, <QCI>, [<DL_GBR>,<UL_GBR>], [<DL_MBR>,<UL_MBR>] [...]]</p> <p>Description: The execution command returns the Quality of Service parameters <QCI>, [<DL_GBR> and <UL_GBR>] and [<DL_MBR> and <UL_MBR>]of the established PDN connection associated to the provided context identifier <cid>. If the context cannot be found an ERROR response is returned. If the parameter <cid> is omitted, the Quality of Service parameters for all established PDN connections are returned.</p> <p>Defined values: <cid>: a numeric parameter which specifies a particular Traffic Flows definition in EPS and a PDN connection definition in UMTS/GPRS. <QCI>: a numeric parameter that specifies a class of EPS QoS. (see 3GPP TS 23.203 [85])0 QCI is selected by network [1 – 4] value range for guaranteed bit rate Traffic Flows [5 – 9] value range for non-guaranteed bit rate Traffic Flows. <DL_GBR>: a numeric parameter, which indicates DL GBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83]) <UL_GBR>: a numeric parameter which indicates UL GBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83]) <DL_MBR>: a numeric parameter which indicates DL MBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83]) <UL_MBR>: a numeric parameter which indicates UL MBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83])</p>
AT+CGEQOSRDP=?	<p>+CGEQOSRDP: (list of <cid>s associated with active contexts) The test command returns a list of <cid>s associated with active contexts. Parameters of both network and MT/TA initiated PDN connections will be returned.</p>

4.1.4.5.7 Show PDP Address - +CGPADDR

+CGPADDR - Show PDP Address		SELINT 2
AT+CGPADDR= [<cid>,<cid> [,...]]]	<p>Execution command returns a list of PDN 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 PDN connection 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 PDN connection 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+CGPADDR=1 +CGPADDR: 1,"xxx.yyy.zzz.www" OK AT+CGPADDR=? +CGPADDR: (1) OK</pre>	
Reference	3GPP TS 27.007	

4.1.4.5.8 PDN Connection activate or deactivate - +CGACT

+CGACT - PDN Connection Activate Or Deactivate		SELINT 2
AT+CGACT= [<state>,<cid> [,<cid>[,...]]]	<p>Execution command is used to activate or deactivate the specified PDN Connection(s)</p> <p>Parameters:</p> <p><state> - indicates the state of PDN Connection activation 0 - deactivated 1 - activated</p> <p><cid> - a numeric parameter which specifies a particular PDN Connection definition (see +CGDCONT command)</p> <p>Note: only three <cid>s can be activated at the same time. Note: if no <cid>s are specified, the activation form of the command activates the first three defined contexts. The deactivation form deactivates all the active contexts.</p>	
AT+CGACT?	<p>Read command returns the current activation state for all the defined PDN Connections in the format:</p> <p>+CGACT: <cid>,<state>[<CR><LF>+CGACT: <cid>,<state>[...]]</p>	
AT+CGACT =?	<p>Test command reports information on the supported PDN Connection activation states parameters in the format:</p> <p>+CGACT: (0,1)</p>	
Example	<pre>AT+CGACT=1,1 OK AT+CGACT? +CGACT: 1,1 OK</pre>	

+CGACT - PDN Connection Activate Or Deactivate		SELINT 2
Reference	3GPP TS 27.007	

4.1.4.5.9 Modify PDN Connection - +CGCMOD

+CGCMOD – Modify PDN Connection		SELINT 2
AT+CGCMOD=[<cid1>[,<cid2>[,...,<cidN>]]]	<p>The execution command is used to modify the specified PDN Connection(s) with respect to QoS profiles.</p> <p>If no <cid<i>i</i>> is specified the command modifies all active contexts.</p> <p>Parameters: <cid<i>i</i>>: a numeric parameter which specifies a particular PDN Connection</p>	
AT+CGCMOD=?	Test command returns a list of <cid> s associated with active contexts.	

4.1.4.6 Commands for Battery Charger

4.1.4.6.1 Battery Charge - +CBC

+ CBC - Battery Charge		SELINT 2
AT+CBC	<p>Execution command returns the current Battery Charge status in the format:</p> <p>+CBC: <bc>,<bcl></p> <p>where:</p> <p><bc> - 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 <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: <bcl> indicates battery charge level only if battery is connected and charger is not connected</p> <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.</p>	
AT+CBC=?	<p>Test command returns parameter values supported as a compound value.</p> <p>+CBC: (0-3),(0-100)</p>	
Example	<p>AT+CBC +CBC: 0,75 OK</p>	

4.1.5 3GPP TS 27.005 AT Commands for SMS and CBS

4.1.5.1 General Configuration

4.1.5.1.1 Select Message Service - +CSMS

+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 – 3GPP TS 23.040 and 3GPP TS 23.041. The syntax of SMS AT commands is compatible with 3GPP TS 27.005 (factory default) 1 – 3GPP TS 23.040 and 3GPP TS 23.041. The syntax of SMS AT commands is compatible with 3GPP TS 27.005. The requirement of <service> setting 1 is mentioned under corresponding command descriptions</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	3GPP TS 27.005; 3GPP TS 23.040; 3GPP TS 23.041	

4.1.5.1.2 Preferred Message Storage - +CPMS

+CPMS - Preferred Message Storage	SELINT 2
<p>AT+CPMS= <memr> [,<memw> [,<mems>]]</p>	<p>Set command selects memory storages <memr>, <memw> and <mems> to be used for reading, writing, sending and storing SMs.</p> <p>Parameters:</p> <p><memr> - memory from which messages are read and deleted "SM" - SIM SMS memory storage (default) "ME" – NVM SMS storage</p> <p><memw> - memory to which writing and sending operations are made "SM" - SIM SMS memory storage (default) "ME" – NVM SMS storage</p> <p><mems> - memory to which received SMs are preferred to be stored "SM" - SIM SMS memory storage (default) "ME" – NVM SMS 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: when <memr> is set to a memory, also <memw> and <mems> are set to the same memory.</p> <p>Note: the set memory is automatically saved in NVM.</p>
<p>AT+CPMS?</p>	<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>
<p>AT+CPMS=?</p>	<p>Test command reports the supported values for parameters <memr>, <memw> and <mems></p>
<p>Example</p>	<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> <p>AT+CPMS="ME" +CPMS: "ME",15,100,"ME",15,100,"ME",15,100</p> <p>OK <i>(change memory to ME where there are 15 SMS positions occupied)</i></p>
<p>Reference</p>	<p>3GPP TS 27.005</p>

4.1.5.1.3 Message Format - +CMGF

+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 3GPP TS 23.040 and 3GPP TS 23.041 (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	3GPP TS 27.005	

4.1.5.2 Message Configuration

4.1.5.2.1 Service Center Address - +CSCA

+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	3GPP TS 27.005	

4.1.5.2.2 Set Text Mode Parameters - +CSMP

+CSMP - Set Text Mode Parameters	SELINT 2
<p>AT+CSMP= [<fo> [,<vp> [,<pid> [,<dcs>]]]]</p>	<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:</p> <p><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]):</p> <p>bit[1]bit[0]: Message Type Indicator, 2-bit field describing the message type; [00] - SMS-DELIVER; [01] - SMS-SUBMIT (default) ;</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>(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)</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:</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) 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</p>

+CSMP - Set Text Mode Parameters	SELINT 2
	<p>[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.</p> <p>[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 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 <i>SMS Parameters</i> 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=?	<p>Test command returns the OK result code.</p>
<p>Example</p>	<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>
<p>Reference</p>	<p>3GPP TS 27.005; 3GPP TS 23.040; 3GPP TS 23.038</p>

4.1.5.2.3 Show Text Mode Parameters - +CSDH

+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:</p> <p><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=?	Test command reports the supported range of values for parameter <show>	
Reference	3GPP TS 27.005	

4.1.5.2.4 Select Cell Broadcast - +CSCB

+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:</p> <p><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>	
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 <i>(all CBMs are accepted, none is rejected)</i> AT+CSCB=0,"0,1,300-315,450","0-3" OK</p>	
Reference	3GPP TS 27.005, 3GPP TS 23.041, 3GPP TS 23.038.	

4.1.5.2.5 Save Settings - +CSAS

+CSAS - Save Settings		SELINT 2
AT+CSAS [=<profile>]	<p>Execution command saves settings which have been made by the +CSCA, +CSMF and +CSCB commands in local non volatile memory.</p> <p>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.</p> <p>Note: certain settings may not be supported by the SIM and therefore they are 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	3GPP TS 27.005	

4.1.5.2.6 Restore Settings - +CRES

+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> <p>Note: If parameter is omitted the command restores message service settings from NVM.</p>	
AT+CRES=?	Test command returns the possible range of values for the parameter <profile> .	
Reference	3GPP TS 27.005	

4.1.5.3 Message Receiving and Reading

4.1.5.3.1 New Message Indications - +CNMI

+CNMI - New Message Indications To Terminal Equipment	SELINT 2
<p>AT+CNMI=[<mode>,<mt> [,<bm>,<ds> [,<bfr>]]]]</p>	<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> <p>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.</p> <p>1 - Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved, otherwise forward them directly to the TE.</p> <p>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.</p> <p>3 - if <mt> is set to 1 the hardware ring line is enabled for 1 s. when a SMS is received while the module is in GPRS online mode.</p> <p><mt> - result code indication reporting for SMS-DELIVER</p> <p>0 - No SMS-DELIVER indications are routed to the TE and messages are stored in SIM.</p> <p>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.</p> <p>2 - SMS-DELIVERs (except class 2 messages and messages in the "store" message waiting indication group) are routed directly to the TE using the following unsolicited result code:</p> <p style="text-align: center;">(PDU Mode)</p> <p>+CMT: <alpha>,<length><CR><LF><pdu> where: <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.</p> <p><length> - PDU length <pdu> - PDU message</p> <p style="text-align: center;">(TEXT Mode)</p> <p>+CMT:<oa>,<alpha>,<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data> (the information written in italics will be present depending on +CSDH last setting) where: <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 <tooa>, <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</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

+CNMI - New Message Indications To Terminal Equipment	SELINT 2
	<p>6 of <fo> is 0), each character of GSM alphabet will be converted into current TE character set (see +CSCS)</p> <ul style="list-style-type: none"> 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> <ul style="list-style-type: none"> <length> - PDU length <PDU> - message PDU <p style="text-align: center;">(TEXT Mode)</p> <p>+CBM:<sn>,<mid>,<dcS>,<pag>,<pags><CR><LF><data></p> <p>where:</p> <ul style="list-style-type: none"> <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 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</p> <p>0 - status report receiving is not reported to the DTE and is not stored</p> <p>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></p> <p>where:</p> <ul style="list-style-type: none"> <length> - PDU length <PDU> - message PDU <p style="text-align: center;">(TEXT Mode)</p> <p>+CDS: <fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st></p> <p>where:</p> <ul style="list-style-type: none"> <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

+CNMI - New Message Indications To Terminal Equipment	SELINT 2																					
	<p><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:</p> <p>+CDSI: <memr>,<index></p> <p>where:</p> <p><memr> - memory storage where the new message is stored "SM"</p> <p><index> - location on the memory where SMS is stored</p> <p><bfr> - buffered result codes handling method:</p> <p>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)</p> <p>1 - TA buffer of unsolicited result codes defined within this command is cleared when <mode>=1..3 is entered.</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>																					
Reference	3GPP TS 27.005																					
Note	<p>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.</p>																					
Note	<p>It has been necessary to take the following decisions to get over any incoherence problem, due to the possibility to have contemporaneous different settings of parameter <mt> in different sessions (see #PORTCFG and +CMUX):</p> <table border="1"> <tr> <td> <p>Message Class or Indication group, as in the DCS</p> <p><mt> settings in different sessions</p> </td> <td> <p>SM Class is No Class OR SM Class is 0 or 1 or 3 OR SM is an Indication with group "Discard"</p> </td> <td> <p>SM Class is 3</p> </td> </tr> <tr> <td> <p><mt>=2 for session "0" AND <mt>=anyvalue for other session(s)</p> </td> <td> <p>URC is shown only on session "0"</p> </td> <td></td> </tr> <tr> <td> <p><mt>=3 for session "0" AND <mt>=0 or 1 for other session(s)</p> </td> <td></td> <td> <p>URC is shown only on session "0"</p> </td> </tr> </table>	<p>Message Class or Indication group, as in the DCS</p> <p><mt> settings in different sessions</p>	<p>SM Class is No Class OR SM Class is 0 or 1 or 3 OR SM is an Indication with group "Discard"</p>	<p>SM Class is 3</p>	<p><mt>=2 for session "0" AND <mt>=anyvalue for other session(s)</p>	<p>URC is shown only on session "0"</p>		<p><mt>=3 for session "0" AND <mt>=0 or 1 for other session(s)</p>		<p>URC is shown only on session "0"</p>												
<p>Message Class or Indication group, as in the DCS</p> <p><mt> settings in different sessions</p>	<p>SM Class is No Class OR SM Class is 0 or 1 or 3 OR SM is an Indication with group "Discard"</p>	<p>SM Class is 3</p>																				
<p><mt>=2 for session "0" AND <mt>=anyvalue for other session(s)</p>	<p>URC is shown only on session "0"</p>																					
<p><mt>=3 for session "0" AND <mt>=0 or 1 for other session(s)</p>		<p>URC is shown only on session "0"</p>																				
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"> <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 ¹	Route msg to TE: +CMT ¹	Store in SIM - Send ind +CMTI	Route msg to TE: +CMT ¹	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 ¹	Store in <mems> - Send ind +CMTI						
where <mems> is the memory where the received messages are stored (see +CPMS)														
Note	It has been necessary to take the following decision to get over an incoherence problem, due to the possibility to have contemporaneous different settings of parameter <ds> in different sessions (see #PORTCFG and +CMUX): <table border="1" style="margin: 10px auto;"> <tbody> <tr> <td style="text-align: center;"><ds> settings in different sessions</td> <td></td> </tr> <tr> <td style="text-align: center;"><ds>=1 for session "0" AND <ds>=2 for at least one of the other sessions</td> <td style="text-align: center;">URC +CDS is shown only on session "0" and no status report is stored on SIM</td> </tr> <tr> <td style="text-align: center;"><ds>=0 for session "0" AND <ds>=2 for at least one of the other sessions</td> <td style="text-align: center;">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													

¹ The SM is not stored!

4.1.5.3.2 List Messages - +CMGL

+CMGL - List Messages	SELINT 2
<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: <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 3GPP TS 23.040</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>[,<toa/toda>,<length>]<CR><LF><data>[<CR><LF> +CMGL: <index>,<stat>,<oa/da>,<alpha>,<scts>[,<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) <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>

+CMGL - List Messages	SELINT 2
	<p><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 , 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) • 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 <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 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>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	3GPP TS 27.005, 3GPP TS 23.040

4.1.5.3.3 Read Message - +CMGR

+CMGR - Read Message	SELINT 2
<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>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</p> <p><stat> - status of the message 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 3GPP TS 23.040.</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): +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: +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: +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</p>

+CMGR - Read Message	SELINT 2
	<p> <pid> - Protocol Identifier <dc> - Data Coding Scheme <vp> - Validity Period; its format depends on SMS-SUBMIT <fo> setting (see +CSMP): <ol style="list-style-type: none"> Not Present if <fo> tells that the <i>Validity Period Format is Not Present</i> Integer type if <fo> tells that the <i>Validity Period Format is Relative</i> Quoted time-string type if <fo> tells that the <i>Validity Period Format is Absolute</i> Quoted hexadecimal representation of 7 octets if <fo> tells that the <i>Validity Period Format is Enhanced</i>. <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) <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. <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 <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>Note: in both cases if status of the message is 'received unread', status in the storage changes to 'received read'.</p> </p>
AT+CMGR=?	Test command returns the OK result code
Reference	3GPP TS 27.005

4.1.5.4 Message Sending And Writing

4.1.5.4.1 Send Message - +CMGS

+CMGS - Send Message	SELINT 2
<p><i>(PDU Mode)</i> AT+CMGS= <length></p>	<p style="text-align: right;">(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) 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; 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><i>(Text Mode)</i> AT+CMGS=<da> [,<toda>]</p>	<p style="text-align: right;">(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: <CR><LF><greater_than><space> (IRA 13, 10, 62, 32)</p>

+CMGS - Send Message	SELINT 2
	<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 3GPP TS 27.005, Annex A; backspace can be used to delete last character and carriage returns can be used; after every <CR> entered by the user the sequence <CR><LF><greater_than><space> is sent to the TE. - 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></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>: 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</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	3GPP TS 27.005

4.1.5.4.2 Send Message From Storage - +CMSS

+CMSS - Send Message From Storage		SELINT 2
AT+CMSS= <index>[,<da> [,<toda>]]	<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:</p> <p><index> - location value in the message storage <memw> of the message to send</p> <p><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.</p> <p><toda> - type of destination address</p> <p>129 - number in national format</p> <p>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	3GPP TS 27.005	

4.1.5.4.3 Write Message To Memory - +CMGW

+CMGW - Write Message To Memory		SELINT 2
<i>(PDU Mode)</i> AT+CMGW= <length> [,<stat>]	<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.</p> <p>7..164</p> <p><stat> - message status.</p> <p>0 - new message (received unread message; default for DELIVER messages (3GPP TS 23.040 SMS-DELIVER messages))</p> <p>1 - read message</p> <p>2 - stored message not yet sent (default for SUBMIT messages(3GPP TS 23.040 SMS-SUBMIT messages))</p> <p>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).</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>	

+CMGW - Write Message To Memory	SELINT 2
	<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> <p>Note: in PDU mode, not only SUBMIT messages can be stored in SIM, 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 messages can only be stored with status 0 or 1.</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 (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, then ME/TA converts the entered text into GSM alphabet, according to 3GPP TS 27.005, Annex A; backspace can be used to delete last character and carriage returns can be used; after every <CR> entered by the user the sequence <CR><LF><greater_than><space> is sent to the TE. - 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 write the message issue Ctrl-Z char (0x1A hex).</p>

+CMGW - Write Message To Memory	SELINT 2
	<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, 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	3GPP TS 27.005
Note	To avoid malfunctions is suggested to wait for the +CMGW: <index> or +CMS ERROR: <err> response before issuing further commands.

4.1.5.4.4 Delete Message - +CMGD

+CMGD - Delete Message	SELINT 2
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) <delflag> - an integer indicating multiple message deletion request. 0 (or omitted) - delete message specified in <index> 1 - delete all read messages from <memr> storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched 2 - delete all read messages from <memr> storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched 3 - delete all read messages from <memr> storage, sent and unsent mobile originated messages, leaving unread messages untouched 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>
AT+CMGD=?	Test command shows the valid memory locations and optionally the supported values of <delflag> .

+CMGD - Delete Message		SELINT 2
	+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	3GPP TS 27.005	

4.1.5.4.5 New Message Acknowledgement - +CNMA

+CNMA - New Message Acknowledgement		SELINT 2
AT+CNMA	<p>Execution command confirms correct reception of a new message (SMS-DELIVER or SMS-STATUS-REPORT) which is routed directly to the TE.</p> <p>Acknowledge with +CNMA is possible only if the +CSMS parameter is set to 1 (+CSMS=1) when a +CMT or +CDS indication is shown.</p> <p>If no acknowledgement is given within the network timeout (17 seconds), an RPERORR is sent to the network, the <mt> and <ds> parameters of the +CNMI command are then reset to zero (do not show new message indication).</p> <p>If command is executed, but no acknowledgement is expected, or some other ME related error occurs, final result code +CMS ERROR: <err> is returned.</p> <p>The AT command syntax and functionalities are different between SMS PDU Mode and SMS Text Mode, as explained below.</p>	
<i>(PDU Mode)</i> AT+CNMA[=<n>[,<length>][<CR>PDU is given<ctrl-Z/ESC]]]	<p>Either positive (RP-ACK) or negative (RP-ERROR) acknowledgement to the network is possible. Parameter <n> defines which one will be sent. Optionally (when <length> is greater than zero) an acknowledgement TPDU (SMSDELIVER-REPORT for RP-ACK or RP-ERROR) may be sent to the network. The entering of PDU is done similarly as specified in command Send Message +CMGS, except that the SMSC address field is not present.</p> <p>Parameter: <n> - Type of acknowledgement in PDU mode 0 : send RP-ACK without PDU (same as TEXT mode) 1 : send RP-ACK with optional PDU message. 2 : send RP-ERROR with optional PDU message.</p> <p><length> : Length of the PDU message.</p>	
<i>(Text Mode)</i> AT+CNMA	Only positive acknowledgement to network (RP-ACK) is possible.	
<i>(PDU Mode)</i> AT+CNMA=?	Test command returns the possible range of values for the parameter <n>	
<i>(Text Mode)</i> AT+CNMA=?	Test command returns the OK result code.	
Notes	<p>1 - In case that a directly routed message must be buffered in ME/TA (possible when +CNMI parameter <mode> equals 0 or 2) or AT interpreter remains too long in a state where result codes cannot be sent to TE (e.g. user is entering a message using +CMGS), acknowledgement (RP-ACK) is sent to the network without waiting +CNMA command from TE.</p> <p>2 - It has been necessary to take the following decision to get over any incoherence problem, due to the possibility to have contemporaneous different settings of parameter <mt> and <ds> of the +CNMI command in different sessions (see #PORTCFG and +CMUX): only the <mt> and <ds> setting for session "0" are considered as valid to decide if +CNMA acknowledgment is expected or not.</p>	

Example	<p style="text-align: center;">(PDU Mode)</p> <p>AT+CSMS=1 +CSMS: 1,1,1 OK</p> <p><i>Set PDU mode.</i> AT+CMGF=0 OK</p> <p>AT+CNMI=2,2,0,0,0 OK</p> <p><i>Message is received from network.</i> +CMT: "",70 06816000585426000480980600F170110370537284...</p> <p><i>Send positive acknowledgement to the network.</i> AT+CNMA=0 OK</p> <p><i>Message is received from network.</i> +CMT: "",70 06816000585426000480980600F170110370537284...</p> <p><i>Send negative acknowledgment (Unspecified error) to the network.</i> AT+CNMA=2,3<CR> > 00FF00 <Ctrl-Z> OK</p> <p style="text-align: center;">(Text Mode)</p> <p>AT+CSMS=1 +CSMS: 1,1,1 OK</p> <p><i>Set Text mode.</i> AT+CMGF=1 OK</p> <p>AT+CNMI=2,2,0,0,0 OK</p> <p><i>Message is received from network.</i> +CMT: "+821020955219",,"07/07/26,20:09:07+36" TEST MESSAGE</p> <p><i>Send positive acknowledgement to the network.</i> AT+CNMA OK</p>
Reference	3GPP TS 27.005

4.1.5.4.6 More Message to Send - +CMMS

+CMMS - More Message to Send		SELINT 2
AT+CMMS=<n>	<p>Set command controls the continuity of SMS relay protocol link. When feature is enabled (and supported by network), multiple messages can be sent much faster as link is kept open.</p> <p>Parameter: <n> 0 - disable (factory default) 1 - keep enabled until the time between the response of the latest message send command (+CMGS, +CMSS, etc.) and the next send command exceeds 5 seconds, then the link is closed and the parameter <n> is automatically reset to 0 2 - enable (if the time between the response of the latest message send command and the next send command exceeds 5 seconds, the link is closed but the parameter <n> remains set to 2)</p>	
AT+CMMS?	<p>Read command reports the current value of the parameter <n> in the format:</p> <p>+ CMMS: <n></p>	
AT+CMMS=?	<p>Test command reports the range of supported <n>.</p>	
Reference	3GPP TS 27.005	

4.1.5.5 Message Sending And Writing (3GPP2 mode)

4.1.5.5.1 Send Message From storage (3GPP2) - +CMSS

+CMSS - Send Message From Storage	SELINT 2
AT+CMSS=<index>[,<da>[,<toda>]]	<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:</p> <p><index> - location value in the message storage <memw> of the message to send</p> <p><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.</p> <p><toda> - type of destination address</p> <p>129 - number in national format</p> <p>145 - number in international format (contains the "+")</p> <p>If message is successfully sent to the network then the OK result is shown.</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. 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.

4.1.5.5.2 Set Text Mode Parameters (3GPP2) - +CSMP

+CSMP - Set Text Mode Parameters	SELINT 2
AT+CSMP=[<callback_addr>[,<tele_id>[,<priority>[,<enc_type>]]]]	<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:</p> <p><callback_addr>- Callback address.</p> <p>Note: The maximum length is different with every carrier.</p> <p>In case of Sprint and Aeris.Net: Maximum length is 32 characters</p> <p>In case of Verizon: Maximum length is 20 characters</p> <p>Note: Initially, this parameter is null. Some carrier networks discard SMS's without a callback number. Therefore, we recommend that customer setup callback number using AT+CSMP command.</p> <p>Note: The <callback_addr> isn't used and saved for only Aeris.Net</p> <p><tele_id>- Teleservice ID</p> <p>4097 - page</p> <p>4098 - SMS message (factory default)</p> <p><priority> - Priority</p> <p>Note: The priority is different with every carrier.</p> <p>In case of Sprint and Aeris.Net:</p> <p>0 - Normal (factory default)</p> <p>1 - Interactive</p> <p>2 - Urgent</p> <p>3 - Emergency</p> <p>In case of Verizon:</p> <p>0 - Normal (factory default)</p> <p>1 - High</p> <p><enc_type>- data coding scheme:</p> <p>0 - 8-bit Octet (factory default for only Aeris.Net)</p> <p>2 - 7-bit ASCII (factory default)</p>

+CSMP - Set Text Mode Parameters		SELINT 2
	4 - 16-bit Unicode (Sprint does not support) Note: the current settings are stored through +CSAS	
AT+CSMP?	Read command reports the current setting in the format: +CSMP: <callback_addr>,<tele_id>,<priority>,<enc_type>	
AT+CSMP=?	Test command returns the OK result code.	
Example	AT+CSMP=? OK AT+CSMP? +CSMP: ,4098,0,0 OK AT+CSMP="1234567890",4097,1,2 OK AT+CSMP? +CSMP: "1234567890",4097,1,2 OK	

4.1.5.5.3 Send Message (3GPP2) - +CMGS

+CMGS - Send Message (3GPP2)		SELINT 2
(PDU Mode) AT+CMGS= <length>	(PDU Mode) Execution command sends to the network a message. 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. Parameter: <length>- length of the PDU to be sent in bytes (excluding the Destination address octets). 5..183 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. 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 OK result is shown. Note: if message sending fails for some reason, an error code is reported. Note: The limit of user data is 160 characters.	
Example – PDU mode	AT+CMGF=0 OK AT+CMGS=35 > 07801091346554F307801096224658F110020000166262626262626262626262626 6 26262626262626262626262626262626 OK 07 <addr_len: 7byte> 80 <type_addr: 128> 1091346554F3 <Destination_address:01194356453> 07 <addr_len: 7byte> 80 <type_addr: 128> 1096224658F1 <callback_address:01692264851> 1002 <Teleservice_id: 4098(decimal)> 00 <priority: normal> 00 <encoding_type: octet>	

4.1.5.5.4 List Messages (3GPP2) - +CMGL

+CMGL – List Messages	SELINT 2
<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: <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: +CMGL: <index>,<stat>,"",<length><CR><LF><pdu></p> <p>Case of received message from base station : <PDU>: <orig_num><date><tele_id><priority><enc_type><length><data></p> <p>Case of sending message to base station: <PDU>: <da><callback><tele_id><priority><enc_type><length><data></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</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): If there is at least a Received message to be listed the representation format is:</p> <p>+CMGL: <index>,<stat>,<orig_num>,<callback>,<date>[,<tooa>,<tele_id>,<priority>,<enc_type>,<length>]<CR><LF> <data></p> <p>If there is at least a Sent or an Unsent message to be listed the representation format is:</p> <p>+CMGL: <index>,<stat>,<da>,<callback>[,<toda>,<tele_id>,<priority>,<enc_type>,<length>]<CR><LF><data></p> <p>Where <orig_num> - Origination number. <da> - Destination number. <callback> - Callback number. <date> - Received date in form as "YYYYMMDDHHMMSS". <tooa> - Type of <orig_num>. <toda> - Type of <da>. <tele_id> - Teleservice ID.</p> <p>4097 - page 4098 - SMS message</p>

+CMGL – List Messages	SELINT 2
	<p>4099 - voice mail notification 262144 - voice mail notification</p> <p><priority> - Priority. Note: The priority is different with every carrier. 0 - Normal (factory default) 1 - High</p> <p><enc_type> - Encoding type of message. 0 - 8-bit Octet 2 - 7-bit ASCII 4 - 16-bit Unicode 9 - GSM 7-bit</p> <p><length> - Length of message.</p> <p><data> - Message data. (Indicates the new voice mail count, if <tele_id> is voice mail notification)</p> <p>Note: If parameter is omitted the command returns the list of sms with “REC UNREAD” status.</p>
<p>AT+CMGL=?</p>	<p>Test command returns a list of supported <stat>s</p>
<p>Example</p>	<pre> <PDU Mode> Case of received message from base station: AT+CMGL=1 +CMGL: 29,1,"",52 07802811495346350808040947271002020221C3870E1C3870E1C3870E1C3870 E 1C3870E1C3870E1C3870E1C3870E1C3870E1C20 OK 07 <addr_len: 7byte> 80 <type_addr: 128> 281149534635 <Origination number: 821194356453> 080804094727 <Date: 08/08/04,09:47:27> 1002 <Teleservice_id: 4098(decimal)> 02 <priority: urgent > 02 <encoding_type: 7-bit ASCII > 21 <data_len: 33> C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C3870E 1C20 <user_data: aaa> Else: AT+CMGL=2 +CMGL: 31,2,"",23 07801091346554F307801091346554F3100200000A6161616161616161616161616161616161 OK 07 <addr_len: 7byte> 80 <type_addr:128> 1091346554F3 <Destination_addr: 01194356453> 07 <addr_len: 7byte> 80 <type_addr:128> 1096224658F1 <Callback_Number: 01692264851> 1002 <Teleservice_id: 4098(decimal)> 00 <priority: normal > 00 <encoding_type: 8-bit Octet > 0A <data_len: 10> 616161616161616161616161 <data: aaaaaaaaa> <PDU Mode> AT+CMGF=0 OK </pre>

+CMGL – List Messages	SELINT 2
	<pre> AT+CMGF? +CMGF: 0 OK AT+CMGL=? (0-4) OK AT+CMGL=4 +CMGL: 0,2,"",12 06801041394306001002000006313233343536 +CMGL: 1,2,"",15 06801041394306001002000009313233343536363737 +CMGL: 2,2,"",18 0680104139430600100200000C3131323233343434343434 +CMGL: 3,2,"",21 0680104139430600100200000F6166666173646565656565656565 OK <Text Mode> AT+CMGF=1 OK AT+CMGF? +CMGF: 1 OK AT+CMGL=? ("REC UNREAD","REC READ","STO UNSENT","STO SENT","ALL") OK at+cmgl="ALL" +CMGL: 0,"STO UNSENT","My Number","", 123456 +CMGL: 1,"STO UNSENT","My Number","", 123456677 +CMGL: 2,"STO UNSENT","My Number","", 112234444444 +CMGL: 3,"STO UNSENT","My Number","", affasdeeeeeeeee OK </pre>

4.1.5.5.5 Read Message (3GPP2) - +CMGR

+CMGR - Read Message	SELINT 2
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 at least one message to be listed the representation format is: +CMGR:<stat>,"",<length><CR><LF><PDU> Case of received message from base station : <PDU> <orig_num>,<date><tele_id><priority><enc_type><length><data> Case of sending message to base station: <PDU> <da><callback><tele_id><priority><enc_type><length><data> where</p>

+CMGR - Read Message	SELINT 2
	<p><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</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): Output format for message delivery confirm: +CMGR: <stat>,<orig_num>,<callback>,<date>[,<tooa>,<tele_id>,<priority>,<enc_type>,<length>]<CR><LF><data></p> <p>If there is either a Sent or an Unsent message in location <index> the output format is: +CMGR: <stat>,<da>,<callback>,[,<toda>,<tele_id>,<priority>,<enc_type>,<length>]<CR><LF><data></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</p> <p><orig_num> - Origination number. <callback> - Callback number. <date> - Received date in form as "YYYYMMDDHHMMSS". <tooa> - Type of <orig_num>. <toda> - Type of <da>. <tele_id> - Teleservice ID. 4097 - page 4098 - SMS message 4099 - voice mail notification 262144 - voice mail notification <priority> - Priority. Note: The priority is different with every carrier. 0 - Normal (factory default) 1 - High <enc_type> - Encoding type of message. 0 - 8-bit Octet 2 - 7-bit ASCII 4 - 16-bit Unicode 9 - GSM 7-bit <length> - Length of message. <data> - Message data. (Indicates the new voice mail count, if <tele_id> is voice mail notification)</p>
AT+CMGR=?	Test command returns the OK result code

+CMGR - Read Message	SELINT 2
Example	<pre> <PDU Mode> Case of received message from base station: AT+CMGR=29 +CMGR: 1,"",52 07802811495346350808040947271002020221C3870E1C3870E1C3870E1C3870 E 1C3870E1C3870E1C3870E1C3870E1C3870E1C20 OK 07 <addr_len: 7byte> 80 <type_addr: 128> 281149534635 <Origination number: 821194356453> 080804094727 <Date: 08/08/04,09:47:27> 1002 <Teleservice_id: 4098(decimal)> 02 <priority: urgent > 02 <encoding_type: ascii > 21 <data_len: 33> C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C3870E 1C20 <user_data: aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa> Else: at+cmgr=31 +CMGR: 2,"",23 07801091346554F307801091346554F3100200000A61616161616161616161616161616161 OK 07 <addr_len: 7byte> 80 <type_addr:128> 1091346554F3 <Origination number: 01193645534 > 07 <addr_len: 7byte> 80 <type_addr:128> 1091346554F3 < Callback number: 01193645534 > 1002 <Teleservice_id: 4098(decimal)> 00 <priority: Normal > 00 <encoding_type: 8-bit Octet > 0A <data_len: 10> 616161616161616161616161 <usr data: aaaaaaaaa> <Text Mode> AT+CSDH=1 OK AT+CMGR=1 +CMGR: "REC READ","",01191775982",20071217190804,,4098,,16,12 TEST MESSAGE OK AT+CMGR=2 +CMGR: "REC READ","",01191775982",20071221160610,,4098,,16,9 TEST MESSAGE2 OK AT+CMGR=3 +CMGR: "STO SENT",01191775982",01096529157",,4098,,16,9 TEST MESSAGE2 OK </pre>

+CMGW - Write Message To Memory	SELINT 2
	<p>"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 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) Note: the echoing of entered characters back from the TA is controlled by echo command E 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>.</p>
AT+CMGW=?	Test command returns the OK result code.
Example – TEXT mode	<pre> AT+CMGW=? OK AT+CMGF=1 OK AT+CMGW > Test message > Ctrl+Z must be used to write message +CMGW: 1 OK AT+CMGW="9194397977" > Test SMS +CMGW: 2 OK AT+CMGW="9194397977",129 > Test SMS +CMGW: 3 OK </pre>
Note	To avoid malfunctions is suggested to wait for the +CMGW: <index> or +CMS ERROR: <err> response before issuing further commands.

4.1.6 Call Control Commands

4.1.6.1 Calling Line Identification Restriction - +CLIR

+CLIR - Calling Line Identification Restriction		SELINT 2
AT+CLIR=[<n>]	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. 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)	
AT+CLIR?	Read command gives the default adjustment for all outgoing calls (<n>) : <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)	
AT+CLIR=?	Test command reports the supported values of parameter <n> .	
Reference	3GPP TS 27.007	
Note	This command sets the default behavior of the device in outgoing calls.	

4.1.6.2 Calling Line Identification Presentation - +CLIP

+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 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. Note: in the +CLIP: response they are currently not reported either the subaddress information (it's always "" after the 2 nd comma) and the subaddress type information (it's always 128 after the 3 rd comma)	
AT+CLIP?	Read command returns the presentation status of the CLI in the format: +CLIP: <n> where: <n> 0 - CLI presentation disabled	

+CLIP - Calling Line Identification Presentation		SELINT 2
	1 - CLI presentation enabled	
AT+CLIP=?	Test command reports 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.	

4.1.6.3 Dialing Mode - #DIALMODE

#DIALMODE - Dialing Mode		SELINT 2
AT#DIALMODE=[<mode>]	<p>Set command sets dialing modality. Parameter: <mode></p> <ul style="list-style-type: none"> 0 - OK result code is received as soon as it starts remotely ringing (factory default) 1 - OK result code is received only after the called party answers. Any character typed aborts the call and OK result code is received. 2 - 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) RELEASED (after ATH) DISCONNECTED (remote hang-up) <p>Any character typed before the CONNECTED message aborts the call Note: The setting is saved in NVM and available on following reboot.</p>	
AT#DIALMODE?	<p>Read command returns current ATD dialing mode in the format: #DIALMODE: <mode></p>	
AT#DIALMODE=?	Test command returns the range of values for parameter <mode>	

4.1.6.4 Extended Call Monitoring - #ECAM

#ECAM - Extended Call Monitoring		SELINT 2
AT#ECAM=[<onoff>]	<p>This command enables/disables the call monitoring function in the ME. Parameter: <onoff></p> <ul style="list-style-type: none"> 0 - disables call monitoring function (factory default) 1 - enables call monitoring function; the ME informs about call events, such as incoming call, connected, hang up etc. using the following unsolicited indication: #ECAM: <ccid>,<ccstatus>,<calltype>,,,[<number>,<type>] <p>where <ccid> - call ID <ccstatus> - call status</p> <ul style="list-style-type: none"> 0 - idle 1 - calling (MO) 2 - connecting (MO) 3 - active 4 - hold 5 - waiting (MT) 6 - alerting (MT) 7 - busy <p><calltype> - call type</p> <ul style="list-style-type: none"> 1 - voice <p><number> - called number (valid only for <ccstatus>=1) <type> - type of <number></p> <ul style="list-style-type: none"> 129 - national number 145 - international number 	

#ECAM - Extended Call Monitoring		SELINT 2
	Note: the unsolicited indication is sent along with usual codes (OK , NO CARRIER , BUSY ...).	
AT#ECAM?	Read command reports whether the extended call monitoring function is currently enabled or not, in the format: #ECAM: <onoff>	
AT#ECAM=?	Test command returns the list of supported values for <onoff> .	

4.1.6.5 Hang Up Call - +CHUP

+CHUP - Hang Up Call		SELINT 2
AT+CHUP	Execution command cancels all active and held calls, also if a multi-party session is running.	
AT+CHUP=?	Test command returns the OK result code	
Reference	3GPP TS 27.007	

4.1.6.6 Dial - D

D – Dial		SELINT 2
ATD<number>;	<p>Execution command starts a VoLTE call to the phone number given as parameter.</p> <p>Parameter: <number> - phone number to be dialed</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 VoLTE call to phone number which corresponding alphanumeric field is <str>; all available memories will be searched for the correct entry.</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 VoLTE call to phone number in phonebook memory storage <mem>, entry location <n> (available memories may be queried with AT+CPBS=?).</p> <p>Parameters: <mem> - phonebook memory storage; it must not be enclosed in quotation marks. SM - SIM phonebook FD - SIM fixed dialing-phonebook LD - SIM last-dialing-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).</p> <p><n> - entry location; it should be in the range of locations available in the memory used.</p>	
ATD><n>;	<p>Issues a VoLTE call to phone number in entry location <n> of the active phonebook memory storage (see +CPBS).</p> <p>Parameter:</p>	

D – Dial		SELINT 2
	<n> - active phonebook memory storage entry location; it should be in the range of locations available in the active phonebook memory storage.	
ATDL	Issues a VoLTE call to the last number dialed.	
ATDS=<nr>;	Issues a VoLTE call to the number stored in the MODULE internal phonebook position number <nr> . Parameter: <nr> - internal phonebook position to be called (See commands &N and &Z)	
ATD<number>I; ATD<number>i;	Issues a VoLTE call overwriting the CLIR supplementary service subscription default value for this call I - invocation, restrict CLI presentation i - suppression, allow CLI presentation	
ATD*<gprs_sc> [**<L2P> [*<cid>]]#	This command is specific of GPRS functionality and causes the MT to perform whatever actions are necessary to establish communication between the TE and the external PDN. Parameters: <gprs_sc> - GPRS Service Code, a digit string (value 98 or 99) which identifies a request to use the GPRS <L2P> - a string which indicates the layer 2 protocol to be used. For communications software that does not support arbitrary characters in the dial string, the following numeric equivalents shall be used: 1 - PPP <cid> - a digit which specifies a particular PDN Connection definition (see +CGDCONT command).	
Example	<p><i>To dial a number in SIM phonebook entry 6:</i> ATD>SM6 OK</p> <p><i>To have a voice call to the 6-th entry of active phonebook:</i> ATD>6; OK</p> <p><i>To call the entry with alphanumeric field "Name":</i> ATD>"Name"; OK</p>	
Reference	V25ter.	

4.1.6.7 Tone Dial - T

T - Tone Dial		SELINT 2
ATT	Set command has no effect is included only for backward compatibility with landline modems.	
Reference	V25ter	

4.1.6.8 Pulse Dial - P

P - Pulse Dial		SELINT 2
ATP	Set command has no effect is included only for backward compatibility with landline modems.	
Reference	V25ter	

4.1.6.9 Accept Incoming Call - A

A – Accept Incoming Call		SELINT 2
ATA	Execution command is used to answer to an incoming call if automatic answer is disabled. Note: This command MUST be the last in the command line and must be followed immediately by a <CR> character.	
Note	Data only products do not start the call and command answer is ERROR if a voice call is requested.	
Reference	V25ter	

4.1.6.10 Disconnect - H

H - Disconnect		SELINT 2
ATH	Execution command is used to close the current VoLTE call.	
Reference	V25ter	

4.1.6.11 List Current Calls - +CLCC

+CLCC - List Current Calls		SELINT 2
AT+CLCC	Execution command returns the list of current calls and their characteristics in the format: [+CLCC:<id1>,<dir>,<stat>,<mode>,<mpty>,<number>,<type> ,<alpha>[<CR><LF>+CLCC:<id2>,<dir>,<stat>,<mode>, <mpty>,<number>,<type>,<alpha>[...]]] where: <idn> - call identification number <dir> - call direction 0 - mobile originated call 1 - mobile terminated call <stat> - state of the call 0 - active 1 - held 2 - dialing (MO call) 3 - alerting (MO call) 4 - incoming (MT call) 5 - waiting (MT call) <mode> - call type 0 - voice 9 - unknown <mpty> - multiparty call flag 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 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 . Note: If no call is active then only OK message is sent.	
AT+CLCC=?	Test command returns the OK result code	
Reference	3GPP TS 27.007	

4.1.6.12 Automatic call – AT#ACAL

AT#ACAL – Automatic call		SELINT 2
AT#ACAL=[<mode>]	<p>Set command enables/disables the automatic call function.</p> <p>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 VoLTE call to the first number (position 0) stored in the internal phonebook.</p>	
AT#ACAL?	<p>Read command reports whether the automatic call function is currently enabled or not, in the format:</p> <p>#ACAL: <mode></p> <p>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.</p> <p>AT#ACAL? #ACAL : 2</p> <p>OK</p> <p>Due to this possible situation, it is strongly recommended not to use contemporaneously both commands.</p>	
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.	

4.1.6.13 Extended automatic call – AT#ACALEXT

AT#ACALEXT – Extended Automatic call		SELINT 2
AT#ACALEXT=<mode>,<index>	<p>Set command enables/disables the extended automatic call function.</p> <p>Parameters: <mode> 0 - disables the automatic call function (factory default) 1 - enables the automatic call function from internal phonebook. 2 - enables the automatic call function from “SM” phonebook. <index> - it indicates a position in the currently selected phonebook.</p> <p>If the extended automatic call function is enabled and &D2 has been issued, the transition OFF/ON of DTR causes an automatic VoLTE call to the number stored in position <index> in the selected phonebook.</p>	
AT#ACALEXT?	<p>Read command reports either whether the automatic call function is currently enabled or not, and the last <index> setting in the format:</p> <p>#ACALEXT: <mode>,<index></p>	
AT#ACALEXT=?	The range of available positions in a phonebook depends on the selected phonebook. This is the reason why the test command returns three ranges of values: the first for parameter <mode> , the second for parameter <index> when is chosen the internal phonebook, the third for parameter <index> when “SM” is the chosen phonebook	
Note	Issuing #ACALEXT causes the #ACAL <mode> to be changed. Issuing AT#ACAL=1 causes the #ACALEXT <index> to be set to default.	

AT#ACALEXT – Extended Automatic call		SELINT 2
	It is recommended to NOT use contemporaneously either #ACALEXT and #ACAL	
Note	See &Z to write and &N to read the number on module internal phonebook.	

4.1.6.14 Cellular Result Codes - +CRC

+CRC – Cellular Result Codes		SELINT 2
AT+CRC=[<mode>]	Set command controls whether or not the extended format of incoming call indication is used. Parameter: <mode> 0 - disables extended format reporting (factory default) 1 - enables extended format reporting: When enabled, an incoming call is indicated to the TE with unsolicited result code +CRING: <type> instead of the normal RING . where <type> - call type: VOICE – VoLTE call	
AT+CRC?	Read command reports the current value of the <mode> parameter.	
AT+CRC=?	Test command reports the range of supported values for parameter <mode>	

4.1.6.15 Select type of address - +CSTA

+CSTA – Select Type of Address		SELINT 2
AT+CSTA=[<type>]	Set command selects the type of number for further dialing commands (D) according to 3GPP specifications. Parameter: <type> : type of address octet in integer format (refer TS 24.008, subclause 10.5.4.7); default 145 when dialing string includes international access code character "+", otherwise 129	
AT+CSTA?	Read command returns the current value of <type> in the format: +CSTA: <type>	
AT+CSTA=?	Test command reports the range for the parameter <type>	

4.1.6.16 Extended Error Report - +CEER

+CEER - Extended Error Report		SELINT 2
AT+CEER	Execution command returns one or more lines of information text <report> offering the TA user an extended error report, in the format: +CEER: <report> This report regards some error condition that may occur: <ul style="list-style-type: none"> the failure in the last unsuccessful call setup (originating or answering) the last call release Note: if none of the previous conditions has occurred since power up then “Normal, unspecified” condition is reported	
AT+CEER=?	Test command returns OK result code.	

4.1.6.17 Call Establishment Lock - #CESTHLCK

#CESTHLCK – Call establishment lock		SELINT 2
AT#CESTHLCK=[<closure_type >]	This command can be used to disable call abort before the DCE enters connected state. < closure_type >:	

#CESTHLCK – Call establishment lock		SELINT 2
	<p>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>	

4.1.6.18 Number Of Rings To Auto Answer - S0

S0 - Number Of Rings To Auto Answer		SELINT 2
ATS0=[<n>]	<p>Set command sets the number of rings required before device automatically answers an incoming call.</p> <p>Parameter:</p> <p><n> - number of rings</p> <p>0 - auto answer disabled (factory default)</p> <p>1..255 - number of rings required before automatic answer.</p>	
ATS0?	<p>Read command returns the current value of S0 parameter.</p>	
Reference	V25ter	

4.1.6.19 Call Waiting - +CCWA

+CCWA - Call Waiting		SELINT 2
AT+CCWA=[<n>]	<p>Set command enables/disables the presentation of the call waiting indication at the TE.</p> <p>Parameters:</p> <p><n> - enables/disables the presentation of an unsolicited result code:</p> <p>0 - disable</p> <p>1 - enable</p> <p>The unsolicited result code enabled by parameter <n> is in the format:</p> <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> - 1 (voice)</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>	
AT+CCWA?	<p>Read command reports the current value of the parameter <n>.</p>	
AT+CCWA=?	<p>Test command reports the supported values for the parameter <n>.</p>	
Reference	3GPP TS 27.007	

4.1.6.20 Voice Hung Up Control - +CVHU

+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> 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" behavior according to &D setting. ATH disconnects (factory default).</p>	
AT+CVHU?	<p>Read command reports the current value of the <mode> parameter, in the format:</p> <p>+CVHU: <mode></p>	
AT+CVHU=?	<p>Test command reports the range of supported values for parameter <mode></p>	

4.1.6.21 Availability for voice calls with IMS - +CAVIMS

+CAVIMS - Availability for voice calls with IMS		SELINT 2
AT+CAVIMS=<state>	<p>Set command informs the modem whether voice calls with the IMS are currently available (see 3GPP TS 24.229). The information can be used by the modem to determine "IMS voice not available" as defined in 3GPP TS 24.301, and for mobility management for IMS voice termination, see 3GPP TS 24.008.</p> <p>Parameters: <state> - integer type. The UEs IMS voice call availability status</p> <p>0 Voice calls with the IMS are not available 1 Voice calls with the IMS are available</p>	
AT+CAVIMS?	<p>Read command reports the IMS voice call availability status stored in the modem in the format:</p> <p>+CAVIMS: <state></p>	
AT+CAVIMS=?	<p>Test command reports supported range of values for parameter.</p>	

4.1.6.22 Return To On Line Mode - O

O - Return To On Line Mode		SELINT 2
ATO	<p>Execution command is used to return to on-line mode from command mode. If there's no active connection it returns NO CARRIER.</p> <p>Note: After issuing this command, if the device is in conversation, to send other commands to the device you must return to command mode by issuing the escape sequence (see register S2).</p>	
Note	The escape sequence causes a closure of the link.	
Reference	V25ter	

4.1.7 Custom AT Commands

4.1.7.1 General Configuration AT Commands

4.1.7.1.1 Hang Up Call - #CHUP

#CHUP - Hang Up Call		SELINT 2
AT#CHUP	Execution command ends all active and held calls, also if a multi-party session is running. It also allows disconnecting of a data call from a CMUX instance different from the one that was used to start the data call.	
AT#CHUP=?	Test command returns the OK result code	

4.1.7.1.2 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), Modem Trace.</p> <p>Parameter: <Variant> - parameter range: 0, 1, 2, 3, 4, 5, 11 1 - default value Please, refer to “Telit 3G Modules 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 displayed, on one row, the allowed couples formed by: a physical port and the logically connected internal software Access Point (AT, TT, Modem Trace). 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>	

4.1.7.1.3 Network Selection Menu Availability - +PACSP

+PACSP - Network Selection Menu Availability		SELINT 2
AT+PACSP?	Read command returns the current value of the <mode> parameter in the format: +PACSP<mode> where: <mode> - PLMN mode bit (in CSP file on the SIM) 0 - restriction of menu option for manual PLMN selection. 1 - no restriction of menu option for Manual PLMN selection.	
AT+PACSP=?	Test command returns the OK result code.	

4.1.7.1.4 Manufacturer Identification - #CGMI

#CGMI - Manufacturer Identification		SELINT 2
AT#CGMI	Execution command returns the device manufacturer identification code with command echo.	
AT#CGMI=?	Test command returns the OK result code.	

4.1.7.1.5 Model Identification - #CGMM

#CGMM - Model Identification		SELINT 2
AT#CGMM	Execution command returns the device model identification code with command echo.	
AT#CGMM=?	Test command returns the OK result code.	

4.1.7.1.6 Revision Identification - #CGMR

#CGMR - Revision Identification		SELINT 2
AT#CGMR	Execution command returns device software revision number with command echo.	
AT#CGMR=?	Test command returns the OK result code.	

4.1.7.1.7 Product Serial Number Identification - #CGSN

#CGSN - Product Serial Number Identification		SELINT 2
AT#CGSN	Execution command returns the product serial number, identified as the IMEI of the mobile, with command echo.	
AT#CGSN=?	Test command returns the OK result code.	

4.1.7.1.8 Request International Mobile station Equipment Identity and Software Version - +IMEISV

+IMEISV – Request International Mobile station Equipment Identity and Software Version		SELINT 2
AT+IMEISV	<p>Execution command returns the International Mobile station Equipment Identity and Software Version Number, identified as the IMEISV of the mobile, without command echo.</p> <p>The IMEISV is composed of the following elements (each element shall consist of decimal digits only):</p> <ul style="list-style-type: none"> • Type Allocation Code (TAC). Its length is 8 digits; • Serial Number (SNR) is an individual serial number uniquely identifying each equipment within each TAC. Its length is 6 digits; • Software Version Number (SVN) identifies the software version number of the mobile equipment. Its length is 2 digits. 	
AT+IMEISV=?	Test command returns OK result code.	
Reference	3GPP TS 23.003	

4.1.7.1.9 International Mobile Subscriber Identity (IMSI) - #CIMI

#CIMI - International Mobile Subscriber Identity (IMSI)		SELINT 2
AT#CIMI	Execution command returns the international mobile subscriber identity, identified as the IMSI number, with command echo.	
AT#CIMI=?	Test command returns the OK result code.	

4.1.7.1.10 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.</p>	
AT#SPN=?	Test command returns the OK result code.	

4.1.7.1.11 Extended Numeric Error report - #CEER

#CEER – Extended numeric error report	SELINT 2																																																																																		
<p>AT#CEER</p>	<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 PDN connection activation; the last GPRS detach or PDN connection 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> <tr><td>19</td><td>User alerting, no answer</td></tr> <tr><td>21</td><td>Call rejected</td></tr> <tr><td>22</td><td>Number changed</td></tr> <tr><td>26</td><td>Non selected user clearing</td></tr> <tr><td>27</td><td>Destination out of order</td></tr> <tr><td>28</td><td>Invalid number format (incomplete number)</td></tr> <tr><td>29</td><td>Facility rejected</td></tr> <tr><td>30</td><td>Response to STATUS ENQUIRY</td></tr> <tr><td>31</td><td>Normal, unspecified</td></tr> <tr><td>34</td><td>No circuit/channel available</td></tr> <tr><td>38</td><td>Network out of order</td></tr> <tr><td>41</td><td>Temporary failure</td></tr> <tr><td>42</td><td>Switching equipment congestion</td></tr> <tr><td>43</td><td>Access information discarded</td></tr> <tr><td>44</td><td>Requested circuit/channel not available</td></tr> <tr><td>47</td><td>Resources unavailable, unspecified</td></tr> <tr><td>49</td><td>Quality of service unavailable</td></tr> <tr><td>50</td><td>Requested facility not subscribed</td></tr> <tr><td>55</td><td>Incoming calls barred with in the CUG</td></tr> <tr><td>57</td><td>Bearer capability not authorized</td></tr> <tr><td>58</td><td>Bearer capability not presently available</td></tr> <tr><td>63</td><td>Service or option not available, unspecified</td></tr> <tr><td>65</td><td>Bearer service not implemented</td></tr> <tr><td>68</td><td>ACM equal to or greater than ACMmax</td></tr> <tr><td>69</td><td>Requested facility not implemented</td></tr> <tr><td>70</td><td>Only restricted digital information bearer capability is available</td></tr> <tr><td>79</td><td>Service or option not implemented, unspecified</td></tr> <tr><td>81</td><td>Invalid transaction identifier value</td></tr> <tr><td>87</td><td>User not member of CUG</td></tr> <tr><td>88</td><td>Incompatible destination</td></tr> <tr><td>91</td><td>Invalid transit network selection</td></tr> <tr><td>95</td><td>Semantically incorrect message</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	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
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#CEER – Extended numeric error report		SELINT 2
	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
	GPRS related errors	
	224	MS requested detach
	225	NWK requested detach
	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
	Other custom values	
	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	

4.1.7.1.12 Display PIN Counter - #PCT

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

4.1.7.1.13 Software Shut Down - #SHDN

#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.	

4.1.7.1.14 System turn-off - #SYSHALT

#SYSHALT – System turn-off		SELINT 2
AT#SYSHALT[=<GPIO_restore>,<DTR_wakeup_en>,<Reboot_en>]	<p>The module is turned off. It can be awoken by reset pin, alarm or DTR pin transition to high.</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 low to high turns on again the module turned off by SYSHALT command</p> <p><Reboot_en>: 0 – Module exits from SYSHALT and stays in detached mode like CFUN=4 status. In order to restore normal behaviour the user shall set CFUN=1 1 – Module exits from SYHALT performing a total reboot (default)</p>	
AT#SYSHALT?	Read command reports the default state of the parameters <GPIO_restore>,<DTR_wakeup_en> and <Reboot_en> in the format: #SYSHALT: 0,0,1	
AT#SYSHALT=?	Test command reports supported range of values for all parameters.	
Notes	<p>Note: the command can be used both on serial port and on USB port. Please, pay attention on USB driver. In order to have a correct behaviour you need to have USB driver supporting selective suspend. The selective suspend must be enabled. If the module has been powered off through #SYSHALT any chars sent from USB is handled as a #SYSHALT wake up event. Insertion of USB cable is an event that wakes up the module turned off by #SYSHALT.</p> <p>When the module is turned off by the #SYSHALT command, it enters in sleep status but it continues to respond to AT commands</p>	

4.1.7.1.15 Fast system turn-off - AT#FASTSYSHALT

AT#FASTSYSHALT - Fast system turn-off		SELINT 2
AT#FASTSYSHALT[=<Enable>[, <Gpio>[, <GPIO_restore>[, <DTR_wakeup_en>[, <Reboot_en>]]]]]	<p>Set the FASTSYSHALT configuration.</p> <p>Parameters:</p> <p><Enable>: 0 – The fastsyshalt execution via GPIO is disabled (default) 1 – The fastsyshalt execution via GPIO is enabled</p> <p>This parameter is stored in NVM.</p> <p><Gpio>: Sets the Gpio that triggers the fastsyshalt execution. When the input of <Gpio> goes from a high level to a low level and <Enable> is set to 1, the module executes the fastsyshalt immediately.</p> <p>This parameter is stored in NVM.</p> <p><GPIO_restore>: 0 – GPIOs and serial ports pins are left unchanged (default)</p>	

AT#FASTSYSHALT - Fast system turn-off		SELINT 2
	<p>1 – GPIOs and serial pins are set in input with pull down (currently not implemented)</p> <p><DTR_wakeup_en>: 0 – DTR has no effect on module turned off by FASTSYSHALT (default) 1 – DTR transition from high to low turns on again the module turned off by FASTSYSHALT command (currently not implemented)</p> <p><Reboot_en>: 0 – Module exits from FASTSYSHALT and stays in detached mode like CFUN=4 status. In order to restore normal behaviour the user shall set CFUN=1 (currently not implemented) 1 – Module exits from FASTSYSHALT performing a total reboot (default)</p> <p>The format AT#FASTSYSHALT forces the module to execute the fastsyshalt immediately.</p> <p>Note: currently module can be woken up only by reset.</p> <p>Note: It is necessary that the Gpio set with <Gpio> is used for the fastsyshalt purpose only. If you want to use the Gpio set via AT#FASTSYSHALT for other purposes you have to disable the fastsyshalt assignment for that pin:</p> <p>AT#FASTSYSHALT = 0,<Gpio>,x,x,x</p> <p>Note: Fastsyshalt does not perform the network deregistration procedure.</p>	
AT#FASTSYSHALT?	Read command reports the default state of the parameters <Enable>, <Gpio>, <GPIO_restore>, <DTR_wakeup_en> and <Reboot_en> in the format: #FASTSYSHALT: 0,1,0,0,1	
AT#FASTSYSHALT=?	Test command reports supported range of values for all parameters.	
Example	<pre>//enable fastsyshalt on GPIO 7 with DTR wake up AT#FASTSYSHALT=1,7,0,1,1 OK //read the fastsyshalt configuration AT#FASTSYSHALT? #FASTSYSHALT=1,7,0,1,1 OK //force immediate fastsyshalt AT#FASTSYSHALT OK</pre>	
Note		

4.1.7.1.16 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.	

4.1.7.1.17 Temperature Monitor - #TEMPMON

#TEMPMON - Temperature Monitor	SELINT 2
<p>AT#TEMPMON= <mod> [,<urcmode> [,<action> [,<hyst_time> [,<GPIO>]]]]</p>	<p>Set command sets the behaviour of the module internal temperature monitor.</p> <p>Parameters:</p> <p><mod> 0 - sets the command parameters. 1 - triggers the measurement of the module internal temperature, reporting the result in the format:</p> <p>#TEMPMEAS: <level>,<value></p> <p>where: <level> - threshold level -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> <p><value> - actual temperature expressed in Celsius degrees.</p> <p>Setting of the following optional parameters has meaning only if <mod>=0</p> <p><urcmode> - URC presentation mode. 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> <p>#TEMPMEAS: <level>,<value></p> <p>where: <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 <hyst_time> parameter too.</p> <p>0..7 - as a sum of: 0 - no action 1 - automatic shut-down when the temperature is beyond the extreme bounds 2 - RF RX and TX circuits automatically disabled (using +CFUN=4) when operating temperature bounds are reached. When the temperature is back to normal the module is brought back to the previous state, before RF RX and 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> <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: in case that action 4 is set, the chosen GPIO has to be configured in alternate function ALT3 through AT#GPIO command</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>										
AT#TEMPMON?	<p>Read command reports the current parameter settings for #TEMPMON command in the format:</p> <p>#TEMPMON: <urcmode>,<action>[,<hyst_time>[,<GPIO>]]</p>										
AT#TEMPMON=?	<p>Test command reports the supported range of values for parameters <mod>, <urcmode>, <action>, <hyst_time> and <GPIO></p>										
Note	<p>The following table is describing the temperature levels.</p> <table border="1"> <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
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Extreme Temperature Upper Bound	80°C										

4.1.7.1.18 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 be bigger than the extreme temperature lower limit, and not lower than its minimum admitted value (see TEMPMON for temperature limits);</p>	

	<p>Note 3: the operating temperature upper limit must be bigger than the operating temperature lower limit, and not lower than its minimum admitted value (see TEMPMON for temperature limits);</p> <p>Note 4: the extreme temperature upper limit must be bigger than the operating temperature upper limit</p> <p>Note 5: The extreme temperature upper limit must be lower than its upper limit (see TEMPMON for temperature limits).</p> <p>Note 5: the temperature correctly 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>
AT#TEMPCFG?	<p>read the currently active temperature range :</p> <p>#TEMPCFG: <TempExLowBound>, <TempOpLowBound>, <TempOpUpBound>, <TempExUpBound></p>
AT#TEMPCFG =?	<p>Test command returns the supported range of <TempExLowBound>, <TempOpLowBound>, <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>

4.1.7.1.19 General Purpose Input/Output Pin Control - #GPIO

#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 - if <dir>=0 – INPUT, remove any Pull-up/Pull-down - 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 	

#GPIO - General Purpose Input/Output Pin Control	SELINT 2
	<p>1 - if <dir>=0 – INPUT, if <dir>=0 – INPUT, remove any Pull-up/Pull-down - 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</p> <p>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</p> <p>3 - if <dir>=0 – INPUT, enable Pull-Up 4 - if <dir>=0 – INPUT, enable Pull-Down</p> <p><dir> - GPIO pin direction 0 - pin direction is INPUT 1 - pin direction is OUTPUT 2,3,4,5,6 - pin direction is Alternate Function ALT1, ALT2, ALT3, ALT4, ALT5 respectively (see Note).</p> <p><save> - GPIO pin save configuration 0 – pin configuration is not saved 1 – pin configuration is saved</p> <p>Note: when <save> is omitted the configuration is stored only if user set or reset ALTx function on <dir> parameter. Note: if values of <dir> is set in output and save omitted then it is set automatically in input on next power cycle.</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
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> <p>where <dir> - as seen before <stat> - as seen before</p> <p>If <mode> = 3,4 the output format is #GPIO:<dir>,<stat>,<mode>[<CR><LF>#GPIO:<dir>,<stat>,<mode>[...]]</p>
AT#GPIO=?	<p>Test command reports the supported range of values of the command parameters <pin>, <mode> , <dir> and <save>.</p>
Example	<pre>AT#GPIO=3,0,1 OK AT#GPIO=3,2 #GPIO: 1,0 OK</pre>

#GPIO - General Purpose Input/Output Pin Control	SELINT 2
	AT#GPIO=4,1,1 OK AT#GPIO=5,0,0 OK AT#GPIO=6,2 #GPIO: 0,1 OK

4.1.7.1.20 STAT_LED GPIO Setting - AT#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 1 - GPIO tied High 2 - GPIO handled by Module Software (factory default) with the following timings: <ul style="list-style-type: none"> • not registered : always on • registered in idle: blinking 1s on and 2s off 3 - GPIO is turned on and off alternatively, with period defined by the sum <on_duration> + <off_duration> 4 - GPIO handled by Module Software with the following timings: <ul style="list-style-type: none"> • not registered : blinking 0,5s on and 0,5s off • registered in idle: blinking 300ms on and 2,7s off <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: to have STAT_LED operative, the first time enter AT#GPIO=7,1,1,1</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>, <on_duration> and <off_duration>.</p>	

4.1.7.1.21 Save STAT_LED GPIO Setting - #SLEDSAV

#SLEDSAV - Save STAT_LED GPIO Setting		SELINT 2
AT#SLEDSAV	Execution command saves STAT_LED setting in NVM.	
AT#SLED=?	Test command returns OK result code.	

4.1.7.1.22 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:</p> <p><GPIO_pin> - GPIO pin number:</p> <ul style="list-style-type: none"> 0 – no GPIO pin is selected (default value) 6 – GPIO number 6 <p><Simin_det_mode> - status of Simin pin for sim detection (dummy, not used):</p> <ul style="list-style-type: none"> 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 	

#SIMINCFG – SIMIN pin configuration		SELINT 2
AT#SIMINCFG?	Read command reports the selected GPIO pin in the format: #SIMINCFG: <GPIO_pin>, <Simin_det_mode>	
AT#SIMINCFG=?	Test command reports supported range of values for parameter <GPIO_pin> and <Simin_det_mode>	

4.1.7.1.23 Read Analog/Digital Converter input - #ADC

#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: #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 <mode> - required action 2 - query ADC value <dir> - direction; its interpretation is currently not implemented 0 - no effect.</p> <p>Note: The command returns the last valid measure.</p>	
AT#ADC?	Read command reports all pins voltage, converted by ADC, in the format: #ADC: <value>[<CR><LF>#ADC: <value>[...]]	
AT#ADC=?	Test command reports the supported range of values of the command parameters <adc> , <mode> and <dir> .	

4.1.7.1.24 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: <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. <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 <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.</p>	

#V24CFG - V24 Output Pins Configuration	SELINT 2
	<p>Note: when the <save> parameter is omitted, the pin configuration is NOT stored.</p> <p>Note: changing V24 pins configuration may affect the cellular module functionality set through AT+CFUN.</p>
AT#V24CFG?	<p>Read command returns the current configuration for all the pins (both output and input) in the format:</p> <pre>#V24CFG: <pin1>,<mode1>[<CR><LF><CR><LF> #V24CFG: <pin2>,<mode2>[...]]</pre> <p>Where: <pin> - AT command serial port interface HW pin <moden> - AT commands serial port interface hardware pin mode</p>
AT#V24CFG=?	<p>Test command reports supported range of values for parameters <pin>, <mode> and <save>.</p>

4.1.7.1.25 V24 Output Pins Control - #V24

#V24 - V24 Output Pins Control	SELINT 2
AT#V24=<pin>[,<state>]	<p>Set command sets the AT commands serial port interface output pins state.</p> <p>Parameters: <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: we maintain this value only for backward compatibility, but trying to set its state raises the result code "ERROR" (not yet implemented) 5 - RTS (Request To Send). This is not an output pin: we maintain this value only for backward compatibility, but trying to set its state raises the result code "ERROR"</p> <p><state> - State of AT commands serial port interface output hardware pins(0, 1, 2, 3) when pin is in GPIO mode (see #V24CFG): 0 - Low 1 - High</p> <p>Note: if <state> is omitted the command returns the actual state of the pin <pin>.</p>
AT#V24?	<p>Read command returns actual state for all the pins (either output and input) in the format:</p> <pre>#V24: <pin1>,<state1>[<CR><LF> #V24: <pin2>,<state2>[...]]</pre> <p>where <pin> - AT command serial port interface HW pin <state> - AT commands serial port interface hardware pin state</p>
AT#V24=?	<p>Test command reports supported range of values for parameters <pin> and <state>.</p>

4.1.7.1.26 Cell Monitor - #MONI

#MONI - Cell Monitor	SELINT 2
<p>AT#MONI=[<number>]</p>	<p>#MONI is both a set and an execution command.</p> <p>Set command sets the cells, from which extract network related information.</p> <p>Parameter: <number> 0 – it is the serving cell 1 – neighbor cells 2..7 – it is not available</p> <p>Execution command (AT#MONI<CR>) reports LTE related information for selected cell or cells:</p> <p>a) When extracting data for the serving cell and the network name is known the format is:</p> <p>#MONI: <netname> RSRP:<rsrp> RSRQ:<rsrq> TAC:<tac> Id:<id> EARFCN:<earfcn> PWR:<dBm> DRX:<drx></p> <p>b) When the network name is unknown, the format is:</p> <p>#MONI: Cc:<cc> Nc:<nc> RSRP:<rsrp> RSRQ:<rsrq> TAC:<tac> Id:<id> EARFCN:<earfcn> PWR:<dBm> DRX:<drx></p> <p>c) When extracting data for a neighbour cell, the format is:</p> <p>#MONI: RSRP:<rsrp> RSRQ:<rsrq> Id:<id> EARFCN:<earfcn> PWR:<dBm>dbm</p> <p>where: <netname> - name of network operator <cc> - country code <nc> - network operator code <rsrp> - Reference Signal Received Power <rsrq> - Reference Signal Received Quality <tac> - Tracking Area Code <id> - cell identifier <earfcn> - E-UTRA Assigned Radio Channel <dBm> - received signal strength in dBm <drx> - Discontinuous reception cycle length (dummy, always 0)</p>
<p>AT#MONI=?</p>	<p>Test command reports the maximum number of cells from which we can extract information, 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 from which we can extract network related information. <CellSet> - the last setting done with command #MONI.</p>
<p>Examples</p>	<p><i>Set command selects the cell 0 in the network</i> at#moni=0 OK</p>

4.1.7.1.27 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 the cells, from which extract network related information.</p> <p>Parameter:</p> <p><number> 0 – it is the serving cell 1 – neighbor cells 2..7 – it is not available</p> <p>Execution command (AT#MONIZIP<CR>) reports LTE-related information for selected cell or cells:</p> <p>If the last setting done by #MONIZIP is in the range [0..6], the output format is as follows:</p> <p>a) When extracting data for the serving cell the format is: #MONIZIP: <cc><nc>,<rsrp>,<rsrq>,<tac>,<id>,<earfcn>,<dBm>,<drx></p> <p>b) When extracting data for a neighbour cell the format is: #MONIZIP: <rsrp>,<rsrq>,<id>,<earfcn>,<dBm></p> <p>where:</p> <p><cc> - country code <nc> - network operator code <id> - cell identifier <dBm> - received signal strength in dBm <drx> - Discontinuous reception cycle length (dummy, always 0) <rsrp> - Reference Signal Received Power <rsrq> - Reference Signal Received Quality <tac> - Tracking Area Code <earfcn> - E-UTRA Assigned Radio Channel</p>
<p>AT#MONIZIP=?</p>	<p>Test command reports the maximum number of cells information, along with the ordinal number of the current selected cell, in the format:</p> <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 information.</p> <p><CellSet> - the last setting done with command #MONIZIP.</p>

4.1.7.1.28 Serving Cell Information - #SERVINFO

#SERVINFO - Serving Cell Information		SELINT 2
AT#SERVINFO	Execution command reports information about serving cell, in the format: #SERVINFO: <EARFCN>,<dBM>,[<NetNameAsc>],<NetCode>,<PhysicalCellId>,<TAC>,<DRX>,<SD>,<RSRP> where: <EARFCN> - E-UTRA Assigned Radio Channel <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)] <PhysicalCellId> - Physical Cell ID <TAC> - Tracking Area Code <DRX> - Discontinuous reception cycle length <SD> - Service Domain 0 – No Service 1 – CS Only 2 – PS Only 3 – CS & PS <RSRP> - Reference Signal Received Power	
AT#SERVINFO=?	Test command tests for command existence.	

4.1.7.1.29 Read current network status - #RFSTS

#RFSTS – Read current network status		SELINT 2
AT#RFSTS	Execution command reads current network status, in the format: #RFSTS: <PLMN>,<EARFCN>,<RSRP>,<RSSI>,<RSRQ>,<TAC>,<RAC>,[<TXPWR>],<DRX>,<MM>,<RRC>,<CID>,<IMSI>,[<NetNameAsc>],<SD>,<ABND> Where: <PLMN> - Country code and operator code(MCC, MNC) <EARFCN> - E-UTRA Assigned Radio Channel <RSRP> - Reference Signal Received Power <RSSI> - Received Signal Strength Indication <RSRQ> - Reference Signal Received Quality <TAC> - Tracking Area Code <RAC> - Routing Area Code <TXPWR> - Tx Power (In traffic only) <DRX> - Discontinuous reception cycle Length (cycle length in ms) <MM> - Mobility Management state (dummy) <RRC> - Radio Resource state (dummy) <CID> - Cell ID <IMSI> - International Mobile Station ID <NetNameAsc> - Operator name, quoted string type <SD> - Service Domain 0 - No Service 1 - CS only 2 - PS only 3 - CS+PS <ABND> - Active Band 1..63 according to 3GPP TS 36.101	
AT#RFSTS=?	Test command tests for command existence.	

4.1.7.1.30 Query SIM Status - #QSS

#QSS - Query SIM Status		SELINT 2
AT#QSS=[<mode>]	<p>Set command enables/disables the Query SIM Status unsolicited indication in the ME.</p> <p>Parameter: <mode> - type of notification 0 - disabled (factory default); it's possible only to query the current SIM status through Read command AT#QSS? 1 - enabled; the ME informs at every SIM status change through the following basic unsolicited indication:</p> <p style="text-align: center;">#QSS: <status></p> <p>where: <status> - current SIM status 0 - SIM NOT INSERTED 1 - SIM INSERTED</p> <p>2 - enabled; the ME informs at every SIM status change through the following unsolicited indication:</p> <p style="text-align: center;">#QSS: <status></p> <p>where: <status> - current SIM status 0 - SIM NOT INSERTED 1 - SIM INSERTED 2 - SIM INSERTED and PIN UNLOCKED 3 - SIM INSERTED and READY (SMS and Phonebook access are possible).</p> <p>Note: the command reports the SIM status change after the <mode> has been set to 2. We strongly suggest to set <mode>=2 and save the value in the user profile, then power off the module. The proper SIM status will be available at the next power on.</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> (<mode> and <status> are described above)</p> <p>To get the proper SIM status, we strongly suggest to set <mode>=2 and save the value in the user profile, then power off and power on the module.</p>	
AT#QSS=?	Test command returns the supported range of values for parameter <mode> .	

4.1.7.1.31 Delete all phonebook entries - #CPBD

#CPBD – Delete All Phonebook Entries		SELINT 2
AT#CPBD	Execution command deletes all phonebook entries in the current phonebook memory storage selected with +CPBS .	
AT#CPBD=?	Test command tests for command existence	

4.1.7.1.32 SMS Overflow - #SMOV

#SMOV - SMS Overflow		SELINT 2
AT#SMOV= [<mode>]	<p>Set command enables/disables the SMS overflow signaling function.</p> <p>Parameter:</p> <p><mode> 0 - disables SMS overflow signaling function (factory default) 1 - enables SMS overflow signaling function; when the maximum storage capacity has been reached, the following network initiated 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 "ME" – NVM SMS storage</p>	
AT#SMOV?	<p>Read command reports whether the SMS overflow signaling function is currently enabled or not, in the format:</p> <p>#SMOV: <mode></p>	
AT#SMOV=?	Test command returns the supported range of values of parameter <mode> .	

4.1.7.1.33 Mailbox Numbers - #MBN

#MBN - Mailbox Numbers		SELINT 2
AT#MBN	<p>Execution command returns the mailbox numbers stored on SIM, if this service is provided by the SIM.</p> <p>The response format is: [#MBN: <index>,<number>,<type>[,<text>][,<mboxtype>][<CR><LF> #MBN: <index>,<number>,<type>[,<text>][,<mboxtype>[...]]]</p> <p>where:</p> <p><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 "FAX" - fax "EMAIL" - electronic mail "OTHER" - other</p> <p>Note: if all queried locations are empty (but available), no information text lines will be returned.</p>	
AT#MBN=?	Test command returns the OK result code.	

4.1.7.1.34 Message Waiting Indication - #MWI

#MWI - Message Waiting Indication	SELINT 2
<p>AT#MWI=<enable></p>	<p>Set command enables/disables the presentation of the message waiting indicator URC.</p> <p>Parameter: <enable> 0 - disable the presentation of the #MWI URC 1 - enable the presentation of the #MWI URC each time a new message waiting indicator is received from the network and, at startup, the presentation of the status of the message waiting indicators, as they are currently stored on SIM..</p> <p>The URC format is:</p> <p>#MWI: <status>,<indicator>[,<count>]</p> <p>where: <status> 0 - clear: it has been deleted one of the messages related to the indicator <indicator>. 1 - set: there's a new waiting message related to the indicator <indicator></p> <p><indicator> 1 - either Line 1 (CPHS context) or Voice (3GPP context) 2 - Line 2 (CPHS context only) 3 - Fax 4 - E-mail 5 - Other</p> <p><count> - message counter: network information reporting the number of pending messages related to the message waiting indicator <indicator>.</p> <p>The presentation at startup of the message waiting indicators status, as they are currently stored on SIM, is as follows:</p> <p>#MWI: <status>,<indicator>,<count>][<CR><LF> #MWI: <status>,<indicator>,<count>][...]]]</p> <p>where: <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>

4.1.7.1.35 Network Emergency Number Update - #NWEN

#NWEN – Network Emergency Number Update		SELINT 2
AT#NWEN=[<en>]	<p>Set command enables/disables unsolicited indication of emergency number update.</p> <p>Parameters:</p> <p><en> 0 - disables unsolicited indication of emergency number update (factory default) 1 - enables unsolicited indication of emergency number update</p> <p>#NWEN: <type></p> <p>where:</p> <p><type> 1 number list update from internal ME 2 number list update from SIM 3 number list update from network</p>	
AT#NWEN?	<p>Read command reports whether the unsolicited indication of network emergency number update is currently enabled or not, in the format:</p> <p>#NWEN: <en></p>	
AT#NWEN=?	Test command reports the range for the parameter <en>	

4.1.7.1.36 Network mode on RNDIS/ECM - AT#NWMODE

AT#NWMODE – Network mode on RNDIS/ECM		SELINT 2
AT#NWMODE= <mode>, <dhcp>, <dmz>	<p>Set command defines the network configuration on USB (RNDIS/ECM interface).</p> <p>Set command reboots immediately the unit.</p> <p>Parameters:</p> <p><mode> - network mode 0 – router (factory default) 1 – bridge</p> <p><dhcp> - DHCP and network IP address; its meaning depends on <mode> setting: 0 – if <mode>=0 DHCP on RNDIS/ECM is disabled (factory default); host IP address should be manually set at 10.0.0.10 0 – if <mode>=1 DHCP on RNDIS/ECM is enabled as local network; host IP address is automatically set at 10.0.0.10 1 – if <mode>=0 DHCP on RNDIS/ECM is enabled as local network; host IP address is automatically set at 10.0.0.10 1 – if <mode>=1 DHCP on RNDIS/ECM is enabled as modem; host IP address is automatically set at the IP address given by the operator</p> <p><dmz> - enable/disable DMZ 0 – server services inside the module are accessible from outside (factory default) 1 – server services in the host are accessible from outside via USB (RNDIS/ECM) 2 – server services in the host are accessible from outside via PPP (client IPv4 address is 10.0.1.10)</p>	
AT#NWMODE?	<p>Read command returns the current network configuration on USB, in the format:</p> <p>#NWMODE: <mode>,<dhcp>,<dmz></p>	
AT#NWMODE=?	Test command returns the range of the parameters <mode> , <dhcp> and <dmz>	

4.1.7.1.37 Update PLMN List - #PLMNUPDATE

#PLMNUPDATE – Update PLMN List		SELINT 2
AT#PLMNUPDATE=[<action>,<MCC>,<MNC>[,<PLMNname>]]	<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 0 - remove the entry with selected <MCC> and <MNC>. Parameter <PLMNname> will be ignored 1 - update the entry with selected <MCC> and <MNC> if it is already present, otherwise add it. 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 range of <action> parameter and the maximum length of <MCC>, <MNC> and <PLMNname> parameters.</p>	

4.1.7.1.38 PLMN List Selection - #PLMNMODE

#PLMNMODE – PLMN List Selection		SELINT 2
AT#PLMNMODE=[<mode>]	<p>Set command selects the list of PLMN names to be used currently</p> <p>Parameter:</p> <p><mode> 1 – disable PLMN list updates set with #PLMNUPDATE command (factory default) 2 – enable PLMN list updates set with #PLMNUPDATE command.</p> <p>Note: <mode> 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: <mode> (<mode> described above)</p>	
AT#PLMNMODE=?	<p>Test command returns the supported range of values for parameter <mode>.</p>	

4.1.7.1.39 Periodical FPLMN cleaning - #FPLMN

#FPLMN – Periodically FPLMN clearing		SELINT 2
AT#FPLMN=<action>[,<period>]	<p>Periodically delete the Forbidden PLMN list stored inside the SIM card.</p> <p>Parameters: <action> : 0 – disable periodic FPLMN clearing (default) 1 – enable periodic FPLMN clearing with period <period> 2 – clear FPLMN file on SIM (one shot) 3 – list contents of forbidden PLMN list file</p> <p><period> : interval in minutes from FPLMN clearing, range 1...60, default value is 60</p> <p>Note: the disable/enable value set by command is directly stored in NVM.</p>	
AT#FPLMN?	<p>Read command reports whether the periodic deletion is currently enabled or not, and the deletion period, in the format:</p> <p>#FPLMN: <action>,<period></p>	
AT#FPLMN=?	<p>Test command reports available values for parameters <action> and <period>.</p>	

4.1.7.1.40 Packet Service Network Type - #PSNT

#PSNT – Packet Service Network Type		SELINT 2
AT#PSNT=[<mode>]	<p>Set command enables/disables unsolicited result code for packet service network type (PSNT). Parameter: <mode> 0 - disable #PSNT unsolicited result code (factory default) 1 - enable #PSNT unsolicited result code</p> <p>#PSNT: <nt> Where <nt> - network type 4 – LTE network 5 - unknown or not registered</p>	
AT#PSNT?	<p>Read command reports <mode> and <nt> #PSNT: <mode>,<nt> where <mode> 0 - #PSNT unsolicited result code disabled 1 - #PSNT unsolicited result code enabled <nt> - network type 4 – LTE network 5 - unknown or not registered.</p>	
AT#PSNT=?	Test command reports the range for the parameter <mode>	

4.1.7.1.41 SIM Presence status - #SIMPR

#SIMPR – SIM Presence status		SELINT 2
AT#SIMPR=[<mode>]	<p>Set command enables/disables the SIM Presence Status unsolicited indication in the ME. This command reports also the status of the remote SIM, if the SAP functionality is supported and has been enabled.</p> <p>Parameter: <mode> - type of notification 0 – disabled (factory default) 1 - enabled; the ME informs at every (local and remote) SIM status change through the following unsolicited indication:</p> <p>#SIMPR: <SIM>,<status></p> <p>where: <SIM> - local or remote SIM 0 local SIM 1 remote SIM <status> - current SIM status 0 - SIM NOT INSERTED 1 - SIM INSERTED</p>	
AT#SIMPR?	<p>Read command reports whether the unsolicited indication #SIMPR is currently enabled or not, along with the local and remote SIM status, in the format: #SIMPR: <mode>,0,<status><CR><LF> #SIMPR: <mode>,1,<status></p> <p>If SAP functionality is not supported or enabled the remote SIM status will always be 0.</p>	
AT#SIMPR=?	Test command reports the range for the parameter <mode>	

4.1.7.1.42 Call Forwarding Flags - #CFF

#CFF – Call Forwarding Flags	SELINT 2
AT#CFF=<enable>	<p>Set command enables/disables the presentation of the call forwarding flags URC.</p> <p>Parameter: <enable> 0 - disable the presentation of the #CFF URC (default value) 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.</p> <p>The URC format is:</p> <p>#CFF: <status>,<fwdtonum></p> <p>where: <status> 0 – CFU disabled 1 – CFU enabled</p> <p>< fwdtonum > - number incoming calls are forwarded to</p> <p>The presentation at start up of the call forwarding flags status, as they are currently stored on SIM, is as follows:</p> <p>#CFF: <status>,< fwdtonum ></p> <p>where: <status> 0 – CFU disabled 1 – CFU enabled < fwdtonum > - number incoming calls are forwarded to</p>
AT#CFF?	<p>Read command reports whether the presentation of the call forwarding flags URC is currently enabled or not, and, if the flags field is present in the SIM, the current status of the call forwarding flags as they are currently stored on SIM, and the number incoming calls are forwarded to. The format is:</p> <p>#CFF: <enable>[,<status>,< fwdtonum >]</p>
AT#CFF=?	<p>Test command returns the range of available values for parameter <enable>.</p>

4.1.7.1.43 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>	

4.1.7.1.44 Clock Mode - #CCLKMODE

#CCLKMODE – Clock Mode		SELINT 2
AT#CCLKMODE=<mode>	<p>Set command enables the local time or the UTC time in AT+CCLK and AT#CCLK commands and in #NITZ URC</p> <p>Parameter: <mode> - time and date mode 0 - Local time + local time zone offset (default) 1 – UTC time + local time zone offset</p> <p>Note: the setting is saved automatically in NVM.</p>	
AT#CCLKMODE?	<p>Read command reports whether the local time or the UTC time is enabled, in the format:</p> <p>#CCLKMODE: <mode> (<mode> described above)</p>	
AT#CCLKMODE=?	<p>Test command reports the supported range of values for parameter <mode></p>	
Example:	<pre> at#cclkmode? #CCLKMODE: 0 OK #NITZ: 13/03/05,15:20:33+04,0 at+cclk? +CCLK: "13/03/05,15:20:37+04" OK at#cclkmode=1 OK at+cclk? +CCLK: "13/03/05,14:20:45+04" OK at#cclkmode? #CCLKMODE: 1 OK #NITZ: 13/03/05,14:20:53+04,0 at+cclk? +CCLK: "13/03/05,14:20:55+04" OK at#cclkmode=0 OK at+cclk? +CCLK: "13/03/05,15:20:59+04" OK </pre>	

4.1.7.1.45 Enhanced Network Selection - #ENS

#ENS - Enhanced Network Selection		SELINT 2
AT#ENS=[<mode>]	<p>Set command is used to activate the ENS functionality.</p> <p>Parameter: <mode> 0 - disable ENS functionality (default for LE866-SV1) 1 - enable ENS functionality</p> <p>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"> 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 <p>Note: the new setting will be available just at first next power-up.</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	Cingular Wireless LLC Requirement	

4.1.7.1.46 Select Band - #BND

#BND - Select Band		SELINT 2
AT#BND=<band>[,<UMTS band>[,<LTE band>]]	<p>Set command selects the current LTE bands.</p> <p>Parameter <band>: 0 - (default value)</p> <p><UMTS band>: 0 - (default value)</p> <p><LTE band> values in the range 1 – 4294967295 as a sum of: 1 - B1 2 - B2 4 - B3 8 - B4 ... i - B(2exp(i-1)) ... 2147483648 - B32</p> <p>Note: This setting is effective after power cycle. Note: if the automatic band selection is enabled (AT#AUTOBND=2) then you can issue AT#BND=<band>,<UMTS band>,<LTE band> but it will have no functional effect; nevertheless every following read command AT#BND? will report that setting. Note: not all products support all the values of parameter <band>: please refer to test command to find the supported range of values. Note: not all products support all the values of parameter <UMTS band>: please refer to test command to find the supported range of values. Note: not all products support all the values of parameter <LTE band>: please refer to test command to find the supported range of values (maximum value is the sum representation of supported bands).</p>	
AT#BND?	<p>Read command returns the current selected band in the format:</p> <p>#BND: <band>,<UMTS band>,<LTE band></p>	
AT#BND=?	<p>Test command returns the supported range of values of parameters <band>, <UMTS band> and <LTE band>.</p>	

4.1.7.1.47 Automatic Band Selection - #AUTOBND

#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 next power-up 1 – value not supported. 2 – (default) enables automatic band selection in all supported bands at next power-up</p> <p>Note: if the current setting is equal to AT#AUTOBND=0 and we're issuing AT#ENS=1, at first next power-up after the ENS functionality has been activated (see #ENS) the automatic band selection (AT#AUTOBND=2) is enabled.</p>	
AT#AUTOBND?	<p>Read command returns whether the automatic band selection is enabled or not in the form:</p>	

#AUTOBND - Automatic Band Selection		SELINT 2
	#AUTOBND: <value>	
AT#AUTOBND=?	Test command returns the range of supported values for parameter <value>.	

4.1.7.1.48 PPP-GPRS Parameters Configuration - #GPPPCFG

AT#GPPPCFG - PPP-GPRS Parameters Configuration		SELINT 2
AT#GPPPCFG=<serverIPAddress> [,<unused_A>] [,<unused_B>]	<p>Set command sets one parameter for a PPP-GPRS connection.</p> <p>Parameters: <serverIPAddress> - Server IP Address that is assigned to the PPP server side (the module); Sstring type, it can be any valid IP address in the format: xxx.xxx.xxx.xxx.</p> <p>Note: if <serverIPAddress>="000.000.000.000" (factory default) server address is provided by operator</p> <p>Note: The host IP address (assigned to the PPP client side – the host application) by default is "10.0.1.10" if it is not included in the IPCP Conf Req by the host application.</p>	
AT#GPPPCFG?	<p>Read command reports the current PPP-GPRS connection parameters in the format:</p> <p>#GPPPCFG: <serverIPAddress>,,<unused_A>,<unused_B></p>	
AT#GPPPCFG=?	<p>Test command returns the range of supported values for parameters</p> <p>#GPPPCFG: (25),(0)</p>	

4.1.7.1.49 PPP- Data Connection Authentication Type – AT#GAUTH

AT#GAUTH - PPP Data Connection Authentication Type		SELINT 2
AT#GAUTH=<type>	<p>Set command sets the authentication type used in PDN Connection Activation during PPP-GPRS connections and stores it in the NVM of the device.</p> <p>Parameter <type> 0 - no authentication (factory default) 1 - PAP authentication 2 - CHAP authentication</p>	
AT#GAUTH?	<p>Read command reports the current authentication type, in the format:</p> <p>#GAUTH: <type></p>	
AT#GAUTH=?	<p>Test command returns the range of supported values for parameter <type>.</p>	

4.1.7.1.50 PPP Authentication Username and Password – AT#GAUTHCFG

AT#GAUTHCFG – PPP Authentication Username and Password		SELINT 2
AT#GAUTHCFG= <username> [,<password>]	<p>Set command defines the username and password used in PDN Connection Activation during PPP-GPRS connections and stores them in the NVM of the device.</p> <p>Parameters: <username> - PPP authentication username, string type <password> - PPP authentication password, string type</p> <p>Note: PPP Authentication Type is set through AT#GAUTH; if PAP or CHAP is used, authentication is successfully managed if the host application uses the same credentials (<username> and <password>) saved in the device and these are accepted by operator during the Context Activation.</p>	
AT#GAUTHCFG?	<p>Read command returns the current username string, in the format:</p> <p>#GAUTHCFG: <username></p>	
AT#GAUTHCFG=?	<p>Test command returns the maximum length of <username> and <password>. The format is:</p> <p>#GAUTHCFG: 150,150</p>	

4.1.7.1.51 Skip Escape Sequence - #SKIPESC

#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. 2 - skips the escape sequence; its transmission is not enabled. If there are data pending in the receiving buffer from the serial port driver, they are deleted. 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>	

4.1.7.1.52 Subscriber number - #SNUM

#SNUM – Subscriber Number		SELINT 2
AT#SNUM= <index>[,<number>[,<alpha>]]	<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.</p>	

	<p><number> - string containing the phone number</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

4.1.7.1.53 Show Address - #CGPADDR

#CGPADDR - Show Address		SELINT 2
AT#CGPADDR= [<cid>,<cid> [,...]]]	<p>Execution command returns a list of PDN addresses for the specified PDN connection identifiers</p> <p>Parameters: <cid> - context identifier 1..5 - numeric parameter which specifies a particular PDN connection definition (see +CGDCONT command).</p> <p>Note: if no <cid> is specified, the 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> <p>#CGPADDR: <cid>,<address>[<CR><LF> #CGPADDR: <cid>,<address>[...]]]</p> <p>where: <cid> - context identifier, as before <address> - its meaning depends on the value of <cid> <cid> in (1..5)) it is a string that identifies the terminal in the address space applicable to the PDN.</p> <p>Note: if no address is available the empty string (“”) is represented as <address>.</p>	
AT#CGPADDR=?	Test command returns a list of defined <cid> s.	
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>	

4.1.7.1.54 Write to I2C - #I2CWR

#I2CWR – Write to I2C	SELINT 2
<p>AT#I2CWR= <sdaPin>, <sciPin>, <deviceld>, <registerld>, <len></p>	<p>This command is used to Send Data to an I2C peripheral connected to module GPIOs <sdaPin >: GPIO number for SDA . Valid range is “any input/output pin” (see Test Command.) <sciPin>: GPIO number to be used for SCL. Valid range is “any output pin” (see Test Command). <deviceld>: 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). <registerld>: Register to write data to , range 0..255. Value has to be written in hexadecimal form (without 0x). <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> <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>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>
<p>AT#I2CWR=?</p>	<p>Test command reports the supported list of currently available <service>s.</p>
<p>Example</p>	<pre>AT#I2CWR=2,3,20,10,14 > 00112233445566778899AABBCCDD<ctrl-z> OK</pre> <p>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>

4.1.7.1.55 Read from I2C - #I2CRD

#I2CRD – Read from I2C		SELINT 2
AT#I2CRD= <sdaPin> , <sciPin> , <deviceld> , <registerId> , <len>	<p>This command is used to Read 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><sciPin>: GPIO number to be used for SCL. Valid range is “any output pin” (see Command Test).</p> <p><deviceld>: 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> <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.	
Example	AT#I2CRD=2,3,20,10,12 #I2CRD: 00112233445566778899AABBCC OK	

4.1.7.1.56 Command Mode Flow Control - #CFLO

#CFLO – Command Mode Flow Control		SELINT 2
AT#CFLO= <enable>	<p>Set command enables/disables the flow control in command mode. If enabled, current flow control is applied to both data mode and command mode.</p> <p>Parameter:</p> <p><enable> -</p> <p>0 – disable flow control in command mode <default value></p> <p>1 – enable flow control in command mode</p> <p>Note: setting value is saved in the profile</p>	
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>	

4.1.7.1.57 Report concatenated SMS indexes - #CMGLCONCINDEX

#CMGLCONCINDEX – Report concatenated SMS indexes		SELINT 2
AT#CMGLCONCINDEX	<p>The command will report a line for each concatenated SMS containing:</p> <p>#CMGLCONCINDEX: N,i,j,k,...</p> <p>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</p> <p>If no concatenated SMS is present on the SIM, only OK result code will be returned.</p>	
AT#CMGLCONCINDEX=?	Test command returns OK result code.	
Example	<pre>at#cmglconclindex #CMGLCONCINDEX: 3,0,2,3 #CMGLCONCINDEX: 5,4,5,6,0,8 OK</pre>	

4.1.7.1.58 Select language - #LANG

#LANG – select language		SELINT 2
AT#LANG=<lan>	<p>Set command selects the currently used language for displaying different messages</p> <p>Parameter: <lan> - selected language “en” – English (factory default) “it” – Italian</p>	
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>	

4.1.7.1.59 Enable RX Diversity - AT#RXDIV

#RXDIV – enable RX Diversity		SELINT 2
AT#RXDIV=<DIV_enable>[,<DARP_mode>]	<p>This command enables/disables the RX Diversity.</p> <p>Parameters: <DIV_enable> RX Diversity 0 - disable the RX Diversity 1 - enable RX Diversity (default value)</p> <p><DARP_mode> DARP mode 0 – DARP not supported (dummy parameter)</p> <p>Note: the value set by command is directly stored in NVM and doesn't depend on the specific CMUX instance. It is available at next power on.</p>	
AT#RXDIV?	Read command reports the currently selected <DIV_enable> and <DARP_mode> parameters in the format: #RXDIV: <DIV_enable>,<DARP_mode>	
AT#RXDIV=?	Test command reports the supported range of values for parameters <DIV_enable> and <DARP_mode>	

4.1.7.1.60 No Carrier Indication Handling - #NCIH

#NCIH – NO CARRIER Indication Handling		SELINT 2
AT#NCIH = <enable>	Set command enables/disables sending of a NO CARRIER indication when a remote call that is ringing is dropped by calling party before it is answered at called party. Parameter: <enable> - NO CARRIER indication sending 0 - disabled (factory default) 1 - enabled	
AT#NCIH?	Read command reports whether the feature is currently enabled or not, in the format: #NCIH: <enable>	
AT#NCIH=?	Test command returns the supported range of values for parameter <enable>.	

4.1.7.1.61 Digital/Analog Converter Control - #DAC

#DAC - Digital/Analog Converter Control		SELINT 2
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 Note: the command automatically sets the GPIO_07 in alternate function ALT1</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>	
Example	<p><i>Enable the DAC out and set its integrated output to the 50% of the max value:</i></p> <p>AT#DAC=1,511 OK</p> <p><i>Disable the DAC out:</i></p> <p>AT#DAC=0 OK</p>	
Note	<p>With this command the DAC frequency is selected internally. D/A converter must not be used during POWERSAVING.</p> <p>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.</p>	

4.1.7.1.62 CMUX Mode Set - #CMUXMODE

#CMUXMODE – CMUX Mode Set		SELINT 2
AT#CMUXMODE=<mode>	<p>Set command specifies the CMUX mode</p> <p>Parameter:</p> <p><mode>:</p> <p>1 – Ignore DTR feature is disabled, a transition of the physical DTR line instructs the DCE to disable the CMUX and switches to the normal command mode</p> <p>5 – Ignore DTR feature is enabled, the DCE doesn't care the physical DTR line transitions (default)</p> <p>13 – Ignore DTR feature is enabled, so the DCE will continue the CMUX session, but the transition of the physical DTR will be broadcasted to all opened logical channel. The behavior of the particular channel depends on its own configuration, e.g. AT&D[<n>]</p>	
AT#CMUXMODE?	<p>Read command reports the currently selected <mode> in the format:</p> <p>#CMUXMODE: <mode></p>	
AT#CMUXMODE=?	Test command returns the range of the parameter <mode>	

4.1.7.1.63 User Determined User Busy - #CREJ

#CREJ – User Determined User Busy		SELINT 2
AT#CREJ	<p>Execution command disconnects all active calls (like ATH or AT+CHUP), but setting the “call rejected” cause (cause #21) for disconnection (only if we have an incoming call that has not been answered yet, and that we want to reject).</p>	
AT#CREJ=?	Test command returns the OK result code	

4.1.7.1.64 Reboot - #REBOOT

#REBOOT - Reboot		SELINT 2
AT#REBOOT	<p>Execution command reboots immediately the unit.</p> <p>It can be used to reboot the system after a remote update of the script in order to have the new one running.</p> <p>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</p> <p>Note: AT#REBOOT is an obsolete AT command; please refer to AT#ENHRST to perform a module reboot</p>	
AT#REBOOT=?	Test command returns OK result code.	
Example	<p>AT#REBOOT</p> <p>OK</p> <p>... Module Reboots ...</p>	

4.1.7.1.65 Physical connectivity info - AT#PCONI

AT#PCONI – Physical connectivity info		SELINT 2
AT#PCONI	<p>Execution command returns physical connectivity and eNB parameters info in the format</p> <p>%PCONI: <duplexing mode>,<antenna/TX mode>, <bw>, <EARFCN>, <Global cell ID>, <Physical cell ID>, <HNBN>, <band></p> <p>where:</p> <p><duplexing mode> - string:</p> <ul style="list-style-type: none"> - “TDD” - “FDD” <p><antenna/TX mode> - string:</p> <ul style="list-style-type: none"> - “tm1” (SISO) - “tm2” (tx diversity) - “tm3” (open loop MIMO) - “tm4” (closed loop MIMO) <p><bw>:</p> <ul style="list-style-type: none"> - 0 (1.4 MHz) - 1 (3 MHz) - 2 (5 MHz) - 3 (10 MHz) - 4 (15 MHz) - 5 (20 MHz) <p><EARFCN> - decimal: 3GPP spec encoding for EARFCN</p> <p><Global cell ID> - hexadecimal: 3GPP spec encoding for cell ID</p> <p><Physical cell ID> - decimal: Physical cell Id acquired by cell search</p> <p><HNBN> - string: Home eNB name encoded in SIB9 (string size up to 48 symbols)</p> <p><band> - decimal: As per 3GPP encoding for band</p>	
AT#PCONI=?	Test command returns OK result code	

4.1.7.1.66 Battery and charger status - #CBC

#CBC- Battery And Charger Status		SELINT 2
AT#CBC	Execution command returns the current Battery and Charger state in the format: #CBC: <ChargerState>,<BatteryVoltage> where: <ChargerState> - battery charger state 0 - charger not connected 1 - charger connected and charging 2 - charger connected and charge completed <BatteryVoltage> - battery voltage in units of ten millivolts: it is the real battery voltage only if charger is not connected; if the charger is connected this value depends on the charger voltage.	
AT#CBC=?	Test command returns the OK result code.	

4.1.7.1.67 Extended Numeric Error report - #CEERNET

#CEERNET – Ext error report for Network reject cause		SELINT 2																																																				
AT#CEERNET	Execution command causes the TA to return a numeric code in the format #CEERNET: <code> which should offer the user of the TA a report for the last mobility management (MM/GMM/EMM) or session management (SM/ESM) procedure not accepted by the network. <code> values as follows valid for (MM/GMM) or session management (SM) i.e. for 2G and 3G networks																																																					
	<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> <tr><td>3</td><td>ILLEGAL MS</td></tr> <tr><td>4</td><td>IMSI UNKNOWN IN VISITOR LR</td></tr> <tr><td>5</td><td>IMEI NOT ACCEPTED</td></tr> <tr><td>6</td><td>ILLEGAL ME</td></tr> <tr><td>7</td><td>GPRS NOT ALLOWED</td></tr> <tr><td>8</td><td>OPERATOR DETERMINED BARRING(SM cause failure)/ GPRS AND NON GPRS NOT ALLOWED(GMM cause failure)</td></tr> <tr><td>9</td><td>MS IDENTITY CANNOT BE DERIVED BY NETWORK</td></tr> <tr><td>10</td><td>IMPLICITLY DETACHED</td></tr> <tr><td>11</td><td>PLMN NOT ALLOWED</td></tr> <tr><td>12</td><td>LA NOT ALLOWED</td></tr> <tr><td>13</td><td>ROAMING NOT ALLOWED</td></tr> <tr><td>14</td><td>GPRS NOT ALLOWED IN THIS PLMN</td></tr> <tr><td>15</td><td>NO SUITABLE CELLS IN LA</td></tr> <tr><td>16</td><td>MSC TEMP NOT REACHABLE</td></tr> <tr><td>17</td><td>NETWORK FAILURE</td></tr> <tr><td>20</td><td>MAC FAILURE</td></tr> <tr><td>21</td><td>SYNCH FAILURE</td></tr> <tr><td>22</td><td>CONGESTION</td></tr> <tr><td>23</td><td>GSM AUTHENTICATION UNACCEPTABLE</td></tr> <tr><td>24</td><td>MBMS BEARER CAPABILITIES INSUFFICIENT FOR THE SERVICE</td></tr> <tr><td>25</td><td>LLC OR SNDCP FAILURE</td></tr> <tr><td>26</td><td>INSUFFICIENT RESOURCES</td></tr> <tr><td>27</td><td>MISSING OR UNKNOWN APN</td></tr> <tr><td>28</td><td>UNKNOWN PDP ADDRESS OR PDP TYPE</td></tr> </tbody> </table>		Value	Diagnostic	2	IMSI UNKNOWN IN HLR	3	ILLEGAL MS	4	IMSI UNKNOWN IN VISITOR LR	5	IMEI NOT ACCEPTED	6	ILLEGAL ME	7	GPRS NOT ALLOWED	8	OPERATOR DETERMINED BARRING(SM cause failure)/ GPRS AND NON GPRS NOT ALLOWED(GMM cause failure)	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	20	MAC FAILURE	21	SYNCH FAILURE	22	CONGESTION	23	GSM AUTHENTICATION UNACCEPTABLE	24	MBMS BEARER CAPABILITIES INSUFFICIENT FOR THE SERVICE	25	LLC OR SNDCP FAILURE	26	INSUFFICIENT RESOURCES	27	MISSING OR UNKNOWN APN	28	UNKNOWN PDP ADDRESS OR PDP TYPE
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#CEERNET – Ext error report for Network reject cause		SELINT 2
	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	CALL CANNOT BE IDENTIFIED(MM cause failure) / SMN NETWORK FAILURE(SM cause failure)
	39	REACTIVATION REQUIRED
	40	NO PDP CTXT ACTIVATED(GMM cause failure)/ FEATURE NOT SUPPORTED(SM cause failure)
	41	SEMANTIC ERROR IN TFT OPERATION
	42	SYNTACTICAL ERROR IN TFT OPERATION
	43	UNKNOWN PDP CNTXT
	44	SEM ERR IN PKT FILTER
	45	SYNT ERR IN PKT FILTER
	46	PDP CNTXT WITHOUT TFT ACTIVATED
	47	MULTICAST GROUP MEMBERSHIP TIMEOUT
	48	RETRY ON NEW CELL BEGIN(if MM cause failure) / ACTIVATION REJECTED BCM VIOLATION(if SM cause failure)
	50	PDP TYPE IPV4 ONLY ALLOWED
	51	PDP TYPE IPV6 ONLY ALLOWED
	52	SINGLE ADDRESS BEARERS ONLY ALLOWED
	63	RETRY ON NEW CELL END
	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
	112	APN RESTRICTION VALUE INCOMPATIBLE WITH ACTIVE PDN CONNECTION
	In 4G network the <code>s meaning are included in tables 9.9.4.4.1 (for ESM causes) and 9.9.3.9.1 (for EMM cause) of 3GPP TS 24.301 Release 9.	
AT#CEERNET=?	Test command returns OK result code.	
Reference	3GPP 24.008 24.301	

4.1.7.1.68 Extended error report for Network reject cause - #CEERNETEXT

#CEERNETEXT – Extended error report for Network reject cause	SELINT 2
AT#CEERNETEXT=<func>	<p>Set command allows to configure the functions of #CEERNETEXT.</p> <p>Parameters:</p> <p><func> - function</p> <ul style="list-style-type: none"> 0 – Disable the #CEERNETEXT URC (factory default) 1 – Enable the #CEERNETEXT URC 2 – Delete last info of Network Code, AcT, MCC and MNC <p>The URC will occur every time a mobility management (MM/GMM/EMM) or session management (SM/ESM) procedure is not accepted by the network.</p> <p>The URC format is:</p> <p>#CEERNETEXT: <code>,<AcT>,<MCC>,<MNC></p> <p>where:</p> <p><code> is last numeric Network Reject Cause from network, see <code> in AT#CEERNET</p> <p><AcT> is the access technology:</p> <ul style="list-style-type: none"> 0 GSM 2 UTRAN 7 E-UTRAN <p><MCC> is the Mobile Country Code of the used network when last numeric code has received</p> <p><MNC> is the Mobile Network Code of the used network when last numeric code has received</p> <p>Note. The values 0 and 1 of <func> parameter are saved in the NVM issuing AT&W command. The value 2 is not stored and does not change the current <func> value.</p> <p>1..10 - if the device is waiting either SIM PUK or SIM PUK2 to be given.</p>
AT#CEERNETEXT	<p>Execution command causes the TA to return the last numeric Network Reject Cause code, AcT, MCC and MNC received by the network</p> <p>#CEERNETEXT: <code>,<AcT>,<MCC>,<MNC></p>
AT#CEERNETEXT?	<p>Read command returns the current value of parameter <func> in the format:</p> <p>AT#CEERNETEXT: <func></p> <p>Where <func> can assume the following values:</p> <ul style="list-style-type: none"> 0 – if CEERNETEXT URC is disabled 1 – if CEERNETEXT URC is enabled
AT#CEERNETEXT=?	<p>Test command reports the supported range of values for the <func> parameter only, in the format:</p> <p>#CEERNETEXT: (0-2)</p>

4.1.7.1.69 Escape Sequence Guard Time - #E2ESC

#ENCALG – Set Encryption Algorithm		SELINT 2
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>	
AT#E2ESC?	<p>Read command returns current value of the escape sequence guard time, in the format:</p> <p>#E2ESC: <gt></p>	
AT#E2ESC=?	Test command returns the range of supported values for parameter <gt> .	

4.1.7.1.70 Network Timezone - #NITZ

#NITZ - Network Timezone		SELINT 2
AT#NITZ= [<val> [,<mode>]]	<p>Set command enables/disables (a) automatic date/time updating, (b) Full Network Name applying and (c) #NITZ URC; moreover it permits to change the #NITZ URC format.</p> <p>Date and time information can be sent by the network after GSM registration or after GPRS attach.</p> <p>Parameters: <val> 0 - disables (a) automatic data/time updating, (b) Full Network Name applying and (c) #NITZ URC; moreover it sets the #NITZ URC 'basic' format (see <datetime> below) 1..15 - as a sum of: 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) (default: 7) <mode> 0 - disables #NITZ URC (factory default) 1 - enables #NITZ URC; after date and time updating the following unsolicited indication is sent:</p> <p>#NITZ: <datetime></p> <p>where: <datetime> - string whose format depends on subparameter <val> "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> <p>where: yy - year MM - month (in digits) dd - day hh - hour mm - minute ss - second</p>	

#NITZ - Network Timezone		SELINT 2
	<p>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>d – number of hours added to the local TZ because of Daylight Saving Time (summertime) adjustment; range is 0-3.</p> <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?	<p>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:</p> <p>#NITZ: <val>,<mode></p>	
AT#NITZ=?	Test command returns supported values of parameters <val> and <mode>	

4.1.7.1.71 Read ICCID (Integrated Circuit Card Identification) - #CCID

#CCID - Read ICCID		SELINT 2
AT#CCID	Execution command reads on SIM the ICCID (card identification number that provides a unique identification number for the SIM)	
AT#CCID=?	Test command returns the OK result code.	

4.1.7.1.72 SIM detection mode - #SIMDET

#SIMDET - SIM Detection Mode		SELINT 2
AT#SIMDET= <mode>	<p>Set command specifies the SIM Detection mode</p> <p>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' 2 - automatic SIM detection through SIMIN Pin (default)</p> <p>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. 2 – automatic external SIM detection through SIMIN Pin (default). NOTE: with #SIMDET=1, although SIMIN pin is ignored, SIM removal is detected</p>	
AT#SIMDET?	<p>Read command returns the currently selected Sim Detection Mode in the format:</p> <p>#SIMDET: <mode>,<simin></p> <p>where: <mode> - SIM Detection mode, as before <simin> - SIMIN pin real status 0 - SIM not inserted 1 - SIM inserted</p>	
AT#SIMDET=?	Test command reports the supported range of values for parameter <mode>	

4.1.7.1.73 User Determined User Busy - #UDUB

#UDUB – User Determined User Busy		SELINT 2
AT#UDUB	Execution command disconnects all active calls (like ATH or AT+CHUP), but setting the “user busy” cause for disconnection (only if we have an incoming call that has not been answered yet, and that we want to reject).	
AT#UDUB=?	Test command returns the OK result code	

4.1.7.2 AT Run Commands

4.1.7.2.1 Enable SMS Run AT Service - #SMSATRUN

#SMSATRUN – Enable SMS AT Run service		SELINT 2
AT#SMSATRUN= <mod>	<p>Set command enables/disables the SMS AT RUN service.</p> <p>Parameter: < mod > 0: Service Disabled 1: Service Enabled</p> <p>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.</p> <p>Note2: the current settings are stored in NVM.</p>	
AT#SMSATRUN?	<p>Read command returns the current settings of <mode> and the value of <stat> in the format:</p> <p># SMSATRUN: <mod>,<stat></p> <p>where: <stat> - service status 0 – not active 1 - active</p>	
AT#SMSATRUN =?	Test command returns the supported values for the SMSATRUN parameters	
Notes:	By default the SMS ATRUN service is disabled It can be activated either by the command AT#SMSATRUN	

4.1.7.2.2 Set SMS Run AT Service parameters - #SMSATRUNCFG

#SMSATRUNCFG – Set SMS AT Run Parameters	SELINT 2
<p>AT#SMSATRUNCFG= <instance> [,<urcmod> [,<timeout>]]</p>	<p>Set command configures the SMS AT RUN service.</p> <p>Parameter: <instance>: AT instance that will be used by the service to run the AT Command. Range 1 - 5, default 3.</p> <p><urcmod>: 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>
<p>AT#SMSATRUNCFG?</p>	<p>Read command returns the current settings of parameters in the format:</p> <p>#SMSATRUNCFG:<instance>,<urcmod>,<timeout></p>
<p>AT#SMSATRUNCFG=?</p>	<p>Test command returns the supported values for the SMSATRUNCFG parameters</p>

4.1.7.2.3 SMS AT Run White List - #SMSATWL

#SMSATWL – SMS AT Run White List		SELINT 2
AT#SMSATWL= <action> ,<index> [,<entryType> [,<string>]]	Set command to handle the white list. <action >: 0 – Add an element to the WhiteList 1 – Delete an element from the WhiteList 2 – Print and element of the WhiteList < index >: Index of the WhiteList. Range 1-8 < entryType >: 0 – Phone Number 1 – Password NOTE: A maximum of two Password Entry can be present at same time in the white List <string>: string parameter enclosed between double quotes containing or the phone number or the password 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 NOTE: When the character “*” is used, it means that all the numbers that begin with the defined digit are part of the white list. 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.	
AT#SMSATWL?	Read command returns the list elements in the format: #SMSATWL: [<entryType>,<string>]	
AT#SMSATWL=?	Test command returns the supported values for the parameter <action> , <index> and <entryType>	
Note	It will return ERROR if executed using SMSATRUN digest mode or TCPATRUN server mode	

4.1.7.2.4 Set TCP Run AT Service parameter - #TCPATRUNCFG

#TCPATRUNCFG– Set TCP AT Run Service Parameters	SELINT 2
<p>AT#TCPATRUNCFG= <connId> ,<instance> ,<tcpPort> ,<tcpHostPort> ,<tcpHost> [,<urcmod> [,<timeout> [,<authMode> [,<retryCnt> [,<retryDelay>]]]]]</p>	<p>Set command configures the TCP AT RUN service Parameters:</p> <p><connId> socket connection identifier. Default 1. 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 1 - 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> <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: - any valid IP address in the format: "xxx.xxx.xxx.xxx" - any host name to be solved with a DNS query This parameter is mandatory. Default "".</p> <p><urcmod>: 0 – disable unsolicited messages 1 - enable an unsolicited message when the TCP socket is connected or disconnect (default).</p> <p>When unsolicited is enabled, an asynchronous TCP Socket connection is indicated to TE with unsolicited result code: #TCPATRUN: <iphostaddress></p> <p>When unsolicited is enabled, the TCP socket disconnection is indicated to TE with unsolicited result code: #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: 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> <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>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>,<urcmod>,<timeout>,<authMode>,<retryCnt>,<retryDelay></p>
AT#TCPATRUNCFG=?	<p>Test command returns the supported values for the TCPATRUNCFG parameters</p>

4.1.7.2.5 TCP Run AT Service in listen (server) mode - #TCPATRNL

#TCPATRNL– Enables TCP AT Run Service in listen (server) mode	SELINT 2
AT#TCPATRNL= <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 SMSATRNL 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 be rejected.</p> <p>Note3: the current settings are stored in NVM.</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: <stat> - connection status 0 – not in listen 1 - in listen or active</p>
AT#TCPATRNL=?	<p>Test command returns the supported values for the TCPATRNL parameters</p>

4.1.7.2.6 TCP AT Run Firewall List - #TCPATRUNFRWL

#TCPATRUNFRWL - TCP AT Run Firewall List		SELINT 2
AT#TCPATRUNFRWL= <action> , <ip_addr> , <net_mask>	<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> <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> <p>#TCPATRUNFRWL: <ip_addr>,<net_mask> #TCPATRUNFRWL: <ip_addr>,<net_mask> ... OK</p>	
AT#TCPATRUNFRWL=?	<p>Test command returns the allowed values for parameter <action>.</p>	
Note	<p>It will return ERROR if executed using SMSATRUN digest mode or TCPATRUN server mode</p>	

4.1.7.2.7 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> <p><action> - command action 0 - remove selected chain 1 - add an ACCEPT chain 2 - remove all chains (DROP everything); < userid > and < passw > has no meaning in this case.</p> <p>< 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> <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?	<p>Read command reports the list of all ACCEPT chain rules registered in the Authentication settings in the format:</p> <p>#TCPATRUNAATH: <user_id>,<passw> #TCPATRUNAATH: <user_id>,<passw> OK</p>	
AT#TCPATRUNAATH=?	<p>Test command returns the allowed values for parameter <action>.</p>	

4.1.7.2.8 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 > 0: Service Disabled 1: Service Enabled</p> <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: 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: <stat> - connection status 0 - not connected 1 – connected or connecting at socket level 2 - not connected but still trying to connect, attempting every delay time (specified in AT#TCPATRUNCFG)</p>	
AT#TCPATRUND =?	Test command returns the supported values for the TCPATRUND parameters	

4.1.7.2.9 Closing TCP Run AT Socket - #TCPATRUNCLOSE

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

4.1.7.2.10 TCP AT Run Command Sequence - #TCPATCMDSEQ

#TCPATCMDSEQ – TCP AT Run Command Sequence		SELINT 2
AT#TCPATCMDSEQ= <mod>	<p>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")</p> <p>Parameter: < mod > 0: Service Disabled (default) 1: Service Enabled</p>	
AT# TCPATCMDSEQ?	<p>Read command returns the current settings of parameters in the format:</p> <p>#TCPATCMDSEQ: <mod></p>	
AT# TCPATCMDSEQ =?	<p>Test command returns the supported values for the TCPATCMDSEQ parameters</p>	

4.1.7.2.11 Set the delay on 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. 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=?	<p>Test command returns the supported values for the ATRUNDELAY parameters</p>	

4.1.7.3 Event Monitor Commands

4.1.7.3.1 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 > 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	

4.1.7.3.2 EvMoni Service parameter - #ENAEVMONICFG

#ENAEVMONICFG – Set EvMoni Service Parameters	SELINT 2
<p>AT#ENAEVMONICFG=<instance> [,<urcmo> [,<timeo>]]</p>	<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 1 - 5. (Default: 3)</p> <p><urcmo>: 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> <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><timeo>: 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>
<p>AT#ENAEVMONICFG?</p>	<p>Read command returns the current settings of parameters in the format:</p> <p>#ENAEVMONICFG:<instance>,<urcmo>,<timeo></p>
<p>AT# ENAEVMONICFG =?</p>	<p>Test command returns the supported values for the ENAEVMONICFG parameters</p>

4.1.7.3.3 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 • ROAM - roaming monitoring • CONTDEACT - context deactivation monitoring • RING - call ringing monitoring (not yet implemented) • STARTUP – module start-up monitoring • REGISTERED – network registration monitoring • GPIO1 – monitoring on a selected GPIO in the GPIO range • GPIO2 – monitoring on a selected GPIO in the GPIO range • GPIO3 – monitoring on a selected GPIO in the GPIO range • GPIO4 – monitoring on a selected GPIO in the GPIO range • GPIO5 – monitoring on a selected GPIO in the GPIO range • ADCH1 – ADC High Voltage monitoring • ADCL1 – ADC Low Voltage monitoring • DTMF1 – monitoring on user defined DTMF string (not yet implemented) • DTMF2 – monitoring on user defined DTMF string (not yet implemented) • DTMF3 – monitoring on user defined DTMF string (not yet implemented) • DTMF4 – monitoring on user defined DTMF string (not yet implemented) • SMSIN – monitoring on incoming SMS • CONSUME1 – used to define an action to be used in consume functionality (see parameter <action_id> in #CONSUMECFG command) (not yet implemented) • CONSUME2 – used to define an action to be used in consume functionality (see parameter <action_id> in #CONSUMECFG command) (not yet implemented) • CONSUME3 – used to define an action to be used in consume functionality (see parameter <action_id> in #CONSUMECFG command) (not yet implemented) • CONSUME4 – used to define an action to be used in consume functionality (see parameter <action_id> in #CONSUMECFG command) (not yet implemented) • CONSUME5 – used to define an action to be used in consume functionality (see parameter <action_id> in #CONSUMECFG command) (not yet implemented) <p><mode>:</p> <ul style="list-style-type: none"> 0 – disable the single event monitoring (default) 1 – enable the single event monitoring <p>< paramType >: numeric parameter indicating the type of parameter contained in <param>. The 0 value indicates that <param> contains the AT command string to execute when the related event has occurred. Other values depend from the type of event.</p> <p><param>: it can be a numeric or string value depending on the value of <paramType> and on the type of event.</p> <p>If <paramType> is 0, then <param> is a string containing the AT command:</p> <ul style="list-style-type: none"> • It has to be enclosed between double quotes • It has to start with the 2 chars AT (or at) • If the string contains the character ”, then it has to be replaced with the 3 characters \22 • the max string length is 96 characters • if it is an empty string, then the AT command is erased

#EVMONI – Set the single Event Monitoring	SELINT 2
	<ul style="list-style-type: none"> • If <label> is VBATT, <paramType> can assume values in the range 0 - 2. <ul style="list-style-type: none"> ○ if <paramType> = 1, <param> indicates the battery voltage threshold in the range 0 – 500, where one unit corresponds to 10 mV (therefore 500 corresponds to 5 V). (Default: 0) ○ 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; supported range is from 1 to a value that depends on the hardware. (Default: 1) ○ 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.

#EVMONI – Set the single Event Monitoring		SELINT 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>	

4.1.7.3.4 Write Message To Memory - #CMGW

#CMGW - Write Message To Memory		SELINT 2
<p>(PDU Mode) AT#CMGW= <length>,<pdu></p>	<p>(PDU Mode) 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 <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: <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) AT#CMGW=<da> ,<text></p>	<p>(Text Mode) 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). <text> - text to write</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 3GPP TS 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 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>	
AT#CMGW=?	Test command returns the OK result code.	
Reference	3GPP TS 27.005	
Note	To avoid malfunctions is suggested to wait for the #CMGW: <index> or +CMS ERROR: <err> response before issuing further commands.	

4.1.7.3.5 AT Command Delay - #ATDELAY

#ATDELAY – AT Command Delay		SELINT 2
AT#ATDELAY= <delay>	<p>Set command sets a delay in second for the execution of following AT command.</p> <p>Parameters: <delay> - delay in 100 milliseconds intervals; 0 means no delay</p> <p>Note: <delay> is only applied to first command executed after #ATDELAY</p>	
AT#ATDELAY=?	Test command returns the supported range of values for parameter <delay>	
Example	<p>Delay “at#gpio=1,1,1” execution of 5 seconds:</p> <pre>at#gpio=1,0,1;#atdelay=50;#gpio=1,1,1 OK</pre>	

4.1.7.3.6 Send Message - #CMGS

#CMGS - Send Message		SELINT 2
<i>(PDU Mode)</i> AT#CMGS= <length>,<pdu>	<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><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>	
<i>(Text Mode)</i> AT#CMGS=<da> ,<text>	<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). <text> - text to send</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 used and current <fo> (see +CSMP) indicates that 3GPP TS 23.040 TP-User-Data-</p>	

#CMGS - Send Message	SELINT 2
	<p>Header-Indication is not set, then ME/TA converts the entered text into GSM alphabet, according to 3GPP TS 27.005, Annex A.</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>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>
AT#CMGS=?	Test command returns the OK result code.
Reference	3GPP TS 27.005
Note	To avoid malfunctions is suggested to wait for the #CMGS: <mr> or #CMS ERROR: <err> response before issuing further commands.

4.1.7.4 Multisocket AT Commands

4.1.7.4.1 Socket Status - #SS

#SS - Socket Status	SELINT 2
AT#SS[=<connId>]	<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: #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. 6 - Socket resolving DNS. 7 - Socket connecting.</p> <p><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></p> <p>...</p> <p>#SS: <connId6>,<state6>,<locIP6>,<locPort6>,<remIP6>,<remPort6></p>
AT#SS=?	Test command reports the range for parameter <connId>.

#SS - Socket Status	SELINT 2
Example	<pre> 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 OK 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 Socket 2: listening on local IP 91.80.90.162/local port 1000 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 AT#SS=2 #SS: 2,4,91.80.90.162,1000 OK We have information only about socket number 2 </pre>

4.1.7.4.2 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 read <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 (not supported on LE866)</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> ... #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>

4.1.7.4.3 Socket Type - #ST

#ST – Socket Type	SELINT 2
AT#ST [=<ConnId>]	<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: #ST: <connId>,<type>,<direction></p> <p>where < connId > - socket connection identifier 1..6 < type > - socket type 0 – No socket 1 – TCP socket 2 – UDP socket < 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> <p>...</p> <p>#ST: <connId6>,< type 6>,< direction 6></p>
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>

4.1.7.4.4 Context Activation - #SGACT

#SGACT - Context Activation		SELINT 2
AT#SGACT=<cid>,<stat>[,<userId>,<pwd>]	<p>Execution command is used to activate or deactivate the specified PDN connection.</p> <p>Parameters:</p> <p><cid> - PDN connection identifier 1..5 - numeric parameter which specifies a particular PDN connection definition</p> <p><stat> 0 - deactivate the context 1 - activate the context</p> <p><userId> - string type, used only if the context requires it</p> <p><pwd> - string type, used only if the context requires it</p> <p>Note: context activation/deactivation returns ERROR if there is not any socket associated to it (see AT#SCFG).</p> <p>Note: In LTE network, default PDN connection(cid 1) is activated by piggybacking on LTE attach procedure and maintained until detached from NW. This command with cid 1 is just binding or unbinding application to the default PDN connection.</p>	
AT#SGACT?	<p>Returns the state of all the contexts that have been defined</p> <p>#SGACT: <cid1>,<Stat1><CR><LF> ... #SGACT: <cid5>,<Stat5></p> <p>where: <cidn> - as <cid> before <statn> - context status 0 - context deactivated 1 - context activated</p>	
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.	

4.1.7.4.5 Socket Shutdown - #SH

#SH - Socket Shutdown		SELINT 2
AT#SH=<connId>	<p>This command is used to close a socket.</p> <p>Parameter: <connId> - socket connection identifier 1..6</p> <p>Note: socket cannot be closed in states “resolving DNS” and “connecting” (see AT#SS command)</p>	
AT#SH=?	Test command reports the range for parameter <connId> .	

4.1.7.4.6 Socket Configuration - #SCFG

#SCFG - Socket Configuration	SELINT 2
<p>AT#SCFG= <connId>,<cid>,<pktSz>,<maxTo>,<connTo>,<txTo></p>	<p>Set command sets the socket configuration parameters.</p> <p>Parameters:</p> <p><connId> - socket connection identifier 1..6</p> <p><cid> - PDN connection identifier 1..5 - numeric parameter which specifies a particular PDN connection definition</p> <p><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.</p> <p><maxTo> - exchange timeout (or socket inactivity timeout); 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><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)</p> <p><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</p> <p>Note: these values are automatically saved in NVM.</p> <p>Note: if DNS resolution is required, max DNS resolution time(20 sec) has to be considered in addition to <connTo></p>
<p>AT#SCFG?</p>	<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></p> <p>...</p> <p>#SCFG: <connId6>,<cid6>,<pktsz6>,<maxTo6>,<connTo6>,<txTo6> <CR><LF></p>
<p>AT#SCFG=?</p>	<p>Test command returns the range of supported values for all the subparameters.</p>
<p>Example</p>	<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>

4.1.7.4.7 Socket Configuration Extended - #SCFGEXT

#SCFGEXT - Socket Configuration Extended	SELINT 2
<p>AT#SCFGEXT= <conned>,<srMode>,<recvDataMode>,<keepalive>,<ListenAutoRsp>,<sendDataMode>]</p>	<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><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>
<p>AT#SCFGEXT?</p>	<p>Read command returns the current socket extended configuration parameters values for all the six sockets, in the format:</p> <p>#SCFGEXT:<connId1>,<srMode1>,<dataMode1>,<keepalive1>,<ListenAutoRsp1>,0<CR><LF></p>

	<pre>... #SCFGEXT:<connId6>, <srMode6>,<dataMode6>,<keepalive6>, <ListenAutoRsp6>,0<CR><LF></pre>
AT#SCFGEXT=?	Test command returns the range of supported values for all the subparameters.
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>

4.1.7.4.8 Socket configuration Extended 2 - #SCFGEXT2

#SCFGEXT2 - Socket Configuration Extended	
<p>AT#SCFGEXT2= <connId>,<bufferStart>, [,<abortConnAttempt> [,<unused_B > [,<unused_C >[,<noCarrierMode>]]]]</p>	<p>Set command sets the socket configuration extended parameters for features not included in #SCFGEXT command.</p> <p>Parameters:</p> <p><connId> - socket connection identifier 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) 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>Note: values are automatically saved in NVM.</p> <p><noCarrierMode> - 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> <pre>#SCFGEXT2:<connId1>,<bufferStart1>,0,0,0,0<CR><LF> ... #SCFGEXT2:<connId6>,<bufferStart6>,0,0,0,0<CR><LF></pre>
<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>

4.1.7.4.9 Socket configuration Extended 3 - #SCFGEXT3

#SCFGEXT3 - Socket Configuration Extended 3	SELINT 2
<p>AT#SCFGEXT3= <connId >,<immRsp>[, <closureTypeCmdMo deEnabling> [,<fastsring>[,<unuse d_C>[,<unused_D>]]]]</p>	<p>Set command sets the socket configuration extended parameters for features not included in #SCFGEXT command nor in #SCFGEXT2 command</p> <p>Parameters: <connId> - socket connection identifier 1..6</p> <p><immRsp> - Enables AT#SD command mode immediate response</p> <p>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 – factory default, #SD or #SL <closureType> 255 in command mode has no effect 1 – #SD or SL <closureType> 255 in command mode takes effect</p> <p><fastsring> - Enables the fast SRING (active only when AT#SCFGEXT parameter <srmode>=2) in TCP and UDP sockets</p> <p>0 – factory default, means that SRING unsolicited is received periodically if data are available every 200ms. 1 – means that if data are available SRING unsolicited is received asynchronous as fast as possible.</p> <p>Note: parameters are 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>, <closureTypeCmdModeEnabling>,<fastsring >,0,0<CR><LF> ... #SCFGEXT3:<connId6>,<immRsp6>, <closureTypeCmdModeEnabling>, <fastsring >,0,0<CR><LF></p>
<p>AT#SCFGEXT3=?</p>	<p>Test command returns the range of supported values for all the parameters.</p>

4.1.7.4.10 Socket Dial - #SD

#SD - Socket Dial	SELINT 2
<p>AT#SD=<connId>, <txProt>,<rPort>, <IPAddr> [,<closureType> [,<IPort> [,<connMode>]]]</p>	<p>Execution command opens a remote connection via socket.</p> <p>Parameters:</p> <p><connId> - socket connection identifier 1..6</p> <p><txProt> - transmission protocol 0 - TCP 1 - UDP</p> <p><rPort> - remote host port to contact 1..65535</p> <p><IPAddr> - 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> - 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><IPort> - UDP connections local port 1..65535</p> <p><connMode> - Connection mode 0 - online mode connection (default) 1 - command mode connection</p> <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> <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>

#SD - Socket Dial		SELINT 2
	Note: if PDN connection has not properly opened then +CME ERROR: 556 (context not opened) will be given.	
AT#SD=?	Test command reports the range of values for all the parameters.	
Example	<p><i>Open socket 1 in online mode</i></p> <p>AT#SD=1,0,80,"www.google.com",0,0,0 CONNECT ...</p> <p><i>Open socket 1 in command mode</i></p> <p>AT#SD=1,0,80,"www.google.com",0,0,1 OK</p>	

4.1.7.4.11 Socket Restore - #SO

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

4.1.7.4.12 Socket Listen - #SL

#SL - Socket Listen		SELINT 2
AT#SL=<connId>, <listenState>, <listenPort> >[,<closure type>]	<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>	

#SL - Socket Listen		SELINT 2
	<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> parameter has been previously enabled.</p>	
AT#SL?	Read command returns all the actual listening TCP sockets.	
AT#SL=?	Test command returns the range of supported values for all the subparameters.	
Example	<p><i>Next command opens a socket listening for TCP on port 3500 without.</i></p> <p>AT#SL=1,1,3500 OK</p>	

4.1.7.4.13 Socket Listen UDP - #SLUDP

#SLUDP - Socket Listen UDP		SELINT 2
<p>AT#SLUDP=<connId> , <listenState>, <listenPort></p>	<p>This command opens/closes a socket listening for an incoming UDP connection on a specified port.</p> <p>Parameters: <connId> - socket connection identifier 1..6 <listenState> - 0 - closes socket listening 1 - starts socket listening <listenPort> - local listening port 1..65535</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 an UDP 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 an UDP 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. If the socket is closed by the network the following URC is received:</p> <p>#SLUDP: ABORTED</p> <p>Note: when closing the listening socket <listenPort> is a don't care parameter</p>	
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>	

4.1.7.4.14 Socket Accept - #SA

#SA - Socket Accept		SELINT 2
AT#SA=<connId> [,<connMode>]	Execution command accepts an incoming socket connection after an URC SRING: <connId> Parameter: <connId> - socket connection identifier 1..6 <connMode> - Connection mode, as for command #SD. 0 - online mode connection (default) 1 - command mode connection Note: the SRING URC has to be a consequence of a #SL issue. 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	
AT#SA=?	Test command reports the range of values for all the parameters.	

4.1.7.4.15 Detect the cause of a Socket disconnection - #SLASTCLOSURE

#SLASTCLOSURE – Detect the cause of a socket disconnection		SELINT 2
AT#SLASTCLOSURE= [<connId>]	Execution command reports socket disconnection cause Parameters: <connId> - socket connection identifier 1..6 The response format is: #SLASTCLOSURE: <connId>,<cause> where: <connId> - socket connection identifier, as before <cause> - socket disconnection cause: 0 – not available(socket has not yet been closed) 1.- remote host TCP connection close due to FIN/END: normal remote disconnection decided by the remote application 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 recv or send on the TCP socket(named as different from EWOULDBLOCK) 3.- socket inactivity timeout 4.- network deactivation(PDN connection deactivation from network) Note: any time socket is re-opened, last disconnection cause is reset. Command report 0(not available). 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. Note: if more consecutive closure causes are received, the original disconnection cause is saved.	

	<p>(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>Note: in 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>
AT#SLASTCLOSURE=?	Test command reports the supported range for parameter <connId>

4.1.7.4.16 Receive Data In Command Mode - #SRECV

#SRECV - Receive Data In Command Mode	SELINT 2
<p>AT#SRECV= <connId>, <maxByte>,[<UDPInfo>]</p>	<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:</p> <p><connId> - socket connection identifier 1..6</p> <p><maxByte> - max number of bytes to read 1..1500</p> <p><UDPInfo> 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.</p> <p>AT#SRECV=<connId>,<maxBytes>,1 #SRECV: <sourceIP>,<sourcePort><connId>,<recData>,<dataLeft> data</p> <p>Note: issuing #SRECV when there's no buffered data raises an error.</p>
<p>AT#SRECV=?</p>	<p>Test command returns the range of supported values for parameters < connId > < maxByte > and <UDPInfo></p>
<p>Example</p>	<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>

#SRECV - Receive Data In Command Mode		SELINT 2
	<p>OK</p> <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>	

4.1.7.4.17 Send Data In Command Mode - #SSEND

#SSEND - Send Data In Command Mode		SELINT 2
AT#SSEND=<connId>	<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><space> 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 1500 bytes ; trying to send more data will cause the surplus to be discarded and lost.</p> <p>Note: it's possible to use #SSEND 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>	
AT#SSEND=?	<p>Test command returns the range of supported values for parameter < connId ></p>	
Example	<p>Send data through socket number 2 AT#SSEND=2 >Test<CTRL-Z> OK</p>	

4.1.7.4.18 Send UDP data to a specific remote host - #SSENDUDP

#SSENDUDP – send UDP data to a specific remote host	SELINT 2
<p>AT#SSENDUDP=<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. 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: <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>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 #SS: 1,2,<LocIP>,<LocPort>,<RemIP1>,<RemPort1></p>

	<p>OK</p> <p>AT#SSENDUDP=1,<RemIP1>,<RemPort1> >response to first host OK</p> <p>SRING: 1 // UDP data from a remote host available</p> <p>AT#SI=1 #SI: 1,22,23,24,0 // 24 bytes to read</p> <p>OK</p> <p>AT#SRECV=1,24 #SRECV:1,24 message from second host</p> <p>OK</p> <p>AT#SS=1 #SS: 1,2,<LocIP>,<LocPort>,<RemIP2>,<RemPort2> OK</p> <p><i>Remote host has changed, we want to send a reponse:</i></p> <p>AT#SSENDUDP=1,<RemIP2>,<RemPort2> >response to second host OK</p>
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4.1.7.4.19 Send UDP data to a specific remote host extended #SSENDUDPEXT

#SSENDUDPEXT – send UDP data to a specific remote host extended		SELINT 2
<p>AT#SSENDUDPEXT =<connId>,<bytestosend>,<remoteIP>,<remotePort></p>	<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 #SENDEXT, 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:</p> <p><connId> - socket connection identifier 1..6</p> <p><bytestosend> - number of bytes to be sent 1-1500</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>AT#SSENDUDPEXT=?</p>	<p>Test command reports the supported range of values for parameters <connId>,<bytestosend>,<remoteIP> and <remotePort></p>	

4.1.7.4.20 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>	

4.1.7.4.21 IP Easy Authentication Type - #SGACTAUTH

#SGACTAUTH – Easy GRPS Authentication Type		SELINT 2
AT#SGACTAUTH= <type>	<p>Set command sets the authentication type for IP Easy This command has effect on the authentication mode used on AT#SGACT</p> <p>Parameter <type> 0 - no authentication 1 - PAP authentication (factory default) 2 - CHAP authentication</p> <p>Note: the parameter is not saved in NVM</p>	
AT#SGACTAUTH?	Read command reports the current IP Easy authentication type, in the format: #SGACTAUTH: <type>	
AT#SGACTAUTH =?	Test command returns the range of supported values for parameter <type> .	

4.1.7.4.22 Configure Monosocket parameters - #APPSKTCFG

#APPSKTCFG – 4.1.7.4.22 Configure monosocket parameters		SELINT 2
AT#APPSKTCFG=<connTO> [,<UNUSED_1>[,<UNUSED_2> [,<UNUSED_3> [,<UNUSED_4>]]]]	<p>This command sets the parameters needed to monosocket 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. 0 – internal stack timeout value(default) 10..1200 - timeout value in hundreds of milliseconds</p> <p>Note: values are automatically saved in NVM.</p>	
AT#APPSKTCFG?	<p>Read command returns the current settings in the format:</p> <p>#APPSKTCFG: <connTO>,0,0,0,0<CR><LF></p>	
AT#APPSKTCFG=?	<p>Test command returns the range of supported values for all the parameters.</p>	

4.1.7.4.23 PAD command features - #PADCMD

#PADCMD – PAD command features		SELINT 2
AT#PADCMD=<mode>	<p>This command sets features of the pending data flush to socket, opened with AT#SD command.</p> <p>Parameters:</p> <p><mode>: Bit 1: 1 - enable forwarding; 0 – disable forwarding; Other bits reserved;</p> <p>Note: forwarding depends on character defined by AT#PADFWD</p>	
AT#PADCMD?	<p>Read command reports the state of all the five contexts, in the format:</p> <p>#SGACTCFGEXT: <cid1>,< abortAttemptEnable1 >,0,0,0<CR><LF> ... #SGACTCFGEXT: <cid5>,< abortAttemptEnable5 >,0,0,0<CR><LF></p> <p>where: <cidn> - as <cid> before < abortAttemptEnable n > - as < abortAttemptEnable > before</p> <p>Note: values are automatically saved in NVM.</p>	
AT#PADCMD=?	<p>Test command reports supported range of values for all parameters</p>	

4.1.7.4.24 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>	

#PADFWD – PAD forward character		SELINT 2
	Note: use AT#PADCMD to enable the socket char-flush activity.	
AT#PADFWD?	Read command reports the currently selected <char> and <mode> in the format: #PADFWD: <char>,mode	
AT#PADFWD=?	Test command reports the supported range of values for parameters <char> and <mode> .	

4.1.7.5 FTP AT Commands

4.1.7.5.1 FTP Time-Out - #FTPTO

#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>	

4.1.7.5.2 FTP Open - #FTPOPEN

#FTPOPEN - FTP Open		SELINT 2
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> 0 - active mode (factory default) 1 - passive mode Note: Before opening an FTP connection the PDN connection #1 must have been activated by AT#SGACT=1,1	
AT#FTPOPEN=?	Test command returns the OK result code.	

4.1.7.5.3 FTP Close - #FTPCLOSE

#FTPCLOSE - FTP Close		SELINT 2
AT#FTPCLOSE	Execution command closes an FTP connection.	
AT#FTPCLOSE=?	Test command returns the OK result code.	

4.1.7.5.4 FTP Config - #FTPCFG

#FTPCFG – description	SELINT 2
<p>AT#FTPCFG=<tout>,<IPPignoring>[,<FTPSEn>]</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>[,<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>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 (#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. 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>
<p>AT#FTPCFG?</p>	<p>Read command reports the currently selected parameters in the format: #FTPCFG: <tout></p>
<p>AT+FTPCFG=?</p>	<p>Test command reports the supported range of values for parameter(s) <tout></p>

4.1.7.5.5 FTP Put - #FTPPUT

#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.</p> <p>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:</p> <p><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>	
AT#FTPPUT=?	<p>Test command reports the maximum length of <filename> and the supported range of values of <connMode>. The format is:</p> <p>#FTPPUT: <length>, (list of supported <connMode>s) where: <length> - integer type value indicating the maximum length of <filename></p>	

4.1.7.5.6 FTP Get - #FTPGET

#FTPGET - FTP Get		SELINT 2
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.</p> <p>The file is received on the serial port.</p> <p>Parameter:</p> <p><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=?	<p>Test command returns the OK result code.</p>	

4.1.7.5.7 FTP GET in command mode - #FTPGETPKT

#FTPGETPKT - FTP Get in command mode		SELINT 2
AT#FTPGETPKT= <filename> [,<viewMode>]	<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 #FTPRECV command</p> <p>Parameters: <filename> - file name, string type. (maximum length: 200 characters). <viewMode> - permit to choose view mode (text format or Hexadecimal) 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> <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#FTPGETPKT?	<p>Read command reports current download state for <filename> with <viewMode> chosen, in the format:</p> <p>#FTPGETPKT: <remotefile>,<viewMode>,<eof></p> <p><eof> 0 = file currently being transferred 1 = complete file has been transferred to FTP client</p>	
AT#FTPGETPKT=?	Test command returns the OK result code.	

4.1.7.5.8 FTP Type - #FTPTYPE

#FTPTYPE - FTP Type		SELINT 2
AT#FTPTYPE= [<type>]	<p>Set command, issued during an FTP connection, sets the file transfer type.</p> <p>Parameter: <type> - file transfer type: 0 - binary 1 - ascii</p> <p>Note: The command causes an ERROR result code to be returned if no FTP connection has been opened yet.</p>	
#FTPTYPE?	<p>Read command returns the current file transfer type, in the format:</p> <p>#FTPTYPE: <type></p>	
#FTPTYPE=?	<p>Test command returns the range of available values for parameter <type>:</p> <p>#FTPTYPE: (0,1)</p>	

4.1.7.5.9 FTP Read Message - #FTPMSG

#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.	

4.1.7.5.10 FTP Delete - #FTPDELE

#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> <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>	
AT#FTPDELE=?	Test command returns the OK result code.	

4.1.7.5.11 FTP Print Working Directory - #FTPPWD

#FTPPWD - FTP Print Working Directory		SELINT 2
AT#FTPPWD	<p>Execution command, issued during an FTP connection, shows the current working directory on FTP server.</p> <p>Note: The command causes an ERROR result code to be returned if no FTP connection has been opened yet.</p>	
AT#FTPPWD=?	Test command returns the OK result code.	

4.1.7.5.12 FTP Change Working Directory - #FTPCWD

#FTPCWD - FTP Change Working Directory		SELINT 2
AT#FTPCWD=[<dirname>]	<p>Execution command, issued during an FTP connection, changes the working directory on FTP server.</p> <p>Parameter: <dirname> - string type, it's the name of the new working directory.</p> <p>Note: The command causes an ERROR result code to be returned if no FTP connection has been opened yet.</p>	
AT#FTPCWD=?	Test command returns the OK result code.	

4.1.7.5.13 FTP List - #FTPLIST

#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.	

4.1.7.5.14 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.	

4.1.7.5.15 FTP Append - #FTPAPP

#FTPAPP - FTP Append		SELINT 2
AT#FTPAPP=[[<filename>], <connMode>]	<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>	
AT#FTPAPP=?	<p>Test command reports the maximum length of <filename> and the supported range of values of <connMode>. The format is:</p> <p>#FTPAPP: <length>, (list of supported <connMode>s) where: <length> - integer type value indicating the maximum length of <filename></p>	

4.1.7.5.16 Set restart position - # FTPREST

#FTPREST – Set restart position for FTP GET		SELINT 2
AT#FTPREST= <restartposition>	<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>	
AT#FTPREST?	<p>Read command returns the current <restartposition></p> <p>#FTPREST: <restartposition></p>	
AT#FTPREST=?	<p>Test command returns the OK result code.</p>	

4.1.7.5.17 Receive Data In Command Mode - #FTPrecv

#FTPrecv – Receive Data In Command Mode		SELINT 2
AT#FTPrecv= <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 #FTPGETPKT 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 #FTPGETPKT command</p> <p>Note: issuing #FTPrecv 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(FTPrecv returns 0 and FTPGETPKT gives a EOF 0 indication).</p>	
AT#FTPrecv?	<p>Read command reports the number of bytes currently received from FTP server, in the format:</p> <p>#FTPrecv: <available></p>	

#FTPRECV – Receive Data In Command Mode		SELINT 2
AT#FTPRECV=?	Test command returns the range of supported values for <blocksize> parameter.	
Example	<pre> AT#FTPRECV? #FTPRECV: 3000 OK Read required part of the buffered data: AT#FTPRECV=400 #FTPRECV: 400 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 OK AT#FTPRECV =200 #FTPRECV: 200 88888 * Text row number 9 * 999999999999999999999999 * Text row number 10 * AAAAAAAAAAAAAAAAAAAAAAAAAA * Text row number 12 * BBBBBBBBBBBBBBBBBBBBBBBB * Text row number 13 * CCCCCCCCCCCCCCCC OK Note: to check when you have received complete file it's possible to use AT#FTPGETPKT read command: AT#FTPGETPKT? #FTPGETPKT: sample.txt,0,1 OK (you will get <eof> set to 1) </pre>	

4.1.7.5.18 FTP Append

#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>AT#FTPAPP=?</p>	<p>Test command reports the supported range of values for parameters <filename> and <connMode></p>

4.1.7.5.19 FTP Append Extended - #FTPAPPEXT

#FTPAPPEXT – FTP Append Extended	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. 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. 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>

	<pre> AT#FTPAPPEXT=Size,1 >...write here the binary data. As soon Size byte are written, data are sent and OK is returned #FTPAPPEXT: <SentBytes> OK // If the user has to reopen the data port to send another // (or append to the same) file, he can restart with the // FTTPUT(or FTPAPP.) //Then FTPAPPEXT,... to send the data chunks on the //reopened data port. // Note: if while sending the chunks the data port is closed // 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 //socket has been closed. // Also in this case obviously, data port will have to be //reopened with FTTPUT and so on...(same sequence) </pre>
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4.1.7.6 Enhanced IP Easy Extension AT Commands

4.1.7.6.1 Authentication User ID - #USERID

#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 "").	
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	

4.1.7.6.2 Authentication Password - #PASSW

#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 "").	
AT#PASSW=?	Test command returns the maximum allowed length of the string parameter <pwd> .	
Example	AT#PASSW="myPassword" OK	

4.1.7.6.3 Packet Size - #PKTSZ

#PKTSZ - Packet Size		SELINT 2
AT#PKTSZ=[<size>]	<p>Set command sets the default packet size to be used by the TCP/UDP/IP stack for data sending.</p> <p>Parameter: <size> - packet size in bytes 0 - automatically chosen by the device 1..1500 - packet size in bytes (factory default is 300)</p>	
AT#PKTSZ?	<p>Read command reports the current packet size value.</p> <p>Note: after issuing command AT#PKTSZ=0, the Read command reports the value automatically chosen by the device.</p>	
AT#PKTSZ=?	Test command returns the allowed values for the parameter <size> .	
Example	<pre>AT#PKTSZ=100 OK AT#PKTSZ? #PKTSZ: 100 OK AT#PKTSZ=0 OK AT#PKTSZ? #PKTSZ: 300 ->value automatically chosen by device OK</pre>	

4.1.7.6.4 Data Sending Time-Out - #DSTO

#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: <tout> - packet sending time-out in 100ms units (factory default is 50) 0 - no time-out, wait forever for packets to be completed before send. 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>	
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>	

4.1.7.6.5 Socket Inactivity Time-Out - #SKTTO

#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</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.</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	<pre>AT#SKTTO=30 ->(30 sec. time-out) OK AT#SKTTO? #SKTTO: 30 OK</pre>	

4.1.7.6.6 Socket Definition - #SKTSET

#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: <socket type> - socket protocol type 0 - TCP (factory default) 1 - UDP <remote port> - remote host port to be opened 0..65535 - port number (factory default is 3333) <remote addr> - 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 in the format: <host name> (factory default is the empty string "") <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. <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: - the PDN context 1 is correctly set with +CGDCONT - the authentication parameters are set (#USERID, #PASSW) - the network coverage is enough to permit a connection.</p>	

#SKTSET - Socket Definition		SELINT 2
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.	

4.1.7.6.7 Query DNS - #QDNS

#QDNS - Query DNS		SELINT 2
AT#QDNS= [<host name>]	Execution command executes a DNS query to solve the host name into an IP address. Parameter: <host name> - host name, string type. If the DNS query is successful then the IP address will be reported in the result code, as follows: #QDNS: <host name>,<IP address> where <host name> - string type <IP address> - string type, in the format " xxx.xxx.xxx.xxx " Note: the command has to activate the context if it was not previously activated. In this case the context is deactivated after the DNS query.	
AT#QDNS=?	Test command returns the OK result code.	
Note	This command requires that the authentication parameters are correctly set and that the network is present.	
Note	Issuing command #QDNS will overwrite <remote addr> setting for command #SKTSET .	
Note	This command is available only on the first AT instance (see AT#PORTCFG) or on the first virtual port of CMUX and works on the PDN connection 1 and on the first ConnId (see AT#SCFG)	

4.1.7.6.8 Socket TCP Connection Time-Out - #SKTCT

#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>	
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>	

4.1.7.6.9 Socket Parameters Save - #SKTSAV

#SKTSAV - Socket Parameters Save		SELINT 2
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 - Packet Size - Socket Inactivity Time-Out - Data Sending Time-Out - Socket Type (UDP/TCP) - Remote Port - Remote Address - TCP Connection Time-Out 	
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.	

4.1.7.6.10 Socket Parameters Reset - #SKTRST

#SKTRST - Socket Parameters Reset		SELINT 2
AT#SKTRST	<p>Execution command resets the socket parameters to the “factory default” configuration and stores them in the NVM of the device.</p> <p>The socket parameters to reset are:</p> <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>	

4.1.7.6.11 Socket Dial - #SKTD

#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 when remote host has closed (default) 255 - local host closes after an escape sequence (+++) or immediately in case of an abortive disconnect from remote. <local port> - local host port to be used on UDP socket 1..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 PDN context 1 is correctly set with +CGDCONT - the authentication parameters are set (#USERID, #PASSW) the Network coverage is enough to permit a connection 	

#SKTD - Socket Dial		SELINT 2
AT#SKTD?	Read command reports the socket dial parameters values, in the format: AT#SKTD: <socket type>,<remote port>,<remote addr>,<closure type>,<local port>	
AT#SKTD=?	Test command returns the allowed values for the parameters.	
Example	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	

4.1.7.6.12 Socket Listen - #SKTL

#SKTL - Socket Listen		SELINT 2
AT#SKTL = [<mode>, <socket type>, <input port>, <closure type>]	<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 when remote host has closed (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 PDN context 1 is correctly set with +CGDCONT - the authentication parameters are set (#USERID, #PASSW) - the Network coverage is enough to permit a connection <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>+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 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>	

#SKTL - Socket Listen	SELINT 2
	<p>#SKTL: ABORTED</p> <p>Note: when closing the listening socket <input port> is a don't care parameter</p>
<p>AT#SKTL?</p>	<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>#SKTL: <status>,<socket type>, <input port>,<closure type></p> <p>Where</p> <p><status> - socket listening status</p> <p>0 - socket not listening</p> <p>1 - socket listening</p>
<p>AT#SKTL=?</p>	<p>Test command returns the allowed values for parameters <mode>, <socket type>, <input port> and <closure type>.</p>
<p>Example</p>	<p><i>Start TCP listening</i></p> <p>AT#SKTL=1,0,1024 OK</p> <p>or</p> <p>AT#SKTL=1,0,1024,255 OK</p> <p><i>Receive TCP connection requests</i></p> <p>+CONN FROM: 192.164.2.1 CONNECT</p> <p><i>exchange data with the remote host</i></p> <p><i>send escape sequence</i></p> <p>+++ NO CARRIER</p> <p><i>Now listen is not anymore active</i></p> <p><i>to stop listening</i></p> <p>AT#SKTL=0,0,1024, 255 OK</p>
<p>Note</p>	<p>The main difference between this command and #SKTD is that #SKTL does not contact any peer, nor does any interaction with the PDN Connection status, therefore when the connection made with #SKTL is closed the context (and hence the local IP address) is maintained.</p>

4.1.7.6.13 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: [<hostn 1>,<IPaddr 1>,[...],[<hostn n>,<IPaddr n>]](0,1)</p> <p>where: <hostn n> - hostname, string type <IPaddr n> - IP address, string type, in the format “xxx.xxx.xxx.xxx”</p>	

4.1.7.6.14 Manual DNS Selection - #DNS

#DNS – Manual DNS Selection		SELINT 2
AT#DNS=<cid>,<primary>,<secondary>	<p>Set command allows to manually set primary and secondary DNS servers either for a PDN Connection defined by +CGDCONT or for a GSM context defined by #GSMCONT</p> <p>Parameters: <cid> - context identifier 0 - specifies the GSM context 1.. <i>max</i> - numeric parameter which specifies a particular PDN Connection definition. The value of <i>max</i> is returned by the Test command</p> <p><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>	

#DNS – Manual DNS Selection	SELINT 2
	<p>Note: the context identified by <cid> has to be previously defined, elsewhere issuing AT#DNS=... raises an error.</p> <p>Note: issuing AT#DNS=... raises an error if the context identified by <cid> has already been activated by AT commands.</p>
AT#DNS?	<p>Read command returns the manual DNS servers set either for every defined PDN Connection 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>
AT#DNS=?	<p>Test command reports the supported range of values for the <cid> parameter. only, in the format:</p> <p>#DNS: (0-15),,</p>

4.1.7.7 SMS AT Commands

4.1.7.7.1 Move Short Message to other memory - #SMSMOVE

#SMSMOVE – Move Short Message to other memory		SELINT 2
AT#SMSMOVE=<index>	<p>Execution command moves selected Short Message from current memory to destination memory.</p> <p>Parameter: <index> - message index in the memory selected by +CPMS command. It can have values form 1 to N, where N depends on the available space (see +CPMS)</p> <p>Note: if the destination memory is full, an error is returned.</p>	
AT#SMSMOVE?	<p>Read command reports the message storage status of the current memory and the destination memory in the format:</p> <p>#SMSMOVE: <curr_mem>,<used_curr_mem>,<total_curr_mem>,<dest_mem>,<used_dest_mem>,<total_dest_mem></p> <p>Where:</p> <ul style="list-style-type: none"> - <curr_mem> is the current memory, selected by +CPMS command. It can assume the values "SM" or "ME" - <used_curr_mem> is the number of SMs stored in the current memory - <total_curr_mem> is the max number of SMs that the current memory can contain - <dest_mem> is the destination memory. It can assume the values "SM" or "ME" - <used_dest_mem> is the number of SMs stored in the destination memory - <total_dest_mem> is the max number of SMs that the destination memory can contain 	
AT#SMSMOVE=?	Test command reports the supported values for parameter <index>	
Example	<pre>AT#SMSMOVE? #SMSMOVE: "ME",3,100,"SM",0,50 OK //the current memory is ME where 3 SMs are stored; the destination memory is SIM that is empty AT+CMGL=ALL +CMGL: 1,"STO UNSENT","32XXXXXXXXX","", test 1 +CMGL: 2,"STO UNSENT","32XXXXXXXXX","", test 2 +CMGL: 3,"STO UNSENT","32XXXXXXXXX","", test 3 OK //list the SMs to discover the memory index AT#SMSMOVE=1 OK //move the SM in the first position of ME to SIM AT#SMSMOVE? #SMSMOVE: "ME",2,100,"SM",1,50 OK //now we have 2 SMs in ME and 1 in SIM</pre>	

4.1.7.7.2 SMS Commands Operation Mode - #SMSMODE

#SMSMODE - SMS Commands Operation Mode		SELINT 2
AT#SMSMODE= <mode>	<p>Set command enables/disables the check for presence of SMS Service Centre Address in the FDN phonebook</p> <p>Parameter: <mode> 1 - disables the check for presence of SMS SCA in FDN 2 – enables the check for presence of SMS SCA in the FDN phonebook when FDN are enabled; if the SMS SCA is not present, then a SMS cannot be sent (default)</p>	
AT#SMSMODE?	<p>Read command reports whether the check of SMS SCA in FDN is enabled or not, in the format:</p> <p>#SMSMODE: <mode> (<mode> described above)</p>	
AT#SMSMODE=?	Test command reports the supported range of values for parameter <mode>	

4.1.7.7.3 Domain configuration for Outgoing SMS - #ISMSCFG

#ISMSCFG – Domain configuration for Outgoing SMS		SELINT 2
AT#ISMSCFG=<mode>	<p>Set command changes the configuration parameter for outgoing SMS, which will be used to route the outgoing SMS either over CPS or over IMS (IP Multimedia Core Network Subsystem).</p> <p>Parameter: <mode> 0 - the SMS service is not to be invoked over the IP networks; 1 - the SMS service is preferred to be invoked over the IP networks (default)</p> <p>NOTE: the setting is saved in NVM.</p>	
AT#ISMSCFG?	<p>Read command returns the current domain selected to route the outgoing SMS in the format:</p> <p>#ISMSCFG: <mode></p>	
AT#ISMSCFG=?	<p>Test command returns the supported range of values for parameter <mode>, in the format:</p> <p>#ISMSCFG: (list of supported <mode>s)</p>	

4.1.7.8 E-mail Management AT Commands

4.1.7.8.1 E-mail SMTP Server - #ESMTP

#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:</p> <p><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> <p>(factory default is the empty string "")</p> <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	<pre>AT#ESMTP="smtp.mydomain.com" OK</pre>	
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.	

4.1.7.8.2 E-mail Sender Address - #EADDR

#EADDR - E-mail Sender Address		SELINT 2
AT#EADDR= [<e-addr>]	<p>Set command sets the sender address string to be used for sending the e-mail.</p> <p>Parameter:</p> <p><e-addr> - sender address, string type.</p> <ul style="list-style-type: none"> - any string value up to max length reported in the Test command. <p>(factory default is the empty string "")</p>	
AT#EADDR?	<p>Read command reports the current sender address, in the format:</p> <p>#EADDR: <e-addr></p>	
AT#EADDR=?	Test command returns the maximum allowed length of the string parameter <e-addr> .	
Example	<pre>AT#EADDR="me@email.box.com" OK AT#EADDR? #EADDR: "me@email.box.com" OK</pre>	

4.1.7.8.3 E-mail Authentication User Name - #EUSER

#EUSER - E-mail Authentication User Name		SELINT 2
AT#EUSER= [<e-user>]	<p>Set command sets the user identification string to be used during the authentication step of the SMTP.</p> <p>Parameter: <e-user> - e-mail authentication User ID, string type. - any string value up to max length reported in the Test command. (factory default is the empty string "")</p> <p>Note: if no authentication is required then the <e-user> parameter shall be empty "".</p>	
AT#EUSER?	<p>Read command reports the current user identification string, in the format:</p> <p>#EUSER: <e-user></p>	
AT#EUSER=?	<p>Test command returns the maximum allowed length of the string parameter <e-user>.</p>	
Example	<pre>AT#EUSER="myE-Name" OK AT#EUSER? #EUSER: "myE-Name" OK</pre>	
Note	<p>It is a different user field than the one used for GPRS authentication (see #USERID).</p>	

4.1.7.8.4 E-mail Authentication Password - #EPASSW

#EPASSW - E-mail Authentication Password		SELINT 2
AT#EPASSW= [<e-pwd>]	<p>Set command sets the password string to be used during the authentication step of the SMTP.</p> <p>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 "")</p> <p>Note: if no authentication is required then the <e-pwd> parameter shall be empty "".</p>	
AT#EPASSW=?	<p>Test command returns the maximum allowed length of the string parameter <e-pwd>.</p>	
Example	<pre>AT#EPASSW="myPassword" OK</pre>	
Note	<p>It is a different password field than the one used for GPRS authentication (see #PASSW).</p>	

4.1.7.8.5 E-mail Sending - #EMAILD

#EMAILD - E-mail Sending	SELINT 2
<p>AT#EMAILD=[<da>, <subj>]</p>	<p>Execution command sends an e-mail message if context has already been activated by either AT#SGACT=1,1</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 1500 trying to send more data will cause the surplus to be discarded and lost.</p>
<p>AT#EMAILD=?</p>	<p>Test command returns the OK result code.</p>
<p>Example</p>	<p>AT#EMAILD="me@myaddress.com","subject of the mail" >message body... this is the text of the mail message... CTRL-Z</p> <p>..wait..</p> <p>OK</p> <p><i>Message has been sent.</i></p>

4.1.7.8.6 E-mail Parameters Save - #ESAV

#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.	

4.1.7.8.7 E-mail Parameters Reset - #ERST

#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.	

4.1.7.8.8 SMTP Read Message - #EMAILMSG

#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.	

4.1.7.8.9 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).</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 100 characters)</p> <p><att> - attached file flag 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 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>
<p>AT#SMTPCL=?</p>	<p>Test command reports the supported range of values for parameters <da>,<subj>,<att>[,<filename>,<encod>]</p>
<p>Examples</p>	<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>

4.1.7.8.10 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) 25..465,587</p> <p>Note: SMTP protocol is used on the selected port</p> <p>Note: the value set by command is directly stored in NVM</p>	
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 >	

4.1.7.8.11 Configure SMTP parameters - #SMTPCFG

#SMTPCFG – configure SMTP parameters		SELINT 2
AT#SMTPCFG=<ssl_enabled>[,<port>[,<mode>[,<UNUSSED_1>[,<pkt_size>[,<UNUSSED_2>]]]]]	<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..465,587</p> <p><mode> - SMTP start session command 0 – SMTP start session command HELO (default) 1 – SMTP start session command EHLO</p> <p><pkt_size> - send size for attachment sending (see #SMTPCL command) 0 – select automatically default value(1024). 1..1500 – send size in bytes.</p> <p>Note: the SSL encryption can be enabled only if <Enable> parameter of #SLEN 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>	
AT#SMTPCFG?	Read command returns the current settings in the format: #SMTPCFG:<ssl_enabled>,<port>,<mode>,0,<pkt_size>,0 <CR><LF>	
AT#SMTPCFG=?	Test command returns the supported range of parameters <ssl_enabled> , <port> , <mode> and <pkt_size> in the format: #SMTPCFG: (list of supported <ssl_enabled>s),(list of supported <port>s),(list of supported <mode>s),(0),(list of supported <pkt_size>s) ,(0)	

4.1.7.9 HTTP Client AT Commands

4.1.7.9.1 Configure HTTP Parameters - #HTTPCFG

#HTTPCFG – configure HTTP parameters	SELINT 2
<pre>AT#HTTPCFG=<prof_id>[,<server_address>[,<server_port>[,<auth_type>[,<username>[,<password>[,<ssl_enabled>[,<timeout>[,<cid>[,<pkt_size>][[,<UNUSED_1>[,<UNUSED_2>]]]]]]]]]]]</pre>	<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 PDN Connection Identifier. Range: (0- <i>max</i>, where the value of <i>max</i> is returned by the Test command Default: 3</p> <p><pkt_size> - send(#HTTPSND) or rcv(#HTTPCRV) size for data sending or receiving. 0 – select automatically default value(300). 1..1500 – send or rcv size in bytes.</p> <p>Note: an ERROR is issued if <UNUSED_1> and <UNUSED_2> parameters are set with a value different from 0.</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: only one profile can use the SSL encryption.</p>

#HTTPCFG – configure HTTP parameters	SELINT 2
	<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: if it's needed to configure security parameters, it is possible to use #SSLSECCFG/#SSLSECDATA commands as usual for #SSLD</p> <p>Note: values are automatically saved in NVM.</p>
AT#HTTPCFG?	<p>Read command returns the current settings for each defined profile in the format:</p> <p>#HTTPCFG: <prof_id>,<server_address>,<server_port>,<auth_type>,<username>,<password>,<ssl_enabled>,<timeout>,<cid>,<pkt_size>,0,0 <CR><LF>[<CR><LF>#HTTPCFG: <prof_id>,<server_address>,<server_port>,<auth_type>,<username>,<password>,<ssl_enabled>,<timeout>,<cid>,<pkt_size>,0,0] <CR><LF>[...]]</p>
AT#HTTPCFG=?	<p>Test command returns the supported range of parameters <prof_id>,<server_port>,<auth_type>,<ssl_enabled>,<timeout>,<cid> and <pkt_size> 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),(list of supported <pkt_size>s)</p> <p>where: <s_length> - integer type value indicating the maximum length of parameter <server_address>. <u_length> - integer type value indicating the maximum length of parameter <username>. <p_length> - integer type value indicating the maximum length of parameter <password></p>

4.1.7.9.2 Send HTTP GET, HEAD or DELETE request - #HTTPQRY

#HTTPQRY – send HTTP GET, HEAD or DELETE request	SELINT 2
AT#HTTPQRY=<prof_id>,<command>,<resource>[,<extra_header_line>]	<p>Execution command performs a GET, HEAD or DELETE request to HTTP server.</p> <p>Parameters: <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>

#HTTPQRY – send HTTP GET, HEAD or DELETE request	SELINT 2
	<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 can not 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) <content_type> is a string reporting the "Content-Type" header line, as received from the server (see RFC 2616) <data_size> is the byte amount of data received from the server. If the server doesn't report the "Content-Length:" header line, the parameter value is 0.</p> <p>Note: if there are no data from server or the server doesn't answer within the time interval specified in <timeout> parameter of #HTTPCFG command, then the URC #HTTPRING <http_status_code> parameter has value 0.</p>
AT#HTTPQRY=?	<p>Test command reports the supported range of values for the parameters <prof_id> and <command> and the maximum length of <resource> parameter in the format:</p> <p>#HTTPQRY: (list of supported <prof_id>s),(list of supported <command>s),<r_length>,<m_length></p> <p>where: <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>

4.1.7.9.3 Send HTTP POST or PUT request - #HTTPSND

#HTTPSND – send HTTP POST or PUT request	SELINT 2
AT#HTTPSND=<prof_id>,<command>,<resource>,<data_len>[,<post_param>[,<extra_header_line>]]	<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: <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>

#HTTPSND – send HTTP POST or PUT request	SELINT 2
	<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 Content-type 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. Note: the HTTP request header sent with #HTTPSND always contains the “Connection: close” line, and it can not 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) <content_type> is a string reporting the “Content-Type” header line, as received from the server (see RFC 2616) <data_size> is the byte amount of data received from the server. If the server doesn’t report the “Content-Length:” header line, the parameter value is 0.</p> <p>Note: if there are no data from server or the server doesn’t answer within the time interval specified in <timeout> parameter of #HTTPCFG command, then the URC #HTTPRING <http_status_code> parameter has value 0.</p>
AT#HTTPSND=?	<p>Test command returns the supported range of parameters <prof_id>, <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: <r_length> - integer type value indicating the maximum length of parameter <resource>.</p>

#HTTPSND – send HTTP POST or PUT request		SELINT 2
	<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><i>Post 100 byte without "Content-type" header</i> AT#HTTPSND=0,0,"/","100 >>></p> <p><i>Post 100 byte with "application/x-www-form-urlencoded"</i> AT#HTTPSND=0,0,"/","100,0 >>></p> <p><i>Post 100 byte with "multipart/form-data" and extension</i> AT#HTTPSND=0,0,"/","100,"3:boundary=----FormBoundary" >>></p>	

4.1.7.9.4 Receive HTTP server data - #HTTTPRCV

#HTTTPRCV – receive HTTP server data		SELINT 2
AT#HTTTPRCV=<prof_id>[, <maxByte>]	<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> parameter has value 0, an error code is reported.</p>	
AT#HTTTPRCV=?	<p>Test command reports the supported range of values for <prof_id> parameter in the format:</p> <p># HTTTPRCV: (list of supported <prof_id>s)</p>	

4.1.7.10 SSL Commands

4.1.7.10.1 Configure general parameters of a SSL socket - #SSLCFG

#SSLCFG – Configure general parameters of a SSL socket	SELINT 2
AT#SSLCFG=<SSId>,<cid>,<pktSz>,<maxTo>,<defTo>,<txTo>[,<sslSRingMode >[,<noCarrierMode >[,<UNUSED_1>[,<UNUSED_2>]]]]	<p>This command allows configuring SSL connection parameters.</p> <p>Parameters:</p> <p><SSId> - Secure Socket Identifier 1..6</p> <p><cid> - PDN connection identifier. 1..5</p> <p><pktSz> - packet size to be used by the SSL/TCP/IP stack for data sending. 0 - select automatically default value (300). 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 1300) 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> are added.</p>

#SSLCFG – Configure general parameters of a SSL socket	SELINT 2
	<p>Following the possible <cause> values are listed: 0 – not available (secure socket has not yet been closed) 1 – the remote TCP connection has been closed (RST, or any fatal error in send/rcv are all included within this case) 2 – socket inactivity timeout 3 – network deactivation 4 – SSL “Close Notify Alert” message has been received 5 – the remote TCP connection has been closed(FIN) after all data have been retrieved from socket 6 – Closure due to any other SSL alert different from the previous ones.</p> <p>Note: if secure socket is not enabled using #SLEN 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. Note: when <cid> is changed, it is automatically changed also for all the other <SSId>’s</p> <p>Note: if there is a secure socket connected, linked <cid> cannot be changed</p> <p>Note: if secure socket <SSId> is not enabled using #SLEN only test requests can be made. Read command can be issued if at least a <SSId> is enabled. Read command shows only <SSId>’s enabled using #SLEN</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>,<0,0,0</p>
AT#SSLCFG =?	<p>Test command returns the range of supported values for all the parameters.</p> <p>#SSLCFG: (1-6),(1-5),(0-1500),(0-65535),(10-5000),(0-255),(0),(0),(0),(0)</p>

4.1.7.10.2 Opens 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:</p> <p><SSId> - Secure Socket Identifier 1..6</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> - 0 – only value 0 supported</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 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). 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 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</p>

	<p>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 #SSESEND.</p> <p>Note: Before opening a SSL connection the internet PDN connection must have been activated by AT#SGACT=3,1.</p> <p>Note: Before opening a SSL connection, make sure to have stored the needed secure data (CA certificate), using AT#SSLSECDATA.</p> <p>Note: in case of CA Certificate already stored, it could be possible to avoid #SSLSECDATA command.</p>
AT#SSLD=?	Test command returns the range of supported values for all the parameters.

4.1.7.10.3 Enable a SSL socket - #SLEN

#SLEN – Enable a SSL socket		SELINT 2
AT#SLEN=<SSId>,<Enable>	<p>This command enables a socket secured by SSL</p> <p>Parameters: <SSId> - Secure Socket Identifier</p> <p>1..6</p> <p><Enable> 0 – deactivate secure socket [default] 1 – activate secure socket</p> <p>Note: if secure socket is not enabled only test requests can be made for every SSL command except #SLS(SSL status) and #SSL which can be issued also if the socket is disabled.</p> <p>Note: these values are automatically saved in NVM.</p> <p>Note: a SSL socket cannot be disabled by issuing #SLEN=<SSId>,0 if it is connected.</p>	
AT#SLEN?	<p>Read command reports the currently enable status of secure socket in the format:</p> <p>#SLEN: <SSId>,<Enable><CR><LF> <CR><LF> OK</p>	
AT#SLEN=?	<p>Test command returns the range of supported values for all the parameters:</p> <p>#SLEN: (1-6),(0,1)</p>	

4.1.7.10.4 Close 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..6 < ClosureType >: 0 – only value 0 is supported</p> <p>Note: if secure socket is not enabled using AT#SLEN only test requests can be made.</p>	
AT#SSLH=?	<p>Test command returns the range of supported values for all the parameters:</p> <p>#SSLH: (1-6),(0)</p>	

4.1.7.10.5 Secure Socket Info - #SSLI

#SSLI – Secure Socket Info		SELINT 2
AT#SSLI[=<SSId>]	<p>Execution command is used to get information about secure socket data traffic.</p> <p>Parameters: <SSId> - Secure Socket Identifier 1..6</p> <p>The response format is:</p> <p>#SSLI: <SSId>,<DataSent>,<DataRecv>,<PendingData>,0</p> <p>where:</p> <p><SSId> - secure socket connection identifier, as before</p> <p><DataSent> - total amount(in bytes) of data sent to the TLS/SSL connection since the beginning of the connection itself (obviously: not yet encoded into TLS/SSL record)</p> <p><DataRecv> - total number of bytes received from the TLS/SSL connection since the beginning of the connection itself (obviously: already decoded from TLS/SSL record)</p> <p><PendingData> - number of bytes available to be read from the TLS/SSL record that is currently being processed (obviously: already decoded from TLS/SSL record)</p> <p>Note: for retrocompatibility, execution command shows <SSId>'s > 1 only after enable(#SLEN=<SSId>,1) has been called for them once.</p>	
AT#SSLI=?	<p>Test command returns the range of supported values for all the parameters.</p> <p>#SSLI: (1-6)</p>	

4.1.7.10.6 Restore 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..6</p> <p>Note: if secure socket is not enabled using AT#SSLEN only test requests can be made.</p> <p>Note: Before opening a SSL connection the internet PDN connection must have been activated by AT#SGACT=3,1.</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: #SSLO: (1-6)</p>	

4.1.7.10.7 Read data from a SSL socket - #SSLRECV

#SSLRECV – Read data from a SSL socket	SELINT 2
<p>AT#SSLRECV=<SSId>, <MaxNumByte> [,<TimeOut>]</p>	<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:</p> <p><SSId> - Secure Socket Identifier 1..6</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: #SSLRECV: 0<CR><LF> TIMEOUT<CR><LF> <CR><LF> OK</p> <p>If the remote host closes the connection the device responds: #SSLRECV: 0<CR><LF> DISCONNECTED<CR><LF> <CR><LF> OK</p> <p>If data are received the device responds: #SSLRECV: 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#SSLRECV=?</p>	<p>Test command returns the range of supported values for all the parameters:</p> <p>#SSLRECV: (1-6),(1-1000),(10-5000)</p>

4.1.7.10.8 Report the status of a SSL socket - #SSLS

#SSLS – Report the status of a SSL socket		SELINT 2
AT#SSLS=<SSId>	<p>Execution command is used to report the status of secure socket <SSId>'s</p> <p>Parameters: <SSId> - Secure Socket Identifier 1..6</p> <p>If secure socket is connected the device responds to the command:</p> <p>#SSLS: <SSId>,2,<CipherSuite> otherwise: #SSLS: <SSId>,<ConnectionStatus></p> <p>Where <CipherSuite> can be as follows:</p> <p>0 - unknown 1 - TLS_RSA_WITH_RC4_128_MD5 2 - TLS_RSA_WITH_RC4_128_SHA 3 - TLS_RSA_WITH_AES_128_CBC_SHA 4 - TLS_RSA_WITH_NULL_MD5 5 - TLS_RSA_WITH_AES_256_CBC_SHA N - RFC value + 100</p> <p>Note: for all other(i.e.: N) possible values, <CipherSuite> is RFC value + 100</p> <p>otherwise: #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> <p>Note: for retrocompatibility, execution command shows <SSId>'s > 1 only after enable(#SSLEN=<SSId>,1) has been called for them once. Test command returns the range of supported values for all the parameters.</p> <p>#SSLS: (1-6)</p>	
AT#SSLS=?	<p>Test command returns the range of supported values for all the parameters.</p> <p>#SSLS: (1-6)</p>	

4.1.7.10.9 Configure security parameters of a SSL socket - #SSLSECCFG

#SSLSECCFG – Configure security parameters of a SSL socket	SELINT 2
AT#SSLSECCFG= <SSId> , <CipherSuite> , <auth_mode> [,<cert_format>]	<p>This command allows configuring SSL connection parameters.</p> <p>Parameters:</p> <p><SSId> - Secure Socket Identifier 1..6</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_128_CBC_SHA 4 - TLS_RSA_WITH_NULL_SHA 5 - TLS_RSA_WITH_AES_256_CBC_SHA</p> <p>Note: when 0 value is chosen, all supported cipher suites are indicated to the server within TLS handshake (i.e.: client hello)</p> <p>Note: TLS_RSA_WITH_NULL_SHA is not included as default(0), but it is possible to set it(4) if required.</p> <p><auth_mode> 0 – SSL Verify None[default] 1 – Manage server authentication</p> <p><cert_format> is an optional parameter. It selects the format of the certificate to be stored via #SSLSECDATA command 0 - DER format 1 - PEM format[default]</p> <p>Note - it is supposed that the module is just powered on and the AT#SSLSECCFG command is entered without <cert_format> parameter, the AT#SSLSECCFG? read command doesn't return the setting of the format in order to meet retro compatibility with other families. Now, let's assume that AT#SSLSECCFG command is entered again, but using the <cert_format> parameter for the first time: if the read command is entered, it reports the parameter value just used. If subsequently the <cert_format> is omitted, the AT#SSLSECCFG? read command reports the parameter value entered the last time.</p> <p>Note: in case of multiple <SSId> secure socket connections, if <cert_format> optional parameter is changed for one <SSId>, it is automatically updated for all other <SSId>'s</p> <p>Note: Server CA certificate has to be stored through AT#SSLSECDATA.</p> <p>Note: if secure socket <SSId> is not enabled using #SLEN only test requests can be made. Read command can be issued if at least a <SSId> is enabled. Read command shows only <SSId>'s enabled using #SLEN</p> <p>Note: these values are automatically saved in NVM.</p>
AT#SSLSECCFG?	Read command reports the currently selected parameters in the format: #SSLSECCFG: <SSId>,<CipherSuite>,<auth_mode>[,<cert_format>]
AT#SSLSECCFG=?	Test command returns the range of supported values for all the parameters.

4.1.7.10.10 Configure additional parameters of a SSL socket - #SSLSECCFG2

#SSLSECCFG2 – Configure additional parameters of a SSL socket		SELINT 2
AT#SSLSECCFG2= <SSId> , <version> [,<unused_A> [,<unused_B> [,<unused_C> [,<unused_D>]]]]	<p>This command allows configuring additional SSL connection parameters.</p> <p>Parameters: <SSId> - Secure Socket Identifier 1..6 <version> - SSL/TLS protocol version (default is 1, i.e.: TLSv1.0)</p> <p>0 – protocol version SSLv3 1 – protocol version TLSv1.0 2 – protocol version TLSv1.1 3 – protocol version TLSv1.2</p> <p>Note: if secure socket <SSId> is not enabled using #SSELEN only test requests can be made. Read command can be issued if at least a <SSId> is enabled. Read command shows only <SSId>'s enabled using #SSELEN</p> <p>Note: parameter is automatically saved in NVM</p>	
AT#SSLSECCFG2?	<p>Read command reports the currently selected parameters in the format:</p> <p>#SSLSECCFG2: <SSId>,<version>,0,0,0,0</p>	
AT#SSLSECCFG2=?	Test command reports the range of supported values for all the parameters	

4.1.7.10.11 Manage the security data - #SSLSECDATA

#SSLSECDATA – Manage the security data		SELINT 2
AT#SSLSECDATA =<storeId> , <Action> , <DataType>[,<Size>]	<p>This command allows to store, delete and read security data (CAcertificate) into NVM or RAM.</p> <p>Parameters: storeId> - store identifier 1 - <Action> - Action to do. 0 – Delete data from NVM store. 1 – Store data into NVM store. 2 – Read data from NVM store . 3 – Store data in RAM store, until the next SSLD command with the relevant <SSId> <DataType> 1 – CA certificate</p> <p><Size> - Size of security data to be stored 1..4000</p> <p>If the <Action> parameter is 1 (store data into NVM) or 3 (store data in RAM) the device responds to the command with the prompt '>' and waits for the data to store.</p> <p>Note: secured data have to be in PEM or in DER format, depending on <cert_format> chosen with #SSLSECCFG. If no <cert_format> has been specified with #SSLSECCFG, PEM format is assumed.</p> <p>PEM format(see #SSLSECCFG command): to complete the operation send Ctrl-Z char (0x1A hex); to exit without writing the message send ESC char (0x1B hex).</p>	

	<p>DER format(see #SSLSECCFG command):when <size> bytes are entered, the certificate is automatically stored. ESC or Ctrl-Z does not take effect, because they are considered as possible octets contained in the certificate.</p> <p>If data are successfully stored, then the response is OK; if it fails for some 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:</p> <pre>#SSLSECDATA: <connId>,<DataType> <DATA></pre> <p>OK</p> <p>If <DataType> data has not been stored in NVM (or it has been deleted from NVM) the response has the following format:</p> <pre>#SSLSECDATA: <connId>,<DataType> No data stored</pre> <p>OK</p> <p>Note: <size> parameter is mandatory if the Store(NVM or RAM) action is issued, but it has to be omitted if <delete> or <read> actions are issued.</p> <p>Note: in case of CA Certificate already stored, it could be possible to avoid #SSLSECDATA command.</p> <p>Note: in case of <Action>=3, CA certificate is stored in RAM until next SSLD command(with the relevant <SSId>).</p> <p>Note: <Action>=3 is permitted also when there are already connected <SSId>'s, it will take effect on next #SSLD=<SSId>,... to be connected</p> <p>Note: if later same CA certificate is needed(secure socket <SSId> closed and reopened), it has to be stored in RAM calling again #SSLSECDATA with <Action>=3</p> <p>Note: NVM store is shared among all secure socket <SSId>'s</p>
<p>AT#SSLSECDATA?</p>	<p>Read command reports what security data are stored in NVM in the format:</p> <pre>#SSLSECDATA: <SSId 1>,<0>,<CAcertIsSet>,<0></pre> <p><CAcertIsSet> is 1 if CA certificate is stored into NVM otherwise 0.</p>
<p>AT#SSLSECDATA=?</p>	<p>Test command returns the range of supported values for all the parameters:</p> <pre>#SSLSECDATA: (1),(0-3),(1),(1-4000)</pre>
<p>Example</p>	<pre>#SSLSECDATA=1,3,1,<len> >.... // CA cert 1 for www.site1.com #SSLD=1,443,"www.site1.com",... CONNECT +++ OK #SSLSECDATA=1,3,1,<len> >.... // CA cert 2 for www.site2.com</pre>

	<pre>#SSLD=2,443,"www.site2.com",... CONNECT +++ OK //...closure by remote or by user(#SH) for socket 1..... // Reopen socket 1 => #SSLSECDATA again #SSLSECDATA=1,3,1,<len> >.... // CA cert 1 for www.site1.com #SSLD=1,443,"www.site1.com",... CONNECT +++ OK ...closure by remote or by user(#SH) for socket 2..... // Reopen socket 2 => #SSLSECDATA again #SSLSECDATA=1,3,1,<len> >.... // CA cert 2 for www.site2.com #SSLD=2,443,"www.site2.com",...</pre>
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4.1.7.10.12 Send data through a secure socket - #SSLSEND

#SSLSEND – Send data through a SSL socket		SELINT 2
AT#SSLSEND=<SSId>[, < Timeout >]	<p>This command allows sending data through a secure socket.</p> <p>Parameters:</p> <p><SSId> - Secure Socket Identifier 1..6</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>	

AT#SSLSEND=?	Test command returns the range of supported values for all the parameters: #SSLSEND: (1-6),(1-5000)
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4.1.7.10.13 Send data through a secure socket in Command Mode extended - #SSLSENDEXT

#SSLSENDEXT – Send data through a secure socket in Command Mode extended		SELINT 2
AT#SSLSENDEXT= <SSId>,<bytestosend>[, <Timeout>]	<p>This command allows sending data through a secure socket.</p> <p>Parameters:</p> <p><SSId> - Secure Socket Identifier 1..6</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#SSELEN 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>	
AT#SSLSENDEXT =?	Test command returns the range of supported values for parameters <SSId> , <bytestosend> and <Timeout>. #SSLSENDEXT: (1-6),(1-1500),(1-5000)	
Example	<p>Open the socket in command mode: at#ssld=1,443,<port>,"IP address",0,1 OK</p> <p>Give the command specifying total number of bytes as second parameter: at#sslsendext=1,256,100</p>	

4.1.7.11 SWM FUMO Commands

These are the AT commands to manage SWM client configuration and activation, FUMO client initiated, Bootstrap and Self-Registration.

4.1.7.11.1 SWM Client Enable / Disable - #SWMENA

#SWMENA – SWM Client Enable / Disable		SELINT 2
AT#SWMENA=<mode> >	Execution command, used to enable/disable the SWM Client feature. Parameters: <mode> 0 – disable (default) 1 – enable	
AT#SWMENA?	Test command reports the supported range of values for the <mode> parameter.	
Example	AT#SWMENA=? #SWMENA: (0,1) OK AT#SWMENA? #SWMENA: 0,0 OK AT#SWMENA=1 OK AT#SWMENA? #SWMENA: 1,0 OK	

4.1.7.11.2 Configure SWM Client Parameters - #SWMCFG

#SWMCFG – Configure SWM Client Parameters		SELINT 2
AT#SWMCFG=[<max_avail_size_ext_storage>[,<pdpld>[,<enableInRoaming>[,<enableReleaseNoteURL>[,<pollingIntervallnHours>[,<bootupPollingInterval>[,<recoveryPollingInterval>[,<secureConnection>]]]]]]]	Set command configures the parameters related to SWM Client. Parameters: <max_avail_size_ext_storage> - (Not yet supported: accepted by the AT interface but it has no effect) maximum available size in bytes of the external storage. For external application updates. Default: 0. <pdpld> - PDN Connection identifier the SWM client should use on the module. Range: 1-5; Default: 1 on every product except “LE866-SV1”, where the default PDN Connection is 3. <enableInRoaming> - (Not yet supported: accepted by the AT interface but it has no effect) Flag indicating if DM sessions are allowed in cellular roaming conditions. 0 – DM sessions not allowed in roaming (default) 1 – DM sessions allowed in roaming <enableReleaseNoteURL> - Flag indicating if unsolicited ring notifications for #SWMCHKUPD and #SWMRING will contain the release note strings even if they are present in the DM session. 0 – release note not present in URC (default) 1 – release note present in URC <pollingIntervallnHours> - (Not yet supported: accepted by the AT interface but it has no effect) Integer parameter indicating the span of time in hours between automatic DM session initiations by the SWM client. Valid value is >=0. A value of 0 means no polling. Default is stored parsed as part of the DM tree: 168.	

#SWMCFG – Configure SWM Client Parameters	SELINT 2
	<p><bootupPollingInterval> - (Not yet supported: accepted by the AT interface but it has no effect) Integer parameter indicating the span of time in minutes between device boot and a one time DM session initiation by the SWM client. Valid value is >=0. A value of 0 means no polling after device boot. Default is stored parsed as part of the DM tree: 60.</p> <p><recoveryPollingInterval> - (Not yet supported: accepted by the AT interface but it has no effect) Integer parameter indicating the next polling clock time when the device initiated (polling) session has failed. The value should be smaller than <pollingIntervallnHours>. Valid value is >=0. A value of 0 means no polling. Default is stored parsed as part of the DM tree: 2.</p> <p><secureConnection> - (Not yet supported: accepted by the AT interface but it has no effect) Flag indicating if the SSL encryption is enabled. Not yet implemented. 0 – SSL encryption disabled (default) 1 – SSL encryption enabled (not yet implemented)Note: if SSL encryption is enabled, another secure socket will not be available for the application.</p> <p>Note: if the parameter <max_avail_size_ext_storage> has value 0, then the external application handling is not supported/required.</p> <p>Note: the configuration has to be done before enabling SWM. Issuing the AT#SWMCFG set command after AT#SWMENA=1 will raise an error.</p>
AT#SWMCFG?	<p>Read command reports the current values of parameters in the format:</p> <p>#SWMCFG: <max_avail_size_ext_storage>,<pdpld>,<enableInRoaming>,<enableReleaseNoteURL>,<pollingIntervallnHours>,<bootupPollingInterval>,<recoveryPollingInterval>,<secureConnection></p>
AT#SWMCFG=?	<p>Test command reports the supported range of values for all the parameters.</p>

4.1.7.11.3 Check updates - #SWMCHKUPD

#SWMCHKUPD – Check updates	SELINT 2
AT#SWMCHKUPD	<p>Execution command, used to trigger a DM Session for querying the OMA-DM server for a pending update.</p> <p>Note: if successful, the command returns a final result code OK. Then, when an update check is done, a URC is received:</p> <p>#SWMCHKUPD:<isUpdateAvailable>[, <totalPackageSizeInBytes>[,<description>[,<releaseNoteURL>]]]</p> <p>where:</p> <p><isUpdateAvailable> 0 – No update is available. 1 – Update is available.</p> <p><totalPackageSizeInBytes> - Size of update package in bytes. <description> - Description of the release package <releaseNoteURL> - OMA-DM Server URL where the package release note is located.</p> <p>Note: The <totalPackageSizeInBytes> parameter is optional and will be present in the response in case an update package is pending on the OMA-DM server side. The <releaseNoteURL> parameter is optionally available if there is a descriptive release note string associated with the update package and if <enableReleaseNoteURL>=1 in #SWMCFG.</p>

#SWMCHKUPD – Check updates		SELINT 2
	Note: the command raises an error if issued before AT#SWMENA=1.	
AT#SWMCHKUPD=?	Test command returns the OK result code.	
Example	<p>(Update is available) AT#SWMCHKUPD OK</p> <p>#SWMCHKUPD: 1,4096, Minor Bug Fixes and Added Functionality</p> <p>(No Update is available) AT#SWMCHKUPD OK</p> <p>#SWMCHKUPD: 0</p>	

4.1.7.11.4 Download update package from OMA-DM software management server - #SWMGETDP

#SWMGETDP – Download update package from OMA-DM software management server.		SELINT 2
AT#SWMGETDP=<status>	<p>Execution command confirms SWM client to proceed and download an update package after receiving in client initiated update the URC:</p> <p>#SWMCHKUPD: 1,<totalPackageSizeInBytes>[,<description>[,<releaseNoteURL>]]</p> <p>Parameters: <status> - User action for confirmation 0 – Reject 1 – Accept</p> <p>Note: if successful, commands returns a final result code OK. Then, a URC is received:</p> <p>#SWMDLPRGRSS: <accumulativeReceivedBytes>,<totalDPSizeInBytes></p> <p>where: <accumulativeReceivedBytes>: current size in bytes of the downloaded portion of the package <totalDPSizeInBytes>: total size in bytes of the package</p> <p>Note: when download is done successful, the following URC is received:</p> <p>- #SWMRING: 2[,<description>[,<releaseNoteURL>]]</p> <p>Note: the command raises an error if issued before AT#SWMENA=1.</p> <p>Note: if #SWMGETDP issued when the delta package has already been downloaded, the command returns “OK” and no action is performed.</p>	
AT#SWMGETDP=?	Test command reports the supported range of values for the <status> parameter.	
Example	<p>AT#SWMCHKUPD OK</p> <p>#SWMCHKUPD: 1,1024,"Description of update package","Release Note URL"</p> <p>AT#SWMGETDP=1 OK</p> <p>#SWMDLPRGRSS: 0,1024</p>	

#SWMGETDP – Download update package from OMA-DM software management server.	SELINT 2
	<p>#SWMDLPRGRSS: 1024,1024</p> <p>#SWMRING: 2,"Description of update package","Release Note URL"</p>

4.1.7.11.5 Install software update package - #SWMDEPLOYDP

#SWMDEPLOYDP – Install software update package	SELINT 2
AT#SWMDEPLOYDP=<status>	<p>Execution command confirms SWM client to install update package after a URC #SWMRING: 2[,<description>[,<releaseNoteURL>]] (for client initiated FUMO (firmware update request))</p> <p>Parameters: <status> - User action for confirmation 0 – Reject 1 – Accept</p> <p>Note: if the update requires a device reboot, the device will be rebooted silently.</p> <p>Note: when a FUMO update is done, a URC is received</p> <p>#SWMRING: <notificationId>[<description>[,<releaseNoteURL>]]</p> <p>where: <notificationId> 4 – Firmware update successfully deployed 5 – Firmware update failed</p> <p>Note: the command raises an error if issued before AT#SWMENA=1.</p> <p>Note: if #SWMDEPLOYDP is issued before the delta package is downloaded with #SWMGETDP, the command returns "OK" and no action is performed.</p>
AT#SWMDEPLOYDP=?	Test command reports the supported range of values for the <status> parameter.
Example	<p>AT# SWMDEPLOYDP =1 OK</p> <p>(after device reboot)</p> <p>#SWMRING: 4,"description of update package","Release Note URL"</p>

4.1.7.11.6 Configure Bootstrap - #SWMBOOTSTRAP

#SWMBOOTSTRAP – Configure Bootstrap	SELINT 2
AT#SWMBOOTSTRAP =<serverId>,<name>,< serverURL>,<serverA uthType>,<serverAuth Name>,<serverAuthS ecret>,<serverAuthDa ta>,<clientAuthType>,< clientAuthName>,<clie ntAuthSecret>,<clie ntAuthData>	<p>Set command configures the DM parameters like server URL and access credentials, required for the DM sessions.</p> <p>Parameters:</p> <p><serverId> - string parameter that identifies the server</p> <p><name> - string parameter indicating the name of the bootstrap parameters set</p> <p><serverURL> - string parameter indicating the URL of the SWM server in address:port form. The address substring shall start with “http://” or “https://”, otherwise an error is raised.</p> <p><serverAuthType> - integer parameter indicating the authentication type at the server side: 0 – BASIC 1 – DIGEST 2 – HMAC</p> <p><serverAuthName> - string parameter indicating the username in the server authentication</p> <p><serverAuthSecret> - string parameter indicating the password in the server authentication</p> <p><serverAuthData> - string parameter indicating the nonce in the server authentication</p> <p><clientAuthType> - integer parameter indicating the authentication type at the client side: 0 – BASIC 1 – DIGEST 2 – HMAC</p> <p><clientAuthName> - string parameter indicating the username in the client authentication</p> <p><clientAuthSecret> - string parameter indicating the password in the client authentication</p> <p><clientAuthData> - string parameter indicating the nonce in the client authentication</p>
AT#SWMBOOTSTRAP ?	<p>Read command reports the current values of parameters in the format:</p> <p>#SWMBOOTSTRAP: <serverId>,<name>,<serverURL>,<serverAuthType>,<serverAuthName>,<serverAuthSecret>,<serverAuthData>,<clientAuthType>,<clientAuthName>,<clientAuthSecret>,<clientAuthData></p>
AT#SWMBOOTSTRAP =?	<p>Test command reports the supported range of values for all the parameters.</p>

4.1.7.11.7 #SWMRING Notifications

The following table shows the #SWMRING notification ID and availability:

Table 1: #SWMRING Parameters

Notification Id	Description	Related At Command
1	Self-registration error	#SWMREG
2	Firmware update available	#SWMGETDP
4	Firmware update successfully deployed	#SWMDEPLOYDP
5	Firmware update failed	#SWMDEPLOYDP
11	Unexpected error occurred from SWM Client	
17	(URC format: #SWMRING: 11, #ERROR_ID)	#SWMGETDP

The following table shows the failure reason in case of error:

Error Id	Reason
16	Unspecified error
17	Memory error
18	Routine called when not allowed or with bad parameters
19	Attempt to call VDM_run with non-resume trigger when suspended
32	SyncML message Protocol or version error
24576	Supplied buffer is too small
24577	Badly formatted input
24578	Tree node already exists
24579	Tree node is missing
24580	Parent node is missing
24581	Error in leaf node
24582	Leaf node expected
24583	Unknown property
24584	Attempt made to delete a permanent node
24585	Not allowed by AccessType

Error Id	Reason
24586	Client aborted
24587	Client access denied
24588	Partial write of external data not allowed
24589	Write of external data not allowed at this time
24590	May not replace
24591	Persistent storage read error
24592	Persistent storage write error
24593	Authentication failure
24594	Access denied by ACL
24595	External data value is not readable
24596	External data value is not writable
24597	Node not registered for execute
24598	Tree open error
24599	Tree commit error
24832	No more commands. Used internally by the Engine. This is not really an error.
24833	Missing start message command
24834	Missing status command
24835	Optional feature not implemented
24837	Alert - options parsing error
24838	Alert - not enough items
24839	Alert - not enough data
24840	No data
24841	Alert - user cancelled or aborted
24842	Alert - too many choices passed to implementation
24843	Alert - server has sent a session-abort alert
24844	Large object item has been handled. Used internally by the Engine. This is not really an error.

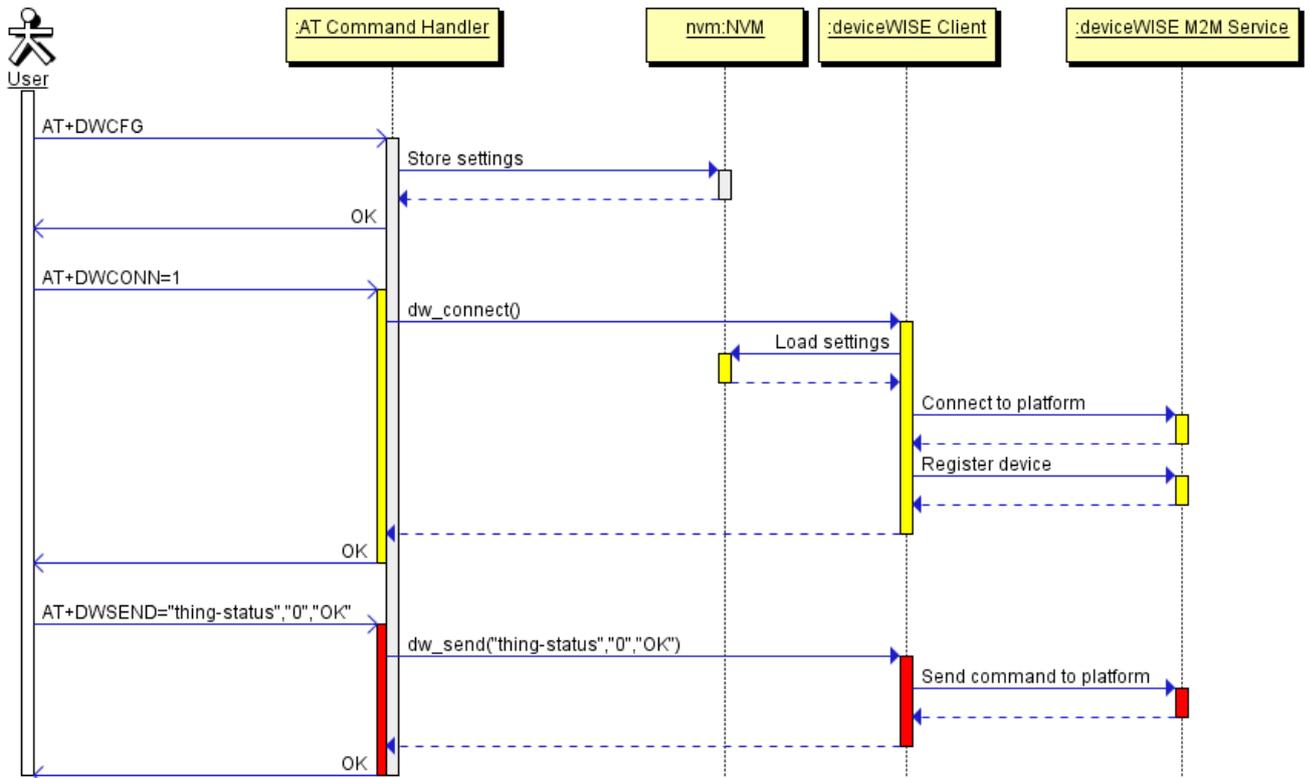
Error Id	Reason
24845	Data is too long to pass back as a large object
24846	Command status code is failed
25088	Notification - message has invalid length
25089	Notification - message has invalid digest
25090	Boot message has invalid digest
25091	Could not get NSS for bootstrap
25092	Could not get PIN for bootstrap
25093	Bad bootstrap PIN length
25094	Bad bootstrap SEC value
25095	Bad bootstrap MAC
25096	Bad bootstrap message
25097	Bad bootstrap profile
25104	Bad trigger reason
25105	Notification - message contains unsupported version info
25106	Bootstrap not currently allowed
25107	Non-DM Bootstrap message
25108	Download object too large
25109	Bad Nia Format
25344	Unsupported protocol
25345	Mismatched reply: XML received when WBXML sent or vice-versa
25346	General fatal transport error
25347	Start range of non-fatal communication errors
25347	General non-fatal transport error (can be retried)
25348	Socket timeout transport error
25349	General socket non-fatal (retriable) socket error
25350	HTTP result wasn't found

Error Id	Reason
25407	End range of non-fatal communication errors
25408	Start range of fatal communication errors
25408	HTTP error
25471	End range of fatal communication errors
25472	Start range of vendor specified transport errors
25472	Download general error
25473	Download network error
25474	DM general error
25475	DM network error
25476	No new update
25477	DM session in progress
25478	Device roaming or in emergency mode
25479	Wifi not available while WifiOnly is enabled
25480	A DM flow scenario is in progress
25481	Download general error
25599	End range of vendor specified transport errors
25602	Error accessing MO external storage
25604	User cancelled update or download
25605	Could not initiate update client
25606	Download URL is malformed or bad
25607	Error while parsing Download Descriptor

4.1.7.12 m2mAIR Cloud Commands

The following AT commands regard the deviceWISE functionality.

Here is a basic interaction diagram:



4.1.7.12.1 Configure deviceWISE parameters - #DWCFG

#DWCFG – configure deviceWISE parameters	SELINT 2
<p>AT#DWCFG=[<serverUrl>[,<deviceIDSelector>[,<appToken>[,<security>[,<heartBeat>[,<autoReconnect>[,<overflowHandling>[,<atrUnInstanceId>[,<serviceTimeout>[,<unused_1>[,<unused_2>[,<unused_3>]]]]]]]]]]]]]</p>	<p>This command sets the parameters related to the deviceWISE functionality</p> <p>Parameters:</p> <ul style="list-style-type: none"> <serverUrl> - String parameter indicating the URL of the M2M Service instance in address:port form. <deviceIDSelector> 0 – 1 (0=IMEI 1=CCID/ESN), basically 0 if not SIM card or CDMA ID installed <appToken> - The secure application token provided in the Management Portal, typically a string of 16 characters.. <security> - Flag indicating if the SSL encryption is enabled. (not supported) <ul style="list-style-type: none"> 0 – SSL encryption disabled (default) 1 – SSL encryption enabled <p>If SSL encryption enabling is required, some initial settings have to be done as follows. For further details, refer to “SSL/TLS User Guide”.</p> <p>SSL channel has to be enabled as follows:</p> <p>AT#SSELEN=1,1 OK</p>

	<p>If server authentication is needed, #SSLSECCFG has to be set as follows:</p> <pre>AT#SSLSECCFG=1,0,1,0 OK</pre> <p>Then, CA Certificate(DER PEM format) has to be stored as follows:</p> <pre>AT#SSLSECDATA=1,1,1,<size> > // store CA Certificate OK</pre> <p>Note: DW connection in secure mode cannot be used contemporarily to any command starting an SSL connection (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><atrUnInstanceld> - 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>AT#DWCFG?</p>	<p>Read command returns the current settings in the format:</p> <pre>#DWCFG: <serverUri>,<deviceIDSelector>,<appToken>,<security>,<heartBeat>,<autoReconnect>,<overflowHandling>,<atrUnInstanceld>,<serviceTimeout>,0,0,0</pre>
<p>AT#DWCFG=?</p>	<p>Test command returns the supported range of parameters <deviceIDSelector>, <security>, <heartBeat>, <AutoReconnect>, <overflowHandling>, <atrUnInstanceld> and <serviceTimeout> and the maximum length of <serverUri> and <appToken> parameters.</p>

4.1.7.12.2 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 PDN connection 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	

4.1.7.12.3 Query connection status - #DWSTATUS

#DWSTATUS – query connection status		SELINT 2
AT#DWSTATUS	<p>Execution command returns the status of the connection, including some runtime statistics. Note, all statistics should be stored in RAM, not NVM.</p> <p>The Cloud will return a generic structure</p> <p>#DWSTATUS: <connected><lastErrorCode>,<latency>,<pktsIn>,<pktsOut>,<bytesIn>,<bytesOut></p> <p><connected> : 3 = waiting to connect, 2 = connected, 1 = trying to connect, 0 = disconnected <lastErrorCode>: last error code encountered by the client <latency> : milliseconds measured between last request and reply. <pktsIn> : number of packets received, tracked by the server <pktsOut> : number of packets sent. <bytesIn> : number of bytes received, TCP/IP payload <bytesOut> : number of bytes sent.</p>	
AT#DWSTATUS=?	Test command reports OK result code	

4.1.7.12.5 Send raw data to M2M Service - #DWSENDR

#DWSENDR – send raw data to M2M Service		SELINT 2
AT#DWSENDR=<dataLen>	<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 Range: 1 - 1500</p> <p>The module responds to the command with the prompt <greater_than><space> and waits for the data to send. When <dataLen> 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>Note: the response to the AT#DWSENDR command reports the <msgId> 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#DWSENDR only if the connection has been opened with AT#DWCONN</p>	
AT#DWSENDR=?	Test command reports the supported range of values for <dataLen> parameter	

4.1.7.12.6 Receive data from M2M Service - #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: <msgId> - 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#DWSEND, then the <msgId> value is the same of the <msgId> value reported in the answer of AT#DWSEND.</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: <type> - type of message to receive <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#DWRCV, then the formatted data are received and showed with the following URC:</p> <p>#DWDATA: <msgId>,<error>,<len>,<param_1>,<param_2>,[...,<param_n>]]]</p>	

#DWRCV – Receive data from M2M Service	SELINT 2
	<p>where: <msgld> - defined as above <error> - error code of the message to receive, 0 if there is no error. <len> - defined as above <param_i> - 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.

4.1.7.12.7 Receive raw data from M2M Service - #DWRCVR

#DWRCVR – Receive raw data from M2M Service	SELINT 2
AT#DWRCVR=<msgld>	<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: <msgld> - 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#DSEND), then the <msgld> value is the same of the <msgld> 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>,<msgld>,<len></p> <p>where: <type> - type of the data message to receive <msgld> - 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: <msgld>,<error>,<len>,<data></p> <p>where: <msgld> - 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#DSEND, then they can be read only using</p>

#DWRCVR – Receive raw data from M2M Service		SELINT 2
	AT#DWRCVR command and not AT#DWRCV command (i.e.: AT#DWRCV and AT#DWRCVR are not interchangeable).	
AT#DWRCVR=?	Test command reports the supported range of values for all parameters.	

4.1.7.12.8 List information on messages pending from M2M Service - #DWLRCV

#DWLRCV – List information on messages pending from M2M Service		SELINT 2
AT#DWLRCV	Execution command permits the user to obtain information regarding the messages pending from M2M Service in the following format: #DWLRCV: <msg_number>[,<msgld_1>,<msg_1_len>[,<msgld_2>,<msg_2_len>[,<msgld_n>,<msg_n_len>]]] where: <msg_number> - number of messages pending from M2M Service Range: >=0 <msgld_i> - index of the i-th data message to receive <msg_i_len> - length of the i-th data message to receive 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.	
AT#DWLRCV=?	Test command reports OK result code	

4.1.7.12.9 Enable Agent Features - #DWEN

#DWEN – enable agent features		SELINT 2
AT#DWEN=<feat>,<en>[,<option1>[,<option2>[,<option3>[,<option4>[,<option5>]]]]]	Set command permits to enable/disable up to 8 different deviceWISE features. Parameters: <feat> - feature to enable or disable; range (0-7) 0 – remote at commands 1 ... 7 – reserved for future use. <en> - enable or disable the features 0 – disable the feature 1 – enable the feature <optionX> where X=1,...,5 - optional parameters depending on the feature (string) 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	
AT#DWEN?	Read command returns the current settings for each feature in the format: #DWEN: <feat>,<en>,<option1>,<option2>,<option3>,<option4>,<option5>	
AT#DWEN=?	Test command reports the supported range of values for parameters <feat> and <en> and the maximum length of <optionX> (where X=1,...,5) parameters	

4.1.7.13 3GPP Rel12 PSM Commands

These are the AT commands to manage the PSM (Power Saving Mode) function introduced by the 3GPP Rel12.

Please refer to the related Application note for the details on the HW requirements

4.1.7.13.1 3GPP Rel12 PSM (Power Save Mode) Settings - #PSM

#PSM – 3GPP Rel12 Power Save Mode Settings		SELINT 2
AT#PSM= <PSMEn> , <PSMActReboot> , <T3412> , <T3324> , <ConsumType>	<p>This command enables and disables PSM mode. It needs a reboot to take effects.</p> <p>PSM enabled allows to the module to go into Power Saving Mode (Sleep or Hibernation) according to timer values.</p> <p>When PSMEn is enabled and PSMActReboot is disabled, the Power Saving Mode can be started/stopped with CPSMS command. If PSM is not enabled, the CPSMS command will return error.</p> <p>Parameters:</p> <p><PSMEn> - PSM Feature enabling/disabling 0 – Disable 1 – Enable</p> <p><PSMActReboot> - PSM status after reboot 0 - Disable 1 - Enable</p> <p><T3412> - Timer Value, how long the module stay in PSM mode <T3324> - Timer value, after how long the module goes into PSM mode</p> <p><ConsumType> - Power save mode to use: 0 - Sleep Mode 1 – Hibernation Mode</p> <p>Note: All these parameters are automatically saved in NVM.</p>	
AT#PSM?	Read command returns the current PSM configuration, in the format: #PSM: <PSMEn> , <PSMActReboot> , <T3412> , <T3324>	
AT#PSM=?	Test command reports supported range of values for all parameters.	
Example	AT#PSM? #PSM: 1,1,162,33 OK In this case, PSM is enabled and become active after a reboot. In particular, the module goes into Power Saving Mode after a minute (T3324 = 33) and stay in this mode for two minute (T3412 = 162). In this case, PSM is full active and Power Saving Mode is managed immediately according to timer values AT#PSM=1,0,162,33,1	

4.1.7.13.2 Setting of 3GPP Rel12 PSM mode run time - +CPSMS

+CPSMS – 3GPP Rel12 PSM mode enable/disable		SELINT 2
AT+CPSMS= <En> , <T3412Default> , <T3324Default> , <T3412> , <T3324>	<p>This command enables and disables PSM mode at run time. PSM enabled allows to the module to go into Power Saving Mode (Sleep or Hibernation) according to the timer values.</p> <p>AT+CPSMS is strictly linked to AT#PSM command If PSM is not enabled the command CPSMS will return error.</p> <p>Parameters: <En> - PSM Feature enabling/disabling 0 – Disable 1 – Enable</p> <p>< T3412Default> – Default timer value (timer disable) < T3324Default> – Default timer value (timer disable)</p> <p><T3412> - Timer Value, how long the module stay in PSM mode <T3324> - Timer value, after how long the module goes into PSM mode</p> <p>NOTE: The timer values are the same as defined for AT#PSM command</p>	
AT+ CPSMS?	Read command returns the current CPSMS configuration, in the format: +CPSMS: <En>,< T3412Default >,< T3324Default >,<T3412>,<T3324>	
AT+ CPSMS=?	Test command reports supported range of values for all parameters.	
Example	AT+CPSMS? +CPSMS: 0,224,224,224,224 OK It means that PSM is disabled but it is possible to activate it at run time. Note: 224 represents timer disable. AT+CPSMS=1,,162,33 OK It means that Power Saving Mode is set to enabled and module enters in PSM (Sleep or Hibernation, managed by AT#PSM command) after a minute (T3324 = 33) and stay in this mode for two minute (T3412 = 162). AT+CPSMS=0 OK It means that PSM is set to disable, the module does not go to Power Saving Mode in any case. Note: when PSM is disabled (through AT#PSM command), the CPSMS command returns ERROR: AT#PSM? PSM: 0,0,224,224 OK As consequence: AT+CPSMS? ERROR	

4.1.7.14 Digital Audio Commands

These are the AT commands to manage the Digital Audio

4.1.7.14.1 Digital Voiceband Interface - #DVI

#DVI – Digital Voiceband Interface		SELINT 2
AT#DVI=<mode> [,<dviport>, <clockmode>]	Set command enables/disables the Digital Voiceband Interface. Parameters: <mode> - enables/disables the DVI. 0 – disable DVI (factory default) 1 – enable DVI; audio is forwarded to the DVI block 2 – reserved <dviport> 2 – DVI port 2 will be used <clockmode> 1 – DVI master	
AT#DVI?	Read command reports last setting, in the format: #DVI: <mode>,<dviport>,<clockmode>	
AT#DVI=?	Test command reports the range of supported values for parameters <mode> , <dviport> and <clockmode>	
Example	AT#DVI=1,2,1 OK DVI is configured as master providing on DVI port #2 (the only available)	

4.1.7.14.2 Extended Digital Voiceband Interface - #DVIEXT

#DVIEXT – Digital Voiceband Interface Extension		SELINT 2
AT#DVIEXT= <config> , [<samplerate>, [<samplewidth>, [<audiomode>, [<edge>]]]]]	Set command configures the Digital Voiceband Interface. Parameters: <config> 1 – Normal Mode <samplerate> 0 – audio scheduler sample rate 8KHz (factory default) 1 – audio scheduler sample rate 16KHz <samplewidth> 0 – 8 bit per sample 1 – 16 bit per sample (factory default) <audiomode> 0 – Mono Mode <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	
AT#DVIEXT?	Read command reports last setting, in the format: #DVIEXT: <config>,<samplerate>,<samplewidth>,<audiomode>,<edge>	
AT#DVIEXT=?	Test command reports the range of supported values for parameters: <config> , <samplerate> , <samplewidth> , <audiomode> , <edge>	

4.1.7.15 Phonebook AT Commands

4.1.7.15.1 Read Group Entries - #CPBGR

#CPBGR- Read Group Entries		SELINT 2
AT#CPBGR= <index1> [,<index2>]	<p>Execution command returns Grouping information Alpha String (GAS) USIM file entries in location number range <index1>...<index2>. If <index2> is omitted, only location <index1> is returned. These strings are the names used for groups an ADN entry could belong to.</p> <p>Parameters: <index1> - integer type, value in the range of location numbers of GAS. <index2> - integer type, value in the range of location numbers of GAS.</p> <p>The response format is: [#CPBGR: <index1>,<text>[<CR><LF> #CPBGR: <index2>,<text>[...]]]</p> <p>where: <indexn> - the location number of the GAS entry <text> - the alphanumeric text associated to the entry</p>	
AT#CPBGR=?	<p>Test command returns the supported range of values for parameters <indexn> and the maximum length of <text> field, in the format:</p> <p>#CPBGR: (<minIndex> - <maxIndex>),<tlength></p> <p>where: <minIndex> - the minimum <index> number, integer type <maxIndex> - the maximum <index> number, integer type <tlength> - maximum <text> field length, integer type</p>	

4.1.7.15.2 Write Group Entries - #CPBGW

#CPBGW - Write Group Entry		SELINT 2
AT#CPBGW= <index>,<text>	<p>Execution command writes Grouping information Alpha String (GAS) USIM file entry in location number <index>.</p> <p>Parameters: <index> - integer type, value in the range of location numbers of the GAS file. <text> - the text associated to the entry, string type</p> <p>Note: If record number <index> already exists, it will be overwritten.</p>	
AT#CPBGW=?	<p>Test command returns location range supported by the current storage as a compound value, and maximum length of <text> field. The format is:</p> <p>+CPBGW: (list of supported <index>s),<tlength></p> <p>where: <tlength> - integer type value indicating the maximum length of field <text> in bytes; actual maximum number of characters that can be stored depends upon <text> coding (see +CSCS)</p>	

4.1.7.16 SIM Toolkit Commands

4.1.7.16.1 SIM Toolkit Interface Activation - #STIA

#STIA - SIM Toolkit Interface Activation	SELINT 2
<p>AT#STIA= [<mode> [,<timeout>]]</p>	<p>Set command is used to activate the SAT sending of unsolicited indications when a proactive command is received from SIM.</p> <p>Parameters:</p> <p><mode></p> <ul style="list-style-type: none"> 0 - disable SAT 1 - enable SAT without unsolicited indication #STN (default) 2 - enable SAT and extended unsolicited indication #STN (see #STGI) 3 - enable SAT and reduced unsolicited indication #STN (see #STGI) 17 - enable SAT without unsolicited indication #STN and 3GPP TS 23.038 alphabet used 18 - enable SAT and extended unsolicited indication #STN (see #STGI) and 3GPP TS 23.038 alphabet used 19 - enable SAT and reduced unsolicited indication #STN (see #STGI) and 3GPP TS 23.038 alphabet used 33 - enable SAT without unsolicited indication #STN and UCS2 alphabet used 34 - enable SAT and extended unsolicited indication #STN (see #STGI) and UCS2 alphabet used 35 - enable SAT and reduced unsolicited indication #STN (see #STGI) and UCS2 alphabet used <p><timeout> - time-out for user responses</p> <ul style="list-style-type: none"> 1.. 2 - time-out in minutes (default 2). Any ongoing (but unanswered) proactive command will be aborted automatically after <timeout> minutes. In this case, the terminal response is either "ME currently unable to process command", or if applicable, "No response from user". In addition an unsolicited indication will be sent to the external application: <p>#STN: <cmdTerminateValue></p> <p>where:</p> <p><cmdTerminateValue> is defined as <cmdType> + terminate offset; the terminate offset equals 100.</p> <p>Note: every time the SIM application issues a proactive command that requires 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> <ul style="list-style-type: none"> • 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>if <cmdType>=1 (REFRESH)</p> <p>an unsolicited notification will be sent to the user:</p> <p>#STN: <cmdType>,<refresh type></p> <p>where:</p>

#STIA - SIM Toolkit Interface Activation	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>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. <p><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: <text> - (optional) text to be displayed to user</p> <p>In these cases 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. <p>In case of SEND SHORT MESSAGE (<cmdType>=19) command if sending to network fails an unsolicited notification will be sent</p> <p>#STN: 119</p> <p><i>if <cmdType>=33 (DISPLAY TEXT)</i></p> <p>an unsolicited notification will be sent if allowed by SIM (see GSM 11.14):</p> <p>#STN: <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> - (optional) text to be displayed to user</p> <p>In this case:</p> <ol style="list-style-type: none"> 1. if <cmdDetails>/bit8 is 0 neither #STGI nor #STSR commands are required: <ul style="list-style-type: none"> • AT#STGI is accepted anyway. • AT#STSR=<cmdType>,0 will answer OK but do nothing. 2. If <cmdDetails>/bit8 is 1 #STSR command is required <p><i>if <cmdType>=40 (SET UP IDLE MODE TEXT)</i></p>	

#STIA - SIM Toolkit Interface Activation	SELINT 2
<p>an unsolicited notification will be sent:</p> <p>#STN: <cmdType>[,<text>]</p> <p>where: <text> - (optional)text to be displayed to user</p> <p>In these cases 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. <p><i>if <cmdType>=18 (SEND USSD)</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> <p>In this case:</p> <ul style="list-style-type: none"> • AT#STSR=18,20 can be sent to end USSD transaction. • AT#STGI is accepted anyway. • AT#STSR=<cmdType>,0 will answer OK but do nothing. <p><i>if <cmdType>=5 (SET UP EVENT LIST)</i></p> <p>an unsolicited notification will be sent:</p> <p>#STN: <cmdType>[,<event list mask>]</p> <p>where: <event list mask> - (optional)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>In these cases 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. <p><i>if <cmdType>=64 (OPEN CHANNEL)</i></p>	

#STIA - SIM Toolkit Interface Activation	SELINT 2
	<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> <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. <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 <cmdTerminateValue> 150 - SMS control response 160 - call/SS/USSD response <Result> 0 - Call/SMS not allowed 1 - Call/SMS allowed 2 - Call/SMS allowed with modification <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> <p>Note: an unsolicited result code</p> <p>#STN: 254</p> <p>is sent if the user has indicated the need to end the proactive SIM application session (AT#STSR=<cmdType>,16 i.e. “proactive SIM application session terminated by the user” according to GSM 11.14).</p> <p>The TA does not need to respond directly, i.e. AT#STSR is not required. It is possible to restart the SAT session from the main menu again with the command AT#STGI=37.</p> <p>Note: The settings are saved on user profile and available on following reboot. SIM Toolkit activation/deactivation is only performed at power on.</p> <p>Note: if #ENS=1 then the <mode> parameter is set to 2</p>

#STIA - SIM Toolkit Interface Activation		SELINT 2
AT#STIA?	<p>Read command can be used to get information about the SAT interface in the format:</p> <p>#STIA: <state>,<mode>,<timeout>,<SatProfile></p> <p>where:</p> <p><state> - the device is in one of the following state: 0 - SIM has not started its application yet 1 - SIM has started its application (SAT main menu ready)</p> <p><mode> - SAT and unsolicited indications enabling status (see above)</p> <p><timeout> - time-out for user responses (see above)</p> <p><SatProfile> - SAT Terminal Profile according to GSM 11.14, i. e. the list of SIM Application Toolkit facilities that are supported by the ME. The profile cannot be changed by the TA.</p> <p>Note: In SAT applications usually an SMS message is sent to the network provider containing service requests, e.g. to send the latest news. The provider returns a message with the requested information. Before activating SAT it is recommended to set the SMS text mode with command AT+CMGF=1 and to enable unsolicited indications for incoming SMS messages with command +CNMI.</p>	
AT#STIA=?	Test command returns the range of available values for the parameters <mode> and <timeout> .	
Note	Just one instance at a time, the one which first issued AT#STIA=n (with n different from zero), is allowed to issue SAT commands, and this is valid till the same instance issues AT#STIA=0 . After power cycle another instance can enable SAT.	
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).	

4.1.7.16.2 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:</p> <p><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 	

#STGI - SIM Toolkit Get Information	SELINT 2
<p>64 – OPEN CHANNEL</p> <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><i>if <cmdType>=1 (REFRESH)</i></p> <p>#STGI: <cmdType>,<refresh type> where: <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 <p><i>if <cmdType>=5 (SET UP EVENT LIST)</i></p> <p>#STGI: <cmdType>,<event list mask> 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><i>if <cmdType>=16 (SET UP CALL)</i></p> <p>#STGI: <cmdType>,<commandDetails>,<confirmationText>,<calledNumber>where: <commandDetails> - unsigned integer, used as an enumeration</p> <ul style="list-style-type: none"> 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 <p><confirmationText> - string for user confirmation stage <calledNumber> - string containing called number</p> <p><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>	

#STGI - SIM Toolkit Get Information	SELINT 2
<p>#STGI: <cmdType>[,<text>]</p> <p>where: <text> - text to be displayed to user</p> <p><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><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) 1 - UCS2 alphabet bit 3: 0 - Character sets defined by bit 1 and bit 2 are enabled 1 - Character sets defined by bit 1 and bit 2 are disabled and the "Yes/No" response is requested bits 4 to 7: 0 bit 8: 0 - No help information available 1 - Help information available <text> - String as prompt for text.</p> <p><i>if <cmdType>=35 (GET INPUT)</i></p> <p>#STGI: <cmdType>,<commandDetails>,<text>,<responseMin>,<responseMax>[,<defaultText>]</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</p>	

#STGI - SIM Toolkit Get Information	SELINT 2
	<p>bit 2: 0 - SMS default alphabet (GSM character set) 1 - UCS2 alphabet</p> <p>bit 3: 0 - ME may echo user input on the display 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: 0 - User input to be in unpacked format 1 - User input to be in SMS packed format</p> <p>bits 5 to 7: 0</p> <p>bit 8: 0 - No help information available 1 - Help information available</p> <p><text> - string as prompt for text <responseMin> - minimum length of user input 0..255 <responseMax> - maximum length of user input 0..255 <defaultText> - string supplied as default response text</p> <p><i>if <cmdType>=36 (SELECT ITEM)</i></p> <p>The first line of output is:</p> <p>#STGI: <cmdType>,<commandDetails>,<numOfItems>[,<titleText>] <CR><LF></p> <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> <p>bit 1: 0 - Presentation type is not specified 1 - Presentation type is specified in bit 2</p> <p>bit 2: 0 - Presentation as a choice of data values if bit 1 = '1' 1 - Presentation as a choice of navigation options if bit 1 is '1'</p> <p>bit 3: 0 - No selection preference 1 - Selection using soft key preferred</p> <p>bits 4 to 7: 0</p> <p>bit 8: 0 - No help information available 1 - Help information available</p> <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>

#STGI - SIM Toolkit Get Information	SELINT 2
	<p>if <cmdType>=37 (SET UP MENU)</p> <p>The first line of output is:</p> <p>#STGI: <cmdType>,<commandDetails>,<numOfItems>,<titleText><CR><LF></p> <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> <p>bit 1: 0 - no selection preference 1 - selection using soft key preferred</p> <p>bit 2 to 7: 0</p> <p>bit 8: 0 - no help information available 1 - help information available</p> <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>
AT#STGI?	<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>
AT#STGI=?	<p>Test command returns the range for the parameters <state> and <cmdType>.</p>
Note	<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 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</p>

#STGI - SIM Toolkit Get Information	SELINT 2
	<p>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>

4.1.7.16.3 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>Get Inkey</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> <ul style="list-style-type: none"> 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>Get Input</p> <p><data> - contains the string of characters entered by the user (see above)</p> <p>Select Item</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>
<p>AT#STSR?</p>	<p>The read command can be used to request the currently ongoing proactive command and the SAT state in the format</p> <p>#STSR!: <state>,<cmdType> where:</p>

#STSR - SIM Toolkit Send Response		SELINT 2
	<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>	
AT#STSR=?	Test command returns the range for the parameters <state> and <cmdType> .	

4.1.7.17 Device Management (OMA-DM) Commands

4.1.7.17.1 Host ODIS parameters management - #HOSTODIS

#HOSTODIS – Host Odis parameters management		SELINT 2
AT#HOSTODIS=<Param>,<Action>[,<Value>]	<p>The set command is intended to allow the end-user to handle the Host Odis parameters for AT&T OMADM client.</p> <p>Parameters:</p> <p><Param> - this parameter should be used to select the parameter to work on: 0 is for the Host Manufacturer; 1 is for the Host Model; 2 is for the Host Software application version.</p> <p><Action> - this parameter should be used to select the action to be performed on the chosen parameter: 0 is to perform a “set”; 1 is to perform a “get” 2 is to perform a “reset”;</p> <p><Value> - only valid in case of <Action> set to 0, it should contain a string with the proper value.</p> <p>Note: Host Manufacturer, Host Model and Host Software application version do not change after an OTA firmware upgrade.</p>	
AT# HOSTODIS =?	Test command returns the supported range of <Param> , <Action> and <Value> parameters.	

4.1.7.17.2 OMADM AT&T Device ID set - #UNIQUEDEVID

#UNIQUEDEVID – Device ID write		SELINT 2
AT#UNIQUEDEVID=<pdpld>	<p>Handling of Device ID parameter (developed for ODIS AT&T requirement). Set command writes the Device ID in persistent storage</p> <p>Parameters: <DeviceID> - Device ID: 10 alphanumeric digits ID assigned to the device. String type.</p> <p>Note: Device ID can be written only once</p>	
Example	<pre>AT#UNIQUEDEVID =abc1234567 OK // Read command not supported AT#UNIQUEDEVID? ERROR</pre>	

4.1.7.18 Consume Commands

4.1.7.18.1 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 (not supported) 8 – IP All Data Received (not supported) 9 – IP All Data (not supported) 10 – IP All Data Sent (with Header) (not supported) 11 – IP All Data Received (with Header) (not supported) 12 – IP All Data (with Header) (not supported)</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 behavior: 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 AT 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>
<p>AT#CONSUMECFG?</p>	<p>Read command returns the current settings for each rule in the format:</p>

#CONSUMECFG – configure consume parameters		SELINT 2
	#CONSUMECFG: <rule_id>,<service_type>,<rule_enable>,<period>,<limit_amount>,<action_id>	
AT#CONSUMECFG=?	Test command reports the supported range of values for all parameters	

4.1.7.18.2 Enable consume functionality - #ENACONSUME

#ENACONSUME – enable consume functionality		SELINT 2
AT#ENACONSUME=<enable>[,<storing_mode>[,<storing_period>]]	<p>Set command enables/disables the consume functionality. Parameters:</p> <p><enable> 0 – disable consume functionality (default) 1 – disable consume functionality except life counters 2 – enable consume functionality</p> <p><storing_mode>: 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 AT instance 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. Note: when the functionality is disabled with <enable>=1, the data counters are stopped <u>except life counters</u>. Note: the life counters are never reset, neither in terms of counted data nor in terms of time</p>	
AT#ENACONSUME?	Read command returns the current settings for all parameters in the format: #ENACONSUME: <enable>,<storing_mode>,<storing_period>	
AT#ENACONSUME=?	Test command reports the supported range of values for all parameters	

4.1.7.18.3 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. Parameter:</p> <p><counter_type> Type of counter: range (0-1) 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: <rule_10>,<service_type>,<counted_data>,<threshold>,<current_time>,<period> where <rule_i> Index of the rule defined with AT#CONSUMECFG <service_type> Type of service: 1 – SMS Sent</p>	

#STATSCONSUME – report consume statistics	SELINT 2
	<p>2 – SMS Received 3 – Total SMS 4 – CS MO Calls 5 – CS MT Calls 6 – Total CS Calls 7 – IP All Data Sent (not supported) 8 – IP All Data Received (not supported) 9 – IP All Data (not supported) 10 – IP All Data Sent (with Header) (not supported) 11 – IP All Data Received (with Header) (not supported) 12 – IP All Data (with Header) (not supported)</p> <p><counted_data> Number of data counted during <current_time></p> <p><threshold> Limit amount of data to count (set in parameter <limit_amount> with AT#CONSUMECFG)</p> <p><current_time> Number of passed hours in the current <period></p> <p><period> Number of total hours in the period where the data are counted (corresponds to the value set in <period> with AT#CONSUMECFG) 1 – life counter: the command returns the values of life counters for every service type in the format:</p> <p>#STATSCONSUME: <service_1>,<life_data>,<current_time><CR><LF>#STATSCONSUME: <service_2>,<life_data>,<current_time><CR><LF>...<CR><LF>#STATSCONSUME: <service_12>,<life_data>,<current_time></p> <p>where <service_i> is defined as <service_type> above <life_data> Number of data counted during entire life time period <current_time> Number of passed hours during entire life time period Note: issuing AT#STATSCONSUME without parameters has the same effect as AT#STATSCONSUME=0</p>
AT#STATSCONSUME=?	Test command returns OK result code

4.1.7.18.4 Block/unblock a type of service - #BLOCKCONSUME

#BLOCKCONSUME – block/unblock a type of service	SELINT 2
AT#BLOCKCONSUME=<service_type>,<block>	<p>Execution command blocks/unblocks a type of service 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 (not supported)</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>

#BLOCKCONSUME – block/unblock a type of service		SELINT 2
	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)	
AT# BLOCKCONSUME?	Read command reports the status blocked/unblocked of every type of service in the following format: #BLOCKCONSUME: <service_type>,<block>	
AT# BLOCKCONSUME=?	Test command reports the supported range of values for <service_type> and <block> parameters	

4.1.7.18.5 #SGACT/#SENDLINE configuration - #IPCONSUMECFG

#IPCONSUMECFG – #SGACT/#SENDLINE configuration		SELINT 2
AT#IPCONSUMECFG= [<connId> [,<txProt> [,<remoteHost> [,<remotePort> [,<authIMEI/ICCIDena> [,<unused_A> [,<unused_B> [,<unused_C>]]]]]]]]	<p>This command configures #SGACT authentication and #SENDLINE connection parameters.</p> <p>Parameters:</p> <p>Following settings take effect on successive #SENDLINE command:</p> <p><connId>: - socket connection identifier 1(default)...6</p> <p>Note: verify <connId> is currently available(i.e.: not already connected) by multiset 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:</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 “”</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 PDN Connection activation (#SGACT) authentication(user/pwd) with ICCID/IMEI 0 – disable #SGACT authentication with IMEI/ICCID as user/pwd(default) 1 – enable #SGACT authentication with with IMEI/ICCID as user/pwd</p> <p>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>	
AT#IPCONSUMECFG?	Read command reports the currently configuration parameters in the format: #IPCONSUMECFG: <connId>,<txProt>,<remoteHost> ,<remotePort>,<authIMEI/ICCIDena>,<0>,<0>,<0> <CR><LF>	
AT#IPCONSUMECFG=?	Test command reports the supported range of values for all the parameters	

4.1.7.18.6 Open a connection, send data, close connection - #SENDLINE

#SENDLINE – open a connection, send data, close connection		SELINT 2
AT#SENDLINE=<data>	<p>This command permits to open a TCP/UDP connection, send specified data and close the TCP/UDP connection.</p> <p>The remote host/port of the connection have to be previously specified with #IPCONSUMECFG command.</p>	

#SSENDLINE – open a connection, send data, close connection		SELINT 2
	Parameters: <data> - text to send, shall be enclosed between double quotes. Note: maximum allowed amount of data is 380 octets Note: in case of UDP obviously only local opening/closure is done, datagram is sent with <data> contained in the payload.	
AT#SSENDLINE=?	Test command reports the maximum length of <data> parameter	
Example	<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>	

4.1.7.19 GPS/GNSS Commands

The following commands are usable in connection with an external GNSS receiver.

4.1.7.19.1 Get Acquired Position Information – AT\$GPSACP

\$GPSACP – Get Acquired Position Information		SELINT 2
AT\$GPSACP	Execution command returns information about the latest GNSS position in the format: \$GPSACP: <UTC>,<latitude>,<longitude>,<hdop>,<altitude>,<fix>,<cog>,<spkm>,<spkn>,<date>,<nsat> where: <UTC> - UTC time (hhmmss.sss) referred to GGA sentence <latitude> - format is ddmm.mmmm N/S (referred to GGA sentence) where: dd - degrees 00..90 mm.mmmm - minutes 00.0000..59.9999 N/S: North / South <longitude> - format is dddmm.mmmm E/W (referred to GGA sentence) where: ddd - degrees 000..180 mm.mmmm - minutes 00.0000..59.9999 E/W: East / West <hdop> - x.x - Horizontal Dilution of Precision (referred to GGA sentence) <altitude> - x.x Altitude - mean-sea-level (geoid) in meters (referred to GGA sentence) <fix> - 0 or 1 - Invalid Fix 2 - 2D fix 3 - 3D fix	

	<p><cog> - ddd.mm - Course over Ground (degrees, True) (referred to VTG sentence) where: ddd - degrees 000..360 mm - minutes 00..59</p> <p><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</p> <p><nsat> - nn - Total number of satellites in use (referred to GGA sentence) 00..12</p>
AT\$GPSACP?	Read command has the same meaning as the Execution command
AT\$GPSACP=?	Test command returns the OK result code
Example	<pre>AT\$GPSACP \$GPSACP: 122330.000,4542.8106N,01344.2720E,2.25,338.0,3,0.0,0.02,0.01,240613 ,04 OK</pre>
Note	<p>If the GNSS receiver is turned off or its serial line is not physically connected to the cellular module, the answer might be empty as shown below.</p> <pre>AT\$GPSACP \$GPSACP: OK</pre>

4.1.7.19.2 GNSS Antenna LNA Control – AT\$GPSAT

\$GPSAT – GNSS Antenna LNA Control		SELINT 2
AT\$GPSAT= <type>	<p>Set command selects the GNSS antenna used.</p> <p>Parameter: <type> 0 - Disable External GNSS Antenna LNA (default): GNSS chip Internal LNA Gain Mode is High and GPS_EXT_LNA_EN signal is Low 1 - Enable External GNSS Antenna LNA: GNSS chip Internal LNA Gain Mode is Low and GPS_EXT_LNA_EN signal is High</p>	
AT\$GPSAT?	<p>Read command returns the current value of <type> in the format:</p> <pre>\$GPSAT: <type></pre>	
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 GNSS 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 GNSS 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 GNSS receiver, issuing 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 GNSS Antenna LNA is directly driven by the GNSS receiver according to its current power mode (i.e. the External GNSS Antenna LNA is turned off whenever the GNSS receiver is in power saving mode)</p> <p>Please refer to the HW User Guide for the compatible GNSS antennas and their usage</p> <p>Note: the current setting is stored through \$GPSSAV</p>

4.1.7.19.3 Direct Access to GNSS Module – AT\$GPSCON

\$GPSCON - Direct Access to GNSS Module		SELINT 2
AT\$GPSCON	Execution command allows setting the cellular module in transparent mode in order to have a direct access to the serial port of the GNSS module. The cellular module will directly transfer the received data to the GNSS module (and vice-versa), without checking or elaborating it.	
AT\$GPSCON=?	Test command returns the OK result code	
Note	<p>The command can be used in “controlled mode” only.</p> <p>In case of an incoming call from cellular module, this will be visible on the RING pin of serial port.</p> <p>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>	

4.1.7.19.4 GNSS Device Type Set – AT\$GPSD

\$GPSD - GNSS Device Type Set		SELINT 2
AT\$GPSD= <device_type> [,<sub_device_type>]	<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> 0 - none; the serial port is not connected to the GNSS device and available for standard use 1 - currently has no meaning, maintained for backward compatibility</p>	

\$GSPSD - GNSS Device Type Set		SELINT 2
	<p>2 - serial port connected to the GNSS serial port: controlled mode. This configuration is for SiRF StarIV-based GNSS modules support only (JF2-FLASH, JF2-ROM and JF2-ROM+EEPROM)</p> <p>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).</p> <p>4 - serial port connected to the GNSS serial port: controlled mode. This configuration is for ST TeseoII-based GNSS modules support only (SL869)</p> <p>5 - serial port connected to the GNSS serial port: controlled mode. This configuration is for SiRF StarV-based GNSS modules support only (SE868-V2)</p> <p>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> <p><sub_device type> 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> <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>	
AT\$GSPSD?	<p>Read command reports the current value of <device_type> and <sub_device_type> parameters, in the format:</p> <p>\$GSPSD: <device_type>,<sub_device_type></p>	
AT\$GSPSD=?	<p>Test command reports the range of supported values for parameter <device_type>,<sub_device_type></p>	
Example	<p>AT\$GSPSD=0 OK</p> <p>AT\$GSPSD=2,1 OK</p> <p>AT\$GSPSD=4,2 ERROR</p>	
Note	The current setting is stored through AT\$GPSSAV	

4.1.7.19.5 GPIO Configuration for GNSS Control – AT\$GPSGPIO

\$GPSGPIO – GPIO Configuration for GNSS Control		SELINT 2
<p>AT\$GPSGPIO= <on_off>, <system_on>, <boot>, <reset></p>	<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: <on_off> - GPIO pin number to be used to drive the JF2/JN3/SL869/SE868-V2's ON-OFF signal (default = 1) <system_on> - GPIO pin number to be used to drive the JF2/SE868-V2's SYSTEM-ON signal (default = 2) <boot> - GPIO pin number to be used to drive the JF2-Flash/JN3-Flash/SL869's BOOT signal (default = 3) <reset> - GPIO pin number to be used to drive the JF2-Flash/JN3-Flash's RESET signal (default = 4)</p>	

\$GPSGPIO – GPIO Configuration for GNSS Control		SELINT 2
AT\$GPSGPIO?	Read command reports the currently selected configuration in the format: \$GPSGPIO: <on_off>,<system_on>,<boot>,<reset>	
AT\$GPSGPIO=?	Test command reports supported range of values for parameters <on_off>, <system_on>, <boot> and <reset> Note: the extended GPIO range is reported along with the available customer GPIO range.	
Example	<p>- For a JF2-Flash (AT\$GPSD=2,0):</p> <pre>AT\$GPSGPIO=4,5,6,7 OK AT\$GPSGPIO? \$GPSGPIO: 4,5,6,7 OK</pre> <p>- For a JF2-ROM (AT\$GPSD=2,1):</p> <pre>AT\$GPSGPIO=4,5,0,0 OK OR AT\$GPSGPIO=4,5,6,7 OK AT\$GPSGPIO? \$GPSGPIO: 4,5,0,0 OK</pre> <p>- For a JF3-ROM (AT\$GPSD=3,1):</p> <pre>AT\$GPSGPIO=4,0,0,0 OK OR AT\$GPSGPIO=4,5,6,7 OK AT\$GPSGPIO? \$GPSGPIO: 4,0,0,0 OK</pre> <p>- Set Command to configure GPIOs from extended GPIO range:</p> <pre>AT\$GPSGPIO=131,132,130,128 OK</pre> <p>- Test Command showing extended GPIO range:</p> <pre>AT\$GPSGPIO=? \$GPSGPIO: (1-8,128-131),(1-8,132-133),(1-8,128-131),(1-8,128-131) OK</pre>	

\$GPSGPIO – GPIO Configuration for GNSS Control		SELINT 2
Note	<p>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\$GPSD 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>See the Hardware User Guide to check the number of available GPIO pins.</p> <p>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>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. 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 above for an example on how to set such GPIOs.</p> <p>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>The current GPIO configuration can be stored through AT\$GPSSAV.</p> <p>The Command is available in "Controlled Mode" only</p>	

4.1.7.19.6 GPS SiRFInstantFix™ – AT\$GPSIFIX

\$GPSIFIX – GPS SiRFInstantFix™		SELINT 2
AT\$GPSIFIX= <enable>[, <cgee>[, <sgee>[, <update>]]	<p>Set command enables/disables SiRFInstantFix™ feature available on SiRF StarIV based modules.</p> <p>Parameters:</p> <p><enable> - SiRFInstantFix Usage 0 – Disable (default) 1 – Enable</p> <p><cgee> - Client Generated Extended Ephemeris (CGEE) 0 – Disable 1 – Enable (default)</p> <p><sgee> - Server Generated Extended Ephemeris (SGEE) 0 – Disable (default) 1 – Enable</p> <p><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: 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>
AT\$GPSIFIX?	<p>Read command reports the currently selected SiRFInstantFix configuration in the format:</p> <p>\$GPSIFIX: <enable>[,<cgee>,<sgee>[,<update>]]</p>
AT\$GPSIFIX=?	<p>Test command reports the supported range of values for parameters <enable>, <cgee>, <sgee>,<update></p>
Example	<p>AT\$GPSIFIX=0 OK</p> <p>AT\$GPSIFIX=1,1,0 OK</p>
Note	<p>SiRFInstantFix parameters are stored in NVM, along with all current GPS parameters, if OK is returned (same as AT\$GPSSAV).</p> <p>SiRFInstantFix default configuration may be restored by issuing the AT\$GPSRST command.</p> <p>The Command is available in “Controlled Mode” only.</p>

4.1.7.19.7 Unsolicited NMEA Data Configuration – AT\$GPSNMUN

\$GPSNMUN - Unsolicited NMEA Data Configuration		SELINT 2
<p>AT\$GPSNMUN= <enable> [,<GGA>,<GLL> <GSA>,<GSV> <RMC>,<VTG >]</p>	<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>	

\$GPSNMUN - Unsolicited NMEA Data Configuration	SELINT 2
	<p>0 - disable (default) 1 - enable</p> <p><GSA> - GNSS DOP and Active Satellites 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>Set the GSA as available sentence in the unsolicited message:</p> <pre>AT\$GPSNMUN=2,0,0,1,0,0,0 OK</pre> <p>Turn-off the unsolicited mode:</p> <pre>AT\$GPSNMUN=0 OK</pre> <p>Read the current NMEA mask configuration:</p> <pre>AT\$GPSNMUN? \$GPSNMUN: 2,0,0,1,0,0,0 OK</pre> <p>The unsolicited message will be:</p> <pre>\$GPGSA,A,3,23,20,24,07,13,04,02,,,,,2.4,1.6,1.8*3C</pre>
Reference	NMEA 0183 Specifications
Note	<p>The command is available in “Controlled Mode” only</p> <p>The available NMEA sentences and their talker (GN, GP and GL) depend on the GNSS receiver used and its firmware configuration. Please refer to the Software Application Note of the GNSS receiver used for further information on the available NMEA data set.</p> <p>SirfIV-based GNSS modules (e.g. JF2, JN3):</p> <p>The fields PDOP and VDOP are not available</p>

4.1.7.19.8 GNSS Controller Power Management – AT\$GPSP

\$GPSP – GNSS Controller Power Management		SELINT 2
AT\$GPSP=<status>	Set command allows to manage power-up or down of the GNSS controller Parameter: <status> 0 - GNSS controller is powered down 1 - GNSS controller is powered up	
AT\$GPSP?	Read command reports the current value of the <status> parameter, in the format: \$GPSP: <status> The <status> parameter does not report the real power status of the GNSS 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 GNSS module (ON or OFF) at system start-up.	
AT\$GPSP=?	Test command reports the range of supported values for parameter <status>	
Example	AT\$GPSP=0 OK	
Note	The command is available in “controlled mode” only. The current setting is stored through \$GPSSAV	

4.1.7.19.9 Set the GNSS Module in Power Saving Mode – AT\$GPSPS

\$GPSPS - Set The GNSS Module In Power Saving Mode		SELINT 2
AT\$GPSPS= <mode> [,<PTF_Period>]	Set command allows setting the GNSS module in Power saving mode. Parameters: <mode> - the GNSS receiver can operate in four power modes: 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 SiRF Star receiver in the Hibernate power state and leaving Hibernate only as needed to maintain these conditions. 4 – SmartGNSS I Mode. SmartGNSS I autonomously manages GNSS system usage based on signal conditions to save power. The adaptive mechanism uses fewer system resources during strong signal conditions and uses more resources during weak signal conditions in order to maintain navigation performance.	

\$GPSPS - Set The GNSS Module In Power Saving Mode		SELINT 2
	<p>5 – SmartGNSS II Mode. SmartGNSS II includes the benefits of SmartGNSS I and achieves further power reduction by minimizing the usage of the secondary GNSS constellation</p> <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>	
AT\$GPSPS?	<p>Read command returns the current power saving mode and push-to-fix period, in the format:</p> <p>\$GPSPS: <mode>,<PTF_Period></p>	
AT\$GPSPS=?	Test command returns the available range for <mode> and <PTF_Period>	
Note	<p>Available in “controlled mode” only</p> <p>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>Micro Power Mode support is not currently available for SE868-V2.</p> <p>SmartGNSS I and SmartGNSS II Modes are available on SiRF Star V Flash-based GNSS receivers only (e.g. SE868-V3)</p> <p>This command is currently available for SiRF-based GNSS modules (JF2, JN3, SE868-V2 and SE868-V3) only, i.e. whenever is AT\$GPSD=2, AT\$GPSD=3 or AT\$GPSD=5.</p>	

4.1.7.19.10 GNSS Reset – AT\$GPSR

\$GPSR - GNSS Reset		SELINT 2
AT\$GPSR=<reset_type>	<p>Execution command allows to reset the GNSS controller.</p> <p>Parameter: <reset_type></p> <p>0 – Factory reset: this option clears all the GNSS memory including Clock Drift, Extended Ephemeris files stored into flash memory and applied software patch in case a ROM-based receiver is being used.</p> <p>1 – Coldstart (No Almanac, No Ephemeris): this option clears all data that is currently stored in the internal memory of the GNSS receiver including Last Position, Almanac, Ephemeris and Time. However, the stored Clock Drift and Extended Ephemeris are retained.</p> <p>2 – Warmstart (No ephemeris): this option clears Ephemeris and Last Position only. Almanac and Extended Ephemeris are retained.</p> <p>3 – Hotstart (with stored Almanac and Ephemeris): the GNSS receiver restarts by using all data that is currently stored in the internal memory of the GNSS receiver: valid Almanac, Ephemeris and Extended Ephemeris are therefore retained and used.</p>	
AT\$GPSR=?	Test command reports the range of supported values for parameter <reset_type>	
Example	AT\$GPSR=0 OK	
Note	The command is available in “controlled mode” only	

\$GPSR - GNSS Reset		SELINT 2
	<p>This command must be issued only when the GNSS receiver is operating in Full Power Mode (see \$GPSPS), otherwise it might have no effect.</p> <p>Since the Factory Reset (<reset_type>=0) performs a hardware reconfiguration of the GNSS receiver, issuing two consecutive AT\$GPSR commands should be avoided, otherwise the reconfiguration might fail: an ERROR is returned in the latter case.</p>	

4.1.7.19.11 Restore GNSS Parameters to Default – AT\$GPSRST

\$GPSRST - Restore GNSS Parameters To Default		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	

4.1.7.19.12 Save GNSS Parameters Configuration – AT\$GPSSAV

\$GPSSAV - Save GNSS 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	

4.1.7.19.13 GNSS Software Version – AT\$GPSSW

\$GPSSW - GNSS 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	<p>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</p> <p>For STM TeseoII-based modules (e.g. SL869 and GE910-GNSS): AT\$GPSSW \$GPSSW: SL869 v3.0.0.1 -STD -N96 OK</p> <p>For SiRF V-based modules (e.g. SE868-V2): AT\$GPSSW \$GPSSW: 5xp__5.5.2-R32+5xpt_5.5.2-R32 OK</p> <p>For MT3333-based modules (e.g. SL871): AT\$GPSSW \$GPSSW: AXN_3.60_3333_14080800,C012,MT33-1.,1.106 OK</p>	
Note	<p>The command is available in “controlled mode” only.</p> <p>The GNSS Module software version is available in few seconds at first GPS module startup</p>	

4.1.7.19.14 Wake Up GNSS from Power Saving Mode – AT\$GPSWK

\$GPSWK - Wake Up GNSS From Power Saving Mode		SELINT 2
AT\$GPSWK	Execution command allows waking the GNSS module up when a power saving or standby mode has been previously enabled.	
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\$GSPD=2, AT\$GSPD=3, AT\$GSPD=5 or AT\$GSPD=6.</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 it up 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>	

4.1.7.19.15 Enable STAGPS™ Usage – AT\$GPSSTAGPS

\$GPSSTAGPS – Enable STAGPS™ Usage		SELINT 2
AT\$GPSSTAGPS=<enable>	<p>Set command enables/disables the STAGPS™ feature available on ST TESEOII-based GNSS modules.</p> <p>Parameters: <enable>: 0 – Disable 1 – Enable</p>	
AT\$GPSSTAGPS?	<p>Read command reports the currently selected STAGPS™ configuration in the format:</p> <p>\$GPSSTAGPS: <enable></p>	
AT\$GPSSTAGPS=?	<p>Test command reports the supported range of values for parameter <enable></p>	
Note	<p>This command can be used with ST TESEOII-based GNSS modules only (AT\$GSPD=4).</p> <p>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.</p>	

4.1.7.19.16 Set CPU Clock for ST TESEOII – AT\$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>: 0 – 52 MHz 1 – 104 MHz 2 – 156 MHz 3 – 208 MHz</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>	
AT\$GPSSTCPUCLK=?	<p>Test command reports the supported range of values for the parameter <cpu_clock></p>	
Note	<p>Note: This command can be used with ST TESEOII-based GNSS modules only (AT\$GPSD=4).</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>	

4.1.7.19.17 Set the GNSS Serial Port Speed – AT\$GPSSERSPEED

\$GPSSERSPEED – Set the GNSS Serial Port Speed		SELINT 2
AT\$GPSSERSPEED= <speed>	<p>Execution command sets the GNSS serial port communication speed.</p> <p>Parameters: <speed> - 4800(default) 9600</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>	
Note	<p>This command can be used with SiRF-based GNSS modules, such as JF2, JN3 and SE868-V2 (AT\$GPSD=2, AT\$GPSD=2,1, AT\$GPSD=2,2, 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>The current setting is stored through \$GPSSAV.</p> <p>The module must be restarted to use the new configuration.</p>	

4.1.7.19.18 Set the Periodic Power Saving Mode for MTK – AT\$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> <ul style="list-style-type: none"> 0 – Normal mode (Periodic Power Saving mode disabled) 1 – Periodic Backup mode 2 – Periodic Standby mode 8 – AlwaysLocate™ standby mode 9 – AlwaysLocate™ backup mode <p><runtime> - Full Power (or Normal) Period in milliseconds 1000...518400000</p> <p><sleeptime> - Low Power Period (backup/standby) in milliseconds 1000... 518400000</p> <p><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)</p> <p><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: \$GPSMTKPPS: <mode>[,<runtime>,<sleeptime>,<second_runtime>,<second_sleeptime>]	
AT\$GPSMTKPPS=?	Test command reports the supported range of values for parameters <mode>,<runtime>,<sleeptime>,<second_runtime>,<second_sleeptime>	
Note	Available in “controlled mode” only. This command is currently available for MediaTek MT3333-based GNSS modules (e.g. SL871) only, i.e. whenever is AT\$GPSD=6.	

4.1.7.19.19 Set Standby Mode for MTK – AT\$GPSMTKSTDBY

\$GPSMTKSTDBY - Set Standby Mode for MTK		SELINT 2
AT\$GPSMTKSTDBY= <mode>	<p>Set command allows setting the MediaTek MT3333-based GNSS modules in Standby mode.</p> <p>Parameters: <mode> - the GNSS receiver can operate in three Standby modes: 0 – Standby Mode disabled (default). This value cannot be set and may be reported by the read command only. 1 – Stop Mode 2 – Sleep Mode</p>	
AT\$GPSMTKSTDBY?	<p>Read command returns the current Standby mode in the format:</p> <p>\$GPSMTKSTDBY: <mode></p>	
AT\$GPSMTKSTDBY=?	<p>Test command returns the available range for <mode></p>	
Note	<p>This command is available in “controlled mode” only, for MediaTek MT3333-based GNSS modules (e.g. SL871), i.e. whenever is AT\$GPSD=6.</p> <p>Stop or Sleep Standby modes can be set only when the GNSS module is powered ON and operating in full power mode.</p> <p>The GNSS module can be forced to exit from the standby modes through the AT\$GPSWK command.</p>	

4.1.7.19.20 GNSS SiRFInstantFix™ – AT\$GNSSIFIX

\$GNSSIFIX – GNSS SiRFInstantFix™		SELINT 2
AT\$GNSSIFIX= <navsystem>, <cgee>, <sgee>	<p>Set command enables/disables the SiRFInstantFix™ feature available on SiRF StarV-based GNSS modules.</p> <p>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</p> <p>Note: SE868-V2 firmware comes with CGEE and SGEE enabled by default for both GPS and GLONASS constellations.</p> <p>Note: if <sgee>=1 the following URC is used to warn, according to the <navsystem> value, that the SGEE file has to be updated:</p> <ul style="list-style-type: none"> - For GPS <p><i>\$SIFIXEV: GPS SGEE File Update Requested</i></p> <ul style="list-style-type: none"> - For GLONASS <p><i>\$SIFIXEV: GLONASS SGEE File Update Requested</i></p>	

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.

4.1.7.19.21 GNSS Estimated Position Errors – AT\$GNSSEPE

\$GNSSEPE – GNSS Estimated Position Errors		SELINT 2
AT\$GNSSEPE?	Read command reports the Estimated Horizontal and Vertical Position Errors for the last GNSS position fix, for SiRF StarIV and SiRF StarV based GNSS receivers, in the format: \$GNSSEPE: <ehpe>,<evpe> Where: <ehpe> - Estimated Horizontal Position Error in meters <evpe> - Estimated Vertical Position Error in meters	
AT\$GNSSEPE=?	Test command returns the OK result code	
Note	The command is available in “Controlled Mode” only. If a GNSS position fix has not been got yet, the answer will be as follows: AT\$GNSSEPE? \$GNSSEPE: 0.00,0.00 OK	

4.1.7.19.22 GNSS 5Hz Navigation Mode – AT\$GNSS5HZ

\$GNSS5HZ – GNSS 5Hz Navigation Mode		SELINT 2
AT\$GNSS5HZ=<mode>	Set command allows enabling the 5Hz Navigation Mode on a SiRFStar V Flash-based GNSS receiver (e.g. SE868-V3). Parameter: <mode> 0 – Disable 5Hz Navigation Mode (default) 1 – Enable 5Hz Navigation Mode	
AT\$GNSS5HZ?	Read command reports the current value of the <mode> parameter, in the format: \$GNSS5HZ: <mode>	
AT\$GNSS5HZ=?	Test command reports the range of supported values for parameter <mode>	
Note	The command is available in “Controlled Mode” only.	

4.1.7.19.23 Get SGEE File for SiRFInstantFix™ – AT\$FTPGETIFIX

\$FTPGETIFIX – Get SGEE File for SiRFInstantFix™		SELINT 2
AT\$FTPGETIFIX= <filename> , <filesize> [,<navsystem>]	<p>Execution command, issued during a 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: 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	AT\$FTPGETIFIX="packedDifference.f2p3enc.ee",30970 OK AT\$FTPGETIFIX="packedDifference.f2p1enc.ee",10742 +CME ERROR: SGEE file is not newer than the last stored one	
Note	<p>Whenever a FTP connection has not been opened yet, an ERROR result code is returned.</p> <p>Whenever an error happens during the SGEE 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> <p style="padding-left: 40px;"> 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> <p>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>The Command is available in "Controlled Mode" only.</p>	

4.1.7.19.24 Delete EPO Data – AT\$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.	

4.1.7.19.25 Get EPO File for MT EPO Aiding – AT\$HTTPGETEPO

\$HTTPGETEPO – Get EPO File for MT EPO Aiding		SELINT 2
AT\$HTTPGETEPO= <prof_id>, <filesize>	<p>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.</p> <p>The EPO file can be injected later on by means of the AT\$INJECTEPO command.</p> <p>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.</p> <p>Parameters:</p> <p><prof_id> - Numeric parameter indicating the profile identifier. Range: 0-2</p> <p><filesize> - EPO file size in bytes</p> <p>Note: whenever a HTTP configuration has not been done yet, an ERROR result code is returned</p>	
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\$GSPD=6.	

4.1.7.19.26 Inject EPO Aiding File – AT\$INJECTEPO

\$INJECTEPO – Inject EPO Aiding File		SELINT 2										
AT\$INJECTEPO	<p>Execution command injects an EPO file, previously downloaded and stored onto the cellular module's NVM, into MT3333-based GNSS receivers (e.g. SL871).</p> <p>Note: whenever an error happens during the EPO file injection stage, an ERROR result code is returned.</p> <p>In this case the possible <err> values reported by +CME ERROR (numeric format followed by verbose format) may be:</p> <table border="0" style="margin-left: 40px;"> <tr> <td>980</td> <td>GNSS file open error</td> </tr> <tr> <td>985</td> <td>Invalid EPO file</td> </tr> <tr> <td>986</td> <td>EPO MTK binary configuration error</td> </tr> <tr> <td>987</td> <td>EPO injection error</td> </tr> <tr> <td>988</td> <td>EPO NMEA configuration error</td> </tr> </table> <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>	980	GNSS file open error	985	Invalid EPO file	986	EPO MTK binary configuration error	987	EPO injection error	988	EPO NMEA configuration error	
980	GNSS file open error											
985	Invalid EPO file											
986	EPO MTK binary configuration error											
987	EPO injection error											
988	EPO NMEA configuration error											
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.											

4.1.7.19.27 Query EPO Data Status – AT\$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.	

4.1.7.19.28 Enable EASY – AT\$EASY

\$EASY – Enable EASY		SELINT 2
AT\$EASY=<enable>	<p>Set command allows enabling or disabling the EASY feature on MT3333-based GNSS receivers (e.g. SL871).</p> <p>Parameters:</p> <p><enable> - Enable/Disable the EASY feature 0 – Disable 1 – Enable</p>	
AT\$EASY?	<p>Read command reports the current EASY status in the format:</p> <p>\$EASY: <enable>,<extension_day></p> <p>Where:</p> <p><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</p>	

AT\$EASY=?	Test command reports the range of supported values for parameter <enable>
Note	<p>This command is available in “controlled mode” only, for MediaTek MT3333-based GNSS modules (e.g. SL871), i.e. whenever is AT\$GPSD=6.</p> <p>The EASY feature is supported starting from SL871 firmware version AXN_3.60_3333_14080800,C012,MT33-1.,1.106</p> <p>The default EASY configuration depends on the specific SL871 firmware version used.</p>

4.1.7.19.29 Delete Patch from NVM – AT\$DPATCH

\$DPATCH – Delete Patch from NVM		SELINT 2
AT\$DPATCH= <patch_file_name>	<p>Execution command deletes a SiRF software patch stored onto the module’s flash memory.</p> <p>Parameters: <patch_file_name> - name of the file in NVM, string type (max 16 chars, case sensitive).</p> <p>The execution command returns OK.</p>	
AT\$DPATCH=?	Test command returns the OK result code	
Example	AT\$DPATCH = “GSD4E_4.1.2.pd2” 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).	

4.1.7.19.30 Enable Patch – AT\$EPATCH

\$EPATCH – Enable Patch		SELINT 2
AT\$EPATCH= [<patch_file_name>]	<p>Execution command allows enabling the usage of a SiRF software patch saved onto the module’s flash memory.</p> <p>Parameters: <patch_file_name> - name of the file in NVM, string type (max 16 chars, case sensitive).</p> <p>The execution command returns OK but the patching is confirmed by the following unsolicited: - <i>“Patch Manager: Patched”</i></p> <p>Other unsolicited messages can be due to errors occurred during the patching procedure or patch storage errors: - <i>“Patch Manager: Error opening Patch File”</i> - <i>“Patch Manager: Error processing Patch File”</i> - <i>“Patch Manager: Error on Start Request”</i> - <i>“Patch Manager: Error on Load Request”</i> - <i>“Patch Manager: Error on Exit Request”</i></p>	
AT\$EPATCH?	<p>Read command displays the patch currently in use in the format:</p> <p>\$EPATCH: <patch_file_name></p>	

\$EPATCH – Enable Patch		SELINT 2
AT\$EPATCH=?	Test command returns the OK result code	
Example	AT\$EPATCH = "GSD4E_4.1.2.pd2" OK Patch Manager: Patched. - The SiRF GNSS module has been patched	
Note	<p>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).</p> <p>The patch file must have a ".pd2" or ".pd3" (AT\$GPSD=5,2) extension.</p> <p>A previously applied patch can be removed from the GNSS Patch RAM by issuing a Factory Reset or by powering the GNSS module down and removing the VBatt. However, if automatic patch application hasn't been disabled, the patch will be automatically reapplied.</p> <p>If the <patch_file_name> is omitted, the automatic patch application, at the next startup of the cellular module, is disabled. However, the current patch remains applied until it will be not removed as explained above.</p> <p>The configuration specified through AT\$EPATCH can be saved by means of the AT\$GPSSAV command.</p> <p>The "AT\$EPATCH" command returns ERROR.</p>	

4.1.7.19.31 List Available Patch – AT\$LPATCH

\$LPATCH – List Available Patch		SELINT 2
AT\$LPATCH	Execution command displays the available SiRF software patch saved onto the module's flash memory.	
AT\$LPATCH=?	Test command returns the OK result code	
Example	AT\$LPATCH \$LPATCH: "GSD4E_4.1.2.pd2",5472 OK	
Note	<p>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>The patch file must have a ".pd2" or ".pd3" (AT\$GPSD=5,2) extension.</p>	

4.1.7.19.32 Write Patch on Flash – AT\$WPATCH

\$WPATCH – Write Patch on Flash		SELINT 2
AT\$WPATCH= <patch_file_name> , <size>	<p>Execution command allows storing a SiRF software patch onto the module's flash memory.</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 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>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>	
AT\$WPATCH=?	Test command returns the OK result code	
Example	AT\$WPATCH = "GSD4E_4.1.2.pd2",5472 >>> here the prompt is received: 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.	
Note	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.	

4.1.7.19.33 Get SGEE File for SiRFInstantFix™ – AT\$HTTPGETIFIX

\$HTTPGETIFIX – Get SGEE File for SiRFInstantFix™		SELINT 2
AT\$HTTPGETIFIX= < prof_id > , <filesize> [,<navsystem>]	<p>Execution command, issued during a 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>	

	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.
AT\$HTTPGETIFIX=?	Test command returns the OK result code
Example	AT\$HTTPGETIFIX=0,30970 OK AT\$HTTPGETIFIX=0,10742 +CME ERROR: SGEE file is not newer than the last stored one
Note	Whenever a HTTP configuration has not been done yet, an ERROR result code is returned. Whenever an error happens during the SGEE 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: <div style="margin-left: 40px;"> 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 </div> The Command is available in “Controlled Mode” only.

4.1.7.19.34 Get ST-AGPS Seed File for ST-AGPS™ – AT\$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	
AT\$HTTPGETSTSEED=?	Test command returns the OK result code	
Example	AT\$HTTPGETSTSEED=0,2199 OK	
Note	The Command is available in “Controlled Mode” only. Whenever a HTTP configuration has not been done yet, an ERROR result code is returned.	

4.1.7.19.35 Inject Decoded ST-AGPS Seed File – AT\$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> <ul style="list-style-type: none"> 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 <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>	
AT\$INJECTSTSEED=?	Test command returns the OK result code	
Note	The command is available in “Controlled Mode” only.	

5 DOCUMENT HISTORY

5.1 Revisions

Revision	Date	Changes
0	2015-09-15	Preliminary Version
1	2016-01-29	New: AT+CEREG, AT+CNMA, AT&F, AT+CTZR, AT+CTZU
2	2016-02-08	Updated overall AT Interface Added functions: Reboot, QSS, SMS Configuration, Multisocket, FTP, Enhanced IP Easy Extension, DWAgent, E-mail management, AT Run Improved sections: S parameters, Generic Hayes AT Commands, Mobile Equipment Control, Generic Configuration commands.
3	2016-03-16	Commands referring to GSM or UTRA modified to represent the LTE only product.
4	2016-06-06	Added: +IPR, AT#PORTCFG, +IPR, &C, &K, &S, +IFC, +ICF, #v24cfg, S25, #FASTSYSHALT, #GAUTH, #GAUTHCFG, #GPPCFG, #SMTPCFG, #SIMINCFG, #SSL commands, #SWM Commands Updated: #MONI, #MONIZIP, AT#PSNT, AT#SLED, AT+CESQ, AT+CSQ, +CFUN, #DWCFG, #FTPCFG, +CGDCONT, +CLCK, ATS25, #EVMONI, #SI
5	2017-02-03	Added: Call control commands, 3GPP Rel12 PSM commands, #NWMODE, #DVI, #DVIEXT, GPS/GNSS commands, AT#APPSKTCFG, #HOSTODIS, #UNIQUEDEVID, #PCONI, AT#SWMBOOTSTRAP, #SYSHALT, +CCHO, +CCHC, +CGLA, +CNMA, +CAVIMS, +CTZU, +CBC, #CBC, #CPBD, #CACHEDNS, #CEERNET, #CEERNETEXT, E2ESC, +CPBS, +CPBR, +CPBF, +CPBW, +CSIM, #DNS, #NITZ, #PADCMD, #PADFWD, +CGACT, +CGCMOD, #CPBGR, #CPBGW, #CCID, HTTP Commands, #CMGS, +CCLK, #SIMDET, #STGI, #STIA, #STSR, #UDUB, #SLEDSAV, Consume Commands Updated: #PORTCFG, #SSLCFG, #SSLD, #SSLEN, #SSLH, #SSLI, #SSLO, #SSLRECV, #SSLS, #SSLSECCFG, #SSLSECCFG2, #SSLSECDATA, #SSLSEND, #SSLSENDEXT, #CMUXMODE, #GAUTHCFG, #GPPPCFG, +CMUX

