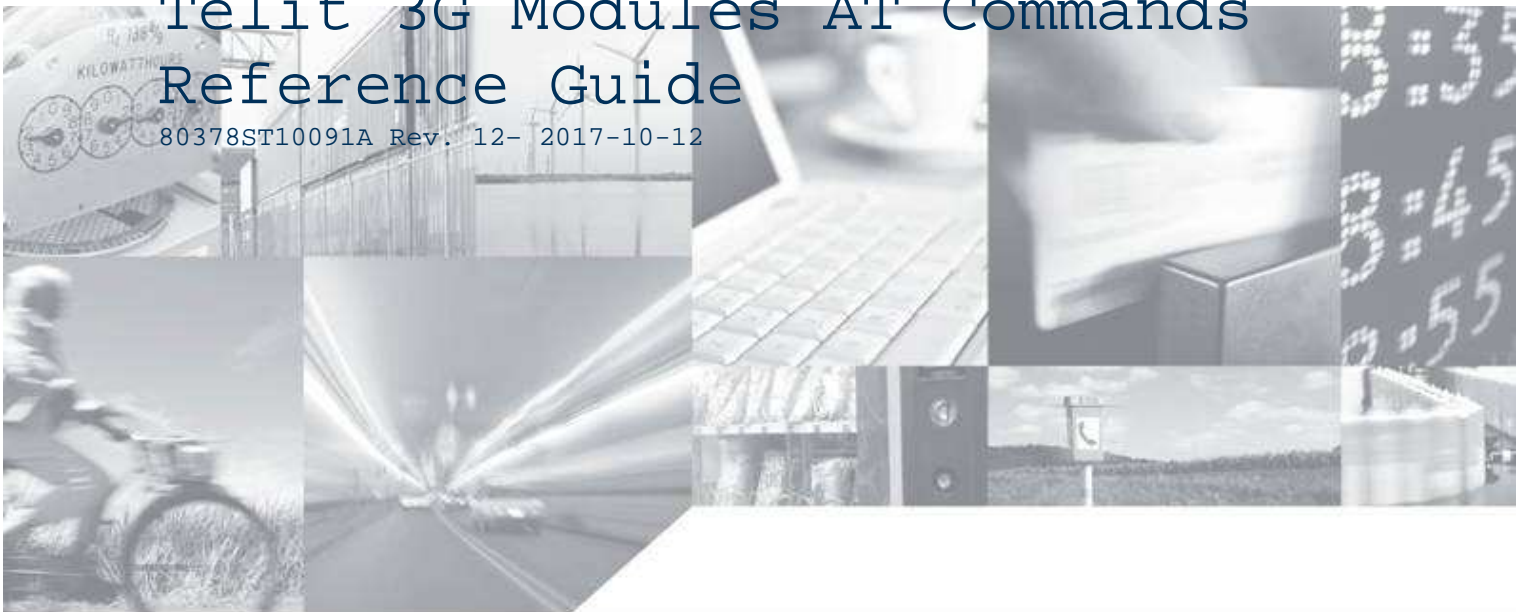


Telit 3G Modules AT Commands Reference Guide

80378ST10091A Rev. 12- 2017-10-12



APPLICABILITY TABLE¹

PRODUCT
HE910
HE910-D
HE910-GL
HE910-EUR
HE910-EUD
HE910-EUG
HE910-NAR
HE910-NAD
HE910-NAG
UE910-EUR
UE910-EUD
UE910-NAR
UE910-NAD
UL865-EUR
UL865-EUD
UL865-NAR
UL865-NAD
UE866-N3G
UE910-N3G
UE866-EU
UL865-BR
UE910-GL
UE910-EU
UL865-EU

SW Version

12.00.xx8

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.

¹ HE910 is the “type name” of the products marketed as HE910-G and HE910-DG





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1. Introduction

1.1. Scope

This document is aimed in providing an detailed specification and a comprehensive listing as a reference for the whole set of AT command.

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, to report documentation errors and to order manuals, contact Telit Technical Support Center (TTSC) at:

TS-EMEA@telit.com

TS-NORTHAMERICA@telit.com

TS-LATINAMERICA@telit.com

TS-APAC@telit.com

Alternatively, use:

<http://www.telit.com/en/products/technical-support-center/contact.php>

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

<http://www.telit.com>

To register for product news and announcements or for product questions contact Telit Technical Support Center (TTSC).

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. Document Organization

This document contains the following chapters:

Chapter 1: “Introduction” provides a scope for this document, target audience, contact and support information, and text conventions.

Chapter 2: “Overview” about the aim of this document and implementation suggestions.

Chapter 3: “AT Commands” AT Commands Basic Definitions

Chapter 4: “AT Commands Availability Table” Differences between the products variants

Chapter 5: “AT Commands References” The core of this specification

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

2.1. About the document

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



3. AT COMMANDS

The Telit wireless module family can be controlled via the serial interface using the standard AT commands². The Telit wireless module family is compliant with:

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

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

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

3.1. Definitions

The following syntactical definitions apply:

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

² 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.



3.2. AT Command Syntax

The syntax rules followed by Telit implementation of either Hayes AT commands, GSM 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 subparameters; they also have a Read command (trailing ?) to check the current values of subparameters.
 - **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 subparameters are associated with the action, the ranges of subparameters values that are supported; if the command has no subparameters, 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 subparameters are associated with the action, the ranges of subparameters values that are supported.

Action commands don’t store the values of any of their possible subparameters.

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 subparameters of a parameter type command +**CMD** are optional, issuing **AT+CMD=<CR>** causes the **OK** result code to be returned and the previous values of the omitted subparameters to be retained.

3.2.1. String Type Parameters



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

A string is always case sensitive.

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

3.2.2. Command Lines

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

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

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

The basic structures of the command line are:

- **ATCMD1<CR>** where **AT** is the command line prefix, **CMD1** is the body of a **basic command** (nb: the name of the command never begins with the character “+”) and **<CR>** is the command line terminator character
- **ATCMD2=10<CR>** where 10 is a subparameter
- **AT+CMD1;+CMD2=, ,10<CR>** These are two examples of **extended commands** (nb: the name of the command always begins with the character “+”³). They are delimited with semicolon. In the second command the subparameter is omitted.
- **+CMD1?<CR>** This is a Read command for checking current subparameter values
- **+CMD1=?<CR>** This is a test command for checking possible subparameter values

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

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

anyway it is always preferable to separate into different command lines the basic commands and the extended commands; furthermore it is suggested to avoid placing several action commands

³ 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**



Numeric Format	Verbose Format
568	wrong PDP
569	service not supported
570	QOS not accepted
571	NSAPI already used
572	LLC or SNDSCP failure
573	network reject
Custom SIM Lock related errors	
586	MCL personalisation PIN required
FTP related errors	
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
AES commands	
955	AES encryption or decryption is working
956	AES empty buffer
957	AES key wrong or not stored
958	AES data wrong length

*(values in parentheses are GSM 04.08 cause codes)



3.2.3. Information Responses And Result Codes

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

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

Moreover there are other two types of result codes:

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

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

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

⁴ <text> can be "300", "1200", "2400", "4800", "9600", "14400" or "1200/75"



3.2.4. 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.

3.2.5. Command Issuing Timing

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

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

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

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

3.3. Storage

3.3.1. 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:

DTE SPEED	+IPR
DTE FORMAT	+ICF
GSM DATA MODE	+CBST
AUTOBAUD	+IPR
COMMAND ECHO	E
RESULT MESSAGES	Q
VERBOSE MESSAGES	V
EXTENDED MESSAGES	X
DSR (C107) OPTIONS	&S
DTR (C108) OPTIONS	&D
RI (C125) OPTIONS	\R
POWER SAVING	+CFUN (it does not depend on the specific AT instance; value is always taken from Instance 0)
DEFAULT PROFILE	&Y
S REGISTERS	S0;S2;S3;S4;S5;S7;S10;S12;S25
BEARER SERVICE NAME	+CBST

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
+CREG	+CLIP	+CRLP
+CRC	+CLIR	+CSVM
+CCWA	+CUSD	+CAOC
+CSSN	+CIND	+CMER
+CPBS	+CMEE	+CGREG
+CGEREP	+CMGF	+CSDH
+CNMI	#QSS	#ECAM
#SMOV	#MWI	#NITZ
#SKIPESC	#CFE	#STIA
+CSTF	+CSDF	+CTZU
+CAPD	+CCWE	+CSIL
+CTZR	#NWEN	#PSNT
#SIMPR	+COLP	#CESTHLCK
+DR	\$GPSNUM	+CSTA
+NCIH	#CFLO	



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

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

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 ⁶	+CGCLASS
+CGDCONT	+CGQMIN	+CGQREQ
#ENS	#SCFG	#AUTOATT
#DNS	#ICMP	#GSMCONT
+CGSMS	+CGEQMIN	+CGEQREQ
#SMSMODE	#SCFGEXT	#SCFGEXT2
#SCFGEXT3	#APPSKTCFG	#SGACTCFGEXT
#BASE64	#SSLLEN	#SSLSECCFG
#SSLSECCFG2	#SSLCFG	#SMTPCFG
#HTTPCFG	+CPMS	#SWMCFG
#DWCFCG	#ENHRST	#TEMPMON
#TEMPCFG	#ALARMPIN	+WS46
+CPLS	#BCCHLOCK	#DIALMODE
#PLMNUPDATE	#PLMNMODE	#FPLMN
#CCLKMODE	#RXDIV	#ENCALG
#GSMAD	#FILEPWD	#TESTMODE
#WCDMADOM	#SECCFG	#FDOR
#SMSATRUN	#SMSATRUNCFG	#TCPATRUNCFG
#TCPATRUNL	#TCPATRUNFRWL	#TCPATRUNAETH
#TCPATRUND	#CONSUMECFG	#ENACONSUME
#IPCONSUMECFG	#ENAEVMONI	#ENAEVMONICFG
#SGACTCFG	#GDATAVOL	#ESMTPPORT
\$LCSLTP	\$LCLCS	\$LCSLRMT
\$LCSLK	\$GPSIFIX	#TTY
#JDRENH2	#OTASNAP	#OTAIPCFG
#OTASNAPIP	#OTASNAPIPCFG	#ECALLNWTMR

⁵ +CSCB is still stored in the profile extended section only for backward compatibility issues: its actual storing and restoring are accomplished issuing +CSAS and +CRES

⁶ It is partially stored in NVM; see command description.



#ECALLTMR	#ECONLY	
-----------	---------	--

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 +CSAS⁷ command and restored by +CRES⁷ command

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

stored by #SLEDSAV command

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

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

#ESMTP	#EADDR	#EUSER
#EPASSW		

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

\$GPSP	\$GPSR	\$GPSNVRAM
\$GPSQOS	\$GPSSLR	\$GPSSTOP

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

#BIQUADIN	# BIQUADINEX	# BIQUADOUT
# BIQUADOUTEX		

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

⁷ Both commands +CSAS and +CRES deal with non-volatile memory, intending for it either the NVM and the SIM storage.



4. AT Commands Availability Table

The following table highlights the availability of commands which are not shared between all the versions of the product (• = Supported; X = Not Supported):

COMMAND	HE910										UE910					UL865					UE866			
	G	DG	D	GL	EUG	EUR	EUD	NAG	NAR	NAD	EUR	EUD	NAR	NAD	N3G	EUR	EUD	NAR	NAD	N3G V2	BR	N3G	EU	
D	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
A	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
S0	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
#RXDIV	•	•	•	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
#RXTOGGLE	•	•	•	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
\$GPSP	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
\$GPSR	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
\$GPSNMUN	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
\$GPSACP	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
\$GPSSAV	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
\$GPSRST	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
\$GPSNVRAM	•	•	X	X	•	X	X	•	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
\$GPSQOS	•	•	X	X	•	X	X	•	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
\$GPSLSR	•	•	X	X	•	X	X	•	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
\$GPSSTOP	•	•	X	X	•	X	X	•	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
\$LCSSLP	•	•	X	X	•	X	X	•	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
\$LCSLUI	•	•	X	X	•	X	X	•	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
\$LCSTER	•	•	X	X	•	X	X	•	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
\$LCLCS	•	•	X	X	•	X	X	•	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
\$LCSLRMT	•	•	X	X	•	X	X	•	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
\$LCSLRV	•	•	X	X	•	X	X	•	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
\$LTC	•	•	X	X	•	X	X	•	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
\$LCSLK	•	•	X	X	•	X	X	•	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
#ANAMICG	X	X	X	X	X	X	X	X	X	X	•	X	•	X	•	•	X	•	X	•	•	•	•	•
#DIGMICG	X	X	X	X	X	X	X	X	X	X	•	X	•	X	•	•	X	•	X	•	•	•	•	•
#ECHOFCG	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•	•	•	•
#SPCM	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•	•	•	•
#CAP	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•	•	•	•
#SRS	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•	•	•	•
#SRP	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•	•	•	•
#HFMICG	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•	•	•	•
#HSMICG	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•	•	•	•
#HFRECG	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•	•	•	•
#HSRECG	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•	•	•	•



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COMMAND	HE910										UE910					UL865					UE866		
	G	DG	D	GL	EUG	EUR	EUD	NAG	NAR	NAD	EUR	EUD	NAR	NAD	N3G	EUR	EUD	NAR	NAD	N3G V2	BR	N3G	EU
#SHFSD	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#SHSSD	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#SPKMUT	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#STM	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#TONE	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#TONEXT	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#TSVOL	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#UDTSET	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#UDTSAV	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#UDTRST	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#PRST	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#PSAV	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#PSEL	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#BIQUADIN	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#BIQUADINEX	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#BIQUADOUT	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#BIQUADOUTEX	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#SHFEC	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#SHSEC	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#SHFAGC	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#SHSAGC	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#SHFNR	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#SHSNR	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#DTMF	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#DVI	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#DVIEXT	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#DVICLK	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#TTY	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	X	.	X	.	X	.
#BND	X	X	X	X	X	X	X	X	X	X	X	X	X
#AUTOBND	X	X	X	X	X	X	X	X	X	X	X	X	X
#MSCLASS	X	.	.	.	.	X	.	X	.	.
#ENCALG	X	.	.	.	.	X	.	X	.	.
+WS46
+COPS
#CODEC
#BCCHLOCK
\$GPSD	X	X	.	.	X	.	.	X
\$GPSGPIO	X	X	.	.	X	.	.	X
\$GPSSERSPEED	X	X	.	.	X	.	.	X
\$GPSAT	X	X	.	.	X	.	.	X



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COMMAND	UE910		UL865
	GL	EUR	EUR
#TONEXT	.	.	.
#TSVOL	.	.	.
#UDTSET	.	.	.
#UDTSAV	.	.	.
#UDTRST	.	.	.
#PRST	.	.	.
#PSAV	.	.	.
#PSEL	.	.	.
#BIQUADIN	.	.	.
#BIQUADINEX	.	.	.
#BIQUADOUT	.	.	.
#BIQUADOUTEX	.	.	.
#SHFEC	.	.	.
#SHSEC	.	.	.
#SHFAGC	.	.	.
#SHSAGC	.	.	.
#SHFNR	.	.	.
#SHSNR	.	.	.
#DTMF	.	.	.
#DVI	.	.	.
#DVIEXT	.	.	.
#DVICK	.	.	.
#TTY	.	.	.
#BND	X	X	X
#AUTOBND	X	X	X
#MSCLASS	.	.	.
#ENCALG	.	.	.
+WS46	.	.	.
+COPS	.	.	.
#CODEC	.	.	.
#BCCHLOCK	.	.	.
\$GPSD	.	.	.
\$GPSGPIO	.	.	.
\$GPSSERSPEED	.	.	.
\$GPSAT	.	.	.
\$GPSPS	.	.	.
\$GPSWK	.	.	.
\$GPSSW	.	.	.
\$GPSCON	.	.	.
\$GPSIFIX	.	.	.



5. AT Commands References

5.1. Command Line General Format

5.1.1. Command Line Prefixes

5.1.1.1. 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	

5.1.1.1.2. 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	

5.1.1.1.3. Repeat Last Command - AT#/

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



5.1.2. General Configuration Commands

5.1.2.1.1. 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 products like HE910
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.



5.1.3. Hayes Compliant AT Commands

5.1.3.1. Generic Modem Control

5.1.3.1.1. 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 behaviour as AT&F0</p>	
Reference	V25ter.	

5.1.3.1.2. 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.	



5.1.3.1.3. Select Active Service Class - +FCLASS

+FCLASS - Select Active Service Class		SELINT 2
AT+FCLASS=<n>	Set command sets the wireless module in specified connection mode (data, voice), hence all the calls done afterwards will be data or voice. Parameter: <n> 0 - data 8 - voice	
AT+FCLASS?	Read command returns the current configuration value of the parameter <n> .	
AT+FCLASS=?	Test command returns all supported values of the parameters <n> .	
Reference	3GPP TS 27.007	

5.1.3.1.4. Default Reset Basic Profile Designation - &Y

&Y - Default Reset Basic Profile Designation		SELINT 2
AT&Y[<n>]	Execution command defines the basic profiles which will be loaded on startup. Parameter: <n> 0..1 - profile (default is 0): the wireless module is able to store 2 complete configurations (see &W). 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. Note: if parameter is omitted, the command has the same behaviour as AT&Y0	

5.1.3.1.5. Default Reset Full Profile Designation - &P

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



5.1.3.1.6. 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> 0..1 - profile</p> <p>Note: if parameter is omitted, the command has the same behaviour of AT&W0.</p>	

5.1.3.1.7. 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 <i>n</i> can be dialed by giving the command ATDS=<n>.</p>	

5.1.3.1.8. 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>	



5.1.3.1.9. **Manufacturer Identification - +GMI**

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

5.1.3.1.10. **Model Identification - +GMM**

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

5.1.3.1.11. **Revision Identification - +GMR**

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

5.1.3.1.12. **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 +DS: Data Service common modem command set +MS: Mobile Specific command set +ES: WCDMA data Service common modem command set	
Reference	V.25ter	

5.1.3.1.13. **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	



5.1.3.1.14. Display Configuration And Profile - &V

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

5.1.3.1.15. Display Configuration And Profile - &V0

&V0 - Display Current Configuration And Profile		SELINT 2
AT&V0	<p>Execution command returns all the configuration parameters settings.</p> <p>Note: this command is the same as &V, it is included only for backwards compatibility.</p> <p>Note: the row of information about CTS (C106) OPTIONS is in the output of &V0 only for compatibility reasons and represents only a dummy value.</p>	

5.1.3.1.16. 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 style="margin-left: 40px;"> REG DEC HEX <reg0> <dec> <hex> <reg1> <dec> <hex> ... </pre> <p>where <regn> - S register number 000..005 007 012 025 038</p> <p><dec> - current value in decimal notation <hex> - current value in hexadecimal notation</p>	



5.1.3.1.17. Extended S Registers Display - &V3

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

5.1.3.1.18. Display Last Connection Statistics - &V2

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

5.1.3.1.19. Single Line Connect Message - \V

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



5.1.3.1.20. 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.	

5.1.3.1.21. Line Signal Level - %L

%L - Line Signal Level		SELINT 2
AT%L	It has no effect and is included only for backward compatibility with landline modems	

5.1.3.1.22. Line Quality - %Q

%Q - Line Quality		SELINT 2
AT%Q	It has no effect and is included only for backward compatibility with landline modems	

5.1.3.1.23. Speaker Loudness - L

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

5.1.3.1.24. Speaker Mode - M

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



5.1.3.2. DTE - Modem Interface Control

5.1.3.2.1. 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	

5.1.3.2.2. 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>	
Example	<p><i>After issuing ATQ1 or ATQ2</i></p> <p>AT+CGACT=? +CGACT: (0-1) nothing is appended to the response</p>	
Reference	V25ter	



5.1.3.2.3. Response Format - V

V - Response Format	SELINT 2								
<p>ATV[<n>]</p>	<p>Set command determines the contents of the header and trailer transmitted with result codes and information responses. It also determines if result codes are transmitted in a numeric form or an alphanumeric form (see [§3.2.3 Information Responses And Result Codes] for the table of result codes).</p> <p>Parameter:</p> <p><n></p> <p>0 - limited headers and trailers and numeric format of result codes</p> <table border="1"> <tr> <td>information responses</td> <td><text><CR><LF></td> </tr> <tr> <td>result codes</td> <td><numeric code><CR></td> </tr> </table> <p>1 - full headers and trailers and verbose format of result codes (factory default)</p> <table border="1"> <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								



5.1.3.2.4. 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>	
Note	For complete control on CONNECT response message see also +DR command.	
Reference	V25ter	

5.1.3.2.5. 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	



&D - Data Terminal Ready (DTR) Control		SELINT 2
	Note: if parameter is omitted, the command has the same behaviour of AT&D0 Note: if AT&D2 has been issued the call is drop on falling DTR edge and NO CARRIER exits on rising DTR edge.	
Reference	V25ter	

5.1.3.2.8. Standard Flow Control - \Q

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

5.1.3.2.9. Flow Control - &K

&K - Flow Control		SELINT 2
AT&K[<n>]	Set command controls the RS232 flow control behaviour. Parameter: <n> 0 - no flow control 3 - hardware bi-directional flow control (both RTS/CTS active) (factory default) Note: if parameter is omitted, the command has the same behaviour as AT&K0 Note: &K has no Read Command. To verify the current setting of &K, simply check the settings of the active profile issuing AT&V . Note: Hardware flow control (AT&K3) is not active in command mode.	

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

&S - Data Set Ready (DSR) Control		SELINT 2
AT&S[<n>]	Set command controls the RS232 DSR pin behaviour.	



&S - Data Set Ready (DSR) Control	SELINT 2
	<p>Parameter: <n> 0 - always High 1 - follows the GSM traffic channel indication. 2 - High when connected 3 - High when device is ready to receive commands (factory default).</p> <p>Note: if option 1 is selected then DSR is tied High when the device receives from the network the GSM traffic channel indication.</p> <p>Note: in power saving mode the DSR pin is always tied Low.</p> <p>Note: if parameter is omitted, the command has the same behaviour of AT&S0</p>

5.1.3.2.11. Ring (RI) Control - \R

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

5.1.3.2.12. Fixed DTE Interface Rate - +IPR

+IPR - Fixed DTE Interface Rate	SELINT 2
<p>AT+IPR=<rate></p>	<p>Set command specifies the DTE speed at which the device accepts commands during command mode operations; it may be used to fix the DTE-DCE interface speed.</p> <p>Parameter: <rate> 0 (default value) 300 1200 2400</p>



+IPR - Fixed DTE Interface Rate	SELINT 2
	<p>4800 9600 19200 38400 57600 115200 230400 460800 921600</p> <p>Note: when IPR=0 the module can autodetect the baudrate on the physical serial port; the command must start with 'AT' or 'at'. The following strings are not allowed 'At' or 'aT', to use them fix the IPR.</p> <p>Note: the value 0 has a meaning only on the physical serial port, using USB this value is not supported nor have a sense (the baudrate is fake on USB).</p> <p>Note: the detectable baudrates are 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400 (chipset limitation).</p> <p>Note: if the echo is enabled (ATE1) the first 2 echoed chars are in small letters even if the command has been sent using capital (chipset limitation).</p> <p>e.g. cmd: AT+CGMR<CR> ans: at+CGMR<CR>...OK<CR><LF></p> <p>Note: when IPR=0 if there are URCs enabled, they will be issued by the module at 115200 bps.</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



5.1.3.2.13. 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	

5.1.3.2.14. 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	8N2 AT+ICF = 1 OK	



+ICF - DTE-Modem Character Framing	SELINT 2
	<p><i>8O1</i> AT+ICF = 2,0 OK</p> <p><i>8E1</i> AT+ICF = 2,1 OK</p> <p><i>8N1</i> AT+ICF = 3 OK</p> <p><i>7O1</i> AT+ICF = 5,0 OK</p> <p><i>7E1</i> AT+ICF = 5,1 OK</p>



5.1.3.3. Call Control

5.1.3.3.1. Dial - D

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



D – Dial	SELINT 2
	<p>memory storage (see +CPBS). If “;” is present a voice call is performed.</p> <p>Parameter: <n> - active phonebook memory storage entry location; it should be in the range of locations available in the active phonebook memory storage.</p>
<p>ATDL</p>	<p>Issues a call to the last number dialed.</p>
<p>ATDS=<nr>[;]</p>	<p>Issues a call to the number stored in the MODULE internal phonebook position number <nr>. If “;” is present, a voice call is performed.</p> <p>Parameter: <nr> - internal phonebook position to be called (See commands &N and &Z)</p>
<p>ATD<number>I[;] ATD<number>i[;]</p>	<p>Issues a call overwriting the CLIR supplementary service subscription default value for this call If “;” is present a voice call is performed.</p> <p>I - invocation, restrict CLI presentation i - suppression, allow CLI presentation</p>
<p>ATD<number>G[;] ATD<number>g[;]</p>	<p>Issues a call checking the CUG supplementary service information for the current call. Refer to +CCUG command. If “;” is present a voice call is performed.</p>
<p>ATD*<gprs_sc> [*<addr>][*<L2P> [*<cid>]]]#</p>	<p>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.</p> <p>Parameters: <gprs_sc> - GPRS Service Code, a digit string (value 99) which identifies a request to use the GPRS <addr> - string that identifies the called party in the address space applicable to the PDP. <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 PDP context definition (see +CGDCONT command).</p>
<p>Note</p>	<p>Data only products do not start the call and command answer is ERROR if a voice call is requested.</p>
<p>Note</p>	<p>The escape sequence causes a closure of the link.</p>
<p>Example</p>	<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>



5.1.3.3.6. Return To On Line Mode - O

O - Return To On Line Mode		SELINT 2
ATO	Execution command is used to return to on-line mode from command mode. If there's no active connection it returns NO CARRIER . 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).	
Note	The escape sequence causes a closure of the link.	
Reference	V25ter.	

5.1.3.4. Modulation Control

5.1.3.4.1. 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.	

5.1.3.5. Compression Control

5.1.3.5.1. Data Compression - +DS

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



5.1.3.5.2. Data Compression Reporting - +DR

+DR - Data Compression Reporting		SELINT 2
AT+DR=<n>	Set command enables/disables the data compression reporting upon connection. Parameter: <n> 0 - data compression reporting disabled; 1 - data compression reporting enabled upon connection. Note: if enabled, the following intermediate result code is transmitted before the final result code: +DR: <compression> (the only supported value for <compression> is "NONE")	
AT+DR?	Read command returns current value of <n>.	
AT+DR=?	Test command returns all supported values of the parameter <n>	
Reference	V25ter	



S1 - Ring Counter		SELINT 2
	Note: the form ATS1 has no effect.	
ATS1?	Read command returns the value of this parameter.	

5.1.3.6.3. 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 <i>n</i> ms of idle (see S12 to set <i>n</i>).	
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	

5.1.3.6.4. Command Line Termination Character - S3

S3 - Command Line Termination Character		SELINT 2
ATS3=[<char>]	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. Parameter: <char> - command line termination character (decimal ASCII) 0..127 - factory default value is 13 (ASCII <CR>)	
ATS3?	Read command returns the current value of S3 parameter. Note: the format of the numbers in output is always 3 digits, left-filled with 0s	



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



5.1.4. 3GPP TS 27.007 AT Commands

5.1.4.1. General

5.1.4.1.1. 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	

5.1.4.1.2. 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	

5.1.4.1.3. 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	

5.1.4.1.4. 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	

5.1.4.1.5. Select TE Character Set - +CSCS

+CSCS - Select TE Character Set		SELINT 2
AT+CSCS= [<chset>]	<p>Set command sets the current character set used by the device.</p> <p>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) "HEX" Character strings consist only of hexadecimal numbers from 00 to FF; e.g. "032FE6" equals three 8-bit characters with decimal values 3, 47 and 230; no conversions to the original MT character set shall be done. If MT is using GSM 7 bit default alphabet, its characters shall be padded with 8th bit (zero) before converting them to hexadecimal numbers (i.e. no SMS-style packing of 7-bit alphabet).</p>	
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	

5.1.4.1.6. International Mobile Subscriber Identity (IMSI) - +CIMI

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



5.1.4.2. Call Control

5.1.4.2.1. 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	

5.1.4.2.2. Select Bearer Service Type - +CBST

+CBST - Select Bearer Service Type		SELINT 2
AT+CBST= [<speed> [,<name> [,<ce>]]]	<p>Set command sets the bearer service <name> with data rate <speed>, and the connection element <ce> to be used when data calls are originated. This setting is also used during mobile terminated data call setup, in case of single numbering scheme calls.</p> <p>Parameters:</p> <ul style="list-style-type: none"> <speed> - data rate <ul style="list-style-type: none"> 0 - autobauding (automatic selection of the speed, factory default) 4 - 2400 bps (V.22bis) 5 - 2400 bps (V.26ter) 6 - 4800 bps (V.32) 7 - 9600 bps (V.32) 12 - 9600 bps (V.34) 14 - 14400 bps (V.34) 15 - 19200 bps (V.34) 16 - 28800 bps (V.34) 17 - 33600 bps (V.34) 68 - 2400 bps (V.110 or X.31 flag stuffing) 70 - 4800 bps (V.110 or X.31 flag stuffing) 71 - 9600 bps (V.110 or X.31 flag stuffing) 75 - 14400 bps (V.110 or X.31 flag stuffing) 79 - 19200 bps (V.110 or X.31 flag stuffing) 80 - 28800 bps (V.110 or X.31 flag stuffing) 81 - 38400 bps (V.110 or X.31 flag stuffing) 82 - 48000 bps (V.110 or X.31 flag stuffing) 83 - 56000 bps (V.110 or X.31 flag stuffing) 84 - 64000 bps (X.31 flag stuffing) 115 - 56000 bps (bit transparent) 116 - 64000 bps (bit transparent) 120 - 32000 bps (PIAFS32k) 121 - 64000 bps (PIAFS64k) 130 - 28800 bps (multimedia) 131 - 32000 bps (multimedia) 	



+CBST - Select Bearer Service Type	SELINT 2
	<p>132 – 33600 bps (multimedia) 133 – 56000 bps (multimedia) 134 - 64000 bps (multimedia)</p> <p><name> - bearer service name 0 - data circuit asynchronous (factory default) 1 - data circuit synchronous</p> <p><ce> - connection element 0 - transparent 1 - non transparent (default)</p> <p>Note: the settings AT+CBST=0,0,0 AT+CBST=14,0,0 AT+CBST=75,0,0 are not supported.</p> <p>Note: if <name>=1 then <speed>=0,4,6,7,14,68,70,71,75 is not supported.</p> <p>Note: the following settings are recommended AT+CBST=71,0,1 for mobile-to-mobile calls AT+CBST=7,0,1 for mobile-to-fix calls</p>
AT+CBST?	Read command returns current value of the parameters <speed> , <name> and <ce>
AT+CBST=?	Test command returns the supported range of values for the parameters.
Reference	3GPP TS 27.007



+CR - Service Reporting Control		SELINT 2
	REL ASYNC - asynchronous non-transparent REL SYNC - synchronous non-transparent. Note: this command replaces V.25ter [14] command Modulation Reporting Control (+MR), which is not appropriate for use with a GSM terminal.	
AT+CR?	Read command returns whether or not intermediate result code +CR is enabled, in the format: +CR: <mode>	
AT+CR=?	Test command returns the supported range of values of parameter <mode>.	
Reference	3GPP TS 27.007	

5.1.4.2.5. 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.	
Reference	3GPP TS 27.007, GSM 04.08	

5.1.4.2.6. 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>	



+CRC - Cellular Result Codes		SELINT 2
	instead of the normal RING . where <type> - call type: ASYNC - asynchronous transparent data SYNC - synchronous transparent data REL ASYNC - asynchronous non-transparent data REL SYNC - synchronous non-transparent data VOICE - normal voice (TS 11)	
AT+CRC?	Read command returns current value of the parameter <mode> .	
AT+CRC=?	Test command returns supported values of the parameter <mode> .	
Reference	3GPP TS 27.007	

5.1.4.2.7. Voice Hung Up Control - +CVHU

+CVHU - Voice Hang Up Control		SELINT 2
AT+CVHU= [<mode>]	Set command selects whether ATH or " drop DTR " shall cause a voice connection to be disconnected or not. 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).	
AT+CVHU?	Read command reports the current value of the <mode> parameter, in the format: +CVHU: <mode>	
AT+CVHU=?	Test command reports the range of supported values for parameter <mode>	

5.1.4.2.8. 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 GSM/UMTS 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>	



5.1.4.3. Network Service Handling

5.1.4.3.1. 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: <alpha> - alphanumeric string associated to <number>; used character set should be the one selected with +CSCS. <number> - string containing the phone number in the format <type> <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	

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



5.1.4.3.3. Network Registration Report - +CREG

+CREG - Network Registration Report	SELINT 2
<p>AT+CREG= [<mode>]</p>	<p>Set command enables/disables network registration reports depending on the parameter <mode>.</p> <p>Parameter: <mode></p> <ul style="list-style-type: none"> 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>If <mode>=1, network registration result code reports:</p> <p>+CREG: <stat></p> <p>where <stat></p> <ul style="list-style-type: none"> 0 - not registered, ME is not currently searching a new operator to register to 1 - registered, home network 2 - not registered, but ME is currently searching a new operator to register to 3 - registration denied 4 - unknown 5 - registered, roaming <p>If <mode>=2, network registration result code reports:</p> <p>+CREG: <stat>[,<Lac>,<Ci>[,<AcT>]]</p> <p>where: <Lac> - Local Area Code for the currently registered on cell <Ci> - Cell Id for the currently registered on cell <AcT>: access technology of the registered network: 0 GSM 2 UTRAN</p> <p>Note: <Lac>, and <Ci> and <AcT> are reported only if <mode>=2 and the mobile is registered on some network cell.</p>
<p>AT+CREG?</p>	<p>Read command reports the <mode> and <stat> parameter values in the format:</p> <p>+CREG: <mode>,<stat>[,<Lac>,<Ci>[,<AcT>]]</p> <p>Note: <Lac>, and <Ci> and <AcT> are reported only if <mode>=2 and the mobile is registered on some network cell.</p>
<p>AT+CREG=?</p>	<p>Test command returns the range of supported <mode></p>



+COPS - Operator Selection	SELINT 2
	<p><AcT> access technology selected: 0 GSM 2 UTRAN</p> <p>Note: <mode> parameter setting is stored in NVM and available at next reboot, if it is not 3 (i.e.: set only <format> parameter).</p> <p>Note: if <mode>=1 or 4, the selected network is stored in NVM too and is available at next reboot (this will happen even with a new SIM inserted)</p> <p>Note: <format> parameter setting is never stored in NVM</p> <p>Note: 3G only products support <AcT> parameter value 2 only.</p>
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>
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</p> <p><stat> - operator availability 0 - unknown 1 - available 2 - current 3 - forbidden</p> <p><AcT> access technology selected: 0 GSM 2 UTRAN</p> <p>Note: since with this command a network scan is done, this command may require some seconds before the output is given.</p>
Reference	3GPP TS 27.007



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



5.1.4.3.7. 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: <fac> - facility "SC" - SIM (PIN request) "AB" - All barring services "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. <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	<pre>at+cpwd=? +CPWD: ("SC",8),("AB",4),("P2",8),("PS",8) OK</pre>	
Reference	3GPP TS 27.007	

5.1.4.3.8. Calling Line Identification Presentation - +CLIP

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



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



5.1.4.3.10. Connected line identification presentation - +COLP

+COLP – Connected Line Identification Presentation	SELINT 2
<p>AT+COLP=[<n>]</p>	<p>This command refers to the GSM/UMTS 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: <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>
<p>AT+COLP?</p>	<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: <n> 0 - COL presentation disabled 1 - COL presentation enabled</p> <p><m> - status of the COLP service on the GSM network 0 - COLP not provisioned 1 - COLP provisioned</p>



+COLP – Connected Line Identification Presentation		SELINT 2
	2 - unknown (e.g. no network is present) Note: This command issues a status request to the network, hence it may take a few seconds to give the answer due to the time needed to exchange data with it.	
AT+COLP=?	Test command reports the range for the parameter <n>	

5.1.4.3.11. Connected line identification restriction status - +COLR

+COLR – Connected Line Identification Restriction status		SELINT 2
AT+COLR	<p>This command refers to the GSM/UMTS 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> <ul style="list-style-type: none"> <m>: integer type (parameter shows the subscriber COLR service status in the network) 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	



5.1.4.3.12. 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></p> <ul style="list-style-type: none"> 0 - unconditional 1 - mobile busy 2 - no reply 3 - not reachable 4 - all calls (not with query command) 5 - all conditional calls (not with query command) <p><cmd></p> <ul style="list-style-type: none"> 0 - disable 1 - enable 2 - query status 3 - registration 4 - erasure <p><number> - string type phone number of forwarding address in format specified by <type> parameter</p> <p><type> - type of address octet in integer format :</p> <ul style="list-style-type: none"> 129 - national numbering scheme 145 - international numbering scheme (contains the character "+") <p><class> - sum of integers each representing a class of information which the command refers to; default 7 (voice + data + fax)</p> <ul style="list-style-type: none"> 1 - voice (telephony) 2 - data 4 - fax (facsimile services) 8 - short message service 16 - data circuit sync 32 - data circuit async 64 - dedicated packet access 128 - dedicated PAD access <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)</p> <ul style="list-style-type: none"> 1..30 - automatically rounded to a multiple of 5 seconds (default is 20) <p>Note: when <cmd>=2 and command successful, it returns:</p> <p>+CCFC: <status>,<class1>[,<number>,<type>[,<time>]]<CR><LF></p> <p>+CCFC: <status>,<class2>[,<number>,<type>[,<time>]] [...]</p>



5.1.4.3.14. Call Holding Services - +CHLD

+CHLD - Call Holding Services	SELINT 2
AT+CHLD=[<n>]	<p>Execution command controls the network call hold service. With this service it is possible to disconnect temporarily a call and keep it suspended while it is retained by the network, contemporary it is possible to connect another party or make a multiparty connection.</p> <p>Parameter: <n></p> <ul style="list-style-type: none"> 0 - releases all held calls, or sets the UDUB (User Determined User Busy) indication for a waiting call. 1 - releases all active calls (if any exist), and accepts the other (held or waiting) call 1X - releases a specific active call X 2 - places all active calls (if any exist) on hold and accepts the other (held or waiting) call. 2X - places all active calls on hold except call X with which communication shall be supported 3 - adds an held call to the conversation 4 - connects the two calls and disconnects the subscriber from both calls (Explicit Call Transfer (ECT)) <p>Note: "X" is the numbering (starting with 1) of the call given by the sequence of setting up or receiving the calls (active, held or waiting) as seen by the served subscriber. Calls hold their number until they are released. New calls take the lowest available number.</p> <p>Note: where both a held and a waiting call exist, the above procedures apply to the waiting call (i.e. not to the held call) in conflicting situation.</p>
AT+CHLD=?	<p>Test command returns the list of supported <n>s.</p> <p>+CHLD: (0,1,1X,2,2X,3,4)</p>
Reference	3GPP TS 27.007
Note	ONLY for VOICE calls



5.1.4.3.15. Call deflection - +CTFR

+CTFR – Call deflection	SELINT 2
<p>AT+CTFR=<number>[,<type>]</p>	<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 GSM/UMTS 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>
<p>AT+CTFR=?</p>	<p>Test command tests for command existence</p>

5.1.4.3.16. Unstructured Supplementary Service Data - +CUSD

+CUSD - Unstructured Supplementary Service Data	SELINT 2
<p>AT+CUSD=[<n>[,<str>[,<dcs>]]]</p>	<p>Set command allows control of the Unstructured Supplementary Service Data (USSD 3GPP TS 22.090).</p> <p>Parameters:</p> <p><n> - is used to disable/enable the presentation of an unsolicited result code. 0 - disable the result code presentation in the DTA 1 - enable the result code presentation in the DTA 2 - cancel an ongoing USSD session (not applicable to read command response)</p> <p><str> - USSD-string (when <str> parameter is not given, network is not interrogated)</p> <ul style="list-style-type: none"> - If <dcs> indicates that GSM338 default alphabet is used ME/TA converts GSM alphabet into current TE character set (see +CSCS). - If <dcs> indicates that 8-bit data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number; e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65). <p><dcs> - 3GPP TS 23.038 Cell Broadcast Data Coding Scheme in integer format (default is 0).</p> <p>Note: the unsolicited result code enabled by parameter <n> is in the format:</p> <p>+CUSD: <m>[,<str>,<dcs>] to the TE</p>



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

5.1.4.3.17. 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?	Read command reports the value of parameter <mode> in the format: <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	



5.1.4.3.19. SS Notification - +CSSN

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



5.1.4.3.20. Closed User Group - +CCUG

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

5.1.4.3.21. Preferred Operator List - +CPOL

+CPOL - Preferred Operator List		SELINT 2
AT+CPOL= [<index>][,<format> [,<oper>[,<GSM_AcT> >, <GSM_Compact_Ac T>], <UTRAN_AcT]]]	<p>Execution command writes an entry in the SIM list of preferred operators.</p> <p>Parameters:</p> <p><index> - integer type; the order number of operator in the SIM preferred operator list 1..n</p> <p><format> 2 - numeric <oper></p> <p><oper> - string type</p> <p><GSM_AcT> - GSM access technology 0 – access technology not selected 1 – access technology selected</p> <p><GSM_Compact_AcT> - GSM compact access technology 0 – access technology not selected 1 – access technology selected</p> <p><UTRAN_AcT> - UTRAN access technology 0 – access technology not selected 1 – access technology selected</p>	



+CPOL - Preferred Operator List		SELINT 2
	Note: if <index> is given but <oper> is left out, entry is deleted. If <oper> is given but <index> is left out, <oper> is put in the next free location. If only <format> is given, the format of the <oper> in the read command is changed.	
AT+CPOL?	Read command returns all used entries from the SIM list of preferred operators.	
AT+CPOL=?	Test command returns the whole <index> range supported by the SIM and the range for the parameter <format>	
Reference	3GPP TS 27.007	

5.1.4.3.22. 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.	



5.1.4.4. Mobile Equipment Control

5.1.4.4.1. Phone Activity Status - +CPAS

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



5.1.4.4.2. Set Phone functionality - +CFUN

+CFUN - Set Phone Functionality	SELINT 2
<p>AT+CFUN= [<fun>[,<rst>]]</p>	<p>Set command selects the level of functionality in the ME.</p> <p>Parameters:</p> <p><fun> - is the power saving function mode</p> <p>0 - minimum functionality, NON-CYCLIC SLEEP mode: in this mode, the AT interface is not accessible. Consequently, once you have set <fun> level 0, do not send further characters. Otherwise these characters remain in the input buffer and may delay the output of an unsolicited result code. The first wake-up event, or rising RTS line, stops power saving and takes the ME back to full functionality level <fun>=1.</p> <p>1 - mobile full functionality with power saving disabled (factory default)</p> <p>4 - disable both TX and RX</p> <p>5 - mobile full functionality with power saving enabled</p> <p>7 - CYCLIC SLEEP mode: in this mode, the serial interface is periodically enabled while CTS is active. If characters are recognized on the serial interface, the ME stays active for 2 seconds after the last character was sent or received. ME exits SLEEP mode only, if AT+CFUN=1 is entered</p> <p>9 - just as 0 but with different wake-up events (see SW User Guide)</p> <p>12 - Fast detach</p> <p><rst> - reset flag</p> <p>0 - do not reset the ME before setting it to <fun> functionality level</p> <p>1 - reset the device. The device is fully functional after the reset. This value is available only for <fun> = 1</p> <p>Note: issuing AT+CFUN=4[,0] actually causes the module to perform either a network deregistration and a SIM deactivation.</p> <p>Note: if power saving enabled, it reduces the power consumption during the idle time, thus allowing a longer standby time with a given battery capacity.</p> <p>Note: to place the module in power saving mode, set the <fun> parameter at value = 5 and the line DTR (RS232) must be set to OFF. Once in power saving, the CTS line switch to the OFF status to signal that the module is really in power saving condition.</p> <p>During the power saving condition, before sending any AT command on the serial line, the DTR must be set to ON (0V) to exit from power saving and it must be waited for the CTS (RS232) line to go in ON status.</p> <p>Until the DTR line is ON, the module will not return back in the power saving condition</p> <p>Note: the power saving function does not affect the network behaviour of the module, even during the power save condition the module remains registered on the network and reachable for incoming calls or SMS. If a call incomes during the</p>



+CPINR – Remaining PIN retries		SELINT 2
Example	AT+CPINR="SIM*" will return the lines: +CPINR: SIM PIN,<retries>,<default_retries> +CPINR: SIM PUK,<retries>,<default_retries> +CPINR: SIM PIN2,<retries>,<default_retries> +CPINR: SIM PUK2,<retries>,<default_retries>	
Note	Only "SIM*" <sel_code> is supported	
Reference	3GPP TS 27.007	



5.1.4.4.5. Signal Quality - +CSQ

+CSQ - Signal Quality	SELINT 2
<p>AT+CSQ</p>	<p>Execution command reports received signal quality indicators in the form:</p> <p>+CSQ: <rssi>,<ber> where <rssi> - received signal strength indication 0 - (-113) dBm or less 1 - (-111) dBm 2..30 - (-109)dBm..(-53)dBm / 2 dBm per step 31 - (-51)dBm or greater 99 - not known or not detectable <ber> - bit error rate (in percent) 0 - less than 0.2% 1 - 0.2% to 0.4% 2 - 0.4% to 0.8% 3 - 0.8% to 1.6% 4 - 1.6% to 3.2% 5 - 3.2% to 6.4% 6 - 6.4% to 12.8% 7 - more than 12.8% 99 - not known or not detectable</p> <p>Note: this command should be used instead of the %Q and %L commands, since GSM relevant parameters are the radio link ones and no line is present, hence %Q and %L have no meaning.</p> <p>Note: in GSM, the received signal strength indication is the average of the received signal level measurement samples in dBm, taken on a channel within the reporting period of length one SACCH multi frame, and is mapped as above. For UMTS, according to the specification 3GPP TS25.133, the level range is from 0 to 91, with</p> <p>0 less than (-115) dBm 1 (-115) dBm..(-114) dBm . . . 91 (-25) dBm or greater 99 - not known or not detectable</p> <p>Values between -115dbm and -120dbm will all be represented by level 0 To be compliant with 3GPP TS27.007 specification, the above 0...91 levels are mapped to range 0...31:</p>



+CSQ - Signal Quality	SELINT 2
	3GPP TS25.133 Level Scaled (displayed) RSSI 3 or less 0 4...65 Level /2 - 1 66...91 31 99 99
AT+CSQ=?	Test command returns the supported range of values of the parameters <rsqi> and <ber> . Note: although +CSQ is an execution command without parameters, ETSI 07.07 requires the Test command to be defined.
Reference	3GPP TS 27.007

5.1.4.4.6. **Indicator Control - +CIND**

+CIND - Indicator Control	SELINT 2
AT+CIND= [<state> [,<state>[,...]]]	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=? 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) Note: When the ME is switched on all of the indicators are in registered mode.
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



+CIND - Indicator Control	SELINT 2
	<p>“signal” - signal quality <ind> - signal quality indicator range 0..7 99 - not measurable</p> <p>“service” - service availability <ind> - service availability indicator range 0 - not registered to any network 1 - registered</p> <p>“sounder” - sounder activity <ind> - sounder activity indicator range 0 - there’s no any sound activity 1 - there’s some sound activity</p> <p>“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”</p> <p>“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</p> <p>“roam” - roaming <ind> - roaming indicator range 0 - registered to home network or not registered 1 - registered to other network</p> <p>“smsfull” - a short message memory storage in the MT has become full (1), or memory locations are available (0) <ind> - short message memory storage indicator range 0 - memory locations are available 1 - a short message memory storage in the MT has become full.</p> <p>“rssi” - 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</p>
Example	<p><i>Next command causes all the indicators to be registered</i> AT+CIND=1,1,1,1,1,1,1,1,1</p> <p><i>Next command causes all the indicators to be de-registered</i> AT+CIND=0,0,0,0,0,0,0,0,0</p> <p><i>Next command to query the current value of all indicators</i> AT+CIND? CIND: 4,0,1,0,0,0,0,0,2</p> <p>OK</p>
Note	See command +CMER
Reference	3GPP TS 27.007



+CMER - Mobile Equipment Event Reporting		SELINT 2
	+CMER: <mode>,<keyp>,<disp>,<ind>,<bfr>	
AT+CMER=?	Test command returns the range of supported values for parameters <mode>,<keyp>,<disp>,<ind>,<bfr>, in the format: +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)	
Reference	3GPP TS 27.007	

5.1.4.4.8. 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: <storage> "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> <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>	



+CPBS - Select Phonebook Memory Storage		SELINT 2
AT+CPBS?	<p>Read command returns the actual values of the parameter <storage>, the number of occupied records <used> and the maximum index number <total>, in the format:</p> <p>+CPBS: <storage>,<used>,<total></p> <p>Note: For <storage>="MC": if there are more than one missed calls from the same number the read command will return only the last call</p>	
AT+CPBS=?	Test command returns the supported range of values for the parameters <storage> .	
Reference	3GPP TS 27.007	

5.1.4.4.9. 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:</p> <p><index1> - integer type, value in the range of location numbers of the currently selected phonebook memory storage (see +CPBS).</p> <p><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:</p> <p>[+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:</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>	



+CPBR - Read Phonebook Entries	SELINT 2
	<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 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=?	<p>Test command returns the supported range of values for parameters <index> and the maximum lengths of <number>, <text>, <group>, <secondtext> and <email> fields fields, in the format:</p> <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 3. if “MB” memory storage has been selected (see +CPBS) and the SIM supports the Extension6 service
Note	Remember to select the PB storage with +CPBS command before issuing PB commands.
Reference	3GPP TS 27.007



5.1.4.4.10. 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: <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> <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 <u>0</u>: phonebook entry not hidden 1: phonebook entry hidden</p>



+CPBF - Find Phonebook Entries	SELINT 2
	<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:</p> <p style="padding-left: 40px;"><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 1. if “MB” memory storage has been selected (see +CPBS) and the SIM supports the Extension6 service
Note	Remember to select the PB storage with +CPBS command before issuing PB commands.
Reference	3GPP TS 27.007



5.1.4.4.11. Write Phonebook Entry - +CPBW

+CPBW - Write Phonebook Entry	SELINT 2
<p>AT+CPBW= [<index> [,<number> [,<type> [,<text>[,<group>[,<adnumber>[,<adtype>[,<secondtext>[,<email> >[,<hidden>]]]]]]]]]</p>	<p>Execution command writes phonebook entry in location number <index> in the current phonebook memory storage selected with <u>+CPBS</u>.</p> <p>Parameters:</p> <p><index> - integer type, value in the range of location numbers of the currently selected phonebook memory storage (see <u>+CPBS</u>).</p> <p><number> - string type, phone number in the format <type></p> <p><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> <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 0: phonebook entry not hidden 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 <u>+CPBS</u>) it is possible just to delete the phonebook entry in location <index>, therefore parameters <number>, <type> and <text> must be omitted.</p>



+CPBW - Write Phonebook Entry	SELINT 2
	<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> <ul style="list-style-type: none"> <nlength> - integer type value indicating the maximum length of field <number>. <tlength> - integer type value indicating the maximum length of field <text> <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>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 3. if “MB” memory storage has been selected (see +CPBS) and the SIM supports the Extension6 service
Reference	3GPP TS 27.007
Note	Remember to select the PB storage with +CPBS command before issuing PB commands.



+CALA - Alarm Management	SELINT 2
	<p>in this state until a #WAKE or #SHDN command is received or a 90 seconds timer expires. If the device is in "alarm mode" and it does not receive the #WAKE command within 90s then it shuts down.</p> <p>5 - the MODULE will make both the actions as for type=2 and <type>=3. 6 - the MODULE will make both the actions as for type=2 and <type>=4. 7 - the MODULE will make both the actions as for type=3 and <type>=4. 8 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE sets High the RI output pin. The RI output pin remains High until next #WAKE issue or until a 90s timer expires. If the device is in "alarm mode" and it does not receive the #WAKE command within 90s. After that it shuts down.</p> <p><text> - unsolicited alarm code text string. It has meaning only if <type> is equal to 2 or 5 or 6.</p> <p><recurr> - string type value indicating day of week for the alarm in one of the following formats: “<1..7>[,<1..7>[, ...]]” - it sets a recurrent alarm for one or more days in the week; the digits 1 to 7 corresponds to the days in the week (Monday is 1). “0” - it sets a recurrent alarm for all days in the week.</p> <p><silent> - integer type indicating if the alarm is silent or not. 0 - the alarm will not be silent; 1 - the alarm will be silent.</p> <p>During the "alarm mode" the device will not make any network scan and will not register to any network and therefore is not able to dial or receive any call or SMS, the only commands that can be issued to the MODULE in this state are the #WAKE and #SHDN, every other command must not be issued during this state.</p>
AT+CALA?	<p>Read command returns the list of current active alarm settings in the ME, in the format:</p> <p>[+CALA: <time>,<n>,<type>,<text>,<recurr>,<silent>]</p>
AT+CALA=?	<p>Test command returns the list of supported index values (currently just 0), alarm types, maximum length of the text to be displayed, maximum length of <recurr> and supported <silent>s, in the format:</p> <p>+CALA: (list of supported <n>s),(list of supported <type>s),<tlength>,<rlength>,(list of supported <silent>s)</p>
Example	<p>AT+CALA="02/09/07,23:30:00+00" OK</p>
Reference	<p>ETSI 07.07, ETSI 27.007</p>

5.1.4.4.14. Delete Alarm - +CALD



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

5.1.4.4.15. Postpone alarm - +CAPD

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

5.1.4.4.16. Setting date format - +CSDF

+CSDF – setting date format		SELINT 2
AT+CSDF=[<mode> [,<auxmode>]]	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. 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>. Parameters: <mode>: 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>: 1 yy/MM/dd (default) 2 yyyy/MM/dd</p> <p>Note: The <time> format of +CCLK and +CALA is "yy/MM/dd,hh:mm:ss+zz" when <auxmode>=1 and it is "yyyy/MM/dd,hh:mm:ss+zz" when <auxmode>=2.</p>
AT+CSDF?	Read command reports the currently selected <mode> and <auxmode> in the format: +CSDF: <mode>,<auxmode>
AT+CSDF=?	Test command reports the supported range of values for parameters <mode> and <auxmode>

5.1.4.4.17. 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>	



5.1.4.4.20. Restricted SIM Access - +CRSM

+CRSM - Restricted SIM Access	SELINT 2
<p>AT+CRSM= <command> [,<fileid> [,<P1>,<P2>,<P3> [,<data>]]]</p>	<p>Execution command transmits to the ME the SIM <command> and its required parameters. ME handles internally all SIM-ME interface locking and file selection routines. As response to the command, ME sends the actual SIM information parameters and response data.</p> <p>Parameters:</p> <p><command> - command passed on by the ME to the SIM 176 - READ BINARY 178 - READ RECORD 192 - GET RESPONSE 214 - UPDATE BINARY 220 - UPDATE RECORD 242 - STATUS</p> <p><fileid> - identifier of an elementary data file on SIM. Mandatory for every command except STATUS.</p> <p><P1>,<P2>,<P3> - parameter passed on by the ME to the SIM; they are mandatory for every command except GET RESPONSE and STATUS</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

5.1.4.4.21. Generic SIM access - +CSIM



+CSIM – Generic SIM access	SELINT 0 / 1 / 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):</p> <ul style="list-style-type: none"> 3 operation not allowed (<i>operation mode is not allowed by the ME, wrong interface lock/unlock status</i>) 4 operation not supported (<i>wrong format or parameters of the command</i>) 13 SIM failure (<i>SIM no response</i>)
AT+CSIM=?	Test command returns the OK result code.
Example	<p>Lock SIM interface AT+CSIM=1 OK</p> <p>2G SIM (TS 11.11): AT#ENASIM? +ENASIM: 0</p>



+CSIM – Generic SIM access	SELINT 0 / 1 / 2
	<p>OK</p> <p><i>STATUS</i> AT+CSIM=10,A0F2000016 +CME ERROR: operation not supported</p> <p><i>STATUS</i> AT+CSIM=10,80F2000016 +CSIM:48,"623F8202782183027FF08410A0000000871002FFFFFF9000"</p> <p>OK</p> <p><i>SELECT EF 6F07 No Data Returned</i> AT+CSIM=18,00A4080C047F206F07 +CSIM: 4,"9000"</p> <p>OK</p> <p><i>SELECT EF 6F30 Return FCP Template</i> AT+CSIM=18,00A40804047F206F30 +CSIM: 4,"6120"</p> <p>OK</p> <p><i>GET RESPONSE</i> AT+CSIM=10,00C0000020 +CSIM:68,"621E8202412183026F30A506C00140DE01008A01058B036F060480 02006988009000"</p> <p>OK</p> <p><i>READ BINARY</i> AT+CSIM=10,00B0000069 +CSIM:214,"02F81012F47022F83082F63082F64022F60192F31412F6031300613 2F40102F20162 F21032F23002F60182F41012F91042F41902F46102F40242F22092F52072F22062 F03062F86032F0 1032F11042F01032F80217F60127F42027F43027F44027F24337F62037F0209000 "</p> <p>OK</p> <p><i>Unlock SIM interface</i> AT+CSIM=0 OK</p>



+CSIM – Generic SIM access	SELINT 0 / 1 / 2
Note	<p>After the locking of the SIM-ME interface (AT+CSIM=1) the SIM will be accessible only by AT+CSIM commands (#QSS: 0). The GSM and GPRS services will be automatically deregistered to avoid the TE commands alter the GSM application. They will be automatically reconditioned after the unlocking of the SIM-ME interface. After the unlocking of the SIM-ME interface if PIN is required it will be necessary to enter it another time.</p>



5.1.4.4.24. Loudspeaker Volume Level - +CLVL

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

5.1.4.4.25. Microphone Mute Control - +CMUT

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



5.1.4.4.26. Silence command - +CSIL

+CSIL – silence command		SELINT 2
AT+CSIL=[<mode>]	<p>This command enables/disables the silent mode. When the phone is in silent mode, all signalling tones from MT are suppressed.</p> <p>Parameters: <mode>: 0 Silent mode off (default) 1 Silent mode on</p>	
AT+CSIL?	<p>Read command reports the currently selected <mode> in the format: +CSIL: <mode></p>	
AT+CSIL=?	<p>Test command reports the supported range of values for parameter <mode></p>	

5.1.4.4.27. 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: +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=?	<p>Test command returns the OK result code</p>	
Reference	3GPP TS 27.007	



5.1.4.4.28. 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	

5.1.4.4.29. 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: <currency> - string type; three-character currency code (e.g. "LIT", "L. ", "USD", "DEM" etc.); used character set should be the one selected with command +CSCS. <ppu> - price per unit, string type (dot is used as decimal separator) e.g. "1989.27" <pwd> - SIM PIN2; if PIN2 has been already input once after startup, it is required no more</p>	
AT+CPUC?	Read command reports the current values of <currency> and <ppu> parameters in the format:	



+CSVM – Set Voice Mail Number	SELINT 2
	<p>numbering plan (contains the character "+")</p> <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=?	<p>Test command reports the range for the parameters <mode> and <type>.</p>

5.1.4.4.32. 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: <AT cmdn> - defines the AT command including the prefix AT</p>
AT+CLAC=?	<p>Test command returns the OK result code</p>
Reference	3GPP TS 27.007



Mobile Equipment Errors

5.1.4.4.33. 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=?	Test command returns the range of values for subparameter <n>	
Note	+CMEE has no effect on the final result code +CMS	
Reference	3GPP TS 27.007	

5.1.4.4.34. 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>	

+CCHO – Open Logical Channel	SELINT 2
	<p>The response of the command is in the format: +CCHO: < sessionid ></p> <p>where: <sessionid> integer type; a session Id to be used in order to target a specific application on the smart card (e.g. (U)SIM, WIM, ISIM) using logical channels mechanism</p> <p>See 3GPP TS 31.101 for more information about defined values.</p> <p>Error case: +CME ERROR: <err> possible <err> values (numeric format followed by verbose format): 3 operation not allowed (<i>operation mode is not allowed by the ME</i>) 4 operation not supported (<i>wrong format or parameters of the command</i>) 13 SIM failure (<i>SIM response SW1 SW2 status byte Error</i>) 15 SIM wrong (<i>SIM response SW1 SW2 status byte Error</i>) 100 unknown (<i>generic error</i>)</p> <p>Note: The logical channel number is contained in the CLASS byte of an APDU command, thus implicitly contained in all APDU commands sent to a UICC. In this case it will be up to the MT to manage the logical channel part of the APDU CLASS byte and to ensure that the chosen logical channel is relevant to the <sessionid> indicated in the AT command. See 3GPP TS 31.101 for further information on logical channels in APDU commands protocol.</p>
AT+CCHO=?	Test command returns the OK result code.

5.1.4.4.35. Close Logical Channel - +CCHC

+CCHC – Close Logical Channel	SELINT 2
AT+CCHC=<sessionid>	<p>This command asks the ME to close a communication session with the active UICC. The ME shall close the previously opened logical channel. The TE will no longer be able to send commands on this logical channel. The UICC will close the logical channel when receiving this command.</p> <p>Parameter: <sessionid> : integer type; a session Id to be used in order to target a specific application on the smart card (e.g. (U)SIM, WIM, ISIM) using logical channels mechanism.</p> <p>Error case: +CME ERROR: <err> possible <err> values (numeric format followed by verbose format):</p>



	<p>3 operation not allowed (<i>operation mode is not allowed by the ME</i>)</p> <p>4 operation not supported (<i>wrong format or parameters of the command</i>)</p> <p>13 SIM failure (<i>SIM response SW1 SW2 status byte Error</i>)</p> <p>15 SIM wrong (<i>SIM response SW1 SW2 status byte Error</i>)</p> <p>21 invalid index (<i><sessionid> not correspond to an opened channel</i>)</p> <p>100 unknown (<i>generic error</i>)</p>
AT+CCHC=?	Test command returns the OK result code.

5.1.4.4.36. 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:</p> <p><response> : response to the command passed on by the SIM to the ME in the format as described in GSM TS 11.11 or 3G TS 31.101 (hexadecimal character format).</p> <p>See 3GPP TS 31.101 for more information about defined values.</p> <p>Error case: +CME ERROR: <err> possible <err> values (numeric format followed by verbose format):</p> <p>3 operation not allowed (<i>operation mode is not allowed by the ME</i>)</p>



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



5.1.4.5. Voice Control

5.1.4.5.1. DTMF Tones Transmission - +VTS

+VTS - DTMF Tones Transmission		SELINT 2
AT+VTS= <dtmfstring> [,<duration>]	<p>Execution command allows the transmission of DTMF tones.</p> <p>Parameters:</p> <p><dtmfstring> - string of <dtmf>s, i.e. ASCII characters in the set (0-9), #, *, (A-D), P; it allows the user to send a sequence of DTMF tones, each of them with a duration that was defined through +VTD command.</p> <p><duration> - duration of a tone in 1/100 sec.; this parameter can be specified only if the length of first parameter is just one ASCII character</p> <p>0 - a single DTMF tone will be transmitted for a duration depending on the network, no matter what the current +VTD setting is.</p> <p>1..255 - a single DTMF tone will be transmitted for a time <duration> (in 10 ms multiples), no matter what the current +VTD setting is.</p> <p>Note: this commands operates in voice mode only (see +FCLASS).</p> <p>Note: the character P does not correspond to any DTMF tone, but it is interpreted as a pause of 3 seconds between the preceding and succeeding DTMF string elements</p>	
AT+VTS=?	<p>Test command provides the list of supported <dtmf>s and the list of supported <duration>s in the format:</p> <p>(list of supported <dtmf>s)[,(list of supported <duration>s)]</p>	
Reference	3GPP TS 27.007 and TIA IS-101	



5.1.4.5.2. Tone Duration - +VTD

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



5.1.4.6. Commands For GPRS

5.1.4.6.1. GPRS Mobile Station Class - +CGCLASS

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

5.1.4.6.2. GPRS Attach Or Detach - +CGATT

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



5.1.4.6.3. GPRS Event Reporting - +CGEREP

+CGEREP - GPRS Event Reporting	SELINT 2
<p>AT+CGEREP= [<mode>[,<bfr>]]</p>	<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:</p> <p><mode> - controls the processing of URCs specified with this command</p> <ul style="list-style-type: none"> 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. <p><bfr> - controls the effect on buffered codes when <mode> 1 or 2 is entered:</p> <ul style="list-style-type: none"> 0 - TA buffer of unsolicited result codes defined within this command is cleared when <mode>=1 or 2 is entered. 1 - TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode>=1 or 2 is entered (OK response shall be given before flushing the codes) <p style="text-align: center;">Unsolicited Result Codes</p> <p>The following unsolicited result codes and the corresponding events are defined:</p> <p>+CGEV: REJECT <PDP_type>, <PDP_addr> A network request for PDP context activation occurred when the TA was unable to report it to the TE with a +CRING unsolicited result code and was automatically rejected</p> <p>+CGEV: NW REACT <PDP_type>, <PDP_addr>, [<cid>] The network has requested a context reactivation. The <cid> that was used to reactivate the context is provided if known to TA</p> <p>+CGEV: NW DEACT <PDP_type>, <PDP_addr>, [<cid>] The network has forced a context deactivation. The <cid> that was used to activate the context is provided if known to TA</p> <p>+CGEV: ME DEACT <PDP_type>, <PDP_addr>, [<cid>] The mobile equipment has forced a context deactivation. The <cid> that was used to activate the context is provided if known to TA</p> <p>+CGEV: NW DETACH The network has forced a GPRS detach. This implies that all active contexts have been deactivated. These are not reported separately</p>



+CGEREP - GPRS Event Reporting		SELINT 2
	<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?	<p>Read command returns the current <mode> and <bfr> settings, in the format:</p> <p>+CGEREP: <mode>,<bfr></p>	
AT+CGEREP=?	Test command reports the supported range of values for the +CGEREP command parameters.	
Reference	3GPP TS 27.007	

5.1.4.6.4. GPRS 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: 0 GSM 2 UTRAN</p> <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>	
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	

5.1.4.6.5. Define PDP Context - +CGDCONT

+CGDCONT - Define PDP Context		SELINT 2
<p>AT+CGDCONT= [<cid> [,<PDP_type> [,<APN> [,<PDP_addr> [,<d_comp> [,<h_comp> [,<pd1> [...[,pdN]]]]]]]]]</p>	<p>Set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, <cid></p> <p>Parameters:</p> <p><cid> - (PDP Context Identifier) numeric parameter which specifies a particular PDP context definition.</p> <p>1..max - where the value of max is returned by the Test command</p> <p><PDP_type> - (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol</p> <p>"IP" - Internet Protocol "IPV6" - Internet Protocol version 6 "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><PDP_addr> - a string parameter that identifies the terminal in the address space applicable to the PDP. The allocated address may be read using the +CGPADDR command.</p> <p><d_comp> - numeric parameter that controls PDP data compression</p> <p>0 - off (default if value is omitted)</p>	



+CGDCONT - Define PDP Context	SELINT 2
	<p>1 - on <h_comp> - numeric parameter that controls PDP header compression 0 - off (default if value is omitted) 1 - on <pd1>, ..., <pdN> - zero to N string parameters whose meanings are specific to the <PDP_type></p> <p>Note: a special form of the Set command, +CGDCONT=<cid>, causes the values for context number <cid> to become undefined.</p>
AT+CGDCONT?	<p>Read command returns the current settings for each defined context in the format: +CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>[,<pd1>[...,<pdN>]] [<CR><LF> +CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>[,<pd1>[...,<pdN>]] [...]</p>
AT+CGDCONT=?	<p>Test command returns values supported as a compound value</p>
Example	<pre>AT+CGDCONT=1,"IP","APN","10.10.10.10",0,0 OK AT+CGDCONT? +CGDCONT: 1,"IP","APN","10.10.10.10",0,0 OK AT+CGDCONT=? +CGDCONT: (1-5),"IP",,,(0-1),(0-1) OK</pre>
Reference	3GPP TS 27.007



5.1.4.6.6. Quality Of Service Profile - +CGQMIN

+CGQMIN - Quality Of Service Profile (Minimum Acceptable)	SELINT 2
<p>AT+CGQMIN= [<cid> [,<precedence> [,<delay> [,<reliability> [,<peak> [,<mean>]]]]]]</p>	<p>Set command allows to specify a minimum acceptable profile which is checked by the terminal against the negotiated profile returned in the Activate PDP Context Accept message.</p> <p>Parameters: <cid> - PDP context identification (see +CGDCONT command). <precedence> - precedence class <delay> - delay class <reliability> - reliability class <peak> - peak throughput class <mean> - mean throughput class</p> <p>If a value is omitted for a particular class then this class is not checked.</p> <p>Note: a special form of the Set command, +CGQMIN=<cid> causes the requested profile for context number <cid> to become undefined.</p> <p>Note: set command can modify the 3G QoS according to 3GPP 23.107 (see +CGEQMIN).</p>
<p>AT+CGQMIN?</p>	<p>Read command returns the current settings for each defined context in the format:</p> <p>+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>[<CR><LF>+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>[...]]</p> <p>If no PDP context has been defined, it has no effect and OK result code is returned.</p>
<p>AT+CGQMIN=?</p>	<p>Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format:</p> <p>+CGQMIN: <PDP_Type>,(list of supported <precedence>s), (list of supported <delay>s),(list of supported <reliability>s), (list of supported <peak>s),(list of supported <mean>s)</p> <p>Note: only the "IP" <PDP_Type> is currently supported.</p>
<p>Example</p>	<pre>AT+CGQMIN=1,0,0,3,0,0 OK AT+CGQMIN? +CGQMIN: 1,0,0,5,0,0 OK AT+CGQMIN=? +CGQMIN: "IP",(0-3),(0-4),(0-5),(0-9),(0-18,31) OK</pre>
<p>Reference</p>	<p>3GPP TS 27.007; GSM 03.60</p>



5.1.4.6.7. Quality Of Service Profile - +CGQREQ

+CGQREQ - Quality Of Service Profile (Requested)	SELINT 2
<p>AT+CGQREQ= [<cid> [,<precedence> [,<delay> [,<reliability> [,<peak> [,<mean>]]]]]]</p>	<p>Set command allows to specify a Quality of Service Profile that is used when the terminal sends an Activate PDP Context Request message to the network. It specifies a profile for the context identified by the (local) context identification parameter, <cid>.</p> <p>Parameters: <cid> - PDP context identification (see +CGDCONT command). <precedence> - precedence class <delay> - delay class <reliability> - reliability class <peak> - peak throughput class <mean> - mean throughput class</p> <p>If a value is omitted for a particular class then this class is not checked.</p> <p>Note: a special form of the Set command, +CGQREQ=<cid> causes the requested profile for context number <cid> to become undefined.</p> <p>Note: set command can modify the 3G QoS according to 3GPP 23.107 (see +CGEQREQ).</p>
<p>AT+CGQREQ?</p>	<p>Read command returns the current settings for each defined context in the format:</p> <p>+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>[<CR><LF>+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>[...]]</p> <p>If no PDP context has been defined, it has no effect and OK result code is returned.</p>
<p>AT+CGQREQ=?</p>	<p>Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format:</p> <p>+CGQREQ: <PDP_Type>,(list of supported <precedence>s),(list of supported <delay>s),(list of supported <reliability>s),(list of supported <peak>s),(list of supported <mean>s)</p> <p>Note: only the "IP" <PDP_Type> is currently supported.</p>
<p>Example</p>	<pre>AT+CGQREQ? +CGQREQ: 1,0,0,3,0,0 OK AT+CGQREQ=1,0,0,3,0,0 OK AT+CGQREQ=? +CGQREQ: "IP",(0-3),(0-4),(0-5),(0-9),(0-18,31) OK</pre>
<p>Reference</p>	<p>3GPP TS 27.007; GSM 03.60</p>



	<p>8700...16000</p> <p><Delivery order> - SDU Delivery order 0 - no 1 - yes 2 - subscribed value (default value)</p> <p><Maximum SDU size> - Maximum SDU size in octets 0 - subscribed value (default value) 10...1500 1502 1510 1520</p> <p><SDU error ratio> - SDU error ratio - mEe mean $m \cdot 10^{-e}$, for example 1E2 mean $1 \cdot 10^{-2}$ "0E0" (default value) "1E1" "1E2" "7E3" "1E3" "1E4" "1E5" "1E6"</p> <p><Residual bit error ratio> - Residual bitt error ratio - mEe mean $m \cdot 10^{-e}$, for example 1E2 mean $1 \cdot 10^{-2}$ "0E0" (default value) "5E2" "1E2" "5E3" "4E3" "1E3" "1E4" "1E5" "1E6" "6E8"</p> <p><Delivery of erroneous SDUs> - Delivery of erroneous SDUs 0 - no 1 - yes 2 - no detect 3 - subscribed value (default value)</p> <p><Transfer delay > - Transfer delay (milliseconds) 0 - subscribed value (default value) 10...150 200...950</p>
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	<p>1000...4000</p> <p><Traffic handling priority> - Traffic handling priority 0 - subscribed value (default value) 1...3</p> <p><Source Statistics Descriptor> - Characteristics of the source of the submitted SDUs for a PDP context. This parameter should be provided if the <Traffic class> is specified as conversational or streaming. 0 - Characteristics of SDUs is unknown (default value) 1 - Characteristics of SDUs corresponds to a speech source</p> <p><Signalling Indication> - Signalling content of submitted SDUs for a PDP context. This parameter should be provided if the <Traffic class> is specified as interactive. 0 - PDP context is not optimized for signalling (default value) 1 - PDP context is optimized for signalling <PDP_type> (see +CGDCONT command).</p> <p>Note: a special form of the Set command, +CGEQREQ=<cid> causes the requested profile for context number <cid> to become undefined.</p> <p>Note: the current settings are stored in NVM. Note: set command can modify the 2G QoS according to 3GPP 23.107 (see +CGQREQ).</p>
<p>AT+CGEQREQ?</p>	<p>Read command returns the current settings for each defined context in the format:</p> <p>[+CGEQREQ: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic handling>,<Source statistics descriptor>,<Signalling indication><CR><LF>] [+CGEQREQ:...]</p> <p>If no PDP context has been defined, it has no effect and OK result code is returned.</p>
<p>AT+CGEQREQ=?</p>	<p>Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format:</p> <p>+CGEQREQ: <PDP_Type>,(list of supported <Traffic class>s), (list of supported <Maximum bitrate UL>s),(list of supported <Maximum bitrate DL>s),(list of supported <Guaranteed bitrate UL>s),(list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s),(list of supported<Maximum SDU size>s),(list of supported<SDU error ratio>s),(list of supported<Residual bit error</p>



	<p><Delivery order> - SDU Delivery order 0 - no (for default value) 1 – yes</p> <p><Maximum SDU size> - Maximum SDU size in octets 0 (default value) 10...1500 1502 1510 1520</p> <p><SDU error ratio> - SDU error ratio - mEe mean $m \cdot 10^{-e}$, for example 1E2 mean $1 \cdot 10^{-2}$ “0E0” (default value) “1E1” “1E2” “7E3” “1E3” “1E4” “1E5” “1E6”</p> <p><Residual bit error ratio> - Residual bit error ratio - mEe mean $m \cdot 10^{-e}$, for example 1E2 mean $1 \cdot 10^{-2}$ “0E0” (default value) “5E2” “1E2” “5E3” “4E3” “1E3” “1E4” “1E5” “1E6” “6E8”</p> <p><Delivery of erroneous SDUs> - Delivery of erroneous SDUs 0 - no (default value) 1 – yes 2 – no detect</p> <p><Transfer delay > - Transfer delay (milliseconds) 0 (default value) 10...150 200...950 1000...4000</p> <p><Traffic handling priority > - Traffic handling priority</p>
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	<p>1...3</p> <p><Source Statistics Descriptor> - Characteristics of the source of the submitted SDUs for a PDP context. This parameter should be provided if the <Traffic class> is specified as conversational or streaming. 0 - Characteristics of SDUs is unknown (default value) 1 - Characteristics of SDUs corresponds to a speech source</p> <p><Signalling Indication> - Signalling content of submitted SDUs for a PDP context. This parameter should be provided if the <Traffic class> is specified as interactive. 0 - PDP context is not optimized for signalling (default value) 1 - PDP context is optimized for signalling.</p> <p>Note: a special form of the Set command, +CGEQMIN=<cid> causes the requested profile for context number <cid> to become undefined.</p> <p>Note: the current settings are stored in NVM.</p> <p>Note: set command can modify the 2G QoS according to 3GPP 23.107 (see +CGQMIN).</p>
<p>AT+CGEQMIN?</p>	<p>Read command returns the current settings for each defined context in the format:</p> <p>[+CGEQMIN: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic handling>,<Source statistics descriptor>,<Signalling indication><CR><LF>] [+CGEQMIN:...]</p> <p>Parameters are described as for the set command except:</p> <p><Traffic class> - Traffic class 0 – conversational (if the value is explicitly defined, otherwise, if the context or the QoS is undefined it is the default value as undefined) 1 - streaming 2 - interactive 3 – background</p> <p><Traffic handling priority > - Traffic handling priority 0 (default value as undefined) 1...3</p> <p>If no PDP context has been defined, it has no effect and OK result code is returned.</p>



<p>AT+CGEQMIN=?</p>	<p>Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format:</p> <p>+CGQMIN: <PDP_Type>,(list of supported <Traffic class>s), (list of supported <Maximum bitrate UL>s),(list of supported <Maximum bitrate DL>s),(list of supported <Guaranteed bitrate UL>s),(list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s),(list of supported<Maximum SDU size>s),(list of supported<SDU error ratio>s),(list of supported<Residual bit error ratio>s),(list of supported <Delivery of erroneous SDUs>s),(list of supported <Transfer delay>s),(list of supported <Traffic handling priority>s), (list of supported <Source statistics descriptor>s), (list of supported <Signalling indication>s)</p> <p>Note: only the “IP” PDP_Type is currently supported.</p>
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5.1.4.6.10. PDP Context activate or deactivate - +CGACT

+CGACT - PDP Context Activate Or Deactivate		SELINT 2
<p>AT+CGACT= [<state>[,<cid> [,<cid>[,...]]]]</p>	<p>Execution command is used to activate or deactivate the specified PDP context(s)</p> <p>Parameters: <state> - indicates the state of PDP context activation 0 - deactivated 1 - activated <cid> - a numeric parameter which specifies a particular PDP context definition (see +CGDCONT command)</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>	
<p>AT+CGACT?</p>	<p>Read command returns the current activation state for all the defined PDP contexts in the format: +CGACT: <cid>,<state>[<CR><LF>+CGACT: <cid>,<state>[...]]</p>	
<p>AT+CGACT=?</p>	<p>Test command reports information on the supported PDP context activation states parameters in the format: +CGACT: (0,1)</p>	
<p>Example</p>	<pre>AT+CGACT=1,1 OK AT+CGACT? +CGACT: 1,1 OK</pre>	
<p>Reference</p>	<p>3GPP TS 27.007</p>	



5.1.4.6.11. 3G Quality Of Service Profile (Negotiated) - +CGEQNEG

+CGEQNEG – 3G Quality Of Service Profile (Negotiated)	SELINT 2
<p>AT+CGEQNEG= [<cid>[,<cid>[,...]]]</p>	<p>This command allows the TE to retrieve the negotiated 3G quality of service returned in the Activate PDP Context Accept/Modify message.</p> <p>Set command returns the negotiated 3G QoS profile for the specified context identifiers, <cid>s. The QoS profile consists of a number of parameters, each of which may have a separate value.</p> <p>Parameters: <cid> - PDP context identification (see +CGDCONT command).</p> <p>It returns the current settings for each specified context in the format (see +CGEQREQ):</p> <p>[+CGEQREQ: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic handling><CR><LF>] [+CGEQREQ:...]</p>
<p>AT+CGEQNEG=?</p>	<p>Test command returns a list of <cid>s associated with active contexts.</p>
<p>Reference</p>	<p>3GPP TS 27.007</p>



5.1.4.6.12. PDP Context - +CGACT

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



5.1.4.6.13. Show PDP Address - +CGPADDR

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



5.1.4.6.14. Modify PDP context - +CGCMOD

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



5.1.4.6.15. Commands for Battery Charger

5.1.4.6.15.1. Battery Charge - +CBC

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



5.1.5. 3GPP TS 27.005 AT Commands for SMS and CBS

5.1.5.1. General Configuration

5.1.5.1.1. Select Message Service - +CSMS

+CSMS - Select Message Service	SELINT 2
AT+CSMS= <service>	Set command selects messaging service <service>. It returns the types of messages supported by the ME: 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 Set command returns the types of messages supported by the ME: +CSMS: <mt>,<mo>,<bm> 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
AT+CSMS?	Read command reports current service setting along with supported message types in the format: +CSMS: <service>,<mt>,<mo>,<bm> 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)
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



5.1.5.1.2. 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 (you have 5 out of 10 SMS SIM positions occupied)</p>



+CPMS - Preferred Message Storage		SELINT 2
	<p>AT+CPMS="ME" +CPMS: "ME",15,100,"ME",15,100,"ME",15,100</p> <p>OK (change memory to ME where there are 15 SMS positions occupied)</p>	
Reference	3GPP TS 27.005	

5.1.5.1.3. 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	

5.1.5.2. Message Configuration

5.1.5.2.1. 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>	



+CSCA -Service Center Address	SELINT 2
	<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=?	<p>Test command returns the OK result code.</p>
Reference	3GPP TS 27.005



5.1.5.2.2. 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



+CSMP - Set Text Mode Parameters	SELINT 2
	<p>quoted hexadecimal representation (string type) of 7 octets, as follows:</p> <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: <ul style="list-style-type: none"> bit[7]: extension bit <ul style="list-style-type: none"> [0] - there are no more VP Functionality Indicator extension octets to follow bit[6]: Single Shot SM; <ul style="list-style-type: none"> [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 bit[5]bit[4]bit[3]: reserved <ul style="list-style-type: none"> [000] bit[2]bit[1]bit[0]: Validity Period Format <ul style="list-style-type: none"> [000] - No Validity Period specified [001] - Validity Period specified as for the relative format. The following octet contains the VP value as described before; all the other octets are 0's. [010] - Validity Period is relative in integer representation. The following octet contains the VP value in the range 0 to 255, representing 0 to 255 seconds; all the other octets are 0's. [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><pid> - 3GPP TS 23.040 TP-Protocol-Identifier in integer format (default 0). <dcs> - depending on the command or result code: 3GPP TS 23.038 SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme</p> <p>Note: the current settings are stored through +CSAS</p> <p>Note: we're storing through +CSAS the <vp> value too, but only as integer type, i.e. only in its <i>relative format</i></p> <p>Note: <vp>, <pid> and <dcs> default values are loaded from first SIM SMS Parameters profile, if present. If it is not present, then the default values are those above indicated.</p>
AT+CSMP?	<p>Read command reports the current setting in the format:</p> <p>+CSMP: <fo>,<vp>,<pid>,<dcs></p> <p>Note: if the Validity Period Format (<fo>'s bit[4]bit[3]) is [00] (i.e. <i>Not Present</i>), <vp> is represented just as a quoted empty string ("").</p>
AT+CSMP=?	<p>Test command returns the OK result code.</p>
Example	<p>Set the parameters for an outgoing message with 24 hours of validity period and default properties:</p>



+CSMP - Set Text Mode Parameters		SELINT 2
	<p>AT+CSMP=17,167,0,0 OK</p> <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> <p>AT+CSMP=9,"01A80000000000" OK</p> <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> <p>AT+CSMP=9,"023C0000000000" OK</p> <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> <p>AT+CSMP=9,"03925803000000" OK</p>	
Reference	3GPP TS 27.005; 3GPP TS 23.040; 3GPP TS 23.038	

5.1.5.2.3. 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: <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	



5.1.5.2.4. Select Cell Broadcast - +CSCB

+CSCB -Select Cell Broadcast Message Types		SELINT 2
AT+CSCB= [<mode>,<mids> [<dcss>]]	Set command selects which types of Cell Broadcast Messages are to be received by the device. Parameters: <mode> 0 - the message types defined by <mids> and <dcss> are accepted (factory default) 1 - the message types defined by <mids> and <dcss> are rejected <mids> - Message Identifiers, string type: all different possible combinations of the CBM message identifiers; default is empty string (""). <dcss> - Data Coding Schemes, string type: all different possible combinations of CBM data coding schemes; default is empty string (""). Note: the current settings are stored through +CSAS	
AT+CSCB?	Read command reports the current value of parameters <mode>, <mids> and <dcss>.	
AT+CSCB=?	Test command returns the range of values for parameter <mode>.	
Example	AT+CSCB? +CSCB: 1,"", "" OK <i>(all CBMs are accepted, none is rejected)</i> AT+CSCB=0,"0,1,300-315,450","0-3" OK	
Reference	3GPP TS 27.005, 3GPP TS 23.041, 3GPP TS 23.038.	



5.1.5.2.5. Save Settings - +CSAS

+CSAS - Save Settings		SELINT 2
AT+CSAS [=<profile>]	<p>Execution command saves settings which have been made by the +CSCA, +CSMP 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	

5.1.5.2.6. 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	

5.1.5.2.7. 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></p> <ul style="list-style-type: none"> 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) 	
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 returns the range of supported <n></p>	
Reference	<p>3GPP TS 27.005</p>	



5.1.5.3. Message Receiving And Reading

5.1.5.3.1. 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> <ul style="list-style-type: none"> 0 - Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications. 1 - Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved, otherwise forward them directly to the TE. 2 - Buffer unsolicited result codes in the TA in case the DTE is busy and flush them to the TE after reservation. Otherwise forward them directly to the TE. 3 - if <mt> is set to 1 the hardware ring line is enabled for 1 s. when a SMS is received while the module is in GPRS online mode. <p><mt> - result code indication reporting for SMS-DELIVER</p> <ul style="list-style-type: none"> 0 - No SMS-DELIVER indications are routed to the TE and messages are stored in SIM. 1 - If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using the following unsolicited result code: +CMTI: <mems>,<index> where: <mems> - memory storage where the new message is stored (see +CPMS) <index> - location on the memory where SMS is stored. 2 - SMS-DELIVERs (except class 2 messages and messages in the “store” message waiting indication group) are routed directly to the TE using the following unsolicited result code: <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. <length> - PDU length <pdu> - PDU message</p> <p style="text-align: center;">(TEXT Mode)</p> <p>+CMT:<oa>,<alpha>,<scts>[,<toa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data> (the information written in italics will be present depending on +CSDH last setting) where: <oa> - originating address, string type converted in the currently selected</p>



+CNMI - New Message Indications To Terminal Equipment	SELINT 2
	<p><pag> - page number <pags> - total number of pages of the message <data> - CBM Content of Message</p> <ul style="list-style-type: none"> • If <dc> indicates that GSM03.38 default alphabet is used , each character of GSM alphabet will be converted into current TE character set (see +CSCS) • If <dc> indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41) <p><ds> - SMS-STATUS-REPORTs reporting option 0 - status report receiving is not reported to the DTE and is not stored 1 - the status report is sent to the DTE with the following unsolicited result code:</p> <p style="text-align: center;">(PDU Mode)</p> <p>+CDS: <length><CR><LF><PDU> where: <length> - PDU length <PDU> - message PDU</p> <p style="text-align: center;">(TEXT Mode)</p> <p>+CDS: <fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st> where: <fo> - first octet of the message PDU <mr> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format <ra> - recipient address, string type, represented in the currently selected character set (see +CSCS) <tora> - type of number <ra> <scts> - arrival time of the message to the SC <dt> - sending time of the message <st> - message status as coded in the PDU</p> <p>2 - if a status report is stored, then the following unsolicited result code is sent: +CDSI: <memr>,<index></p> <p>where: <memr> - memory storage where the new message is stored "SM" <index> - location on the memory where SMS is stored</p> <p><bfr> - buffered result codes handling method: 0 - TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode>=1..3 is entered (OK response shall be given before flushing the codes) 1 - TA buffer of unsolicited result codes defined within this command is cleared when <mode>=1..3 is entered.</p>



+CNMI - New Message Indications To Terminal Equipment		SELINT 2																											
AT+CNMI?	Read command returns the current parameter settings for +CNMI command in the form: +CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>																												
AT+CNMI=?	Test command reports the supported range of values for the +CNMI command parameters.																												
Reference	3GPP TS 27.005																												
Note	DTR signal is ignored, hence the indication is sent even if the DTE is inactive (DTR signal is Low). In this case the unsolicited result code may be lost so if MODULE remains active while DTE is not, at DTE startup is suggested to check whether new messages have reached the device meanwhile with command AT+CMGL=0 that lists the new messages received.																												
Note	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):																												
	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 33%; vertical-align: middle;"> Message Class or Indication group, as in the DCS <mt> settings in different sessions </td> <td style="width: 33%; vertical-align: middle;"> SM Class is No Class OR SM Class is 0 or 1 or 3 OR SM is an Indication with group "Discard" </td> <td style="width: 33%; vertical-align: middle;"> SM Class is 3 </td> </tr> <tr> <td style="vertical-align: middle;"> <mt>=2 for session "0" AND <mt>=anyvalue for other session(s) </td> <td style="vertical-align: middle;"> URC is shown only on session "0" </td> <td></td> </tr> <tr> <td style="vertical-align: middle;"> <mt>=3 for session "0" AND <mt>=0 or 1 for other session(s) </td> <td></td> <td style="vertical-align: middle;"> URC is shown only on session "0" </td> </tr> </table>		Message Class or Indication group, as in the DCS <mt> settings in different sessions	SM Class is No Class OR SM Class is 0 or 1 or 3 OR SM is an Indication with group "Discard"	SM Class is 3	<mt>=2 for session "0" AND <mt>=anyvalue for other session(s)	URC is shown only on session "0"		<mt>=3 for session "0" AND <mt>=0 or 1 for other session(s)		URC is shown only on session "0"																		
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<mt>=3 for session "0" AND <mt>=0 or 1 for other session(s)		URC is shown only on session "0"																											
Note	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.																												
	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="2"></th> <th colspan="5">SM CLASS</th> </tr> <tr> <th colspan="2"></th> <th>0 / msg waiting discard</th> <th>1 / no class</th> <th>2</th> <th>3</th> <th>msg waiting store</th> </tr> </thead> <tbody> <tr> <th rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);"> <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> <tr> <th>1</th> <td>Store in <mems> - Send ind +CMTI</td> <td>Store in <mems> - Send ind +CMTI</td> <td>Store in SIM - Send ind +CMTI</td> <td>Store in <mems> - Send ind +CMTI</td> <td>Store in <mems> - Send ind +CMTI</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>	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
		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>																							
	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																							



+CNMI - New Message Indications To Terminal Equipment							SELINT 2					
	2	Route msg to TE: +CMT⁸	Route msg to TE: +CMT^l	Store in SIM - Send ind + CMTI	Route msg to TE: +CMT^l	Store in <mems> - Send ind + CMTI						
	3	Store in <mems> - Send ind + CMTI	Store in <mems>- Send ind + CMTI	Store in SIM - Send ind + CMTI	Route msg to TE: +CMT^l	Store in <mems> - Send ind + CMTI						
<p>where <mems> is the memory where the received messages are stored (see +CPMS)</p>												
Note	<p>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):</p> <table border="1"> <thead> <tr> <th colspan="2"><ds> settings in different sessions</th> </tr> </thead> <tbody> <tr> <td> <ds>=1 for session "0" AND <ds>=2 for at least one of the other sessions </td> <td> URC +CDS is shown only on session "0" and no status report is stored on SIM </td> </tr> <tr> <td> <ds>=0 for session "0" AND <ds>=2 for at least one of the other sessions </td> <td> 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
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<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											

⁸ The SM is not stored!



5.1.5.3.2. New message acknowledgement - +CNMA

+CNMA – New Message Acknowledgement	
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 RP-ERROR 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 (SMS-DELIVER-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. <length> : Length of the PDU message.</p>
<i>(Text Mode)</i> AT+CNMA	<p>Only positive acknowledgement to network (RP-ACK) is possible.</p>
<i>(PDU Mode)</i> AT+CNMA=?	<p>Test command returns the possible range of values for the parameter <n></p>
<i>(Text Mode)</i> AT+CNMA=?	<p>Test command returns the OK result code.</p>
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>



+CNMA – New Message Acknowledgement	
	<p>OK</p> <p><i>Message is received from network.</i></p> <p>+CMT: "+821020955219",,"07/07/26,20:09:07+36"</p> <p>TEST MESSAGE</p> <p><i>Send positive acknowledgement to the network.</i></p> <p>AT+CNMA OK</p>
Reference	3GPP TS 27.005

5.1.5.3.3. 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>



+CMGL - List Messages	SELINT 2
	<p>+CMGL: <index>,<stat>,<fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st> [...]</p> <p>where</p> <p><index> - message position in the storage <stat> - message status <fo> - first octet of the message PDU <mr> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format <ra> - recipient address, string type , represented in the currently selected 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

5.1.5.3.4. 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</p>



+CMGR - Read Message	SELINT 2
	<p>d) Quoted hexadecimal representation of 7 octets if <fo> tells that the <i>Validity Period Format is Enhanced</i>.</p> <p><oa> - Originator address, string type represented in the currently selected character set (see +CSCS)</p> <p><da> - Destination address, string type represented in the currently selected character set (see +CSCS)</p> <p><alpha> - string type alphanumeric representation of <da> or <oa>, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS.</p> <p><sca> - Service Centre number</p> <p><toa>, <toda >, <tosca> - type of number <oa>, <da>, <sca> 129 - number in national format 145 - number in international format (contains the "+")</p> <p><length> - text length</p> <p><data> - TP-User_data</p> <ul style="list-style-type: none"> • If <dc> indicates that GSM03.38 default alphabet is used , 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>
AT+CMGR=?	Test command returns the OK result code
Reference	3GPP TS 27.005



5.1.5.4. Message Sending And Writing

5.1.5.4.1. Send Message - +CMGS

+CMGS - Send Message	SELINT 2
<p>(PDU Mode) AT+CMGS= <length></p>	<p>(PDU Mode) Execution command sends to the network a message.</p> <p>Parameter: <length> - length of the PDU to be sent in bytes (excluding the SMSC address octets). 7..164</p> <p>After command line is terminated with <CR>, the device responds sending a four character sequence prompt: <CR><LF><greater_than><space> (IRA 13, 10, 62, 32)</p> <p>and waits for the specified number of bytes.</p> <p>Note: the DCD signal shall be in ON state while PDU is given.</p> <p>Note: the echoing of given characters back from the TA is controlled by echo command E</p> <p>Note: the PDU shall be hexadecimal format (each octet of the PDU is given as two IRA character long hexadecimal number) and given in one line.</p> <p>Note: when the length octet of the SMSC address (given in the PDU) equals zero, the SMSC address set with command +CSCA is used; in this case the SMSC Type-of-Address octet shall not be present in the PDU.</p> <p>To send the message issue Ctrl-Z char (0x1A hex). To exit without sending the message issue ESC char (0x1B hex).</p> <p>If message is successfully sent to the network, then the result is sent in the format: +CMGS: <mr></p> <p>where <mr> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format.</p> <p>Note: if message sending fails for some reason, an error code is reported.</p> <p>Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.</p>



+CMGS - Send Message	SELINT 2
<p>(Text Mode) AT+CMGS=<da> [,<toda>]</p>	<p>(Text Mode) Execution command sends to the network a message.</p> <p>Parameters: <da> - destination address, string type represented in the currently selected character set (see +CSCS). <toda> - type of destination address 129 - number in national format 145 - number in international format (contains the "+")</p> <p>After command line is terminated with <CR>, the device responds sending a four character sequence prompt:</p> <p><CR><LF><greater_than><space> (IRA 13, 10, 62, 32)</p> <p>After this prompt text can be entered; the entered text should be formatted as follows:</p> <ul style="list-style-type: none"> - if current <dcs> (see +CSMP) indicates that GSM03.38 default alphabet is used and current <fo> (see +CSMP) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM alphabet, according to 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>



+CMSS - Send Message From Storage	SELINT 2
Reference	3GPP TS 27.005

5.1.5.4.3. Write Message To Memory - +CMGW

+CMGW - Write Message To Memory	SELINT 2
<p><i>(PDU Mode)</i> AT+CMGW= <length> [,<stat>]</p>	<p>(PDU Mode) Execution command writes in the <memw> memory storage a new message. Parameter: <length> - length in bytes of the PDU to be written. 7..164 <stat> - message status. 0 - new message (received unread message; default for DELIVER messages (3GPP TS 23.040 SMS-DELIVER messages)) 1 - read message 2 - stored message not yet sent (default for SUBMIT messages(3GPP TS 23.040 SMS-SUBMIT messages)) 3 - stored message already sent The device responds to the command with the prompt '>' and waits for the specified number of bytes. To write the message issue Ctrl-Z char (0x1A hex). To exit without writing the message issue ESC char (0x1B hex). If message is successfully written in the memory, then the result is sent in the format: +CMGW: <index> where: <index> - message location index in the memory <memw>. If message storing fails for some reason, an error code is reported. Note: care must be taken to ensure that during the command execution, no other SIM interacting commands are issued. Note: in PDU mode, not only SUBMIT messages can be stored in SIM, 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></p>	<p>(Text Mode) Execution command writes in the <memw> memory storage a new message.</p>



+CMGW - Write Message To Memory	SELINT 2
	<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 <dc>: 1530 chars if 3GPP TS 23.038 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used. 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.

5.1.5.4.4. Delete Message - +CMGD

+CMGD - Delete Message	SELINT 2
<p>AT+CMGD= <index> [,<delflag>]</p>	<p>Execution command deletes from memory <memr> the message(s).</p> <p>Parameter: <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</p>



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

5.1.5.4.5. Select service for MO SMS messages - +CGSMS

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



	<p>disabled; DLINK feature is disabled; VID 0x1BC7 PID 0x0024</p> <p>5 - All the USB ports (Telit Mobile (USBx) are in ACM mode; Selective Suspend is enabled; ECM is enabled; DLINK feature is disabled; VID 0x1BC7 PID 0x0023</p> <p>Note: the modem device doesn't reset automatically; use AT#REBOOT or a complete power cycle.</p> <p>Note: the default value depends on the software version</p> <p>Note: to learn more about DLINK feature, read AT#DLINK description</p> <table border="1"> <thead> <tr> <th>Mode</th> <th>Ports</th> <th>SS</th> <th>ECM</th> <th>DLINK</th> <th>VID</th> <th>PID</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>ACM</td> <td>NO</td> <td>NO</td> <td>NO</td> <td>0x1BC7</td> <td>0x0021</td> </tr> <tr> <td>1</td> <td>ACM Data Only</td> <td>NO</td> <td>NO</td> <td>YES</td> <td>0x1BC7</td> <td>0x0026</td> </tr> <tr> <td>2</td> <td>ACM</td> <td>NO</td> <td>NO</td> <td>YES</td> <td>0x1BC7</td> <td>0x0021</td> </tr> <tr> <td>3</td> <td>ACM</td> <td>NO</td> <td>YES</td> <td>NO</td> <td>0x1BC7</td> <td>0x0023</td> </tr> <tr> <td>4</td> <td>ACM</td> <td>YES</td> <td>NO</td> <td>NO</td> <td>0x1BC7</td> <td>0x0024</td> </tr> <tr> <td>5</td> <td>ACM</td> <td>YES</td> <td>YES</td> <td>NO</td> <td>0x1BC7</td> <td>0x0025</td> </tr> </tbody> </table>	Mode	Ports	SS	ECM	DLINK	VID	PID	0	ACM	NO	NO	NO	0x1BC7	0x0021	1	ACM Data Only	NO	NO	YES	0x1BC7	0x0026	2	ACM	NO	NO	YES	0x1BC7	0x0021	3	ACM	NO	YES	NO	0x1BC7	0x0023	4	ACM	YES	NO	NO	0x1BC7	0x0024	5	ACM	YES	YES	NO	0x1BC7	0x0025
Mode	Ports	SS	ECM	DLINK	VID	PID																																												
0	ACM	NO	NO	NO	0x1BC7	0x0021																																												
1	ACM Data Only	NO	NO	YES	0x1BC7	0x0026																																												
2	ACM	NO	NO	YES	0x1BC7	0x0021																																												
3	ACM	NO	YES	NO	0x1BC7	0x0023																																												
4	ACM	YES	NO	NO	0x1BC7	0x0024																																												
5	ACM	YES	YES	NO	0x1BC7	0x0025																																												
AT#USBCFG?	<p>Read command shows the current <mode> in the following format</p> <p>#USBCFG: <mode></p>																																																	
AT#USBCFG=?	<p>Test command returns the list of supported values.</p>																																																	

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

#PORTCFG – connect physical ports to Service Access Points		SELINT 2
AT#PORTCFG=<Variant>	<p>AT#PORTCFG 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), 3G(Trace).</p> <p><Variant> parameter range: 0 ÷ 12; factory setting: 1. Please, refer to “HE Family Ports Arrangements User Guide” document for a detailed explanation of all port configurations</p>	



5.1.6.1.4. Data Link - #DLINK

#DLINK - Data Link	SELINT 2
<p>AT#DLINK=<act>,<urc_mode></p>	<p>Set command establishes or terminates data link channel between the Telit Mobile (USB5) and the first logic cmux channel DLCI_1.</p> <p>Parameters:</p> <p><act> - Data Link Action 0 - Terminate Data Link Channel 1 - Establish Data Link Channel</p> <p><urc_mode> - URC mode 0 - Disable URC message about Data Link status 1 - Enable URC message about Data Link status</p> <p>If <urc_mode>=1 , Data link status reported as followings #DLINK: <status></p> <p><status> 0 : Data Link disconnected 1 : Data Link connected</p> <p>Note: this command required #PORTCFG=12 and #USBCFG=1 or #USBCFG=2; both the settings should be configured before to issue #DLINK.</p> <p>Note: #DLINK connects the port where it has been issued with Telit Mobile (USB5). By now this command can be issued only on DLCI_1 (first cmux logical data channel), so the cmux must be up & running.</p> <p>Note: Once DLCI_1 is connected with DLINK-USB successfully, DLCI_1 couldn't accept AT commands any more. "+++" escape sequence character on DLCI_1 or Telit Mobile (USB5) will terminate the data link channel; sending AT#DLINK=0 on any other port will produce the same result.</p> <p>Note: until the data link channel is not established the Telit Mobile (USB5) port is internally disconnected, it cannot process any kind of data (e.g. AT commands).</p> <p>Note: a typical configuration is DLCI_1 connected to AT parser or Telit Mobile</p>



	(USB5) DLCI_2 connected to AT parser Telit Mobile (USB3) connected to AT parser Telit Mobile (USB4) connected to AT parser
AT#DLINK?	Read command reports <status> and <urc_mode> parameter values in the following format: #DLINK: <status>,<urc_mode>
AT#DLINK=?	Test command returns the list of supported values.

5.1.6.1.5. 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.	

5.1.6.1.6. 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.	

5.1.6.1.7. 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.	

5.1.6.1.8. Revision Identification - #CGMR

#CGMR - Revision Identification		SELINT 2
AT#CGMR	Execution command returns device software revision number with command echo.	



5.1.6.1.11. 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.	

5.1.6.1.12. 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.	

5.1.6.1.13. Service Provider Name - #SPN

#SPN - Service Provider Name		SELINT 2
AT#SPN	Execution command returns the service provider string contained in the SIM field SPN , in the format: #SPN: <spn> where: <spn> - service provider string contained in the SIM field SPN , represented in the currently selected character set (see +CSCS). Note: if the SIM field SPN is empty, the command returns just the OK result code.	
AT#SPN=?	Test command returns the OK result code.	

5.1.6.1.14. Extended Numeric Error report - #CEER

#CEER – Extended numeric error report		SELINT 2
AT#CEER	Execution command causes the TA to return a numeric code in the format #CEER: <code> which should offer the user of the TA a report of the reason for <ul style="list-style-type: none"> • the failure in the last unsuccessful call setup (originating or answering); • the last call release; • the last unsuccessful GPRS attach or unsuccessful PDP context activation; • the last GPRS detach or PDP context deactivation. Note: if none of the previous conditions has occurred since power up then 0 is reported (i.e. No error , see below) <code> values as follows	



#CEER – Extended numeric error report		SELINT 2
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	
96	Invalid mandatory information	
97	Message type non-existent or not implemented	



#CEERNET – Ext error report for Network reject cause		SELINT 2
		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 PDP CONTEXT
AT#CEERNET=?	Test command returns OK result code.	
Reference	3GPP 24.008	

5.1.6.1.16. 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 0 - the SIM is blocked. 1..3 - if the device is waiting either SIM PIN or SIM PIN2 to be given. 1..10 - if the device is waiting either SIM PUK or SIM PUK2 to be given.</p>	
AT#PCT=?	Test command returns the OK result code.	

5.1.6.1.17. Manage PIN2- #CPIN2

#CPIN2 – Manage PIN2		SELINT 2
AT#CPIN2=<pin> [,<newpin>]	This command sends a password to the MT which is required to access FDN phonebook and other features that require verification of SIM PIN2.	



5.1.6.1.18. 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: AT#SHDN performs a network detach and the switch off sometimes could take time, depending on network condition. During this period, any previous activity is terminated and the device will not respond to any further AT command, except the AT commands that return some information local to the device (like FW version, date and time, network status).</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.	

5.1.6.1.19. Fast shutdown configuration - #FASTSHDN

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



AT#FASTSHDN?	Read command reports the currently selected configuration in the format: AT#FASTSHDN: <Enable>,<Gpio>,0,0,0,0
AT\$GPSGPIO=?	Test command returns the supported range of values for all the parameters.
Example	//enable fast shutdown on GPIO 5 AT#FASTSHDN=1,5 OK AT#FASTSHDN? \$GPSGPIO: 1,5,0,0,0,0 OK //force immediate fast shutdown AT#FASTSHDN OK

5.1.6.1.20. **Extended Reset - #Z**

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

5.1.6.1.21. **Periodic Reset - #ENHRST**

#ENHRST – Periodic Reset		SELINT 2
AT#ENHRST=<mod>,<delay>	Set command enables/disables the unit reset after <delay> minutes. Parameters: <mod> 0 – disables the unit reset (factory default) 1 – enables the unit reset only for one time 2 – enables the periodic unit reset <delay> - time interval after that the unit reboots; numeric value in minutes Note: the settings are saved automatically in NVM only if old or new mod is 2. Any change from 0 to 1 or from 1 to 0 is not stored in NVM	



#ENHRST – Periodic ReseT	SELINT 2
	Note: the particular case AT#ENHRST=1,0 causes the immediate module reboot. In this case if AT#ENHRST=1,0 follows an AT command that stores some parameters in NVM, it is recommended to insert a delay of at least 5 seconds before to issue AT#ENHRST=1,0, to permit the complete NVM storing.
AT#ENHRST?	Read command reports the current parameter settings for # EHRST command in the format: # EHRST: < mod >[,<delay>,<remainTime>] <remainTime> - time remaining before next reset
AT#ENHRST=?	Test command reports supported range of values for parameters <mod> and <delay>.
Examples	AT#ENHRST=1,60 Module reboots after 60 minutes ... AT#ENHRST=1,0 Module reboots now ... AT#ENHRST=2,60 Module reboots after 60 minutes and indefinitely after every following power on ...

5.1.6.1.22. Wake From Alarm Mode - #WAKE

#WAKE - Wake From Alarm Mode	SELINT 2
AT#WAKE=[<opmode>]	<p>Execution command stops any eventually present alarm activity and, if the module is in alarm mode, it exits the alarm mode and enters the normal operating mode.</p> <p>Parameter: <opmode> - operating mode 0 - normal operating mode; the module exits the alarm mode, enters the normal operating mode, any alarm activity is stopped (e.g. alarm tone playing) and an OK result code is returned.</p> <p>Note: the alarm mode is indicated by status ON of hardware pin CTS and by status ON of pin DSR; the power saving status is indicated by a CTS - OFF and DSR - OFF status; the normal operating status is indicated by DSR - ON.</p> <p>Note: during the alarm mode the device will not make any network scan and will</p>



#WAKE - Wake From Alarm Mode	SELINT 2
	<p>not register to any network and therefore is not able to dial or receive any call or SM, the only commands that can be issued to the MODULE in this state are the #WAKE and #SHDN, every other command must not be issued during this state.</p> <p>Note: if #WAKE=0 command is issued after an alarm has been set with +CALA command, but before the alarm has expired, it will answer OK but have no effect.</p>
AT#WAKE?	<p>Read command returns the operating status of the device in the format:</p> <p>#WAKE: <status></p> <p>where: <status> 0 - normal operating mode 1 - alarm mode or normal operating mode with some alarm activity.</p>
AT#WAKE=?	Test command returns OK result code.

5.1.6.1.23. 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><i>Setting of the following optional parameters has meaning only if <mod>=0</i></p> <p><urcmode> - URC presentation mode.</p>



	<p>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>
<p>AT#TEMPMON?</p>	<p>Read command reports the current parameter settings for #TEMPMON command in the format:</p>



	#TEMPMON: <urcmode>,<action>[,<hyst_time>[,<GPIO>]]										
AT#TEMPMON=?	Test command reports the supported range of values for parameters <mod>, <urcmode>, <action>, <hyst_time> and <GPIO>										
Note	The following table is describing the temperature levels. <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
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										

5.1.6.1.24. Temperature monitor configuration - #TEMPCFG

#TEMPCFG – Temperature monitor configuration		SELINT 2
AT#TEMPCFG= <TempExLowBound> [,<TempOpLowBound> [,<TempOpUpBound> [,<TempExUpBound>]]]	<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>

5.1.6.1.25. 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>	



#GPIO - General Purpose Input/Output Pin Control	SELINT 2																																																							
	<p>Note: "ALT1" value is valid only for the following pins and with the specified function</p> <table border="1"> <thead> <tr> <th></th> <th>UE910</th> <th>HE910</th> <th>UL865</th> <th>UE866</th> </tr> </thead> <tbody> <tr> <td>GPIO_01</td> <td>Stat Led</td> <td>Stat Led</td> <td>DVI_WA0</td> <td>DVI_WA0</td> </tr> <tr> <td>GPIO_02</td> <td></td> <td></td> <td>DVI_RX</td> <td>DVI_RX</td> </tr> <tr> <td>GPIO_03</td> <td></td> <td></td> <td>DVI_TX</td> <td>DVI_TX</td> </tr> <tr> <td>GPIO_04</td> <td></td> <td></td> <td>DVI_CLK</td> <td>DVI_CLK</td> </tr> <tr> <td>GPIO_05</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>GPIO_06</td> <td>-</td> <td>-</td> <td>SPI_SRDY</td> <td>-</td> </tr> <tr> <td>GPIO_07</td> <td>DAC</td> <td>DAC</td> <td>SPI_MRDY</td> <td>Stat Led</td> </tr> <tr> <td>GPIO_08</td> <td>-</td> <td>-</td> <td>Stat Led</td> <td></td> </tr> <tr> <td>GPIO_09</td> <td>-</td> <td>-</td> <td></td> <td></td> </tr> <tr> <td>GPIO_10</td> <td>-</td> <td>-</td> <td></td> <td></td> </tr> </tbody> </table> <p>“ALT2” value is valid for all GPIOs: alternate function is “Alarm Pin” “ALT3” value is valid for all GPIOs as “TempMon Pin” “ALT4” value is valid for all GPIOs as “AD_Det Pin” “ALT5” value is valid for all GPIOs as “AD_rep Pin”</p> <p>Note: while using the pins in the alternate function, the GPIO read/write access to that pin is not accessible and shall be avoided.</p> <p>Note: GPIO7 is also configured as DAC pin (ALT1 function) with the command #DAC Note: Alarm Pin can be also configured through #ALARMPIN command Note: AD_Det and AD_Rep pin can be also configured through #GSMAD command Note: for UL865 using Portcfg number 2,4,5,6 will block usage of GPIO_06 and GPIO_07 from this command, since they are reserved for the SPI port.</p>		UE910	HE910	UL865	UE866	GPIO_01	Stat Led	Stat Led	DVI_WA0	DVI_WA0	GPIO_02			DVI_RX	DVI_RX	GPIO_03			DVI_TX	DVI_TX	GPIO_04			DVI_CLK	DVI_CLK	GPIO_05	-	-	-	-	GPIO_06	-	-	SPI_SRDY	-	GPIO_07	DAC	DAC	SPI_MRDY	Stat Led	GPIO_08	-	-	Stat Led		GPIO_09	-	-			GPIO_10	-	-		
	UE910	HE910	UL865	UE866																																																				
GPIO_01	Stat Led	Stat Led	DVI_WA0	DVI_WA0																																																				
GPIO_02			DVI_RX	DVI_RX																																																				
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GPIO_04			DVI_CLK	DVI_CLK																																																				
GPIO_05	-	-	-	-																																																				
GPIO_06	-	-	SPI_SRDY	-																																																				
GPIO_07	DAC	DAC	SPI_MRDY	Stat Led																																																				
GPIO_08	-	-	Stat Led																																																					
GPIO_09	-	-																																																						
GPIO_10	-	-																																																						
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>																																																							



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

5.1.6.1.26. SIMIN pin configuration - #SIMINCFG

#SIMINCFG – SIMIN pin configuration		SELINT 2
AT#SIMINCFG= <GPIO_pin>, <Simin_det_mode>	This command allows to configure a General Purpose I/O pin as SIM DETECT input and to set Simin pin status for SIM detection Parameters: <GPIO_pin> - GPIO pin number: 0 – no GPIO pin is selected (default value) X – GPIO_x as specified in Test Command <Simin_det_mode> - status of Simin pin for sim detection: 0 – Simin pin to ground means SIM inserted, to Vcc means SIM removed, for normal sim holder 1 – Simin pin to ground means SIM removed, to Vcc means SIM inserted, for micro sim holder Note:for each product only a few GPIOs can be configured as SIMIN. Note: first parameter makes sense only for UL865 and UE866 families.	
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>	

5.1.6.1.27. Alarm Pin - #ALARMPIN

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



5.1.6.1.28. STAT_LED GPIO Setting - #SLED

#SLED - STAT_LED GPIO Setting	SELINT 2
<p>AT#SLED=<mode> [,<on_duration> [,<off_duration>]]</p>	<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 • registered in idle with powersaving : blinking time depends on network condition in order to minimize power consumption 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 • registered in idle with powersaving : blinking time depends on network condition in order to minimize power consumption <p><on_duration> - duration of period in which STAT_LED GPIO is tied High while <mode>=3 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 1..100 - in tenth of seconds (default is 10)</p> <p>Note: values are saved in NVM by command #SLEDSAV</p> <p>Note: at module boot the STAT_LED GPIO is always tied High and holds this value until the first NVM reading.</p> <p>Note: to have STAT_LED operative, the first time enter AT#GPIO=1,0,2 setting the GPIO1 as alternate function.</p>
<p>AT#SLED?</p>	<p>Read command returns the STAT_LED GPIO current setting, in the format:</p> <p>#SLED: <mode>,<on_duration>,<off_duration></p>
<p>AT#SLED=?</p>	<p>Test command returns the range of available values for parameters <mode>, <on_duration> and <off_duration>.</p>



5.1.6.1.29. 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.	

5.1.6.1.30. SMS Ring Indicator - #E2SMSRI

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

5.1.6.1.31. Event Ring Indicator - #E2RI

#E2RI - Event Ring Indicator		SELINT 2
AT#E2RI=<event_mask>,<duration> on>	<p>Set command enables/disables the Ring Indicator pin response to one or more events. If an event has been enabled, a negative going pulse is generated when event happens. The duration of this pulse is determined by the value of <duration>.</p> <p>Parameters: <event_mask> : 0 – disables all events hexadecimal number representing the list of events: 1 – Power Saving Mode 2 – Socket Listen (same as AT#E2SLRI=<duration>) 4 – OTA firmware upgrade (same as AT#OTASETRI=<duration>) 8 – MT SMS has been received (same as AT#E2SMSRI=<duration>)</p>	



	<p>10 – +CREG will change status 20 – +CGREG will change status 40 – #QSS become 2 (SIM INSERTED and PIN UNLOCKED) 80 – MO SMS has been delivered 100 – Jamming Detection & Reporting (JDR)</p> <p>The hexadecimal number is actually a bit mask, where each bit, when set/not set, indicates that the corresponding event has been enabled/disabled.</p> <p><duration> : 50..1150 - the duration in ms of the pulse generated</p> <p>Note: The values set by the command are stored in the profile extended section and they don't depend on the specific AT instance.</p> <p>Note: Enabling JDR event when the Enhanced Jamming Detection & Reporting feature has been previously enabled (see #JDR and #JDRENH2)</p>
AT#E2RI?	<p>Read command reports a line for each event and the duration in ms of the pulse generated, in the format:</p> <p>#E2RI: <event_mask>,<duration></p>
AT#E2RI=?	<p>Test command returns supported values of parameters <event_mask> and <duration></p>



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

5.1.6.1.33. V24 Output Pins Configuration - #V24CFG

#V24CFG - V24 Output Pins Configuration		SELINT 2
AT#V24CFG=<pin>, <mode>[,<save>]	<p>Set command sets the AT commands serial port interface output pins mode.</p> <p>Parameters:</p> <p><pin> - AT commands serial port interface hardware pin: 0 – DCD (Data Carrier Detect) 1 – CTS (Clear To Send) 2 – RI (Ring Indicator) 3 – DSR (Data Set Ready) 4 – DTR (Data Terminal Ready). This is not an output pin, so its state cannot be set through the AT#V24 command. 5 – RTS (Request To Send). This is not an output pin, so its state cannot be set through the AT#V24 command.</p> <p><mode> - AT commands serial port interface hardware pins mode: 0 – AT commands serial port mode: the V24 pins are controlled by the serial port device driver (default) 1 – GPIO mode: the V24 output pins can be managed through the AT#V24</p>	



#V24CFG - V24 Output Pins Configuration	SELINT 2
	<p>command</p> <p><save> - Save V24 pin configuration: 0 – Pin configuration is not saved 1 – Pin configuration is saved</p> <p>Note: when <mode>=1, the V24 pins, both output and input, can be set to control an external GNSS receiver through the AT\$GPSGPIO command.</p> <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> <p>#V24CFG: <pin1>,<mode1>[<CR><LF><CR><LF> #V24CFG: <pin2>,<mode2>[...]]</p> <p>Where: <pinn> - 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>

5.1.6.1.34. V24 Output Pins Control - #V24

#V24 - V24 Output Pins Control	SELINT 2
<p>AT#V24=<pin> [,<state>]</p>	<p>Set command sets the AT commands serial port interface output pins state.</p> <p>Parameters:</p> <p><pin> - AT commands serial port interface hardware pin: 0 - DCD (Data Carrier Detect) 1 - CTS (Clear To Send) 2 - RI (Ring Indicator) 3 - DSR (Data Set Ready) 4 - DTR (Data Terminal Ready). This is not an output pin: 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>



#V24 - V24 Output Pins Control		SELINT 2
	Note: if <state> is omitted the command returns the actual state of the pin <pin>.	
AT#V24?	Read command returns actual state for all the pins (either output and input) in the format: #V24: <pin1>,<state1>[<CR><LF> #V24: <pin2>,<state2>[...]] where <pin> - AT command serial port interface HW pin <state> - AT commands serial port interface hardware pin state	
AT#V24=?	Test command reports supported range of values for parameters <pin> and <state>.	

5.1.6.1.35. 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.	

5.1.6.1.36. GPRS Auto-Attach Property - #AUTOATT

#AUTOATT - Auto-Attach Property		SELINT 2
AT#AUTOATT= [<auto>]	Set command enables/disables the TE GPRS auto-attach property. Parameter: <auto> 0 - disables GPRS auto-attach property 1 - enables GPRS auto-attach property (factory default): after the command	



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

5.1.6.1.37. Multislot Class Control - #MSCLASS

#MSCLASS - Multislot Class Control		SELINT 2
AT#MSCLASS= [<class>[, <autoattach>]]	<p>Set command sets the multislot class</p> <p>Parameters: <class> - multislot class; take care: class 7 is not supported. (1-12),(30-33),(35-38) - GPRS (EGPRS) class</p> <p>Factory default: HE910-NAx --> class 10 by default UE910-Nax --> class 10 by default HE910-GA --> class 10 by default HE910-G --> class 10 by default HE910-D --> class 10 by default HE910-DG --> class 10 by default HE910_EUx --> class 33 by default UE910_EUx --> class 33 by default UL865_EUx -> class 33 by default</p> <p>UE910_EU --> class 12 by default, range (1-12) UL865_EU --> class 12 by default, range (1-12) UE866_EU --> class 12 by default, range (1-12)</p> <p>HE910-GL --> class 10 by default UL865-NAx --> class 10 by default UL865-BR --> class 33 by default</p> <p><autoattach> 0 - the new multislot class is enabled only at the next detach/attach or after a reboot. 1 - the new multislot class is enabled immediately, automatically forcing a detach / attach procedure.</p> <p>Note: DTM multislot class is automatically chosen with maximum allowed value for every GPRS (EGPRS) subset</p>	
AT#MSCLASS?	Read command reports the current value of the multislot class in the format:	



#MSCLASS - Multislot Class Control	SELINT 2
#MSCLASS: <class>	
AT#MSCLASS=?	Test command reports the range of available values for both parameters <class> and <autoattach>.

5.1.6.1.38. Cell Monitor - #MONI

#MONI - Cell Monitor	SELINT 2
AT#MONI[= [<number>]]	<p>#MONI is both a set and an execution command.</p> <p>Set command sets one cell out of seven, in the neighbour list of the serving cell including it, from which extract GSM /UMTS-related information.</p> <p>Parameter:</p> <p><number> (GSM network)</p> <p>0..6 - it is the ordinal number of the cell, in the neighbour list of the serving cell (default 0, serving cell).</p> <p>7 - it is a special request to obtain GSM-related information from the whole set of seven cells in the neighbour list of the serving cell.</p> <p>(UMTS network)</p> <p>0 – it is the serving cell in idle; Active set cells are also reported in CELL_DCH state, i.e. during a call (default)</p> <p>1 – it is the candidate set (cells that belong to the Active set, only reported in CELL_DCH state, i.e. during a call)</p> <p>2 – it is the synchronized neighbour set (cells that belong to the Virtual Active set, only reported in CELL_DCH state, i.e. during a call)</p> <p>3 – it is the asynchronized neighbour set (cells which are not suitable cells to camp on)</p> <p>4 – it is the ranked neighbour set (cells which are suitable cells to camp on)</p> <p>7 - it is a special request to obtain information from the whole set of detected cells in the neighbour list of the serving cell.</p> <p>5..6 – it is not available</p> <p>Execution command (AT#MONI<CR>) reports GSM/UMTS-related information for selected cell and dedicated channel (if exists).</p> <p>1. If the last setting done by #MONI is in the range [0..6], the output format is as follows:</p> <p>a) When extracting data for the serving cell and the network name is known the format is:</p> <p>(GSM network) #MONI: <netname> BSIC:<bsic> RxQual:<qual> LAC:<lac> Id:<id></p>



#MONIZIP - Compressed Cell Monitor	SELINT 2
<p>AT#MONIZIP=[<number>]]</p>	<p>#MONIZIP is both a set and an execution command.</p> <p>Set command sets one cell out of seven, in a the neighbour list of the serving cell including it, from which extract GSM/UMTS-related information.</p> <p>Parameter:</p> <p><number></p> <p>(GSM network)</p> <ul style="list-style-type: none"> 0..6 - it is the ordinal number of the cell, in a the neighbour list of the serving cell (default 0, serving cell). 7 - it is a special request to obtain GSM-related information from the whole set of seven cells in the neighbour list of the serving cell. <p>(UMTS network)</p> <ul style="list-style-type: none"> 0 - it is the serving cell in idle; Active set cells are also reported in CELL_DCH state, i.e. during a call (default) 1 - it is the candidate set (cells that belong to the Active set, only reported in CELL_DCH state, i.e. during a call) 2 - it is the synchronized neighbour set (cells that belong to the Virtual Active set, only reported in CELL_DCH state, i.e. during a call) 3 - it is the asynchronized neighbour set (cells which are not suitable cells to camp on) 4 - it is the ranked neighbour set (cells which are suitable cells to camp on) 7 - it is a special request to obtain information from the whole set of detected cells in the neighbour list of the serving cell. <p>5..6 - it is not available</p> <p>Execution command (AT#MONIZIP<CR>) reports GSM/UMTS-related information for selected cell and dedicated channel (if exists).</p> <p>1. If the last setting done by #MONIZIP is in the range [0..6], the output format is as follows:</p> <ul style="list-style-type: none"> d) When extracting data for the serving cell the format is: <p>(GSM network)</p>



#SERVINFO - Serving Cell Information	SELINT 2
	<p>1 - CS Only 2 - PS Only 3 - CS & PS <RSCP> - Received Signal Code Power in dBm</p> <p>During a call, a SMS sending/receiving or a location update the value of <GPRS>, <PB-ARFCN>, <NOM>, <RAC> and <PAT> parameters don't make sense.</p>
AT#SERVINFO=?	Test command tests for command existence.

5.1.6.1.41. Lock to single BCCH_ARFCN - #BCCHLOCK

#BCCHLOCK - Lock to single BCCH ARFCN	SELINT 2
AT#BCCHLOCK=<LockedBcch>[,<LockedUarfcn>[,<LockedPsc>]]	<p>This command allows to set the single BCCH ARFCN the device must be locked to, selectable within those allowed for the specific product.</p> <p>Parameters:</p> <p><LockedBcch>: 1024 - disables 2G BCCH locking (factory default); 0-124, 975-1023 - enables 2G BCCH locking on GSM 900MHz; 512-885 - enables 2G BCCH locking on DCS 1800MHz; 128-251 - enables 2G BCCH locking on GSM 850MHz; 512-810 - enables 2G BCCH locking on PCS 1900MHz.</p> <p><LockedUarfcn>: 0 - disables 3G BCCH locking (factory default); 412-10838 - enables 3G BCCH locking on downlink UARFCN in UMTS supported bands (some values in range 412-10838 are not supported according to product band configuration).</p> <p><LockedPsc>: 65535 - disables 3G BCCH locking Primary Scrambling Code selection (factory default); 0-511 - enables 3G BCCH locking Primary Scrambling Code selection on downlink UARFCN.</p> <p>Note: the values set by command are directly stored in NVM and don't depend on the specific</p>



	<p>CMUX instance.</p> <p>Note: it is not possible to lock to a 2G BCCH and a 3G BCCH at the same time.</p> <p>Note: 3G BCCH Primary Scrambling Code selection is active only if locked to a 3G BCCH.</p> <p>Note: if selected locked 2G/3G BCCH is not available, the module will be out of GSM/GPRS/UMTS network service even for emergency calls and will not select an alternative BCCH.</p> <p>Note: if selected locked BCCH is available but the module is not allowed to register to the corresponding PLMN, the module will be able to perform only emergency calls and will not select an alternative BCCH.</p> <p>Note: if selected locked 2G/3G BCCH is available, the module, in idle and in GPRS/UMTS data transfer, will not perform reselection to another cell/ARFCN.</p> <p>Note: if selected locked 2G BCCH is available, the module, in GSM data transfer (voice call, data call, sms), will not perform handover to another cell.</p> <p>Note: if selected locked 3G BCCH is available, the module, in UMTS connection, will not perform handover to another cell/ARFCN.</p> <p>Note: AT#BCCHLOCK setting implies a RAT selection, that is why it is not recommended to use this command together with AT+WS46.</p> <p>Note: AT#BCCHLOCK setting has higher priority than PLMN selection, that is why it is not recommended to use this command together with manual PLMN selection AT+COPS=1,... .</p> <p>Note: in case of a device with current setting AT#AUTOBND=0 there might be conflicts between AT#BND, and AT#BCCHLOCK stored values. It is user responsibility to set proper values avoiding conflicts (no cross check is available between the commands).</p> <p>Note: 3G only products support <LockedBcch> parameter value 1024 only.</p>
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#RFSTS – Read current network status	SELINT 2
	<p>20 - WAIT FOR ADDITIONAL OUTGOING MM CONNECTION 21 - CONNECTION ACTIVE GROUP TRANSMIT 22 - WAIT RR CONNECTION GROUP TRANSMIT 23 - LOCATION UPDATING PENDING 24 - IMSI DETACH PENDING 25 - RR CONNECTION RELEASE NOT ALLOWED 255 - UNKNOWN <RR> - Radio Resource state (for debug purpose only) 2 - CELL SELECTION 3 - WAIT CELL SELECTION 4 - DEACTIVATION CELL SELECTION 5 - SELECT ANY CELL 6 - WAIT SELECT ANY CELL 7 - DEACTIVATION SELECT ANY CELL 8 - WAIT INACTIVE 9 - INACTIVE 10 WAIT IDLE 11 - IDLE 12 - PLMN SEARCH 13 - CELL RESELECTION 14 - WAIT CELL RESELECTION 15 - DEACTIVATION PLMN SEARCH 16 - CELL CHANGE 17 - CS CELL CHANGE 18 - WAIT CELL CHANGE 19 - SINGLE BLOCK ASSIGNMENT 20 - DOWNLINK TBF ESTABLISH 21 - UPLINK TBF ESTABLISH 22 - WAIT TBF 23 - TRANSFER 24 - WAIT SYNC 25 - DTM ENHANCED CALL ESTABLISH 26 - DTM 27 - DTM ENHANCED MO CALL ESTABLISH 28 - MO CONNECTION ESTABLISH 29 - MT CONNECTION ESTABLISH 30 - RR CONNECTION 31 - DTM ESTABLISH 32 - DTM RELEASE 33 - CALL REESTABLISH 34 - DEACTIVATION CALL REESTABLISH 35 - NORMAL CHANNEL RELEASE 36 - LOCAL CHANNEL RELEASE 37 - DEACTIVATION 38 - ENHANCED DTM CS CALL ESTABLISH 39 - CELL RESELECTION TO UTRAN</p>



#RFSTS – Read current network status	SELINT 2
	<p>40 - DTM ENHANCED CS CALL ESTABLISH 41 - INTER RAT ACTIVE ON HOLD</p> <p>42 - INTER RAT RESEL ABORT 43 - INTER RAT WAIT INTER RAT 44 - INTER RAT WAIT FOR RSRC 45 - DSIM SUSPEND 46 - DSIM WAIT SUSPEND 47 - DSIM WAIT SUSPEND IDLE</p> <p><NOM> - Network Operator Mode <CID> - Cell ID <IMSI> - International Mobile Subscriber Identity <NetNameAsc> - Operator name <SD> - Service Domain 0 - No Service 1 - CS only 2 - PS only 3 - CS+PS</p> <p><ABND> - Active Band 1 - GSM 850 2 - GSM 900 3 - DCS 1800 4 - PCS 1900</p> <p>(WCDMA network) #RFSTS: [<PLMN>],<UARFCN>,<PSC>,<Ec/Io>,<RSCP>, RSSI,[<LAC>], [<RAC>],<TXPWR>,<DRX>,<MM>,<RRC>,<NOM>,[<BLER>],<CID>,<IMSI>, <NetNameAsc>,<SD>,<nAST>[,<nUARFCN><nPSC>,<nEc/Io>]</p> <p>Where: <PLMN> - Country code and operator code(MCC, MNC) <UARFCN> - UMTS Assigned Radio Channel <PSC> - Active PSC(Primary Synchronization Code) <Ec/Io> - Active Ec/Io(chip energy per total wideband power in dBm) <RSCP> - Active RSCP (Received Signal Code Power in dBm) <RSSI> - Received Signal Strength Indication <LAC> - Localization Area Code <RAC> - Routing Area Code <TXPWR> - Tx Power <DRX> - Discontinuous reception cycle Length (cycle length in ms) <MM> - Mobility Management state (for debug purpose only) 0 - NULL</p>



5.1.6.1.43. Query SIM Status - #QSS

#QSS – Query SIM Status	SELINT 2
<p>AT#QSS= [<mode>]</p>	<p>Set command enables/disables the Query SIM Status unsolicited indication in the ME.</p> <p>Parameter: <mode> - type of notification 0 - disabled (factory default): it is 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>#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>#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>AT#QSS?</p>	<p>Read command reports whether the unsolicited indication #QSS is currently enabled or not, along with the SIM status, in the format:</p> <p>#QSS: <mode>,<status></p> <p>(<mode> and <status> are described above)</p>
<p>AT#QSS=?</p>	<p>Test command returns the supported range of values for parameter <mode>.</p>

5.1.6.1.44. Delete all phonebook entries - #CPBD

#CPBD – Delete All Phonebook Entries	SELINT 2
AT#CPBD	Execution command deletes all phonebook entries in the current phonebook



#CPBD – Delete All Phonebook Entries	SELINT 2
	memory storage selected with +CPBS.
AT#CPBD=?	Test command tests for command existence

5.1.6.1.45. **ATD Dialing Mode - #DIALMODE**

#DIALMODE - Dialing Mode	SELINT 2
AT#DIALMODE= [<mode>]	<p>Set command sets dialing modality.</p> <p>Parameter: <mode></p> <ul style="list-style-type: none"> 0 - (voice call only) OK result code is received as soon as it starts remotely ringing (factory default) 1 – (voice call only) OK result code is received only after the called party answers. Any character typed aborts the call and OK result code is received. 2 - (voice call and data call) the following custom result codes are received, monitoring step by step the call status: <ul style="list-style-type: none"> 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</p> <p>Note: In case a BUSY tone is received and at the same time ATX0 is enabled ATD will return NO CARRIER instead of DISCONNECTED.</p> <p>Note: The setting is saved in NVM and available on following reboot.</p>
AT#DIALMODE?	<p>Read command returns current ATD dialling mode in the format:</p> <p>#DIALMODE: <mode></p>
AT#DIALMODE=?	Test command returns the range of values for parameter <mode>



5.1.6.1.46. Automatic call - #ACAL

#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 call to the first number (position 0) stored in the internal phonebook.</p> <p>Note: type of call depends on the last issue of command +FCLASS.</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.	



5.1.6.1.48. 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.</p> <p>Parameter: <onoff> 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:</p> <p>#ECAM: <ccid>,<ccstatus>,<calltype>,,,[<number>,<type>]</p> <p>where <ccid> - call ID <ccstatus> - call status 0 - idle 1 - calling (MO) 2 - connecting (MO) 3 - active 4 - hold 5 - waiting (MT) 6 - alerting (MT) 7 - busy <calltype> - call type 1 - voice 2 - data <number> - called number (valid only for <ccstatus>=1) <type> - type of <number> 129 - national number 145 - international number</p> <p>Note: the unsolicited indication is sent along with usual codes (OK, NO CARRIER, BUSY...).</p>	
AT#ECAM?	<p>Read command reports whether the extended call monitoring function is currently enabled or not, in the format:</p> <p>#ECAM: <onoff></p>	
AT#ECAM=?	<p>Test command returns the list of supported values for <onoff></p>	



5.1.6.1.49. SMS Overflow - #SMOV

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

5.1.6.1.50. 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: <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</p>	

#MBN - Mailbox Numbers	SELINT 2
	"OTHER" - other Note: if all queried locations are empty (but available), no information text lines will be returned.
AT#MBN=?	Test command returns the OK result code.

5.1.6.1.51. Message Waiting Indication - #MWI

#MWI - Message Waiting Indication	SELINT 2
AT#MWI=<enable>	<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> <indicator> 1 - either Line 1 (CPHS context) or Voice (3GPP context) 2 - Line 2 (CPHS context only) 3 - Fax 4 - E-mail 5 - Other <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></p>



#SCI – Show Call Information	SELINT 2
	<p><indexn> - the type of the entry (1: incoming call; 2: outgoing call) <number> - string type phone number <text> - the alphanumeric text associated to the number; used character set should be the one selected with command +CSCS <callTime> - call time yy/MM/dd,hh:mm:ss±zz, where yy - year MM - month dd - day hh - hour mm - minute ss - seconds ±zz - time zone <callDuration> - call duration in the format: "hh:mm:ss", where hh - hour mm - minute ss - seconds <status> - only for incoming calls, call status (0: answered: 1: not answered)</p>
AT#SCI=?	Test command returns the OK result code.

5.1.6.1.58. 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).</p> <p>Parameter: <mode> 0 - disable PSNT unsolicited result code (factory default) 1 - enable PSNT unsolicited result code 2 - PSNT unsolicited result code enabled; read command reports HSUPA and HSDPA related info</p>
AT#PSNT?	<p>Read command reports the <mode>,<nt> and HSUPA and HSDPA related info in the format:</p> <p>(<mode> = 2) #PSNT: <mode>,<nt>,<is_hsupa_available>,<is_hsupa_used>,<is_hsdpa_available>,<is_hsdpa_used></p> <p>(<mode> = 0 or <mode> = 1) #PSNT: <mode>,<nt></p> <p>where <mode></p>



#PSNT – Packet Service Network Type	SELINT 2
	<p>0 - PSNT unsolicited result code disabled 1 - PSNT unsolicited result code enabled 2 - PSNT unsolicited result code enabled; read command reports HSUPA and HSDPA related info</p> <p><nt> - network type</p> <p>0 - GPRS network 1 - EGPRS network 2 - WCDMA network 3 - HSDPA network 4 - unknown or not registered.</p> <p><is_hsupa_available> - HSUPA available</p> <p>0 – HSUPA is not supported by network 1 – HSUPA is supported by network</p> <p><is_hsupa_used> - HSUPA used</p> <p>0 – HSUPA is not in use 1 – HSUPA is in use</p> <p><is_hsdpa_available> - HSDPA available</p> <p>0 – HSDPA is not supported by network 1 – HSDPA is supported by network</p> <p><is_hsdpa_used> - HSPA used</p> <p>0 – HSDPA is not in use 1 – HSDPA is in use</p> <p>Note: when the reported type of network <nt> is 2, the <nt> indication could be not complete in idle, because it depends on some not always broadcasted network parameters (HSDPA could be supported anyway); it is valid during traffic.</p>
AT#PSNT=?	Test command reports the range for the parameter <mode>

5.1.6.1.59. SIM Presence status - #SIMPR

#SIMPR – SIM Presence status	SELINT 2
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#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:</p> <p><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:</p> <p>#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>

5.1.6.1.60. 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>



#CFF – Call Forwarding Flags	SELINT 2
	<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>

5.1.6.1.61. GSM and UMTS Audio Codec - #CODEC

#CODEC – GSM and UMTS Audio Codec	SELINT 2
AT#CODEC=[<codec>]	<p>Set command sets the GSM and UMTS audio codec mode.</p> <p>Parameter: <codec> 0 - all the codec modes are enabled (factory default) 1..255 - sum of integers each representing a specific codec mode:</p> <ul style="list-style-type: none"> 1 - FR, full rate mode enabled 2 - EFR, enhanced full rate mode enabled 4 - HR, half rate mode enabled 8 - AMR-FR, AMR full rate mode enabled 16 - AMR-HR, AMR half rate mode enabled 32 - FAWB, full rate AMR wide band



#CCLK - Clock Management		SELINT 2
	(01..29) (01..30) (01..31) Trying to enter an out of range value will raise an error 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.	
AT#CCLK?	Read command returns the current setting of the real-time clock, in the format <time>. 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"	
AT#CCLK=?	Test command returns the OK result code.	
Example	AT#CCLK="02/09/07,22:30:00+04,1" OK AT#CCLK? #CCLK: "02/09/07,22:30:25+04,1" OK	

5.1.6.1.64. Clock Mode - #CCLKMODE

#CCLKMODE - Clock Mode		SELINT 2
AT#CCLKMODE=<mode>	Set command enables the local time or the UTC time in AT+CCLK and AT#CCLK commands and in #NITZ URC Parameter: <mode> - time and date mode 0 - Local time + local time zone offset (default) 1 - UTC time + local time zone offset Note: the setting is saved automatically in NVM.	
AT#CCLKMODE?	Read command reports whether the local time or the UTC time is enabled, in the format: #CCLKMODE: <mode> (<mode> described above)	
AT#CCLKMODE=?	Test command reports the supported range of values for parameter <mode>	
Example:	at#cclkmode? #CCLKMODE: 0	



#CCLKMODE – Clock Mode	SELINT 2
	<pre> 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>

5.1.6.1.65. Calculate and update date and time - #NTP

#NTP – calculate and update date and time	SELINT 2
<p>AT#NTP= <NTPAddr>, <NTPPort>, <update_module_clock>, <timeout>[,<TimeZone>]</p>	<p>This command permits to calculate and update date and time through NTP protocol(RFC2030), sending a request to a NTP server.</p> <p>Parameters:</p> <p><NTPAddr> - address of the NTP server, string type. This parameter can be either:</p> <ul style="list-style-type: none"> - any valid IP address in the format: "xxx.xxx.xxx.xxx"



	<p>- any host name to be solved with a DNS query</p> <p><NTPPort> - NTP server port to contact 1..65535</p> <p><update_module_clock> 0 - no update module clock 1 - update module clock</p> <p><timeout> - waiting timeout for server response in seconds 1..10</p> <p><TimeZone> - Time Zone (indicates the difference, expressed in quarter of an hour, between the local time and GMT), range is -47..+48; default is 0.</p> <p>Note: the Time Zone is applied directly in the Date and Time received by the NTP Server, that is, by definition, GMT+0</p>
AT#NTP=?	Test command reports the supported range of values for parameters <NTPaddr>,<NTPPort>,<update_module_clock>,<timeout> and <TimeZone>
Example	<pre>at#ntp="ntp1.inrim.it",123,1,2,4 #NTP: 12/01/27,14:42:38+04 OK ... at+cclk? +CCLK: "12/01/27,14:42:39+04" OK</pre>

5.1.6.1.66. 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) 1 - enable ENS functionality; if AT#ENS=1 has been issued, the following values will be automatically set:</p> <ul style="list-style-type: none"> <input type="checkbox"/> at every next power-up <ul style="list-style-type: none"> a Band GSM 850 and PCS enabled (AT#BND=3) b SIM Application Toolkit enabled on user interface 0 if not previously enabled on a different user interface (AT#STIA=2)



	<p><input type="checkbox"/> just at first next power-up</p> <p>a Automatic Band Selection enabled (AT#AUTOBND=2) only if the previous setting was equal to AT#AUTOBND=0</p> <p>Note: the new setting will be available just at first next power-up.</p> <p>Note: If 'Four Band' Automatic Band Selection has been activated (AT#AUTOBND=2), at power-up the value returned by AT#BND? could be different from 3 when ENS functionality is enabled.</p>
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=?	Test command reports the available range of values for parameter <mode> .
Reference	Cingular Wireless LLC Requirement

5.1.6.1.67. Select Band - #BND

#BND - Select Band	SELINT 2
<p>AT#BND= [<band> [, <UMTS band>]]</p>	<p>Set command selects the current GSM and UMTS bands.</p> <p>Parameter <band>:</p> <ul style="list-style-type: none"> 0 - GSM 900MHz + DCS 1800MHz (default value) 1 - GSM 900MHz + PCS 1900MHz; this value is not available if the ENS functionality has been activated (see #ENS) 2 - GSM 850MHz + DCS 1800MHz (available only on quadri-band modules); this value is not available if the ENS functionality has been activated (see #ENS) 3 - GSM 850MHz + PCS 1900MHz (available only on quadri-band modules) <p><UMTS band>:</p> <ul style="list-style-type: none"> 0 - 1900 / 2100MHz(FDD I) 1 - 1900MHz(FDD II) (default value depending on product) 2 - 850MHz(FDD V) 3 - 2100MHz(FDD I) + 1900MHz(FDD II) + 850MHz(FDD V) 4 - 1900MHz(FDD II) + 850MHz(FDD V) 5 - 900MHz(FDD VIII) (default value, depending on the product) 6 - 2100MHz(FDD I) + 900MHz(FDD VIII) 7 - 1700/ 2100MHz(FDD IV, AWS)



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



5.1.6.1.71. Skip Escape Sequence - #SKIPESC

#SKIPESC - Skip Escape Sequence	SELINT 2
AT#SKIPESC= [<mode>]	Set command enables/disables skipping the escape sequence +++ while transmitting during a data connection. 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 .
AT#SKIPESC?	Read command reports whether escape sequence skipping is currently enabled or not, in the format: #SKIPESC: <mode>
AT#SKIPESC=?	Test command reports supported range of values for parameter <mode> .



5.1.6.1.72. Subscriber number - #SNUM

#SNUM – Subscriber Number	SELINT 2
<p>AT#SNUM= <index>[,<number>[,<alpha>]]</p>	<p>Set command writes the MSISDN information related to the subscriber (own number) in the EFmsisdn SIM file.</p> <p>Parameter: <index> - record number The number of record in the EFmsisdn depends on the SIM. If only <index> value is given, then delete the EFmsisdn record in location <index> is deleted.</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>
<p>AT#SNUM=?</p>	<p>Test command returns the OK result code</p>

5.1.6.1.73. SIM detection mode - #SIMDET

#SIMDET - SIM Detection Mode	SELINT 2
<p>AT#SIMDET= <mode></p>	<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’(default for UL865 and UE866 families) 2 - automatic SIM detection through SIMIN Pin (default for HE910 and UE910 families)</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).</p>



#SIMDET - SIM Detection Mode	SELINT 2
	NOTE: with #SIMDET=1, although SIMIN pin is ignored, SIM removal is detected
AT#SIMDET?	Read command returns the currently selected Sim Detection Mode in the format: #SIMDET: <mode>,<simin> where: <mode> - SIM Detection mode, as before <simin> - SIMIN pin real status 0 - SIM not inserted 1 - SIM inserted
AT#SIMDET=?	Test command reports the supported range of values for parameter <mode>

5.1.6.1.74. GSM Context Definition - #GSMCONT

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



5.1.6.1.75. Show Address - #CGPADDR

#CGPADDR - Show Address	SELINT 2
<p>AT#CGPADDR= [<cid>,<cid> [...]]</p>	<p>Execution command returns either the IP address for the GSM context (if specified) and/or a list of PDP addresses for the specified PDP context identifiers</p> <p>Parameters: <cid> - context identifier 0 - specifies the GSM context (see +GSMCONT). 1..5 - numeric parameter which specifies a particular PDP context definition (see +CGDCONT command).</p> <p>Note: if no <cid> is specified, the 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></p> <ol style="list-style-type: none"> if <cid> is the (only) GSM context identifier (<cid>=0) it is the dynamic address assigned during the GSM context activation. if <cid> is a PDP context identifier (<cid> in (1..5)) it is a string that identifies the terminal in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the +CGDCONT command when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to by <cid>. <p>Note: if no address is available the empty string (“”) is represented as <address>.</p>
<p>AT#CGPADDR=?</p>	<p>Test command returns a list of defined <cid>s.</p>
<p>Example</p>	<pre>AT#SGACT=0,1 #SGACT: xxx.yyy.zzz.www OK AT#CGPADDR=0</pre>



	#CGPADDR: 0,"xxx.yyy.zzz.www" OK AT#CGPADDR=? #CGPADDR: (0) OK
--	--

5.1.6.1.76. 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 >: 0 - Aborting the call setup by reception of a character is generally possible at any time before the DCE enters connected state (default) 1 - Aborting the call setup is disabled until the DCE enters connected state	
AT#CESTHLCK?	Read command returns the current setting of <closure_type> parameter in the format: #CESTHLCK: <closure_type>	
AT#CESTHLCK=?	Test command returns the supported range of values for the <closure_type> parameter	

5.1.6.1.77. Write to I2C - #I2CWR

#I2CWR – Write to I2C		SELINT 2
AT#I2CWR= <sdaPin>, <sclPin>, <deviceId>, <registerId>, <len>	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.) <sclPin>: GPIO number to be used for SCL. Valid range is “any output pin” (see Test Command). <deviceId>: address of the I2C device, with the LSB, used for read/write command. It doesn’t matter if the LSB is set to 0 or to 1. 10 bit addressing supported. Value has to be written in hexadecimal form (without 0x). <registerId>: Register to write data to , range 0..255. Value has to be written in hexadecimal form (without 0x).	



#I2CWR – Write to I2C	SELINT 2
	<p><len>: number of data to send. Valid range is 1-254.</p> <p>The module responds to the command with the prompt '>' and awaits for the data to send. To complete the operation send Ctrl-Z char (0x1A hex); to exit without writing the message send ESC char (0x1B hex).</p> <p>Data shall be written in Hexadecimal Form.</p> <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 data bytes have to be written in hexadecimal form without 0x.</p>
AT#I2CWR=?	Test command reports the supported list of currently available <service>s.
Example	<p>AT#I2CWR=2,3,20,10,14 > 00112233445566778899AABBCCDD<ctrl-z> OK</p> <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>

5.1.6.1.78. Read to I2C - #I2CRD

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

#I2CRD – Read to I2C	SELINT 2
	<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



5.1.6.1.80. Control Command Flow - #CFLO

#CFLO – Command 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: <enable> - 0 – disable flow control in command mode <default value> 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>	

5.1.6.1.81. 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	<p>at#cmglconclindex #CMGLCONCINDEX: 3,0,2,3 #CMGLCONCINDEX: 5,4,5,6,0,8</p> <p>OK</p>	



5.1.6.1.82. Codec Information - #CODECINFO

#CODECINFO – Codec Information	SELINT 2
<p>AT#CODECINFO[=<format>[, <mode>]]</p>	<p>This command is both a set and an execution command.</p> <p>Set command enables/disables codec information reports depending on the parameter <mode>, in the specified <format>.</p> <p>Parameters:</p> <p><format> 0 – numeric format (default) 1 – textual format</p> <p><mode> 0 - disable codec information unsolicited report (default) 1 - enable codec information unsolicited report only if the codec changes 2 - enable short codec information unsolicited report only if the codec changes</p> <p>If <mode>=1 the unsolicited channel mode information is reported in the following format:</p> <p style="padding-left: 40px;">(if <format>=0) #CODECINFO: <codec_used>,<codec_set></p> <p style="padding-left: 40px;">(if <format>=1) #CODECINFO: <codec_used>,<codec_set1> [,<codec_set2>[.],[codec_setn]]]</p> <p>If <mode>=2 the unsolicited codec information is reported in the following format:</p> <p style="padding-left: 40px;">#CODECINFO: <codec_used></p> <p>The reported values are described below.</p> <p>Execution command reports codec information in the specified <format>.</p> <p style="padding-left: 40px;">(if <format>=0) #CODECINFO: <codec_used>,<codec_set></p> <p style="padding-left: 40px;">(if <format>=1) #CODECINFO: <codec_used>,<codec_set1> [,<codec_set2>[.],[codec_setn]]]</p> <p>The reported values are:</p> <p style="padding-left: 40px;">(if <format>=0)</p>



#CODECINFO – Codec Information	SELINT 2
	<p><codec_used> - one of the following channel modes:</p> <ul style="list-style-type: none"> 0 – no TCH 1 - full rate speech 1 on TCH 2 - full rate speech 2 on TCH 4 - half rate speech 1 on TCH 8 - full rate speech 3 – AMR on TCH 16 - half rate speech 3 – AMR on TCH 128 – full data 9.6 129 – full data 4.8 130 – full data 2.4 131 – half data 4.8 132 – half data 2.4 133 – full data 14.4 134 – full rate AMR wide band 135 – UMTS AMR version 2 136 – UMTS AMR wide band <p><codec_set></p> <ul style="list-style-type: none"> 1..255 - sum of integers each representing a specific codec mode: <ul style="list-style-type: none"> 1 - FR, full rate mode enabled 2 - EFR, enhanced full rate mode enabled 4 - HR, half rate mode enabled 8 - FAMR, AMR full rate mode enabled 16 - HAMR, AMR half rate mode enabled 32 – FR-AMR-WB, full rate AMR wide band 64 – UMTS-AMR-V2, UMTS AMR version 2 128 – UMTS-AMR-WB, UMTS AMR wide band <p>(if <format>=1)</p> <p><codec_used> - one of the following channel modes:</p> <ul style="list-style-type: none"> None – no TCH FR - full rate speech 1 on TCH EFR - full rate speech 2 on TCH HR - half rate speech 1 on TCH FAMR - full rate speech 3 – AMR on TCH HAMR - half rate speech 3 – AMR on TCH FD96 - full data 9.6 FD48 - full data 4.8 FD24 - full data 2.4 HD48 - half data 4.8 HD24 - half data 2.4 FD144 - full data 14.4 FAWB - full rate AMR wide band UAMR2 – UMTS AMR version 2 UAWB – UMTS AMR wide band



#CODECINFO – Codec Information	SELINT 2
	<p><codec_setn> FR - full rate mode enabled EFR - enhanced full rate mode enabled HR - half rate mode enabled FAMR - AMR full rate mode enabled HAMR - AMR half rate mode enabled FAWB - full rate AMR wide band UAMR2 - UMTS AMR version 2 UAWB - UMTS AMR wide band</p> <p>Note: The command refers to codec information in speech call and to channel mode in data call.</p> <p>Note: if AT#CODEC is 0, the reported codec set for <format>=0 is 255 (all codec).</p>
AT#CODECINFO?	<p>Read command reports <format> and <mode> parameter values in the format:</p> <p>#CODECINFO: <format>,<mode></p>
AT#CODECINFO=?	<p>Test command returns the range of supported <format> and <mode>.</p>

5.1.6.1.83. 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?	<p>Read command reports the currently selected <lan> in the format:</p> <p>#LANG: <lan></p>
AT#LANG=?	<p>Test command reports the supported range of values for parameter <lan></p>



5.1.6.1.84. Enable RX Diversity and set DARP - #RXDIV

#RXDIV – enable RX Diversity and set DARP	SELINT 2
AT#RXDIV=<DIV_enable>[,<DARP_mode>]	<p>This command enables/disables the RX Diversity and sets the DARP.</p> <p>Parameters:</p> <p><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 1 – DARP phase 1 2 – DARP phase 2 traffic only 3 – DARP always on (default value)</p> <p>Note: the values set by command are directly stored in NVM and don't depend on the specific CMUX instance. They are available at next power on.</p> <p>Note: if <DIV_enable> is set to 0, then <DARP_mode> is automatically set to 1 regardless the set value</p>
AT#RXDIV?	<p>Read command reports the currently selected <DIV_enable> and <DARP_mode> parameters in the format:</p> <p>#RXDIV: <DIV_enable>,<DARP_mode></p>
AT#RXDIV=?	<p>Test command reports the supported range of values for parameters <DIV_enable> and <DARP_mode></p>

5.1.6.1.85. Swap 3G-RX from main to diversity - #RXTOGGLE

#RXTOGGLE– swap 3G-RX from main to diversity	SELINT 2
AT#RXTOGGLE=<TOGGLE_enable>	<p>Set command moves the 3G-RX receiver from the main antenna to the diversity antenna</p> <p>Parameters:</p> <p><TOGGLE_enable> 0 – set the RX to the main antenna 1 – set the RX to the diversity antenna</p> <p>Note: the command is available only for HE910 products that support the</p>



	diversity
AT#RXTOGGLE?	Read command reports the currently selected <TOGGLE_enable> in the format: #RXTOGGLE: <TOGGLE_enable>
AT#RXTOGGLE=?	Test command reports the supported range of values
Example:	<p>AT+COPS=2 <i>module deregistered from GSM network</i></p> <p>OK</p> <p>AT#RXDIV=0 <i>disable the RX Diversity</i></p> <p>OK</p> <p>AT#REBOOT <i>reboot the module</i></p> <p>OK</p> <p>AT+WS46=22 <i>select 3G cellular network</i></p> <p>OK</p> <p>AT#RXTOGGLE=1 <i>set the RX to the diversity antenna</i></p> <p>OK</p> <p>AT+COPS = 0 <i>register to the GSM network</i></p> <p>OK</p> <p>AT+CREG =1 <i>enable network registration unsolicited result code</i></p> <p>OK</p> <p>AT+CREG? <i>read <mode> and <stat> parameters</i></p> <p>+CREG: 1,1</p> <p>OK</p>

5.1.6.1.86. Set Encryption algorithm - #ENCALG

#ENCALG – Set Encryption Algorithm

SELINT 2

AT#ENCALG=[<encGSM>],[<encGPRS>]

This command enables or disables the GSM and/or GPRS encryption algorithms supported by the module.



	<p>format: < encGSM > and < encGPRS >.</p>
<p>Example</p>	<p>AT#ENCALG? #ENCALG: 5,2,1,1</p> <p>OK</p> <p>AT#ENCALG=5,1 OK</p> <p><i>sets the GSM encryption algorithm A5/1 and A5/3, and the GPRS encryption algorithm GEAI. It will be available at the next reboot.</i></p> <p>AT#ENCALG? #ENCALG: 5,2,1,1</p> <p><i>The last two values indicate that the last used GSM encryption algorithm is A5/1 and the last used GPRS encryption algorithm is GEAI</i></p> <p><i>After reboot</i></p> <p>AT#ENCALG? #ENCALG: 5,1,1,1</p>



5.1.6.1.87. Escape Sequence Guard Time - #E2ESC

#E2ESC - Escape Sequence Guard Time		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=?	<p>Test command returns the range of supported values for parameter <gt;.</p>	
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>	



	#GSMAD: <mod>,<urcmode>,<interval>,<detGPIO>,<repGPIO>
AT#GSMAD=?	Test command reports the supported range of values for parameters <mod>,<urcmode>,<interval>,<detGPIO> and <repGPIO>.

5.1.6.1.91. Change and insert file system password - #FILEPWD

#FILEPWD – Change and insert file system password	SELINT 2
AT#FILEPWD=<Mode>,<Pwd>[,<NewPwd>]	<p>This command changes and inserts file system password. File system password is always enabled (see notes for factory default empty string “”).</p> <p>If current password is different from the empty string “” and password is not inserted then AT commands that make use of the file system will not work (see notes for insertion and AT response).</p> <p>Parameters:</p> <p><Mode>:</p> <ul style="list-style-type: none"> 1 – insert file system password; 2 – change file system password. <p><Pwd>:</p> <p>current password when inserting password, old password when changing password, string type (factory default is the empty string “”).</p> <p><NewPwd>:</p> <p>new password when changing password, string type (only allowed if <Mode> parameter is 2).</p> <p>Note: maximum password length is 12 characters. Note: password is saved in NVM. Note: password value doesn’t depend on the specific CMUX instance.</p> <p>Note: in default configuration current password is equal to the empty string “” and password will be always considered inserted.</p> <p>Note: if current password is different from the empty string “”, password will be always not inserted at power on. Note: if current password is different from the empty string “”, after successful password insertion (<Mode> 1) password will remain inserted until power off. Note: after successful password change (<Mode> 2) password will be not inserted.</p> <p>Note: if current password is different from the empty string “” and password is not inserted then AT commands that make use of the file system (SCRIPT, M2M, MMS) will have either ERROR or +CME ERROR: 16 or</p>



TX slots (Note, edge not supported)

- “*TQ* *<training_sequence>*” → sets the training sequence; *<training_sequence>* has the range: 0 ÷ 7
- “*PL* *<power_lev>*” → sets the Power Control Level for lower and upper bands; *power_lev* has the range: 0 ÷ 19 (refers to 3GPP TS 05.05, table GSM 400, GSM 900, GSM 850 Power Control Level)
- “*PL2* *<power_lev0>* *<power_lev1>*” → sets the Power Control Level for both TX slots; *power_lev0* is related to the first slot and *power_lev1* to the second one; *power_lev0* and *power_lev1* has the range: 0 ÷ 19 (refers to 3GPP TS 0505, table GSM 400, GSM 900, GSM 850 Power Control Level)
- “*RL*” → Read Rx power level
- “*RXTOGGLE* *<antenna>*” → Selects the receiving antenna path depending on *<antenna>* value: *<antenna>* = 0 for the primary antenna, *<antenna>* = 1 for the secondary (diversity) antenna.
- “*ESC*” → exits the current non-stop sequence. It must be used to stop TCH/TCH2 transmission
- “*SetPCSBand* *<band>*” → sets the PCS band;

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

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

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

3G Commands:

- “*INIT3G*” → initialize Radio for 3G transmission
- “*TX3G*” → starts the 3G module transmission if Radio is initialized (Default UARFCN UL is 9612 and power is -19.5 dBm)
- “*PL3G* *<power>*” → change the 3G transmission power
Power has the range -736 to 384 in sixteenths of dBm
- “*CH3G* *<uarfcn_ul>*” → change the 3G uarfcn ul on which to transmit or to receive. If TX3G is called previously CH3G sets a UARFCN for transmission, otherwise it will accept a channel for reception.

UMTS_UARFCN UL	Band
9612 ÷ 9888	1



#WCDMADOM – WCDMA domain selection		SELINT 2
AT#WCDMADOM=<dom>	<p>This command selects the WCDMA domain.</p> <p>Parameter: <dom>: 0 – R4 1 – R5 (HSDPA) 2 – R6 (HSUPA) 3 – R7 (HSUPA & HSDPA) (default value)</p> <p>NOTE: The parameter <dom> is saved in NVM.</p>	
AT#WCDMADOM?	<p>Read command reports the currently selected <dom> parameter in the format: #WCDMADOM: <dom></p>	
AT#WCDMADOM=?	<p>Test command reports the supported range of values for parameters <dom>.</p>	



5.1.6.1.95. Secure configuration - #SECCFG

#SECCFG – Secure configuration	SELINT 2
AT#SECCFG=<uea2>,<uia2>	<p>This command enables/disables the UEA2 and UIA2 algorithms (R7).</p> <p>Parameter:</p> <p><uea2>: 0 – disable UEA2 algorithm 1 – enable UEA2 algorithm</p> <p><uia2>: 0 – disable UIA2 algorithm 1 – enable UIA2 algorithm</p> <p>NOTE: The parameters are saved in NVM.</p>
AT#SECCFG?	<p>Read command reports the currently selected < uea2> parameters in the format:</p> <p>#SECCFG: < uea2>,<uia2></p>
AT#SECCFG=?	Test command reports the supported range of values for parameters.

5.1.6.1.96. 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 low.</p> <p>Parameters:</p> <p>< GPIO_restore>: 0 - GPIOs and serial ports pins are left unchanged (default) 1 - GPIO and serial pins are set in input with pull down</p> <p><DTR_wakeup_en>: 0 - DTR has no effect on module turned off by SYSHALT (default) 1 - DTR transition from high to low turns on again the module turned off by SYSHALT command</p> <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>



	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 .
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.

5.1.6.1.97. Fast system turn-off - #FASTSYSHALT

#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>:</p> <ul style="list-style-type: none"> 0 – The fastsyshalt execution via GPIO is disabled (default) 1 – The fastsyshalt execution via GPIO is enabled <p>This parameter is stored in NVM.</p> <p><Gpio>:</p> <p>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>:</p> <ul style="list-style-type: none"> 0 – GPIOs and serial ports pins are left unchanged (default) 1 – GPIOs and serial pins are set in input with pull down <p><DTR_wakeup_en>:</p> <ul style="list-style-type: none"> 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 <p><Reboot_en>:</p> <ul style="list-style-type: none"> 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 1 – Module exits from FASTSYSHALT performing a total reboot (default) <p>The format AT#FASTSYSHALT forces the module to execute the fastsyshalt immediately.</p>



#CIPHIND – Cipherring Indication	SELINT 2
	<p>operator setting data in the SIM/USIM. If this feature is not disabled by the SIM/USIM, then whenever a connection is in place, which is unenciphered, or changes from cipherring to unenciphered or vice versa, an unsolicited indication shall be given to the user.</p> <p>Parameter: <mode> 0 - disable #CIPHIND unsolicited result code (factory default) 1 - enable #CIPHIND unsolicited result code</p> <p>#CIPHIND: <mode></p>
<p>AT#CIPHIND?</p>	<p>Read command reports the <mode>,<cipher> and <SIM/USIM flag>:</p> <p>#CIPHIND: <mode>,<cipher>,<SIM/USIM flag></p> <p>where <mode></p> <p>0 - #CIPHIND unsolicited result code disabled 1 - #CIPHIND unsolicited result code enabled</p> <p><cipher> - cipher status</p> <p>0 – cipher off 1 – cipher on 2 - unknown (missing network information)</p> <p>< SIM/USIM flag > - SIM/USIM cipher status indication enabling</p> <p>0 – disabled 1 – enabled 2 - unknown (flag not read yet)</p>
<p>AT#CIPHIND =?</p>	<p>Test command reports the range for the parameter <mode></p>

5.1.6.1.99. CMUX Mode Set - #CMUXMODE

#CMUXMODE – CMUX Mode Set	SELINT 2
<p>AT#CMUXMODE</p>	<p>Set command specifies the CMUX mode</p>



#CMUXMODE – CMUX Mode Set	SELINT 2
<p>=<mode>[,<buffer_size>]</p>	<p>Parameter: <mode>: 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 and CFUN=1 5 – Ignore DTR feature is enabled, the DCE doesn't care the physical DTR line transitions (default) 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 behaviour of the particular channel depends on its own configuration, e.g. AT&D[<n>]</p> <p><buffer_size>: If not set explicitly, the module preserves the previous value 0 – Disable the buffer_size limitation (default) 28 – 16384 Resize the internal cmux output buffer to the selected value. When a cmux session will be started using AT+CMUX, this value might be increased; if it is less than (N1 * 4), it becomes exactly N1 * 4. The current value can be gotten using the read command.</p> <p>The cmux out buffer contains the frames ready to be sent for every DLCI. If the modules receives an MSC indicating a RTS state to lock the data flow, these frames (already in the buffer) will be sent. The default size of these buffer is about 32k.</p> <p>Note: a software or hardware reset restores the default value.</p> <p>Note: during a cmux session the set command will fail, only the read and test command can be used</p> <p>Note: reducing the buffer_size will change the behaviour of cmux. Several test have been performed using N1=122 at 115200bps => buffer_size = 488:</p> <ul style="list-style-type: none"> - the bandwidth is decreased by 15% - the bandwidth is not equally distributed, the first channel has the max priority, then the second and the third <p>Note: if the module is downloading a lot of data and the application processor lock the flow moving the logical RTS (with MSC), the module can send more than buffer_size data</p>
<p>AT#CMUXMODE?</p>	<p>Read command reports the currently selected <mode> in the format: #CMUXMODE: <mode>,<buffer_size></p>



#CMUXMODE – CMUX Mode Set	SELINT 2
AT#CMUXMODE=?	<p>Test command reports the supported range of values for parameter <mode> and <buffer_size></p> <p>Response: #CMUXMODE: (1,5,13),(0,28-16384)</p>

5.1.6.1.100. Fast Dormancy - #FDOR

#FDOR- Fast dormancy	SELINT 2
<p>AT#FDOR=<mode>[,<FDDelayTimer>[,<SCRITimer>]]</p>	<p>This command triggers fast dormancy; if all conditions are passed successful SCRI will be send towards the network. SCRI will be sent as a one shot or for every delay timer expiry, depending on the mode specified.</p> <p>Parameters:</p> <p><mode>:</p> <ul style="list-style-type: none"> 1 - indicate application driven (1 shot) Fast Dormancy to modem 2 - switch ON autonomous Fast Dormancy (AFD) 3 - switch OFF autonomous Fast Dormancy (AFD) - default value <p><FDDelayTimer>:</p> <p>1..60 - integer value in seconds</p> <p><SCRITimer>:</p> <p>0..120 - integer value in seconds</p> <p>Note: the setting of <mode> is not saved in NVM. The setting of timers is saved in NVM.</p> <p>Note: the reject cause from lower layers is reported by the unsolicited indication:</p> <p>#FDOR: <cause></p> <p>where</p> <p><cause></p> <ul style="list-style-type: none"> 0 - Reject is default cause. 1 - Reject because T323 timer is running 2 - Reject because Protocol Stack is in wrong states. 3 - Reject when No PS signalling connection



	<p>exists.</p> <p>4 - Reject when CS signalling connection exists.</p> <p>5 - Reject when Protocol Stack component (RRC) procedures are running.</p> <p>6 - Reject when Network deactivated FD, by not sending timer T323 in SIB1.</p> <p>7 - Reject when from lower layers FD STOP Request is received.</p> <p>8 - Reject when Protocol Stack component (PDCP) rejects the FD mode.</p> <p>9 - FD Reject when Protocol Stack component (RLC) buffers are not EMPTY.</p> <p>10 - Reject due to peer message received when FD procedure is running.</p> <p>11 - Reject when there is no PAS RAB is established and if we receive FD_START_REQ.</p> <p>12 - Reject due to cell_pch/ura_pch states when v316 is reached max limit.</p> <p>13 - Reject due to ongoing/pending Emergency call.</p> <p>14 - Reject due to ongoing Call re-establishment.</p> <p>15 - Reject due to Establishment of Full rate TCH Channel.</p> <p>16 - Reject due to Establishment of Half rate TCH Channel.</p> <p>17 - Reject due to Establishment of Half rate TCH Channel for Data Transfer.</p> <p>18 - Reject due to Location update.</p> <p>19 - Reject due to MT Paging.</p> <p>20 - Reject due to other causes, such as Ongoing SS transactions, etc.</p> <p>21 - Reject due to an ongoing CS procedure while the cell does not support DTM.</p> <p>22 - Reject due to Originating Conversational call.</p> <p>23 - Reject due to Originating Streaming call.</p> <p>24 - Reject due to Originating Interactive call.</p> <p>25 - Reject due to Originating Background call.</p> <p>26 - Reject due to Originating Subscribed Traffic call.</p> <p>27 - Reject due to Terminating Conversational call.</p> <p>28 - Reject due to Terminating Streaming call.</p> <p>29 - Reject due to Terminating Interactive call.</p>
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	<p>Note: the value <EnableProt> set by command is stored in the profile extended section and do not depend on the specific AT parser instance. It can be saved in NVM using AT&W and AT&P commands.</p> <p>Note: the value <EnableInst> set by command is stored in the profile extended section and depend on the specific AT parser instance. It can be saved in NVM using AT&W and AT&P commands.</p> <p>If enabled at protocol level and on current AT parser instance the following unsolicited indication of registration messages will be available:</p> <p>#REGIND: <regType>,<regInfo>[,<regData>]</p> <p>where:</p> <p><regType> 0 – Attach 1 – Location Updating 2 – Routing Area Update</p> <p><regInfo> 0 – Request 1 – Accept 2 – Reject 3 – Timer expiry 4 – Abnormal case</p> <p><regData> Optional and present for the following messages only:</p> <ul style="list-style-type: none"> • Xxx Reject - reject cause number received in Xxx Reject message • Attach Request - attach type number sent in Attach Request message • Attach Accept - attach result number received in Attach Accept message • Routing Area Update Request - update type number sent in Routing Area Update Request message • Routing Area Update Accept - update result number received in Routing Area Update Accept message <p>Note: unsolicited indication of registration messages is linked to message type exchanged with the Network and must not be used for registration status instead of AT+CREG, AT+CGREG, AT+CGATT.</p> <p>Note: timing of unsolicited indication of registration messages must not be compared to +CREG, +CGREG.</p>
<p>AT#REGIND?</p>	<p>Read command reports the currently stored parameters <EnableProt> and <EnableInst> in the format:</p> <p>#REGIND: <EnableProt>,<EnableInst></p>



AT#REGIND=?	Test command reports the supported range of values for parameters <EnableProt> and <EnableInst> .
Example	<pre>AT#REGIND=1,1 OK AT+W0&P0 OK reboot #REGIND: 1,0 #REGIND: 0,0,1 #REGIND: 0,1,1 #REGIND: 1,1 #REGIND: 2,0,0 #REGIND: 2,1.0</pre>

5.1.6.1.102. Enhanced Multi Level Procedure and Pre-emption - #XEMPLPP

#XEMPLPP – Enhanced Multi Level Procedure and Pre-emption	SELINT 2
AT#XEMPLPP=<priority_level> >	<p>Set command specifies the priority level to use in subsequent mobile-originated speech calls: checks the requested priority level against the value on the USIM in EFeMLPP file and fails if the priority is not supported (see 3GPP TS 31.102).</p> <p>Parameter: <priority_level> : 0.4 - the value of priority 255 – no or default priority</p> <p>Note: the file EFeMLPP shall be present on the USIM if service 24° (Enhanced Multi-Level Precedence and Pre-emption service) is “available”.</p>
AT#XEMPLPP?	<p>Read command returns the currently active priority level, in the format:</p> <p>#XEMPLPP: <priority_level></p>
AT#XEMPLPP=?	<p>Test command reports the range of supported values for the <priority_level> parameter, in the format:</p>



AT#SPIOPEN?	Read command Returns last provided Parameters values (0,0,0 as default)
AT#SPIOPEN=?	Test command reports available values for parameters <ID> , <speed> and <mode> .

5.1.6.1.105. De-initializes modem serial port for SPI protocol - #SPICLOSE

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

5.1.6.1.106. Writes a buffer to the SPI and prints the read data - #SPIRW

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



#CSURV - Network Survey	SELINT 2
	<p><penaltyt> - decimal Penalty Time, range 0 - 31 <t3212> - decimal T3212 Periodic Location Update Timer <CRH> - decimal Cell Reselection Offset</p> <p>(For non BCCH-Carrier)</p> <p>arfcn: <arfcn> rxLev: <rxLev></p> <p>where: <arfcn> - decimal number; it is the RF channel <rxLev> - decimal number; it is the reception level (in dBm)</p> <p><u>In 3G</u></p> <p>(For BCCH-Carrier)</p> <p>uarfcn: <uarfcn> rxLev: <rxLev> mcc: <mcc> mnc: <mnc> scr code: <scrcode> cellId: <cellId> lac: <lac> cellStatus: <cellStatus> rscp: <rscp> ecio: <ecio> <CR><LF><CR><LF><CR><LF></p> <p>where: <uarfcn> - the cell carrier frequency designated by UTRA Absolute Radio Frequency Channel Number <rxLev> - decimal number; it is the reception level (in dBm) <mcc> - hexadecimal 3-digits number; it is the mobile country code <mnc> - hexadecimal 2-digits number; it is the mobile network code <scrcode> - decimal number; it is the scrambling code <cellId> - cell identifier; if #CSURVF last setting is 0, <cellId> is a decimal number, else it is a 8-digits hexadecimal number <lac> - location area code; if #CSURVF last setting is 0, <lac> is a decimal number, else it is a 4-digits hexadecimal number <cellStatus> - string type; it is the cell status ..CELL_SUITABLE - the cell is a suitable cell. CELL_LOW_PRIORITY - the cell is low priority based on the received system information. CELL_FORBIDDEN - the cell is forbidden. CELL_BARRED - the cell is barred based on the received system information. CELL_LOW_LEVEL - the cell <rxLev> is low. CELL_OTHER - none of the above e.g. exclusion timer running, no BCCH available...etc.</p>



#CSURV - Network Survey	SELINT 2																										
<p>If present, the parameters: <s> - starting channel <e> - ending channel are only allowed in fixed couples indicating a band.</p> <p>Only BCCH-carriers are reported. Non BCCH-carriers are never reported.</p> <p><u>In 2G</u></p> <p><s>,<e> fixed couples and the corresponding band, if supported by the product:</p> <table border="0"> <tr><td>0,124</td><td>GSM900</td></tr> <tr><td>975,1023</td><td>GSM900</td></tr> <tr><td>512,885</td><td>DCS1800</td></tr> <tr><td>128,251</td><td>GSM850</td></tr> <tr><td>512,810</td><td>PCS1900</td></tr> <tr><td>0,1023</td><td>all supported GSM bands</td></tr> </table> <p><ber> is always 0.0.</p> <p><numArfcn> is always 0. <arfcnn> is always empty.</p> <p><numChannels> is always 0. <ban> is always empty.</p> <p>GPRS parameters like <pbch> are printed only if GPRS is supported in the cell but their value is not available and will be always 0.</p> <p>Parameters like <mstxpwr> are printed only for #CSURVEXT=3 setting but their value is not available and will be always 0.</p> <p><u>In 3G</u></p> <p><s>,<e> fixed couples and the corresponding band, if supported by the product:</p> <table border="0"> <tr><td>10562,10838</td><td>UMTS BAND I</td></tr> <tr><td>9662,9938</td><td>UMTS BAND II</td></tr> <tr><td>1537,1738</td><td>UMTS BAND IV</td></tr> <tr><td>4357,4458</td><td>UMTS BAND V</td></tr> <tr><td>4387,4413</td><td>UMTS BAND VI</td></tr> <tr><td>2937,3088</td><td>UMTS BAND VIII</td></tr> <tr><td>712,763</td><td>UMTS BAND XIX</td></tr> </table>		0,124	GSM900	975,1023	GSM900	512,885	DCS1800	128,251	GSM850	512,810	PCS1900	0,1023	all supported GSM bands	10562,10838	UMTS BAND I	9662,9938	UMTS BAND II	1537,1738	UMTS BAND IV	4357,4458	UMTS BAND V	4387,4413	UMTS BAND VI	2937,3088	UMTS BAND VIII	712,763	UMTS BAND XIX
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4387,4413	UMTS BAND VI																										
2937,3088	UMTS BAND VIII																										
712,763	UMTS BAND XIX																										



#CSURVC - Network Survey (Numeric Format)	SELINT 2
<p>0 - pbcch not activated on the cell 1 - pbcch activated on the cell <nom> - network operation mode 1 2 3 <rac> - routing area code 0..255 - <spgc> - SPLIT_PG_CYCLE support ..0 - SPLIT_PG_CYCLE is not supported on CCCH on this cell ..1 - SPLIT_PG_CYCLE is supported on CCCH on this cell <pat> - priority access threshold 0 - 3..6 - <nco> - network control order 0..2 - <t3168> - timer 3168 <t3192> - timer 3192 <drxmax> - discontinuous reception max time (in seconds) <ctrlAck> - packed control ack <bscVmax> - blocked sequenc countdown max value <alpha> - alpha parameter for power control <pcMeasCh> - type of channel which shall be used for downlink measurements for power control 0 - BCCH 1 - PDCH</p> <p><i>(The following informations will be printed only for #CSURVEXT=3 setting)</i> <mstxpw> - decimal TX power level <rxaccmin> - decimal RX level access min, range 0 - 63 <croffset> - decimal Cell Reselection Offset, range 0 - 63 <penaltyt> - decimal Penalty Time, range 0 - 31 <t3212> - decimal T3212 Periodic Location Update Timer <CRH> - decimal Cell Reselection Offset</p> <p style="text-align: center;">(For non BCCH-Carrier)</p> <p><arfcn>, <rxLev></p> <p>where: <arfcn> - decimal number; it is the RF channel <rxLev> - decimal number; it is the reception level (in dBm)</p>	



#CSURVF - Network Survey Format		SELINT 2
AT#CSURVF?	Read command reports the current number format, as follows: <format>	
AT#CSURVF=?	Test command reports the supported range of values for the parameter <format>.	

5.1.6.2.4. <CR><LF> Removing On Easy Scan® Commands - #CSURVNLF

#CSURVNLF - <CR><LF> Removing On Easy Scan® Commands Family		SELINT 2
AT#CSURVNLF=[<value>]	Set command enables/disables the automatic <CR><LF> removing from each information text line. Parameter: <value> 0 - disables <CR><LF> removing; they'll be present in the information text (factory default) 1 - remove <CR><LF> from information text	
AT#CSURVNLF?	Read command reports whether automatic <CR><LF> removing is currently enabled or not, in the format: <value>	
AT#CSURVNLF=?	Test command reports the range of values for parameter <value>.	

5.1.6.2.5. Extended network survey - #CSURVEXT

#CSURVEXT - Extended Network Survey		SELINT 2
AT#CSURVEXT[=<value>]	Set command enables/disables extended network survey. Parameter: <value> 0 - disables extended network survey (factory default) 1 - enables extended network survey; all the network survey execution commands (#CSURV, #CSURVC) display the BAList for every valid scanned BCCh carrier 2 - enables extended network survey; all the network survey execution commands (#CSURV, #CSURVC) display the BAList for every valid scanned BCCh carrier and, if GPRS is supported in the cell, they report some GPRS informations carried by the System Information 13 of the BCCh 3 - enables more extended network survey; all the network survey execution commands (#CSURV, #CSURVC). It displays transmit power level, receiving level	



#SMSATRUN – Enable SMS AT Run service	SELINT 2
	1 - active
AT#SMSATRUN =?	Test command returns the supported values for the SMSATRUN parameters
Notes:	<ul style="list-style-type: none"> • By default the SMS ATRUN service is disabled It can be activated by the command AT#SMSATRUN.



5.1.6.3.2. 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>



5.1.6.3.3. SMS AT Run White List - #SMSATWL

#SMSATWL – SMS AT Run White List	SELINT 2
<p>AT#SMSATWL= <action> ,<index> [,<entryType> [,<string>]]</p>	<p>Set command to handle the white list.</p> <p><action >:</p> <ul style="list-style-type: none"> 0 – Add an element to the WhiteList 1 – Delete an element from the WhiteList 2 – Print and element of the WhiteList <p>< index >: Index of the WhiteList. Range 1-8</p> <p>< entryType >:</p> <ul style="list-style-type: none"> 0 – Phone Number 1 – Password <p>NOTE: A maximum of two Password Entry can be present at same time in the white List</p> <p><string>: string parameter enclosed between double quotes containing or the phone number or the password</p> <p>Phone number shall contain numerical characters and/or the character “+” at the beginning of the string and/or the character “*” at the end of the string. Password shall be 16 characters length</p> <p>NOTE: When the character “*” is used, it means that all the numbers that begin with the defined digit are part of the white list.</p> <p>E.g. “+39*” All Italian users can ask to run AT Command via SMS “+39349*” All vodafone users can ask to run AT Command via SMS.</p>
<p>AT#SMSATWL?</p>	<p>Read command returns the list elements in the format:</p> <p>#SMSATWL: [<entryType>,<string>]</p>
<p>AT#SMSATWL=?</p>	<p>Test command returns the supported values for the parameter <action>, <index> and <entryType></p>
<p>Note</p>	<p>It will return ERROR if executed using SMSATRUN digest mode or TCPATRUN server mode</p>



5.1.6.3.4. Set TCP Run AT Service parameter - #TCPATRUNCFG

#TCPATRUNCFG– Set TCP AT Run Service Parameters	SELINT 2
<p>AT#TCPATRUNCFG= <connId> ,<instance> ,<tcpPort> ,<tcpHostPort> ,<tcpHost> [,<urcmmod> [,<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><urcmmod>: 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>:</p>



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



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

#TCPATRNL- Enables TCP AT Run Service in listen (server) mode	SELINT 2
<p>AT#TCPATRNL= <mod></p>	<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 ></p> <p>0: Service Disabled 1: Service Enabled</p> <p>Note1: If SMSATRNL is active on the same instance (see AT#TCPATRNLCFG) the command will return ERROR.</p> <p>Note2: when the service is active it is on a specific AT instance (see AT#TCPATRNLCFG), 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> <p>Note4: to start automatically the service when the module is powered-on, the automatic PDP context activation has to be set (see AT#SGACTCFG command).</p>
<p>AT#TCPATRNL?</p>	<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>
<p>AT#TCPATRNL=?</p>	<p>Test command returns the supported values for the TCPATRNL parameters</p>



5.1.6.3.6. TCP AT Run Firewall List - #TCPATRUNFRWL

#TCPATRUNFRWL – TCP AT Run Firewall List	SELINT 2
<p>AT#TCPATRUNFRWL= <action>, <ip_addr>, <net_mask></p>	<p>Set command controls the internal firewall settings for the TCPATRUN connection.</p> <p>Parameters: <action> - command action 0 - remove selected chain 1 - add an ACCEPT chain 2 - remove all chains (DROP everything); <ip_addr> and <net_mask> has no meaning in this case. <ip_addr> - remote address to be added into the ACCEPT chain; string type, it can be any valid IP address in the format: xxx.xxx.xxx.xxx <net_mask> - mask to be applied on the <ip_addr>; string type, it can be any valid IP address mask in the format: xxx.xxx.xxx.xxx</p> <p>Command returns OK result code if successful.</p> <p>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>
<p>AT# TCPATRUNFRWL?</p>	<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>
<p>AT#TCPATRUNFRWL=?</p>	<p>Test command returns the allowed values for parameter <action>.</p>
<p>Note</p>	<p>It will return ERROR if executed using SMSATRUN digest mode or TCPATRUN server mode</p>



5.1.6.3.7. TCP AT Run Authentication Parameters List - #TCPATRUNAATH

#TCPATRUNAATH – TCP AT Run Authentication Parameters List	SELINT 2
<p>AT#TCPATRUNAATH= <action>, <userid>, <passw></p>	<p>Execution command controls the authentication parameters for the TCPATRUN connection.</p> <p>Parameters: <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>
<p>AT#TCPATRUNAATH?</p>	<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>
<p>AT#TCPATRUNAATH=?</p>	<p>Test command returns the allowed values for parameter <action>.</p>



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

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



5.1.6.3.9. Closing TCP Run AT Socket - #TCPATRUNCLOSE

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

5.1.6.3.10. TCP AT Run Command Sequence - #TCPATCMDSEQ

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

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

#TCPATCONSER – Connects the TCP Run AT service to a serial port		SELINT 2
AT#TCPATCONSER=<port>,<rate>	Set command sets the TCP Run AT in transparent mode, in order to have direct access to the hardware port specified. Data will be transferred directly, without being elaborated, between the TCP Run AT service and the hardware port specified. If the CMUX protocol is running the command will return ERROR. Parameter: < port > 0 – USIF0 1 – USIF1 2 – USB0 3 – USB1 4 – USB2 5 – USB3	



5.1.6.4. Consume commands

5.1.6.4.1. Configure consume parameters - #CONSUMECFG

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



	<p><action_id> Identifier of the action to trigger when the threshold limit has been reached. It corresponds to the AT command associated to the event CONSUMEX, where X=1,...5. (Refer to #EVMONI command) Range: (0-5); 0 means no action associated: in this case only the counter is active.</p> <p>Note: the Set command #CONSUMECFG=0 has a special behaviour: for all the enabled rules, the data and time of related counters are reset (<u>if they are not-life counters</u>)</p> <p>Note: the values set by command are directly stored in NVM and don't depend on the specific 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> <p>#CONSUMECFG: <rule_id>,<service_type>,<rule_enable>,<period>,<limit_amount>,<action_id></p>
<p>AT#CONSUMECFG=?</p>	<p>Test command reports the supported range of values for all parameters</p>

5.1.6.4.2. Enable consume functionality - #ENACONSUME

<p>#ENACONSUME – enable consume functionality</p>	<p>SELINT 2</p>
<p>AT#ENACONSUME=<enable>[,<storing_mode>[,<storing_period>]]</p>	<p>Set command enables/disables the consume functionality.</p> <p>Parameters:</p> <p><enable></p> <ul style="list-style-type: none"> 0 – disable consume functionality (default) 1 – disable consume functionality except life counters 2 – enable consume functionality



	<p><storing_mode>: 0 – the counters are saved in NVM at every shutoff (default) 1 – the counters are saved in NVM at every shutoff 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</p> <p>Note: when the functionality is disabled with <enable>=0, the data counters are stopped but not reset: to reset them (<u>except life counters</u>) set <rule_enable>=0 with AT#CONSUMECFG command.</p> <p>Note: when the functionality is disabled with <enable>=1, the data counters are stopped <u>except life counters</u>.</p> <p>Note: the life counters are never reset, neither in terms of counted data nor in terms of time</p>
<p>AT#ENACONSUME?</p>	<p>Read command returns the current settings for all parameters in the format:</p> <p>#ENACONSUME: <enable>,<storing_mode>,<storing_period></p>
<p>AT#ENACONSUME=?</p>	<p>Test command reports the supported range of values for all parameters</p>

5.1.6.4.3. Report consume statistics - #STATSCONSUME

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



	<p>#STATSCONSUME: <code><rule_1>,<service_type>,<counted_data>,<threshold>,<current_time>,<period><CR><LF>#STATSCONSUME:</code> <code><rule_2>,<service_type>,<counted_data>,<threshold>,<current_time>,<period><CR><LF>...<CR><LF>#STATSCONSUME:</code> <code><rule_10>,<service_type>,<counted_data>,<threshold>,<current_time>,<period></code></p> <p>where <rule_i> Index of the rule defined with AT#CONSUMECFG</p> <p><service_type> Type of service: 1 – SMS Sent 2 – SMS Received 3 – Total SMS 4 – CS MO Calls 5 – CS MT Calls 6 – Total CS Calls 7 – IP All Data Sent 8 – IP All Data Received 9 – IP All Data 10 – IP All Data Sent (with Header) 11 – IP All Data Received (with Header) 12 – IP All Data (with Header)</p> <p><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)</p> <p>1 – life counter: the command returns the values of life counters for every service type in the format:</p> <p>#STATSCONSUME: <code><service_1>,<life_data>,<current_time><CR><LF>#STATSCONSUME:</code> <code><service_2>,<life_data>,<current_time><CR><LF>...<CR><LF>#STATSCONSUME:</code></p>
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	<p>ATSCONSUME: <service_12>,<life_data>,<current_time></p> <p>where <service_i> is defined as <service_type> above</p> <p><life_data> Number of data counted during entire life time period</p> <p><current_time> Number of passed hours during entire life time period</p> <p>Note: issuing AT#STATSCONSUME without parameters has the same effect as AT#STATSCONSUME=0</p>
AT#STATSCONSUME=?	Test command returns OK result code

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



5.1.6.5.2. EvMoni Service parameter - #ENAEVMONICFG

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



#EVMONI – Set the single Event Monitoring

SELINT 2

event.

<param>: it can be a numeric or string value depending on the value of **<paramType>** and on the type of event.

If **<paramType>** is 0, then **<param>** is a string containing the AT command:

- 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
-
- If **<label>** is VBATT, **<paramType>** can assume values in the range 0 - 2.
 - 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.
 - 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.
 - 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.
 - 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)



#EVMONI – Set the single Event Monitoring	SELINT 2
	<ul style="list-style-type: none"> ○ 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. <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?	Read command returns the current settings for each event in the format:



#EVMONI – Set the single Event Monitoring	SELINT 2
	<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=?	Test command returns values supported as a compound value



5.1.6.5.4. Send Message - #CMGS

#CMGS - Send Message	SELINT 2
<p><i>(PDU Mode)</i> AT#CMGS= <length>,<pdu></p>	<p>(PDU Mode) 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>
<p><i>(Text Mode)</i> AT#CMGS=<da> ,<text></p>	<p>(Text Mode) 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> <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



5.1.6.5.5. Write Message To Memory - #CMGW

#CMGW - Write Message To Memory	SELINT 2
<p><i>(PDU Mode)</i> AT#CMGW= <length>,<pdu></p>	<p style="text-align: center;">(PDU Mode)</p> <p>Execution command writes in the <memw> memory storage a new message.</p> <p>Parameter: <length> - length in bytes of the PDU to be written. 7..164 <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><i>(Text Mode)</i> AT#CMGW=<da> ,<text></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). <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>



#CMGW - Write Message To Memory		SELINT 2
	<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>	
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.	

5.1.6.5.6. 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>	



5.1.6.6. Multisocket AT Commands

5.1.6.6.1. 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:</p> <p>#SS: <connId>,<state>,<locIP>,<locPort>,<remIP>,<remPort></p> <p>where: <connId> - socket connection identifier, as before <state> - actual state of the socket: 0 - Socket Closed. 1 - Socket with an active data transfer connection. 2 - Socket suspended. 3 - Socket suspended with pending data. 4 - Socket listening. 5 - Socket with an incoming connection. Waiting for the user accept or shutdown command. 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> ... #SS: <connId6>,<state6>,<locIP6>,<locPort6>,<remIP6>,<remPort6></p>



5.1.6.6.2. Socket Info - #SI

#SI - Socket Info	SELINT 2
<p>AT#SI[=<connId>]</p>	<p>Execution command is used to get information about socket data traffic.</p> <p>Parameters: <connId> - socket connection identifier 1..6</p> <p>The response format is:</p> <p>#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</p> <p>Note: not yet acknowledged data are available only for TCP connections; the value <ack_waiting> is always 0 for UDP connections.</p> <p>Note: issuing #SI<CR> causes getting information about data traffic of all the sockets; the response format is:</p> <p>#SI: <connId1>,<sent1>,<received1>,<buff_in1>,<ack_waiting1> <CR><LF></p> <p>...</p> <p>#SI: <connId6>,<sent6>,<received6>,<buff_in6>,<ack_waiting6></p>
<p>AT#SI=?</p>	<p>Test command reports the range for parameter <connId>.</p>
<p>Example</p>	<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>



#SI - Socket Info	SELINT 2
	<p>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.</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>

5.1.6.6.3. Socket Type - #ST

#ST – Socket Type	SELINT 2
<p>AT#ST [=<ConnId>]</p>	<p>Set command reports the current type of the socket (TCP/UDP) and its direction (Dialer / Listener)</p> <p>Parameter: < ConnId > - socket connection identifier 1..6</p> <p>The response format is:</p> <p>#ST: <connId>,<type>,<direction></p> <p>where</p> <p>< connId > - socket connection identifier 1..6</p> <p>< type > - socket type 0 – No socket 1 – TCP socket 2 – UDP socket</p> <p>< direction > - direction of the socket 0 – No 1 – Dialer 2 – Listener</p> <p>Note: issuing #ST<CR> causes getting information about type of all the sockets; the response format is:</p> <p>#ST: <connId1>,<type1>,<direction1> <CR><LF> ... #ST: <connId6>,< type 6>,< direction 6></p>



#ST – Socket Type	SELINT 2
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>

5.1.6.6.4. Context Activation - #SGACT

#SGACT - Context Activation	SELINT 2
AT#SGACT=<cid>,<stat>[,<userId>,<pwd>]	<p>Execution command is used to activate or deactivate either the GSM context or the specified PDP context.</p> <p>Parameters:</p> <p><cid> - PDP context identifier 0 - specifies the GSM context (not yet available) 1..5 - numeric parameter which specifies a particular PDP context definition</p> <p><stat> 0 - deactivate the context 1 - activate the context</p> <p><userId> - string type, used only if the context requires it <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>
AT#SGACT?	Returns the state of all the contexts that have been defined



#SGACT - Context Activation		SELINT 2
	<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.	

5.1.6.6.5. 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>.	

5.1.6.6.6. Socket Configuration - #SCFG

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



#SCFG - Socket Configuration	SELINT 2
	<p>1..65535 - timeout value in seconds (default 90 s.) <connTo> - connection timeout; if we can't establish a connection to the remote within this timeout period, an error is raised.</p> <p>10..1200 - timeout value in hundreds of milliseconds (default 600) <txTo> - data sending timeout; after this period data are sent also if they're less than max packet size.</p> <p>0 - no timeout</p> <p>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>



5.1.6.6.7. Socket Configuration Extended - #SCFGEXT

#SCFGEXT - Socket Configuration Extended	SELINT 2
<pre>AT#SCFGEXT= <conned>,<srMode>, <recvDataMode>, <keepalive>, [,<ListenAutoRsp> [,<sendDataMode>]]</pre>	<p>Set command sets the socket configuration extended parameters.</p> <p>Parameters:</p> <p><connId> - socket connection identifier 1..6</p> <p><srMode> - SRing unsolicited mode 0 - Normal (default): SRING : <connId> where <connId> is the socket connection identifier 1 – Data amount: SRING : <connId>,<recData> where <recData> is the amount of data received on the socket connection number <connId> 2 - Data view: SRING : <connId>,<recData>,<data> same as before and <data> is data received displayed following <dataMode> value 3 – Data view with UDP datagram informations: SRING : <sourceIP>,<sourcePort><connId>,<recData>,<dataLeft>,<data> same as before with <sourceIP>,<sourcePort> and <dataLeft> that means the number of bytes left in the UDP datagram</p> <p><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>



5.1.6.6.8. Socket configuration Extended 2 - #SCFGEXT2

#SCFGEXT2 - Socket Configuration Extended

AT#SCFGEXT2=
<connId>,<bufferStart>,
[,<abortConnAttempt>
[,<unused_B >
[,<unused_C >[,<noCarrierMode>]]]]

Set command sets the socket configuration extended parameters for features not included in #SCFGEXT command.

Parameters:

<connId> - socket connection identifier
1..6

<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.

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

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.

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.

<abortConnAttempt> - Enable connection attempt(#SD/#SKTD) abort before CONNECT(online mode) or OK(command mode)

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)

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.

Note: values are automatically saved in NVM.

<noCarrierMode> - permits to choose **NO CARRIER**



5.1.6.6.11. 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</p>



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

5.1.6.6.12. Socket Restore - #SO

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



5.1.6.6.13. Socket Listen - #SL

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



#SL - Socket Listen		SELINT 2
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>	

5.1.6.6.14. Socket Listen UDP - #SLUDP

#SLUDP - Socket Listen UDP		SELINT 2
AT#SLUDP=<connId>, <listenState>, <listenPort>	<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.</p> <p>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.	



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

5.1.6.6.15. 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.	

5.1.6.6.16. Socket Info Extended - #SIEXT

#SIEXT - Socket Info Extended		SELINT 2
AT#SIEXT[=<connId>]	Execution command is used to get information about socket data traffic. Parameters: <connId> - socket connection identifier 1..6 The response format is: #SIEXT: <connId>,<retx>,<oos>,<rsrvd1>,<rsrvd2> where: <connId> - socket connection identifier, as before <retx> - total amount of retransmissions of outgoing packets	



	it is indicated cause 1 for both possible FIN and RST from remote.
AT#SLASTCLOSURE=?	Test command reports the supported range for parameter <connId>



5.1.6.6.18. Receive Data In Command Mode - #SRECV

#SRECV - Receive Data In Command Mode	SELINT 2
<p>AT#SRECV= <connId>, <maxByte>,[<UDPInfo>] o>]</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: <connId> - socket connection identifier 1..6 <maxByte> - max number of bytes to read 1..1500 <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. 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</p>



#SRECV - Receive Data In Command Mode	SELINT 2
<p>SRING: 2,15</p> <p><i>Read in hexadecimal format the buffered data</i></p> <p>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></p> <p>AT#SRECV=2,15 #SRECV: <IPaddr>,<IPport>,2,15,45 737472696e67612064692074657374</p> <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>	

5.1.6.6.19. Send Data In Command Mode - #SSEND

#SSEND - Send Data In Command Mode	SELINT 2
<p>AT#SSEND= <connId></p> <p>Execution command permits, while the module is in command mode, to send data through a connected socket.</p> <p>Parameters: <connId> - socket connection identifier 1..6</p> <p>The device responds to the command with the prompt <greater_than><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</p>	



#SSEND - Send Data In Command Mode		SELINT 2
	<p>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=?	Test command returns the range of supported values for parameter < connId >	
Example	<p>Send data through socket number 2</p> <p>AT#SSEND=2</p> <p>>Test<CTRL-Z></p> <p>OK</p>	

5.1.6.6.20. Send UDP data to a specific remote host - #SSENDUDP

#SSENDUDP – send UDP data to a specific remote host		SELINT 2
AT#SSENDUDP=<connId> ,<remoteIP>,<remotePort>	<p>This command permits, while the module is in command mode, to send data over UDP to a specific remote host.</p> <p>UDP connection has to be previously completed with a first remote host through #SLUDP / #SA.</p> <p>Then, if we receive data from this or another host, we are able to send data to it.</p> <p>Like command #SSEND, the device responds with ‘> ‘ and waits for the data to send.</p> <p>Parameters:</p> <p><connId> - socket connection identifier 1..6</p> <p><remoteIP> - IP address of the remote host in dotted decimal notation, string type: “xxx.xxx.xxx.xxx”</p> <p><remotePort> - remote host port 1..65535</p> <p>Note: after SRING that indicates incoming UDP data and issuing #SRECV to receive data itself, through #SS is possible to check last remote host (IP/Port).</p> <p>Note: if successive resume of the socket to online mode Is performed(#SO), connection with first remote host is restored as it was before.</p>	
AT#SSENDUDP=?	Test command reports the supported range of values for parameters	



	<connId>,<remoteIP> and <remotePort>
Example	<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#SENDUDP=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>



#SGACTAUTH – Easy GPRS 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 or AT#GPRS commands.</p> <p>Parameter <type> 0 - no authentication 1 - PAP authentication (factory default) 2 - CHAP authentication</p> <p>Note: the parameter is not saved in NWM</p>	
AT#SGACTAUTH?	<p>Read command reports the current IP Easy authentication type, in the format:</p> <p>#SGACTAUTH: <type></p>	
AT#SGACTAUTH =?	<p>Test command returns the range of supported values for parameter <type>.</p>	

5.1.6.6.24. Context activation and configuration - #SGACTCFG

#SGACTCFG - Context Activation and Configuration		SELINT 2
AT#SGACTCFG= <cid>, <retry>, [,<delay > [,<urcmode >]]	<p>Execution command is used to enable or disable the automatic activation/reactivation of the context for the specified PDP context, to set the maximum number of attempts and to set the delay between an attempt and the next one. The context is activated automatically after every GPRS Attach or after a NW PDP CONTEXT deactivation if at least one IPEasy socket is configured to this context (see AT#SCFG).</p> <p>Parameters:</p> <p><cid> - PDP context identifier (see +CGDCONT command) 1..5 - numeric parameter which specifies a particular PDP context definition</p> <p><retry> - numeric parameter which specifies the maximum number of context activation attempts in case of activation failure. The value belongs to the following range: 0 - 15 0 - disable the automatic activation/reactivation of the context (default)</p> <p><delay> - numeric parameter which specifies the delay in seconds between an attempt and the next one. The value belongs to the following range: 180 - 3600</p> <p>< urcmode > - URC presentation mode 0 - disable unsolicited result code (default) 1 - enable unsolicited result code, after an automatic activation/reactivation, of the local IP address obtained from the network. It has meaning only if <auto>=1. The unsolicited message is in the format:</p>	

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



5.1.6.6.25. Context activation and configuration extended - #SGACTCFGEXT

#SGACTCFGEXT - context activation configuration extended	SELINT 2
<p>AT#SGACTCFGEXT= <cid>, <abortAttemptEnable> [,<unused> [,<unused> [,<unused>]]]</p>	<p>Execution command is used to enable new features related to context activation.</p> <p>Parameters:</p> <p><cid> - PDP context identifier (see +CGDCONT command) 1..5 - numeric parameter which specifies a particular PDP context definition</p> <p>< abortAttemptEnable > 0 – old behaviour: no abort possible while attempting context activation 1 – abort during context activation attempt is possible by sending a byte on the serial port.</p> <p>It takes effect on successive GPRS context activation attempt through #SGACT command in the following manner. While waiting for AT#SGACT=<cid>,1 response(up to 150 s) is possible to abort attempt by sending a byte and get back AT interface control(NO CARRIER indication).</p> <p>Note: If we receive delayed CTXT ACTIVATION ACCEPT after abort, network will be automatically informed of our aborted attempt through relative protocol messages(SM STATUS) and will also close on its side. Otherwise, if no ACCEPT is received after abort, network will be informed later of our PDP state through other protocol messages (routing area update for instance).</p>
<p>AT#SGACTCFGEXT?</p>	<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: <cid<i>n</i>> - as <cid> before < abortAttemptEnable <i>n</i>> - as < abortAttemptEnable > before</p> <p>Note: values are automatically saved in NVM.</p>
<p>AT#SGACTCFGEXT=?</p>	<p>Test command reports supported range of values for all parameters</p>



5.1.6.6.26. 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?	Read command reports the currently selected <mode> in the format: #PADCMD: mode	
AT#PADCMD=?	Test command reports the supported range of values for parameter <mode>.	

5.1.6.6.27. PAD forward character - #PADFWD

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



5.1.6.6.28. Base64 encoding/decoding of socket sent/received data - #BASE64

#BASE64 – Base64 encoding/decoding of socket sent/received data	SELINT 2
<p>AT#BASE64= <connId>,<enc>,<dec> [,<unused_B > [,<unused_C >]]</p>	<p>Set command enables base64 encoding and/or decoding of data sent/received to/from the socket in online or in command mode.</p> <p>Parameters: <connId> - socket connection identifier 1..6</p> <p><enc> 0 – no encoding of data received from serial port. 1 - MIME RFC2045 base64 encoding of data received from serial port that have to be sent to <connId> socket.</p> <p>Note: as indicated from RFC2045 the encoded output stream is represented in lines of no more than 76 characters each. Lines are defined as sequences of octets separated by a CRLF sequence.</p> <p>2 - RFC 3548 base64 encoding of data received from serial port that have to be sent to <connId> socket. Note: as indicated from RFC3548 CRLF have not to be added.</p> <p><dec> 0 – no decoding of data received from socket <connId>. 1 - MIME RFC2045 base64 decoding of data received from socket <connId> and sent to serial port. (Same rule as for <enc> regarding line feeds in the received file that has to be decoded) 2 - RFC3548 base64 decoding of data received from socket <connId> and sent to serial port. (Same rule as for <enc> regarding line feeds in the received file that has to be decoded)</p> <p>Note: it is possible to use command to change current <enc>/<dec> settings for a socket already opened in command mode or in online mode after suspending it. (In this last case obviously it is necessary to set AT#SKIPESC=1).</p> <p>Note: to use #BASE64 in command mode, if data to send exceed maximum value for #SENDEXT command, they have to be divided in multiple parts. These parts have to be a multiple of 57 bytes, except for the last</p>



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	<pre>AT#SO=<connId> CONNECT // Data received from socket are decoded // base64 before to be sent on the serial port +++ (suspension)</pre>
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	<p>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 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 #SSLEND.</p> <p>Note: Before opening a SSL connection the GPRS context must have been activated by AT#SGACT=x,1.</p> <p>Note: Before opening a SSL connection, make sure to have stored the needed secure data (CA certificate), using AT#SSLSECDATA. Note: in case of CA Certificate already stored(for instance: SUPL), it could be possible to avoid #SSLSECDATA command.</p>
<p>AT#SSLD=?</p>	<p>Test command returns the range of supported values for all the parameters: #SSLD: (1),(1-65535),,(0),(0,1),(10-5000)</p>

5.1.6.6.29.2. Enable a SSL socket - #SSLEN

#SSLEN – Enable a SSL socket	SELINT 2
<p>AT#SSLEN=<SSId>,<Enable></p>	<p>This command enables a socket secured by SSL</p>



#SSLEN – Enable a SSL socket	SELINT 2
	<p>Parameters: <SSId> - Secure Socket Identifier 1 – Until now SSL block manages only one socket</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 #SSLS (SSL status) which can be issued also if the socket is disabled. Read commands can be issued if at least a <SSId> is enabled.</p> <p>Note: these values are automatically saved in NVM.</p> <p>Note: a SSL socket cannot be disabled by issuing #SSLEN=1,0 if it is connected.</p>
AT#SSLEN?	<p>Read command reports the currently enable status of secure socket in the format:</p> <p>#SSLEN: <SSId>,<Enable><CR><LF> <CR><LF> OK</p>
AT#SSLEN=?	<p>Test command returns the range of supported values for all the parameters:</p> <p>#SSLEN: (1),(0,1)</p>



5.1.6.6.29.5. 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: <SSId> - Secure Socket Identifier 1 - Until now SSL block manage only one socket.</p> <p><MaxNumByte> - max number of bytes to read 1..1000</p> <p>< Timeout > - time-out in 100 ms units 1..5000 - hundreds of ms (factory default is 100)</p> <p>If no data are received the device responds: #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>
AT#SSLRECV=?	Test command returns the range of supported values for all the



	<p>parameters:</p> <p>#SSLRCV: (1),(1-1000),(10-5000)</p>
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5.1.6.6.29.6. Report the status of a SSL socket - #SSLS

#SSLS – Report the status of a SSL socket	SELINT 2
<p>AT#SSLS=<SSId></p>	<p>This command reports the status of secure sockets.</p> <p>Parameters: <SSId> - Secure Socket Identifier 1 - Until now SSL block manages only one socket</p> <p>If secure socket is connected the device responds to the command:</p> <p>#SSLS: <SSId>,2,<CipherSuite> otherwise: #SSLS: <SSId>,<ConnectionStatus></p> <p>Where <CipherSuite> can be as follows:</p> <ul style="list-style-type: none"> 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 <p>otherwise:</p> <p>#SSLS: <SSId>,<ConnectionStatus></p> <p><ConnectionStatus> available values are: 0 – Socket Disabled 1 – Connection closed 2 – Connection open</p> <p>Note: this command can be issued even if the <SSId> is not enabled.</p>
<p>AT#SSLS=?</p>	<p>Test command returns the range of supported values for all the parameters.</p> <p>#SSLS: (1)</p>



5.1.6.6.29.7. Manage the security data - #SSLSECDATA

#SSLSECDATA – Manage the security data	SELINT 2
<p>AT#SSLSECDATA =<SSId>,<Action>, <DataType>[,<Size>]</p>	<p>This command allows to store, delete and read security data (Certificate, CAcertificate, private key) into NVM.</p> <p>Parameters:</p> <p><SSId> - Secure Socket Identifier 1 - Until now SSL block manages only one socket.</p> <p><Action> - Action to do. 0 – Delete data from NVM. 1 – Store data into NVM. 2 – Read data from NVM .</p> <p><DataType> 0 – Certificate 1 – CA certificate 2 - RSA Private key</p> <p><Size> - Size of security data to be stored 1..4000</p> <p>If the <Action> parameter is 1 (store data into NVM) the device responds to the command with the prompt '>' and waits for the data to store.</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). DER format(see #SSLSECCFG command):: When <size> bytes are entered, the certificate is automatically stored. ESC or Ctrl-Z don't 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: #SSLSECDATA: <connId>,<DataType></p>



5.1.6.6.29.8. Send data through a SSL socket - #SSLSEND

#SSLSEND – Send data through a SSL socket	SELINT 2
<p>AT#SSLSEND=<SSId>[, < Timeout >]</p>	<p>This command allows sending data through a secure socket.</p> <p>Parameters: <SSId> - Secure Socket Identifier 1 - Until now SSL block manage only one socket.</p> <p>< Timeout > - socket send timeout, in 100 ms units. 1..5000 - hundreds of ms (factory default is 100)</p> <p>The device responds to the command with the prompt '>' and waits for the data to send. To complete the operation send Ctrl-Z char (0x1A hex); to exit without writing the message send ESC char (0x1B hex).</p> <p>If data are successfully sent, then the response is OK. If data sending fails for some reason, an error code is reported</p> <p>Note: the maximum number of bytes to send is 1023; trying to send more data will cause the surplus to be discarded and lost.</p> <p>Note: if secure socket is not enabled using AT#SSLEN only test requests can be made.</p> <p>Note: if timeout is not set for SSL connection the default timeout value, set by AT#SSLCFG, is used.</p> <p>Note: Before sending data through the SSL connection it has to be established using AT#SSLD.</p>
<p>AT#SSLSEND=?</p>	<p>Test command returns the range of supported values for all the parameters:</p> <p>#SSLSEND: (1),(1-5000)</p>



5.1.6.6.29.9. Send data through a secure socket in Command Mode - #SSLSENDEXT

#SSLSENDEXT - Send data through a secure socket in Command Mode extended	SELINT 2
<p>AT#SSLSENDEXT= <SSId>,<bytestosend>[, <Timeout>]</p>	<p>This command allows sending data through a secure socket.</p> <p>Parameters:</p> <p><SSId> - Secure Socket Identifier 1 - Until now SSL block manage only one socket.</p> <p><bytestosend> - number of bytes to be sent Please refer to test command for range</p> <p><Timeout> - time-out in 100 ms units 1..5000 - hundreds of ms (factory default is 100)</p> <p>The device responds to the command with the prompt `>` <greater_than><space> and waits for the data to send. When <bytestosend> bytes have been sent, operation is automatically completed. If data are successfully sent, then the response is OK. If data sending fails for some reason, an error code is reported.</p> <p>Note: if secure socket is not enabled using AT#SSLEN only test requests can be made.</p> <p>Note: if timeout is not set for SSL connection the default timeout value, set by AT#SSLCFG, is used.</p> <p>Note: Before sending data through the SSL connection it has to be established using AT#SSLD.</p> <p>Note: all special characters are sent like a generic byte. (For instance: 0x08 is simply sent through the socket and don't behave like a BS, i.e. previous character is not deleted).</p>
<p>AT#SSLSENDEXT =?</p>	<p>Test command returns the range of supported values for parameters <SSId> , <bytestosend> and <Timeout>.</p>



Example	<p>#SSLSENDEXT: (1),(1-1500),(1-5000)</p> <p>Open the socket in command mode: at#ssld=1,443,<port>,"IP address",0,1 OK Give the command specifying total number of bytes as second parameter: at#sslsendext=1,256,100</p>
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5.1.6.6.29.10. Configure security parameters of a SSL socket - #SSLSECCFG

#SSLSECCFG – Configure security parameters of a SSL socket	SELINT 2
<p>AT#SSLSECCFG= <SSId>, <CipherSuite>, <auth_mode> [,<cert_format>]</p>	<p>This command allows configuring SSL connection parameters.</p> <p>Parameters: <SSId> - Secure Socket Identifier 1 - Until now SSL block manage only one socket</p> <p><CipherSuite> 0 - Cipher 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, cipher suites supported are indicated to the server within TLS handshake (i.e.: client hello) as follows:</p> <p>TLS_RSA_WITH_AES_256_CBC_SHA TLS_RSA_WITH_AES_128_CBC_SHA TLS_RSA_WITH_RC4_128_SHA TLS_RSA_WITH_RC4_128_MD5</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 2 – Manage server and client authentication if requested by the remote server</p> <p><cert_format> is an optional parameter. It selects the format of the certificate to be stored via #SSLSECDATA command 0 - DER format</p>



	#SSLSECCFG2: <SSId>,<version>,0,0,0,0
AT#SSLSECCFG2=?	Test command reports the range of supported values for all the parameters

5.1.6.6.29.12. 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 - Until now SSL block manages only one socket</p> <p><cid> - PDP Context Identifier. 1 - Until now only context one is supported.</p> <p><pktSz> - packet size to be used by the SSL/TCP/IP stack for data sending. 0 - select automatically default value (300). 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</p>



	Note: these parameters cannot be changed if the secure socket is connected. Note: these values are automatically saved in NVM.
AT#SSLCFG?	Read command reports the currently selected parameters in the format: #SSLCFG: <SSId1>,<cid>,<pktSz>,<maxTo>,<defTo><txTo>,<sslSRingMode>,<noCarrierMode>,0,0
AT#SSLCFG=?	Test command returns the range of supported values for all the parameters. #SSLCFG: (1),(1),(0-1500),(0-65535),(10-5000),(0-255),(0),(0),(0),(0)

5.1.6.6.29.13. 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 - Until now SSL block manages only one socket</p> <p>The response format is:</p> <p>#SSLI: <SSId>,<DataSent>,<DataRecv>,<PendingData>,<TCPConnWaitingAck></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><TCPConnWaitingAck> - indication of the underlying TCP socket condition, if there are TCP/IP packets sent but not yet acknowledged or not</p>



#SSLI – Secure Socket Info	SELINT 2
	0 – no TCP/IP packets sent waiting for ack 1 – yes TCP/IP packets sent waiting for ack
AT#SSLI=?	Test command returns the range of supported values for all the parameters. #SSLS: (1)



5.1.6.7. FTP AT Commands

5.1.6.7.1. 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>	

5.1.6.7.2. 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 either the GSM context must have been activated by AT#SGACT=0,1 or the PDP context #1 must have been activated by AT#SGACT=1,1 or by AT#GPRS=1	
AT#FTPOPEN=?	Test command returns the OK result code.	

5.1.6.7.3. 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.	



5.1.6.7.4. 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 or #SSLFASTD. Moreover, trying to dial an SSL socket when <enable>=1 raises an error.</p> <p>Note: any <enable> change is forbidden during an open FTP connection (with or without security). Furthermore, SSL configuration settings are forbidden during FTPS connections</p>
<p>AT#FTPCFG?</p>	<p>Read command reports the currently selected parameters in the format: #FTPCFG: <tout>,<IPPignoring>,<FTPSEn></p>
<p>AT+FTPCFG=?</p>	<p>Test command reports the supported range of values for parameter(s) <tout>,<IPPignoring> and <FTPSEn></p>



5.1.6.7.5. FTP Put - #FTPPUT

#FTPPUT - FTP Put	SELINT 2
<p>AT#FTPPUT= [[<filename>], <connMode>]]</p>	<p>Execution command, issued during an FTP connection, opens a data connection and starts sending <filename> file to the FTP server.</p> <p>If the data connection succeeds, a CONNECT indication is sent. afterward a NO CARRIER indication is sent when the socket is closed.</p> <p>Note: if we set <connMode> to 1, the data connection is opened and we remain in command mode and we see the result code OK (instead of CONNECT)</p> <p>Parameters: <filename> - string type, name of the file (maximum length 200 characters)</p> <p><connMode> 0 - online mode 1 - command mode</p> <p>Note: use the escape sequence +++ to close the data connection.</p> <p>Note: The command causes an ERROR result code to be returned if no FTP connection has been opened yet.</p>
<p>AT#FTPPUT=?</p>	<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>



5.1.6.7.6. 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. If the data connection succeeds a CONNECT indication is sent. The file is received on the serial port.</p> <p>Parameter: <filename> - file name, string type.</p> <p>Note: The command causes an ERROR result code to be returned in case no FTP connection has been opened yet.</p> <p>Note: Command closure should always be handled by application. In order to avoid download stall situations a timeout should be implemented by the application.</p>
AT#FTPGET=?	Test command returns the OK result code.

5.1.6.7.7. 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?	Read command reports current download state for <filename> with



#FTPGETPKT - FTP Get in command mode		SELINT 2
	<p><viewMode> chosen, in the format:</p> <p>#FTPGETPKT: <remotefile>,<viewMode>,<eof> <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.	

5.1.6.7.8. **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>	

5.1.6.7.9. **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.	



5.1.6.7.10. 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.	

5.1.6.7.11. 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.	

5.1.6.7.12. 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.	



5.1.6.7.13. 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.	

5.1.6.7.14. 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: FTPSTYPE=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.	

5.1.6.7.15. 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>	



#FTPAPP - FTP Append	SELINT 2
	<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>

5.1.6.7.16. 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>



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

5.1.6.7.17. Receive Data In Command Mode - #FTP_RECV

#FTP_RECV – Receive Data In Command Mode		SELINT 2
AT#FTP_RECV=<blocksize>	Execution command permits the user to transfer at most <blocksize> bytes of remote file, provided that retrieving from the FTP server has been started with a previous #FTP_GET_PKT command, onto the serial port. This number is limited to the current number of bytes of the remote file which have been transferred from the FTP server. Parameters: < blocksize > - max number of bytes to read 1..3000 Note: it's necessary to have previously opened FTP data port and started download and buffering of remote file through #FTP_GET_PKT command Note: issuing #FTP_RECV when there's no FTP data port opened raises an error. Note: data port will stay opened if socket is temporary waiting to receive data(FTP_RECV returns 0 and FTP_GET_PKT gives a EOF 0 indication).	
AT#FTP_RECV?	Read command reports the number of bytes currently received from FTP server, in the format: #FTP_RECV: <available>	
AT#FTP_RECV=?	Test command returns the range of supported values for <blocksize> parameter.	



5.1.6.7.17.1. 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>



5.1.6.7.17.2. FTPAPPEXT - #FTPAPPEXT

#FTPAPPEXT -	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>	<p><i>AT#FTPOPEN="IP",username,password</i> <i>OK</i></p> <p><i>AT#FTPPUT=<filename>,1 -> the new param 1 means that we open the connection in command mode</i> <i>OK</i></p>



	<p><i>// Here data socket will stay opened, but interface will be //available(command mode)</i></p> <p><i>AT#FTPAPPEXT=Size</i> <i>>... write here the binary data. As soon Size byte are written, data are sent and OK is returned</i> <i>#FTPAPPEXT: <SentBytes></i> <i>OK</i></p> <p>.....</p> <p><i>// Last #FTPAPPEXT will close the data socket, because // second(optional) parameter has this meaning:</i></p> <p><i>AT#FTPAPPEXT=Size,1</i> <i>>...write here the binary data. As soon Size byte are written, data are sent and OK is returned</i> <i>#FTPAPPEXT: <SentBytes></i> <i>OK</i></p> <p><i>// If the user has to reopen the data port to send another // (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.</i></p> <p><i>// 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)</i></p>
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5.1.6.7.18. **Receive and store FTP server data - #FTPGETF**

#FTPGETF – Receive and store FTP server data		SELINT 2
<p>AT#FTPGETF= <src_filename>, <dest_filename> [,<verbose>]</p>	<p>Execution command, issued during a FTP connection, opens a data connection and starts downloading a file from the FTP server. The file is saved into module's file system.</p> <p>Parameter: <src_filename> - Name of the file to be downloaded, string type <dest_filename></p>	



5.1.6.8. Enhanced IP Easy Extension AT Commands

5.1.6.8.1. Authentication User ID - #USERID

#USERID - Authentication User ID		SELINT 2
AT#USERID= [<user>]	<p>Set command sets the user identification string to be used during the authentication step.</p> <p>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 "").</p> <p>Note: this command is not allowed for sockets associated to a GSM context (see #SCFG).</p>	
AT#USERID?	<p>Read command reports the current user identification string, in the format:</p> <p>#USERID: <user></p>	
AT#USERID=?	Test command returns the maximum allowed length of the string parameter <user>.	
Example	<pre>AT#USERID="myName" OK AT#USERID? #USERID: "myName" OK</pre>	

5.1.6.8.2. Authentication Password - #PASSW

#PASSW - Authentication Password		SELINT 2
AT#PASSW= [<pwd>]	<p>Set command sets the user password string to be used during the authentication step.</p> <p>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 "").</p> <p>Note: this command is not allowed for sockets associated to a GSM context (see #SCFG).</p>	
AT#PASSW=?	Test command returns the maximum allowed length of the string parameter <pwd>.	
Example	<pre>AT#PASSW="myPassword" OK</pre>	



#DSTO -Data Sending Time-Out		SELINT 2
	Note: this command is not allowed for sockets associated to a GSM context (see #SCFG).	
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	AT#DSTO=10 ->1 sec. time-out OK AT#DSTO? #DSTO: 10 OK	

5.1.6.8.5. Socket Inactivity Time-Out - #SKTTO

#SKTTO - Socket Inactivity Time-Out		SELINT 2
AT#SKTTO= [<tout>]	Set command sets the maximum time with no data exchanging on the socket that the module awaits before closing the socket Parameter: <tout> - socket inactivity time-out in seconds units 0 - no time-out. 1..65535 - time-out in sec. units (factory default is 90). 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. Note: this command is not allowed for sockets associated to a GSM context (see #SCFG).	
AT#SKTTO?	Read command reports the current socket inactivity time-out value.	
AT#SKTTO=?	Test command returns the allowed values for parameter <tout>.	
Example	AT#SKTTO=30 ->(30 sec. time-out) OK AT#SKTTO? #SKTTO: 30 OK	

5.1.6.8.6. Socket Definition - #SKTSET

#SKTSET - Socket Definition		SELINT 2
AT#SKTSET= [<socket type>, <remote port>, <remote addr>, [<closure type>], [<local port>]]	Set command sets the socket parameters values. Parameters: <socket type> - socket protocol type 0 - TCP (factory default) 1 - UDP	



5.1.6.8.7. Query DNS - #QDNS

#QDNS - Query DNS	SELINT 2
<p>AT#QDNS= [<host name>]</p>	<p>Execution command executes a DNS query to solve the host name into an IP address.</p> <p>Parameter: <host name> - host name, string type.</p> <p>If the DNS query is successful then the IP address will be reported in the result code, as follows:</p> <p>#QDNS: <host name>,<IP address></p> <p>where <host name> - string type <IP address> - string type, in the format “xxx.xxx.xxx.xxx”</p> <p>Note: the command has to activate the GPRS context if it was not previously activated. In this case the context is deactivated after the DNS query. It also works with GSM context, but the GSM context has to be activated before.</p>
<p>AT#QDNS=?</p>	<p>Test command returns the OK result code.</p>
<p>Note</p>	<p>This command requires that the authentication parameters are correctly set and that the GPRS network is present (or GSM, if GSM context is used).</p>
<p>Note</p>	<p>Issuing command #QDNS will overwrite <remote addr> setting for command #SKTSET.</p>
<p>Note</p>	<p>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 PDP context 1 and on the first ConnId (see AT#SCFG)</p>



5.1.6.8.8. DNS Response Caching - #CACHEDNS

#CACHEDNS – DNS Response Caching	SELINT 2
<p>AT#CACHEDNS= [<mode>]</p>	<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>
<p>AT#CACHEDNS?</p>	<p>Read command reports whether the DNS Response Caching is currently enabled or not, in the format:</p> <p>#CACHEDNS: <mode></p>
<p>AT#CACHEDNS=?</p>	<p>Test command returns the currently cached mapping along with the range of available values for parameter <mode>, in the format:</p> <p>#CACHEDNS: [<hostnI>,<IPaddrI>,[...,<hostnn>,<IPaddrn>]](0,1)</p> <p>where: <hostnn> - hostname, string type <IPaddrn> - IP address, string type, in the format “xxx.xxx.xxx.xxx”</p>



5.1.6.8.10. 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> <p>Note: this command is not allowed for sockets associated to a GSM context (see #SCFG).</p>	
AT#SKTCT?	Read command reports the current TCP connection time-out.	
AT#SKTCT=?	Test command returns the allowed values for parameter <tout>.	
Example	AT#SKTCT=600 OK <i>socket first connection answer time-out has been set to 60 s.</i>	

5.1.6.8.11. 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 <p>Note: this command is not allowed for sockets associated to a GSM context (see #SCFG).</p>	
AT#SKTSAV=?	Test command returns the OK result code.	
Example	AT#SKTSAV OK	



#SKTSAV - Socket Parameters Save		SELINT 2
	<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.	

5.1.6.8.12. Socket Parameters Reset - #SKTRST

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

5.1.6.8.13. GPRS Context Activation - #GPRS

#GPRS - GPRS Context Activation		SELINT 2
AT#GPRS=[<mode>]	Execution command deactivates/activates the PDP context #1 , eventually proceeding with the authentication with the parameters given with #PASSW and #USERID . Parameter: <mode> - PDP context activation mode 0 - PDP context #1 deactivation request 1 - PDP context #1 activation request In the case that the PDP context #1 has been activated, the result code OK is preceded by the intermediate result code: +IP: <ip_address_obtained> reporting the local IP address obtained from the network. Note: at least a socket identifier needs to be associated with PDP context #1 in	



#GPRS - GPRS Context Activation	SELINT 2
	<p>order to every #GPRS action be effective; by default the PDP context #1 is associated with socket identifiers 1, 2 and 3, but it is possible to modify these associations through #SCFG. Trying to issue a #GPRS action when no socket identifier is associated with PDP context #1 raises an error.</p> <p>Note: if the PDP context #1 has been activated issuing AT#GPRS=1, then</p> <ul style="list-style-type: none"> if you request to deactivate the PDP context #1 during a call issuing AT#GPRS=0 and then, after the call termination, you want to activate the PDP context #1 again through #GPRS, you need to issue the following sequence of three commands <pre>AT#GPRS=1 OK AT#GPRS=0 OK AT#GPRS=1 OK</pre> <p>Note: this command is not allowed if GSM context has been activated (see AT#SGACT=0,1).</p>
AT#GPRS?	<p>Read command reports the current status of the PDP context #1, in the format:</p> <pre>#GPRS: <status></pre> <p>where:</p> <pre><status></pre> <ul style="list-style-type: none"> 0 - PDP context #1 deactivated 1 - PDP context #1 activated 2 - PDP context #1 activation pending.
AT#GPRS=?	<p>Test command returns the allowed values for parameter <mode>.</p>
Example	<pre>AT#GPRS=1 +IP: 129.137.1.1 OK Now PDP Context #1 has been activated and our IP is 129.137.1.1</pre> <pre>AT#GPRS=0 OK Now PDP Context #1 has been deactivated, IP is lost.</pre>
Note	<p>It is strongly recommended to use the same command (e.g. #GPRS) to activate the context, deactivate it and interrogate about its status.</p>



5.1.6.8.14. 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 GPRS context 1 is correctly set with +CGDCONT - the authentication parameters are set (#USERID, #PASSW) the GPRS coverage is enough to permit a connection - the GPRS has been activated with AT#GPRS=1 <p>Note: this command is not allowed for sockets associated to a GSM context (see #SCFG).</p>
AT#SKTD?	<p>Read command reports the socket dial parameters values, in the format:</p> <p>AT#SKTD: <socket type>,<remote port>,<remote addr>,<closure type>,<local port></p>
AT#SKTD=?	Test command returns the allowed values for the parameters.
Example	AT#SKTD=0,1024,"123.255.020.001",255



#SKTD - Socket Dial	SELINT 2
<p>CONNECT</p> <p>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></p> <p>AT#SKTD=0,1024,"www.telit.net",,255 CONNECT</p>	

5.1.6.8.15. Socket Listen - #SKTL

#SKTL - Socket Listen	SELINT 2
<p>AT#SKTL =[<mode>, <socket type>, <input port>, [<closure type>]]</p>	<p>Execution command opens/closes the socket listening for connection requests.</p> <p>Parameters:</p> <p><mode> - socket mode 0 - closes socket listening 1 - starts socket listening</p> <p><socket type> - socket protocol type 0 -TCP (default) 1- UDP</p> <p><input port> - local host input port to be listened 1..65535 - port number</p> <p><closure type> - socket closure behaviour for TCP when remote host has closed 0 - local host closes immediately 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 GPRS context 1 is correctly set with +CGDCONT - the authentication parameters are set (#USERID, #PASSW) - the GPRS coverage is enough to permit a connection - the GPRS has been activated with AT#GPRS=1 <p>When a connection request comes on the input port, if the sender is not filtered by the internal firewall (see command #FRWL), an unsolicited code is reported:</p> <p>+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>



#FRWLIPV6 - Firewall Setup for IPV6 addresses	SELINT 2
	<p>address in the format xxx.xxx.xxx.xxx. xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx or in the format yyyy:yyyy:yyyy:yyyy:yyyy: yyyy:yyyy:yyyy</p> <p><net_mask> - mask to be applied on the <ip_addr>; string type, it can be any valid IP address mask in the format xxx.xxx.xxx.xxx. xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx or in the format yyyy:yyyy:yyyy:yyyy:yyyy: yyyy:yyyy:yyyy</p> <p>Command returns OK result code if successful.</p> <p>Note: the firewall applies for incoming (listening) connections only.</p> <p>Firewall general policy is DROP, therefore all packets that are not included into an ACCEPT chain rule will be silently discarded.</p> <p>When a packet comes from the IP address incoming_IP, the firewall chain rules will be scanned for matching with the following criteria:</p> <p>incoming_IP & <net_mask> = <ip_addr> & <net_mask></p> <p>If criteria is matched, then the packet is accepted and the rule scan is finished; if criteria is not matched for any chain the packet is silently dropped.</p>
<p>AT#FRWLIPV6?</p>	<p>Read command reports the list of all ACCEPT chain rules registered in the Firewall settings in the format:</p> <p>#FRWLIPV6: <ip_addr>,<net_mask> #FRWLIPV6: <ip_addr>,<net_mask> ... OK</p>
<p>AT#FRWLIPV6=?</p>	<p>Test command returns the allowed values for parameter <action>.</p>



5.1.6.8.19. GPRS Data Volume - #GDATAVOL

#GDATAVOL - GPRS Data Volume	SELINT 2
<p>AT#GDATAVOL= [<mode>]</p>	<p>Execution command reports, for every active PDP context, the amount of data the last GPRS session (and the last GSM session, if GSM context is active) received and transmitted, or it will report the total amount of data received and transmitted during all past GPRS (and GSM) sessions, since last reset.</p> <p>Parameter: <mode></p> <p>0 - it resets the GPRS data counter for the all the available PDP contexts (1-5) and GSM data counter for GSM context 0</p> <p>1 - it reports the last GPRS session data counter for the all the set PDP contexts (i.e. all the PDP contexts with APN parameter set using +CGDCONT) (and the last GSM session data counter for the GSM context, if set through #GSMCONT), in the format:</p> <p>#GDATAVOL: <cidn>,<totn>,<sentn>,<receivedn>[<CR><LF> #GDATAVOL: <cidm>,<totm>,<sentm>,<receivedm>[...]]</p> <p>where:</p> <p><cidn> - PDP context identifier 0 - specifies the GSM context 1..5 - numeric parameter which specifies a particular PDP context definition</p> <p><totn> - number of bytes either received or transmitted in the last GPRS (or GSM) session for <cidn> PDP context;</p> <p><sentn> - number of bytes transmitted in the last GPRS (or GSM) session for <cidn> PDP context;</p> <p><receivedn> - number of bytes received in the last GPRS (or GSM) session for <cidn> PDP context;</p> <p>2 - it reports the total GPRS data counter, since last reset, for the all the set PDP contexts (i.e. all the PDP context with APN parameter set using +CGDCONT) and the total GSM data counter for the GSM context, if set through #GSMCONT, in the format:</p> <p>#GDATAVOL: <cidn>,<totn>,<sentn>,<receivedn>[<CR><LF> #GDATAVOL: <cidm>,<totm>,<sentm>,<receivedm>[...]]</p> <p>where:</p> <p><cidn> - PDP context identifier 0 - specifies the GSM context 1..5 - numeric parameter which specifies a particular PDP context definition</p> <p><totn> - number of bytes either received or transmitted, in every GPRS (or GSM) session since last reset, for <cidn> PDP context;</p> <p><sentn> - number of bytes transmitted, in every GPRS (or GSM) session since last reset, for <cidn> PDP context;</p> <p><receivedn> - number of bytes received, in every GPRS (or GSM) session</p>



#GDATAVOL - GPRS Data Volume		SELINT 2
	<p>since last reset, for <cidn> PDP context;</p> <p>Note: last GPRS and GSM session counters are not saved in NVM so they are loosen at power off.</p> <p>Note: total GPRS and GSM session counters are saved on NVM.</p>	
AT#GDATAVOL=?	Test command returns the range of supported values for parameter <mode>.	

5.1.6.8.20. ICMP Ping Support - #ICMP

#ICMP - ICMP Ping Support		SELINT 2
AT#ICMP=<mode>	<p>Set command enables/disables the ICMP Ping support.</p> <p>Parameter: <mode></p> <ul style="list-style-type: none"> 0 - disable ICMP Ping support (default) 1 - enable firewalled ICMP Ping support: the module is sending a proper ECHO_REPLY only to a subset of IP Addresses pinging it; this subset of IP Addresses has been previously specified through #FRWL (see) 2 - enable free ICMP Ping support; the module is sending a proper ECHO_REPLY to every IP Address pinging it. 	
AT#ICMP?	<p>Read command returns whether the ICMP Ping support is currently enabled or not, in the format:</p> <p>#ICMP: <mode></p>	
AT#ICMP=?	Test command reports the supported range of values for the <mode> parameter.	



5.1.6.8.22. DNS from Network - #NWDNS

#NWDNS – DNS from Network	SELINT 2
<p>AT#NWDNS= [<cid>,<cid> [...]]</p>	<p>Execution command returns either the primary and secondary DNS addresses for the GSM context (if specified) and/or a list of primary and secondary DNS addresses for the specified PDP context identifiers</p> <p>Parameters: <cid> - context identifier 0 - specifies the GSM context (see +GSMCONT). 1..5 - numeric parameter which specifies a particular PDP context definition (see +CGDCONT command).</p> <p>Note: if no <cid> is specified, the DNS addresses for all defined contexts are returned.</p> <p>Note: issuing the command with more than 6 parameters raises an error.</p> <p>Note: the command returns only one row of information for every specified <cid>, even if the same <cid> is present more than once.</p> <p>The command returns a row of information for every specified <cid> whose context has been already defined. No row is returned for a <cid> whose context has not been defined yet. Response format is:</p> <p>#NWDNS: <cid>,<PDNSaddress>,<SDNSaddress>[<CR><LF> #NWDNS: <cid>,<PDNSaddress>,<SDNSaddress> [...]]</p> <p>where: <cid> - context identifier, as before <PDNSaddress>,<SDNSaddress> - primary and secondary DNS addresses set through AT#DNS command. If not set, they are the primary and secondary DNS addresses assigned during the PDP(or GSM) context activation.</p>
<p>AT#NWDNS=?</p>	<p>Test command returns a list of defined <cid>s.</p>



#SMSMOVE – Move Short Message to other memory	SELINT 2
	<pre>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>

5.1.6.9.2. SMS Commands Operation Mode - #SMSMODE

#SMSMODE - SMS Commands Operation Mode	SELINT 2
<p>AT#SMSMODE= <mode></p>	<p>Set command enables/disables the check for presence of SMS Service Centre Address in the FDN phonebook</p> <p>Parameter: <mode></p> <ul style="list-style-type: none"> 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>	<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>
<p>AT#SMSMODE=?</p>	<p>Test command reports the supported range of values for parameter <mode></p>



5.1.6.10. E-mail Management AT Commands

5.1.6.10.1. E-mail SMTP Server - #ESMTP

#ESMTP - E-mail SMTP Server		SELINT 2
AT#ESMTP= [<smtp>]	Set command sets the SMTP server address, used for E-mail sending. SMTP server can be specified as IP address or as nick name. Parameter: <smtp> - SMTP server address, string type. This parameter can be either: <ul style="list-style-type: none"> - any valid IP address in the format: xxx.xxx.xxx.xxx - any host name to be solved with a DNS query in the format: <host name> (factory default is the empty string "")	
AT#ESMTP?	Read Command reports the current SMTP server address, in the format: #ESMTP: <smtp>	
AT#ESMTP=?	Test command returns the max length for the parameter <smtp>.	
Example	AT#ESMTP="smtp.mydomain.com" OK	
Note	The SMTP server used shall be inside the APN space (the smtp server provided by the network operator) or it must allow the Relay, otherwise it will refuse to send the e-mail.	

5.1.6.10.2. E-mail Sender Address - #EADDR

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

5.1.6.10.3. E-mail Authentication User Name - #EUSER



5.1.6.10.5. 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 GPRS context has already been activated by either AT#SGACT=1,1 or AT#GPRS=1.</p> <p>It is also possible to send an e-mail on the GSM context, if it has already been activated by AT#SGACT=0,1.</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>
AT#EMAILD=?	Test command returns the OK result code.
Example	<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.. OK <i>Message has been sent.</i></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</p> <p>0 – no attachment 1 – attach a txt file 2 – attach a binary file(jpg,bin,pdf,...)</p> <p><filename> - attached file name (maximum length 50 characters)</p> <p><encod> -Content-Transfer-Encoding used for attachment</p> <p>0 – “7bit” means data all represented as short lines of US-ASCII data 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. 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>	<p>at#smtpcl="me@myaddress.com","test1",1,"sample.txt",0 >message body...this is the text of the mail message... <i>Send CTRL-Z</i> CONNECT</p>



	<p><i>...data received on the serial port are sent as attachment....</i></p> <p><i>Send escape sequence to close the SMTP connection</i> +++ NO CARRIER</p> <p>at#smtpcl="me@myaddress.com","test2",2,"image.jpg",1 >message body...this is the text of the mail message... <i>Send CTRL-Z</i> CONNECT</p> <p><i>...data received on the serial port are base64-encoded and sent as attachment....</i></p> <p><i>Send escape sequence to close the SMTP connection</i> +++ NO CARRIER</p>
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5.1.6.10.10. 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?	<p>Read command reports the currently selected <Port> in the format: #ESMTPPORT: <Port ></p>	
AT#ESMTPPORT=?	<p>Test command reports the supported range of values for parameter < Port ></p>	

5.1.6.10.11. Configure SMTP parameters - #SMTPCFG



	<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: if the SSL encryption is enabled, the <cid> parameter has to be set to 1.</p> <p>Note: only one profile can use the SSL encryption.</p> <p>Note: the SSL encryption can be enabled only if <Enable> parameter of #SSEn 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>
<p>AT#HTTPCFG?</p>	<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>
<p>AT#HTTPCFG =?</p>	<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</p>



	<p>parameter <server_address>.</p> <p><u_length> - integer type value indicating the maximum length of parameter <username>.</p> <p><p_length> - integer type value indicating the maximum length of parameter <password></p>
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5.1.6.11.2. Send HTTP GET, HEAD or DELETE request - #HTTPQRY

#HTTPQRY – send HTTP GET, HEAD or DELETE request	SELINT 2
<p>AT#HTTPQRY=<prof_id>,<command>,<resource>[,<extra_header_line>]</p>	<p>Execution command performs a GET, HEAD or DELETE request to HTTP server.</p> <p>Parameters:</p> <p><prof_id> - Numeric parameter indicating the profile identifier. Range: 0-2</p> <p><command>: Numeric parameter indicating the command requested to HTTP server: 0 – GET 1 – HEAD 2 – DELETE</p> <p><resource>: String parameter indicating the HTTP resource (uri), object of the request</p> <p><extra_header_line>: String parameter indicating optional HTTP header line</p> <p>If sending ends successfully, the response is OK; otherwise an error code is reported.</p> <p>Note: the HTTP request header sent with #HTTPQRY always contains the “Connection: close” line, and it 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>#HTTPPRING: <prof_id>,<http_status_code>,<content_type>,<data_size></p> <p>Where:</p> <p><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</p>



	command, then the URC #HTTPRING <code><http_status_code></code> parameter has value 0.
AT#HTTPQRY=?	<p>Test command reports the supported range of values for the parameters <code><prof_id></code> and <code><command></code> and the maximum length of <code><resource></code> 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:</p> <p><code><r_length></code> - integer type value indicating the maximum length of parameter <code><resource></code>.</p> <p><code><m_length></code> - integer type value indicating the maximum length of parameter <code><extra_header_line></code>.</p>

5.1.6.11.3. 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 <code><CR></code>; after that the data can be entered from TE, sized <code><data_len></code> bytes.</p> <p>Parameters:</p> <p><code><prof_id></code> - Numeric parameter indicating the profile identifier. Range: 0-2</p> <p><code><command></code>: Numeric parameter indicating the command requested to HTTP server: 0 – POST 1 – PUT</p> <p><code><resource></code>: String parameter indicating the HTTP resource (uri), object of the request</p> <p><code><data_len></code>: Numeric parameter indicating the data length to input in bytes</p> <p><code><post_param></code>: 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</p>



5.1.6.11.5. Receive and store HTTP server data - #HTTPTCVF

#HTTPTCVF – Receive and store HTTP server data		SELINT 2
AT#HTTPTCVF= <prof_id> , <dest_filename> [,<verbose>]	Execution command allows to read data from a HTTP server, in response to a previous HTTP module request, and to save it into module's file system. The module is notified of this data by the #HTTPTCVF URC. Parameter: <prof_id> - Numeric parameter indicating the profile identifier. Range: 0-2 <dest_filename> - Name of the destination file to be written into module's file system, string type (max 16 chars, case sensitive). <verbose> - 0: Disable verbose mode (default) - 1: Enable verbose mode	
AT#HTTPTCVF=?	Test command reports the range of supported values for parameter <prof_id> in the format: #HTTPTCVF: (list of supported <prof_id>s)	
Note	When verbose mode is enabled, i.e. <verbose> is set to 1, the '#' character is printed on the AT command port every time a chunk of data is received and then written.	

5.1.6.12. Easy Script® Extension - Python9 Interpreter, AT Commands

5.1.6.12.1. Write Script - #WSCRIPT

#WSCRIPT - Write Script		SELINT 2
AT#WSCRIPT= [<script_name> , <size> , [,<hidden>]]	Execution command causes the MODULE to store a file in the Easy Script® related NVM, naming it <script_name> <div style="border: 1px solid black; padding: 5px;"> <p>The file should be sent using RAW ASCII file transfer. It is important to set properly the port settings. In particular: Flow control: hardware. Baud rate: 115200 bps</p> </div> Parameters: <script_name> - name of the file in NVM, string type (max 16 chars, case	

⁹ PYTHON is a registered trademark of the Python Software Foundation.



#WSCRIPT - Write Script	SELINT 2
	<p>sensitive).</p> <p><size> - file size in bytes <hidden> - file hidden attribute 0 - file content is readable with #RSCRIPT (default). 1 - file content is readable with #RSCRIPT (no effect).</p> <p>The device shall prompt a five character sequence <CR><LF><greater_than><greater_than><greater_than> (IRA 13, 10, 62, 62, 62) after command line is terminated with <CR>; after that a file can be entered from TE, sized <size> bytes.</p> <p>The operations completes when all the bytes are received.</p> <p>If writing ends successfully, the response is OK; otherwise an error code is reported.</p> <p>Note: the file name should be passed between quotes; every textual script file must have .py extension, whilst every pre-compiled executable script file must have .pyo extension; file names are case sensitive.</p> <p>Note: when sending the script be sure that the line terminator is <CR><LF> and that your terminal program does not change it.</p>
AT#WSCRIPT=?	Test command returns OK result code.
Example	<p>AT#WSCRIPT="First.py ",54,0 >>> <i>here receive the prompt; then type or send the textual script, sized 54 bytes</i></p> <p>OK</p> <p><i>Textual script has been stored</i></p>
Note	It's recommended to use the extension .py only for textual script files and the extension .pyo only for pre-compiled executable script files.

5.1.6.12.2. Select Active Script - #ESCRIP

#ESCRIP - Select Active Script	SELINT 2
<p>AT#ESCRIP= [<script_name>]</p>	<p>Set command selects either</p> <ol style="list-style-type: none"> the name of the textual script file that will be compiled and executed by the Easy Script® compiler at startup according to last #STARTMODESCR setting, or the name of the pre-compiled executable file that will be executed at startup according to last #STARTMODESCR setting. <p>We call this file (either textual or pre-compiled) the current script.</p>



#ESCRIP - Select Active Script	SELINT 2
	<p>Parameter: <script_name> - file name, string type (max 16 chars, case sensitive).</p> <p>Note: all textual script files must have .py extension; all pre-compiled executable files must have .pyo extension.</p> <p>Note: <script_name> must match to the name of a file written by #WSCRIPT in order to have it run.</p> <p>Note: the command does not check whether a textual script named <script_name> does exist or not in the Easy Script® related NVM. If the file <script_name> is not present at startup then the compiler will not execute.</p>
AT#ESCRIP?	Read command reports as a quoted string the file name of the current script .
AT#ESCRIP=?	Test command returns OK result code.



5.1.6.12.3. Script Execution Start Mode - #STARTMODESCR

#STARTMODESCR - Script Execution Start Mode	SELINT 2
<p>AT#STARTMODESCR= <script_start_mode> [,<script_start_to>]</p>	<p>Set command sets the current script (see #ESCRIP) execution start mode.</p> <p>Parameter:</p> <p><script_start_mode> - currente script execution start mode</p> <p>0 - current script will be executed at startup only if the DTR line is found Low (that is: COM is not open on a PC), otherwise the Easy Script® interpreter will not execute and the MODULE will behave normally answering only to AT commands on the serial port (factory default).</p> <p>1 - current script will be executed at startup only if the user does not send any AT command on the serial port for the time interval specified in <script_start_to> parameter, otherwise the Easy Script® interpreter will not execute and the MODULE will behave normally answering only to AT commands on the serial port. The DTR line is not tested.</p> <p><script_start_to> - current script start time-out;</p> <p>10..60 - time interval in seconds; this parameter is used only if parameter <script_start_mode> is set to 1; it is the waiting time for an AT command on the serial port to disable active script execution start. If the user does not send any AT command on the serial port for the time specified in this parameter active script will not be executed (default is 10).</p>
<p>AT#STARTMODESCR?</p>	<p>Read command reports the current script start mode and the current script start time-out, in the format:</p> <p>#STARTMODESCR= <script_start_mode>,<script_start_timeout></p>
<p>AT#STARTMODESCR=?</p>	<p>Test command returns the range of available values for parameters <script_start_mode> and <script_start_timeout>, in the format:</p> <p>#STARTMODESCR: (0,1),(10-60)</p>



5.1.6.12.4. Execute Active Script - #EXECSCR

#EXECSCR - Execute Active Script		SELINT 2
AT#EXECSCR	Execution command causes the current script (see #ESCRIP) execution not at startup. This command is useful when the execution at startup has been blocked deliberately and the user wants to control execution start.	
AT#EXECSCR=?	Test command returns OK result code.	

5.1.6.12.5. Read Script - #RSCRIPT

#RSCRIPT - Read Script		SELINT 2
AT#RSCRIPT= [<script_name>]	Execution command reports the content of file <script_name>. Parameter: <script_name> - file name, string type (max 16 chars, case sensitive). The device shall prompt a five character sequence <CR><LF><less_than><less_than><less_than> (IRA 13, 10, 60, 60, 60) followed by the file content. Note: If the file <script_name> is not present an error code is reported.	
AT#RSCRIPT=?	Test command returns OK result code.	
Example	AT#RSCRIPT="First.py " <i>hereafter receive the prompt; then the script is displayed, immediately after the prompt</i> <<<import MDM MDM.send('AT\r',10) Ans=MDM.receive(20) OK	



5.1.6.12.6. List Script Names - #LSCRIPT

#LSCRIPT - List Script Names		SELINT 2
AT#LSCRIPT	<p>Execution command reports either the list of file names for the files currently stored in the Easy Script® related NVM and the available free NVM memory in the format:</p> <pre>#LSCRIPT: <script_name1>,<size1>... [<CR><LF>#LSCRIPT: <script_namen>,<size>]] <CR><LF>#LSCRIPT: free bytes: <free_NVM></pre> <p>where: <script-namen> - file name, quoted string type (max 16 chars, case sensitive) <size> - size of script in bytes <free_NVM> - size of available NVM memory in bytes</p>	
AT#LSCRIPT=?	Test command returns OK result code.	
Example	<pre>AT#LSCRIPT #LSCRIPT: "First.py",51 #LSCRIPT: "Second.py",178 #LSCRIPT: "Third.py",95 #LSCRIPT: free bytes: 20000 OK</pre>	

#LCSCRIPT - List Script Names		SELINT 2
AT#LCSCRIPT	<p>Execution command reports either the list of file names for the files currently stored in the Easy Script® related NVM, adding CRC16 information, and the available free NVM memory in the format:</p> <pre>#LCSCRIPT: <script_name1>,<size1>[,<crc1>]... [<CR><LF>#LCSCRIPT: <script_namen>,<size>[,<crcn>]]] <CR><LF>#LCSCRIPT: free bytes: <free_NVM></pre> <p>where: <script-namen> - file name, quoted string type (max 16 chars, case sensitive) <size> - size of script in bytes <crcn> - CRC16 poly ($x^{16}+x^{12}+x^5+1$) of script in hex format <free_NVM> - size of available NVM memory in bytes</p> <p>Note: CRC16 is calculated using the standard reversed CRC16-CCITT $x^{16}+x^{12}+x^5+1$ polynomial (0x1021 representation, reversed) with initial value FFFF.</p> <p>Note: if one file currently stored in NVM is in use than CRC16 cannot be calculated and execution command does not report <crcn> for that file. This is always true if command is executed by a Python script because at least the file pointed by #ESCRIP is in use.</p>	



#LCSCRIPT - List Script Names	SELINT 2
<p>AT#LCSCRIPT=<script_name></p>	<p>Execution command reports size and CRC16 information of file <script_name> in the format:</p> <p>[#LCSCRIPT: <script_name>,<size>[,<crc>]]</p> <p>where:</p> <p><script_name> - file name, quoted string type (max 16 chars, case sensitive) <size> - size of script in bytes <crc> - CRC16 poly ($x^{16}+x^{12}+x^5+1$) of script in hex format</p> <p>Parameter:</p> <p><script_name> - file name, string type (max 16 chars, case sensitive).</p> <p>Note: CRC16 is calculated using the standard reversed CRC16-CCITT $x^{16}+x^{12}+x^5+1$ polynomial (0x1021 representation, reversed) with initial value FFFF.</p> <p>Note: if file <script_name> is in use than CRC16 cannot be calculated and execution command does not report <crc>.</p> <p>Note: if file <script_name> is not in the list of files stored in NVM execution command exits with error message.</p>
<p>AT#LCSCRIPT=?</p>	<p>Test command returns OK result code.</p>
<p>Example</p>	<p>AT#LCSCRIPT #LCSCRIPT: "First.py",51,8FD6 #LCSCRIPT: "Second.py",178,A034 #LCSCRIPT: "Third.py",120,7C48 #LCSCRIPT: free bytes: 20000</p> <p>OK</p> <p>AT#LCSCRIPT="Second.py" #LCSCRIPT: "Second.py",178,A034</p> <p>OK</p> <p>If file Third.py is already in use. AT#LCSCRIPT #LCSCRIPT: "First.py",51,8FD6 #LCSCRIPT: "Second.py",178,A034 #LCSCRIPT: "Third.py",120 #LCSCRIPT: free bytes: 20000</p> <p>OK</p>



5.1.6.12.7. Delete Script - #DSCRIPT

#DSCRIPT - Delete Script		SELINT 2
AT#DSCRIPT= [<script_name>]	<p>Execution command deletes a file from Easy Script® related NVM memory.</p> <p>Parameter:</p> <p><script_name> - name of the file to delete, string type (max 16 chars, case sensitive)</p> <p>Note: if the file <script_name> is not present an error code is reported.</p>	
AT#DSCRIPT=?	Test command returns OK result code.	
Example	AT#DSCRIPT="Third.py" OK	

5.1.6.12.8. Delete All Scripts - #DASCRIP

#DASCRIP - Delete All Scripts		SELINT 2
AT#DASCRIP	<p>Execution command deletes all files from Easy Script® related NVM memory.</p> <p>Note: if product supports directories execution command deletes all files from current working directory, it does not delete directories.</p>	
AT#DASCRIP=?	Test command returns OK result code.	

5.1.6.12.9. 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>	



#REBOOT - Reboot		SELINT 2
AT#REBOOT=?	Test command returns OK result code.	
Example	AT#REBOOT OK ... Module Reboots ...	



5.1.6.13. SIM Toolkit Commands

5.1.6.13.1. 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



#STIA - SIM Toolkit Interface Activation	SELINT 2
	<p>type of proactive command issued by the SIM:</p> <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 style="text-align: center;"><i>if <cmdType>=1 (REFRESH)</i></p> <p>an unsolicited notification will be sent to the user:</p> <p>#STN: <cmdType>,<refresh type></p> <p>where:</p> <p><refresh type></p> <ul style="list-style-type: none"> 0 - SIM Initialization and Full File Change Notification; 1 - File Change Notification; 2 - SIM Initialization and File Change Notification; 3 - SIM Initialization; 4 - SIM Reset <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>In this case neither #STGI nor #STSR commands are required:</p> <ul style="list-style-type: none"> • AT#STGI is accepted anyway. • AT#STSR=<cmdType>,0 will answer OK but do nothing. </div> <p style="text-align: center;"><i>if <cmdType>=17 (SEND SS)</i> <i>if <cmdType>=19 (SEND SHORT MESSAGE)</i> <i>if <cmdType>=20 (SEND DTMF)</i> <i>if <cmdType>=32 (PLAY TONE)</i></p> <p>an unsolicited notification will be sent if allowed by SIM (see GSM 11.14):</p> <p>#STN: <cmdType>[,<text>]</p> <p>where:</p> <p><text> - (optional) text to be displayed to user</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>In these cases neither #STGI nor #STSR commands are required:</p> <ul style="list-style-type: none"> • AT#STGI is accepted anyway. • AT#STSR=<cmdType>,0 will answer OK but do nothing. </div> <p>In case of SEND SHORT MESSAGE (<cmdType>=19) command if sending to network fails an unsolicited notification will be sent</p>



#STIA - SIM Toolkit Interface Activation	SELINT 2
<p>#STN: 119</p> <p style="text-align: center;"><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:</p> <p><cmdDetails> - unsigned Integer used as a bit field. 0..255 - used as a bit field:</p> <p>bit 1: 0 - normal priority 1 - high priority</p> <p>bits 2 to 7: reserved for future use</p> <p>bit 8: 0 - clear message after a delay 1 - wait for user to clear message</p> <p><text> - (optional) text to be displayed to user</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>In this case:</p> <ol style="list-style-type: none"> 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. If <cmdDetails>/bit8 is 1 #STSR command is required </div> <p style="text-align: center;"><i>if <cmdType>=40 (SET UP IDLE MODE TEXT)</i></p> <p>an unsolicited notification will be sent:</p> <p>#STN: <cmdType>[,<text>]</p> <p>where:</p> <p><text> - (optional)text to be displayed to user</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>In these cases neither #STGI nor #STSR commands are required:</p> <ul style="list-style-type: none"> AT#STGI is accepted anyway. AT#STSR=<cmdType>,0 will answer OK but do nothing. </div> <p style="text-align: center;"><i>if <cmdType>=18 (SEND USSD)</i></p>	



5.1.6.13.2. SIM Toolkit Get Information - #STGI

#STGI - SIM Toolkit Get Information	SELINT 2
<p>AT#STGI= [<cmdType>]</p>	<p>#STGI set command is used to request the parameters of a proactive command from the ME.</p> <p>Parameter: <cmdType> - proactive command ID according to GSM 11.14 (decimal); these are only those command types that use the AT interface; SAT commands which are not using the AT interface (not MMI related SAT commands, e.g. PROVIDE LOCAL INFORMATION) are executed without sending any indication to the user</p> <ul style="list-style-type: none"> 1 - REFRESH 5 – SET UP EVENT LIST 16 - SET UP CALL 17 - SEND SS 18 - SEND USSD 19 - SEND SHORT MESSAGE 20 - SEND DTMF 32 - PLAY TONE 33 - DISPLAY TEXT 34 - GET INKEY 35 - GET INPUT 36 - SELECT ITEM 37 - SET UP MENU 40 – SET UP IDLE MODE TEXT 64 – OPEN CHANNEL <p>Requested command parameters are sent using an #STGI indication:</p> <p>#STGI: <parameters></p> <p>where <parameters> depends upon the ongoing proactive command as follows:</p> <p style="text-align: center;"><i>if <cmdType>=1 (REFRESH)</i></p> <p>#STGI: <cmdType>,<refresh type> where: <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 style="text-align: center;"><i>if <cmdType>=5 (SET UP EVENT LIST)</i></p>



#STGI - SIM Toolkit Get Information	SELINT 2
	<p style="text-align: center;"><i>if <cmdType>=33 (DISPLAY TEXT)</i></p> <p>#STGI: <cmdType>,<cmdDetails>[,<text>]</p> <p>where: <cmdDetails> - unsigned Integer used as a bit field. 0..255 - used as a bit field: bit 1: 0 - normal priority 1 - high priority bits 2 to 7: reserved for future use bit 8: 0 - clear message after a delay 1 - wait for user to clear message <text> - text to be displayed to user</p> <p style="text-align: center;"><i>if <cmdType>=34 (GET INKEY)</i></p> <p>#STGI: <cmdType>,<commandDetails>,<text></p> <p>where: <commandDetails> - unsigned Integer used as a bit field. 0..255 - used as a bit field: bit 1: 0 - Digits only (0-9, *, # and +) 1 - Alphabet set; bit 2: 0 - SMS default alphabet (GSM character set) 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 style="text-align: center;"><i>if <cmdType>=35 (GET INPUT)</i></p> <p>#STGI: <cmdType>,<commandDetails>,<text>,<responseMin>,<responseMax>[,<defaultText>]</p>



#STGI - SIM Toolkit Get Information	SELINT 2
	<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> <p style="text-align: center;"><i>if <cmdType>=37 (SET UP MENU)</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 - 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></p>



#STGI - SIM Toolkit Get Information	SELINT 2
	<p><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> where: <state> - SAT interface state (see #STIA) <cmdType> - ongoing proactive command</p> <p>An error message will be returned if there is no pending command.</p>
AT#STGI=?	Test command returns the range for the parameters <state> and <cmdType>.
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. A typical SAT session on AT interface starts after an #STN: 37 unsolicited code is received, if enabled. At that point usually an AT#STGI=37 command is issued, and after the SAT main menu has been displayed on TE an AT#STSR=37,0,x command is issued to select an item in the menu (see below). The session usually ends with a SIM action like sending an SMS, or starting a call. After this, to restart the session from the beginning going back to SAT main menu it is usually required an AT#STSR=37,16 command.</p> <p>The unsolicited notification sent to the user:</p> <p>#STN:237</p> <p>is an indication that the main menu of the SIM Application has been removed from the TA, and it is no longer available. In this case AT#STGI=37 command response will be always ERROR.</p>

5.1.6.13.3. 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 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> <p><data> - data entered by user, depending on <cmdType>, only required if <Result> is 0:</p> <p style="text-align: center;"><i>Get Inkey</i></p> <p><data> contains the key pressed by the user; used character set should be the one selected with +CSCS.</p> <p>Note: if, as a user response, a binary choice (Yes/No) is requested by the SIM application using bit 3 of the <commandDetails> parameter the valid content of the <inputString> is:</p> <p>a) "IRA", "8859-1", "PCCP437" charsets: "Y" or "y" (positive answer) and "N" or "n" (negative answer) b) UCS2 alphabet "0079" or "0059" (positive answer) and "006E" or "004E" (negative answer)</p> <p style="text-align: center;"><i>Get Input</i></p> <p><data> - contains the string of characters entered by the user (see above)</p> <p style="text-align: center;"><i>Select Item</i></p> <p><data> - contains the item identifier selected by the user</p> <p>Note: Use of icons is not supported. All icon related actions will respond with no icon available.</p>
<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>#STSRI: <state>,<cmdType></p> <p>where:</p> <p><state> - SAT interface state (see #STIA) <cmdType> - ongoing proactive command</p>



#STSR - SIM Toolkit Send Response		SELINT 2
	An error message will be returned if there is no pending command.	
AT#STSR=?	Test command returns the range for the parameters <state> and <cmdType> .	

5.1.6.13.4. SIM Toolkit terminal Attach - #STTA

#STTA – SIM Toolkit Terminal Attach		SELINT 2
AT#STTA=<state>	<p>This command attaches/detaches the SIM Toolkit application to the AT instance reserved for this use (see #STACFG).</p> <p>Parameters: <state>: attached state 0 – SIM Toolkit detaches 1 – SIM Toolkit attaches</p> <p>If SIM Toolkit application has been already attached/detached the command does nothing and returns OK.</p>	
AT#STTA?	Read command reports the current <state> in the format: #STTA: <state>	
AT#STTA=?	Test command reports the supported range of values for parameter <state>	
Note	The AT instance reserved for the SIM Toolkit application is setted by the command #STACFG (default is #3).	

5.1.6.13.5. Configure SIM Toolkit Application parameters - STACFG

#STACFG – Configure SIM Toolkit Application parameters		SELINT 2
AT#STACFG=<instance> [, <UNUSED_1>[, <UNUSED_2>]	<p>Set command configures the SIM Toolkit Application.</p> <p>Parameters: <instance>: AT instance that will be used by the SIM Toolkit Application (see #STTA). Range 1 - 5, default 3.</p> <p><UNUSED_1>: reserved for future use</p> <p><UNUSED_2>: reserved for future use</p>	



	<p>Note: <instance> parameter can be setted only if <state> parameter of #STTA is set to 0, otherwise the set command returns ERROR.</p> <p>Note: an ERROR is issued if <UNUSED_1> and <UNUSED_2> parameters are set with a value different from 0.</p>
AT#STACFG?	<p>Read command returns the current settings of parameters in the format:</p> <p># STACFG:<instance>,0,0</p>
AT#STACFG=?	<p>Test command returns the supported values for the #STACFG parameters</p>



5.1.6.14. Phonebook AT Commands Set

5.1.6.14.1. Read Group Entries - #CPBGR

#CPBGR- Read Group Entries	SELINT 2
<p>AT#CPBGR= <index1> [,<index2>]</p>	<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: <index<i>n</i>> - the location number of the GAS entry <text> - the alphanumeric text associated to the entry</p>
<p>AT#CPBGR=?</p>	<p>Test command returns the supported range of values for parameters <index<i>n</i>> 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>



5.1.6.14.2. Write Group Entries - #CPBGW

#CPBGW - Write Group Entry	SELINT 2
<p>AT#CPBGW= <index>,<text></p>	<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>
<p>AT#CPBGW=?</p>	<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>



5.1.6.15. GPS AT Commands Set

5.1.6.15.1. GPS NVRAM Parameters Delete - \$GPSNVRAM

\$GPSNVRAM – GPS NVRAM Parameters Delete		SELINT 2
AT\$GPSNVRAM = <bitfield>,<action>	Execution command used to delete the GPS information stored in NVRAM Parameter: <bitfield> - in integer format. The assistance data mask for the type(s) of GPS-data to read/delete with the following meaning: 1: Ephemeris 2: Location 4: Time 8: Almanac <action> 0: Delete data described in bitfield	
AT\$GPSNVRAM?	Read command reports the current value of the <bitfield> parameter, in the format: \$GPSNVRAM: <bitfield>	
AT\$GPSNVRAM=?	Test command returns the supported range of values for parameters <bitfield>,<action>	
Example	AT\$GPSNVRAM=15,0 OK	
Note	The current setting is stored through \$GPSSAV	

5.1.6.15.2. GPS Quality of Service - \$GPSQOS

\$GPSQOS – GPS Quality Of Service		SELINT 2
AT\$GPSQOS =[<horiz_accuracy>,<vertic_a ccuracy>,<rsp_time>,<age_o f_location_info>,<location_ty pe>,<nav_profile>,< velocity_request>]]]]]]]]	Command used to set the location's quality of service (QoS). Parameter: <horiz_accuracy> (horizontal accuracy): 0 – 1800000, where 0 is highest accuracy and 1800000 is lowest accuracy in meters. Default value is 1800000 in meters <vertic_accuracy> (vertical accuracy): 0 – 990, where 0 is highest accuracy and 990 is lowest accuracy in meters. Default is 990 in meters <rsp_time> (response time): 0-14400, where 0 is the low delay and 14400 is the highest delay in	



	<p>seconds. Default value is 14400 in seconds.</p> <p><age_of_location_info> (Maximum age of location): 0-1966020: Value 0 means that stored location information should not be used. Value 1966020 indicates the maximum tolerable age of the stored location information. The valid range of interval for SUPL (Transport protocol) is [0 - 65535] seconds & [0 - 1966020] seconds for C-plane (Transport protocol).</p> <p><location_type> (type of location required): Used only in case of C-Plane. 0: Current Location (default) 1: Current or Last known location 2: Invalid Location, indicates that this parameter shall not be used</p> <p><nav_profile> (navigation profile): 0: Car navigation profile (default) 1: Personal profile 2: Low speed profile 3: Invalid profile, indicates that this parameter shall not be used</p> <p>< velocity_request> (velocity information is needed): 0 FALSE 1 TRUE (default)</p>
AT\$GPSQOS?	<p>Read command returns the current QoS values, in the format:</p> <p>AT\$GPSQOS: <horiz_accuracy>,<vertic_accuracy>,<rsp_time> ,<age_of_location_info>,<location_type>,< nav_profile>,< velocity_request></p>
AT\$GPSQOS=?	<p>Returns the list of supported QoS values for each field.</p> <p>\$GPSQOS: (0-1800000),(0-990),(0-14400),(0-1966020),(0-2),(0-3),(0,1)</p>
Example	<p>AT\$GPSQOS=1800000,990,150,0,0,0 OK</p>
Note	<p>The current setting is stored through \$GPSSAV</p>



5.1.6.15.3. GPS Start Location Service Request - \$GPSSLSR

\$GPSSLSR – GPS Start Location Service Request	SELINT 2
<pre>\$GPSSLSR = <transport_protocol>[,<pos_mode>[,<client_id>,<clientid_type>[,<mlc_number>,<mlcnumber_type>[,<interval>[,<service_type_id>[,<pseudonym_indicator>]]]]]]]]</pre>	<p>Command used to start the Receiver in Autonomous or A-GPS mode.</p> <p>Parameter:</p> <p><transport_protocol>: 0 - CPlane 1 - SUPL 2 – Invalid Note: If <pos_mode > is Autonomous the <transport_protocol> should be invalid. Note: If <transport_protocol> is CPlane and <pos_mode > is Pure MS Assisted, then <interval> should be 0 (or omitted).</p> <p><pos_mode> : 0: Pure MS Assisted - Location estimate from the network (MS Assisted mode). 1: MS Based - Assistance Data from the network (MS Based mode). 2: MS Assisted Based - Combination of MS-A and MS-B modes, location estimate computed both at UE and Network. 3: Autonomous – Autonomous GPS mode of operation. Note: If <pos_mode> is Autonomous the <transport_protocol> should be invalid.</p> <p><client_id> : String parameter containing the ID of the LCS-Client to which the location estimate is to be transferred. Note: <client_id> is mandatory in case of A-GPS and the <transport_protocol> should be Cplane.</p> <p><clientid_type> : 0 – MSISDN 1 – Invalid (default) Note: <client_id> and <clientid_type> are mandatory for A-GPS mode.</p> <p><mlc_number> : String parameter containing the address of the GMLC through which the location estimate is to be sent to the LCS-Client. Note: <mlc_number> is mandatory in case of A-GPS.</p> <p><mlcnumber_type> : 0 – MSISDN 1 – Invalid (default) Note: <mlc_number> and <mlcnumber_type> are mandatory for A-GPS mode.</p>



54 SS_NET_ERROR_POS_METHOD_FAILURE
71 SS_NET_ERROR_UNKNOWN_ALPHABET
72 SS_NET_ERROR_USSD_BUSY
121 SS_NET_ERROR_REJECTED_BY_USER
122 SS_NET_ERROR_REJECTED_BY_NETWORK
123 SS_NET_ERROR_DEFLECTION_TO_SERVED_
SUBSCRIBER
124 SS_NET_ERROR_SPECIAL_SERVICE_CODE
125 SS_NET_ERROR_INVALID_DEFLECTED_TO_NUMBER
126 SS_NET_ERROR_MAX_NUMBER_OF_MPTY_
PARTICIPANTS_EXCEEDED
127 SS_NET_ERROR_RESOURCES_NOT_AVAILABLE
255 SS_NET_ERROR_INTERNAL_SS_TIME_OUT

or

\$GPSSLSR: C-PLANE ERROR,NETWORK REJECT CAUSE,
<error_code>

where

<error_code>

0 SS_NET_REJECT_UNRECOGNIZED_COMPONENT
1 SS_NET_REJECT_MISTYPED_COMPONENT
2 SS_NET_REJECT_BADLY_STRUCTURED_COMPONENT
3 SS_NET_REJECT_DUPLICATE_INVOKE_ID
4 SS_NET_REJECT_UNRECOGNIZED_OPERATION
5 SS_NET_REJECT_MISTYPED_PRO_PARAMETER
6 SS_NET_REJECT_RESOURCE_LIMITATION
7 SS_NET_REJECT_INITIATING_RELEASE
8 SS_NET_REJECT_UNRECOGNIZED_LINKED_ID
9 SS_NET_REJECT_LINKED_RESPONSE_UNEXPECTED
10 SS_NET_REJECT_UNEXPECTED_LINKED_OPERATION
11 SS_NET_REJECT_UNRECOGNIZED_INVOKE_ID
12 SS_NET_REJECT_RETURN_RESULT_UNEXPECTED
13 SS_NET_REJECT_MISTYPED_RES_PARAMETER
14 SS_NET_REJECT_UNRECOGNIZED_ERROR_
INVOKE_ID
15 SS_NET_REJECT_RETURN_ERROR_UNEXPECTED
16 SS_NET_REJECT_UNRECOGNIZED_ERROR
17 SS_NET_REJECT_UNEXPECTED_ERROR
18 SS_NET_REJECT_MISTYPED_ERROR_PARAMETER
19 SS_NET_REJECT_UNKNOWN

or

\$GPSSLSR: C-PLANE ERROR,NETWORK GSM CAUSE,
<error_code>



	interval> [,<service_type_id> [,<pseudonym_indicator>]]]]]]
AT\$GPSSLSR=?	\$GPSSLSR: (0-2),(0-3),(64),(0,1),(64),(0,1),(0-7200),(0-255),(0,1)
Example	AT\$GPSSLSR= 2,3,,,,,1 OK
Note	The current setting is stored through \$GPSSAV

5.1.6.15.4. GPS Stop Location Service Request - \$GPSSTOP

\$GPSSTOP – GPS Stop Location Service Request		SELINT 2
\$GPSSTOP= [<abort_cause>]	Command used to stop the Receiver in Autonomous or A-GPS mode initiated through \$GPSSLSR set command. Parameter: <abort_cause> 0: User denies the request 1: Unspecified cause for abort 2: Cause Invalid	
AT\$GPSSTOP?	Read command returns the current value of parameter <abort_cause>.	
\$GPSSTOP=?	OK	
Example	AT\$GPSSTOP=1 OK	
Note	The current setting is stored through \$GPSSAV	

5.1.6.15.5. Update SLP address - \$LCSSLP

\$LCSSLP - Update SLP address		SELINT 2
AT\$LCSSLP=<slp_address_type>[,<slp_address>[,<slp_port_number>]]	Set command allows updating the SLP address and SLP port number. Parameters: <slp_address_type> : SLP address type 0 - IPv4 1 - FQDN 2 – IMSI (default value) <slp_address> : SLP address in FQDN format or IPv4 format <slp_port_number> : Slp Port number integer parameter. Default value is 7275 Note: If <slp_address_type> is 0 and 1, then <slp_address> is a mandatory parameter. Note: The current setting is stored in NVM.	
AT\$LCSSLP?	Read command returns the current SLP address.	
AT\$LCSSLP=?	Test command returns the range of values for parameter	



	<p>Parameter: <mode> 0 – disable unsolicited 1 – enable unsolicited (default value)</p> <p>The unsolicited result code is in the format:</p> <p>\$LICLS: <request_type>[,<cid>]</p> <p>Where <request_type> 0 – Setup Request to setup the control link 1 – Release Request to release the control link</p> <p><cid> : id associated to the context that shall be deactivated (see +CGDCONT)</p> <p>If the <request_type> is a setup request, the unsolicited indication is sent/used to request the client to define, setup, activate and prepare the pdp-context. If <request_type> is a release request, the unsolicited indication is sent/used to inform the client that the pdp-context (associated with this command type) including the associated terminal is not used any more, and shall be deactivated.</p> <p>Note: The current setting is stored in NVM.</p>
AT\$LICLS?	Read command returns the current value of parameter <mode>.
AT\$LICLS=?	Test command returns the range of values for parameter <mode>.



5.1.6.15.9. MT Location Request Mode - \$LCSLRMT

\$LCSLRMT – MT Location Request Mode	SELINT 2
<p>AT\$LCSLRMT=<mode></p>	<p>Set command is used to enable/disable unsolicited \$LCSLRMT response.</p> <p>Parameter: <mode> 0 – disable unsolicited 1 – enable unsolicited (default value)</p> <p>The unsolicited result code is in the format:</p> <p>\$LCSLRMT: <transport_protocol>,<Notif_type>,<Loc_estimate_type>,<Client_Id>,<Client_NameEncoding_type>,<Client_Name_Type>,<Client_Name>,<Requestor_Id_Encoding_type>,<Requestor_Id_Type>,<Requestor_Id>,<Codeword>,<Service_Type_id>,<reqid></p> <p>Where</p> <p><transport_protocol> 0 -C-Plane protocol 1 - SUPL Protocol 2 - Invalid</p> <p><Notif_type> 0 - Notify 1 - Verify request (no response will be treated as permission granted, see \$LCSLRV) 2 - Verify request (no response will be treated as permission denied, see \$LCSLRV)</p> <p><Loc_estimate_type> 0 - Current location 1 - Current or Last location known 2 - Initial location</p> <p><Requestor_Id_Encoding_type> <Client_Name_Encoding_type> 0 – UCS2 1 - GSM default format 2 - UTF-8 format 3 – invalid format</p> <p><Client_Name_Type> <Requestor_Id_Type> 0 - MSISDN. 1 – IMSI.</p>



	<p>2 – IPV4. 3 – IPV6. 4 – logical name. 5 – email-address. 6 – URL 7 – SIP URL. 8 – IMS Public Identity. 9 – USSD type. 10 – invalid type</p> <p><Client_Name> <Requestor_Id> <Codeword> is displayed as per data coding scheme.</p> <p><Service_Type_id> 0-127</p> <p><reqid> Integer that identifies the request.</p> <p>Note: <reqid> uniquely identifies the MT-LR sent by the network and the same <reqid> shall be returned in AT\$LCSLRV command in case the <Notif_type> is of type “Verify request”</p> <p>Note: The current setting is stored in NVM.</p>
AT\$LCSLRMT?	Read command returns the current value of parameter <mode>.
AT\$LCSLRMT=?	Test command returns the range of values for parameter <mode>.

5.1.6.15.10. Location request verification - \$LCSLRV

\$LCSLRV – Location request verification		SELINT 2
AT\$LCSLRV=<permission>,<reqid>	<p>Set command is used to verify a location request coming from the network. The verification is sent back to the network with request id.</p> <p>Parameter: <permission> 0 – permission denied (default value) 1 – permission granted</p> <p><reqid> uniquely identifies the MT-LR sent by the network</p>	
AT\$LCSLRV=?	Test command returns the range of values for parameter <permission>.	

5.1.6.15.11. LCS certificate - \$LTC



5.1.6.15.12. Lock context for LCS use - \$LCSLK

\$LCSLK – Lock context for LCS use		SELINT 2
AT\$LCSLK=<mode>[,<cid>]	<p>Set command is used to reserve a cid for LCS.</p> <p>Parameters:</p> <p><mode> 0 – unlock the current cid available for LCS use 1 – lock the specified cid in order to setup/release a control link for LCS use only</p> <p><cid> - PDP context identifier 1..5 - numeric parameter which specifies a particular PDP context definition</p> <p>Note: <cid> is mandatory if <mode> is set to lock, otherwise shall be omitted.</p> <p>Note: the set command returns ERROR if the current cid and/or the previously set are in use.</p> <p>Note: The current setting is stored in NVM.</p>	
AT\$LCSLK?	Read command returns the current value of parameters <mode> and <cid> (if <mode> is lock).	
AT\$LCSLK=?	Test command returns the range of values for parameters <mode> and <cid>	

5.1.6.15.13. GNSS Receiver Configuration

5.1.6.15.13.1. GNSS device type set - \$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:</p> <p><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 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) 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>	



\$GPSD - GNSS Device Type Set	SELINT 2
	<p>4 - serial port connected to the GNSS serial port: controlled mode. This configuration is for ST TeseoII-based GPS 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><sub_device type></p> <p>0 - Flash device: Flash based module (default).</p> <p>1 - ROM device: ROM based module.</p> <p>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\$GPSD=2, AT\$GPSD=3 or AT\$GPSD=5.</p> <p>Note: the current setting is stored through \$GPSSAV</p>
AT\$GPSD?	<p>Read command reports the current value of <device_type> and <sub_device_type> parameters, in the format:</p> <p>\$GPSD: <device_type>,<sub_device_type></p>
AT\$GPSD=?	<p>Test command reports the range of supported values for parameter <device_type>,<sub_device_type></p>
Example	<p>AT\$GPSD=0 OK</p> <p>AT\$GPSD=2,1 OK</p> <p>AT\$GPSD=4,2 ERROR</p>

5.1.6.15.13.2. GPIO configuration for GNSS control - \$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:</p> <p><on_off> - GPIO pin number to be used to drive the JF2/JN3/SL869/SE868-V2's ON-OFF signal (default = 1)</p>



\$GPSGPIO – GPIO Configuration for GNSS control	SELINT 2
	<p><system_on> - GPIO pin number to be used to drive the JF2/SE868-V2's SYSTEM-ON signal (default = 2)</p> <p><boot> - GPIO pin number to be used to drive the JF2-Flash/JN3-Flash/SL869's BOOT signal (default = 3)</p> <p><reset> - GPIO pin number to be used to drive the JF2-Flash/JN3-Flash's RESET signal (default = 4)</p> <p>Note: the GPIO configuration specified through this command must be coherent with the specific GNSS module that has to be used, i.e. the configuration specified through the AT\$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>Note: See the Hardware User Guide to check the number of available GPIO pins.</p> <p>Note: the GPIO configuration correctness and functionality (i.e. possible conflicts with the GPIO configuration applied through AT#GPIO) are under the customer's sole responsibility.</p> <p>Note: 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 below for an example on how to set such GPIOs. An ERROR is returned whenever trying to set a GPIO, from the extended GPIO range, its corresponding V24 signal has not been previously configured as GPIO through AT#V24CFG.</p> <p>Note: the current GPIO configuration can be stored through AT\$GPSSAV</p>
AT\$GPSGPIO?	<p>Read command reports the currently selected configuration in the format:</p> <p>\$GPSGPIO: <on_off>,<system_on>,<boot>,<reset></p>
AT\$GPSGPIO=?	<p>Test command reports supported range of values for parameters <on_off>, <system_on>, <boot> and <reset></p>



\$GPSGPIO – GPIO Configuration for GNSS control	SELINT 2
	<p>Note: the extended GPIO range is reported along with the available customer GPIO range.</p>
<p>Example</p>	<p>- For a JF2-Flash (AT\$GPSD=2,0):</p> <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>



\$GPSGPIO – GPIO Configuration for GNSS control		SELINT 2
	AT\$GPSGPIO=131,132,130,128 OK - Test Command showing extended GPIO range: AT\$GPSGPIO=? \$GPSGPIO: (1-8,128-131),(1-8,132-133),(1-8,128-131),(1-8,128-131) OK	
Note	The Command is available in “Controlled Mode” only	

5.1.6.15.13.3. Set the GNSS serial port speed - \$GPSSERSPEED

\$GPSSERSPEED – Set the GNSS serial port speed		SELINT 2
AT\$GPSSERSPEED= <speed>	Execution command sets the GNSS serial port communication speed. Parameters: <speed> - 4800(default) 9600 Note: This command can be used with SIRF-based GNSS modules only, 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). Note: the current setting is stored through \$GPSSAV . Note: The module must be restarted to use the new configuration	
AT\$GPSSERSPEED?	Read command returns the selected serial speed in the format \$GPSSERSPEED: <speed>	
AT\$GPSSERSPEED=?	Test command returns the available range for <speed>	
Example	AT\$GPSSERSPEED = 4800 OK	

5.1.6.15.13.4. GPS Controller Power Management - \$GPSP

\$GPSP – GNSS Controller Power Management		SELINT 2
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\$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> For products without built-in GNSS receiver (see the Note section below): 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	For products without built-in GNSS receiver: The command is available in “controlled mode” only For products with built-in GNSS receiver: Power up clears GNSS memory and then starts the GNSS receiver. GNSS data cleaning is performed on the base of the current value of the <reset_type> parameter (see \$GPSR) List of products with built-in GNSS receiver is available in the AT Commands Availability Table (for instance: HE910-G). The current setting is stored through \$GPSSAV	

5.1.6.15.13.5. GNSS Antenna LNA control - \$GPSAT

\$GPSAT – GNSS Antenna LNA Control		SELINT 2
AT\$GPSAT=<type>	Set command selects the GNSS antenna used. 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	



	OK
Note	The module must be restarted to use the new configuration

5.1.6.15.13.7. Restore To Default GPS Parameters - \$GPSRST

\$GPSRST – Restore To Default GPS Parameters		SELINT 2
AT\$GPSRST	Execution command resets the GNSS parameters to “Factory Default” configuration and stores them in the NVM of the cellular modules.	
AT\$GPSRST=?	Test command returns the OK result code	
Example	AT\$GPSRST OK	
Note	The module must be restarted to use the new configuration	

5.1.6.15.13.8. Set MTK Communication Ports - \$GPSMTKSETCOMPOR

\$GPSMTKSETCOMPOR – Set MTK Communication Ports		SELINT 2
AT\$GPSMTKSETCOMPOR= <port> , <mode> , <baudrate> , <protocol>	Set command allows changing the communication port configuration on MediaTek MT3333-based GNSS receivers. <port> - Communication Port Number 1 – UART 0 (value not currently supported) 2 – UART 1 (default) <mode> - Interface Operating Mode 1 – NONE 2 – UART 3 – I2C <baudrate> - Baudrate 4800 9600 19200 38400 57600 115200 230400 460800 921600 <protocol> - Communication Protocol 1 – NMEA 2 – RTCM	
AT\$GPSMTKSETCOMPOR?	Read command reports the current communication port configuration in the format: \$GPSMTKSETCOMPOR: <port> , <mode> , <baudrate> , <protocol>	
AT\$GPSMTKSETCOMPOR=?	Test command reports the supported range of values for parameters: <port> , <mode> , <baudrate> , <protocol>	



Note	Available in “controlled mode” only This command is available for MediaTek MT3333-based GNSS modules (e.g. SL871) only, i.e. whenever is AT\$GPSD=6.
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5.1.6.15.13.9. Set CPU Clock for ST TESEOII - \$GPSSTCPUCLK

\$GPSSTCPUCLK – Set CPU Clock for ST TESEOII		SELINT 2
AT\$GPSSTCPUCLK= <cpu_clock>	Set command allows changing the CPU Clock Frequency for ST TESEOII-based GNSS modules (e.g. SL869). Parameter: <cpu_clock>: 0 – 52 MHz 1 – 104 MHz 2 – 156 MHz 3 – 208 MHz Note: This command can be used with ST TESEOII-based GNSS modules only (AT\$GPSD=4). 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.	
AT\$GPSSTCPUCLK?	Read command reports the current setting for the CPU Clock Frequency in the format: \$GPSSTCPUCLK: <cpu_clock> Note: An ERROR is returned if the CPU Clock Frequency has never been changed. <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>	
AT\$GPSSTCPUCLK=?	Test command reports the supported range of values for the parameter <cpu_clock>	

5.1.6.15.13.10. GNSS 5Hz Navigation Mode - \$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)	



\$GNSS5HZ – GNSS 5Hz Navigation Mode		SELINT 2
	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	

5.1.6.15.13.11. GNSS Estimated Position Errors - \$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	

5.1.6.15.14. GNSS Power Saving Modes

5.1.6.15.14.1. Set The GNSS Module In Power Saving Mode - \$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	



\$GPS - Set The GNSS Module In Power Saving Mode		SELINT 2
	This command is currently available for Sirf-based GNSS modules (JF2, JN3 and SE868-V2) only, i.e. whenever is AT\$GSPD=2, AT\$GSPD=3 or AT\$GSPD=5.	

5.1.6.15.14.2. Wake Up GNSS From Power Saving Mode - \$GPSWK

\$GPSWK - Wake Up GNSS From Power Saving Mode		SELINT 2
AT\$GPSWK	<p>Execution command allows to wake up the GNSS module when a power saving mode has been enabled.</p> <p>Note: 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>Note: if the GNSS module has been configured to work in Push-To-Fix Mode, issuing AT\$GPSWK allows to wake up it before the Push-To-Fix update period; once a new fix will be got, the GNSS module will return to Push-To-Fix mode.</p> <p>Note: 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\$GPS=0 command).</p>	
AT\$GPSWK=?	Test command returns the OK result code	
Note	<p>Available in "controlled mode" only</p> <p>This command is currently available for Sirf-based GNSS modules (e.g. JF2, JN3 and SE868-V2) only, i.e. whenever is AT\$GSPD=2, AT\$GSPD=3 or AT\$GSPD=5.</p>	

5.1.6.15.14.3. Set the Periodic Power Saving Mode for MTK - \$GPSMTKPPS

\$GPSMTKPPS - Set the Periodic Power Saving Mode for MTK		SELINT 2
AT\$GPSMTKPPS= <mode>[, <runtime>, <sleeptime>, <second_runtime>, <second_sleeptime>]	<p>Set command allows setting the MediaTek MT3333-based GNSS modules' Periodic Power Saving Mode settings.</p> <p>Parameters:</p> <p><mode> - the GNSS receiver can operate in five different Periodic Power Saving modes:</p> <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</p>	

\$GPSMTKPPS - Set the Periodic Power Saving Mode for MTK		SELINT 2
	<p>1000...518400000 <sleeptime> - Low Power Period (backup/standby) in milliseconds 1000... 518400000 <second_runtime> - Full Power (or Normal) Period in milliseconds for extended acquisition if GNSS acquisition fails during <runtime> 0 – Disable 1000...518400000 – Enable (should be larger than the set <runtime> value) <second_sleeptime> - Low Power Period (backup/standby) in milliseconds for extended sleep if GNSS acquisition fails during <runtime> 0 – Disable 1000...518400000</p> <p>Note: The <runtime>, <sleeptime>, <second_runtime>, <second_sleeptime> parameters must be set if <mode> is 1 or 2 otherwise ERROR is returned</p> <p>Note: The <runtime>, <sleeptime>, <second_runtime>, <second_sleeptime> parameters must be omitted if <mode> is 0, 8 or 9 otherwise ERROR is returned</p> <p>Note: <mode> values different from 0 can be set only when the GNSS module is powered ON and operating in Full (or Normal) Power mode.</p> <p>Note: the <mode> value 0 can be set only when the GNSS module is operating in any of the Periodic Power Saving modes. Issuing AT\$GPSMTKPPS=0 the GNSS module switches back to Full (or Normal) Power mode as soon as it wakes up according to the <sleeptime> and <second_sleeptime> values set.</p>	
AT\$GPSMTKPPS?	Read command returns the current Periodic Power Saving mode in the format: \$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.	

5.1.6.15.14.4. Set Standby Mode for MTK - \$GPSMTKSTDBY

\$GPSMTKSTDBY - Set Standby Mode for MTK		SELINT 2
AT\$GPSMTKSTDBY=<mode>	Set command allows setting the MediaTek MT3333-based GNSS modules in Standby mode. Parameters: <mode> - the GNSS receiver can operate in three Standby modes:	



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

5.1.6.15.15. GNSS General Managent

5.1.6.15.15.1. GNSS Software Version - \$GPSSW

\$GPSSW - GNSS Software Version		SELINT 2
AT\$GPSSW	<p>Execution command provides the GNSS module software version in the format:</p> <p>\$GPSSW: <sw version></p>	
AT\$GPSSW?	Read command has the same meaning as the Execution command	
AT\$GPSSW=?	Test command returns the OK result code	
Example	<p>For modules with SE/SL868: AT\$GPSSW \$GPSSW: GSD4e_4.0.2-P1 05/26/2010 146 OK</p> <p>For modules with SL869: AT\$GPSSW \$GPSSW: SL869 v3.0.0.1 -STD -N96 OK</p> <p>For modules with SE868-V2: AT\$GPSSW \$GPSSW: 5xp__5.5.2-R32+5xpt_5.5.2-R32 OK</p>	
Note	The command is available in “controlled mode” only	



\$GPSCON - Direct Access to GNSS Module		SELINT 2
	<p>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.</p> <p>Note: the command can be used in "controlled mode" only.</p> <p>Note: in case of an incoming call from cellular module, this will be visible on the RING pin of serial port.</p> <p>Note: the escape sequence is "+++"</p> <p>The suggested Serial Port Speed for SirfIV-based modules (e.g. JF2 and JN3) is 57600.</p> <p>The suggested Serial Port Speed for SirfV-based modules (e.g. SE868-V2) is 115200.</p>	
AT\$GPSCON=?	Test command returns the OK result code	

5.1.6.15.16. GNSS Positioning Information

5.1.6.15.16.1. Unsolicited NMEA Data Configuration - \$GPSNMUN

\$GPSNMUN - Unsolicited NMEA Data Configuration		SELINT 2
AT\$GPSNMUN= <enable> [,<GGA>,<GLL>, <GSA>,<GSV>, <RMC>,<VTG >]	<p>Set command allows to activate an Unsolicited stream of GNSS data (in NMEA format) through the standard cellular module serial port and defines which NMEA sentences will be relayed</p> <p>Parameters:</p> <p><enable></p> <ul style="list-style-type: none"> 0 - NMEA data stream de-activated (default) 1 - NMEA data stream activated with the following unsolicited response syntax: \$GPSNMUN: <NMEA SENTENCE><CR> 2 - NMEA data stream activated with the following unsolicited response syntax: <NMEA SENTENCE><CR> 3 - dedicated NMEA data stream; it is not possible to send AT commands; with the escape sequence '+++' the user can return to command mode <p><GGA> - Global Positioning System Fix Data</p> <ul style="list-style-type: none"> 0 - disable (default) 1 - enable <p><GLL> - Geographic Position - Latitude/Longitude</p> <ul style="list-style-type: none"> 0 - disable (default) 	



\$GPSNMUN - Unsolicited NMEA Data Configuration	SELINT 2
	<p>1 - enable <GSA> - GNSS DOP and Active Satellites 0 - disable (default) 1 - enable <GSV> - GNSS Satellites in View 0 - disable (default) 1 - enable <RMC> - Recommended Minimum Specific GNSS Data 0 - disable (default) 1 - enable <VTG> - GNSS Course Over Ground and Ground Speed 0 - disable (default) 1 - enable</p>
AT\$GPSNMUN?	<p>Read command returns whether the unsolicited GNSS NMEA data stream is currently enabled or not, along with the current NMEA mask configuration, in the format:</p> <p>\$GPSNMUN:<enable>,<GGA>,<GLL>,<GSA>,<GSV>,<RMC>,<VTG ></p>
AT\$GPSNMUN=?	<p>Test command returns the supported range of values for parameters <enable>, <GGA>, <GLL>, <GSA>, <GSV>, <RMC>, <VTG></p>
Example	<p><i>Set the GSA as available sentence in the unsolicited message:</i></p> <pre>AT\$GPSNMUN=2,0,0,1,0,0,0 OK</pre> <p><i>Turn-off the unsolicited mode:</i></p> <pre>AT\$GPSNMUN=0 OK</pre> <p><i>Read the current NMEA mask configuration:</i></p> <pre>AT\$GPSNMUN? \$GPSNMUN: 2,0,0,1,0,0,0 OK</pre> <p><i>The unsolicited message will be:</i></p> <pre>\$GPGSA,A,3,23,20,24,07,13,04,02,,,,,2.4,1.6,1.8*3C</pre>
Reference	<p>For products without built-in GNSS receiver (see the Note section below)</p>



\$GPSNMUN - Unsolicited NMEA Data Configuration		SELINT 2
	NMEA 0183 Specifications	
Note	<p>For products without built-in GNSS receiver:</p> <p><i>The command is available in “Controlled Mode” only</i></p> <p><i>The available NMEA sentences and their talker (GN, GP and GL) depend on the GNSS receiver used and its firmware configuration. Please refer to the Software Application Note of the GNSS receiver used for further information on the available NMEA data set.</i></p> <p>SirfIV-based GNSS modules (e.g. JF2, JN3):</p> <p><i>The fields PDOP and VDOP are not available</i></p> <p>List of products with built-in GNSS receiver is available in the AT Commands Availability Table (for instance: HE910-G).</p>	

5.1.6.15.16.2. Get Acquired Position - \$GPSACP

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



	<p><fix> - 0 or 1 - Invalid Fix 2 - 2D fix 3 - 3D fix</p> <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	<p>AT\$GPSACP \$GPSACP: 122330.000,4542.8106N,01344.2720E,2.25,338.0,3,0.0,0.02,0.01,240613, 04</p> <p>OK</p>
Note	<p>For products without built-in GNSS receiver:</p> <p><i>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.</i></p> <p>AT\$GPSACP \$GPSACP: OK</p> <p>List of products with built-in GNSS receiver is available in the AT Commands Availability Table (for instance: HE910-G).</p>





5.1.6.15.17. GNSS SiRFInstantFix™

5.1.6.15.17.1. GPS SiRFInstantFix™ - \$GPSIFIX

\$GPSIFIX - GPS SiRFInstantFix™	SELINT 2
<pre>AT\$GPSIFIX= <enable>[, <cgee>, <sgee>[, <update>]]</pre>	<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: SiRFInstantFix parameters are stored in NVM, along with all current GPS parameters, if OK is returned (same as AT\$GPSSAV)</p> <p>Note: if <enable>=0, the rest of parameters must be omitted otherwise ERROR is returned</p> <p>Note: if <enable>=1 and the rest of parameters is omitted, the default configuration, or a previous stored one, is used</p> <p>Note: if <sgee>=1, the <update> parameter must be set otherwise ERROR is returned</p> <p>Note: if <sgee>=1 the following URC is used to warn, according to the <update> value, that the SGEE file has to be updated:</p> <p><i>\$SIFIXEV: SGEE File Update Requested</i></p> <p>Note: If <sgee>=0, the <update> parameter must be omitted otherwise ERROR is returned</p>



	Note: SiRFInstantFix default configuration may be restored by issuing the AT\$GPSRST command
AT\$GPSIFIX?	Read command reports the currently selected SiRFInstantFix configuration in the format: \$GPSIFIX: <enable>[,<cgee>,<sgee>[,<update>]]
AT\$GPSIFIX=?	Test command reports the supported range of values for parameters <enable> , <cgee> , <sgee> , <update>
Example	AT\$GPSIFIX=0 OK AT\$GPSIFIX=1,1,0 OK
Note	The Command is available in "Controlled Mode" only

5.1.6.15.17.2. GNSS SiRFInstantFix™ - \$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:</p> <p><navsystem> - Constellation for which the SiRFInstantFix™ feature has to be enabled 0 - GPS 1 - GLONASS</p> <p><cgee> - Client Generated Extended Ephemeris (CGEE) 0 - Disable 1 - Enable</p> <p><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>



	<p>- For GPS</p> <p><i>\$SIFIXEV: GPS SGEE File Update Requested</i></p> <p>- For GLONASS</p> <p><i>\$SIFIXEV: GLONASS SGEE File Update Requested</i></p>
AT\$GNSSIFIX?	<p>Read command reports the current SiRFInstantFix™ configuration, for both GPS and GLONASS, in the format:</p> <p>\$GNSSIFIX: 0,<cgee>,<sgee> \$GNSSIFIX: 1,<cgee>,<sgee></p>
AT\$GNSSIFIX=?	<p>Test command reports the supported range of values for parameters <navsystem>, <cgee>, <sgee></p>
Example	<p>AT\$GNSSIFIX=0,1,0 OK</p> <p>AT\$GNSSIFIX=1,1,1 OK</p>
Note	<p>The Command is available in "Controlled Mode" only</p>

5.1.6.15.17.3. Get SGEE File for SiRFInstantFix™ - \$FTPGETIFIX

\$FTPGETIFIX - Get SGEE File for SiRFInstantFix™		SELINT 2
<p>AT\$FTPGETIFIX= <filename>, <filesize> [,<navsystem>]</p>	<p>Execution command, issued during an FTP connection, opens a data connection, downloads a SGEE file from the FTP server and injects it into SiRF StarIV or StarV GNSS receiver.</p> <p>Parameters: <filename> - file name, string type <filesize> - SGEE file size in bytes <navsystem> - Constellation for which the SGEE file has to be downloaded and injected 0 - GPS (default) 1 - GLONASS</p> <p>Note: whenever an FTP connection has not been opened yet, an ERROR result code is returned</p> <p>Note: whenever an error happens during the SGEE</p>	



5.1.6.15.18. GNSS Patch Management

5.1.6.15.18.1. Write Patch on flash - \$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 cellular module's flash memory.</p> <p>The file should be sent using RAW ASCII file transfer. It is important to set properly the port settings. In particular: Flow control: hardware. Baud rate: 115200 bps</p> <p>Parameters: <patch_file_name> - name of the file in NVM, string type (max 16 chars, case sensitive). <size> - file size in bytes</p> <p>The device shall prompt a three character sequence <greater_than><greater_than><greater_than> (IRA 62, 62, 62) then the command line is terminated with a <CR>; after that a file can be sent from TE, sized <size> bytes.</p> <p>The operations completes when all the bytes are received.</p> <p>If writing ends successfully, the response is OK; otherwise an error code is reported.</p> <p>Note: This command can be used with SIRF ROM-based 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>Note: The patch file must have a ".pd2" or ".pd3" (AT\$GPSD=5,2) extension.</p>	
AT\$WPATCH=?	Test command returns the OK result code	
Example	<pre>AT\$WPATCH = "GSD4E_4.1.2.pd2",5472 >>> here receive the prompt: depending on your editor settings it's possible that the prompt overrides the above line; then type or send the patch, sized 54 bytes OK Patch has been stored.</pre>	

5.1.6.15.18.2. List Available Patch - \$LPATCH



\$EPATCH - Enable Patch		SELINT 2
	<p>Note: A previously applied patch can be removed from the GNSS module Patch RAM by issuing a Factory Reset or by powering the GNSS module down and removing the VBatt.</p> <p>However, if automatic patch application hasn't been disabled, the patch will be automatically reapplied.</p> <p>Note: 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>Note: The configuration specified through AT\$EPATCH can be saved by means of the AT\$GPSSAV command.</p> <p>Note: "AT\$EPATCH" command returns ERROR.</p>	
AT\$EPATCH?	Read command display the patch in use in the format: \$EPATCH: <patch_file_name>	
AT\$EPATCH=?	Test command returns the OK result code	
Example	<p>AT\$EPATCH = "GSD4E_4.1.2.pd2" OK</p> <p>Patch Manager: Patched.</p> <p>-The SiRF GNSS module has been patched</p>	

5.1.6.15.18.4. Delete Patch - \$DPATCH

\$DPATCH - Delete Patch from NVM		SELINT 2
AT\$DPATCH= <patch_file_name >	<p>Execution command deletes a SiRF software patch stored onto the cellular 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> <p>Note: This command can be used with SIRF ROM-based GNSS modules only (AT\$GSPSD=2,1, AT\$GSPSD=2,2, AT\$GSPSD=3,1, AT\$GSPSD=3,2 or AT\$GSPSD=5,2).</p>	



\$DPATCH - Delete Patch from NVM		SELINT 2
AT\$DPATCH=?	Test command returns the OK result code	
Example	AT\$DPATCH = "GSD4E_4.1.2.pd2" OK	

5.1.6.15.19. GNSS ST-AGPS™

5.1.6.15.19.1. Enable STAGPS™ Usage - \$GPSSTAGPS

\$GPSSTAGPS - Enable STAGPS™ Usage		SELINT 2
AT\$GPSSTAGPS= <enable>	Set command enables/disables the STAGPS™ feature available on ST TESEOII-based GNSS modules. Parameters: <enable>: 0 - Disable 1 - Enable Note: This command can be used with ST TESEOII-based GNSS modules only (AT\$GPSD=4). Note: Since the current STAGPS™ configuration is not saved in NVM this command has to be issued at every power-cycle of both the GNSS receiver and the cellular module.	
AT\$GPSSTAGPS?	Read command reports the currently selected STAGPS™ configuration in the format: \$GPSSTAGPS: <enable>	
AT\$GPSSTAGPS=?	Test command reports the supported range of values for parameter <enable>	

5.1.6.15.19.2. Get ST-AGPS seed file for ST-AGPS™ - \$HTTPGETSTSEED

\$HTTPGETSTSEED - Get ST-AGPS seed file for ST-AGPS™		SELINT 2
AT\$HTTPGETSTSEED= <prof_id>, <filesize>	Execution command, issued during a HTTP connection, downloads a ST-AGPS seed file from the HTTP server and creates a decoded version of the file itself. The decoded seed file, is stored onto the	



Note	The command is available in "Controlled Mode" only
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5.1.6.15.20. GNSS MTK EPO

5.1.6.15.20.1. Get EPO file for MT EPO Aiding - \$HTTPGETEPO

\$HTTPGETEPO – Get EPO file for MT EPO Aiding		SELINT 2
AT\$HTTPGETEPO= <prof_id> , <filesize>	Execution command, issued during a HTTP connection, downloads an EPO file from the HTTP server and stores it on the cellular module's NVM for future use. The EPO file can be injected later on by means of the AT\$INJECTEPO command. The EPO file size must be retrieved, before issuing the AT\$HTTPGETEPO command, by sending a HTTP query using a specific Profile Id, GET option and the EPO file name. Parameters: <prof_id> - Numeric parameter indicating the profile identifier. Range: 0-2 <filesize> - EPO file size in bytes Note: whenever a HTTP configuration has not been done yet, an ERROR result code is returned	
AT\$HTTPGETEPO=?	Test command returns the OK result code	
Example	AT\$HTTPGETEPO=0,129024 OK	
Note	This command is available in "controlled mode" only, for MediaTek MT3333-based GNSS modules (e.g. SL871), i.e. whenever is AT\$GSPSD=6.	

5.1.6.15.20.2. Inject EPO Aiding file - \$INJECTEPO

\$INJECTEPO – Inject EPO Aiding file		SELINT 2
AT\$INJECTEPO	Execution command injects an EPO file, previously downloaded and stored onto the cellular module's NVM, into MT3333-based GNSS receivers (e.g. SL871). Note: whenever an error happens during the EPO file injection stage, an ERROR result code is returned In this case the possible <err> values reported by +CME ERROR (numeric format followed by verbose format) may be: <div style="text-align: center;"> 980 GNSS file open error </div>	



	<p>985 Invalid EPO file 986 EPO MTK binary configuration error 987 EPO injection error 988 EPO NMEA configuration error</p> <p>Note: only EPO files up to 14-days validity are currently supported. Therefore, if a 30-days EPO file is used, only data for the first 14 days will be injected.</p>
AT\$INJECTEPO=?	Test command returns the OK result code
Note	This command is available in “controlled mode” only, for MediaTek MT3333-based GNSS modules (e.g. SL871), i.e. whenever is AT\$GSPSD=6.

5.1.6.15.20.3. Query EPO Data Status - \$QUERYEPO

\$QUERYEPO – Query EPO Data Status	SELINT 2
AT\$QUERYEPO	<p>Execution command queries the EPO data status, in MT3333-based GNSS receivers (e.g. SL871), whose answer will be in the form:</p> <p>\$QUERYEPO: <SET>,<FWN>,<FTOW>,<LWN>,<LTOW>,<FCWN>,<FCTOW>,<LCWN>,<LCTOW></p> <p>Where:</p> <p><SET> - Total number of EPO data set stored into the GNSS receiver. The EPO prediction for one day is made up of 4 EPO data sets. <FWN> - GPS week number of the first set of EPO data stored into the GNSS receiver. <FTOW> - GPS TOW of the first set of EPO data stored into the GNSS receiver. <LWN> - GPS week number of the last set of EPO data stored into the GNSS receiver. <LTOW> - GPS TOW of the last set of EPO data stored into the GNSS receiver. <FCWN> - GPS week number of the first set of EPO data currently used. <FCTOW> - GPS TOW of the first set of EPO data currently used. <LCWN> - GPS week number of the last set of EPO data currently used. <LCTOW> - GPS TOW of the last set of EPO data currently used.</p>
AT\$QUERYEPO=?	Test command returns the OK result code
Example	<p>AT\$QUERYEPO \$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\$GSPSD=6.



5.1.6.15.20.4. Delete EPO Data - \$CLEAREPO

\$CLEAREPO – Delete EPO Data		SELINT 2
AT\$CLEAREPO	Execution command deletes all the EPO data from MT3333-based GNSS receivers (e.g. SL871).	
AT\$CLEAREPO=?	Test command returns the OK result code	
Note	This command is available in “controlled mode” only, for MediaTek MT3333-based GNSS modules (e.g. SL871), i.e. whenever is AT\$GSPD=6.	

5.1.6.15.20.5. Enable EASY - \$EASY

\$EASY – Enable EASY		SELINT 2
AT\$EASY=<enable>	Set command allows enabling or disabling the EASY feature on MT3333-based GNSS receivers (e.g. SL871). Parameters: <enable> - Enable/Disable the EASY feature 0 – Disable 1 – Enable	
AT\$EASY?	Read command reports the current EASY status in the format: \$EASY: <enable>,<extension_day> Where: <extension_day> - Number of days for which the prediction has been already done 0 – EASY enabled and prediction not finished yet or not available 1..3 – EASY enabled and prediction finished for 1, 2 and 3 days respectively	
AT\$EASY=?	Test command reports the range of supported values for parameter <enable>	
Note	This command is available in “controlled mode” only, for MediaTek MT3333-based GNSS modules (e.g. SL871), i.e. whenever is AT\$GSPD=6. The EASY feature is supported starting from SL871 firmware version AXN_3.60_3333_14080800,C012,MT33-1.,1.106 The default EASY configuration depends on the specific SL871 firmware version used.	



#SRS - Select Ringer Sound		SELINT 2
	as Read command	
AT#SRS?	Read command reports current selected ringing and its status in the form: #SRS: <n>,<status> where: <n> - ringing tone number 1..max <status> - ringing status 0 - selected but not playing 1 - currently playing	
AT#SRS=?	Test command reports the supported values for the parameters <n> and <tout>	

5.1.6.16.1.3. Select Ringer Path - #SRP

#SRP - Select Ringer Path		SELINT 2
AT#SRP=[<n>]	It has no effect and is included only for backward compatibility. Parameter: <n>: (0-3)	
AT#SRP?	Read command reports the set value of the parameter <n> in the format: #SRP: <n>.	
AT#SRP=?	Test command reports the supported values for the parameter <n>.	
Example	AT#SRP=? #SRP: (0-3) OK AT#SRP=3 OK	

5.1.6.16.1.4. Handsfree Microphone Gain - #HFMICG

#HFMICG - Handsfree Microphone Gain		SELINT 2
AT#HFMICG=[<level>]	It has no effect and is included only for backward compatibility. Parameter: <level>: 0..7 - (factory default = 4)	
AT#HFMICG?	Read command returns the current set value for parameter <level>, in the format: #HFMICG: <level>	
AT#HFMICG=?	Test command returns the supported range of values of parameter <level>.	



5.1.6.16.1.13. Echo Reducer Configuration - #ECHOCFG

#ECHOCFG – Echo Reducer Configuration	SELINT 2
<p>AT#ECHOCFG=<par_1> [<par_2>[,...,<par_N>]]</p>	<p>Set command writes values in echo reducer parameters. It is not allowed if active audio profile is 0.</p> <p>The module responds to the set command with the prompt '>' and waits for the data to send.</p> <p>Parameters:</p> <p><par_1> 0 – configure all parameters, module awaits 39 values 1,2,...,62 – configure single parameters, module awaits 1 value</p> <p><par_i> with i = {2;N} 1,2,...,62 – configure every parameter specified</p> <p>After '>' to complete the operation send Ctrl-Z char (0x1A hex); to exit without writing the message send ESC char (0x1B hex).</p> <p>Data shall be written in Hexadecimal Form with 4 digits for every <par_i> value provided by set command.</p> <p>If data are successfully sent, then the response is OK. If data sending fails for some reason, an error code is reported.</p> <p>Parameters can be saved in NVM using AT#PSAV command and are available for audio profiles 1,2,3. For audio profile 0 the values are fixed.</p> <p>Note: Configuring single parameters, it is allowed to enter a maximum of 32 parameters.</p> <p>Note: the default configuration is targeted for almost all common acoustic echo scenarios; if further tuning is needed the customer can change by oneself only the following parameters:</p> <p><par_14> 0..32767 - factory default value is 18384 Additional gain: increasing this parameter average echoes are more attenuated</p> <p><par_15> 0..16384 - factory default value is 2000 Total gain lower limit: increasing this parameter small echoes are more attenuated</p> <p><par_16></p>



	<p>0..16384 - factory default value is 10000 Total gain upper limit: increasing this parameter load echoes are more attenuated</p> <p><par_32> 0..32767 - factory default value is 6000 NR Attenuation factor: decreasing this parameter increases allowed attenuation</p> <p><par_33> 0..32767 - factory default value is 8000 Overestimation factor 0: decreasing this parameter increases noise reduction and decreases speech quality below 500Hz</p> <p><par_34> 0..32767 - factory default value is 8000 Overestimation factor 1: decreasing this parameter increases noise reduction and decreases speech quality above 500Hz</p> <p>The remaining parameters could be changed but under the supervision of Telit Technical Support.</p>
<p>AT#ECHOCFG?</p>	<p>Read command reports the currently set parameters in the format:</p> <p>#ECHOCFG: <par_1><par2>...<parN></p> <p><par_i>: Full set of registers values dumped in hexadecimal form, 62 words (156 characters).</p> <p>It is not allowed if active audio profile is 0.</p>
<p>AT#ECHOCFG=?</p>	<p>Test command reports supported range of values for all parameters in the format:</p> <p>#ECHOCFG: <i>, (<low_i>-<high_i>)</p> <p>Where</p> <p><i>: Parameter index</p> <p><low_i>: Lower limit of <par_i></p> <p><high_i>: High limit of <par_i></p>



5.1.6.16.2. Tones configuration

5.1.6.16.2.1. Signaling Tones Mode - #STM

#STM - Signaling Tones Mode		SELINT 2
AT#STM= [<mode>]	<p>Set command enables/disables the signaling tones output on the audio path</p> <p>Parameter: <mode> - signaling tones status 0 - signaling tones disabled 1 - signaling tones enabled 2 - all tones disabled</p> <p>Note: AT#STM=0 has the same effect as AT+CALM=2; AT#STM=1 has the same effect as AT+CALM=0.</p>	
AT#STM?	<p>Read command reports whether the current signaling tones status is enabled or not, in the format:</p> <p>#STM: <mode></p>	
AT#STM=?	Test command reports supported range of values for parameter <mode>.	

5.1.6.16.2.2. Tone Playback - #TONE

#TONE - Tone Playback		SELINT 2
AT#TONE=<tone> [,<duration>]	<p>Execution command allows the reproduction of DTMF tones, standard free tone, standard busy tone and a set of user defined tones for a certain time.</p> <p>Parameters: <tone> - ASCII characters, range is ((0-9),#,*,(A-D),(G-L),Y,Z); - (0-9), #, *,(A-D): DTMF tone - (G-L): User Defined Tones - Y: free tone - Z: busy tone <duration> - Duration of current tone in 1/10 of Sec. 1..300 - tenth of seconds (default is 30)</p>	
AT#TONE=?	Test command returns the supported range of values for parameters <tone> and <duration>.	
Note:	See AT#UDTSET command to set user defined tones	



5.1.6.16.2.3. Extended tone generation - #TONEEXT

#TONEEXT – Extended tone generation		SELINT 2
AT# TONEEXT = <toneId>,<act>	<p>Execution command allows the reproduction of DTMF tones, standard free tone, standard busy tone and a set of user defined tones for a infinite time, or stop the running tone</p> <p>Parameters:</p> <p>< toneId > - ASCII characters in the set (0-9), #, *,(A-D),(G-L),Y,Z ;</p> <ul style="list-style-type: none"> - (0-9), #, *,(A-D) : DTMF tone - (G-L) : User Defined Tones¹⁰. - y : free tone - z: busy tone <p>< act > - Action to be performed.</p> <ul style="list-style-type: none"> - 0: Stop the <toneId> if running. - 1: Start the <toneId>. 	
AT#TONEEXT=?	Test command returns the range of supported values for parameter <toneId>,<act>.	

5.1.6.16.2.4. Tone Classes Volume - #TSVOL

#TSVOL – Tone Classes Volume		SELINT 2
AT#TSVOL= <class>, <mode> [,<volume>]	<p>Set command is used to select the volume mode for one or more tone classes.</p> <p>Parameters:</p> <p><class> -sum of integers each representing a class of tones which the command refers to</p> <ul style="list-style-type: none"> 1 - GSM tones 2 - ringer tones 4 - alarm tones 8 - signalling tones 16 - DTMF tones 32 - SIM Toolkit tones 64 - user defined tones 128 – Dial tones 255 - all classes <p><mode> - it indicates which volume is used for the classes of tones represented by <class></p> <ul style="list-style-type: none"> 0 - default volume is used 1 - the volume <volume> is used <p><volume> - volume to be applied to the set of classes of tones represented by <class>; it is mandatory if <mode> is 1.</p>	

¹⁰ See also AT#UDTSET, AT#UDTRST and AT#UDTSAV command description following in this document.



#TSVOL – Tone Classes Volume	SELINT 2
	<p>0..<i>max</i> - the value of <i>max</i> can be read issuing the Test command AT#TSVOL=?</p> <p>Note: The class DTMF Tones (<class>=16) refers only to the volume for locally generated DTMF tones. It doesn't affect the level of the DTMF generated by the network as result of AT+VTS command</p>
AT#TSVOL?	<p>Read command returns for each class of tones the last setting of <mode> and, if <mode> is not 0, of <volume> too, in the format:</p> <pre>#TSVOL: 1,<mode1>[,<volume1>]<CR><LF> ... #TSVOL:128,<mode128>[,<volume128>]</pre>
AT#TSVOL=?	<p>Test command returns the supported range of values of parameters <class>, <mode> and <volume>.</p>
Example	<pre>AT#TSVOL=64,1,5 OK AT#TSVOL? #TSVOL:1,0 #TSVOL:2,0 #TSVOL:4,1,5 #TSVOL:8,0 #TSVOL:16,1,5 #TSVOL:32,0 #TSVOL:64,1,5 #TSVOL:128,0 OK</pre>



5.1.6.16.2.5. User Defined Tone SET - #UDTSET command

#UDTSET – User Defined Tone SET	SELINT 2
<p>AT#UDTSET= <tone> ,<F1>,<A1> [,<F2>,<A2> [,<F3>,<A3>]]</p>	<p>Set command sets a tone identified by the index <tone> as the sum of 3 independent frequencies <Fi> and amplitudes <Ai>.</p> <p>Parameters: <tone> - tone index (G,H,I,J,K,L) <Fi> - frequency in Hz; range is (300,3000) in step of 1 Hz <Ai> - amplitude in dB; range is (10,100) in step of 1 dB</p> <p>Note: Ai = 100 is equal to the max value of the single tone. Lower values attenuate output to the difference between 100 and the selected amplitude (ex: Ai = 80 is equal to 100-80 = -20dB).</p> <p>Note: issuing AT&F1 or AT&Z has the effect to set the parameters with the last saved in NVM values</p> <p>Note: Ai = 0 and Fi = 0 are only values for uninitialized parameters and can't be issued by AT command. Every time the set command is issued, the unspecified parameters are automatically reset to zero. (Ai,Fi) issuing needs also (Aj,Fj) with j<i.</p>
<p>AT# UDTSET?</p>	<p>Read command returns the current settings for the tones:</p> <p>#UDTSET: G,<F1>,<A1>,<F2>,<A2>,<F3>,<A3> #UDTSET: H, <F1>,<A1>,<F2>,<A2>,<F3>,<A3> #UDTSET: I, <F1>,<A1>,<F2>,<A2>,<F3>,<A3> #UDTSET: J, <F1>,<A1>,<F2>,<A2>,<F3>,<A3> #UDTSET: K, <F1>,<A1>,<F2>,<A2>,<F3>,<A3> #UDTSET: L, <F1>,<A1>,<F2>,<A2>,<F3>,<A3></p>
<p>AT# UDTSET =?</p>	<p>Test command returns the supported range of values for <tone>, <Fi> and <Ai> parameters.</p>



5.1.6.16.2.6. User Defined Tone SAVE - #UDTSAV command

#UDTSAV – User Defined Tone SAVe		SELINT 2
AT#UDTSAV	Execution command saves the actual values of frequency and amplitude parameters that have been set with the command #UDTSET	
AT#UDTSAV =?	Test command returns the OK result code.	
Example	AT#UDTSAV OK Current tones are saved in NVM	

5.1.6.16.2.7. User Defined Tone Reset - #UDTRST command

#UDTRST – User Defined Tone ReSeT		SELINT 2
AT#UDTRST	Execution command resets to the default set the actual values of frequency and amplitude parameters that can be set with the command #UDTSET.	
AT#UDTRST =?	Test command returns the OK result code.	
Example	AT#UDRST OK The default value tones are restored in NVM	



5.1.6.16.3. Audio profiles

5.1.6.16.3.1. Audio Profile Factory Configuration - #PRST

#PRST - Audio Profile Factory Configuration		SELINT 2
AT#PRST	Execution command resets the actual audio parameters in the NVM of the device to the default set. It is not allowed if active audio profile is 0. The audio parameters to reset are: <ul style="list-style-type: none"> - Uplink path biquad filters - Downlink path biquad filters 	
AT#PRST=?	Test command returns the OK result code.	
Example	AT#PRST OK <i>Current audio profile is reset</i>	

5.1.6.16.3.2. Audio Profile Configuration Save - #PSAV

#PSAV - Audio Profile Configuration Save		SELINT 2
AT#PSAV	Execution command saves the actual audio parameters in the NVM of the device. It is not allowed if active audio profile is 0. The audio parameters to store are: <ul style="list-style-type: none"> - Uplink path biquad filters - Downlink path biquad filters 	
AT#PSAV=?	Test command returns the OK result code.	
Example	AT#PSAV OK <i>Current audio profile is saved in NVM</i>	



5.1.6.16.3.3. Audio Profile Selection - #PSEL

#PSEL - Audio Profile Selection	SELINT 2
AT#PSEL=<prof>	<p>Set command selects the active audio profile</p> <p>Parameter: <prof>: current profile 0 - standard profile 1..3 - extended profile, modifiable.</p> <p><i>Note: This parameter is saved in NVM issuing AT&W command.</i></p>
AT#PSEL?	<p>The read command returns the active profile in the format:</p> <p>#PSEL:<prof></p>
AT#PSEL=?	<p>Test command returns the supported range of values of parameter <prof>.</p>



5.1.6.16.4. Audio Filters

5.1.6.16.4.1. Uplink Path Biquad Filters - #BIQUADIN

#BIQUADIN - Uplink Path Biquad Filters	SELINT 2
<p>AT# BIQUADIN= <aF0> [, <aF1> [, <aF2> [, <bF1> [, <bF2> [, <aS0> [, <aS1> [, <aS2> [, <bS1> [, <bS2>]]]]]]]]]</p>	<p>Set command allows to configure the parameters of the two cascaded digital biquad filters $H_{First}(z) \cdot H_{Second}(z)$ in Uplink path (sending). It is not allowed if active audio profile is 0.</p> <p>Parameters: <aFn>, <bFn>, <aSn>, <bSn> - they all are specific parameters for the calculation of digital biquad filters as follows:</p> $H_F(z) = \frac{a_{F0} + 2 \cdot a_{F1} \cdot z^{-1} + a_{F2} \cdot z^{-2}}{1 + 2 \cdot b_{F1} \cdot z^{-1} + b_{F2} \cdot z^{-2}}$ $H_S(z) = \frac{a_{S0} + 2 \cdot a_{S1} \cdot z^{-1} + a_{S2} \cdot z^{-2}}{1 + 2 \cdot b_{S1} \cdot z^{-1} + b_{S2} \cdot z^{-2}}$ <p>-32768..32767 - each value has to be interpreted as signed fixed point number in two's complement format with 15 fractional bits in a 16 bit word (Q15)</p> <p>Note: in the above formulas pay attention to the multiplier (2) for parameters <aF1>, <aS1>, <bF1> and <bS1></p> <p>Parameters can be saved in NVM using AT#PSAV command and are available for audio profiles 1,2,3. For audio profile 0 the values are fixed.</p>
<p>AT# BIQUADIN?</p>	<p>Read command returns the parameters for the active profile in the format:</p> <p>#BIQUADIN: <aF0>, <aF1>, <aF2>, <bF1>, <bF2>, <aS0>, <aS1>, <aS2>, <bS1>, <bS2></p> <p>It is not allowed if active audio profile is 0.</p>
<p>AT# BIQUADIN=?</p>	<p>Test command returns the supported range of values for parameters <aF0>, <aF1>, <aF2>, <bF1>, <bF2>, <aS0>, <aS1>, <aS2>, <bS1>, <bS2></p>



5.1.6.16.4.4. Extended Downlink Biquad Filters - #BIQUADOUTEX

#BIQUADOUTEX – Extended Downlink Biquad Filters	SELINT 2
<p>AT#BIQUADOUTEX= <aF0> [,<aF1> [,<aF2> [,<bF1> [,<bF2> [,<aS0> [,<aS1> [,<aS2> [,<bS1> [,<bS2>]]]]]]]]]]</p>	<p>Set command allows to configure the parameters of the two extended digital biquad filters $H_{First}(z) \cdot H_{Second}(z)$ in Downlink path (receiving). It is not allowed if active audio profile is 0.</p> <p>Parameters: <aFn>,<bFn>,<aSn>,<bSn> - they all are specific parameters for the calculation of digital biquad filters as follows:</p> $H_F(z) = \frac{a_{F0} + 2 \cdot a_{F1} \cdot z^{-1} + a_{F2} \cdot z^{-2}}{1 + 2 \cdot b_{F1} \cdot z^{-1} + b_{F2} \cdot z^{-2}}$ $H_S(z) = \frac{a_{S0} + 2 \cdot a_{S1} \cdot z^{-1} + a_{S2} \cdot z^{-2}}{1 + 2 \cdot b_{S1} \cdot z^{-1} + b_{S2} \cdot z^{-2}}$ <p>-32768..32767 - each value has to be interpreted as signed fixed point number in two's complement format with 15 fractional bits in a 16 bit word (Q15)</p> <p>Note: in the above formulas pay attention to the multiplier (2) for parameters <aF1>, <aS1>, <bF1> and <bS1> Parameters can be saved in NVM using AT#PSAV command and are available for audio profiles 1,2,3. For audio profile 0 the values are fixed.</p>
<p>AT#BIQUADOUTEX?</p>	<p>Read command returns the parameters for the active profile in the format:</p> <p>#BIQUADOUTEX: <aF0>,<aF1>,<aF2>,<bF1>,<bF2>,<aS0>,<aS1>,<aS2>,<bS1>,<bS2></p> <p>Note: It is not allowed if active audio profile is 0; in this case an ERROR is returned.</p>
<p>AT#BIQUADOUTEX=?</p>	<p>Test command returns the supported range of values for parameters <aF0>,<aF1>,<aF2>,<bF1>,<bF2>,<aS0>,<aS1>,<aS2>,<bS1>,<bS2></p>



5.1.6.16.5. Echo canceller configuration

5.1.6.16.5.1. Handsfree Echo Canceller - #SHFEC

#SHFEC - Handsfree Echo Canceller		SELINT 2
AT#SHFEC= [<mode>]	<p>It has no effect and is included only for backward compatibility.</p> <p>Parameter: <mode> (0,1) - (0 is factory default)</p> <p>Note: This setting returns to default after power off.</p>	
AT#SHFEC?	<p>Read command reports the value of parameter <mode>, in the format:</p> <p>#SHFEC: <mode></p>	
AT#SHFEC=?	<p>Test command returns the supported range of values of parameter <mode>.</p>	

5.1.6.16.5.2. Handset Echo Canceller - #SHSEC

#SHSEC - Handset Echo Canceller		SELINT 2
AT#SHSEC = <mode>	<p>Set command enables/disables the echo canceller function on audio handset output.</p> <p>Parameter: <mode> 0 - disables echo canceller for handset mode (default) 1 - enables echo canceller for handset mode</p> <p>Note: This parameter is saved in NVM issuing AT&W command.</p>	
AT#SHSEC?	<p>Read command reports whether the echo canceller function on audio handset output is currently enabled or not, in the format:</p> <p>#SHSEC: <mode></p>	
AT#SHSEC =?	<p>Test command returns the supported range of values of parameter <mode>.</p>	



5.1.6.16.5.3. Handsfree Automatic Gain Control - #SHFAGC

#SHFAGC - Handsfree Automatic Gain Control		SELINT 2
AT# SHFAGC = <mode>	<p>It has no effect and is included only for backward compatibility.</p> <p>Parameter: <mode> (0,1) - (0 is default)</p> <p><i>Note: This parameter is saved in NVM issuing AT&W command.</i></p>	
AT# SHFAGC?	<p>Read command reports the value of parameter <mode>, in the format:</p> <p>#SHFAGC: <mode></p>	
AT# SHFAGC =?	<p>Test command returns the supported range of values of parameter <mode>.</p>	

5.1.6.16.5.4. Handset Automatic Gain Control - #SHSAGC

#SHSAGC - Handset Automatic Gain Control		SELINT 2
AT#SHSAGC = <mode>	<p>Set command enables/disables the automatic gain control function on audio handset input.</p> <p>Parameter: <mode> 0 - disables automatic gain control for handset mode (default) 1 - enables automatic gain control for handset mode</p> <p><i>Note: This parameter is saved in NVM issuing AT&W command.</i></p>	
AT#SHSAGC?	<p>Read command reports whether the automatic gain control function on audio handset input is currently enabled or not, in the format:</p> <p>#SHSAGC: <mode></p>	
AT#SHSAGC =?	<p>Test command returns the supported range of values of parameter <mode>.</p>	



5.1.6.16.5.5. Handsfree Noise Reduction - #SHFNR

#SHFNR - Handsfree Noise Reduction		SELINT 2
AT#SHFNR = <mode>	<p>It has no effect and is included only for backward compatibility.</p> <p>Parameter: <mode> (0,1) - (0 is default)</p> <p><i>Note: This parameter is saved in NVM issuing AT&W command.</i></p>	
AT#SHFNR?	<p>Read command reports the value of parameter <mode> , in the format:</p> <p>#SHFNR: <mode></p>	
AT#SHFNR=?	<p>Test command returns the supported range of values of parameter <mode>.</p>	

5.1.6.16.5.6. Handset Noise Reduction - #SHSNR

#SHSNR - Handset Noise Reduction		SELINT 2
AT# SHSNR = <mode>	<p>Set command enables/disables the noise reduction function on audio handset input.</p> <p>Parameter: <mode> 0 - disables noise reduction for handset mode (default) 1 - enables noise reduction for handset mode</p> <p><i>Note: This parameter is saved in NVM issuing AT&W command.</i></p>	
AT# SHSNR?	<p>Read command reports whether the noise reduction function on audio handset input is currently enabled or not, in the format:</p> <p># SHSNR: <mode></p>	
AT# SHSNR=?	<p>Test command returns the supported range of values of parameter <mode>.</p>	

5.1.6.16.5.7. Handset Ambient Noise Adaptation - #SHSANA

#SHSANA - Handset Ambient Noise Adaptation		SELINT 2
AT#SHSANA = <mode>	<p>Set command enables/disables the ambient noise adaptation function on audio handset input.</p> <p>Parameter: <mode> 0 - disables ambient noise adaptation for handset mode (default) 1 - enables ambient noise adaptation for handset mode</p>	



	<p>1000..20000 - this is the numeric threshold used to detect DTMF tones. The default value is 2500.</p> <p><threshold_2>: 1000..20000 - this is the numeric threshold used to start DTMF decoding. The default value is 1500.</p> <p><std_twist>: 0..20 - standard twist threshold. It is an optional parameter and the default value is 9.</p> <p><rev_twist >: 0..20 - reverse twist threshold. It is an optional parameter and the default value is 5.</p> <p>Note: The default values were chosen after a fine tuning, so every change should be done very carefully to avoid wrong decoding.</p> <p>Note: the values set by command are not saved and a software or hardware reset restores the default value.</p> <p>Note: Default values are referred to standard DTMF decoder (AT#DTMF=1).</p> <p>Note: It is supposed that the module is just powered on and the AT#DTMFCFG command is entered without < std_twist> and < rev_twist> parameters. In this case the read command doesn't return the setting of the <std_twist> and <rev_twist> in order to meet retro compatibility with other families. Now, let's assume that AT#DTMFCFG command is entered again, but using the < std_twist> and <rev_twist> parameters for the first time: if the read command is entered, it reports the parameter value just used. If subsequently the <std_twist> and <rev_twist> are omitted, the read command reports the parameter value entered the last time.</p>
<p>AT#DTMFCFG?</p>	<p>Read command reports the currently selected value in the format:</p> <p># DTMFCFG: <scaling>,<threshold_1>,<threshold_2>[,<std_twist >[,<rev_twist >]]</p>



AT#DTMFCFG =?	Test command reports supported range of values for all parameters.
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5.1.6.16.7. Digital Voice Interface

5.1.6.16.7.1. 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 for UE910 product series) 1 - enable DVI; audio is forwarded to the DVI block (factory default for HE910 and UL865 product series) 2 - reserved <dviport> 2 - DVI port 2 will be used. <clockmode> 0 - DVI slave 1 - DVI master (factory default) NOTE: for further information see “HE910 Digital Voice Interface Application Note”
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 <i>DVI is configured as master providing on DVI Port #2 (the only available)</i>



5.1.6.16.7.2. Extended Digital Voiceband Interface - #DVIEXT

#DVIEXT - Digital Voiceband Interface Extension	SELINT 2
<p>AT#DVIEXT=<config>,<[<samplerate>,<samplewidth>,<audiomode>,<edge>]]</p>	<p>Set command configures the Digital Voiceband Interface.</p> <p>Parameters:</p> <p><config> 0 – Burst Mode 1 – Normal Mode (factory default)</p> <p><samplerate> 0 – audio scheduler sample rate 8KHz (factory default) 1 - audio scheduler sample rate 16KHz</p> <p><samplewidth> 0 – 16 bits per sample (factory default) 1 – 18 bits per sample 2 – 20 bits per sample 3 – 24 bits per sample 4 – 32 bits per sample</p> <p><audiomode> 0 – Mono Mode 1 – Dual Mono (factory default)</p> <p><edge> 0 – data bit is transmitted on falling edge of clock and sampled on rising edge of clock (factory default) 1 – data bit is transmitted on rising edge of clock and sampled on falling edge of clock</p> <p>Note: <edge> parameters is valid only in Burst Mode, in Normal Mode shall be 0.</p>
<p>AT#DVIEXT?</p>	<p>Read command reports last setting, in the format:</p> <p>#DVIEXT: <config>,<samplerate>,<samplewidth>,<audiomode>,<edge></p>
<p>AT#DVIEXT=?</p>	<p>Test command reports the range of supported values for parameters:</p> <p><config>,<samplerate>,<samplewidth>,<audiomode>,<edge></p>
<p>Example</p>	



5.1.6.16.8. DVI Clock Activation - #DVICLK

#DVICLK – DVI Clock Activation	SELINT 2
AT#DVICLK=<clk>	<p>Set command configures and activates the DVICLK clock signal.</p> <p>Parameters: <clk> 0 – Disable (factory default) 1 – DVI Clock activated at 256KHz 2 – DVI Clock activated at 384KHz 3 – DVI Clock activated at 512KHz</p> <p>Note: the commands #DVI, #DVIEXT, #OAP can turn off the DVICLK signal or change its frequency. Note: after setting the DVICLK frequency through #DVICLK command, a voice call does not modify the DVICLK setting.</p>
AT#DVICLK?	<p>Read command reports last setting, in the format: #DVICLK: <clk></p>
AT#DVICLK=?	<p>Test command reports the range of parameter <clk></p>

5.1.6.16.9. Audio file and stream management commands

5.1.6.16.9.1. PCM Play and Receive - #SPCM

#SPCM - PCM Play And Receive	SELINT 2
AT#SPCM=<mode>, <dir>[,<format>]	<p>Set command allows user either to send speech sample coming from microphone or downlink audio channel to serial port in PCM format, or to play a PCM stream coming from serial port to speaker or uplink audio channel.</p> <p>As showed in the table below if <mode> = 3 and <dir> = 1 then the speech coming from serial port with selected PCM <format> is sent to uplink and, at the same time, the speech coming from downlink is sent to serial port with selected PCM <format>.</p> <p>An active speech call is needed when sending/receiving to/from audio channel.</p> <p>Parameters: <mode>: action to be execute; 1 - play PCM stream from serial to selected direction <dir>. 2 - send speech from selected direction <dir> to serial. 3 - send/receive speech to/from selected direction <dir></p> <p><dir>: Select the audio path. 0 - send/receive to/from audio front end 1 - send/receive to/from audio channel 2 - reserved</p>



#SPCM - PCM Play And Receive	SELINT 2												
	<p>< format >: PCM bits format 0 - 8 bit (factory default) 1 - 16 bit</p> <p>Note: Execution command switches module in online mode. Module moves back to command mode either after entering the escape sequence +++ or as a consequence of a DTR transition.</p> <p>Note: Using 16 bit it is mandatory to set +IPR at least to 230400.</p> <p>The following table summarizes the status of audio path during a speech call for different configurations and with sidetone disabled:</p> <table border="1"> <thead> <tr> <th></th> <th>mode = 1</th> <th>mode = 2</th> <th>mode = 3</th> </tr> </thead> <tbody> <tr> <td>dir = 0</td> <td>Uplink off / Downlink on PCM stream on speaker</td> <td>Uplink off / Downlink off PCM stream from microphone</td> <td>Not supported</td> </tr> <tr> <td>dir = 1</td> <td>Uplink on / Downlink off PCM stream on Uplink</td> <td>Uplink off / Downlink on PCM stream from Downlink</td> <td>Uplink on / Downlink on PCM stream to/from Uplink/Downlink</td> </tr> </tbody> </table> <p>Sidetone is active for default.</p> <p>Note: When DTMF decoder is enabled, PCM playing and recording are automatically disabled (AT#SPCM will return error).</p>		mode = 1	mode = 2	mode = 3	dir = 0	Uplink off / Downlink on PCM stream on speaker	Uplink off / Downlink off PCM stream from microphone	Not supported	dir = 1	Uplink on / Downlink off PCM stream on Uplink	Uplink off / Downlink on PCM stream from Downlink	Uplink on / Downlink on PCM stream to/from Uplink/Downlink
	mode = 1	mode = 2	mode = 3										
dir = 0	Uplink off / Downlink on PCM stream on speaker	Uplink off / Downlink off PCM stream from microphone	Not supported										
dir = 1	Uplink on / Downlink off PCM stream on Uplink	Uplink off / Downlink on PCM stream from Downlink	Uplink on / Downlink on PCM stream to/from Uplink/Downlink										
AT#SPCM=?	<p>Test command returns the supported range of values for parameters <mode>, <dir> and <format>.</p> <p>#SPCM: <mode>,<dir>,<format></p>												
Example	<p>AT#SPCM=1,0,0 CONNECT +++ NO CARRIER</p> <p>Note: after the CONNECT, 8Khz 8bit PCM stream has to be sent to serial port</p> <p>AT#SPCM=2,0,0 CONNECT +++ NO CARRIER</p> <p>Note: after the CONNECT, 8Khz 8bit PCM stream can be read from serial port</p>												



#ARECD – Record an audio file	SELINT 2
	<p><mode> 0 - stop to record , Optional parameter is not allowed (default value) 1 - start to record, Optional parameter is mandatory</p> <p><filename> - file name, string type with .pcm or .wav extension</p> <p>When the recording is stopped or an error occurs, an URC is provided with the following format:</p> <p>#ARECDEV: <result> Where: <result> 0 – file record done 1 – file record error</p> <p>Note: Feature supported only in idle mode Note: Filename has a maximum of 16 characters excluding double inverted commas. Note: The total size of all audio files must not be over <total size> in #ASIZE Note: Below 200 Kb of free space the file system could stop the recording and no more recordings are allowed. Note: .wav and .pcm extensions are currently supported.</p>
AT#ARECD?	<p>Read command reports the currently selected <mode> in the format:</p> <p>#ARECD: <mode></p>
AT#ARECD=?	<p>Test command reports the supported range of values for the parameters <mode> in the format:</p> <p>#ARECD: (0,1)</p>
Example	<p>AT# ARECD =1,"rec.pcm" OK AT# ARECD =0 OK #ARECDEV: 0</p>

5.1.6.16.9.9. Configure audio file format - #ACONF

#ACONF – Configure audio file format	SELINT 2
AT# ACONF [=<filename>]	This command configures the compression format which is used when



	<p>recording a wave audio file. Compression in PCM file format is not supported.</p> <p>Parameters: <format> 0 - Linear(default) 1 - A-law 2 - U-law Note: AT#ACONF command without parameters, restores the default value</p>
AT#ACONF?	<p>Read command reports the currently <format> in the format:</p> <p>#ACONF: <format></p>
AT#ACONF=?	<p>Test command reports the supported range of values for the parameters <format> in the format:</p> <p>#ACONF: (0-2)</p>

5.1.6.16.9.10. Play an audio file - #APLAY

#APLAY – Play an audio file

SELINT 2

<p>AT#APLAY= <mode>[,<dir>,<filename>]</p>	<p>This command plays audio file on the speaker or uplink path. It's mandatory to specify the file extension and it's necessary to write file name between a couple of double inverted commas.</p> <p>Parameters: <mode> 0 - stop to play, Optional parameters are ignored (default value) 1 - start to play, Optional parameters are mandatory</p> <p><dir>: select audio path. 0 - send to the speaker(default value) 1 - send to the uplink path</p> <p><filename> - file name, string type</p> <p>The URC format is: #APLAYEV: <result></p> <p>Where: <result> 0 – file play done 1 – file play error</p>
--	--



#APLAY – Play an audio file	SELINT 2
	Note: Feature supported only in idle mode Note: The format of mono audio file is 8k samples/sec and 16 bits/sample. Note: '.wav' and '.pcm' file formats are supported.
AT#APLAY?	Read command reports the currently selected <mode>,<dir> in the format: #APLAY: <mode>,<dir>
AT#APLAY=?	Test command reports the supported range of values for the parameters <mode>,<dir> in the format: #APLAY: (0,1),(0,1)
Example	AT#APLAY = 1,0,"rec.pcm" OK #APLAYEV: 0

5.1.6.16.9.11. Find a specific audio file - #AFIND

#AFIND – Find a specific audio file	SELINT 2
AT#AFIND =<filename>	This command finds a specific audio file. Parameter: <filename> - file name, string type Note: filename has a maximum of 32 characters.
AT# AFIND =?	Test command returns the OK result code

5.1.6.16.10. Miscellaneous audio commands

5.1.6.16.10.1. TeleType Writer - #TTY

#TTY - TeleType Writer	SELINT 2
AT#TTY=<support>	Set command enables/disables the TTY functionality. Parameter: <support> 0 - disable TTY functionality (factory default) 1 - enable TTY functionality Note: the value set by command is directly stored in NVM and doesn't depend on



	the specific AT instance.
AT#TTY?	Read command returns whether the TTY functionality is currently enabled or not, in the format: #TTY: <support>
AT#TTY=?	Test command reports the supported range of values for parameter <support>.

5.1.6.16.10.2. **Open Audio Path - #OAP**

#OAP - Open Audio Path		SELINT 2
AT#OAP=[<mode>]	Set command sets Open Audio Path. Parameter: 0 - disables Open Audio Path (default) 1 - enables Open Audio Path	
AT#OAP?	Read command reports whether the Open Audio Path is currently enabled or not, in the format: #OAP: <mode>	
AT#OAP=?	Test command returns the supported range of values of parameter <mode>.	
Note	The audio loop will be established between microphone and speaker using sidetone scaling value. <i>AT#OAP command is intended for testing purposes only, thus any additional audio command or setting may change the current open audio path status."</i>	



5.1.6.17. Jammed Detection & Report AT Commands

5.1.6.17.1. Jammed Detect & Report - #JDR

This command is obsolete, please refer to the next #JDRENH2.

5.1.6.17.2. Enhanced Jammed Detect & Report 2 - #JDRENH2

#JDRENH2 - Enhanced Jammed Detect & Report 2	SELINT 2
<pre>AT#JDRENH2=<mode>[,<SAT2G>,<SAT3G>,<CARRNUM>,<P_RxLev_T2G>,<P_EcN0_T3G>,<P_RSCP_T3G>[,<spare>[,<spare>[,<spare>[,<spare>]]]]]</pre>	<p>Set command allows to control the Jammed Detect & Report feature.</p> <p>The MODULE can detect if a communication Jammer is active in its range and give indication to the user of this condition either on the serial line with an unsolicited code or on a dedicated GPIO by rising it.</p> <p>Parameters:</p> <p><mode> - behaviour mode of the Jammed Detect & Report</p> <ul style="list-style-type: none"> 0 - disables Jammed Detect & Report (factory default) 1 - enables the Jammed Detect; the Jammed condition is reported on pin GPIO2/JDR <ul style="list-style-type: none"> GPIO2/JDR Low - Normal Operating Condition GPIO2/JDR High - Jammed Condition. 2 - enables the Jammed Detect; the Jammed condition is reported with a single unsolicited result code on serial line, in the format: <p>#JDR: <status> where: <status> JAMMED - Jammed condition detected OPERATIVE - Normal Operating condition restored. This code will be shown only after a jammed condition has occurred.</p> 3 - enables the Jammed Detect; the MODULE will make both the actions as for <mode>=1 and <mode>=2. 4 - enables the Jammed Detect; the Jammed condition is reported with an unsolicited code every 3s on serial line, in the format: <p>#JDR: <status> where: <status> JAMMED - Jammed condition detected OPERATIVE - Normal Operating condition restored. This code will be shown only after a jammed condition has occurred.</p> 5 - enables the Jammed Detect; the MODULE will make both the actions as for <mode>=1 and <mode>=4. 6 - enables the Jammed Detect (this value is available only for 10.00.xxx release);



5.1.6.18.2. OTA Set User Answer - #OTASUAN

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



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



5.1.6.18.3. OTA Set Ring Indicator - #OTASETRI

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



5.1.6.18.4. Save IP Port and IP Address for OTA over IP - #OTAIPCFG

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



5.1.6.18.5. Start an OTA Update over IP - #OTAIPUPD

#OTAIPUPD – Start an OTA Update over IP	SELINT 2
<p>AT#OTAIPUPD</p>	<p>This command starts an OTA Update over IP.</p> <p>Note: in order to complete the update, the device has to be registered in the OTA server.</p> <p>Note: it is necessary to set some parameters beforehand: the bearer (CSD or GPRS) and the APN, through the command AT#OTASNAIPCFG, the IP port and IP address, through the command AT#OTAIPCFG.</p> <p>After the command AT#OTAIPUPD has been set, some unsolicited messages will inform the user about the status of the update process:</p> <ul style="list-style-type: none"> - #OTAEV: Start Fw Download - #OTAEV: Fw Download Complete - #OTAEV: Module Upgraded To New FW - #OTAEV: Server notified about successful FW Upgrade <p>Or, in case of failure:</p> <ul style="list-style-type: none"> - #OTAEV: OTA FW Upgrade Failed
<p>AT#OTAIPUPD?</p>	<p>Read command reports the current status of the OTA over IP: the value 1 is returned if the OTA over IP is running (in this case the user shall receive the unsolicited messages), 0 otherwise.</p> <p>#OTAIPUPD: <status></p>
<p>AT#OTAIPUPD =?</p>	<p>Test command tests for command existence</p>



#OTAREG - OTA Registration status	SELINT 0/1/2
<pre> registered because there isn't any inserted SIM; it's showed the last registered IMSI at#otareg #OTAREG: 0,222887445252672 OK //insert a different SIM with IMSI 222015602268637 at+cimi 222015602268637 OK //the module is not yet registered with the current IMSI so it's showed the last registered IMSI at#otareg #OTAREG: 0,222887445252672 OK //the module is performing automatically the OTA registration #OTAEV: Registered //module is registered to the OTA server with the IMSI 222015602268637 at#otareg #OTAREG: 1,222015602268637 OK </pre>	

5.1.6.19. eCall AT Commands

5.1.6.19.1. Initiate eCall - +CECALL

+CECALL - Initiate eCall	SELINT 2
<p>AT+CECALL=<type of eCall></p>	<p>Set command is used to trigger an eCall to the network. Based on the configuration selected, it can be used to either trigger a test call, a reconfiguration call, a manually initiated call or an automatically initiated call.</p> <p>Parameters: <type of eCall>: 0 – test call</p>



	<p>1 – reconfiguration call 2 – manually initiated eCall 3 – automatically initiated eCall</p> <p>Note: the sending of a MSD is pointed out with an unsolicited message through AT interface that can report the HL-ACK data bits or an error code in the following format:</p> <p>#ECALLEV: <prim>,<data></p> <p><prim>: 0 – Pull-IND 1 – Data_CNF 2 – AL-Ack 16 – sync loss</p> <p><data>: Data content of Application Layer message (only with AL-Ack)</p>
<p>AT+CECALL?</p>	<p>Read command returns the type of eCall that is currently in progress in the format:</p> <p>+CECALL: [<type of eCall>]</p>
<p>AT+CECALL=?</p>	<p>Test command reports the supported range of values for parameter <type of eCall>.</p>



5.1.6.19.2. Embedded IVS inband modem enabling - #ECALL

#ECALL – Embedded IVS inband modem enabling	SELINT 2
<p>AT#ECALL=<mode></p>	<p>Set command enables/disables the embedded IVS modem.</p> <p>Parameters: <mode>: 0 – disable IVS (default) 1 – enables IVS</p> <p>Note: the sending of a MSD is pointed out with an unsolicited message through AT interface that can report the HL-ACK data bits or an error code in the following format:</p> <p>#ECALLEV: <prim>,<data></p> <p><prim>: 0 – Pull-IND 1 – Data_CNF 2 – AL-Ack 16 – sync loss</p> <p><data>: Data content of Application Layer message (only with AL-Ack)</p> <p>Note: the value set by command is not saved and a software or hardware reset restores the default value. The value can be stored in NVM using profiles.</p> <p>Note: When IVS modem is enabled PCM playing, PCM recording and DTMF decoding are automatically disabled (AT#SPCM or AT#DTMF will return error).</p> <p>Note: +CECALL command supersedes this command because it enables automatically eCall functionality.</p>
<p>AT#ECALL?</p>	<p>Read command reports the currently selected <prim> in the format:</p> <p>#ECALL: <mode></p> <p><mode>: 0 – IVS disabled 1 – IVS enabled</p>
<p>AT#ECALL =?</p>	<p>Test command reports supported range of values for all parameters.</p>

5.1.6.19.3. Dial an Emergency Call - #EMRGD



5.1.6.19.10. set eCall Only mode - #ECONLY

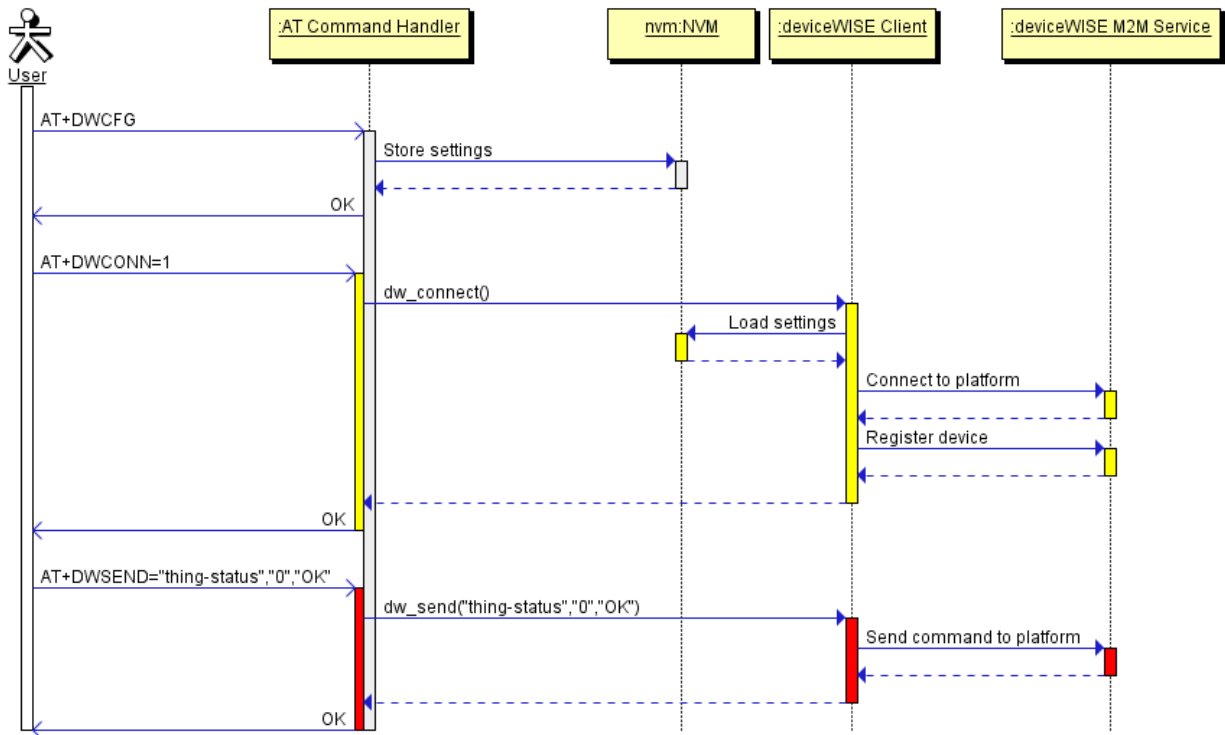
#ECONLY – set eCall Only mode	SELINT 2
AT#ECONLY=<mode>	<p>This command enables/disables the eCall Only mode of operation.</p> <p>Parameters: <mode>: 0 – disable eCall Only mode, normal mode 1 - enable eCall Only mode if eCall only subscription is available (default) 2 – enable eCall Only mode even if eCall only subscription is not available</p> <p>Note: the value set by command is directly stored in NVM and doesn't depend on the specific CMUX instance.</p> <p>Note: the new setting can cause an automatic reboot of module.</p>
AT#ECONLY?	<p>Read command reports the currently selected <mode> and <status> in the format:</p> <p>#ECONLY: <mode>,<status></p> <p>Parameters: <status>: 0 – eCall only mode doesn't apply 1 – eCall only mode applies 2 - eCall only mode applies, but T3242 or T3243 are running</p>
AT#ECONLY=?	<p>Test command reports the supported range of values for parameter <mode>.</p>

5.1.6.20. m2mAIR Cloud Commands

The following AT commands regard the deviceWISE functionality.

Here is a basic interaction diagram:





5.1.6.20.1. Configure deviceWISE parameters - #DWCFG

#DWCFG – configure deviceWISE parameters	SELINT 2
AT#DWCFG =[<serverUrl>[,<deviceIDSelector>[,<appToken>[,<security>[,<heartBeat>[,<autoReconnect>[,<overflowHandling>[,<atrunInstanceId>[,<serviceTimeout>[,<contextID>[,<unused_1>[,<unused_2>]]]]]]]]]]]]]]]]]]]]	<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. <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</p>



	<p>Default 4 Range 0 – 4</p> <p><serviceTimeout> - It defines in seconds the maximum time interval for a service request to the server. Default 5 Range 1 – 120</p> <p><contextID> - the PDP context used for the network connection. Default 1 Range 1 – 5</p>
AT#DWCFG?	<p>Read command returns the current settings in the format:</p> <p>#DWCFG: <serverUrl>,<deviceIDSelector>,<appToken>,<security>,<heartBeat>,<autoReconnect>,<overflowHandling>,<atrunInstanceId>,<serviceTimeout>,<contextID>,,0,0</p>
AT#DWCFG=?	<p>Test command returns the supported range of parameters <deviceIDSelector> , <security> , <heartBeat> , <AutoReconnect> , <overflowHandling> , <atrunInstanceId> , <serviceTimeout> , <contextID> , <unused_1> and <unused_2> , and the maximum length of <serverUrl> and <appToken> parameters.</p>

5.1.6.20.2. Connect to M2M Service - #DWCONN

#DWCONN - connect to M2M Service	SELINT 2
AT#DWCONN=<connect>	<p>Set command connects/disconnects to the M2M Service.</p> <p>Parameters: <connect> - flag to connect/disconnect to the M2M Service 0 – disconnect (default) 1 – connect</p> <p>Note: AT#DWCONN=1 performs the socket connection and the MQTT connection. AT#DWCONN=0 performs the socket disconnection.</p> <p>Note: the PDP Context used for the network connection is the first (<cid>=1 has to be previously defined with AT+CGDCONT command and activated with AT#SGACT command)</p> <p>Note: if the secure mode connection has been enabled, it cannot be used contemporarily to any command starting an SSL connection (including</p>



	SSL sockets, FTPS, secure SMTP and HTTPS).
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

5.1.6.20.3. 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



5.1.6.20.4. Send data to M2M Service - #DWSSEND

#DWSSEND - send data to M2M Service	SELINT 2
<p>AT#DWSSEND= <type>,<param_1> [,<param_2>[,... [,param_n]]]</p>	<p>Execution command permits to send formatted data to the M2M Service.</p> <p>Parameters:</p> <p><type> - type code for the type of message to send.</p> <ul style="list-style-type: none"> 0 - normal request 1 - method request 2 - method update 3 - method ack <p>The meaning of the following parameters (<param_1> ... <param_n>) changes depending on the value of the first parameter <type>:</p> <p>Type 0 message format (API execution request):</p> <p><param_1> - command – the API command to execute. <param_2+> - string parameters required by the method, in the format <key_i>,<value_i>. They are key-value pairs indicating the i-th parameter, with i=0,...,12. If the current API does not require input variables, these parameters can be omitted.</p> <p>Type 1 message format (remote method execution request):</p> <p><param_1> - “thingKey” – the key of a thing to execute. <param_2> - timeout – time to wait in milliseconds before returning an error for the request. <param_3> - method – the method key of a thing to execute. <param_4> - is singleton – 0 or 1. 1 if no more than one of these instances can exist. <param_5+> - string parameters required by the method, in the format <key_i>,<value_i>. They are key-value pairs indicating the i-th parameter, with i=0,...,10. If the current method does not require input variables, these parameters can be omitted.</p> <p>Type 2 message format (method update):</p> <p><param_1> - id – the identification of the method instance. <param_2> - message – a message represents the current status of the method.</p> <p>Type 3 message format (method acknowledgement):</p>



#DWSEND - send data to M2M Service	SELINT 2
	<p><param_1> - <i>id</i> – the identification of the method instance. <param_2> - <i>status</i> – the integer result status for the execution. 0 is reserved for OK. <param_3 when status is set to non-zero> - error message associated with the status. <param_3+ when status is set to zero> - return parameters of the method. Key-value pairs should be used. <i>param_i</i> should be the name of the element and <i>param_i+1</i> should be the value of the element. If the current method does not require output variables, these parameters can be omitted.</p> <p>Note: there is no limit on the length of the single <param_i>, but there is a limit in the total length of the AT command string, that cannot exceed 400 characters. If this threshold is exceeded, then an ERROR is raised. There is also a limit of 20 messages on the receive queue. If the queue is full, the consequent send will still succeed but the response for that particular request will be dropped until an item is removed from this queue (See command AT#DWRCV and AT#DWRCVR).</p> <p>Note: the response to the AT#DWSEND command reports the <msgId> value that identifies the sending.</p> <p>Note: if data are successfully sent, then the response is OK. If data sending fails for some reason, an error code is reported.</p> <p>Note: it's possible to use AT#DWSEND only if the connection has been opened with AT#DWCONN.</p>
AT#DWSEND=?	Test command reports the maximum length of <type> parameter.

5.1.6.20.5. Send raw data to M2M Service - #DWSENDER

#DWSENDER - send raw data to M2M Service	SELINT 2
AT#DWSENDER=<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</p>



#DWRCV - Receive data from M2M Service	SELINT 2
<p><msgId>,<error>,<len>,<param_1>[,<param_2>[...[,<param_n>]]]</p> <p>where: <msgId> - defined as above <error> - error code of the message to receive, 0 if there is no error. <len> - defined as above <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#DWSEND, 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.

5.1.6.20.7. Receive raw data from M2M Service - #DWRCVR

#DWRCVR - Receive raw data from M2M Service	SELINT 2
<p>AT#DWRCVR=<msgId></p> <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: <msgId> - 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#DWSENDNR), then the <msgId> value is the same of the <msgId> value reported in the answer of AT#DWSENDNR.</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 the data 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#DWRCVR, then the data are received and showed with the following URC:</p>	



#DWRCVR - Receive raw data from M2M Service	SELINT 2
<p>#DWRDATA: <msgId>,<error>,<len>,<data></p> <p>where: <msgId> - defined as above <error> - error code of the message to receive, 0 if there is no error. <len> - defined as above <data> - M2M Service data</p> <p>Note: it is possible to use AT#DWRCVR only if the connection has been opened with AT#DWCONN, else the ME is raising an error.</p> <p>If the data received are the consequence of a previous data sending issued by AT#DWSENDER, then they can be read only using AT#DWRCVR command and not AT#DWRCV command (i.e.: AT#DWRCV and AT#DWRCVR are not interchangeable).</p>	
AT#DWRCVR=?	Test command reports the supported range of values for all parameters.

5.1.6.20.8. List information on messages pending from M2M Service - #DWLRCV

#DWLRCV - List information on messages pending from M2M Service	SELINT 2
<p>AT#DWLRCV</p> <p>Execution command permits the user to obtain information regarding the messages pending from M2M Service in the following format:</p> <p>#DWLRCV: <msg_number>[,<msgId_1>,<msg_1_len>[,<msgId_2>,<msg_2_len>[, <msgId_n>,<msg_n_len>]]]</p> <p>where: <msg_number> - number of messages pending from M2M Service Range: >=0</p> <p><msgId_i> - index of the i-th data message to receive <msg_i_len> - length of the i-th data message to receive</p> <p>Note: it is possible to use AT#DWLRCV only if the connection has been opened with AT#DWCONN, else the ME is raising an error.</p>	
AT#DWLRCV=?	Test command reports OK result code

5.1.6.20.9. Enable Agent Features - #DWEN

#DWEN - enable agent features	SELINT 2
AT#DWEN=<feat>,<en>[,<op>	Set command permits to enable/disable up to 8 different deviceWISE



<p>tion1>[,<option2>[,<option3>[,<option4>[,<option5>]]]]]</p>	<p>features.</p> <p>Parameters:</p> <p><feat> - feature to enable or disable; range (0-7) 0 – remote at commands 1 ... 7 – reserved for future use.</p> <p><en> - enable or disable the features 0 – disable the feature 1 – enable the feature</p> <p><optionX> where X=1,...,5 - optional parameters depending on the feature (string)</p> <p>Note: feature 0 (Remote AT commands) has no option. Note: the <en> value is considered only at the very first connection to M2M Service (AT#DWCONN=1) after a device power on or reboot</p>
<p>AT#DWEN?</p>	<p>Read command returns the current settings for each feature in the format:</p> <p>#DWEN: <feat>,<en>,<option1>,<option2>,<option3>,<option4>,<option5></p>
<p>AT#DWEN=?</p>	<p>Test command reports the supported range of values for parameters <feat> and <en> and the maximum length of <optionX> (where X=1,...,5) parameters</p>

5.1.6.21. Advanced Encryption Standard AT commands

5.1.6.21.1. Load the security data - #AESSECDATA

<p>#AESSECDATA – Load the security data</p>	<p>SELINT 2</p>
<p>AT#AESSECDATA=<Action>[,<Size>]</p>	<p>Execution command allows to store, delete and read security data AES key into NVM.</p> <p>Parameters:</p> <p><Action> - Action to do. 0 - Delete data from NVM. 1 - Store data into NVM. 2 - Get MD5 digest of data into NVM</p> <p><Size> - Size of AES key to be stored Admitted values: - 16 number of bytes used for AES128 - 24 number of bytes are used for AES192 - 32 number of bytes are used for AES256</p>



	<p>If the <Action> parameter is 1 (store data into NVM) the device responds to the command with the prompt '>' and waits for the data to store. When < Size > bytes have been sent, operation is automatically completed.</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</p> <p>Note: <size> parameter is mandatory if the store action is issued, but it has to be omitted for delete or get actions are issued.</p>
AT#AESSECDATA?	<p>Read command return the present of security data in NVM</p> <p>#AESSECDATA: <AESKeyIsSet></p> <p><AESKeyIsset> is 1 if related data are stored into NVM otherwise 0.</p>
AT#AESSECDATA=?	<p>Test command returns the range of supported values for all the parameters</p>

5.1.6.21.2. Encrypt data - #AESENCRYPT

#AESENCRYPT - encrypt data	SELINT 2
AT#AESENCRYPT	<p>Execution command encrypts data with AES algorithm</p> <p>The device responds to the command with the prompt '>' <greater_than><space> and waits for the data to send.</p> <p>When bytes have been sent, operation is automatically completed.</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</p> <p>Note: the command accept only 1 block of 16 bytes Note: If AES key isn't loaded the command returns error</p>



<p>AT#AESENCRYPT=?</p>	<p>Test command returns the number of bytes to be sent after the prompt</p> <p>#AESENCRYPT: (16)</p> <p>If AES key isn't loaded the command returns: #AESENCRYPT: (0)</p>
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5.1.6.21.3. Decrypt data - #AESDECRYPT

<p>#AESDECRYPT - decrypt data SELINT 2</p>	
<p>AT#AESDECRYPT</p>	<p>Execution command decrypts data with AES algorithm</p> <p>The device responds to the command with the prompt '>' <greater_than><space> and waits for the data to send.</p> <p>When bytes have been sent, operation is automatically completed.</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</p> <p>Note: the command accept only 1 block of 16 bytes Note: If AES key isn't loaded the command returns error</p>
<p>AT#AESDECRYPT=?</p>	<p>Test command returns the number of bytes to be sent after the prompt</p> <p>#AESDECRYPT: (16)</p> <p>If AES key isn't loaded the command returns: #AESDECRYPT: (0)</p>

5.1.6.21.4. Result of AES calculation - #AESGETRESULT

<p>#AESGETRESULT- result of calculation AES SELINT 2</p>	
<p>AT#AESGETRESULT</p>	<p>Execution command reads calculated data, result of AES encrypt or decrypt.</p> <p>Note: If the AES algorithm is idle or working mode, then the command returns ERROR</p>



AT# AESGETRESULT?	<p>Read command returns the state of AES encrypt or decrypt previously given</p> <p>#AESGETRESULT:<ResultAES></p> <p>Where <ResultAES> can assume the following values:</p> <p>0: Idle or working mode 1: AES encrypt/decrypt finished</p>
AT# AESGETRESULT=?	<p>Test command returns OK result code</p>

5.1.6.22. Ethernet Control Mode (ECM) AT commands

5.1.6.22.1. ECM setup - #ECM

#ECM - Ethernet Control Model setup	SELINT 2
AT#ECM=<Cid>,<Did>,<UserId>,<Pwd>,<DhcpServerEnable>	<p>This command sets up an Ethernet Control Model (ECM) session.</p> <p>Parameters:</p> <p><Cid> - Context id <Did> - Device id, currently limited to 0 (only one device) <UserId> - string type, used only if the context requires it <Pwd> - string type, used only if the context requires it <DhcpServerEnable> - dhcp server abilitation: 0 - disabled 1 - enabled (default)</p> <p>Note: this command activates a context, so all necessary setup has to be done before it (registration, APN).</p>
AT#ECM?	<p>Read command returns the session state in the following format:</p> <p># ECM: <Did>,<State> ... OK</p>



	<p>where <Did> is currently 0 and <State> can be:</p> <ul style="list-style-type: none"> 0 - disabled 1 - enabled
AT#ECM=?	Test command returns the range of supported values for all the parameters.

5.1.6.22.2. ECM configure - #ECMC

#ECMC - Ethernet Control Model configure	SELINT 2
AT#ECMC=<Did>,<Parid>,<Address>	<p>This command configures an Ethernet Control Model (ECM) session.</p> <p>Parameters:</p> <ul style="list-style-type: none"> <Did> - Device id, currently limited to 0 (only one device) <Parid> - Parameter id: <ul style="list-style-type: none"> 0 - custom address 1 - custom mask 2 - custom gateway 3 - custom dns 1 4 - custom dns 2 <Address> - Parameter id: <ul style="list-style-type: none"> a valid IP address in the format xxx.xxx.xxx.xxx <p>Note: if a parameter is different from 0.0.0.0 then it is used instead the default one.</p>
AT#ECMC?	<p>Read command returns the last session configuration in the following format:</p> <pre># ECMC: <Did>,<State>,<Address>,<Address_Mask>,<Address_Gateway>,<Address_Dns1>,<Address_Dns2>,<Address_Custom>,<Address_CustomMask>,<Address_CustomGateway>,<Address_CustomDns1>,<Address_CustomDns2> ... OK</pre> <p>where</p> <ul style="list-style-type: none"> <Did> is currently 0 <State> can be: <ul style="list-style-type: none"> 0 - disabled 1 - enabled <Address> is the IP address assigned by the network



	<p><Address_Mask> is the default mask obtained from IP address</p> <p><Address_Gateway> is the default IP address of gateway, obtained from IP address</p> <p><Address_Dns1> is the IP address of the first DNS server, assigned by the network</p> <p><Address_Dns2> is the IP address of the second DNS server, assigned by the network</p> <p><Address_Custom> is the custom IP address</p> <p><Address_CustomMask> is the custom mask</p> <p><Address_CustomGateway> is the custom IP address of gateway</p> <p><Address_CustomDns1> is the custom IP address of the first DNS server</p> <p><Address_CustomDns2> is the custom IP address of the second DNS server</p>
AT#ECMC=?	Test command returns the range of supported values for all the parameters.

5.1.6.22.3. ECM shutdown - #ECMD

#ECMD - Ethernet Control Model shutdown		SELINT 2
AT#ECMD=<Did>	<p>This command is used to shutdown an Ethernet Control Model (ECM) session.</p> <p>Parameters:</p> <p><Did> - Device id, currently limited to 0 (only one device)</p> <p>Note: this command also deactivates the context.</p>	
AT#ECMD?	<p>Read command returns the session state in the following format:</p> <pre># ECM: <Did>,<State> ... OK</pre> <p>where <Did> is currently 0 and <State> can be:</p> <ul style="list-style-type: none"> 0 - disabled 1 - enabled 	
AT#ECMD=?	Test command returns the range of supported values for all the parameters.	



5.1.6.23. Software Management Service (SWM) AT commands

5.1.6.23.1. SWM Client Enable / Disable - #SWMENA

#SWMENA – SWM Client Enable / Disable		SELINT 2
AT#SWMENA=<mode>	<p>Execution command, used to enable/disable the SWM Client feature.</p> <p>Parameters: <mode> 0 – disable (default) 1 – enable</p>	
AT#SWMENA?	<p>Read command reports the current setting of SWM Client <mode> and <status> in the format:</p> <p>#SWMENA: <mode>,<status></p> <p>where: <status> - service status 0 – not connected 1 – connected</p> <p>Note: issuing #SWMENA=0 resets any pending update process by resetting the SWM OMADM client to its default values and also by deleting all the files needed by the SMW OMADM client currently present in the "/swm" folder in the file system.</p>	
AT#SWMENA=?	<p>Test command reports the supported range of values for the <mode> parameter.</p>	
Example	<pre>AT#SWMENA=? #SWMENA: (0,1) OK AT#SWMENA? #SWMENA: 0,0 OK AT#SWMENA=1 OK AT#SWMENA? AT#SWMENA: 1,0 OK</pre>	

5.1.6.23.2. Configure SWM Client Parameters - #SWMCFG



#SWMCFG – Configure SWM Client Parameters

AT#SWMCFG=[<max_avail_size_ext_storage>[,<pdpId>[,<enableInRoaming>[,<enableReleaseNoteURL>[,<pollingIntervalInHours>[,<bootupPollingInterval>[,<recoveryPollingInterval>[,<secureConnection>]]]]]]]

Set command configures the parameters related to SWM Client.

Parameters:

<max_avail_size_ext_storage> - maximum available size in bytes of the external storage. For external application updates. Default: 0.

<pdpId> - PDP context identifier the SWM client should use on the module. Range: 1-5; Default: 1

<enableInRoaming> - 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

<pollingIntervalInHours> - 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.

<bootupPollingInterval> - 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 that the SWM Client launches a DM session immediately. Default is stored parsed as part of the DM tree: 60.

<recoveryPollingInterval> - Integer parameter indicating the next polling clock time when the device initiated (polling) session has failed. The value should be smaller than <pollingIntervalInHours>. Valid value is >=0. A value of 0 means no polling. Default is stored parsed as part of the DM tree: 2.

<secureConnection> - 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.



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

#SWMGETDP – Download update package from OMA-DM software management server.	
AT#SWMGETDP=<status>	<p>Execution command confirms SWM client to proceed and download an update package after receiving a 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>
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> <p>#SWMDLPRGRSS: 1024,1024</p> <p>#SWMRING: 2,"Description of update package","Release Note URL"</p>



5.1.6.24. Device Management (OMA-DM) Commands

5.1.6.24.1. OMA-DM Configuration parameters management - #OMACFG

#OMACFG – OMA-DM Configuration parameters management		SELINT 2
AT#OMACFG= <pdpId> [,<unused_1>[,<unused_2> [,<unused_3>]]]	The set command is intended to allow the end-user to handle the OMADM AT&T parameters configuration. Parameters: < pdpId > - PDP context identifier the AT&T OMADM client should use on the module. Range: 1-5; Default: Default: 1	
AT#OMACFG?	Read command returns the parameters current value.	
AT#OMACFG=?	Test command returns the supported range for #OMACFG command parameters	
Example	<pre>//get the current values AT#OMACFG? #OMACFG: 1,0,0,0 OK //set a new PDP context identifier value AT#OMACFG=3 OK //read the currently set value AT#OMACFG? #OMACFG: 3,0,0,0 OK //test command AT#OMACFG=? #OMACFG: (1-5),(0),(0),(0) OK</pre>	

5.1.6.24.2. Enable OMA DM - #ENAOMADM

#ENAOMADM – Enable OMA DM	SELINT 2
AT#ENAOMADM=<enable>[,<unsolicited>[,<account type>]]	This command enables Open Mobile Alliance (OMA) standards-based Device Management (DM) functionality. OMA DM is used to remotely provision new subscribers, configure applications and network settings, manage software, and retrieve device information over the air; the command starts/stops internal DM engine.



	<p>Parameters:</p> <p><enable> - is used to disable/enable OMA DM functionality (start/stop internal DM engine)</p> <ul style="list-style-type: none"> 0 - disable OMA DM (default for AT&T product variants) 1 - enable OMA DM (default for Verizon product variants) <p><unsolicited> type of notification</p> <ul style="list-style-type: none"> 0 - disabled 1 - enabled (factory default); the ME informs about reception of DM events related to ongoing session through an unsolicited code <p>#OMADM: <event></p> <p>Where <event> is one of the strings</p> <ul style="list-style-type: none"> "UIE_SESSION_DM_NI_STARTED" - An NIA session has started "UIE_BOOTSTRAP_GET_PIN" - Request PIN code "UIE_BOOTSTRAP_GET_NSS" - Request NSS data "UIE_UI_ALERT_INFO" - Shows the end-user a UI Alert information message "UIE_UI_ALERT_CONFIRM" - Shows the end-user an UI Alert confirmation message "UIE_UI_ALERT_INPUT" - Shows the end-user an UI Alert input message "UIE_UI_ALERT_CHOICE" - Shows the end-user an UI Alert choice list "UIE_FUMO_CONFIRM_UPDATE" - Prompts the end-user to confirm update installation <p>(Only for AT&T products)</p> <p><account type> - is used to select the server to connect to</p> <ul style="list-style-type: none"> 0. AT&T Production 1. (reserved) 2. (reserved) 3. (reserved) 4. (reserved) 5. (reserved) <p>Note – valid only for AT&T -: the command only works for #ENS=1 (see #ENS command). It is consequent that, once the OMADM client is active, #ENS could not be disabled.</p> <p>Note: the values <enable> and <account type> set by command are directly stored in NVM and do not depend on the specific CMUX instance; the value <unsolicited> is stored in the profile extended section, and it depends on the specific AT instance</p> <p>Note: if the AT&T OMADM client is activated on an account, to</p>
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	<p>change it, it is mandatory to disable the OMADM client before enabling it on a different account. Not disabling it will not produce an error, but it will not result in an effective account change.</p> <p>Note: a IP context must be defined before the enable command is issued; the context, if not already activated, is activated by the command</p>
AT#ENAOMADM?	<p>Read command reports the currently selected parameters and DM engine status in the format: #ENAOMADM: <enable>,<unsolicited>,<account type>,<engine status></p> <p>Where <engine status> 0 – DM engine stopped 1 – DM engine running</p> <p>Note: in Verizon products, <account type> parameter is shown even if it is meaningless.</p>
AT#ENAOMADM=?	<p>Test command reports the supported range of values for parameters <enable>,<unsolicited> and <account type> .</p>

5.1.6.24.3. 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</p>



#OMASENDPIN – OMA DM Send PIN or NSS		SELINT 2
AT#OMASENDPIN= <data>	This command sends a response to an UIE_BOOTSTRAP_GET_PIN or UIE_BOOTSTRAP_GET_NSS event (see #ENAOMADM command). Parameter: <data> - string corresponding to the requested PIN or NSS data	
AT#OMASENDPIN=?	Test command tests for command existence.	

5.1.6.24.5. Device ID write - #UNIQUEDEVID

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



6. List of acronyms

ARFCN	Absolute Radio Frequency Channel Number
AT	Attention command
BA	BCCH Allocation
BCCH	Broadcast Control Channel
CA	Cell Allocation
CBM	Cell Broadcast Message
CBS	Cell Broadcast Service
CCM	Current Call Meter
CLIR	Calling Line Identification Restriction
CTS	Clear To Send
CUG	Closed User Group
DCD	Data Carrier Detect
DCE	Data Communication Equipment
DCS	Digital Cellular System
DGPS	Differential GPS, the use of GPS measurements, which are differentially corrected
DNS	Domain Name System
DSR	Data Set Ready
DTE	Data Terminal Equipment
DTMF	Dual Tone Multi Frequency
DTR	Data Terminal Ready
GGA	GPS Fix data
GLL	Geographic Position – Latitude/Longitude
GLONASS	Global positioning system maintained by the Russian Space Forces
GMT	Greenwich Mean Time
GNSS	Any single or combined satellite navigation system (GPS, GLONASS and combined GPS/GLONASS)
GPRS	Global Packet Radio Service
GPS	Global Positioning System
GSA	GPS DOP and Active satellites
GSM	Global System Mobile
GSV	GPS satellites in view
HDLC	High Level Data Link Control
HDOP	Horizontal Dilution of Precision
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
IRA	International Reference Alphabet
IWF	Interworking Function
ME	Mobile Equipment
MO	Mobile Originated



MT	<i>either Mobile Terminated or Mobile Terminal</i>
NMEA	National Marine Electronics Association
NVM	Non Volatile Memory
PCS	Personal Communication Service
PDP	Packet Data Protocol
PDU	Packet Data Unit
PIN	Personal Identification Number
PPP	Point to Point Protocol
PUK	Pin Unblocking Code
RLP	Radio Link Protocol
RMC	Recommended minimum Specific data
RTS	Request To Send
SAP	SIM Access Profile
SCA	Service Center Address
SMS	Short Message Service
SMSC	Short Message Service Center
SMTP	Simple Mail Transport Protocol
TA	Terminal Adapter
TCP	Transmission Control Protocol
TE	Terminal Equipment
UDP	User Datagram Protocol
USSD	Unstructured Supplementary Service Data
UTC	Coordinated Universal Time
VDOP	Vertical dilution of precision
VTG	Course over ground and ground speed
WAAS	Wide Area Augmentation System



ISSUE#5	2013-07-01	12.00.xx4	<p>Added UE910 family Updated Chapters: 1.4, 3.2, 3.2.2.2, 3.3.1, 4, 5.1.3.6 #VAUX, #VAUXSAV, \$GPSSW removed</p> <p>Updated AT Command's descriptions: #DNS, #DVI, #DVIEXT, #ENCALG, #MONI, #SH, #SPCM, #WAKE, #WSCRIPT, \$GPSSLSR, &D, +CGEQNEQ, +CSSN, ATS25, #FTPCFG, #QSS, #TEMPMON, \$GPSACP, \$LCSLK, \$LCSLPL, \$LCSTER, \$LICLS, \$LTC, +CCLK, #CCLK, +CFUN</p> <p>Existing AT Commands updated from 12.00.xx4: #CODECINFO, #ENAEVMONICFG, #EVMONI, #GPIO, #MSCLASS, #PORTCFG, #PSNT, #RFSTS, #SCFG, #SCFGEXT2, #SMSATRUNCFG, #SS, #TCPATRUNCFG, +CPBR, +CPBW, +CPBF, +CPBS, +CPMS, #SSLSECCFG, +CGDCONT</p> <p>New AT Commands supported from 12.00.xx4: #ANAMICG, #ATDELAY, #CCLKMODE, #DIGMICG, #E2ESC, #ECHOFCFG, #JDR, #NCIH, #OTASNAP, #OTASUAN, #OTASETRI, #OTAIPCFG, #OTAIPUPD, #OTASNAPIP, #OTASNAPIPCFG, #SCFGEXT3, #SLASTCLOSURE, #SMSMOVE, #SSLCFG, #SSLD, #SSLEN, #SSLH, #SSLO, #SSLRCV, #SSLS, #SSLSECCFG, #SSLSECDATA, #SSLSEND, #HTTPCFG, #HTTPQRY, #HTTPSND, #HTTPCRV, #CPBGR, #CPBGW, #DAC, #NWDNS, #SMSMODE, AT#ECALL, AT+CECALL, AT#EMRGD, AT#MSDPUSH, AT#MSDSEND, #OAP</p>
ISSUE#6	2014-02-05	12.00.xx4	<p>Updated title and applicability table with UL865 family modules</p>
ISSUE#7	2014-02-24	12.00.xx5	<p>Par.3.3.1 update</p> <p>Update commands: +CGDCONT, +CLCK, +COPS, +CSQ, +CSVM, +CUSD, +CCID +W46, ATO, #CODEC, #ENAEVMONICFG, #EVMONI, #JDR, #LCSRIPT, #MONI, #SCFGEXT3, #SHSSD, #SMSATRUNCFG, #SS, #STIA, #STGI, #STSR, #TCPATRUNCFG, #HTTPCFG, #HTTPCRV, #ECHOFCFG, #DIALMODE, #ATDELAY, #QDNS, #HSMICG, #DVI, #GPIO, #GSMCONT, #DVICLK, #SKIPESC</p> <p>New commands: ATS2, ATS12, \Q, #CHUP, #FILEPWD, #ENACONSUME, #CONSUMEFCFG,</p>



			#BLOCKCONSUME, #STATSCONSUME, #IPCONSUMECFG, #SSENDLINE, #MONIZIP, #UDUB, #DTMFCFG, #TESTMODE, #ESMTPORT, #FPLMN, #GPPPCFG, #SCT, #SCI, #WCDMADOM, #SECCFG
ISSUE#8	2015-01-13	12.00.xx6	<p>Remove HE910-GA in applicability table.</p> <p>Par3.3.1</p> <p>Updated commands: #ANAMICG, #DIGMICG, #GPIO, \$GPSAV, \$GPRST, \$GPSNMUN, \$GPSACP, \$GPSR, #SIMDET, #ENCALG, #SIMDET, #HTTPCFG, #SSL, #SSLDECCFG, #SSLSECDATA, #SSLSEND, #SSLS, #SSL, #SSLCFG, #JDR, #PORTCFG, +CPIN, #SD, #SL, #TESTMODE, #SSLRECV, #FPLMN, #GPPPCFG, #SSLRECV, +CGACT, +CFUN, #MONIZIP, #RSCRIPT, #SMOV</p> <p>New commands: #SIEXT, \$EPATCH, \$DPATCH, \$WPATCH, \$LPATCH, \$GPSSTAGPS, \$GPSCON, \$GPSPS, \$GPSSP, \$GPSIFIX, \$GPSGPIO, \$GPSP, \$GPSAT, \$GPSSW, \$GPSWK, \$GPSSERSPEED, \$INJECTSTSEED, \$FTPGETIFIX, \$HTTPGETIFIX, \$HTTPGETSTSEED, #SYSHALT, #TEMPCFG, #FRWLIPV6, #SSLSENDEXT, #JDRENH2, #USBCFG, #CSURV, #DLINK, #ECM, #ECMC, #ECMD, #SIMINCFG, #E2RI, #CIPHIND, +IMEISV, #AESSECDATA, #AESENCRYPT, #AESDECRYPT, #AESDECRYPT, #AESGETRESULT, #DWCFCG, #DWCONN, #DWSTATUS, #DWSEND, #DWSENDR, #DWRCVR, #DWRCV, #DWLRCV, #DWEN, #FDOR, #RXTOGGLE</p>
ISSUE#9	2015-04-03	12.00.xx6	Updated paragraph titles and notes added to the following commands: AT#SMSATWL, AT#FRWL, AT#TCPATRUNFRWL, AT+CLCK
ISSUE#9	2015-05-15	12.00.xx6	New document title. Updated applicability table and AT commands availability table, introducing new product variants (HE910-GL, UE910-N3G, UL865-N3G V2, UE866-N3G). Updated
ISSUE#10	2015-10-26	12.00.xx7	<p>Updated AT Commands Availability Table (Par. 4).</p> <p>Updated commands: #CMUXMODE, #DWCFCG, AT#QSS, #SIMINCFG,</p>



