Telit 3G Modules AT Commands Reference Guide

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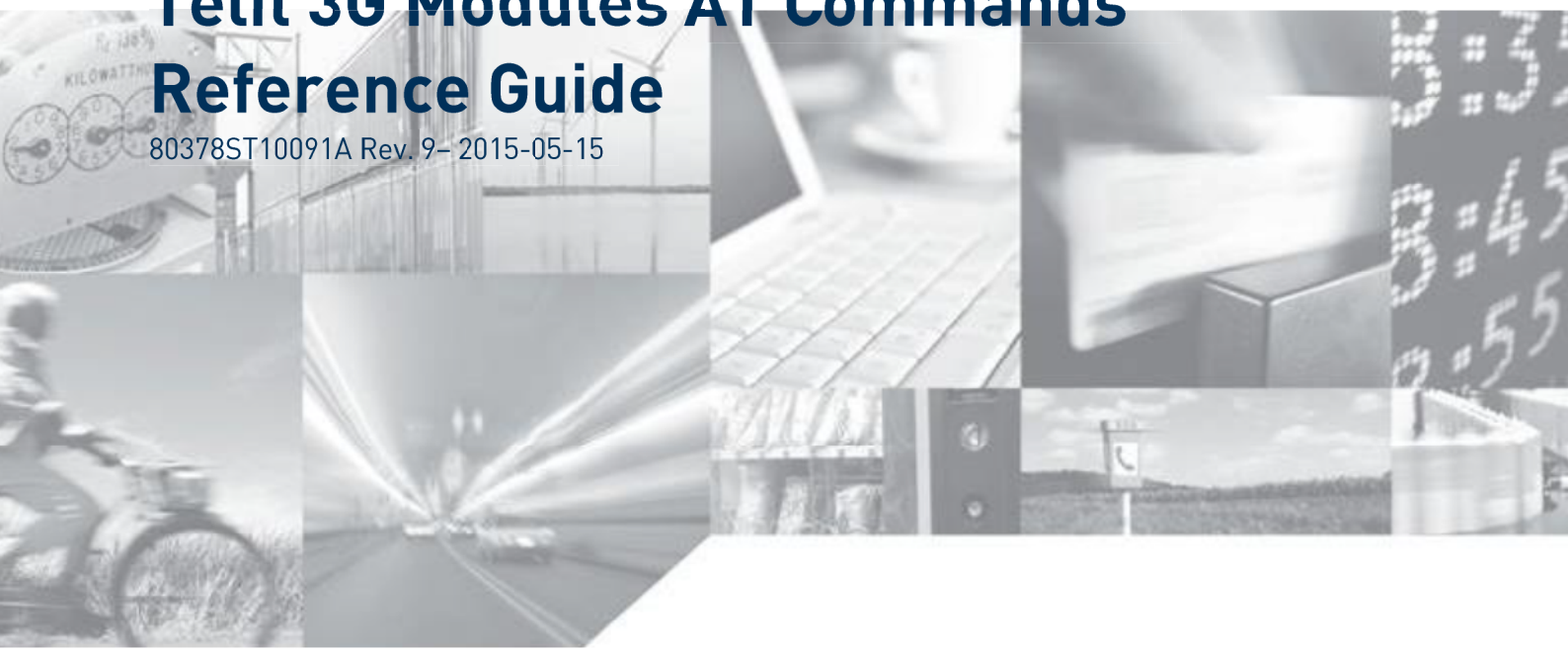

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1. Introduction

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
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2. Overview

2.1. About the document

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

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 beretained.

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

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

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

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

NOTE:

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

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

This is NOT a command, it is the error response to +**Cxxx 3GPP TS 27.007** commands.
Syntax: **+CME ERROR: <err>**
Parameter: **<err>** - error code can be either numeric or verbose (see **+CMEE**).The possible values of **<err>** are reported in the table:

Numeric Format	Verbose Format
General Errors	
0	phone failure
1	No connection to phone
2	phone-adaptor link reserved
3	operation not allowed
4	operation not supported
5	PH-SIM PIN required
10	SIM not inserted
11	SIM PIN required
12	SIM PUK required
13	SIM failure
14	SIM busy

Numeric Format	Verbose Format
563	tx error
564	already listening
566	can not resume socket
567	wrong APN
568	wrong PDP
569	service not supported
570	QOS not accepted
571	NSAPI already used
572	LLC or SNDCP 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

*(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 code*s that inform about progress of TA operation (e.g. connection establishment **CONNECT**)
- *result code*s 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

Result Codes	
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"

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)
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	#CFF	#STIA
+CSTF	+CSDF	+CTZU
+CAPD	+CCWE	+CSIL
+CTZR	#NWEN	#PSNT
#SIMPR	+COLP	#CESTHLCK
+DR	$GPSNUM	+CSTA
+NCIH		

#ESMTP	#EADDR	#EUSER
#EPASSW		

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

$GPSP	$GPSR	$GPSNVRAM
$GPSQOS	$GPSSLSR	$GPSSTOP

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

#BIQUADIN	# BIQUADINEX	# BIQUADOUT
# BIQUADOUTEX		

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

	HE910										UE910					UL865					UE866
COMMAND	G	DG	D	GL	EUG	EUR	EUD	NAG	NAR	NAD	EUR	EUD	NAR	NAD	N3G	EUR	EUD	NAR	NAD	N3G V2	N3G
#UDTRST	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•
#PRST	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•
#PSAV	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•
#PSEL	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•
#BIQUADIN	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•
#BIQUADINEX	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•
#BIQUADOUT	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•
#BIQUADOUTEX	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•
#SHFEC	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•
#SHSEC	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•
#SHFAGC	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•
#SHSAGC	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•
#SHFNR	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•
#SHSNR	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•
#DTMF	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•
#DVI	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•
#DVIEXT	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•
#DVICLK	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•
#TTY	•	X	X	•	X	•	X	X	•	X	•	X	•	X	•	•	X	•	X	•	•
#BND	•	•	•	•	•	•	•	•	•	•	X	X	X	X	X	X	X	X	X	X	X
#AUTOBND	•	•	•	•	•	•	•	•	•	•	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	•	•	•	•	•	•	•	•	•	•	•	•	•
$GPSPS	X	X	•	•	X	•	•	X	•	•	•	•	•	•	•	•	•	•	•	•	•
$GPSWK	X	X	•	•	X	•	•	X	•	•	•	•	•	•	•	•	•	•	•	•	•
$GPSSW	X	X	•	•	X	•	•	X	•	•	•	•	•	•	•	•	•	•	•	•	•
$GPSCON	X	X	•	•	X	•	•	X	•	•	•	•	•	•	•	•	•	•	•	•	•
$GPSNMUN	X	X	•	•	X	•	•	X	•	•	•	•	•	•	•	•	•	•	•	•	•
$GPSIFIX	X	X	•	•	X	•	•	X	•	•	•	•	•	•	•	•	•	•	•	•	•
$GNSSIFIX	X	X	•	•	X	•	•	X	•	•	•	•	•	•	•	•	•	•	•	•	•
$HTTPGETIFIX	X	X	•	•	X	•	•	X	•	•	•	•	•	•	•	•	•	•	•	•	•
$WPATCH	X	X	•	•	X	•	•	X	•	•	•	•	•	•	•	•	•	•	•	•	•
$EPATCH	X	X	•	•	X	•	•	X	•	•	•	•	•	•	•	•	•	•	•	•	•
$LPATCH	X	X	•	•	X	•	•	X	•	•	•	•	•	•	•	•	•	•	•	•	•
$DPATCH	X	X	•	•	X	•	•	X	•	•	•	•	•	•	•	•	•	•	•	•	•
$GPSATGPS	X	X	•	•	X	•	•	X	•	•	•	•	•	•	•	•	•	•	•	•	•
$HTTPGETSTSEED	X	X	•	•	X	•	•	X	•	•	•	•	•	•	•	•	•	•	•	•	•
$INJECTSTSEED	X	X	•	•	X	•	•	X	•	•	•	•	•	•	•	•	•	•	•	•	•

NOTE *: This is a **data only** product, with restrictions in the execution of this commands.

NOTE **: This is a **3G only** product, with restrictions in the execution of this commands.

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.

5.1.3.1.3. 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

5.1.3.1.9. 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

5.1.3.1.17. 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: **REG DEC HEX** **<reg0> <dec> <hex>** **<reg1> <dec> <hex>** ... where **<reg*n*>** - **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

5.1.3.2. DTE - Modem Interface Control

5.1.3.2.1. Command Echo - E

E - Command Echo	SELINT 2
ATE[<n>]	Set command enables/disables the command echo. 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. Note: if parameter is omitted, the command has the same behaviour of **ATE0**
Reference	V25ter

5.1.3.2.2. Quiet Result Codes - Q

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

5.1.3.2.4. Extended Result Codes - X

X - Extended Result Codes	SELINT 2
ATX[<n>]	Set command selects the result code messages subset used by the modem to inform the **DTE** of the result of the commands. 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. Note: If parameter is omitted, the command has the same behaviour of **ATX0**
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>]	Execution command returns one or more lines of information text followed by a result code. Parameter: **<n>** 0 - numerical identifier 1 - module checksum 2 - checksum check result 3 - manufacturer 4 - product name 5 - DOB version Note: if parameter is omitted, the command has the same behaviour of **ATI0**
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

+IPR - Fixed DTE Interface Rate		SELINT 2
	2400 4800 9600 19200 38400 57600 115200 (default value) 230400 460800 921600	
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	

+ICF - DTE-Modem Character Framing		SELINT 2
	OK *8O1* AT+ICF = 2,0 OK *8E1* AT+ICF = 2,1 OK *8N1* AT+ICF = 3 OK *7O1* AT+ICF = 5,0 OK *7E1* AT+ICF = 5,1 OK	

D – Dial	SELINT 2
	memory storage (see **+CPBS**). If "**;**" is present a **voice** call is performed. Parameter: **<n>** - active phonebook memory storage entry location; it should be in the range of locations available in the active phonebook memory storage.
ATDL	Issues a call to the last number dialed.
ATDS=<nr>[;]	Issues a call to the number stored in the MODULE internal phonebook position number **<nr>**. **If ";" is present,** a voice call is performed. Parameter: **<nr>** - internal phonebook position to be called (See commands **&N** and **&Z**)
ATD<number>I[;] **ATD<number>i[;]**	Issues a call overwriting the CLIR supplementary service subscription default value for this call If "**;**" is present a **voice** call is performed. **I** - invocation, restrict CLI presentation **i** - suppression, allow CLI presentation
ATD<number>G[;] **ATD<number>g[;]**	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.
ATD*<gprs_sc> **[*<addr>][*[<L2P>]** **[*[<cid>]]]#**	This command is specific of GPRS functionality and causes the **MT** to perform whatever actions are necessary to establish communication between the **TE** and the external PDN. Parameters: **<gprs_sc>** - GPRS Service Code, a digit string (value 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).
Note	Data only products do not start the call and command answer is ERROR if a voice call is requested.
Note	The escape sequence causes a closure of the link.
Example	*To dial a number in SIM phonebook entry 6:* ATD>SM6 OK *To have a voice call to the 6-th entry of active phonebook:* ATD>6; OK

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

5.1.3.6. S Parameters

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

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

Reference: V25ter

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

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

Example:

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

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

5.1.3.6.1. Number Of Rings To Auto Answer - S0

S0 - Number Of Rings To Auto Answer	**SELINT 2**
ATS0=[<n>]	Set command sets the number of rings required before device automatically answers an incoming call. Parameter: **<n>** - number of rings 0 - auto answer disabled (factory default) 1..255 - number of rings required before automatic answer.
ATS0?	Read command returns the current value of **S0 parameter**.
Note	Data only products ignore command setting and have auto answer disabled if incoming call is a voice call.
Reference	V25ter

5.1.3.6.2. Ring Counter - S1

S1 - Ring Counter	**SELINT 2**

S3 - Command Line Termination Character	SELINT 2
	Note: the format of the numbers in output is always 3 digits, left-filled with 0s
Reference	V25ter

5.1.3.6.5. Response Formatting Character - S4

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

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

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	

5.1.4.1.7. Multiplexing Mode - +CMUX

+CMUX - Multiplexing Mode	SELINT 2
AT+CMUX=<mode>[,<subset>[,<port_speed>[,<N1>[,<T1>[,<N2>[,<T2>[,<T3>[,<k>]]]]]]]	Set command is used to enable/disable the 3GPP TS 27.010 multiplexing protocol control channel. Parameters: **<mode>** multiplexer transparency mechanism 0 - basic option; it is currently the only supported value. **<subset>** 0 - UIH frames used only; it is currently the only supported value. **<port_speed>** transmission rate 5 - 115 200 bit/s (default) **<N1>** maximum frame size 1-1509, the default is 121 **<T1>** acknowledgement timer in units of ten milliseconds 1-255: where 10 is default (100 ms) **<N2>** maximum number of re-transmissions 0-100: currently only the range 0-5 is supported, the default is 3 **<T2>** response timer for the multiplexer control channel in units of ten milliseconds 2-255: where 30 is default (300 ms). Note: T2 must be longer than T1. **<T3>** wake up response timer in seconds 1-255: currently not supported, in case of read command 0 is returned **<k>** window size, for Advanced operation with Error Recovery options 1-7: currently not supported, in case of read command 0 is returned Note: all the CMUX protocol parameters are fixed as defined in GSM07.10 and cannot be changed.
AT+CMUX?	Read command returns the current value of **<mode>, <subset>, <port_speed>, <N1>, <T1>, <N2>, <T2>, <T3>** and **<k>** parameters, in the format: **+CMUX: <mode>,<subset>, <port_speed>, <N1>, <T1>, <N2>, <T2>, <T3>,<k>**
AT+CMUX=?	Test command returns the range of supported values for parameters **<mode>, <subset>, <port_speed>, <N1>, <T1>, <N2>, <T2>, <T3>** and **<k>**.
Reference	3GPP TS 27.007, 3GPP TS 27.010

5.1.4.1.8. Read ICCID - +CCID

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

+CBST - Select Bearer Service Type		SELINT 2
	132 – 33600 bps (multimedia) 133 – 56000 bps (multimedia) 134 - 64000 bps (multimedia) **<name>** - bearer service name 0 - data circuit asynchronous (factory default) 1 - data circuit synchronous **<ce>** - connection element 0 - transparent 1 - non transparent (default) Note: the settings **AT+CBST=0,0,0** **AT+CBST=14,0,0** **AT+CBST=75,0,0** are not supported. Note: if <name>=1 then <speed>=0,4,6,7,14,68,70,71,75 is not supported. 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	
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: • 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>**

+CSTA – Select Type of Address	SELINT 2
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	Execution command returns the MSISDN (if the phone number of the device has been stored in the SIM card) in the format: **+CNUM: <alpha>,<number>,<type>[<CR><LF>** **+CNUM: <alpha>,<number>,**<type>**[…]]** 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 "+").
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	Execution command returns the list of operator names from the **ME** in the format: **+COPN: <numeric1>,<alpha1>[<CR><LF>** **+COPN: <numeric2>,<alpha2>[…]]** where: **<numeric*n*>** - string type, operator in numeric format (see **+COPS**) **<alpha*n*>** - string type, operator in long alphanumeric format (see **+COPS**) Note: each operator code **<numeric*n*>** that has an alphanumeric equivalent **<alpha*n*>** in the ME memory is returned
AT+COPN=?	Test command returns the **OK** result code
Reference	3GPP TS 27.007

+CREG - Network Registration Report	SELINT 2
AT+CREG=?	Test command returns the range of supported **<mode>**
Example	AT OK at+creg? +CREG: 0,2 OK *(the MODULE is in network searching state)* at+creg? +CREG: 0,2 OK at+creg? +CREG: 0,2 OK at+creg? +CREG: 0,2 OK at+creg? +CREG: 0,1 OK *(the MODULE is registered)* at+creg? +CREG: 0,1 OK
Reference	3GPP TS 27.007

5.1.4.3.4. Operator Selection - +COPS

+COPS - Operator Selection	SELINT 2
AT+COPS= **[<mode>** **[,<format>** **[,<oper>[,< AcT>]]]]**	Set command forces an attempt to select and register the GSM network operator. **<mode>** parameter defines whether the operator selection is done automatically or it is forced by this command to operator **<oper>**. The operator **<oper>** shall be given in format **<format>**. Parameters: **<mode>** 0 - automatic choice (the parameter **<oper>** will be ignored) (factory default) 1 - manual choice (**<oper>** field shall be present) 2 - deregister from GSM network; the MODULE is kept unregistered until a **+COPS** with **<mode>=0, 1** or **4** is issued 3 - set only **<format>** parameter (the parameter **<oper>** will be ignored) 4 - manual/automatic (**<oper>** field shall be present); if manual selection fails, automatic mode (**<mode>=0**) is entered **<format>** 0 - alphanumeric long form (max length 16 digits) 2 - Numeric 5 or 6 digits [country code (3) + network code (2 or 3)]

5.1.4.3.5. Select Wireless Network - +WS46

+WS46 - PCCA STD-101 Select Wireless Network	SELINT 2
AT+WS46=[<n>]	Set command selects the cellular network (Wireless Data Service, WDS) to operate with the **TA** (WDS-Side Stack Selection). Parameter: **<n>** - integer type, it is the WDS-Side Stack to be used by the **TA**. 12 - GSM digital cellular 22 UTRAN only 25 3GPP Systems (both GERAN and UTRAN) (factory default) NOTE: <n> parameter setting is stored in NVM and available at next reboot. NOTE: 3G only products support **<n>** parameter value 22 only.
AT+WS46?	Read command reports the currently selected cellular network, in the format: **+ WS46: <n>**
AT+WS46=?	Test command reports the range for the parameter **<n>**.
Reference	3GPP TS 27.007

5.1.4.3.6. Facility Lock/Unlock - +CLCK

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

5.1.4.3.7. Change Facility Password - +CPWD

+CPWD - Change Facility Password	SELINT 2
AT+CPWD=<fac>, <oldpwd>, <newpwd>	Execution command changes the password for the facility lock function defined by command Facility Lock **+CLCK**. Parameters: **<fac>** - facility "SC" - SIM (PIN request) "AB" - All barring services "P2" - SIM PIN2 "PS"- SIM VO **<oldpwd>** - string type, it shall be the same as password specified for the facility from the ME user interface or with command **+CPWD**. **<newpwd>** - string type, it is the new password Note: parameter **<oldpwd>** is the old password while **<newpwd>** is the new one.
AT+CPWD=?	Test command returns a list of pairs **(<fac>,<pwdlength>)** which presents the available facilities and the maximum length of their password (**<pwdlength>**)
Example	at+cpwd=? +CPWD: ("SC",8),("AB",4),("P2",8),("PS",8) OK
Reference	3GPP TS 27.007

5.1.4.3.8. Calling Line Identification Presentation - +CLIP

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

5.1.4.3.9. Calling Line Identification Restriction - +CLIR

+CLIR - Calling Line Identification Restriction	SELINT 2
AT+CLIR=[<n>]	Set command overrides the CLIR subscription when temporary mode is provisioned as a default adjustment for all following outgoing calls. This adjustment can be revoked by using the opposite command. This command refers to CLIR-service (GSM 02.81) that allows a calling subscriber to enable or disable the presentation of the CLI to the called party when originating a call. Parameter: **<n>** - facility status on the Mobile 0 - CLIR facility according to CLIR service network status 1 - CLIR facility active (CLI not sent) 2 - CLIR facility not active (CLI sent)
AT+CLIR?	Read command gives the default adjustment for all outgoing calls (**<n>**) and also triggers an interrogation of the provision status of the CLIR service (**<m>**), where **<n>** - facility status on the Mobile 0 - CLIR facility according to CLIR service network status 1 - CLIR facility active (CLI not sent) 2 - CLIR facility not active (CLI sent) **<m>** - facility status on the Network 0 - CLIR service not provisioned 1 - CLIR service provisioned permanently 2 - unknown (e.g. no network present, etc.) 3 - CLI temporary mode presentation restricted 4 - CLI temporary mode presentation allowed
AT+CLIR=?	Test command reports the supported values of parameter **<n>**.
Reference	3GPP TS 27.007
Note	This command sets the default behaviour of the device in outgoing calls.

+COLP – Connected Line Identification Presentation	SELINT 2
	1 - COLP provisioned 2 - unknown (e.g. no network is present) Note: This command issues a status request to the network, hence it may take a few seconds to give the answer due to the time needed to exchange data with it.
AT+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	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. Execution command triggers an interrogation of the activation status of the COLR service according 3GPP TS 22.081 (given in <m>): **+COLR: <m>** where: **<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.) Activation, deactivation, registration and erasure of the supplementary service COLR are not applicable.
AT+COLR=?	Test command tests for command existence

+CCFC - Call Forwarding Number And Condition	SELINT 2
	where: **<status>** - current status of the network service 0 - not active 1 - active **<class*n*>** - same as **<class>** **<time>** - it is returned only when **<reason>**=2 ("no reply") and **<cmd>**=2. The other parameters are as seen before.
AT+CCFC=?	Test command reports supported values for the parameter **<reason>**.
Reference	3GPP TS 27.007
Note	When querying the status of a network service **(<cmd>=2)** the response line for 'not active' case **(<status>=0)** should be returned only if service is not active for any **<class>**.

5.1.4.3.13. Call Waiting - +CCWA

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

5.1.4.3.14. Call Holding Services - +CHLD

+CHLD - Call Holding Services	SELINT 2
AT+CHLD=[<n>]	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. Parameter: **<n>** 0 - releases all held calls, or sets the UDUB (User Determined User Busy) indication for a waiting call. (only from version D) 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 (only from version D). 3 - adds an held call to the conversation 4 - connects the two calls and disconnects the subscriber from both calls (Explicit Call Transfer (ECT)) 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. 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.
AT+CHLD=?	Test command returns the list of supported **<n>s**. **+CHLD: (0,1,1X,2,2X,3,4)**
Reference	3GPP TS 27.007
Note	ONLY for VOICE calls

+CUSD - Unstructured Supplementary Service Data	SELINT 2
	where: **<m>**: 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>	Set command refers to the Advice of Charge supplementary services that enable subscriber to get information about the cost of calls; the command also includes the possibility to enable an unsolicited event reporting of the Current Call Meter (CCM) information. Parameter: **<mode>** 0 - query CCM value 1 - disables unsolicited CCM reporting 2 - enables unsolicited CCM reporting Note: the unsolicited result code enabled by parameter **<mode>** is in the format: **+CCCM: <ccm>** where: **<ccm>** - current call meter in home units, string type: three bytes of the CCM value in hexadecimal format (e.g. "00001E" indicates decimal value 30) Note: the unsolicited result code **+CCCM** is sent when the CCM value changes, but not more than every 10 seconds.
AT+CAOC?	Read command reports the value of parameter **<mode>** in the format: **+CAOC: <mode>**
AT+CAOC=?	Test command reports the supported values for **<mode>** parameter.

+CLCC - List Current Calls		SELINT 2
AT+CLCC=?	Test command returns the **OK** result code	
Reference	3GPP TS 27.007	

5.1.4.3.19. SS Notification - +CSSN

+CSSN - SS Notification		SELINT 2
AT+CSSN=[<n>[,<m>]]	It refers to supplementary service related network initiated notifications. Set command enables/disables the presentation of notification result codes from **TA** to **TE**. 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 When **<n>**=1 and a supplementary service notification is received after a mobile originated call setup, an unsolicited code: **+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 When **<m>=1** and a supplementary service notification is received during a mobile terminated call setup or during a call, an unsolicited result code: **+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).	
AT+CSSN?	Read command reports the current value of the parameters.	
AT+CSSN=?	Test command reports the supported range of values for parameters **<n>**, **<m>**.	
Reference	3GPP TS 27.007	

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

5.1.4.4.2. Set Phone functionality - +CFUN

+CFUN - Set Phone Functionality	SELINT 2
AT+CFUN= **[<fun>[,<rst>]]**	Set command selects the level of functionality in the ME. Parameters: **<fun>** - is the power saving function mode 0 - minimum functionality, NON-CYCLIC SLEEP mode: in this mode, the AT interface is not accessible. Consequently, once you have set **<fun>** level 0, do not send further characters. Otherwise these characters remain in the input buffer and may delay the output of an unsolicited result code. The first wake-up event, or rising RTS line, stops power saving and takes the ME back to full functionality level **<fun>=1**. 1 - mobile full functionality with power saving disabled (factory default) 4 - disable both TX and RX 5 - mobile full functionality with power saving enabled 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 9 - just as 0 but with different wake-up events (see SW User Guide) 12 – Fast detach **<rst>** - reset flag 0 - do not reset the ME before setting it to **<fun>** functionality level 1 - reset the device. The device is fully functional after the reset. This value is available only for <fun> = 1 Note: issuing **AT+CFUN=4[,0]** actually causes the module to perform either a network deregistration and a SIM deactivation. 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. 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. 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. Until the **DTR** line is **ON**, the module will not return back in the power saving condition 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

+CPIN - Enter PIN	**SELINT 2**
	SIM PUK2 - ME is waiting SIM PUK2 to be given; this **<code>** is returned only when the last executed command resulted in PUK2 authentication failure (i.e. **+CME ERROR: 18**) PH-NET PIN - ME is waiting network personalization password to be given PH-NET PUK - ME is waiting network personalization unblocking password to be given PH-NETSUB PIN - ME is waiting network subset personalization password to be given PH-NETSUB PUK - ME is waiting network subset personalization unblocking password to be given PH-SP PIN - ME is waiting service provider personalization password to be given PH-SP PUK - ME is waiting service provider personalization unblocking password to be given PH-CORP PIN - ME is waiting corporate personalization password to be given PH-CORP PUK - ME is waiting corporate personalization unblocking password to be given Note: Pin pending status at startup depends on PIN facility setting, to change or query the default power up setting use the command **AT+CLCK=SC,<mode>,<pin>**
AT+CPIN=?	Test command returns **OK** result code.
Example	AT+CMEE=1 OK AT+CPIN? +CME ERROR: 10 *error: you have to insert the SIM* AT+CPIN? +CPIN: READY *you inserted the SIM and device is not waiting for PIN to be given* OK
Reference	3GPP TS 27.007

+CSQ - Signal Quality		SELINT 2
	3GPP TS25.133 Level 3 or less 4...65 66...91 99	Scaled (displayed) RSSI 0 Level /2 - 1 31 99
AT+CSQ=?	Test command returns the supported range of values of the parameters **<rssi>** 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	

5.1.4.4.5. 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	

+CIND - Indicator Control		SELINT 2
Reference	3GPP TS 27.007	

5.1.4.4.6. Mobile Equipment Event Reporting - +CMER

+CMER - Mobile Equipment Event Reporting	SELINT 2
AT+CMER= **[<mode>** **[,<keyp>** **[,<disp>** **[,<ind>** **[,<bfr>]]]]]**	Set command enables/disables sending of unsolicited result codes from TA to TE in the case of indicator state changes (~~n.b.:~~ sending of URCs in the case of key pressings or display changes are currently not implemented). Parameters: **<mode>** - controls the processing of unsolicited result codes 0 - buffer **+CIEV** Unsolicited Result Codes. 1 - discard **+CIEV** Unsolicited Result Codes when TA-TE link is reserved (e.g. on-line data mode); otherwise forward them directly to the TE. 2 - buffer **+CIEV** Unsolicited Result Codes in the TA when TA-TE link is reserved (e.g. on-line data mode) and flush them to the TE after reservation; otherwise forward them directly to the TE. 3 - forward **+CIEV** Unsolicited Result Codes directly to the TE; when TA is in on-line data mode each **+CIEV** URC is stored in a buffer; once the ME goes into command mode (after +++ was entered), all URCs stored in the buffer will be output. **<keyp>** - keypad event reporting 0 - no keypad event reporting **<disp>** - display event reporting 0 - no display event reporting **<ind>** - indicator event reporting 0 - no indicator event reporting 2 - indicator event reporting **<bfr>** - TA buffer clearing 0 - TA buffer of unsolicited result codes is cleared when <mode> 1..3 is entered 1 - TA buffer of unsolicited result codes is flushed to the TE when <mode> 1...3 is entered (OK response shall be given before flushing the codes) Note: After AT+CMER has been switched on with e.g. AT+CMER=2,0,0,2 command (i.e. <bfr> is 0), URCs for all registered indicators will be issued only first time, if previous <mode> was 0, for backward compatibility. Values shown by the indicators will be current indicators values, not buffered ones. Subsequent AT+CMER commands with <mode> different from 0 and <bfr> equal to 0 will not flush the codes, even if <mode> was set again to 0 before. To flush the codes, <bfr> must be set to 1. Although it is possible to issue the command when SIM PIN is pending, it will answer ERROR if "message" or "smsfull" indicators are enabled in AT+CIND, because with pending PIN it is not possible to give a correct indication about SMS status. To issue the command when SIM PIN is pending you have to disable "message" and "smsfull" indicators in AT+CIND first.

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

5.1.4.4.8. Read Phonebook Entries - +CPBR

+CPBR - Read Phonebook Entries	SELINT 2
AT+CPBR= **<index1>** **[,<index2>]**	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. Parameters: **<index1>** - integer type, value in the range of location numbers of the currently selected phonebook memory storage (see **+CPBS**). **<index2>** - integer type, value in the range of location numbers of the currently selected phonebook memory storage (see **+CPBS**). The response format is: **[+CPBR:** **<index1>,<number>,<type>,<text>**[,<hidden>][,<group>][,<adnumber>][,<adtype>][,<secondtext>][,<email>]] **[<CR><LF>** **+CPBR:** **<index2>,<number>,<type>,<text>**[,<hidden>][,<group>][,<adnumber>][,<adtype>][,<secondtext>][,<email>]] **[…]]]** where: **<index*n*>** - 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

+CPBR - Read Phonebook Entries	SELINT 2
	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

5.1.4.4.9. Find Phonebook Entries - +CPBF

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

5.1.4.4.10. Write Phonebook Entry - +CPBW

+CPBW - Write Phonebook Entry	**SELINT 2**
AT+CPBW= **[<index>]** **[,<number> [,<type>** **[,<text>[,<group>[,<a** **dnumber>[,<adtype>[** **,<secondtext>[,<email** **>[,<hidden>]]]]]]]]**	Execution command writes phonebook entry in location number **<index>** in the current phonebook memory storage selected with **+CPBS**. Parameters: **<index>** - integer type, value in the range of location numbers of the currently selected phonebook memory storage (see **+CPBS**). **<number>** - string type, phone number in the format **<type>** **<type>** - the type of number 129 - national numbering scheme 145 - international numbering scheme (contains the character "+") **<text>** - the text associated to the number, string type; used character set should be the one selected with command **+CSCS**. <group>: string type field of maximum length <glength> indicating a group the entry may belong to; character set as specified by command Select TE Character Set +CSCS <adnumber>: additional number ; string type phone number of format <adtype> <adtype>: type of address octet in integer format <secondtext>: string type field of maximum length <slength> indicating a second text field associated with the number; character set as specified by command Select TE Character Set +CSCS <email>: string type field of maximum length <elength> indicating an email address; character set as specified by command Select TE Character Set +CSCS <hidden>: indicates if the entry is hidden or not 0: phonebook entry not hidden 1: phonebook entry hidden Note: If record number **<index>** already exists, it will be overwritten. Note: if either **<number>**, **<type>** and **<text>** are omitted, the phonebook entry in location **<index>** is deleted. 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") Note: if either "LD", "MC" or "RC" memory storage has been selected (see **+CPBS**) it is possible just to delete the phonebook entry in location **<index>**, therefore parameters **<number>**, **<type>** and **<text>** must be omitted.

5.1.4.4.11. Clock Management - +CCLK

+CCLK - Clock Management	**SELINT 2**
AT+CCLK=<time>	Set command sets the real-time clock of the **ME**. Parameter: **<time>** - current time as quoted string in the format: "yy/MM/dd,hh:mm:ss±zz" yy - year (two last digits are mandatory), range is 00..99 MM - month (two last digits are mandatory), range is 01..12 dd - day (two last digits are mandatory); The range for dd(day) depends either on the month and on the year it refers to. Available ranges are: (01..28) (01..29) (01..30) (01..31) Trying to enter an out of range value will raise an error 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
AT+CCLK?	Read command returns the current setting of the real-time clock, in the format **<time>**. Note: the three last characters of **<time>**, i.e. the time zone information, are returned by **+CCLK?** only if the **#NITZ** URC *'extended'* format has been enabled (see **#NITZ**).
AT+CCLK=?	Test command returns the **OK** result code.
Example	AT+CCLK="02/09/07,22:30:00+00" OK AT+CCLK? +CCLK: "02/09/07,22:30:25" OK
Reference	3GPP TS 27.007

+CALA - Alarm Management	SELINT 2
	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. 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. **<text>** - unsolicited alarm code text string. It has meaning only if **<type>** is equal to 2 or 5 or 6. **<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. **<silent>** - integer type indicating if the alarm is silent or not. 0 - the alarm will not be silent; 1 - the alarm will be silent. 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.
AT+CALA?	Read command returns the list of current active alarm settings in the ME, in the format: **[+CALA: <time>,<n>,<type>,[<text>],<recurr>,<silent>]**
AT+CALA=?	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: **+CALA: (list of supported <n>s),(list of supported <type>s),<tlength>, <rlength>,(list of supported <silent>s)**
Example	AT+CALA="02/09/07,23:30:00+00" OK
Reference	ETSI 07.07, ETSI 27.007

5.1.4.4.13. Delete Alarm - +CALD

	<auxmode>: 1 yy/MM/dd (default) 2 yyyy/MM/dd 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.
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>**

5.1.4.4.16. Setting time format - +CSTF

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

5.1.4.4.19. Restricted SIM Access - +CRSM

+CRSM - Restricted SIM Access	SELINT 2
AT+CRSM= <command> [,<fileid> [,<P1>,<P2>,<P3> [,<data>]]]	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. Parameters: **<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 **<fileid>** - identifier of an elementary data file on SIM. Mandatory for every command except STATUS. **<P1>**,**<P2>**,**<P3>** - parameter passed on by the **ME** to the SIM; they are mandatory for every command except GET RESPONSE and STATUS 0..255 **<data>** - information to be read/written to the SIM (hexadecimal character format). The response of the command is in the format: **+CRSM: <sw1>,<sw2>[,<response>]** where: **<sw1>**,**<sw2>** - information from the SIM about the execution of the actual command either on successful or on failed execution. **<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. Note: this command requires PIN authentication. However commands READ BINARY and READ RECORD can be issued before PIN authentication and if the SIM is blocked (after three failed PIN authentication attempts) to access the contents of the Elementary Files. Note: use only decimal numbers for parameters **<command>**, **<fileid>**, **<P1>**, **<P2>** and **<P3>**.
AT+CRSM=?	Test command returns the **OK** result code
Reference	3GPP TS 27.007, GSM 11.11

+CSIM – Generic SIM access		**SELINT 2**
	OK *SELECT EF 6F30* AT+CSIM=14,A0A40000026F30 +CSIM: 4,"9F0F" OK *READ BINARY* AT+CSIM=10,A0B00000FC +CSIM:508,"FFFFFF1300831300901300541300301300651300381300801301801 3000113110913013013009813007713005913004313008113009513014013002313 0016330420130041FFFFFFFFFFFF21436542F41922F28822F201FFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFF9000" OK **<u>3G UICC (3G TS 31.101):</u>** *STATUS* AT+CSIM=10,A0F2000016 +CME ERROR: operation not supported *STATUS* AT+CSIM=10,80F2000016 +CSIM:134,"623F8202782183027FF08410A0000000871002FFFFFFFF89060400 FFA5078001718302848 28A01058B032F0602C6129001788301018 3010A83010B 83010E8301819000" OK *SELECT EF 6F07 No Data Returned* AT+CSIM=18,00A4080C047F206F07 +CSIM: 4,"9000" OK *SELECT EF 6F30 Return FCP Template* AT+CSIM=18,00A40804047F206F30 +CSIM:68,"621E8202412183026F30A506C00140DE01008A01058B036F060480	

5.1.4.4.21. Alert Sound Mode - +CALM

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

5.1.4.4.22. Ringer Sound Level - +CRSL

+CRSL - Ringer Sound Level	SELINT 2
AT+CRSL=<level>	Set command is used to select the incoming call ringer sound level of the device. Parameter: **<level>** - ringer sound level 0 - Off 1 - low 2 - middle 3 - high 4 - progressive
AT+CRSL?	Read command reports the current **<level>** setting of the call ringer in the format: **+CRSL: <level>**
AT+CRSL=?	Test command reports **<level>** supported values as compound value. **+CRSL: (0-4)**
Reference	3GPP TS 27.007

5.1.4.4.25. Silence command - +CSIL

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

5.1.4.4.26. Accumulated Call Meter - +CACM

+CACM - Accumulated Call Meter	SELINT 2
AT+CACM=[<pwd>]	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. Parameter: **<pwd>** - to access this command PIN2; if PIN2 has been already input once after startup, it is required no more
AT+CACM?	Read command reports the current value of the SIM ACM in the format: **+CACM: <acm>** 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) Note: the value **<acm>** is in home units; price per unit and currency are defined with command **+CPUC**
AT+CACM=?	Test command returns the **OK** result code
Reference	3GPP TS 27.007

+CPUC - Price Per Unit And Currency Table		SELINT 2
	+CPUC : <currency>,<ppu>	
AT+CPUC=?	Test command returns the **OK** result code	
Reference	3GPP TS 27.007	

5.1.4.4.29. Call meter maximum event - +CCWE

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

5.1.4.4.30. Set voice mail number - +CSVM

+CSVM – Set Voice Mail Number		SELINT 2
AT+CSVM=<mode>[,<number>[,<type>]]	The number to the voice mail server is set with this command. The parameters **<number>** and **<type>** can be left out if the parameter **<mode>** is set to 0. Parameters: **<mode>** 0 – disable the voice mail number 1 – enable the voice mail number (factory default) **<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	

5.1.4.5. Mobile Equipment Errors

5.1.4.5.1. Report Mobile Equipment Error - +CMEE

+CMEE - Report Mobile Equipment Error	**SELINT 2**
AT+CMEE=[<n>]	Set command enables/disables the report of result code: **+CME ERROR: <err>** as an indication of an error relating to the +**Cxxx** commands issued. When enabled, device related errors cause the **+CME ERROR: <err>** final result code instead of the default **ERROR** final result code. **ERROR** is anyway returned normally when the error message is related to syntax, invalid parameters, or **DTE** functionality. 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
AT+CMEE?	Read command returns the current value of subparameter **<n>**: **+CMEE: <n>**
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

5.1.4.6.2. 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	

5.1.4.7.3. GPRS Event Reporting - +CGEREP

+CGEREP - GPRS Event Reporting	SELINT 2
AT+CGEREP=[<mode>[,<bfr>]]	Set command enables or disables sending of unsolicited result codes **+CGEV: XXX** (see below) from **TA** to **TE** in the case of certain events occurring in the **TA** or the network. Parameters: **<mode>** - controls the processing of **URCs** specified with this command 0 - Buffer unsolicited result codes in the **TA**. If **TA** result code buffer is full, the oldest one can be discarded. No codes are forwarded to the **TE**. 1 - Discard unsolicited result codes when **TA-TE** link is reserved (e.g. in on-line data mode); otherwise forward them directly to the **TE**. 2 - Buffer unsolicited result codes in the **TA** when **TA-TE** link is reserved (e.g. in on-line data mode) and flush them to the **TE** when **TA-TE** link becomes available; otherwise forward them directly to the **TE**. **<bfr>** - controls the effect on buffered codes when **<mode> 1** or **2** is entered: 0 - **TA** buffer of unsolicited result codes defined within this command is cleared when **<mode>=1** or **2** is entered. 1 - **TA** buffer of unsolicited result codes defined within this command is flushed to the **TE** when **<mode>=1** or **2** is entered (**OK** response shall be given before flushing the codes) **Unsolicited Result Codes** The following unsolicited result codes and the corresponding events are defined: **+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 **+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** **+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** **+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** **+CGEV: NW DETACH** The network has forced a GPRS detach. This implies that all active contexts have been deactivated. These are not reported separately

+CGREG - GPRS Network Registration Status	SELINT 2
	where: **<stat>** - registration status (see above for values) **<lac>** - location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal) **<ci>** - cell ID in hexadecimal format. **<AcT>**: access technology of the registered network: 0 GSM 2 UTRAN **<rac>**: string type; one byte routing area code in hexadecimal format Note: **<lac>, <Ci>, <AcT>** and **<rac>** are reported only if **<mode>=2** and the mobile is registered on some network cell.
AT+CGREG?	Read command returns the status of result code presentation mode **<n>** and the integer **<stat>** which shows whether the network has currently indicated the registration of the terminal in the format: **+CGREG: <n>,<stat>[,<lac>,<ci>[,<AcT>,<rac>]]** Note: **<lac>, <Ci>, <AcT>** and **<rac>** are reported only if **<mode>=2** and the mobile is registered on some network cell.
AT+CGREG=?	Test command returns supported values for parameter **<n>**
Reference	3GPP TS 27.007

5.1.4.7.5. Define PDP Context - +CGDCONT

+CGDCONT - Define PDP Context	SELINT 2
AT+CGDCONT= **[<cid>** **[,<PDP_type>** **[,<APN>** **[,<PDP_addr>** **[,<d_comp>** **[,<h_comp>** **[,<pd1>** **[,…[,pdN]]]]]]]]**	Set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, **<cid>** Parameters: **<cid>** - (PDP Context Identifier) numeric parameter which specifies a particular PDP context definition. 1..*max* - where the value of *max* is returned by the Test command **<PDP_type>** - (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol "IP" - Internet Protocol "IPV6" - Internet Protocol version 6 "IPV4V6" - Virtual <PDP_type> introduced to handle dual IP stack UE capability **<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. **<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.

5.1.4.7.6. Quality Of Service Profile - +CGQMIN

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

+CGQREQ - Quality Of Service Profile (Requested)		SELINT 2
	OK	
Reference	3GPP TS 27.007; GSM 03.60	

	8700…16000 **<Delivery order>** - SDU Delivery order 0 - no 1 – yes 2 – subscribed value (default value) **<Maximum SDU size**> - Maximum SDU size in octets 0 - subscribed value (default value) 10…1500 1502 1510 1520 **<SDU error ratio>** - SDU error ratio - mEe mean m*10-e , for example 1E2 mean 1*10-2 “0E0” (default value) “1E1” “1E2” “7E3” “1E3” “1E4” “1E5” “1E6” **<Residual bit error ratio>** - Residual bitt error ratio - mEe mean m*10-e , for example 1E2 mean 1*10-2 “0E0” (default value) “5E2” “1E2” “5E3” “4E3” “1E3” “1E4” “1E5” “1E6” “6E8” **<Delivery of erroneous SDUs>** - Delivery of erroneous SDUs 0 - no 1 – yes 2 – no detect 3 – subscribed value (default value) **<Transfer delay >** - Transfer delay (milliseconds) 0 – subscribed value (default value) 10…150

	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) Note: only the "IP" PDP_Type is currently supported.

5.1.4.7.9. 3G Quality Of Service Profile (Minimum Acceptable) - +CGEQMIN

+CGEQMIN – 3G Quality Of Service Profile (Minimum Acceptable)	**SELINT 2**
AT+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 priority>** **[,<Source statistics descriptor> [,<Signalling indication>]]]]]]]]]]]]]]]**	Set command allows specifying a 3G quality of service profile for the context identified by the (local) context identification parameter **<cid>** which is checked by the MT against the negotiated profile returned in the Activate/Modify PDP Context Accept Message. Parameters: **<cid>** - PDP context identification (see +CGDCONT command). **<Traffic class>** - Traffic class 0 – conversational (default value) 1 - streaming 2 - interactive 3 - background **<Maximum bitrate UL>** - Maximum bitrate Up Link (kbits/s) 0 (default value) 1…568 576…8640 **<Maximum bitrate DL>** - Maximum bitrate down link (kbits/s) 0 (default value) 1…568 576…8640 8700…16000 **<Guaranteed bitrate UL>** - the guaranteed bitrate up link(kbits/s) 0 (default value) 1…568 576…8640 **<Guaranteed bitrate DL>** - the guaranteed bitrate down link(kbits/s) 0 (default value) 1…568

	1000…4000 **<Traffic handling priority >** - Traffic handling priority 1…3 **<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 **<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. Note: a special form of the Set command, **+CGEQMIN=<cid>** causes the requested profile for context number **<cid>** to become undefined. Note: the current settings are stored in NVM. Note: set command can modify the 2G QoS according to 3GPP 23.107 (see **+CGQMIN**).
AT+CGEQMIN?	Read command returns the current settings for each defined context in the format: **[+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:…]** Parameters are described as for the set command except: **<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 **<Traffic handling priority >** - Traffic handling priority 0 (default value as undefined) 1…3

+CGACT - PDP Context Activate Or Deactivate	SELINT 2
	OK
Reference	3GPP TS 27.007

5.1.4.7.11. 3G Quality Of Service Profile (Negotiated) - +CGEQNEG

+CGEQNEG – 3G Quality Of Service Profile (Negotiated)	SELINT 2
AT+CGEQNEG= **[<cid>[,<cid>[,…]]]**	This command allows the TE to retrieve the negotiated 3G quality of service returned in the Activate PDP Context Accept/Modify message. 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. Parameters: **<cid>** - PDP context identification (see **+CGDCONT** command). It returns the current settings for each specified context in the format (see **+CGEQREQ**): **[+CGEQNEQ: <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>]** **[+CGEQNEQ:…]**
AT+CGEQNEG=?	Test command returns a list of **<cid>**s associated with active contexts.
Reference	3GPP TS 27.007

5.1.4.7.13. Show PDP Address - +CGPADDR

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

5.1.4.7.15. Commands for Battery Charger

5.1.4.7.15.1. Battery Charge - +CBC

+ CBC - Battery Charge	SELINT 2
AT+CBC	Execution command returns the current Battery Charge status in the format: **+CBC: <bcs>,<bcl>** where: **<bcs>** - battery status 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 **<bcl>** - battery charge level, only if <bcs>=0 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. 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. 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. Note: <bcl> indicates battery charge level only if battery is connected and charger is not connected
AT+CBC=?	Test command returns parameter values supported as a compound value. **+CBC: (0-3),(0-100)**
Example	AT+CBC +CBC: 0,75 OK
Note	The **ME** does not make differences between being powered by a battery or by a power supply on the **VBATT** pins, so it is not possible to distinguish between these two cases.
Reference	3GPP TS 27.007

5.1.5.1.2. Preferred Message Storage - +CPMS

+CPMS - Preferred Message Storage	SELINT 2
AT+CPMS= <memr> [,<memw> [,<mems>]]	Set command selects memory storages **<memr>**, **<memw>** and **<mems>** to be used for reading, writing, sending and storing SMs. Parameters: **<memr>** - memory from which messages are read and deleted "SM" - SIM SMS memory storage (default) "ME" – NVM SMS storage **<memw>** - memory to which writing and sending operations are made "SM" - SIM SMS memory storage (default) "ME" – NVM SMS storage **<mems>** - memory to which received SMs are preferred to be stored "SM" - SIM SMS memory storage (default) "ME" – NVM SMS storage The command returns the memory storage status in the format: **+CPMS: <usedr>,<totalr>,<usedw>,<totalw>,<useds>,<totals>** where: **<usedr>** - number of SMs stored into **<memr>** **<totalr>** - max number of SMs that **<memr>** can contain **<usedw>** - number of SMs stored into **<memw>** **<totalw>** max number of SMs that **<memw>** can contain **<useds>** - number of SMs stored into **<mems>** **<totals>** - max number of SMs that **<mems>** can contain Note: when **<memr>** is set to a memory, also **<memw>** and **<mems>** are set to the same memory. Note: the set memory is automatically saved in NVM.
AT+CPMS?	Read command reports the message storage status in the format: **+CPMS: <memr>,<usedr>,<totalr>,<memw>,<usedw>,<totalw>, <mems>,<useds>,<totals>** where **<memr>**, **<memw>** and **<mems>** are the selected storage memories for reading, writing and storing respectively.
AT+CPMS=?	Test command reports the supported values for parameters **<memr>**, **<memw>** and **<mems>**
Example	*AT+CPMS?* *+CPMS: "SM",5,10,"SM",5,10,"SM",5,10* *OK*

+CSCA -Service Center Address	SELINT 2
	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. Note: the current settings are stored through **+CSAS**
AT+CSCA?	Read command reports the current value of the SCA in the format: **+CSCA: <number>,<type>** Note: if SCA is not present the device reports an error message.
AT+CSCA=?	Test command returns the **OK** result code.
Reference	3GPP TS 27.005

+CSMP - Set Text Mode Parameters	SELINT 2
	quoted hexadecimal representation (string type) of 7 octets, as follows: • 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: **bit[7]**: extension bit [0] - there are no more VP Fuctionality Indicator extension octets to follow **bit[6]**: Single Shot SM; [0] - the SC is not required to make up to one delivery attempt [1] - the SC is required to make up to one delivery attempt **bit[5]bit[4]bit[3]**: reserved [000] **bit[2]bit[1]bit[0]**: Validity Period Format [000] - No Validity Period specified [001] - Validity Period specified as for the relative format. The following octet contains the VP value as described before; all the other octets are 0's. [010] - Validity Period is relative in integer representation. The following octet contains the VP value in the range 0 to 255, representing 0 to 255 seconds; all the other octets 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. **<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 Note: the current settings are stored through **+CSAS** Note: we're storing through **+CSAS** the **<vp>** value too, but only as integer type, i.e. only in its *relative format* 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.
AT+CSMP?	Read command reports the current setting in the format: **+CSMP: <fo>,<vp>,<pid>,<dcs>** Note: if the Validity Period Format (**<fo>**'s **bit[4]bit[3]**) is [00] (i.e. *Not Present*), **<vp>** is represented just as a quoted empty string (**""**).
AT+CSMP=?	Test command returns the **OK** result code.
Example	*Set the parameters for an outgoing message with 24 hours of validity period and default properties:*

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

5.1.5.2.7. More message to send - +CMMS

+CMMS – More Message to Send	SELINT 2
AT+CMMS=[<n>]	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. Parameter: **<n>** 0 - disable (factory default) 1 - keep enabled until the time between the response of the latest message send command (+CMGS, +CMSS, etc.) and the next send command exceeds 5 seconds, then the link is closed and the parameter **<n>** is automatically reset to 0 2 - enable (if the time between the response of the latest message send command and the next send command exceeds 5 seconds, the link is closed but the parameter **<n>** remains set to 2)
AT+CMMS?	Read command reports the current value of the parameter **<n>** in the format: **+CMMS: <n>**
AT+CMMS=?	Test command returns the range of supported **<n>**
Reference	3GPP TS 27.005

+CNMI - New Message Indications To Terminal Equipment	SELINT 2

character set (see **+CSCS**)
<alpha> - alphanumeric representation of **<oa>**; used character set should be the one selected with command **+CSCS**.
<scts> - arrival time of the message to the SC
<tooa>, ***<tosca>*** - type of number **<oa>** or ***<sca>***:
129 - number in national format
145 - number in international format (contains the "+")
<fo> - first octet of 3GPP TS 23.040
<pid> - Protocol Identifier
<dcs> - Data Coding Scheme
<sca> - Service Centre address, string type, converted in the currently selected character set (see **+CSCS**)
<length> - text length
<data> - TP-User-Data

- If **<dcs>** indicates that GSM03.38 default alphabet is used and **<fo>** indicates that GSM03.40 TP-User-Data-Header-Indication is not set (bit 6 of **<fo>** is 0), each character of GSM alphabet will be converted into current TE character set (see **+CSCS**)
- If **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used or **<fo>** indicates that GSM03.40 TP-User-Data-Header-Indication is set (bit 6 of **<fo>** is 1), each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41)

Class 2 messages and messages in the "store" message waiting indication group result in indication as defined in **<mt>=1**.
3 - Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in **<mt>=2**. Messages of other data coding schemes result in indication as defined in **<mt>=1**.
<bm> - broadcast reporting option
0 - Cell Broadcast Messages are not sent to the **DTE**
2 - New Cell Broadcast Messages are sent to the **DTE** with the unsolicited result code:

(PDU Mode)
+CBM: <length><CR><LF><PDU>
where:
<length> - PDU length
<PDU> - message PDU

(TEXT Mode)
+CBM:<sn>,<mid>,<dcs>,<pag>,<pags><CR><LF><data>
where:
<sn> - message serial number
<mid> - message ID
<dcs> - Data Coding Scheme

<table>
<tr><td colspan="2">+CNMI - New Message Indications To Terminal Equipment</td><td>SELINT 2</td></tr>
<tr><td></td><td colspan="2"></td></tr>
<tr><td>AT+CNMI?</td><td colspan="2">Read command returns the current parameter settings for +CNMI command in the form:

+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr></td></tr>
<tr><td>AT+CNMI=?</td><td colspan="2">Test command reports the supported range of values for the +CNMI command parameters.</td></tr>
<tr><td>Reference</td><td colspan="2">3GPP TS 27.005</td></tr>
<tr><td>Note</td><td colspan="2">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.</td></tr>
<tr><td>Note</td><td colspan="2">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>
<tr><th>Message Class or Indication group, as in the DCS

<mt> settings in different sessions</th><th>SM Class is No Class
OR
SM Class is 0 or 1 or 3
OR
SM is an Indication with group “Discard”</th><th>SM Class is 3</th></tr>
<tr><td><mt>=2 for session “0”
AND
<mt>=anyvalue for other session(s)</td><td>URC is shown only on session “0”</td><td></td></tr>
<tr><td><mt>=3 for session “0”
AND
<mt>=0 or 1 for other session(s)</td><td></td><td>URC is shown only on session “0”</td></tr>
</table>
</td></tr>
<tr><td>Note</td><td colspan="2">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>
<tr><td></td><td></td><td colspan="5">SM CLASS</td></tr>
<tr><td></td><td></td><td>0 / msg waiting discard</td><td>1 / no class</td><td>2</td><td>3</td><td>msg waiting store</td></tr>
<tr><td rowspan="2"><mt></td><td>0</td><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><td>1</td><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>
</table>
</td></tr>
</table>

5.1.5.3.2. New message acknowledgement - +CNMA

+CNMA – New Message Acknowledgement	
AT+CNMA	Execution command confirms correct reception of a new message (SMS-DELIVER or SMS-STATUS-REPORT) which is routed directly to the TE. Acknowledge with **+CNMA** is possible only if the **+CSMS** parameter is set to 1 (**+CSMS=1**) when a **+CMT** or **+CDS** indication is shown. 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). If command is executed, but no acknowledgement is expected, or some other ME related error occurs, final result code **+CMS ERROR: <err>** is returned. The AT command syntax and functionalities are different between SMS PDU Mode and SMS Text Mode, as explained below.
(PDU Mode) **AT+CNMA[=<n>[,<length>[<CR>PDU is given<ctrl-Z/ESC]]]**	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. 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.
(Text Mode) **AT+CNMA**	Only positive acknowledgement to network (RP-ACK) is possible.
(PDU Mode) **AT+CNMA=?**	Test command returns the possible range of values for the parameter **<n>**
(Text Mode) **AT+CNMA=?**	Test command returns the **OK** result code.
Notes	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.

+CNMA – New Message Acknowledgement	
	AT+CNMI=2,2,0,0,0 OK *Message is received from network.* +CMT: "+821020955219",,"07/07/26,20:09:07+36" TEST MESSAGE *Send positive acknowledgement to the network.* AT+CNMA OK
Reference	3GPP TS 27.005

5.1.5.3.3. List Messages - +CMGL

+CMGL - List Messages	SELINT 2
AT+CMGL [=<stat>]	Execution command reports the list of all the messages with status value **<stat>** stored into **<memr>** message storage (**<memr>** is the message storage for read and delete SMs as last settings of command **+CPMS**). The parameter type and the command output depend on the last settings of command **+CMGF** (message format to be used) **(PDU Mode)** Parameter: **<stat>** 0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent 4 - all messages. If there is at least one message to be listed the representation format is: **+CMGL: <index>,<stat>,<alpha>,<length><CR><LF><pdu>[<CR><LF>** **+CMGL: <index>,<stat>,<alpha>,<length><CR><LF><pdu>[...]]** 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

+CMGL - List Messages	SELINT 2
	+CMGL: <index>,<stat>,<fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st> **[<CR><LF>** **+CMGL: <index>,<stat>,<fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st>** **[...]]** where **<index>** - message position in the storage **<stat>** - message status **<fo>** - first octet of the message PDU **<mr>** - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format **<ra>** - recipient address, string type , represented in the currently selected character set (see **+CSCS**) **<tora>** - type of number <ra> **<scts>** - arrival time of the message to the SC **<dt>** - sending time of the message **<st>** - message status as coded in the PDU Note: If parameter is omitted the command returns the list of sms with "**REC UNREAD**" status. Note: the order in which the messages are reported by **+CMGL** corresponds to their position in the memory storage
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
AT+CMGR=<index>	Execution command reports the message with location value **<index>** from **<memr>** message storage (**<memr>** is the message storage for read and delete SMs as last settings of command **+CPMS**). Parameter: **<index>** - message index. The output depends on the last settings of command **+CMGF** (message format to be used) **(PDU Mode)** If there is a message in location **<index>**, the output has the following format: **+CMGR: <stat>,<alpha>,<length><CR><LF><pdu>** where

+CMGR - Read Message	**SELINT 2**
	a) *Not Present* if **<fo>** tells that the *Validity Period Format is* ***Not Present*** b) *Integer* type if **<fo>** tells that the *Validity Period Format is* ***Relative*** c) *Quoted time-string type* if **<fo>** tells that the *Validity Period Format is* ***Absolute*** d) Quoted hexadecimal representation of 7 octets if **<fo>** tells that the *Validity Period Format is* ***Enhanced***. **<oa>** - Originator address, string type represented in the currently selected character set (see **+CSCS**) **<da>** - Destination address, string type represented in the currently selected character set (see **+CSCS**) **<alpha>** - string type alphanumeric representation of **<da>** or **<oa>**, corresponding to an entry found in the phonebook; used character set is the one selected with command **+CSCS**. ***<sca>*** - Service Centre number ***<tooa>,<toda >,<tosca>*** - type of number **<oa>**,**<da>**,***<sca>*** 129 - number in national format 145 - number in international format (contains the "+") ***<length>*** - text length **<data>** - TP-User_data • If **<dcs>** indicates that GSM03.38 default alphabet is used , each character of GSM alphabet will be converted into current TE character set (see **+CSCS**) • If **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41) Note: in both cases if status of the message is 'received unread', status in the storage changes to 'received read'.
AT+CMGR=?	Test command returns the **OK** result code
Reference	3GPP TS 27.005

+CMGS - Send Message	SELINT 2
(Text Mode) **AT+CMGS=<da>[,<toda>]**	**(Text Mode)** Execution command sends to the network a message. 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 "+") 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)** After this prompt text can be entered; the entered text should be formatted as follows: - 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><greather_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**) Note: the **DCD** signal shall be in **ON** state while text is entered. Note: the echoing of entered characters back from the TA is controlled by echo command **E** To send the message issue **Ctrl-Z** char (**0x1A** hex). To exit without sending the message issue **ESC** char (**0x1B** hex). If message is successfully sent to the network, then the result is sent in the format: **+CMGS: <mr>** where **<mr>** - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format.

+CMSS - Send Message From Storage	SELINT 2
Note	To avoid malfunctions is suggested to wait for the **+CMSS: <mr>** or **+CMS ERROR: <err>** response before issuing further commands.
Reference	3GPP TS 27.005

5.1.5.4.3. Write Message To Memory - +CMGW

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

+CMGW - Write Message To Memory	SELINT 2
	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: it is possible to save a concatenation of at most 10 SMs; the maximum number of chars depends on the **<dcs>**: 1530 chars if 3GPP TS 23.038 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used. If entered text is longer than this maximum value an error is raised. 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".
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
AT+CMGD= <index> [,<delflag>]	Execution command deletes from memory **<memr>** the message(s). 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

5.1.6. Custom AT Commands

5.1.6.1. General Configuration AT Commands

5.1.6.1.1. Hang Up Call - #CHUP

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

5.1.6.1.2. USB configuration - #USBCFG

#USBCFG- USB Configuration	SELINT 2
AT#USBCFG=<mode>	Set command specify USB configuration on the modem device. New configuration mode applied at the next boot up time. Parameter: **<mode>** - USB configuration mode 0 – All the USB ports (Telit Mobile (USBx) are in ACM mode; Selective Suspend is disabled; ECM is disabled; DLINK feature is disabled; VID 0x1BC7 PID 0x0021 **(default value)** 1 – All the USB ports (Telit Mobile (USBx) are in ACM Data Only mode (2 endpoints for each port); Selective Suspend is disabled; ECM is disabled; DLINK feature is enabled; VID 0x1BC7 PID 0x0026 2 – All the USB ports (Telit Mobile (USBx) are in ACM mode; Selective Suspend is disabled; ECM is disabled; DLINK feature is enabled; VID 0x1BC7 PID 0x0021 3 – All the USB ports (Telit Mobile (USBx) are in ACM mode; Selective Suspend is disabled; ECM is enabled; DLINK feature is disabled; VID 0x1BC7 PID 0x0023 4 – All the USB ports (Telit Mobile (USBx) are in ACM mode; Selective Suspend is enabled; ECM is disabled; DLINK feature is disabled; VID 0x1BC7 PID 0x0024 5 – All the USB ports (Telit Mobile (USBx) are in ACM mode;

	module; **<active>** value shows the actual configuration. **#PORTCFG: <requested>,<active>**
AT#PORTCFG=?	Test command reports a brief description of the supported ports arrangement solutions. For each **<Variant>** parameter value are displayed, on one row, the allowed couples formed by: a physical port and the logically connected internal software Access Point (AT, TT). On each row are reported the couples concerning both configurations: USB cable plugged into USB port or not plugged in. AT, indicated on each command row result, can be AT0, AT1, or AT2.

	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.
AT#CGMR=?	Test command returns the **OK** result code.

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 • 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
	97	Message type non-existent or not implemented
	98	Message type not compatible with protocol state
	99	Information element non-existent or not implemented
	100	Conditional IE error
	101	Message not compatible with protocol state
	102	Recovery on timer expiry
	111	Protocol error, unspecified
	127	Interworking, unspecified
	GPRS related errors	
	224	MS requested detach
	225	NWK requested detach
	226	Unsuccessful attach cause NO SERVICE
	227	Unsuccessful attach cause NO ACCESS
	228	Unsuccessful attach cause GPRS SERVICE REFUSED
	229	PDP deactivation requested by NWK
	230	PDP deactivation cause LLC link activation Failed
	231	PDP deactivation cause NWK reactivation with same TI
	232	PDP deactivation cause GMM abort
	233	PDP deactivation cause LLC or SNDCP failure
	234	PDP unsuccessful activation cause GMM error
	235	PDP unsuccessful activation cause NWK reject
	236	PDP unsuccessful activation cause NO NSAPI available
	237	PDP unsuccessful activation cause SM refuse
	238	PDP unsuccessful activation cause MMI ignore
	239	PDP unsuccessful activation cause Nb Max Session Reach
	256	PDP unsuccessful activation cause wrong APN
	257	PDP unsuccessful activation cause unknown PDP address or type
	258	PDP unsuccessful activation cause service not supported
	259	PDP unsuccessful activation cause QOS not accepted
	260	PDP unsuccessful activation cause socket error
	Other custom values	
	240	FDN is active and number is not in FDN
	241	Call operation not allowed
	252	Call barring on outgoing calls
	253	Call barring on incoming calls
	254	Call impossible
	255	Lower layer failure
AT#CEER=?	Test command returns **OK** result code.	
Reference	GSM 04.08	

#CEERNET – Ext error report for Network reject cause		SELINT 2
	40	NO PDP CTXT ACTIVATED(GMM cause failure)/ FEATURE NOT SUPPORTED(SM cause failure)
	41	SEMANTIC ERROR IN TFT OPERATION
	42	SYNTACTICAL ERROR IN TFT OPERATION
	43	UNKNOWN PDP CNTXT
	44	SEM ERR IN PKT FILTER
	45	SYNT ERR IN PKT FILTER
	46	PDP CNTXT WITHOUT TFT ACTIVATED
	47	MULTICAST GROUP MEMBERSHIP TIMEOUT
	48	RETRY ON NEW CELL BEGIN(if MM cause failure) / ACTIVATION REJECTED BCM VIOLATION(if SM cause failure)
	50	PDP TYPE IPV4 ONLY ALLOWED
	51	PDP TYPE IPV6 ONLY ALLOWED
	52	SINGLE ADDRESS BEARERS ONLY ALLOWED
	63	RETRY ON NEW CELL END
	81	INVALID TRANSACTION IDENTIFIER
	95	SEMANTICALLY INCORRECT MESSAGE
	96	INVALID MANDATORY INFORMATION
	97	MSG TYPE NON EXISTENT OR NOT IMPLEMENTED
	98	MSG TYPE NOT COMPATIBLE WITH PROTOCOL STATE
	99	IE NON_EXISTENT OR NOT IMPLEMENTED
	100	CONDITIONAL IE ERROR
	101	MSG NOT COMPATIBLE WITH PROTOCOL STATE
	111	PROTOCOL ERROR UNSPECIFIED
	112	APN RESTRICTION VALUE INCOMPATIBLE WITH ACTIVE 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	Execution command reports the PIN/PUK or PIN2/PUK2 input remaining attempts, depending on **+CPIN** requested password in the format: **#PCT: <n>** where: **<n>** - remaining attempts 0 - the SIM is blocked. 1..3 - if the device is waiting either SIM PIN or SIM PIN2 to be given. 1..10 - if the device is waiting either SIM PUK or SIM PUK2 to be given.	
AT#PCT=?	Test command returns the OK result code.	

#ENHRST – Periodic ReseT	SELINT 2
AT#ENHRST?	Read command reports the current parameter settings for **# EHNRST** command in the format: **# EHNRST: < 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 …

5.1.6.1.20. Wake From Alarm Mode - #WAKE

#WAKE - Wake From Alarm Mode	SELINT 2
AT#WAKE= [<opmode>]	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**. 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. 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**. Note: 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 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.

	unsolicited message is in the format: **#TEMPMEAS: <level>,<value>** where: **<level>** and **<value>** are as before **<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. 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. **<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. 0..255 - time in seconds **<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. 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. Note: in case that action 4 is set, the chosen GPIO has to be configured in alternate function ALT3 through AT#GPIO command 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**).
AT#TEMPMON?	Read command reports the current parameter settings for **#TEMPMON** command in the format: **#TEMPMON: <urcmode>,<action>[,<hyst_time>[,<GPIO>]]**

	Note 5: The extreme temperature upper limit must be lower than its upper limit (see TEMPMON for temperature limits). 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. Note 6: a factory reset restores the factory default values.
AT#TEMPCFG?	read the currently active temperature range : **#TEMPCFG: <TempExLowBound>,** **<TempOpLowBound>,** **<TempOpUpBound>,** **<TempExUpBound>**
AT#TEMPCFG =?	Test command returns the supported range of **<TempExLowBound>,** **<TempOpLowBound>,** **<TempOpUpBound>,** **<TempExUpBound>** parameters**.**

Example	//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

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

#GPIO - General Purpose Input/Output Pin Control	**SELINT 2**
AT#GPIO=[<pin>, **<mode>[,<dir>[,<save>]]]**	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. Parameters:

#GPIO - General Purpose Input/Output Pin Control	SELINT 2

Note: "ALT1" value is valid only for the following pins and with the specified function

	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	-	-		

"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"

Note: while using the pins in the alternate function, the GPIO read/write access to that pin is not accessible and shall be avoided.

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

AT#GPIO?

Read command reports the read direction and value of all **GPIO** pins, in the format:

#GPIO: <dir>,<stat>[<CR><LF>#GPIO: <dir>,<stat>[…]]

where
<dir> - as seen before
<stat> - as seen before

If <mode> = 3,4 the ouput format is
#GPIO:<dir>,<stat>,<mode>[<CR><LF>#GPIO:<dir>,<stat>,<mode>[…]]

	which means no ALARM pin set. Note: the setting is saved in NVM Note: ALARM pin function of a GPIO corresponds to ALT2 function of the GPIO. So it can be also set through AT#GPIO command, ALT2 function.
AT#ALARMPIN?	Read command returns the current parameter settings for **#ALARMPIN** command in the format: **#ALARMPIN: <pin>**
AT#ALARMPIN=?	Test command reports the supported range of values for parameter **<pin>**.

5.1.6.1.27. 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.	

5.1.6.1.28. SMS Ring Indicator - #E2SMSRI

#E2SMSRI - SMS Ring Indicator		SELINT 2
AT#E2SMSRI=[<n>]	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>**. 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. 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.	
AT#E2SMSRI?	Read command reports the duration in ms of the pulse generated on receipt of an incoming SM, in the format: **#E2SMSRI: <n>** Note: as seen before, the value **<n>=0** means that the **RI** pin response to an incoming SM is disabled.	
AT#E2SMSRI=?	Reports the range of supported values for parameter **<n>**	

5.1.6.1.29. Event Ring Indicator - #E2RI

#E2RI – Event Ring Indicator		SELINT 2
AT#E2RI=<event_mask>,<duration>	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>**. Parameters: **<event_mask>** : 0 – disables all events hexadecimal number representing the list of events: 1 – Power Saving Mode (same as **AT#PSMRI=<duration>**)	

5.1.6.1.30. Read Analog/Digital Converter input - #ADC

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

5.1.6.1.31. V24 Output Pins Configuration - #V24CFG

#V24CFG - V24 Output Pins Configuration	SELINT 2
AT#V24CFG=<pin>, **<mode>**	Set command sets the AT commands serial port interface output pins mode. Parameters: **<pin>** - AT commands serial port interface hardware pin: 0 - **DCD** (Data Carrier Detect) 1 - **CTS** (Clear To Send) 2 - **RI** (Ring Indicator) 3 - **DSR** (Data Set Ready) 4 - **DTR** (Data Terminal Ready). This is not an output pin: we maintain this value only for backward compatibility, but trying to set its state raises the result code "**ERROR**" (not yet implemented) 5 - **RTS** (Request To Send). This is not an output pin: we maintain this value only for backward compatibility, but trying to set its state raises the result code "**ERROR**" **<mode>** - AT commands serial port interface hardware pins mode:

#V24 - V24 Output Pins Control		SELINT 2
	where **<pin*n*>** - AT command serial port interface HW pin **<state*n*>** - AT commands serial port interface hardware pin state	
AT#V24=?	Test command reports supported range of values for parameters **<pin>** and **<state>**.	

5.1.6.1.33. 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.	

5.1.6.1.34. 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=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>**.	

#MONI - Cell Monitor	SELINT 2

0..6 - it is the ordinal number of the cell, in 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.

(UMTS network)
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.
5..6 – it is not available

Execution command (**AT#MONI<CR>)** reports GSM/UMTS-related information for selected cell and dedicated channel (if exists).

1. If the last setting done by **#MONI** is in the range **[0..6]**, the output format is as follows:

a) When extracting data for the serving cell and the network name is known the format is:
(GSM network)
#MONI: <netname> BSIC:<bsic> RxQual:<qual> LAC:<lac> Id:<id> ARFCN:<arfcn> PWR:<dBm> dBm TA: <timadv>
(UMTS network)
#MONI: <netname> PSC:<psc> RSCP:<rscp> LAC:<lac> Id:<id>EcIo:<ecio> UARFCN:<uarfcn> PWR:<dBm> dBm DRX:<drx> SCR:<scr>

b) When the network name is unknown, the format is:
(GSM network)
#MONI: <cc> <nc> BSIC:<bsic> RxQual:<qual> LAC:<lac> Id:<id> ARFCN:<arfcn> PWR:<dBm> dBm TA: <timadv>
(UMTS network)
#MONI: <cc> <nc> PSC:<psc> RSCP:<rscp> LAC:,<lac> Id:<id> EcIo:<ecio> UARFCN:<uarfcn> PWR:<dBm> dBm DRX:<drx>SCR:<scr>

c) When extracting data for an adjacent cell (or active set cell), the format is:
(GSM network)
#MONI: Adj Cell<n> [LAC:<lac> Id:<id>] ARFCN:<arfcn>

#MONI - Cell Monitor	SELINT 2
	the cells in the neighbours: **#MONI:** **N<n> <bsic> <lac> <id> <arfcn> <dBm> <C1value> <C2value>[<CR><LF>]** where: **<C1value>** - C1 reselection parameter **<C2value>** - C2 reselection parameter other parameters as before **(UMTS network)** a. First row reports a set of information for the serving cell: **#MONI: <netname> PSC:<psc> RSCP:<rscp> LAC:<lac> Id:<id>EcIo:<ecio> UARFCN:<uarfcn> PWR:<dBm> dBm DRX:<drx> SCR:<scr>** b. the other rows report a set of information for all detected neighbour cells: **#MONI: PSC:<psc> RSCP:<rscp> EcIo:<ecio> UARFCN:<uarfcn> SCR:<scr>** See above for parameters description.
AT#MONI=?	Test command reports the maximum number of cells, in the neighbour list of the serving cell excluding it, from which we can extract GSM/UMTS-related information, along with the ordinal number of the current selected cell, in the format: **#MONI: (<MaxCellNo>,<CellSet>)** where: **<MaxCellNo>** - maximum number of cells, in the neighbour list of the serving cell and excluding it, from which we can extract GSM-related information. This value is always **6**. **<CellSet>** - the last setting done with command **#MONI**.
Examples	*Set command selects the cell 0 in GSM network* at#moni=0 OK *Execution command reports GSM-related information for cell 0* at#moni #MONI: I WIND BSIC:70 RxQual:0 LAC:55FA Id:1D23 ARFCN:736 PWR:-83dbm TA:1 *Set command selects the cell 0 in UMTS network* at#moni=0 OK

#MONIZIP – Compressed Cell Monitor	SELINT 2

(UMTS network)

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.

5..6 – it is not available

Execution command (AT#MONIZIP<CR>) reports GSM/UMTS-related information for selected cell and dedicated channel (if exists).

1. If the last setting done by #MONIZIP is in the range [0..6], the output format is as follows:

d)When extracting data for the serving cell the format is:

(GSM network)

#MONIZIP: <cc><nc>,<bsic>,<qual>,<lac>,<id>,<arfcn>, <dBm>, <timadv>

(UMTS network)

#MONIZIP: <cc><nc>,<psc>,<rscp>,<lac>,<id>, <ecio>, <uarfcn>,<dBm>,<drx>,<scr>

e)When extracting data for an adjacent cell (or active set cell), the format is:

(GSM network)

#MONIZIP: <lac>,<id>,<arfcn>,<dBm>

(UMTS network)

#MONIZIP: <psc>,<rscp>,<ecio>,<uarfcn>,<scr>

where:

<cc> - country code

#MONIZIP – Compressed Cell Monitor	SELINT 2
	<dBm>,<drx>,<scr> b. the other rows report a set of information for all detected neighbour cells: **#MONIZIP: <psc>,<rscp>,<ecio>,<uarfcn>,<scr>** See above for parameters description .
AT#MONIZIP=?	Test command reports the maximum number of cells, in the neighbour list of the serving cell excluding it, from which we can extract GSM-related information, along with the ordinal number of the current selected cell, in the format: #MONIZIP: (<MaxCellNo>,<CellSet>) where: <MaxCellNo> - maximum number of cells, in the neighbour list of the serving cell and excluding it, from which we can extract GSM-related information. This value is always **6**. <CellSet> - the last setting done with command #MONIZIP.
Note	The refresh time of the measures is preset to 3 sec. The timing advance value is meaningful only during calls or GPRS transfers active.
Note	The serving cell is the current serving cell or the last available serving cell, if the module loses coverage.

#SERVINFO - Serving Cell Information	SELINT 2
	0 – No Service 1 – CS Only 2 – PS Only 3 – CS & PS **<RSCP>** - Received Signal Code Power in dBm 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.
AT#SERVINFO=?	Test command tests for command existence.

5.1.6.1.39. Lock to single BCCH_ARFCN - #BCCHLOCK

#BCCHLOCK – Lock to single BCCH ARFCN	SELINT 2
AT#BCCHLOCK=<LockedBcch>[,<LockedUarfcn>[,<LockedPsc>]]	This command allows to set the single BCCH ARFCN the device must be locked to, selectable within those allowed for the specific product. Parameters: <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. <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). <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. Note: the values set by command are directly stored in NVM and don't depend on the specific CMUX instance. Note: it is not possible to lock to a 2G BCCH and a 3G BCCH at the

	parameter <LockedBcch>, <LockedUarfcn> and <LockedPsc>.

5.1.6.1.40. Read current network status - #RFSTS

#RFSTS – Read current network status	SELINT 2
AT#RFSTS	Execution command reads current network status, in the format: **(GSM network)** **#RFSTS:<PLMN>,<ARFCN>,<RSSI>,<LAC>,<RAC>,<TXPWR>,<MM>,** **<RR>,<NOM>,<CID>,<IMSI>,<NetNameAsc>,<SD>,<ABND>** Where: **<PLMN>** - Country code and operator code(MCC, MNC) **<ARFCN>** - GSM Assigned Radio Channel **<RSSI>** - Received Signal Strength Indication **<LAC>** - Localization Area Code **<RAC>** - Routing Area Code **<TXPWR>** - Tx Power **<MM>** - Mobility Management state (for debug purpose only) 0 - NULL 3 - LOCATION UPDATING INITIATED 5 - WAIT FOR OUTGOING MM CONNECTION 6 - CONNECTION ACTIVE 7 - IMSI DETACH INITIATED 8 - PROCESS CM SERVICE PROMPT 9 - WAIT FOR NETWORK COMMAND 10 - LOCATION UPDATE REJECTED 13 - WAIT FOR RR CONNECTION LOCATION UPDATE 14 - WAIT FOR RR CONNECTION MM 15 - WAIT FOR RR CONNECTION IMSI DETACH 17 - WAIT FOR REESTABLISHMENT 18 - WAIT FOR RR ACTIVE 19 - IDLE 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

#RFSTS – Read current network status	SELINT 2

47 - DSIM WAIT SUSPEND IDLE
<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

<ABND> - Active Band
1 - GSM 850
2 - GSM 900
3 - DCS 1800
4 - PCS 1900

(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>]

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
3 - LOCATION UPDATING INITIATED
5 - WAIT FOR OUTGOING MM CONNECTION
6 - CONNECTION ACTIVE
7 - IMSI DETACH INITIATED
8 - PROCESS CM SERVICE PROMPT
9 - WAIT FOR NETWORK COMMAND
10 - LOCATION UPDATE REJECTED
13 - WAIT FOR RR CONNECTION LOCATION UPDATE
14 - WAIT FOR RR CONNECTION MM

5.1.6.1.41. Query SIM Status - #QSS

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

5.1.6.1.44. Automatic call - #ACAL

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

5.1.6.1.46. Extended Call Monitoring - #ECAM

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

#MBN - Mailbox Numbers	SELINT 2
	"EMAIL" - electronic mail "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.

5.1.6.1.49. Message Waiting Indication - #MWI

#MWI - Message Waiting Indication	SELINT 2
AT#MWI=<enable>	Set command enables/disables the presentation of the **message waiting indicator** URC. 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.. The URC format is: **#MWI: <status>,<indicator>[,<count>]** 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>**. The presentation at startup of the **message waiting indicators** status, as they are currently stored on SIM, is as follows: **#MWI: <status>[,<indicator>[,<count>][<CR><LF>** **#MWI: <status>,<indicator>[,<count>][...]]]**

#NWEN – Network Emergency Number Update	SELINT 2
	#NWEN: <en>
AT#NWEN=?	Test command reports the range for the parameter <en>

5.1.6.1.51. Update PLMN List - #PLMNUPDATE

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

	or not, and the deletion period, in the format: #FPLMN: **<action>,<period>**
AT#FPLMN=?	Test command reports available values for parameters <**action**> and <**period**>.

5.1.6.1.54. Show Call Timers - #SCT

#SCT – Show Call Timers	**SELINT 2**
AT#SCT	Execution command returns the value stored in USIM field Incoming Call Timer, which contains the accumulated incoming call timer duration value for the current call and previous calls, and the value stored in the USIM field Outgoing Call Timer, that contains the accumulated outgoing call timer duration value for the current call and previous calls, in the format: **#SCT: <ICT>,<OCT>** where: **<ICT>** - Incoming Call Timer string, in the format: "hh:mm:ss", where hh - hour mm - minute ss - seconds **<OCT> -** Outgoing Call Timer string, in the format: "hh:mm:ss", where hh - hour mm - minute ss - seconds
AT#SCT=?	Test command returns the **OK** result code.

5.1.6.1.55. #Show Call Information - #SCI

#SCI – Show Call Information	**SELINT 2**
AT#SCI	Execution command returns the value stored in USIM field Incoming Call Information, which contains the time of the call and duration of the last calls, and the value stored in the USIM field Outgoing Call Information, that contains time of the call and duration of the last calls, in the format: **#SCI:**

#PSNT – Packet Service Network Type	SELINT 2
	#PSNT: <mode>,<nt>,<is_hsupa_available>, is_hsupa_used>,<is_hsdpa_available>,<is_hsdpa_used> **(<mode> = 0 or <mode> = 1)** **#PSNT: <mode>,<nt>** where **<mode>** 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 **<nt>** - network type 0 - GPRS network 1 - EGPRS network 2 - WCDMA network 3 - HSDPA network 4 - unknown or not registered. **<is_hsupa_available>** - HSUPA available 0 – HSUPA is not supported by network 1 – HSUPA is supported by network **<is_hsupa_used>** - HSUPA used 0 – HSUPA is not in use 1 – HSUPA is in use **<is_hsdpa_available>** - HSDPA available 0 – HSDPA is not supported by network 1 – HSDPA is supported by network **<is_hsdpa_used>** - HSPA used 0 – HSDPA is not in use 1 – HSDPA is in use 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

#CFF – Call Forwarding Flags	SELINT 2
	<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. The URC format is: **#CFF: <status>,<fwdtonum>** where: **<status>** 0 **–** CFU disabled 1 – CFU enabled **< fwdtonum >** - number incoming calls are forwarded to The presentation at start up of the **call forwarding flags** status, as they are currently stored on SIM, is as follows: **#CFF: <status>,< fwdtonum >** where: **<status>** 0 – CFU disabled 1 – CFU enabled **< fwdtonum >** - number incoming calls are forwarded to
AT#CFF?	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: **#CFF: <enable>[,<status>,< fwdtonum >]**
AT#CFF=?	Test command returns the range of available values for parameter **<enable>**.

5.1.6.1.59. GSM and UMTS Audio Codec - #CODEC

#CODEC – GSM and UMTS Audio Codec	SELINT 2
AT#CODEC=[<codec>]	Set command sets the GSM and UMTS audio codec mode. Parameter:

#NITZ - Network Timezone		SELINT 2
	1 - enables automatic date/time updating 2 - enables Full Network Name applying 4 - it sets the **#NITZ** URC *'extended'* format (see **<datetime>** below) 8 - it sets the **#NITZ** URC *'extended'* format with Daylight Saving Time (DST) support (see **<datetime>** below) (default: 7) **<mode>** 0 - disables **#NITZ** URC (factory default) 1 - enables **#NITZ** URC; after date and time updating the following unsolicited indication is sent: **#NITZ: <datetime>** where: **<datetime>** - string whose format depends on subparameter **<val>** **"yy/MM/dd,hh:mm:ss"** - *'basic'* format, if **<val>** is in (0..3) **"yy/MM/dd,hh:mm:ss±zz"** - *'extended'* format, if **<val>** is in (4..7) **"yy/MM/dd,hh:mm:ss±zz,d"** - *'extended'* format with DST support, if **<val>** is in (8..15) where: **yy** - year **MM** - month (in digits) **dd** - day **hh** - hour **mm** - minute **ss** - second **zz** - time zone (indicates the difference, expressed in quarter of an hour, between the local time and GMT; two last digits are mandatory, range is -47..+48) **d** – number of hours added to the local TZ because of Daylight Saving Time (summertime) adjustment; range is 0-3. Note: If the DST information isn't sent by the network, then the **<datetime>** parameter has the format **"yy/MM/dd,hh:mm:ss±zz"**	
AT#NITZ?	Read command reports whether (a) automatic date/time updating, (b) Full Network Name applying, (c) **#NITZ** URC (as well as its format) are currently enabled or not, in the format: **#NITZ: <val>,<mode>**	
AT#NITZ=?	Test command returns supported values of parameters **<val>** and **<mode>**.	

5.1.6.1.61. Clock management - #CCLK

#CCLK - Clock Management	SELINT 2

#CCLKMODE – Clock Mode	**SELINT 2**
	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 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

#BND - Select Band	SELINT 2
	value is not available if the ENS functionality has been activated (see **#ENS**) 3 - GSM 850MHz + PCS 1900MHz (available only on quadri-band modules) **<UMTS band>**: 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) Note: This setting is maintained even after power off. Note: if the normal automatic band selection is enabled (**AT#AUTOBND=1**) then the last **#BND** settings can automatically change at power-up; then you can normally use the command. Note: if the 'four bands' automatic band selection is enabled (**AT#AUTOBND=2**) then you can issue **AT#BND=<band>** but it will have no functional effect; nevertheless every following read command **AT#BND?** will report that setting. Note: not all products support all the values of parameter **<UMTS band>**: please refer to test command to find the supported range of values
AT#BND?	Read command returns the current selected band in the format: **#BND: <band> , <UMTS band>**
AT#BND=?	Test command returns the supported range of values of parameters **<band>** and **<UMTS band>**.

5.1.6.1.65. Automatic Band Selection - #AUTOBND

#AUTOBND - Automatic Band Selection	SELINT 2
AT#AUTOBND=[<value>]	Set command enables/disables the automatic band selection at power-on. Parameter: **<value>**: 0 - disables automatic band selection at ***next*** power-up 1 - enables automatic band selection at ***next*** power-up; the automatic band selection stops as soon as a cell is found (deprecated). 2 – (default) enables automatic band selection in all supported bands; differently

5.1.6.1.66. PPP-GPRS Connection Authentication Type - #GAUTH

#GAUTH – PPP Data Connection Authentication Type	SELINT 2
AT#GAUTH= [<type>]	Set command sets the authentication type used in PDP Context Activation during PPP-GPRS connections. Parameter **<type>** 0 - no authentication 1 - PAP authentication (factory default) 2 - CHAP authentication Note: if the settings on the server side (the host application) of the PPP are not compatible with the AT#GAUTH setting, then the PDP Context Activation will use no authentication.
AT#GAUTH?	Read command reports the current authentication type, in the format: **#GAUTH: <type>**
AT#GAUTH=?	Test command returns the range of supported values for parameter **<type>**.

5.1.6.1.67. PPP-GPRS Parameters Configuration - # GPPPCFG

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

5.1.6.1.69. Subscriber number - #SNUM

#SNUM – Subscriber Number	SELINT 2
AT#SNUM=<index>[,<number>[,<alpha>]]	Set command writes the MSISDN information related to the subscriber (own number) in the EFmsisdn SIM file. 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. **<number>** - string containing the phone number **<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. 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).
AT#SNUM=?	Test command returns the **OK** result code

5.1.6.1.70. SIM detection mode - #SIMDET

#SIMDET - SIM Detection Mode	SELINT 2
AT#SIMDET=<mode>	Set command specifies the SIM Detection mode Parameter: **<mode>** - SIM Detection mode 0 - ignore SIMIN pin and simulate the status ‘SIM Not Inserted’ 1 - ignore SIMIN pin and simulate the status ‘SIM Inserted’ 2 - automatic SIM detection through SIMIN Pin (default) Note: with Sim-On-Chip products, #SIMDET allows to switch between internal and external SIM, as described below: 0 – switch to internal SIM 1 – switch to external SIM, ignore SIMIN pin. 2 – automatic external SIM detection through SIMIN Pin (default). NOTE: with #SIMDET=1, although SIMIN pin is ignored, SIM removal is detected

5.1.6.1.72. Show Address - #CGPADDR

#CGPADDR - Show Address	SELINT 2
AT#CGPADDR=[<cid>[,<cid>[,…]]]	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 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). Note: if no **<cid>** is specified, the addresses for all **defined** contexts are returned. Note: issuing the command with more than 6 parameters raises an error. Note: the command returns only one row of information for every specified **<cid>**, even if the same **<cid>** is present more than once. 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: **#CGPADDR: <cid>,<address>[<CR><LF>** **#CGPADDR:** <cid>,<address>[…]] where: **<cid>** - context identifier, as before **<address>** - its meaning depends on the value of **<cid>** a) if **<cid>** is the (only) GSM context identifier (**<cid>=0**) it is the dynamic address assigned during the GSM context activation. b) 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>.** Note: if no address is available the empty string (**“”**) is represented as **<address>.**
AT#CGPADDR=?	Test command returns a list of defined **<cid>**s.
Example	AT#SGACT=0,1 #SGACT: xxx.yyy.zzz.www OK

#I2CWR – Write to I2C	SELINT 2
	<registerId>: Register to write data to , range 0..255. Value has to be written in hexadecimal form (without 0x). **<len>:** number of data to send. Valid range is 1-254. 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). Data shall be written in Hexadecimal Form. If data are successfully sent, then the response is **OK**. 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 NOTE: At the end of the execution GPIO will be restored to the original setting (check AT#GPIO Command) NOTE: device address, register address where to read from\ write to, and date bytes have to be written in hexadecimal form without 0x.
AT#I2CWR=?	Test command reports the supported list of currently available <service>s.
Example	AT#I2CWR=2,3,20,10,14 > 00112233445566778899AABBCCDD<ctrl-z> OK Set GPIO2 as SDA, GPIO3 as SCL; Device I2C address is 0x20; 0x10 is the address of the first register where to write I2C data; 14 data bytes will be written since register 0x10

5.1.6.1.75. Read to I2C - #I2CRD

#I2CRD – Read to I2C	SELINT 2
AT#I2CRD= <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 Command Test). **<deviceId>:** address of the I2C device, with the LSB, used for read\write

5.1.6.1.76. Power Saving Mode Ring - #PSMRI

#PSMRI – Power Saving Mode Ring	SELINT 2
AT#PSMRI= <x>	Set command enables/disables the Ring Indicator pin response to an URC message while modem is in power saving mode. If enabled, a negative going pulse is generated, when URC message for specific event is invoked. The duration of this pulse is determined by the value of <x>. Parameter: <x> - RI enabling 0 - disables RI pin response for URC message(factory default) 50-1150 - enables RI pin response for URC messages. Note: when RING signal from incoming call/SMS/socket listen is enabled, the behaviour for #PSMRI will be ignored. Note: the behavior for #PSMRI is invoked, only when modem is in sleep mode (AT+CFUN=5 and AT+CFUN=9) Note: in case of AT+CFUN=9, the pulse is generated also when a GPRS packet is received. Note: the value set by command is stored in the profile extended section and doesn't depend on the specific AT instance
#PSMRI?	Read command reports the duration in ms of the pulse generated, in the format: **#PSMRI: <x>**
#PSMRI =?	Test command reports the supported range of values for parameter **<x>**

5.1.6.1.79. Codec Information - #CODECINFO

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

#CODECINFO – Codec Information	SELINT 2
	<codec_set*n*> 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 Note: The command refers to codec information in speech call and to channel mode in data call. Note: if AT#CODEC is 0, the reported codec set for **<format>=0** is 255 (all codec).
AT#CODECINFO?	Read command reports **<format>** and **<mode>** parameter values in the format: **#CODECINFO: <format>,<mode>**
AT#CODECINFO=?	Test command returns the range of supported **<format>** and **<mode>**.

5.1.6.1.80. Select language - #LANG

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

	1 – set the RX to the diversity antenna Note: the command is available only for HE910 products that support the 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:	AT+COPS=2 *module deregistered from GSM network* OK AT+RXDIV=0 *disable the RX Diversity* OK AT#REBOOT *reboot the module* OK AT+WS46=22 *select 3G cellular network* OK AT#RXTOGGLE=1 *set the RX to the diversity antenna* OK AT+COPS = 0 *register to the GSM network* OK AT+CREG =1 *enable network registration unsolicited result code* OK AT+CREG? *read **<mode>** and **<stat>** parameters* +CREG: 1,1 OK

5.1.6.1.83. 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. Parameters: **<encGSM>:** 0 – no GSM encryption algorithm 1..7 - sum of integers each representing a specific GSM encryption algorithm: 1 – A5/1 2 – A5/2 4 – A5/3 255 - reset the default values

	sets the GSM encryption algorithm A5/1 and A5/3, and the GPRS encryption algorithm GEA1. *It will be available at the next reboot.* AT#ENCALG? #ENCALG: 5,2,1,1 *The last two values indicate that the last used GSM encryption algorithm is A5/1 and the last used GPRS encryption algorithm is GEA1* *After reboot* AT#ENCALG? #ENCALG: 5,1,1,1

5.1.6.1.85. No Carrier Indication Handling - #NCIH

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

5.1.6.1.86. Digital/Analog Converter Control - #DAC

#DAC - Digital/Analog Converter Control	SELINT 2
AT#DAC= [<enable> [,<value>]]	Set command enables/disables the **DAC_OUT** pin. Parameters: **<enable>** - enables/disables DAC output. 0 - disables pin; it is in high impedance status (factory default) 1 - enables pin; the corresponding output is driven **<value>** - scale factor of the integrated output voltage; it must be present if **<enable>=1** 0..1023 - 10 bit precision Note: **integrated output voltage = MAX_VOLTAGE * value / 1023** Note: the command automatically sets the GPIO_07 in alternate function ALT1
AT#DAC?	Read command reports whether the **DAC_OUT** pin is currently enabled or not, along with the integrated output voltage scale factor, in the format: **#DAC: <enable>,<value>**
AT#DAC=?	Test command reports the range for the parameters **<enable>** and **<value>**.
Example	*Enable the DAC out and set its integrated output to the 50% of the max value:* AT#DAC=1,511 OK *Disable the DAC out:*

	#GSMAD: <presence> OK This instantaneous activation doesn't affect a periodic activation eventually started before, then the output format would be: AT#GSMAD=3 #GSMAD: <presence> OK #GSMAD: <presence> // URC resulting of previous #GSMAD=1 **<urcmode>** - URC presentation mode. It has meaning and can be set only if **<mod>** is 1. 0 - it disables the presentation of the antenna detection URC 1 - it enables the presentation of the antenna detection URC, whenever the antenna detection algorithm detects a change in the antenna status; the unsolicited message is in the format: **#GSMAD: <presence>** where: **<presence>** is as before **<interval>** - duration in seconds of the interval between two consecutive antenna detection algorithm runs (default is 120). It has meaning and can be set only if **<mod>** is 1. ..1..3600 - seconds **<detGPIO>** - defines which GPIO shall be used as input by the Antenna Detection algorithm. For the **<detGPIO>** actual range see Test Command **<repGPIO>** - defines which GPIO shall be used by the Antenna Detection algorithm to report antenna condition. It has meaning only if **<mod>** is 1. For the **<repGPIO>** actual range see Test Command. 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. Note: GPIO is set to LOW when antenna is connected. Set to HIGH otherwise Note: **#GSMAD** parameters, excluding **<urcmode>**, are saved in NVM.
AT#GSMAD?	Read command returns the current parameter settings for **#GSMAD** command in

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

5.1.6.1.89. User Determined User Busy - #UDUB

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

5.1.6.1.90. Enable Test Mode command in not signaling mode - #TESTMODE

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

	Note: - Bands support varies depending on the product - In Test Mode the transmission simultaneously on both 2g or 3g is not allowed Note 1: in Test Mode the other AT commands doesn't work. Note 2: in Test Mode the only allowed DTE speed is 115200 (see **+IPR**) Note 3: in Test Mode the multiplexing protocol control channel can't be enabled (see **+CMUX**) Note 4: after issuing AT#TESTMODE="TM" or "OM", the module reboots. Note 5: the Test Mode Status is stored in NVM
AT#TESTMODE?	Read command reports the currently selected **<command>** in the format: **#TESTMODE: <TestModeStatus>** Where: **<TestModeStatus>** can assume the following values: - 1 if the module is in Test Mode - 0 if the module is in Operative Mode
AT#TESTMODE=?	Test command returns the **OK** result code

5.1.6.1.91. WCDMA domain selection - #WCDMADOM

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

	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.

5.1.6.1.94. HSDPA Channel Quality Inication - #CQI

#CQI – HSDPA Channel Quality Indication	
AT#CQI	Execution command reports channel quality indication in the form: **#CQI: <cqi>** where **<cqi>** - cqi value 0 - 30 31 - not known or not detectable Note: values are valid only if the module is registered on a WCDMA network with HSDPA/HSUPA established. There will be no CQI if HSDPA/HSUPA is not established.
AT#CQI=?	Test command returns the supported range of values of the parameters **<cqi>**.

5.1.6.1.95. Ciphering Indication - #CIPHIND

#CIPHIND – Ciphering Indication	**SELINT 2**
AT#CIPHIND =[<mode>]	Set command enables/disables unsolicited result code for cipher indication. The ciphering indicator feature allows to detect that ciphering is not switched on and to indicate this to the user. The ciphering indicator feature may be disabled by the home network 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 ciphered to unenciphered or vice versa, an unsolicited indication shall be given to the user.

#CMUXMODE – CMUX Mode Set	SELINT 2
	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>] **<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. 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. Note: a software or hardware reset restores the default value. Note: during a cmux session the set command will fail, only the read and test command can be used Note: **reducing the buffer_size will change the behaviour of cmux**. Several test have been performed using N1=122 at 115200bps => buffer_size = 488: - 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 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
AT#CMUXMODE?	Read command reports the currently selected **<mode>** in the format: **#CMUXMODE: <mode>,<buffer_size>**
AT#CMUXMODE =?	Test command reports the supported range of values for parameter **<mode>** and **<buffer_size>**

	5 - Reject when Protocol Stack component (RRC) procedures are running. 6 - Reject when Network deactivated FD, by not sending timer T323 in SIB1. 7 - Reject when from lower layers FD STOP Request is received. 8 - Reject when Protocol Stack component (PDCP) rejects the FD mode. 9 - FD Reject when Protocol Stack component (RLC) buffers are not EMPTY. 10 - Reject due to peer message received when FD procedure is running. 11 - Reject when there is no PAS RAB is established and if we receive FD_START_REQ. 12 - Reject due to cell_pch/ura_pch states when v316 is reached max limit. 13 - Reject due to ongoing/pending Emergency call. 14 - Reject due to ongoing Call re-establishment. 15 - Reject due to Establishment of Full rate TCH Channel. 16 - Reject due to Establishment of Half rate TCH Channel. 17 - Reject due to Establishment of Half rate TCH Channel for Data Transfer. 18 - Reject due to Location update. 19 - Reject due to MT Paging. 20 - Reject due to other causes, such as Ongoing SS transactions, etc. 21 - Reject due to an ongoing CS procedure while the cell does not support DTM. 22 - Reject due to Originating Conversational call. 23 - Reject due to Originating Streaming call. 24 - Reject due to Originating Interactive call. 25 - Reject due to Originating Background call. 26 - Reject due to Originating Subscribed Traffic call. 27 - Reject due to Terminating Conversational call. 28 - Reject due to Terminating Streaming call. 29 - Reject due to Terminating Interactive call. 30 - Reject due to Terminating Background call. 31 - Reject due to Inter RAT Cell Selection. 32 - Reject due to Inter RAT Cell Change 33 - Reject due to Registration. 34 - Reject due to Detach. 35 - Reject due to Originating Higher Priority.signalling. 36 - Reject due to Originating Low Priority.signalling. 37 - Reject due to Terminating Higher Priority.signalling.

#CSURV - Network Survey	SELINT 2

reported, each of them in the format:

In 2G

(For BCCH-Carrier)

arfcn: <arfcn> bsic: <bsic> rxLev: <rxLev> ber: <ber> mcc: <mcc> mnc: <mnc> lac: <lac> cellId: <cellId> cellStatus: <cellStatus> numArfcn: <numArfcn> arfcn: [<arfcn1> ..[<arfcn64>]] [numChannels: <numChannels> array: [<ba1> ..[<ba32>]] [pbcch: <pbcch> [nom: <nom> rac: <rac> spgc: <spgc> pat: <pat> nco: <nco> t3168: <t3168> t3192: <t3192> drxmax: <drxmax> ctrlAck: <ctrlAck> bsCVmax: <bsCVmax> alpha: <alpha> pcMeasCh: <pcMeasCh>]]] mstxpwr: <mstxpwr> rxaccmin: <rxaccmin> croffset: <croffset> penaltyt: <penaltyt> t3212: <t3212> CRH: <CRH>
<CR><LF><CR><LF><CR><LF>

where:

<arfcn> - the cell carrier assigned radio channel (BCCH - Broadcast Control Channel)

<bsic> - base station identification code; if **#CSURVF** last setting is 0, **<bsic>** is a decimal number, else it is **at the most** a 2-digits octal number

<rxLev> - decimal number; it is the receiption level (in dBm)

<ber> - decimal number; it is the bit error rate (in %)

<mcc> - hexadecimal 3-digits number; it is the mobile country code

<mnc> - hexadecimal 2-digits number; it is the mobile network code

<lac> - location area code; if **#CSURVF** last setting is 0, **<lac>** is a decimal number, else it is a 4-digits hexadecimal number

<cellId> - cell identifier; if **#CSURVF** last setting is 0, **<cellId>** 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.

<numArfcn> - decimal number; it is the number of valid channels in the Cell Channel Description

#CSURV - Network Survey	SELINT 2
	<alpha> - alpha parameter for power control **<pcMeasCh>** - type of channel which shall be used for downlink measurements for power control 0 - BCCH 1 - PDCH *(The following informations will be printed only for #CSURVEXT=3 setting)* **<mstxpwr> - 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** **(For non BCCH-Carrier)** **arfcn: <arfcn> rxLev: <rxLev>** where: **<arfcn>** - decimal number; it is the RF channel **<rxLev>** - decimal number; it is the receiption level (in dBm) *In 3G* **(For BCCH-Carrier)** **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>** where: **<uarfcn>** - the cell carrier frequency designated by UTRA Absolute Radio Frequency Channel Number **<rxLev>** - decimal number; it is the receiption 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

#CSURV - Network Survey	SELINT 2
	0 CRH: 0 uarfcn: 10588 rxLev: -92 mcc: 222 mnc: 88 scr code: 54 cellId: 19406101 lac: 2406 5 cellStatus: CELL_SUITABLE rscp: -101 ecio: -9.0 Network survey ended OK
Notes and Platform limits	This command execution takes a long time especially if the full band scan is performed. The module must be configured in +COPS: 2 mode. If present, the parameters: **<s>** - starting channel **<e>** - ending channel are only allowed in fixed couples indicating a band. Only BCCH-carriers are reported. Non BCCH-carriers are never reported. *In 2G* **<s>,<e>** fixed couples and the corresponding band, if supported by the product: 0,124 GSM900 975,1023 GSM900 512,885 DCS1800 128,251 GSM850 512,810 PCS1900 0,1023 all supported GSM bands **<ber>** is always 0.0. **<numArfcn>** is always 0. **<arfcn*n*>** is always empty. **<numChannels>** is always 0. **<ba*n*>** is always empty. GPRS parameters like **<pbcch>** are printed only if GPRS is supported in the cell but their value is not available and will be always 0. Parameters like **<mstxpwr>** are printed only for #CSURVEXT=3 setting but

#CSURVC - Network Survey (Numeric Format)	SELINT 2
	<CR><LF><CR><LF><CR><LF> where: **<arfcn>** - the cell carrier assigned radio channel (BCCH - Broadcast Control Channel) **<bsic>** - base station identification code; if **#CSURVF** last setting is 0, **<bsic>** is a decimal number, else it is **at the most** a 2-digits octal number **<rxLev>** - decimal number; it is the receiption level (in dBm) **<ber>** - decimal number; it is the bit error rate (in %) **<mcc>** - hexadecimal 3-digits number; it is the mobile country code **<mnc>** - hexadecimal 2-digits number; it is the mobile network code **<lac>** - location area code; if **#CSURVF** last setting is 0, **<lac>** is a decimal number, else it is a 4-digits hexadecimal number **<cellId>** - cell identifier; if **#CSURVF** last setting is 0, **<cellId>** is a decimal number, else it is a 4-digits hexadecimal number **<cellStatus>** - string type; it is the cell status ..0 - the cell is a suitable cell (CELL_SUITABLE). 1 - the cell is low priority based on the received system information (CELL_LOW_PRIORITY). 2 - the cell is forbidden (CELL_FORBIDDEN). 3 - the cell is barred based on the received system information (CELL_BARRED). 4 - the cell **<rxLev>** is low (CELL_LOW_LEVEL). 5 - none of the above e.g. exclusion timer running, no BCCH available...etc.. (CELL_OTHER). **<numArfcn>** - decimal number; it is the number of valid channels in the Cell Channel Description **<arfcn*n*>** - decimal number; it is the arfcn of a valid channel in the Cell Channel Description (*n* is in the range **1..<numArfcn>**) **<numChannels>** - decimal number; it is the number of valid channels in the BCCH Allocation list; the output of this information for non-serving cells depends on last **#CSURVEXT** setting: 1. if **#CSURVEXT=0** this information is displayed only for serving cell 2. if **#CSURVEXT=1, 2 or 3** this information is displayed also for every valid scanned BCCH carrier. **<ba*n*>** - decimal number; it is the arfcn of a valid channel in the BA list (***n*** is in the range **1..<numChannels>**); the output of this information for non-serving cells depends on last **#CSURVEXT** setting: 1. if **#CSURVEXT=0** this information is displayed only for

#CSURVC - Network Survey (Numeric Format)	SELINT 2
	(For non BCCH-Carrier) <arfcn>,<rxLev> where: <arfcn> - decimal number; it is the RF channel <rxLev> - decimal number; it is the receiption level (in dBm) *In 3G* (For BCCH-Carrier) <uarfcn>,<rxLev>,<mcc>,<mnc>,<scrcode>,<cellId>,<lac>,<cellStatus>, <rscp>,<ecio> <CR><LF><CR><LF><CR><LF> where: <uarfcn> - the cell carrier frequency designated by UTRA Absolute Radio Frequency Channel Number <rxLev> - decimal number; it is the receiption 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 0 - CELL_SUITABLE - the cell is a suitable cell. 1 - CELL_LOW_PRIORITY - the cell is low priority based on the received system information. 2 - CELL_FORBIDDEN - the cell is forbidden. 3 - CELL_BARRED - the cell is barred based on the received system information. 4 - CELL_LOW_LEVEL - the cell <rxLev> is low. 5 - CELL_OTHER - none of the above e.g. exclusion timer running, no BCCH available...etc. <rscp> - decimal number; it is the RSCP level (in dBm) <ecio> - decimal number; it is the EC/IO ratio level (in dB) (For non BCCH-Carrier) <uarfcn>,<rxLev>

#CSURVF - Network Survey Format		SELINT 2
[<format>]	Scan® Parameter: <format> - numbers format 0 - Decimal 1 - Hexadecimal values, no text 2 - Hexadecimal values with text	
AT#CSURVF?	Read command reports the current number format, as follows: <format>	
AT#CSURVF=?	Test command reports the supported range of values for the parameter <format>.	

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	

#SMSATRUN – Enable SMS AT Run service	**SELINT 2**
	# SMSATRUN: <mod>,<stat> where: **<stat>** - service status 0 – not active 1 - active
AT#SMSATRUN =?	Test command returns the supported values for the SMSATRUN parameters
Notes:	• By default the SMS ATRUN service is disabled It can be activated either by the command AT#SMSATRUN or receiving a special SMS that can be sent from a Telit server.

5.1.6.3.3. SMS AT Run White List - #SMSATWL

#SMSATWL – SMS AT Run White List	SELINT 2
AT#SMSATWL= <action> ,<index> [,<entryType> [,<string>]]	Set command to handle the white list. **<action >:** 0 – Add an element to the WhiteList 1 – Delete an element from the WhiteList 2 – Print and element of the WhiteList **< index >:** Index of the WhiteList. Range 1-8 **< entryType >:** 0 – Phone Number 1 – Password NOTE: A maximum of two Password Entry can be present at same time in the white List **<string>:** string parameter enclosed between double quotes containing or the phone number or the password Phone number shall contain numerical characters and/or the character "+" at the beginning of the string and/or the character "*" at the end of the string. Password shall be 16 characters length NOTE: When the character "*" is used, it means that all the numbers that begin with the defined digit are part of the white list. E.g. "+39*" All Italian users can ask to run AT Command via SMS "+39349*" All vodafone users can ask to run AT Command via SMS.
AT#SMSATWL?	Read command returns the list elements in the format: **#SMSATWL: [<entryType>,<string>]**
AT#SMSATWL=?	Test command returns the supported values for the parameter **<action>, <index>** and **<entryType>**
Note	It will return ERROR if executed using SMSATRUN digest mode or TCPATRUN server mode

#TCPATRUNCFG– Set TCP AT Run Service Parameters	SELINT 2
	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. **<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 successfull" will close authentication phase. Note: if username and/or password are not allowed (see AT#TCPATRUNAUTH) the connection will close immediately. **<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. **<retryDelay>:** in client mode, delay between one attempt and the other. In minutes. Default: 2. Range 1…3600. Note2: the current settings are stored in NVM. 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). Note 4: the set command returns ERROR if the command AT#TCPATRUNL? returns 1 as <mod> parameter or the command AT# TCPATRUND? returns 1 as <mod> parameter
AT#TCPATRUNCFG?	Read command returns the current settings of parameters in the format: **#TCPATRUNCFG: <connId>,<instance>,<tcpPort>,<tcpHostPort>,<tcpHost>,<urcmod>,<timeout>,<authMode>,<retryCnt>,<retryDelay>**
AT#TCPATRUNCFG=?	Test command returns the supported values for the TCPATRUNCFG parameters

5.1.6.3.6. TCP AT Run Firewall List - #TCPATRUNFRWL

#TCPATRUNFRWL – TCP AT Run Firewall List	SELINT 2
AT#TCPATRUNFRWL= <action>, <ip_addr>, <net_mask>	Set command controls the internal firewall settings for the TCPATRUN connection. 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 Command returns **OK** result code if successful. Firewall general policy is **DROP**, therefore all packets that are not included into an **ACCEPT** chain rule will be silently discarded. When a packet comes from the IP address **incoming_IP**, the firewall chain rules will be scanned for matching with the following criteria: **incoming_IP & <net_mask> = <ip_addr> & <net_mask>** 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. Note1: A maximum of 5 firewall can be present at same time in the List. Note2: the firewall list is saved in NVM
AT# TCPATRUNFRWL?	Read command reports the list of all **ACCEPT** chain rules registered in the Firewall settings in the format: **#TCPATRUNFRWL: <ip_addr>,<net_mask>** **#TCPATRUNFRWL: <ip_addr>,<net_mask>** **…** **OK**
AT#TCPATRUNFRWL=?	Test command returns the allowed values for parameter **<action>.**
Note	It will return ERROR if executed using SMSATRUN digest mode or TCPATRUN server mode

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>	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). Parameter: **< mod >** 0: Service Disabled 1: Service Enabled Note1: If SMSATRUN is active on the same instance (see AT#TCPATRUNCFG) the command will return ERROR. 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. Note3: the current setting are stored in NVM 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). 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.
AT#TCPATRUND?	Read command returns the current settings of <mode> and the value of <stat> in the format: **#TCPATRUND: <mod>,<stat>** where: **<stat>** - connection status 0 - not connected 1 – connected or connecting at socket level 2 - not connected but still trying to connect, attempting every delay time (specified in AT#TCPATRUNCFG)
AT#TCPATRUND =?	Test command returns the supported values for the TCPATRUND parameters

#TCPATCONSER – Connects the TCP Run AT service to a serial port	SELINT 2
	5 – USB3 6 – SPI Not all of these ports will be available at the same time. The ports available will be displayed by the test command. They depend on the AT#PORTCFG command. Please refer to that AT command and to the "HE Family Ports Arrangements User Guide" for a detailed explanation of all port configurations **< rate >** baud rate for data transfer. Allowed values are 300,1200,2400,4800,9600,19200,38400,57600,115200. Note1: the command has to be issued from the TCP ATRUN instance Note2: After this command has been issued, if no error has occurred, then a "CONNECT" will be returned by the module to advise that the TCP ATRUN instance is in *online mode* and connected to the port specified. Note3: To exit from online mode and close the connection, the escape sequence (+++) has to be sent on the TCP ATRUN instance Note4: for USB ports and SPI the rate parameter is dummy
AT#TCPATCONSER =?	Test command returns the supported values for the TCPATCONSER parameters

5.1.6.4. Consume commandsEvent Monitor Commands

5.1.6.4.1. Configure consume parameters - #CONSUMECFG

#CONSUMECFG – configure consume parameters	**SELINT 2**
AT#CONSUMECFG=<rule_id>[,<service_type>[,<rule_enable>[,<period>[,<limit_amount>[,<action_id>]]]]]	This command sets the parameters related to the consume functionality Parameters: **<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. **<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) **<rule_enable>** Enable the counter on the rule 0 – rule disabled (default) 1 – rule enabled **<period>** Time period over which the service type data are counted: 0 – life (entire module life) (default) 1 – 8760 (hours) **<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

	<storing_mode>: 0 – the counters are saved in NVM at every shuthdown (default) 1 – the counters are saved in NVM at every shuthdown and periodically at regular intervals specified by **<storing_period>** parameter **<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) Note: the values set by command are directly stored in NVM and don't depend on the specific AT instance Note: when the functionality is disabled with **<enable>**=0, the data counters are stopped but not reset: to reset them (except life counters) set **<rule_enable>**=0 with **AT#CONSUMECFG** command. Note: when the functionality is disabled with **<enable>**=1, the data counters are stopped except life counters. Note: the life counters are never reset, neither in terms of counted data nor in terms of time
AT#ENACONSUME?	Read command returns the current settings for all parameters in the format: **#ENACONSUME: <enable>,<storing_mode>,<storing_period>**
AT#ENACONSUME=?	Test command reports the supported range of values for all parameters

5.1.6.4.3. Report consume statistics - #STATSCONSUME

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

	<service_1>,<life_data>,<current_time><CR><LF>#STATSCONSUME: <service_2>,<life_data>,<current_time><CR><LF>…<CR><LF>#STATSCONSUME: <service_12>,<life_data>,<current_time>** where <service_i>** is defined as **<service_type>** above **<life_data>** Number of data counted during entire life time period **<current_time>** Number of passed hours during entire life time period Note: issuing **AT#STATSCONSUME** without parameters has the same effect as **AT#STATSCONSUME**=0
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>	Execution command blocks/unblocks a type of service Parameter: **<service_type>** Type of service: 1 – SMS Sending 2 – SMS Receiving 3 – SMS Sending/ Receiving 4 – CS MO Calls 5 – CS MT Calls 6 – MO/MT CS Calls 7 – IP Data **<block>** 0 – unblock the service specified in **<service_type>** 1 – block the service specified in **<service_type>** Note: even if the service "SMS Received" has been blocked, an SMS ATRUN digest SMS can be received and managed. 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)

	1 – enable **#SGACT** authentication with with IMEI/ICCID as user/pwd Note: **<authIMEI/ICCIDEna>** setting takes effect when successive **#SGACT** not indicating **<userId>** and **<pwd>** will be used Note: the values set by command are directly stored in NVM and doesn't depend on the specific CMUX instance.
AT#IPCONSUMECFG?	Read command reports the currently configuration parameters in the format: **#IPCONSUMECFG: <connId>,<txProt>,<remoteHost>** **,<remotePort>,<authIMEI/ICCIDEna>,<0>,<0>,<0>** **<CR><LF>**
AT#IPCONSUMECFG=?	Test command reports the supported range of values for all the parameters

5.1.6.4.6. Open a connection, send data, close connection - #SSENDLINE

#SSENDLINE – Open a connection,send data,close connection	**SELINT 2**
AT#SSENDLINE=<data>	This command permits to open a TCP/UDP connection, send specified data and close the TCP/UDP connection. The remote host/port of the connection have to be previously specified with **#IPCONSUMECFG** command. Parameters: **<data> -** text to send, shall be enclosed between double quotes. Note: maximum allowed amount of data is 380 octets Note: in case of UDP obviously only local opening/closure is done, datagram is sent with **<data>** contained in the payload.
AT#SSENDLINE=?	Test command reports the maximum length of **<data>** parameter

Example	at+cgdcont=1,"IP",”APN"
	OK
	
	at#ipconsumecfg=1,0,"remoteHost",remotePort
	OK
	// Socket with <connId> 1 will be used by #ssendline;
	// TCP will be the transmission protocol;
	// connection will be opened with “remoteHost”/remotePort

5.1.6.5.2. EvMoni Service parameter - #ENAEVMONICFG

#ENAEVMONICFG – Set EvMoni Service Parameters	SELINT 2
AT#ENAEVMONICFG= <instance> [,<urcmod> [,<timeout>]]	Set command configures the EvMoni service. Parameter: **<instance>:** AT instance that will be used by the service to run the AT Command. Range 1 - 5. (Default: 3) **<urcmod>:** 0 – disable unsolicited message 1 - enable an unsolicited message when an AT command is executed after an event is occurred (default) When unsolicited is enabled, the AT Command is indicated to TE with unsolicited result code: #EVMONI: <Text> e.g.: #EVMONI: AT+CGMR;+CGSN;+GSN;+CCLK Unsolicited is dumped on the instance that requested the service activation. **<timeout>:** It defines in minutes the maximum time for a command execution. If timeout expires the module will be rebooted. (Default: 5) Note 1: the current settings are stored in NVM. 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. 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
AT#ENAEVMONICFG?	Read command returns the current settings of parameters in the format: **#ENAEVMONICFG:<instance>,<urcmod>,<timeout>**
AT# ENAEVMONICFG =?	Test command returns the supported values for the ENAEVMONICFG parameters

#EVMONI – Set the single Event Monitoring	SELINT 2
	execute when the related event has occurred. Other values depend from the type of 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. o 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) o 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. o if **<paramType>** = 1, **<param>** indicates the status high or low under monitoring. The values are 0 (low) and 1 (high). (Default: 0) o 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. o 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 ordening. • If **<label>** is GPIOX, **<paramType>** can assume values in the range 0 - 3. o if **<paramType>** = 1, **<param>** indicates the GPIO pin number; supported range is from 1 to a value that depends on the hardware. (Default: 1)

#EVMONI – Set the single Event Monitoring	**SELINT 2**
AT# EVMONI?	Read command returns the current settings for each event in the format: **#EVMONI: <label>,<mode>,<param0>[,<param1>[,<param2>[,<param3>]]]** Where **<param0>**, **<param1>**, **<param2>** and **<param3>** are defined as before for **<param>** depending on **<label>** value
AT#EVMONI=?	Test command returns values supported as a compound value

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

#CMGW - Write Message To Memory	SELINT 2
	#CMGW: <index> where: **<index>** - message location index in the memory **<memw>**. If message storing fails for some reason, an error code is reported.
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>	Set command sets a delay in second for the execution of following AT command. Parameters: **<delay>** - delay in 100 milliseconds intervals; 0 means no delay Note: **<delay>** is only applied to first command executed after **#ATDELAY**
AT#ATDELAY=?	Test command returns the supported range of values for parameter **<delay>**
Example	Delay "at#gpio=1,1,1" execution of 5 seconds: at#gpio=1,0,1;#atdelay=50;#gpio=1,1,1 OK

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

#SI - Socket Info	SELINT 2
	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.* AT#SI=1 #SI: 1,123,400,10,50 OK *We have information only about socket number 1*

5.1.6.6.3. Socket Type - #ST

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

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

5.1.6.6.5. Socket Shutdown - #SH

#SH - Socket Shutdown	SELINT 2
AT#SH=<connId>	This command is used to close a socket. Parameter: **<connId>** - socket connection identifier 1..6 Note: socket cannot be closed in states "resolving DNS" and "connecting" (see AT#SS command)
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>	Set command sets the socket configuration parameters. Parameters: **<connId>** - socket connection identifier 1..6 **<cid>** - PDP context identifier 0 - specifies the GSM context 1..5 - numeric parameter which specifies a particular PDP context definition **<pktSz>** - packet size to be used by the TCP/UDP/IP stack for data sending. 0 - select automatically default value(300). 1..1500 - packet size in bytes. **<maxTo>** - exchange timeout (or socket inactivity timeout); if there's no data

5.1.6.6.7. Socket Configuration Extended - #SCFGEXT

#SCFGEXT - Socket Configuration Extended	**SELINT 2**
AT#SCFGEXT= **<conned>,*<srMode>*,** ***<recvDataMode>*,** ***<keepalive>*,** **[,*<ListenAutoRsp>*** ***[,<sendDataMode>]*** **]**	Set command sets the socket configuration extended parameters. Parameters: **<connId>** - socket connection identifier 1..6 **<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 **<recvDataMode>** - data view mode for received data in command mode(AT#SRECV or <srMode> = 2) 0- text mode (default) 1- hexadecimal mode ***<keepalive>* -** Set the TCP Keepalive value in minutes 0 – Deactivated (default) 1 – 240 – Keepalive time in minutes ***<ListenAutoRsp>* -** Set the listen auto-response mode, that affects the commands AT#SL and AT#SLUDP 0 - Deactivated (default) 1 – Activated **<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

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**

	#SCFGEXT2: 6,0,0,0,0,0 OK AT#SCFG? #SCFG: 1,1,300,90,600,50 #SCFG: 2,1,300,90,600,50 #SCFG: 3,1,300,90,600,50 #SCFG: 4,2,300,90,600,50 #SCFG: 5,2,300,90,600,50 #SCFG: 6,2,300,90,600,50 OK AT#SCFG=1,1,300,90,600,30 OK Current configuration: socket with connId 1 and 2 are configured with new transmission timer behaviour. <txTo> corresponding value has been changed(#SCFG) for connId 1, for connId 2 has been left to default value.

#SCFGEXT3 - Socket Configuration Extended 3		SELINT 2
	fastsring >,0,0<CR><LF> . . . #SCFGEXT3:<connId6>,<immRsp6>, <closureTypeCmdModeEnabling>, < fastsring >,0,0<CR><LF>	
AT#SCFGEXT3=?	Test command returns the range of supported values for all the parameters.	

#SD - Socket Dial	SELINT 2
	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 **#SSEND** 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. 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. 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
AT#SD=?	Test command reports the range of values for all the parameters.
Example	*Open socket 1 in online mode* AT#SD=1,0,80,"www.google.com",0,0,0 CONNECT … *Open socket 1 in command mode* AT#SD=1,0,80,"www.google.com",0,0,1 OK

5.1.6.6.11. Socket Restore - #SO

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

#SL - Socket Listen	SELINT 2
AT#SL=?	Test command returns the range of supported values for all the subparameters.
Example	*Next command opens a socket listening for TCP on port 3500 without.* AT#SL=1,1,3500 OK

5.1.6.6.13. Socket Listen UDP - #SLUDP

#SLUDP - Socket Listen UDP	SELINT 2
AT#SLUDP=<connId>, <listenState>, <listenPort>	This command opens/closes a socket listening for an incoming UDP connection on a specified port. Parameters: **<connId>** - socket connection identifier 1..6 **<listenState>** - 0 - closes socket listening 1 - starts socket listening **<listenPort>** - local listening port **1**..65535 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: **+SRING : <connId>** Afterwards we can use **#SA** to accept the connection or **#SH** to refuse it. If the ListenAutoRsp flag has been set, then, when an UDP connection request comes on the input port, if the sender is not filtered by the internal firewall (see command **#FRWL**), the connection is automatically accepted: the **CONNECT** indication is given and the modem goes into **online data mode**. If the socket is closed by the network the following URC is received: **#SLUDP: ABORTED** Note: when closing the listening socket <listenPort> is a don't care parameter
AT#SLUDP?	Read command returns all the actual listening UDP sockets.

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

5.1.6.6.16. Detect the cause of a Socket disconnection - #SLASTCLOSURE

#SLASTCLOSURE – Detect the cause of a socket disconnection	**SELINT 2**
AT#SLASTCLOSURE= [<connId>]	Execution command reports socket disconnection cause Parameters: **<connId>** - socket connection identifier 1..6 The response format is: **#SLASTCLOSURE: <connId>,<cause>** where: **<connId>** - socket connection identifier, as before

AT#SLASTCLOSURE=?	Test command reports the supported range for parameter **<connId>**

#SRECV - Receive Data In Command Mode	SELINT 2
	SRING: 2,15 *Read in hexadecimal format the buffered data* AT#SRECV=2,15 #SRECV: 2,15 737472696e67612064692074657374 OK *Or:* *if the received datagram, received from <IPaddr and <IPport> is of 60 bytes* AT#SRECV=2,15 #SRECV: <IPaddr>,<IPport>,2,15,45 737472696e67612064692074657374 OK **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* SRING: 3,15, stringa di test

5.1.6.6.18. Send Data In Command Mode - #SSEND

#SSEND - Send Data In Command Mode	SELINT 2
AT#SSEND= <connId>	Execution command permits, while the module is in **command mode,** to send data through a connected socket. Parameters: **<connId>** - socket connection identifier 1..6 The device responds to the command with the prompt <greater_than><space> 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). If data are successfully sent, then the response is **OK**. If data sending fails for some reason, an error code is reported 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. Note: it's possible to use **#SSEND** only if the connection was opened by **#SD**, else

AT#SSENDUDP=?	Test command reports the supported range of values for parameters **<connId>**,**<remoteIP>** and **<remotePort>**
Example	*Starts listening on <LocPort>(previous setting of firewall through #FRWL has to be done)* AT#SLUDP=1,1,<LocPort> OK SRING: 1 // *UDP data from a remote host available* AT#SA=1,1 OK SRING: 1 AT#SI=1 #SI: 1,0,0,23,0 *// 23 bytes to read* OK AT#SRECV=1,23 #SRECV:1,23 message from first host OK AT#SS=1 #SS: 1,2,<LocIP>,<LocPort>,<RemIP1>,<RemPort1> OK AT#SSENDUDP=1,<RemIP1>,<RemPort1> >response to first host OK SRING: 1 // *UDP data from a remote host available* AT#SI=1 #SI: 1,22,23,24,0 *// 24 bytes to read* OK AT#SRECV=1,24 #SRECV:1,24 message from second host OK AT#SS=1 #SS: 1,2,<LocIP>,<LocPort>,<RemIP2>,<RemPort2>

5.1.6.6.21. Send data in Command Mode extended - #SSENDEXT

#SSENDEXT - Send Data In Command Mode extended	SELINT 2
AT#SSENDEXT= <connId>, <bytestosend>	Execution command permits, while the module is in **command mode,** to send data through a connected socket including all possible octets (from 0x00 to 0xFF). Parameters: **<connId>** - socket connection identifier 1..6 **< bytestosend >** - number of bytes to be sent Please refer to test command for range 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. Note: it's possible to use **#SSENDEXT** only if the connection was opened by **#SD**, else the ME is raising an error. 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)
AT#SSENDEXT=?	Test command returns the range of supported values for parameters **< connId >** and **<bytestosend>**

Example	Open the socket in command mode:
	at#sd=1,0,<port>,"IP address",0,0,1
	OK
	
	Give the command specifying total number of bytes as second parameter:
	
	at#ssendext=1,256
	> ..... ; // Terminal echo of bytes sent is displayed here
	OK
	
	All possible bytes(from 0x00 to 0xFF) are sent on the socket as generic bytes.

	the local IP address obtained from the network. It has meaning only if **<auto>**=1. The unsolicited message is in the format: **#SGACT: <ip_address>** reporting the local IP address obtained from the network. 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. Note: **< retry >** and **<delay>** setting are global parameter saved in NVM 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
AT#SGACTCFG?	Read command reports the state of all the five contexts, in the format: **#SGACTCFG: <cid1>,<retry1>,<delay1>, < urcmode >CR><LF>** **…** **#SGACTCFG: <cid5>,<retry5>,<delay5>,< urcmode >** where: **<cid*n*>** - as **<cid>** before **<retry*n*>** - as **<retry>** before **<delay*n*>** - as **<delay>** before **< urcmode >** - as **< urcmode >** before
AT#SGACTCFG=?	Test command reports supported range of values for parameters **<cid>** **>,<retry>,<delay>**and **< urcmode >**

5.1.6.6.25. PAD command features - #PADCMD

#PADCMD – PAD command features	SELINT 2
AT#PADCMD=<mode>	This command sets features of the pending data flush to socket, opened with AT#SD command. Parameters: **<mode>:** Bit 1: 1 - enable forwarding; 0 – disable forwarding; Other bits reserved; Note: forwarding depends on character defined by AT#PADFWD
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>**.

5.1.6.6.26. PAD forward character - #PADFWD

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

	one, to distinguish EOF condition. (Base64 encoding rules) For the same reason if #SRECV command is used by the application to receive data, a multiple of 78 bytes has to be considered. Note: to use #SRECV to receive data with <dec> enabled, it is necessary to consider that: reading <maxByte> bytes from socket, user will get less due to decoding that is performed. Note: values are automatically saved in NVM.
AT#BASE64?	Read command returns the current <enc>/<dec> settings for all the six sockets, in the format: **#BASE64:<connId1><enc1>,<dec1>,0,0<CR><LF>** **. . .** **#BASE64:<connId6>,<enc6>,<dec6>,0,0<CR><LF>**
AT#BASE64=?	Test command returns the range of supported values for all the subparameters.

Example	AT#SKIPESC=1
	OK
	
	AT#SD=<connId>,<txProt>,<rPort>,<IPaddr>
	CONNECT
	//Data sent without modifications(default)
	……
	+++ (suspension)
	OK
	
	at#base64=<connId>,1,0
	OK
	
	AT#SO=<connId>
	CONNECT
	// Data received from serial port are encoded
	// base64 before to be sent on the socket
	……
	+++ (suspension)
	OK
	
	at#base64=<connId>,0,1
	OK

5.1.6.6.28. SSL Commands

5.1.6.6.28.1. Open a socket SSL to a remote server - #SSLD

#SSLD – Opens a socket SSL to a remote server	SELINT 2
AT#SSLD=<SSId>, <rPort>,<IPAddress>, <ClosureType>[, <connMode>[, <Timeout>]]	Execution command opens a remote connection via socket secured through SSL. Both command and online modes can be used. In the first case 'OK' is printed on success, and data exchange can be performed by means of #SSLSEND and #SSLRECV commands. In online mode 'CONNECT' message is printed, and data can be sent/received directly to/by the serial port. Communication can be suspended by issuing the escape sequence (by default +++) and restored with #SSLO command. Parameters: <SSId> - Secure Socket Identifier 1 - Until now SSL block manage only one socket <rPort> - Remote TCP port to contact 1..65535 <IPAddress> - address of the remote host, string type. This parameter can be either: - any valid IP address in the format: "xxx.xxx.xxx.xxx" any host name to be solved with a DNS query <ClosureType> - 0 – only value 0 supported <connMode> - connection mode 0 – online mode connection. 1 – command mode connection (factory default). <Timeout> - time-out in 100 ms units. It represents the maximum allowed TCP inter-packet delay. It means that, when more data is expected during the handshake, the module awaits <Timeout> * 100 msecs for the next packet. If no more data can be read, the module gives up the handshake and raises an ERROR response. Note: IT'S NOT the total handshake timeout or, in other words, it's not the absolute maximum time between the #SSLD issue and the CONNECT/OK/ERROR response. Though by changing this parameter you can limit the handshake duration (for example in case of congested network or busy server), there's no way to be sure to get the command response within a certain amount of time, because it depends on the TCP connection time, the handshake time and the computation time (which depends on the

	Parameters: **<SSId>** - Secure Socket Identifier 1 – Until now SSL block manages only one socket **<Enable>** 0 – deactivate secure socket [default] 1 – activate secure socket 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. Note: these values are automatically saved in NVM. Note: an error is raised if #SSLEN=X,1 is issued when the socket 'X' is already enabled and if #SSLEN=X,0 is issued when the socket 'X' is already disabled. Note: a SSL socket cannot be disabled by issuing #SSLEN=1 if it is connected.
AT#SSLEN?	Read command reports the currently enable status of secure socket in the format: **#SSLEN: <SSId>,<Enable><CR><LF>** **<CR><LF>** **OK**
AT#SSLEN =?	Test command returns the range of supported values for all the parameters: **#SSLEN: (1),(0,1)**

5.1.6.6.28.5. Read Data from a SSL socket - #SSLRECV

#SSLRECV – Read data from a SSL socket	SELINT 2
AT#SSLRECV=<SSId>, <MaxNumByte> [,<TimeOut>]	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. Parameters: <SSId> - Secure Socket Identifier 1 - Until now SSL block manage only one socket. <MaxNumByte> - max number of bytes to read 1..1000 < Timeout > - time-out in 100 ms units 1..5000 - hundreds of ms (factory default is 100) If no data are received the device respondes: #SSLRECV: 0<CR><LF> TIMEOUT<CR><LF> <CR><LF> OK If the remote host closes the connection the device respondes: #SSLRECV: 0<CR><LF> DISCONNECTED<CR><LF> <CR><LF> OK If data are received the device respondes: #SSLRECV: NumByteRead<CR><LF> ...(Data read)... <CR><LF> <CR><LF> OK Note: if secure socket is not enabled using AT#SSLEN only test requests can be made. Note: if timeout is not set for SSL connection the default timeout value, set through AT#SSLCFG, is used. Note: before receiving data from the SSL connection it has to be established using AT#SSLD.
AT#SSLRECV=?	Test command returns the range of supported values for all the

5.1.6.6.28.7. Manage the security data - #SSLSECDATA

#SSLSECDATA – Manage the security data	SELINT 2
AT#SSLSECDATA =<SSId>,<Action>, <DataType>[,<Size>]	This command allows to store, delete and read security data (Certificate, CAcertificate, private key) into NVM. Parameters: **<SSId>** - Secure Socket Identifier 1 - Until now SSL block manages only one socket. **<Action>** - Action to do. 0 **–** Delete data from NVM. 1 – Store data into NVM. 2 **–** Read data from NVM . **<DataType>** 0 – Certificate 1 – CA certificate 2 - RSA Private key **<Size>** - Size of security data to be stored 1..4000 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. 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. 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. If data are successfully stored, then the response is OK; if it fails for some reason, an error code is reported. If the **<Action>** parameter is 2 (read data from NVM), data specified by **<DataType>** parameter is shown in the following format: **#SSLSECDATA: <connId>,<DataType>**

5.1.6.6.28.8. Send data through a SSL socket - #SSLSEND

#SSLSEND – Send data through a SSL socket	SELINT 2
AT#SSLSEND=<SSId>[, < Timeout >]	This command allows sending data through a secure socket. Parameters: **<SSId>** - Secure Socket Identifier 1 - Until now SSL block manage only one socket. **< Timeout > - socket send timeout**, in 100 ms units. 1..5000 - hundreds of ms (factory default is 100) 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). If data are successfully sent, then the response is OK. If data sending fails for some reason, an error code is reported Note: the maximum number of bytes to send is 1023; trying to send more data will cause the surplus to be discarded and lost. Note: if secure socket is not enabled using **AT#SSLEN** only test requests can be made. Note: if timeout is not set for SSL connection the default timeout value, set by **AT#SSLCFG,** is used. Note: Before sending data through the SSL connection it has to be established using **AT#SSLD**.
AT#SSLSEND=?	Test command returns the range of supported values for all the parameters: **#SSLSEND: (1),(1-5000)**

	parameter: at#sslsendext=1,256,100

5.1.6.6.28.10. Configure security parameters of a SSL socket - #SSLSECCFG

#SSLSECCFG – Configure security parameters of a SSL socket	**SELINT 2**
AT#SSLSECCFG= **<SSId>,** **<CipherSuite>,** **<auth_mode>** **[,<cert_format>]**	This command allows configuring SSL connection parameters. Parameters: **<SSId>** - Secure Socket Identifier 1 - Until now SSL block manage only one socket **<CipherSuite>** 0 - Chiper Suite is chosen by remote Server [default] 1 - TLS_RSA_WITH_RC4_128_MD5 2 - TLS_RSA_WITH_RC4_128_SHA 3 - TLS_RSA_WITH_AES_128_CBC_SHA 4 - TLS_RSA_WITH_NULL_SHA 5 - TLS_RSA_WITH_AES_256_CBC_SHA Note: when o value is chosen, cipher suites supported are indicated to the server within TLS handshake (i.e.: client hello) as follows: 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 Note: TLS_RSA_WITH_NULL_SHA is not included as default(0), but it is possible to set it(4) if required. **<auth_mode>** 0 – SSL Verify None[default] 1 – Manage server authentication 2 – Manage server and client authentication if requested by the remote server **<cert_format>** is an optional parameter. It selects the format of the certificate to be stored via **#SSLSECDATA** command 0 - DER format 1 - PEM format[default] Note - it is supposed that the module is just powered on and the **AT#SSLSECCFG** command is entered without **<cert_format>** parameter, the default format is PEM. In this case the **AT#SSLSECCFG?** read command

AT#SSLSECCFG2=?	Test command reports the range of supported values for all the parameters

5.1.6.6.28.12. 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>]]]]	This command allows configuring SSL connection parameters. Parameters: **<SSId>** - Secure Socket Identifier 1 - Until now SSL block manages only one socket **<cid>** - PDP Context Identifier. 1 - Until now only context one is supported. **<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. **<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.) **<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). **<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). <sslSRingMode> - sslSRing unsolicited mode. 0 – SSLSRING disabled 1 – SSLSRING enabled in the format SSLSRING: <SSId>,<recData> where <SSId> is the secure socket identifier and <recData> is the amount of data received and decoded by the SSL socket. A new unsolicited is sent whenever the amount of data ready to be read changes. Only a record is decoded at once so, any further record is received and decoded only after the first have been read by the user by means of the #SSLRECV command. 2 – SSLSRING enabled in the format

	#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)**

5.1.6.7. 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

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

5.1.6.7.5. FTP Put - #FTPPUT

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

#FTPGETPKT - FTP Get in command mode	SELINT 2
	<viewMode> chosen, in the format: #FTPGETPKT: <remotefile>,<viewMode>,<eof> <eof> 0 = file currently being transferred 1 = complete file has been transferred to FTP client
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>]	Set command, issued during an FTP connection, sets the file transfer type. Parameter: **<type>** - file transfer type: 0 - binary 1 - ascii Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet.
#FTPTYPE?	Read command returns the current file transfer type, in the format: **#FTPTYPE: <type>**
#FTPTYPE=?	Test command returns the range of available values for parameter **<type>**: **#FTPTYPE: (0,1)**

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.

5.1.6.7.13. FTP List - #FTPLIST

#FTPLIST - FTP List	SELINT 2
AT#FTPLIST[= [<name>]]	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. Parameter: **<name>** - string type, it's the name of the directory or file. Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. Note: issuing **AT#FTPLIST<CR>** opens a data connection and starts getting from the server the list of contents of the working directory.
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>	Execution command, issued during an FTP connection, permits to get file size of <filename> file. Note: FTPTYPE=0 command has to be issued before FTPFSIZE command, to set file transfer type to binary mode.
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>]	Execution command, issued during an FTP connection, opens a data connection and append data to existing <filename> file. If the data connection succeeds, a **CONNECT** indication is sent, afterward a NO CARRIER indication is sent when the socket is closed. Note: if we set **<connMode>** to 1, the data connection is openedand we remain in command mode and we see the result code **OK** (instead of **CONNECT**) Parameter: **<filename>** - string type, name of the file.

#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 - #FTPRECV

#FTPRECV – Receive Data In Command Mode	SELINT 2
AT#FTPRECV= <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 #FTPGETPKT 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 #FTPGETPKT command Note: issuing **#FTPRECV** 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(FTPRECV returns 0 and FTPGETPKT gives a EOF 0 indication).
AT#FTPRECV?	Read command reports the number of bytes currently received from FTP server, in the format: #FTPRECV: <available>
AT#FTPRECV=?	Test command returns the range of supported values for <blocksize> parameter.

5.1.6.7.17.1. FTP Append

#FTPAPP - FTP Append	**SELINT 2**
AT#FTPAPP=[[<filename>],<connMode>]	Execution command, issued during an FTP connection, opens a data connection and append data to existing <filename> file. If the data connection succeeds, a **CONNECT** indication is sent, afterward a NO CARRIER indication is sent when the socket is closed. Note: if we set **<connMode>** to 1, the data connection is openedand we remain in command mode and we see the result code **OK** (instead of **CONNECT**) Parameter: **<filename>** - string type, name of the file. **<connMode>** 0 - online mode 1 – command mode Note: use the escape sequence +++ to close the data connection. Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet.
AT#FTPAPP=?	Test command reports the supported range of values for parameters **<filename>** and **<connMode>**

	// Here data socket will stay opened, but interface will be *//available(command mode)* *AT#FTPAPPEXT=Size* *>… write here the binary data. As soon Size byte are written, data are sent and OK is returned* *#FTPAPPEXT: <SentBytes>* *OK* *……..* *// Last #FTPAPPEXT will close the data socket, because* *// second(optional) parameter has this meaning:* *AT#FTPAPPEXT=Size,1* *>…write here the binary data. As soon Size byte are written, data are sent and OK is returned* *#FTPAPPEXT: <SentBytes>* *OK* *// If the user has to reopen the data port to send another* *// (or append to the same) file, he can restart with the* *// FTPPUT(or FTPAPP.)* *//Then FTPAPPEXT,… to send the data chunks on the //reopened data port.* *// Note: if while sending the chunks the data port is closed* *// from remote, user will be aware of it because #FTPAPPEXT // will indicate ERROR and cause (available if previously //issued the command AT+CMEE=2) will indicate that* *//socket has been closed.* *// Also in this case obviously, data port will have to be //reopened with FTPPUT and so on… (same sequence)*

5.1.6.8.3. Packet Size - #PKTSZ

#PKTSZ - Packet Size	SELINT 2
AT#PKTSZ=[<size>]	Set command sets the default packet size to be used by the TCP/UDP/IP stack for data sending. Parameter: **<size>** - packet size in bytes 0 - automatically chosen by the device 1..1500 - packet size in bytes (factory default is 300) Note: this command is not allowed for sockets associated to a GSM context (see **#SCFG**).
AT#PKTSZ?	Read command reports the current packet size value. Note: after issuing command **AT#PKTSZ=0**, the Read command reports the value automatically chosen by the device.
AT#PKTSZ=?	Test command returns the allowed values for the parameter **<size>**.
Example	AT#PKTSZ=100 OK AT#PKTSZ? #PKTSZ: 100 OK AT#PKTSZ=0 OK AT#PKTSZ? #PKTSZ: 300 *->value automatically chosen by device* OK

5.1.6.8.4. Data Sending Time-Out - #DSTO

#DSTO -Data Sending Time-Out	SELINT 2
AT#DSTO=[<tout>]	Set command sets the maximum time that the module awaits before sending anyway a packet whose size is less than the default one. Parameter: **<tout>** - packet sending time-out in 100ms units (factory default is 50) 0 - no time-out, wait forever for packets to be completed before send. 1..255 hundreds of ms Note: In order to avoid low performance issues, it is suggested to set the data sending time-out to a value greater than 5. Note: this time-out applies to data whose size is less than packet size and whose sending would have been delayed for an undefined time until new data to be sent

#SKTSET - Socket Definition	SELINT 2
[<local port>]]	1 - UDP **<remote port>** - remote host port to be opened 0..65535 - port number (factory default is 3333) **<remote addr>** - address of the remote host, string type. This parameter can be either: - any valid IP address in the format: xxx.xxx.xxx.xxx - any host name to be solved with a DNS query in the format: **<host name>** (factory default is the empty string "") **<closure type>** - socket closure behaviour for TCP when remote host has closed 0 - local host closes immediately (default) 255 - local host closes after an escape sequence (+++) or immediately in case of an abortive disconnect from remote. **<local port>** - local host port to be used on UDP socket 0..65535 - port number Note: **<closure type>** parameter is valid only for TCP socket type, for UDP sockets shall be left unused. Note: **<local port>** parameter is valid only for UDP socket type, for TCP sockets shall be left unused. Note: The resolution of the host name is done when opening the socket, therefore if an invalid host name is given to the **#SKTSET** command, then an error message will be issued. Note: the DNS Query to be successful requests that: - 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. Note: this command is not allowed for sockets associated to a GSM context (see **#SCFG**).
AT#SKTSET?	Read command reports the socket parameters values, in the format: **AT#SKTSET: <socket type>,<remote port>,<remote addr>,<closure type>,<local port>**
AT#SKTSET=?	Test command returns the allowed values for the parameters.
Example	AT#SKTSET=0,1024,"123.255.020.001" OK AT#SKTSET=0,1024,"www.telit.net" OK
Note	Issuing command **#QDNS** will overwrite **<remote addr>** setting.

5.1.6.8.8. DNS Response Caching - #CACHEDNS

#CACHEDNS – DNS Response Caching	SELINT 2
AT#CACHEDNS= [<mode>]	Set command enables caching a mapping of domain names to IP addresses, as does a resolver library. Parameter: **<mode>** 0 - caching disabled; it cleans the cache too 1 - caching enabled 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. 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. Note: it is recommended to clean the cache, if command **+CCLK** has been issued while the DNS Response Caching was enabled.
AT#CACHEDNS?	Read command reports whether the DNS Response Caching is currently enabled or not, in the format: **#CACHEDNS: <mode>**
AT#CACHEDNS=?	Test command returns the currently cached mapping along with the range of available values for parameter **<mode>**, in the format: **#CACHEDNS: [<hostn*1*>,<IPaddr*1*>,[…,[<hostn*n*>,<IPaddr*n*>,]]](0,1)** where: **<hostn*n*>** - hostname, string type **<IPaddr*n*>** - IP address, string type, in the format **“xxx.xxx.xxx.xxx”**

5.1.6.8.10. Socket TCP Connection Time-Out - #SKTCT

#SKTCT - Socket TCP Connection Time-Out	SELINT 2
AT#SKTCT=[<tout>]	Set command sets the TCP connection time-out for the first **CONNECT** answer from the TCP peer to be received. Parameter: **<tout>** - TCP first **CONNECT** answer time-out in 100ms units 10..1200 - hundreds of ms (factory default value is 600). Note: this time-out applies only to the time that the TCP stack waits for the **CONNECT** answer to its connection request. 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. Note: this command is not allowed for sockets associated to a GSM context (see **#SCFG**).
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 *socket first connection answer time-out has been set to 60 s.*

5.1.6.8.11. Socket Parameters Save - #SKTSAV

#SKTSAV - Socket Parameters Save	SELINT 2
AT#SKTSAV	Execution command stores the current socket parameters in the NVM of the device. The socket parameters to store are: - User ID - Password - Packet Size - Socket Inactivity Time-Out - Data Sending Time-Out - Socket Type (UDP/TCP) - Remote Port - Remote Address - TCP Connection Time-Out Note: this command is not allowed for sockets associated to a GSM context (see **#SCFG**).
AT#SKTSAV=?	Test command returns the **OK** result code.
Example	AT#SKTSAV OK

#GPRS - GPRS Context Activation	**SELINT 2**
	Note: at least a **socket identifier** needs to be associated with **PDP context #1** in 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. Note: if the **PDP context #1** has been activated issuing **AT#GPRS=1**, then • 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 **AT#GPRS=1** **OK** **AT#GPRS=0** **OK** **AT#GPRS=1** **OK** Note: this command is not allowed if GSM context has been activated (see **AT#SGACT=0,1**).
AT#GPRS?	Read command reports the current status of the **PDP context #1**, in the format: **#GPRS: <status>** where: **<status>** 0 - **PDP context #1** deactivated 1 - **PDP context #1** activated 2 - **PDP context #1** activation pending.
AT#GPRS=?	Test command returns the allowed values for parameter **<mode>**.
Example	AT#GPRS=1 +IP: 129.137.1.1 OK *Now **PDP Context #1** has been activated and our IP is 129.137.1.1* AT#GPRS=0 OK *Now **PDP Context #1** has been deactivated, IP is lost.*
Note	It is strongly recommended to use the same command (e.g. **#GPRS**) to activate the context, deactivate it and interrogate about its status.

#SKTD - Socket Dial	SELINT 2
Example	AT#SKTD=0,1024,"123.255.020.001",255 CONNECT AT#SKTD=1,1024,"123.255.020.001", ,1025 CONNECT *In this way my local port 1025 is opened to the remote port 1024* AT#SKTD=0,1024,"www.telit.net", 255 CONNECT

5.1.6.8.15. Socket Listen - #SKTL

#SKTL - Socket Listen	SELINT 2
AT#SKTL =[<mode>, <socket type>, <input port>, [<closure type>]]	Execution command opens/closes the socket listening for connection requests. Parameters: **<mode>** - socket mode 0 - closes socket listening 1 - starts socket listening **<socket type>** - socket protocol type 0 -TCP (default) 1- UDP **<input port>** - local host input port to be listened **1**..65535 - port number **<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. Command returns the **OK** result code if successful. Note: the command to be successful requests that: - 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** 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: **+CONN FROM: <remote addr>** Where: **<remote addr>** - host address of the remote machine that contacted the device. When the connection is established the **CONNECT** indication is given and the

#SKTL - Socket Listen		SELINT 2
Note	The main difference between this command and **#SKTD** is that **#SKTL** does not contact any peer, nor does any interaction with the GPRS context status, leaving it **ON** or **OFF** according to the **#GPRS** setting, therefore when the connection made with **#SKTL** is closed the context (and hence the local IP address) is maintained.	

5.1.6.8.16. Socket Listen Ring Indicator - #E2SLRI

#E2SLRI - Socket Listen Ring Indicator		SELINT 2
AT#E2SLRI=[<n>]	Set command enables/disables the Ring Indicator pin response to a Socket Listen connect and, if enabled, the duration of the negative going pulse generated on receipt of connect. Parameter: **<n>** - **RI** enabling 0 - **RI** disabled for Socket Listen connect (factory default) 50..1150 - **RI** enabled for Socket Listen connect; a negative going pulse is generated on receipt of connect and **<n>** is the duration in ms of this pulse.	
AT#E2SLRI?	Read command reports whether the Ring Indicator pin response to a Socket Listen connect is currently enabled or not, in the format: **#E2SLRI: <n>**	
AT#E2SLRI=?	Test command returns the allowed values for parameter **<status>.**	

5.1.6.8.17. Firewall Setup - #FRWL

#FRWL - Firewall Setup		SELINT 2
AT#FRWL= [<action>, <ip_address>, <net mask>]	Execution command controls the internal firewall settings. 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 Command returns **OK** result code if successful. Note: the firewall applies for incoming (listening) connections only. Firewall general policy is **DROP**, therefore all packets that are not included into an **ACCEPT** chain rule will be silently discarded.	

#FRWLIPV6 - Firewall Setup for IPV6 addresses		SELINT 2
	can be any valid IP address 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 **<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 Command returns **OK** result code if successful. Note: the firewall applies for incoming (listening) connections only. Firewall general policy is **DROP**, therefore all packets that are not included into an **ACCEPT** chain rule will be silently discarded. When a packet comes from the IP address **incoming_IP**, the firewall chain rules will be scanned for matching with the following criteria: **incoming_IP & <net_mask> = <ip_addr> & <net_mask>** 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.	
AT#FRWLIPV6?	Read command reports the list of all **ACCEPT** chain rules registered in the Firewall settings in the format: **#FRWLIPV6: <ip_addr>,<net_mask>** **#FRWLIPV6: <ip_addr>,<net_mask>** **….** **OK**	
AT#FRWLIPV6=?	Test command returns the allowed values for parameter **<action>**.	

#GDATAVOL - GPRS Data Volume	SELINT 2
	since last reset, for **<cid*n*>** PDP context; Note: last GPRS and GSM session counters are not saved in NVM so they are loosen at power off. Note: total GPRS and GSM session counters are saved on NVM.
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>	Set command enables/disables the ICMP Ping support. Parameter: **<mode>** 0 - disable ICMP Ping support (default) 1 - enable firewalled ICMP Ping support: the module is sending a proper ECHO_REPLY only to a subset of IP Addresses pinging it; this subset of IP Addresses has been previously specified through **#FRWL** (see) 2 - enable free ICMP Ping support; the module is sending a proper ECHO_REPLY to every IP Address pinging it.
AT#ICMP?	Read command returns whether the ICMP Ping support is currently enabled or not, in the format: **#ICMP: <mode>**
AT#ICMP=?	Test command reports the supported range of values for the **<mode>** parameter.

5.1.6.8.22. DNS from Network - #NWDNS

#NWDNS – DNS from Network	SELINT 2
AT#NWDNS= **[<cid>[,<cid>** **[,…]]]**	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 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). Note: if no **<cid>** is specified, the DNS addresses for all **defined** contexts are returned. Note: issuing the command with more than 6 parameters raises an error. Note: the command returns only one row of information for every specified **<cid>**, even if the same **<cid>** is present more than once. 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: **#NWDNS: <cid>,<PDNSaddress>,<SDNSaddress>[<CR><LF>** **#NWDNS: <cid>,<PDNSaddress>,<SDNSaddress> […]]** 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.
AT#NWDNS=?	Test command returns a list of defined **<cid>**s.

#SMSMOVE – Move Short Message to other memory	SELINT 2
	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*

5.1.6.9.2. SMS Commnads Operation Mode - #SMSMODE

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

5.1.6.10.3. E-mail Authentication User Name - #EUSER

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

5.1.6.10.4. E-mail Authentication Password - #EPASSW

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

5.1.6.10.6. E-mail Parameters Save - #ESAV

#ESAV - E-mail Parameters Save	SELINT 2
AT#ESAV	Execution command stores the e-mail parameters in the NVM of the device. The e-mail parameters to store are: - E-mail User Name - E-mail Password - E-mail Sender Address - E-mail SMTP server
AT#ESAV=?	Test command returns the **OK** result code.
Note	If some parameters have not been previously specified then a default value will be taken.

5.1.6.10.7. E-mail Parameters Reset - #ERST

#ERST - E-mail Parameters Reset	SELINT 2
AT#ERST	Execution command resets the e-mail parameters to the "factory default" configuration and stores them in the NVM of the device. The e-mail parameters to reset are: - E-mail User Name - E-mail Password - E-mail Sender Address - E-mail SMTP server
AT#ERST=?	Test command returns the **OK** result code.

5.1.6.10.8. SMTP Read Message - #EMAILMSG

#EMAILMSG - SMTP Read Message	SELINT 2
AT#EMAILMSG	Execution command returns the last response from SMTP server.
AT#EMAILMSG=?	Test command returns the **OK** result code.

5.1.6.10.9. Send mail with attachment - #SMTPCL

#SMTPCL – send mail with attachment	SELINT 2
AT#SMTPCL= <da>,<subj>,<att> [,<filename>,<encod>]	This command permits to send an email with different types of attachments if GPRS context has already been activated (#SGACT or #GPRS). After sending message body text (as with #EMAILD), the command switch to online mode if attachment has to be sent. While in online mode data received on the serial port are transmitted on the SMTP socket as MIME attachment. The escape sequence has to be sent to close the SMTP connection.

	…data received on the serial port are sent as attachment…. *Send escape sequence to close the SMTP connection* +++ NO CARRIER at#smtpcl="me@myaddress.com","test2",2,"image.jpg",1 >message body…this is the text of the mail message… *Send CTRL-Z* CONNECT *…data received on the serial port are base64-encoded and sent as attachment….* *Send escape sequence to close the SMTP connection* +++ NO CARRIER

5.1.6.10.10. E-mail SMTP Port - #ESMTPPORT

#ESMTPPORT – E-mail SMTP Port	**SELINT 2**
AT#ESMTPPORT=<Port>	This command permits to set SMTP port Parameters: **<Port> -** SMTP port to contact (default 25) 25..465,587 Note: SMTP protocol is used on the selected port Note: the value set by command is directly stored in NVM
AT#ESMTPPORT?	Read command reports the currently selected **<Port>** in the format: **#ESMTPPORT: <Port >**
AT#ESMTPPORT=?	Test command reports the supported range of values for parameter **< Port >**

	<pkt_size> - send(**#HTTPSND**) or recv(**#HTTPRCV**) size for data sending or receiving. 0 – select automatically default value(300). 1..1500 – send or recv size in bytes. Note: an ERROR is issued if <UNUSED_1> and <UNUSED_2> parameters are set with a value different from 0. Note: a special form of the Set command, **#HTTPCFG=<prof_id>**, causes the values for profile number **<prof_id>** to reset to default values. Note: if the SSL encryption is enabled, the **<cid>** parameter has to be set to 1. Note: only one profile can use the SSL encryption. Note: the SSL encryption can be enabled only if <Enable> parameter of #SSLEN is set to 0 and <FTPSEn> parameter of #FTPCFG is set to 0. Note: if it's needed to configure security parameters, it is possible to use **#SSLSECCFG/#SSLSECDATA** commands as usual for **#SSLD** Note: values are automatically saved in NVM.
AT#HTTPCFG?	Read command returns the current settings for each defined profile in the format: **#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>[…]]**
AT#HTTPCFG =?	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: **# 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)** where:

5.1.6.11.2. Send HTTP GET, HEAD or DELETE request - #HTTPQRY

#HTTPQRY – send HTTP GET, HEAD or DELETE request	**SELINT 2**
AT#HTTPQRY=<prof_id>,<command>,<resource>[,<extra_header_line>]	Execution command performs a GET, HEAD or DELETE request to HTTP server. Parameters: **<prof_id>** - Numeric parameter indicating the profile identifier. Range: 0-2 **<command>**: Numeric parameter indicating the command requested to HTTP server: 0 – GET 1 – HEAD 2 – DELETE **<resource>**: String parameter indicating the HTTP resource (uri), object of the request **<extra_header_line>**: String parameter indicating optional HTTP header line If sending ends successfully, the response is OK; otherwise an error code is reported. Note: the HTTP request header sent with #HTTPQRY always contains the "Connection: close" line, and it can not be removed. When the HTTP server answer is received, then the following URC is put on the serial port: **#HTTPRING:** **<prof_id>,<http_status_code>,<content_type>,<data_size>** Where: **<prof_id>** is defined as above **<http_status_code>** is the numeric status code, as received from the server (see RFC 2616) **<content_type>** is a string reporting the "Content-Type" header line, as received from the server (see RFC 2616) **<data_size>** is the byte amount of data received from the server. If the server doesn't report the "Content-Length:" header line, the parameter value is 0. Note: if there are no data from server or the server doesn't answer within the time interval specified in **<timeout>** parameter of **#HTTPCFG**

	"0[:extension]" – "application/x-www-form-urlencoded" with optional extension "1[:extension]" – "text/plain" with optional extension "2[:extension]" – "application/octet-stream" with optional extension "3[:extension]" – "multipart/form-data" with optional extension other content – free string corresponding to other content type and possible sub-types **<extra_header_line>**: String parameter indicating optional HTTP header line If sending ends successfully, the response is OK; otherwise an error code is reported. Note: the HTTP request header sent with #HTTPSND always contains the "Connection: close" line, and it can not be removed. When the HTTP server answer is received, then the following URC is put on the serial port: **#HTTPRING:** **<prof_id>,<http_status_code>,<content_type>,<data_size>** Where: **<prof_id>** is defined as above **<http_status_code>** is the numeric status code, as received from the server (see RFC 2616) **<content_type>** is a string reporting the "Content-Type" header line, as received from the server (see RFC 2616) **<data_size>** is the byte amount of data received from the server. If the server doesn't report the "Content-Length:" header line, the parameter value is 0. Note: if there are no data from server or the server doesn't answer within the time interval specified in **<timeout>** parameter of **#HTTPCFG** command, then the URC **#HTTPRING <http_status_code>** parameter has value 0.
AT#HTTPSND=?	Test command returns the supported range of parameters **<prof_id>, <command>** and **<data_len>** and the maximum length of **<resource>, <post_param>** and **<extra_header_line>** parameters in the format: **# HTTPSND: (list of supported <prof_id>s),(list of supported <command>s), <r_length>, (list of supported <data_len>s),<p_length>,<m_length>** where: **<r_length>** - integer type value indicating the maximum length of

	<http_status_code> parameter has value 0, an error code is reported.
AT#HTTPRCV=?	Test command reports the supported range of values for <prof_id> parameter in the format: # HTTPRCV: (list of supported <prof_id>s)

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>** 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** Parameters: **<script_name>** - name of the file in NVM, string type (max 16 chars, case sensitive). **<size>** - file size in bytes **<hidden>** - file hidden attribute 0 - file content is readable with **#RSCRIPT** (default). 1 - file content is readable with **#RSCRIPT** (no effect). 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. The operations completes when all the bytes are received. If writing ends successfully, the response is **OK**; otherwise an error code is reported. 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**

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

5.1.6.12.3. Script Execution Start Mode - #STARTMODESCR

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

5.1.6.12.6. List Script Names - #LSCRIPT

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

#LCSCRIPT - List Script Names	SELINT 2
AT#LCSCRIPT	Execution command reports either the list of file names for the files currently stored in the Easy Script® related NVM, adding CRC16 information, and the available free NVM memory in the format: **[#LCSCRIPT: <script_name1>,<size1>[,<crc1>|…** **[<CR><LF>#LCSCRIPT: <script_name*n*>,<size*n*>[,<crc*n*>]]]** **<CR><LF>#LCSCRIPT: free bytes: <free_NVM>** where: **<script-name*n*>** - file name, quoted string type (max 16 chars, case sensitive) **<size*n*>** - size of script in bytes **<crc*n*>** - CRC16 poly (x^16+x^12+x^5+1) of script in hex format **<free_NVM>** - size of available NVM memory in bytes 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. Note: if one file currently stored in NVM is in use than CRC16 cannot be calculated and execution command does not report **<crc*n*>** for that file. This is always true if command is executed by a Python script because at least the file pointed by #ESCRIPT is in use.

5.1.6.12.7. Delete Script - #DSCRIPT

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

5.1.6.12.8. Reboot - #REBOOT

#REBOOT - Reboot	SELINT 2
AT#REBOOT	Execution command reboots immediately the unit. It can be used to reboot the system after a remote update of the script in order to have the new one running. Note: if AT#REBOOT follows an AT command that stores some parameters in NVM, it is recommended to insert a delay of at least 5 seconds before to issue AT#REBOOT, to permit the complete NVM storing Note: AT#REBOOT is an obsolete AT command; please refer to AT#ENHRST to perform a module reboot
AT#REBOOT=?	Test command returns **OK** result code.
Example	AT#REBOOT OK … Module Reboots …

#STIA - SIM Toolkit Interface Activation	SELINT 2

type of **proactive command** issued by the SIM:

#STN: <cmdType>

- 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:

if ***<cmdType>=1*** *(REFRESH)*

an unsolicited notification will be sent to the user:

#STN: <cmdType>,<refresh type>

where:
<refresh type>
0 - SIM Initialization and Full File Change Notification;
1 - File Change Notification;
2 - SIM Initialization and File Change Notification;
3 - SIM Initialization;
4 - SIM Reset

In this case neither **#STGI** nor **#STSR** commands are required:
- **AT#STGI** is accepted anyway.
- **AT#STSR=<cmdType>,0** will answer **OK** but do nothing.

if ***<cmdType>=17*** *(SEND SS)*
if ***<cmdType>=19*** *(SEND SHORT MESSAGE)*
if ***<cmdType>=20*** *(SEND DTMF)*
if ***<cmdType>=32*** *(PLAY TONE)*

an unsolicited notification will be sent if allowed by SIM (see GSM 11.14):

#STN: <cmdType>[,<text>]

where:
<text> - (optional) text to be displayed to user

In these cases neither **#STGI** nor **#STSR** commands are required:
- **AT#STGI** is accepted anyway.
- **AT#STSR=<cmdType>,0** will answer **OK** but do nothing.

In case of SEND SHORT MESSAGE (**<cmdType>**=19) command if sending

#STIA - SIM Toolkit Interface Activation	SELINT 2

if ***<cmdType>=18*** *(SEND USSD)*

an unsolicited notification will be sent to the user:

#STN: <cmdType>[,<text>]

where:
<text> - optional text string sent by SIM

In this case:
- **AT#STSR=18,20** can be sent to end USSD transaction.
- **AT#STGI** is accepted anyway.
- **AT#STSR=<cmdType>,0** will answer **OK** but do nothing.

if ***<cmdType>=5*** *(SET UP EVENT LIST)*

an unsolicited notification will be sent:

#STN: <cmdType>[,<event list mask>]

where:
<event list mask> - (optional)hexadecimal number representing the list of events to monitor (see GSM 11.14)
- '00' = MT call
- '01' = Call connected
- '02' = Call disconnected
- '03' = Location status
- '04' = User activity
- '05' = Idle screen available
- '06' = Card reader status (if class "a" is supported)
- '07' = Language selection
- '08' = Browser Termination (if class "c" is supported)
- '09' = Data available (if class "e" is supported)
- '0A' = Channel status (if class "e" is supported)

The hexadecimal number is actually a bit mask, where each bit, when set, indicates that the corresponding event has to be monitored (e.g., if <event list mask> is 0x0001, it means that MT call has to be monitored).

In these cases neither **#STGI** nor **#STSR** commands are required:
- **AT#STGI** is accepted anyway.
- **AT#STSR=<cmdType>,0** will answer **OK** but do nothing.

if ***<cmdType>=64*** *(OPEN CHANNEL)*

#STIA - SIM Toolkit Interface Activation	SELINT 2
	is sent if the user has indicated the need to end the proactive SIM application session (**AT#STSR=<cmdType>,**16 i.e. "proactive SIM application session terminated by the user" according to GSM 11.14). The TA does not need to respond directly, i.e. **AT#STSR** is not required. It is possible to restart the SAT session from the main menu again with the command **AT#STGI=37**. Note: The settings are saved on user profile and available on following reboot. SIM Toolkit activation/deactivation is only performed at power on. Note: if **#ENS=1** then the **<mode>** parameter is set to 2
AT#STIA?	Read command can be used to get information about the SAT interface in the format: **#STIA: <state>,<mode>,<timeout>,<SatProfile>** where: **<state>** - the device is in one of the following state: 0 - SIM has not started its application yet 1 - SIM has started its application (SAT main menu ready) **<mode>** - SAT and unsolicited indications enabling status (see above) **<timeout>** - time-out for user responses (see above) **<SatProfile>** - SAT Terminal Profile according to GSM 11.14, i. e. the list of SIM Application Toolkit facilities that are supported by the ME. The profile cannot be changed by the TA. Note: In SAT applications usually an SMS message is sent to the network provider containing service requests, e.g. to send the latest news. The provider returns a message with the requested information. Before activating SAT it is recommended to set the SMS text mode with command **AT+CMGF=1** and to enable unsolicited indications for incoming SMS messages with command **+CNMI**.
AT#STIA=?	Test command returns the range of available values for the parameters **<mode>** and **<timeout>**.
Note	Just one instance at a time, the one which first issued **AT#STIA=*n*** (with ***n*** different from zero), is allowed to issue SAT commands, and this is valid till the same instance issues **AT#STIA=0**. After power cycle another instance can enable SAT.
Note	A typical SAT session on AT interface starts after an **#STN: 37** unsolicited code is received, if enabled(see above). At that point usually an **AT#STGI=37** command is issued (see **#STGI**), and after the SAT main menu has been displayed on TE an **AT#STSR=37,0,x** command is issued to select an item in the menu (see **#STSR**).

#STGI - SIM Tookit Get Information	SELINT 2

#STGI: <cmdType>,<event list mask>
where:
<event list mask> - hexadecimal number representing the list of events to monitor (see GSM 11.14):

- '00' = MT call
- '01' = Call connected
- '02' = Call disconnected
- '03' = Location status
- '04' = User activity
- '05' = Idle screen available
- '06' = Card reader status (if class "a" is supported)
- '07' = Language selection
- '08' = Browser Termination (if class "c" is supported)
- '09' = Data available (if class "e" is supported)
- '0A' = Channel status (if class "e" is supported)

The hexadecimal number is actually a bit mask, where each bit, when set, indicates that the corresponding event has to be monitored (e.g., if <event list mask> is 0x0001, it means that MT call has to be monitored).

if ***<cmdType>=16*** *(SET UP CALL)*

#STGI: <cmdType>,<commandDetails>,[<confirmationText>],
<calledNumber>where:
<commandDetails> - unsigned integer, used as an enumeration
0 Set up call, but only if not currently busy on another call
1 Set up call, but only if not currently busy on another call, with redial
2 Set up call, putting all other calls (if any) on hold
3 Set up call, putting all other calls (if any) on hold, with redial
4 Set up call, disconnecting all other calls (if any)
5 Set up call, disconnecting all other calls (if any), with redial
<confirmationText> - string for user confirmation stage
<calledNumber> - string containing called number

if ***<cmdType>=17*** *(SEND SS)*
if ***<cmdType>=18*** *(SEND USSD)*
if ***<cmdType>=19*** *(SEND SHORT MESSAGE)*
if ***<cmdType>=20*** *(SEND DTMF)*
if ***<cmdType>=32*** *(PLAY TONE)*
if ***<cmdType>=40*** *(SET UP IDLE MODE TEXT)*
if ***<cmdType>=64*** *(OPEN CHANNEL)*

#STGI: <cmdType>[,<text>]

where:
<text> - text to be displayed to user

#STGI - SIM Tookit Get Information	SELINT 2

<responseMax>[,<defaultText>]

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 - ME may echo user input on the display
1 - User input shall not be revealed in any way. Hidden entry mode (see GSM 11.14) is only available when using digit input. In hidden entry mode only characters (‘0’-‘9’, ‘*’ and ‘#’) are allowed.
bit 4:
0 - User input to be in unpacked format
1 - User input to be in SMS packed format
bits 5 to 7:
0
bit 8:
0 - No help information available
1 - Help information available
<text> - string as prompt for text
<responseMin> - minimum length of user input
0..255
<responseMax> - maximum length of user input
0..255
<defaultText> - string supplied as default response text

*if **<cmdType>=36** (SELECT ITEM)*

The first line of output is:

#STGI: <cmdType>,<commandDetails>,<numOfItems>[,<titleText>]
<CR><LF>

One line follows for every item, repeated for **<numOfItems>**:

#STGI: <cmdType>,<itemId>,<itemText>[,<nextActionId>]

where:
<commandDetails> - unsigned Integer used as a bitfield
0..255 - used as a bit field:

#STGI - SIM Tookit Get Information	SELINT 2
	<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. 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.
AT#STGI?	The read command can be used to request the currently ongoing **proactive command** and the SAT state in the format **#STGI: <state>,cmdType>** where: **<state>** - SAT interface state (see **#STIA**) **<cmdType>** - ongoing proactive command An error message will be returned if there is no pending command.
AT#STGI=?	Test command returns the range for the parameters **<state>** and **<cmdType>**.
Note	The unsolicited notification sent to the user: **#STN: 37** 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. The unsolicited notification sent to the user: **#STN:237** 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**.

#STSR - SIM Tookit Send Response		SELINT 2
AT#STSR?	The read command can be used to request the currently ongoing **proactive command** and the SAT state in the format **#STSRI: <state>,<cmdType>** where: **<state>** - SAT interface state (see **#STIA**) **<cmdType>** - ongoing proactive command 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 Tookit terminal Attach - #STTA

#STTA – SIM Toolkit Terminal Attach		SELINT 2
AT#STTA=<state>	This command attaches/detaches the SIM Toolkit application to the AT instance reserved for this use. Parameters: **<state>:** attached state 0 – SIM Toolkit detaches 1 – SIM Toolkit attaches If SIM Toolkit application has been already attached/detached the command does nothing and returns OK.	
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 the #3. Issuing AT#STTA=<state> when the AT instance has been already attached to another service (CMUX, SMSATRUN/TCPATRUN) causes an ERROR result code to be returned.	

5.1.6.14.2. Write Group Entries - #CPBGW

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

	0-14400, where 0 is the low delay and 14400 is the highest delay in seconds. Default value is 14400 in seconds. **<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). **<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 **<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 **< velocity_request>** (velocity information is needed): 0 FALSE 1 TRUE (default)
AT$GPSQOS?	Read command returns the current QoS values, in the format: AT$GPSQOS: **<horiz_accuracy>,<vertic_accuracy>,<rsp_time> ,<age_of_location_info>,<location_type>,< nav_profile>,< velocity_request>**
AT$GPSQOS=?	Returns the list of supported QoS values for each field. $GPSQOS: (0-1800000),(0-990),(0-14400),(0-1966020),(0-2),(0-3),(0,1)
Example	AT$GPSQOS=1800000,990,150,0,0,0 OK
Note	The current setting is stored through $GPSSAV

	<interval> : 0 - 7200: GPS reporting period in seconds (will be sent unsolicited). if the value is 0 then a single shot NMEA Message will be provided Any value different from 0 sets the period (in seconds) between each NMEA Sentence. NOTE: If this value is not set, it is assumed to be 0. NOTE: The Unsolicited NMEA sentences have to be enabled with the commands AT$GPSNMUN **<service_type_id>** : 0 - 255 where 255 indicates that this parameter shall not be used. Note: <service_type_id> is mandatory in case of A-GPS. **< pseudonym_indicator>** : 0 FALSE (default) : display user name at the external client 1 TRUE : display user name as anonymous at the external client If C-plane or Supl session is not successfully completed then an unsolicited indication reports the error cause in the following formats: **$GPSSLSR: C-PLANE ERROR,NETWORK ERROR, <error_code>** where **<error_code>** 0 SS_NET_ERROR_INTERNAL_SS_ERROR 1 SS_NET_ERROR_UNKNOWN_SUBSCRIBER 9 SS_NET_ERROR_ILLEGAL_SUBSCRIBER 10 SS_NET_ERROR_BEARERSERVICE_NOT_ PROVISIONED 11 SS_NET_ERROR_TELESERVICE_NOT_PROVISIONED 12 SS_NET_ERROR_ILLEGAL_EQUIPMENT 13 SS_NET_ERROR_CALL_BARRED 16 SS_NET_ERROR_ILLEGAL_SS_OPERATION 17 SS_NET_ERROR_ERROR_STATUS 18 SS_NET_ERROR_NOT_AVAILABLE 19 SS_NET_ERROR_SUBSCRIPTION_VIOLATION 20 SS_NET_ERROR_INCOMPATABILITY 21 SS_NET_ERROR_FACILITY_NOT_SUPPORTED 27 SS_NET_ERROR_ABSENT_SUBSCRIBER 29 SS_NET_ERROR_SHORT_TERM_DENIAL 30 SS_NET_ERROR_LONG_TERM_DENIAL 34 SS_NET_ERROR_SYSTEM_FAILURE 35 SS_NET_ERROR_DATA_MISSING 36 SS_NET_ERROR_UNEXPECTED_DATA_VALUE 37 SS_NET_ERROR_PW_REGISTRATION_FAILURE 38 SS_NET_ERROR_NEGATIVE_PW_CHECK 43 SS_NET_ERROR_NUMBER_OF_PW_ATTEMPTS_

	<error_code> where **<error_code>** 1 SS_GSM_ERROR_UNASSIGNED_NUMBER 3 SS_GSM_ERROR_NO_ROUTE 6 SS_GSM_ERROR_CHANNEL_UNACCEPTABLE 8 SS_GSM_ERROR_OPERATOR_BARRING 16 SS_GSM_ERROR_NORMAL_CALL_CLEARING 17 SS_GSM_ERROR_USER_BUSY 18 SS_GSM_ERROR_NO_USER_RESPONDING 19 SS_GSM_ERROR_USER_ALERTING_NO_ANSWER 21 SS_GSM_ERROR_CALL_REJECTED 22 SS_GSM_ERROR_NUMBER_CHANGED 26 SS_GSM_ERROR_NON_SELECTED_USER_CLEARING 27 SS_GSM_ERROR_DESTINATION_OUT_OF_ORDER 28 SS_GSM_ERROR_INVALID_NUMBER_FORMAT 29 SS_GSM_ERROR_FACILITY_REJECTED 30 SS_GSM_ERROR_RESPONSE_TO_STATUS_ENQUIRY 31 SS_GSM_ERROR_NORMAL_UNSPECIFIED 34 SS_GSM_ERROR_NO_CIRCUIT_AVAILABLE 38 SS_GSM_ERROR_NETWORK_OUT_OF_ORDER 41 SS_GSM_ERROR_TEMPORARY_FAILURE 42 SS_GSM_ERROR_SWITCH_CONGESTION 43 SS_GSM_ERROR_ACCESS_INFORMATION_ DISCARDED 44 SS_GSM_ERROR_REQUESTED_CIRCUIT_NOT_ AVAILABLE 47 SS_GSM_ERROR_RESOURCES_UNAVAILABLE 49 SS_GSM_ERROR_QUALITY_UNAVAILABLE 50 SS_GSM_ERROR_FACILITY_NOT_SUBSCRIBED 55 SS_GSM_ERROR_INCOMING_CALLS_BARRED_IN_ CUG 57 SS_GSM_ERROR_BEARER_CAPABILITY_NOT_ ALLOWED 58 SS_GSM_ERROR_BEARER_CAPABILITY_NOT_AVAILABLE 63 SS_GSM_ERROR_SERVICE_NOT_AVAILABLE 65 SS_GSM_ERROR_BEARER_SERVICE_NOT_ IMPLEMENTED 68 SS_GSM_ERROR_ACM_GREATER_OR_EQUAL_TO_ ACM_MAX 69 SS_GSM_ERROR_FACILITY_NOT_IMPLEMENTED 70 SS_GSM_ERROR_ONLY_RESTRICTED_DIGITAL 79 SS_GSM_ERROR_SERVICE_NOT_IMPLEMENTED 81 SS_GSM_ERROR_INVALID_TI 87 SS_GSM_ERROR_USER_NOT_IN_CUG 88 SS_GSM_ERROR_INCOMPATIBLE_DESTINATION

	where **<error_code>** -1 INET_RES_SOCKET_ERROR -114 INET_RES_UNDEFINED -115 INET_RES_ACCESS -116 INET_RES_ADDRINUSE -117 INET_RES_ADDRNOTAVAIL -118 INET_RES_AFNOSUPPORT -119 INET_RES_ALREADY -120 INET_RES_BADF -121 INET_RES_CONNABORTED -122 INET_RES_CONNREFUSED -123 INET_RES_CONNRESET -124 INET_RES_DESTADDRREQ -125 INET_RES_FAULT -126 INET_RES_HOSTDOWN -127 INET_RES_HOSTUNREACH -128 INET_RES_INPROGRESS -129 INET_RES_INTR -130 INET_RES_INVAL -131 INET_RES_ISCONN -132 INET_RES_MFILE -133 INET_RES_MSGSIZE -134 INET_RES_NETDOWN -135 INET_RES_NETRESET -136 INET_RES_NETUNREACH -137 INET_RES_NOBUFS -138 UTA_INET_RES_NOPROTOOPT -139 UTA_INET_RES_NOTCONN -140 UTA_INET_RES_NOTSOCK -141 UTA_INET_RES_OPNOTSUPP -142 UTA_INET_RES_PFNOSUPPORT -143 UTA_INET_RES_PROTONOSUPPORT -144 UTA_INET_RES_PROTOTYPE -145 UTA_INET_RES_SHUTDOWN -146 UTA_INET_RES_SOCKTNOSUPPORT -147 UTA_INET_RES_TIMEDOUT -148 UTA_INET_RES_WOULDBLOCK -149 UTA_INET_RES_SEC_SSLERROR -150 UTA_INET_RES_SEC_ERRFILE -151 UTA_INET_RES_SPECIFIC Other ERROR or

	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 **<slp_address_type>**.

5.1.6.15.6. Update location information - $LCSLUI

$LCSLUI - Update location information	**SELINT 2**
AT$LCSLUI=<update_type>	Set command allows updating the Location information. Parameters: **<update_type>** : the current access technology 0 - GSM 1 - WCDMA Note: the current access technology can be read with AT+COPS?
AT$LCSLUI=?	Test command returns the range of values for parameter <update_type>.

5.1.6.15.7. Update terminal information - $LCSTER

$LCSTER - Update terminal information	**SELINT 2**
AT$LCSTER=<id_type>[,<id_value>[,<pref_pos_mode>[,<tls_mode>]]]	Set command updates the terminal information like IMSI, MSISDN or IPv4 address. Parameters: **<id_type>** : is a number which can have any of the following values 0 - MSIDSN 1 - IMSI (default value) 2 - IPv4 address 3 - Invalid **<id_value>** : is a string , as defined in <id_type> **<pref_pos_mode>** : preferred position mode, 0 – default position mode 1 – none preferred position mode **<tls_mode>** : indicates if TLS mode should/should not be used by the SET 0 - non-TLS mode 1 - TLS mode (default value) Note: If **<id_type>** is MSISDN or IPv4 address then **<id_value>** shall be entered

5.1.6.15.9. MT Location Request Mode - $LCSLRMT

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

5.1.6.15.11. LCS certificate - $LTC

$LTC – LCS certificate	SELINT 2
AT$LTC=<string>,<total_message_length>,<seq_no>,<Security_Object_Type>	Set command is used to pass the security objects (e.g. certificate, key) to the Transport Layer Security Protocol (binary string). The certificate shall be in hexadecimal format (each octet of the certificate is given as two IRA character long hexadecimal number). Parameter: **<string>** - the string certificate segment (max 300 characters per segment) **<total_message_length>** - The total size of the certificate to be received 1-4096 **<seq_no>** - The sequence number of the segment. 1-13 **<Security_Object_Type>** 0: Root Certificate NOTE: The last two certificates are stored in NVM.
AT$LTC	Execution command deletes the certificates stored in NVM.
AT$LTC?	Read command provides the first 300 characters of each valid certificate stored in NVM in the format: **$LTC: <string>,<total_message_length>,1, <Security_Object_Type>** If no certificate is stored the read command provides: **$LTC: “”,0,1 ,<Security_Object_Type>**
AT$LTC=?	Test command returns the range of values for parameters **<total_message_length>**,**<seq_no>** and **<Security_Object_Type>**

$GPSD - GNSS Device Type Set	SELINT 2
	This configuration is for SiRF StarIV-based GNSS modules support only (JN3-FLASH, JN3-ROM and JN3-ROM+EEPROM). 4 - serial port connected to the GNSS serial port: controlled mode. This configuration is for ST TeseoII-based GPS modules support only (SL869) 5 - serial port connected to the GNSS serial port: controlled mode. This configuration is for SiRF StarV-based GNSS modules support only (SE868-V2) **<sub_device type>** 0 - Flash device: Flash based module (default). 1 - ROM device: ROM based module. 2 - ROM + EEPROM (or SPI Flash) device: EEPROM (or SPI Flash) based module. Note: The **<sub_device type>** can be used with SiRF Star-based GNSS modules (JF2/JN3/SE868-V2) only, i.e. when **AT$GPSD=2, AT$GPSD=3 or AT$GPSD=5.** Note: the current setting is stored through **$GPSSAV**
AT$GPSD?	Read command reports the current value of **<device_type>** and **<sub_device_type>** parameters, in the format: **$GPSD: <device_type>,<sub_device_type>**
AT$GPSD=?	Test command reports the range of supported values for parameter **<device_type>,<sub_device_type>**
Example	AT$GPSD=0 OK AT$GPSD=2,1 OK AT$GPSD=4,2 ERROR

5.1.6.15.13.2. GPIO configuration for GNSS control - $GPSGPIO

$GPSGPIO – GPIO Configuration for GNSS control	SELINT 2
AT$GPSGPIO= <on_off>, <system_on>, <boot>, <reset>	Execution command sets the GPIO pins to be used to drive JF2 (SE868), JN3 (SL868), SL869 and SE868-V2 GNSS modules. Parameters: <on_off> - GPIO pin number to be used to drive the JF2/JN3/SL869/SE868-V2's ON-OFF signal

	AT$GPSGPIO=4,5,0,0 OK OR AT$GPSGPIO=4,5,6,7 OK AT$GPSGPIO? $GPSGPIO: 4,5,0,0 OK - For a JF3-ROM (AT$GPSD=3,1): AT$GPSGPIO=4,0,0,0 OK OR AT$GPSGPIO=4,5,6,7 OK AT$GPSGPIO? $GPSGPIO: 4,0,0,0 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).

$GPSP – GNSS Controller Power Management	SELINT 2
	data cleaning is performed on the base of the current value of the **<reset_type>** parameter (see $GPSR) Products with built-in GNSS receiver are: HE910-G, HE910-DG, HE910-GA, HE910-EUG, HE910-NAG Products without built-in GNSS receiver are: HE910-D, HE910-EUD, HE910-EUR, HE910-NAD, HE910-NAR, UE910-EUD, UE910-EUR, UE910-NAR, UE910-NAD, UL865-EUR, UL865-EUD, UL865-NAR, UL865-NAD. The current setting is stored through **$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 1 - Enable External GNSS Antenna LNA: GNSS chip Internal LNA Gain Mode is Low and GPS_EXT_LNA_EN signal is High Note: the current setting is stored through $GPSSAV
AT$GPSAT?	Read command returns the current value of <type> in the format: $GPSAT: <type>
AT$GPSAT=?	Test command reports the range of supported values for parameter <type>
Example	AT$GPSAT=1 OK
Note	The command is available in "controlled mode" only This command is currently available for SirfIV-based GNSS modules (JF2

$GPSPS - Set The GNSS Module In Power Saving Mode	SELINT 2
[,<PTF_Period>]	Parameters: <mode> - the GNSS receiver can operate in four power modes: 0 - Full Power Mode, power saving disabled (default). Full-power mode is also known as Continuous Navigation mode. This is the most accurate navigation mode and supports the most dynamic motion scenarios. 1 - TricklePower Mode. TricklePower mode is a duty cycled mode in which the system selects a minimum rate of navigation solution updates and minimizes average current. 2 - Push-To-Fix Mode. Push-to-Fix mode (PTF) is designed for applications that require infrequent position reporting. The SiRF Star receiver generally stays in the Hibernate system power state but wakes up periodically to refresh position, time, ephemeris data and RTC calibration. A pulse on the external ON_OFF line to the receiver acts as a position update request. 3 - Micro Power Mode. Micro Power mode (MPM) is a very low power maintenance mode that delivers continuous availability of the navigation solution. It is intended for low dynamics applications. It continuously maintains ephemeris data as well as a low level of uncertainty in the estimates of position, time, and receiver clock error. It achieves this by keeping the SiRFStar receiver in the Hibernate power state and leaving Hibernate only as needed to maintain these conditions. <PTF_Period> - Push-To-Fix update period, numeric value in seconds; when mode is Push-To-Fix, the receiver turns on periodically according to this parameter (default value is 1800 sec). This parameter does have meaning only when <mode>=2. Note: Push-To-Fix and Micro Power modes support is not available for JN3 because it does not have an ON_OFF input. Therefore, when AT$GPSD=3, only Full Power and TricklePower modes are supported. In addition, in this case, the <PTF_Period> parameter is accepted but not used. Note: Micro Power Mode support is not currently available for SE868-V2.
AT$GPSPS?	Read command returns the current power saving mode and push-to-fix period, in the format: $GPSPS: <mode>,<PTF_Period>
AT$GPSPS=?	Test command returns the available range for <mode> and <PTF_Period>
Note	Available in “controlled mode” only

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

5.1.6.15.15.2. GPS Reset - $GPSR

$GPSR – GPS Reset	**SELINT 2**
AT$GPSR= <reset_type>	Execution command allows to reset the GPS controller. Parameter: **<reset_type>** 0 **–** Factory Reset: this option clears all GPS memory including clock drift. 1 - Coldstart (No Almanac, No Ephemeris): this option clears all data that is currently stored in the internal memory of the GPS receiver including position, almanac, ephemeris, and time. The stored clock drift however, is retained. 2 - Warmstart (No ephemeris): this option clears all initialization data in the GPS receiver and subsequently reloads the data that is currently displayed in the Receiver Initialization Setup screen. The almanac is retained but the ephemeris is cleared. 3 - Hotstart (with stored Almanac and Ephemeris): the GPS receiver restarts by using the values stored in the internal memory of the GPS receiver; validated ephemeris and almanac.
AT$GPSR=?	Test command reports the range of supported values for parameter **<reset_type>**
Example	AT$GPSR=0 OK
Note	For products without built-in GNSS receiver (see note below): - The command is available in "controlled mode" only

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 >]	Set command permits to activate an Unsolicited streaming of GNSS data (in NMEA format) through the standard cellular module serial port and defines which NMEA sentences will be available Parameters: **<enable>** 0 - NMEA data stream de-activated (default) 1 - NMEA data stream activated with the following unsolicited response syntax: **$GPSNMUN:<CR><NMEA SENTENCE><CR>** 2 - NMEA data stream activated with the following unsolicited response syntax: **<NMEA SENTENCE><CR>** 3 - dedicated NMEA data stream; it is not possible to send AT commands; with the escape sequence '+++' the user can return to command mode **<GGA>** - Global Positioning System Fix Data 0 - disable (default) 1 - enable **<GLL>** - Geographical Position - Latitude/Longitude 0 - disable (default) 1 - enable **<GSA>** - GPS/GLONASS DOP and Active Satellites 0 - disable (default) 1 - enable **<GSV>** - GPS/GLONASS Satellites in View 0 - disable (default) 1 - enable **<RMC>** - recommended Minimum Specific GNSS Data 0 - disable (default) 1 - enable **<VTG>** - Course Over Ground and Ground Speed 0 - disable (default) 1 – enable
AT$GPSNMUN?	Read command returns whether the unsolicited GNSS NMEA data streaming is currently enabled or not, along with the NMEA sentences availability status, in the format: **$GPSNMUN:<enable>,<GGA>,<GLL>,<GSA>,<GSV>,<RMC>,<VTG >**
AT$GPSNMUN=?	Test command returns the supported range of values for parameters

	are reported, one for GPS and one for GLONASS. *When the **<GSV>** parameter is enabled, the $GPGSV NMEA sentence is reported along with the $GLGSV one for the GLONASS satellites.* *When the **<RMC>** parameter is enabled, the $GNRMC NMEA sentence is reported.* *When the **<VTG>** parameter is enabled, the $GNVTG NMEA sentence is reported.*

5.1.6.15.16.2. Get Acquired Position - $GPSACP

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

5.1.6.15.17. GNSS SiRFInstantFix™

5.1.6.15.17.1. GPS SiRFInstantFix™ - $GPSIFIX

$GPSIFIX – GPS SiRFInstantFix™	SELINT 2
AT$GPSIFIX= <enable>[, <cgee>, <sgee>[, <update>]]	Set command enables/disables SiRFInstantFix™ feature available on SiRF StarIV based modules. Parameters: **<enable>** - SiRFInstantFix Usage 0 – Disable (default) 1 – Enable **<cgee>** - Client Generated Extended Ephemeris (CGEE) 0 – Disable 1 – Enable (default) **<sgee>** - Server Generated Extended Ephemeris (SGEE) 0 – Disable (default) 1 – Enable **<update>** - SGEE File Update Mode 0 – Upon Aiding Data Requests coming from GPS chip 1..168 – Update rate in hours (168 is the max update rate in case of 7-days SGEE files usage) Note: SiRFInstantFix parameters are stored in NVM, along with all current GPS parameters, if **OK** is returned (same as AT$GPSSAV) Note: if **<enable>=0,** the rest of parameters must be omitted otherwise **ERROR** is returned Note: if **<enable>=1** and the rest of parameters is omitted, the default configuration, or a previous stored one, is used Note: if **<sgee>=1**, the **<update>** parameter must be set otherwise **ERROR** is returned Note: if **<sgee>=1** the following URC is used to warn, according to the **<update>** value, that the SGEE file has to be updated: *$SIFIXEV: SGEE File Update Requested* Note: If **<sgee>=0,** the **<update>** parameter must be omitted otherwise **ERROR** is returned Note: SiRFInstantFix default configuration may be restored by

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

5.1.6.15.17.3. Get SGEE File for SiRFInstantFix™ - $FTPGETIFIX

$FTPGETIFIX – Get SGEE File for SiRFInstantFix™	SELINT 2
AT$FTPGETIFIX= <filename>, <filesize> [,<navsystem>]	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. 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 Note: whenever an FTP connection has not been opened yet, an ERROR result code is returned Note: whenever an error happens during the SGEE file injection stage, an ERROR result code is returned

	ERROR result code is returned Note: whenever an error happens during the SGEE file injection stage, an ERROR result code is returned In this case the possible *<err>* values reported by *+CME ERROR* (numeric format followed by verbose format) may be: 920 SGEE update initialization stage failed 921 SGEE file is not newer than the last stored one 922 SGEE update generic error 923 SGEE file open error Note: the <navsystem> parameter must be used for Sirf StarV-based receivers (e.g. SE868-V2) only; if omitted, the default value will be used (GPS).
AT$HTTPGETIFIX=?	Test command returns the OK result code
Example	AT$HTTPGETIFIX=0,30970 OK AT$HTTPGETIFIX=0,10742 +CME ERROR: SGEE file is not newer than the last stored one
Note	The Command is available in "Controlled Mode" only

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>	Execution command allows storing a SiRF software patch onto the cellular module's flash memory. 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 Parameters: **<patch_file_name>** - name of the file in NVM, string type (max 16 chars, case sensitive). **<size>** - file size in bytes

$LPATCH – List Available Patch	SELINT 2
Example	AT$LPATCH $LPATCH "GSD4E_4.1. 2.pd2",5472 OK

5.1.6.15.18.3. Enable Patch - $EPATCH

$EPATCH – Enable Patch	SELINT 2
AT$EPATCH=[<patch_file_name>]	Execution command allows enabling the usage of the SiRF software patch saved onto the cellular module's flash memory. Parameters: **<patch_file_name>** - name of the file in NVM, string type (**max 16 chars, case sensitive**). The execution command returns OK but the patching is confirmed by the following unsolicited: - *"Patch Manager: Patched"* Other unsolicited messages can be due to errors occurred during the patching procedure or patch storage errors: -*"Patch Manager: Error opening Patch File"* -*"Patch Manager: Error processing Patch File"* -*"Patch Manager: Error on Start Request"* -*"Patch Manager: Error on Load Request"* -*"Patch Manager: Error on Exit Request"* 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$GPSD=5,2**). Note: The patch file must have a "**.pd2**" or "**.pd3**" (AT$GPSD=5,2) extension. 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. In case of AT$GPSD=5,2 patch can be removed by issuing a factory reset only. However, if automatic patch application hasn't been disabled, the patch will be automatically reapplied. 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.

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 module's NVM and can be injected later on by means of the AT$INJECTSTSEED command. The ST-AGPS seed file size must be retrieved, before issuing the AT$HTTPGETSTSEED command, by sending a HTTP query using a specific Profile Id, GET option and the ST-AGPS seed file name. Parameters: <prof_id> - Numeric parameter indicating the profile identifier. Range: 0-2 <filesize> - ST-AGPS seed file size in bytes

5.1.6.16. Audio Commands

5.1.6.16.1. Audio Basic configuration

5.1.6.16.1.1. Change Audio Path - #CAP

#CAP - Change Audio Path	SELINT2
AT#CAP=[<n>]	It has no effect and is included only for backward compatibility. Parameter: **<n>**: (0-2)
AT#CAP?	Read command reports the set value of the parameter **<n>** in the format: **#CAP: <n>**.
AT#CAP=?	Test command reports the supported values for the parameter **<n>**.

5.1.6.16.1.2. Select Ringer Sound - #SRS

#SRS - Select Ringer Sound	SELINT 2
AT#SRS= [<n>,<tout>]	Set command sets the ringer sound. Parameters: **<n>** - ringing tone 0 - current ringing tone 1..*max* - ringing tone number, where *max* can be read by issuing the Test command **AT#SRS=?**. **<tout>** - ringing tone playing timer in units of seconds. 0 - ringer is stopped (if present) and current ringer sound is set. 1..60 - ringer sound playing for **<tout>** seconds and, if **<n> > 0,** ringer sound **<n>** is set as default ringer sound. Note: when the command is issued with **<n> > 0** and **<tout> > 0**, the **<n>** ringing tone is played for **<tout>** seconds and stored as default ringing tone. Note: if command is issued with **<n> > 0** and **<tout> = 0**, the playing of the ringing is stopped (if present) and **<n>** ringing tone is set as current. Note: if command is issued with **<n> = 0** and **<tout> > 0** then the current ringing tone is played for **<tout>** seconds. Note: if both **<n>** and **<tout>** are **0** then the default ringing tone is set as current and ringing is stopped. Note: If all parameters are omitted then the behaviour of Set command is the same as Read command
AT#SRS?	Read command reports current selected ringing and its status in the form:

#HSMICG - Handset Microphone Gain	SELINT 2
AT#HSMICG=[<level>]	Set command sets the handset microphone input gain Parameter: **<level>**: handset microphone input gain 0..7 - handset microphone gain (+6dB/step, factory default = 0 for HE910 and UL865 products; factory default = 4 for UE910 products)
AT#HSMICG?	Read command returns the current handset microphone input gain, in the format: **#HSMICG: <level>**
AT#HSMICG=?	Test command returns the supported range of values of parameter **<level>**.

5.1.6.16.1.6. Handsfree Receiver Gain - #HFRECG

#HFRECG - Handsfree Receiver Gain	SELINT 2
AT#HFRECG=<level>	It has no effect and is included only for backward compatibility. Parameter: **<level>**: 0..6 - (factory default = 0) *Note: This parameter is saved in NVM issuing AT&W command.*
AT#HFRECG?	Read command returns the current value of parameter **<level>**, in the format: **#HFRECG: <level>**
AT#HFRECG =?	Test command returns the supported range of values of parameter **<level>**.

5.1.6.16.1.7. Handset Receiver Gain - #HSRECG

#HSRECG - Handset Receiver Gain	SELINT 2
AT#HSRECG=<level>	Set command sets the handset analogue output gain Parameter: **<level>**: handset analogue output gain 0..6 - handset analogue output (-3dB/step, default value = 0) *Note: This parameter is saved in NVM issuing AT&W command.*
AT#HSRECG?	Read command returns the current handset analog output gain, in the format: **#HSRECG: <level>**
AT#HSRECG =?	Test command returns the supported range of values of parameter **<level>**.

#SPKMUT - Speaker Mute Control		SELINT 2
	call is enabled or not, in the format: **#SPKMUT: <n>**	
AT#SPKMUT=?	Test command reports the supported values for **<n>** parameter.	

5.1.6.16.1.11. Analog Microphone Gain - #ANAMICG

#ANAMICG – Analog Microphone Gain		SELINT 2
AT#ANAMICG=<gain_level>	This command allows setting the microphone analog gain through 15 levels by 3 dB steps Parameters: **<gain_level>:** analog microphone gain 0..14 - analog microphone input gain (+3dB/step, factory default = 5)	
AT#ANAMICG?	Read command returns the current analog microphone gain level, in the format: **#ANAMICG: <gain_level>**	
AT#ANAMICG =?	Test command reports the supported range of values for parameters **<gain_level>**.	

5.1.6.16.1.12. Digital Microphone Gain - #DIGMICG

#DIGMICG – Digital Microphone Gain		SELINT 2
AT#DIGMICG=<gain_level>	This command allows setting the microphone digital gain through 46 levels by 1 dB steps Parameters: **<gain_level>:** digital microphone input gain 0..45 - digital microphone input gain (+1dB/step, factory default = 24) NOTE: This command substitutes the #HSMICG command and has the same default values.	
AT#DIGMICG?	Read command returns the current digital microphone gain level, in the format: **#DIGMICG: <gain_level>**	
AT#DIGMICG =?	Test command reports the supported range of values for parameters **<gain_level>**.	

	0..16384 - factory default value is 10000 Total gain upper limit: increasing this parameter load echoes are more attenuated **<par_32>** 0..32767 - factory default value is 6000 NR Attenuation factor: decreasing this parameter increases allowed attenuation **<par_33>** 0..32767 - factory default value is 8000 Overestimation factor 0: decreasing this parameter increases noise reduction and decreases speech quality below 500Hz **<par_34>** 0..32767 - factory default value is 8000 Overestimation factor 1: decreasing this parameter increases noise reduction and decreases speech quality above 500Hz The remaining parameters could be changed but under the supervision of Telit Technical Support.
AT#ECHOCFG?	Read command reports the currently set parameters in the format: **#ECHOCFG: <par_1><par2>…<parN>** **<par_i>:** Full set of registers values dumped in hexadecimal form, 39 words (156 characters). It is not allowed if active audio profile is 0.
AT#ECHOCFG=?	Test command reports supported range of values for all parameters in the format: **#ECHOCFG: <i>, (<low_i>-<high_i>)** Where **<i>:** Parameter index **<low_i>:** Lower limit of **<par_i>** **<high_i>:** High limit of **<par_i>**

5.1.6.16.2.3. Extended tone generation - #TONEEXT

#TONEEXT – Extended tone generation	SELINT 2
AT# TONEEXT= <toneId>,<act>	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 Parameters: **< toneId >** - ASCII characters in the set **(0-9), #,*,(A-D),(G-L),Y,Z** ; - (0-9), #,*,(A-D) : DTMF tone - (G-L) : User Defined Tones[10]. - y : free tone - z: busy tone **< act >** - Action to be performed. - 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>]	Set command is used to select the volume mode for one or more tone classes. Parameters: **<class>** -sum of integers each representing a class of tones which the command refers to 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 **<mode>** - it indicates which volume is used for the classes of tones represented by **<class>** 0 - default volume is used 1 - the volume **<volume>** is used **<volume>** - volume to be applied to the set of classes of tones represented by

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

5.1.6.16.2.5. User Defined Tone SET - #UDTSET command

#UDTSET – User Defined Tone SET	SELINT 2
AT#UDTSET= <tone> ,<F1>,<A1> [,<F2>,<A2> [,<F3>,<A3>]]	Set command sets frequency and amplitude composition for a User Defined Tone. 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 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). Note: issuing AT&F1 or AT&Z has the effect to set the parameters with the last saved in NVM values 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.
AT# UDTSET?	Read command returns the current settings for the tones: **#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>**
AT# UDTSET =?	Test command returns the supported range of values for **<tone>, <Fi>** and **<Ai>** parameters.

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: - Uplink path biquad filters - Downlink path biquad filters
AT#PRST=?	Test command returns the **OK** result code.
Example	AT#PRST OK *Current audio profile is reset*

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: - Uplink path biquad filters - Downlink path biquad filters
AT#PSAV=?	Test command returns the **OK** result code.
Example	AT#PSAV OK *Current audio profile is saved in NVM*

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
AT# BIQUADIN= **<a_{F0}>** **[,<a_{F1}>** **[,<a_{F2}>** **[,<b_{F1}>** **[,<b_{F2}>** **[,<a_{S0}>** **[,<a_{S1}>** **[,<a_{S2}>** **[,<b_{S1}>** **[,<b_{S2}>** **]]]]]]]]]**	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. Parameters: **<a_{Fn}>,<b_{Fn}>,<a_{Sn}>,<b_{Sn}>** - they all are specific parameters for the calculation of digital **biquad filters** as follows: $$H_F(z) = \frac{a_{F0} + 2 \cdot a_{F1} \cdot z^{-1} + a_{F2} \cdot z^{-2}}{1 + 2 \cdot b_{F1} \cdot z^{-1} + b_{F2} \cdot z^{-2}}$$ $$H_S(z) = \frac{a_{S0} + 2 \cdot a_{S1} \cdot z^{-1} + a_{S2} \cdot z^{-2}}{1 + 2 \cdot b_{S1} \cdot z^{-1} + b_{S2} \cdot z^{-2}}$$ -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) Note: in the above formulas pay attention to the multiplier (2) for parameters **<a_{F1}>, <a_{S1}>, <b_{F1}>** and **<b_{S1}>** Parameters can be saved in NVM using AT#PSAV command and are available for audio profiles 1,2,3. For audio profile 0 the values are fixed.
AT# BIQUADIN?	Read command returns the parameters for the active profile in the format: **#BIQUADIN:** **<a_{F0}>,<a_{F1}>,<a_{F2}>,<b_{F1}>,<b_{F2}>,<a_{S0}>,<a_{S1}>,<a_{S2}>,<b_{S1}>,<b_{S2}>** It is not allowed if active audio profile is 0.
AT# BIQUADIN=?	Test command returns the supported range of values for parameters **<a_{F0}>, <a_{F1}>, <a_{F2}>, <b_{F1}>, <b_{F2}>, <a_{S0}>, <a_{S1}>, <a_{S2}>, <b_{S1}>, <b_{S2}>**

5.1.6.16.4.3. Cascaded filters - #BIQUADOUT

#BIQUADOUT - Downlink Path Biquad Filters	**SELINT 2**
AT# BIQUADOUT= <a_{F0}> [,<a_{F1}> [,<a_{F2}> [,<b_{F1}> [,<b_{F2}> [,<a_{S0}> [,<a_{S1}> [,<a_{S2}> [,<b_{S1}> [,<b_{S2}>]]]]]]]]]	Set command allows to configure the parameters of the two cascaded digital **biquad filters** $H_{First}(z) \cdot H_{Second}(z)$ in Downlink path (receiving). It is not allowed if active audio profile is 0. Parameters: **<a_{Fn}>,<b_{Fn}>,<a_{Sn}>,<b_{Sn}>** - they all are specific parameters for the calculation of digital **biquad filters** as follows: $$H_F(z) = \frac{a_{F0} + 2 \cdot a_{F1} \cdot z^{-1} + a_{F2} \cdot z^{-2}}{1 + 2 \cdot b_{F1} \cdot z^{-1} + b_{F2} \cdot z^{-2}}$$ $$H_S(z) = \frac{a_{S0} + 2 \cdot a_{S1} \cdot z^{-1} + a_{S2} \cdot z^{-2}}{1 + 2 \cdot b_{S1} \cdot z^{-1} + b_{S2} \cdot z^{-2}}$$ -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) Note: in the above formulas pay attention to the multiplier (2) for parameters **<a_{F1}>, <a_{S1}>, <b_{F1}>** and **<b_{S1}>** Parameters can be saved in NVM using AT#PSAV command and are available for audio profiles 1,2,3. For audio profile 0 the values are fixed.
AT# BIQUADOUT?	Read command returns the parameters for the active profile in the format: **# BIQUADOUT: <a_{F0}>,<a_{F1}>,<a_{F2}>,<b_{F1}>,<b_{F2}>,<a_{S0}>,<a_{S1}>,<$_{S2}$>,<b_{S1}>,<b_{S2}>** It is not allowed if active audio profile is 0.
AT# BIQUADOUT=?	Test command returns the supported range of values for parameters **<a_{F0}>, <a_{F1}>, <a_{F2}>, <b_{F1}>, <b_{F2}>, <a_{S0}>, <a_{S1}>, <a_{S2}>, <b_{S1}>, <b_{S2}>**

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

5.1.6.16.5.2. Handset Echo Canceller - #SHSEC

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

5.1.6.16.5.5. Handsfree Noise Reduction - #SHFNR

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

5.1.6.16.5.6. Handset Noise Reduction - #SHSNR

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

	1000..20000 – this is the numeric threshold used to detect DTMF tones. The default value is 2500. **<threshold_2>:** 1000..20000 – this is the numeric threshold used to start DTMF decoding. The default value is 1500. **<std_twist>:** 0..20 – standard twist threshold. It is an optional parameter and the default value is 9. **<rev_twist >:** 0..20 – reverse twist threshold. It is an optional parameter and the default value is 5. **Note: The default values were chosen after a fine tuning, so every change should be done very carefully to avoid wrong decoding.** Note: the values set by command are not saved and a software or hardware reset restores the default value. Note: Default values are referred to standard DMTF decoder (AT#DTMF=1). 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.
AT#DTMFCFG?	Read command reports the currently selected value in the format: **# DTMFCFG:** **<scaling>,<threshold_1>,<threshold_2>[,<std_twist>[,<rev_twist >]]**
AT#DTMFCFG =?	Test command reports supported range of values for all parameters.

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 *DVI is configured as master providing on DVI Port #2 (the only available)*

5.1.6.16.8. DVI Clock Activation - #DVICLK

#DVICLK – DVI Clock Activation	SELINT 2
AT#DVICLK=<clk>	Set command configures and activates the DVICLK clock signal. Parameters: **<clk>** 0 – Disable (factory default) 1 – DVI Clock activated at 256KHz 2 – DVI Clock activated at 384KHz 3 – DVI Clock activated at 512KHz 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.
AT#DVICLK?	Read command reports last setting, in the format: **#DVICLK: <clk>**
AT#DVICLK=?	Test command reports the range of parameter **<clk>**

	<table><tr><td></td><td>Uplink</td><td>Downlink</td><td>Uplink/Downlink</td></tr></table> Sidetone is active for default. Note: When DTMF decoder is enabled, PCM playing and recording are automatically disabled (AT#SPCM will return error).
AT#SPCM=?	Test command returns the supported range of values for parameters **<mode>, <dir>** and **<format>**. **#SPCM: <mode>,<dir>,<format>**
Example	AT#SPCM=1,0,0 CONNECT +++ NO CARRIER Note: after the CONNECT, 8Khz 8bit PCM stream has to be sent to serial port AT#SPCM=2,0,0 CONNECT +++ NO CARRIER Note: after the CONNECT, 8Khz 8bit PCM stream can be read from serial port

5.1.6.16.9.2. 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 functionalityis currently enabled or not, in the format: **#TTY: <support>**
AT#TTY=?	Test command reports the supported range of values for parameter **<support>**.

#JDRENH2 – Enhanced Jammed Detect & Report 2	SELINT 2

where:
<status>
JAMMED - Jammed condition detected
OPERATIVE - Normal Operating condition restored. This code will be shown only after a jammed condition has occurred.

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:

#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.

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); the Jammed condition is reported in the format:

#JDR: <status>
where:
<status>
JAMMED - Jammed condition detected
OPERATIVE - Normal Operating condition restored. This code will be shown only after a jammed condition has occurred
UNKNOWN – default state before first successful PLMN searching

NOTICE: if you change the **<mode>** parameter of the AT#JDRENH2 command, it will be automatically changed the **<mode>** parameter of the AT#JDR command, without notice.

- Set the starting absolute threshold of RxLevel 2G Network.
After a frequency scan in 2G bands, if the power measured of a carrier is above of <SAT2G> that carrier is counted as possible jammed carrier.
0...63 (Factory default is 45).

<SAT3G> - Set the starting absolute threshold of RSSI 3G Network.
After a frequency scan in 3G bands, if the power measured of a carrier is above of <SAT3G> that carrier is counted as possible jammed carrier.
0...63 (Factory default is 35).

<CARRNUM> - Set the minimum number of possible jammed carriers to consider that the module is under jamming condition.

5.1.6.18. OTA Commands

5.1.6.18.1. OTA Set Network Access Point - #OTASNAP

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

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

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**
AT#OTAIPCFG=<IPort>,<IP addr>[,<unused>]	This command saves in NVM the IP port number and IP address of the OTA server. 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" Note: the values set by the command are directly stored in NVM and don't depend on the specific CMUX instance. Note2: a special form of the Set command, #OTAIPCFG=<IPort>,"" sets the IP address to "0.0.0.0".
AT#OTAIPCFG?	Read command reports the currently selected **<IPort >** and **<IPaddr>** in the format: **#OTAIPCFG: <IPort >,<IPaddr>,0**
AT#OTAIPCFG=?	Test command reports the range of supported values for parameters **<IPort>** and **<unused>**

5.1.6.18.6. Set IP Port and Address for OTA over IP - #OTASNAPIP

#OTASNAPIP – Set IP port and address for OTA over IP	SELINT 2
AT#OTASNAPIP=<IPort>,<IPaddr>[,<mynumber>[,<company_name>[,<unused>]]]	Set command specifies the IP port number and IP address that the module has to use to send the Remote Registration massage. If the current IMSI hasn't been yet registered, the Remote Registration message is automatically sent. 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" **<mynumber> -** string parameter which specifies the phone number of the client **<company_name>** - string parameter containing a client identifier Note1: the command returns ERROR if the APN has not been set through the command AT#OTASNAPIPCFG Note2: a special form of the Set command, **#OTASNAP=<IPort>,""**, sets the IP address to "0.0.0.0". Note3: the values of **<IPort>** and **<IPaddr>** parameters can be overwritten from the OTA server by any SMS (Command, RSA Discovery Registration …) Note4: a change of the value of **<company_name>** parameter causes a new FOTA Registration procedure Note5: if the **<company_name>** is an empty string, an ERROR is returned Note6: all the settings are saved in NVM but < **mynumber**>
AT#OTASNAPIP?	Read command reports the current settings in the format: **#OTASNAPIP: <IPort>,<IPaddr>[,<company_name>],0**
AT#OTASNAPIP =?	Test command returns the range for **<IPort>** values and the maximum length of **<mynumber>** field and **<company_name>** field. The format is: **#OTASNAPIP: (0-65535),,<nlength>,<tlength>** where: **<nlength>** - integer type value indicating the maximum length of field **<mynumber>** **<tlength>** - integer type value indicating the maximum length of field **<company_name>**

5.1.6.18.8. OTA Registration status - #OTAREG

#OTAREG – OTA Registration status	SELINT 0/1/2
AT#OTAREG	Execution command reports the CTA registration status in the following form: #OTAREG: <OTA_reg_status>,<OTA_registered_IMSI> Where: <OTA_reg_status> - numeric parameter: - 0: module is not registered to the OTA server - 1: module is registered to the OTA server <OTA_registered_IMSI> - string parameter which contains the last IMSI that has been registered to OTA server. If there isn't any registered IMSI, then the value is FFFFFFFFFFFFFF Note: if any SIM isn't inserted in the module, then <OTA_reg_status> has value 0
AT#OTAREG =?	Test command returns OK result code.

Example	//module has never been registered before to OTA server
	at#otareg
	#OTAREG: 0,FFFFFFFFFFFFFF
	
	OK
	
	//the current IMSI is 222887445 252672
	at+cimi
	222887445252672
	
	OK
	
	//register the module to the OTA server
	at#otasnap=+39348 XXXXXXX
	
	OK
	
	#OTAEV: Registered
	
	//module is registered to the OTA server with the IMSI 222887445252672
	at#otareg
	#OTAREG: 1,222887445252672
	
	OK

	Parameters: **<type of eCall>:** 0 – test call 1 – reconfiguration call 2 – manually initiated eCall 3 – automatically initiated eCall 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: **#ECALLEV: <prim>,<data>** **<prim>**: 0 – Pull-IND 1 – Data_CNF 2 – AL-Ack 16 – sync loss **<data>**: Data content of Application Layer message (only with AL-Ack)
AT+CECALL?	Read command returns the type of eCall that is currently in progress in the format: **+CECALL: [<type of eCall>]**
AT+CECALL=?	Test command reports the supported range of values for parameter **<type of eCall>**.

#EMRGD – dial an emergency call	**SELINT 2**
AT#EMRGD[=<par>]	This command initiates an emergency call. Parameters: **<par>:** 0 **–** initiates an emergency call without specifying the Service Category. (default value) 1..31 - sum of integers each representing a specific Emergency Service Category: 1 - Police 2 - Ambulance 4 - Fire Brigade 8 – Marine Guard 16 - Mountain Rescue 32 - Manually Initiated eCall (if eCall is supported – Rel8 feature) 64 - Automatically Initiated eCall (if eCall is supported– Rel8 feature) When the emergency call can initiate, an indication of the Service Categories selected is shown before the OK in the following format: **#EMRGD: <serv>[,<serv>..[,<serv]]** Where **<serv>** "Police "Ambul" "FireBrig" "MarineGuard" "MountRescue" "MIeC" "AIeC" Example: AT#EMRGD=17 #EMRGD: "Police"," MountRescue " OK
AT#EMRGD	The execution command initiates an emergency call without specifying the Service Category.
AT#EMRGD?	The read command reports the emergency numbers received from the

5.1.6.19.4. IVS push mode activation - #MSDPUSH

#MSDPUSH – IVS push mode activation	SELINT 2
AT#MSDPUSH	Execution command enables IVS to issue the request for MSD transmission. It reuses downlink signal format to send a initiation message to the PSAP.
AT#MSDPUSH=?	Test command returns the **OK** result code.

5.1.6.19.5. Sending MSD data to IVS - AT#MSDSEND

#MSDSEND – Sending MSD data to IVS	SELINT 2
AT#MSDSEND	Execution command allows to send 140 bytes of MSD data to the IVS embedded while modem is in command mode. The device responds to the command with the prompt '>' and waits for the MSD to send. To complete the operation send **Ctrl-Z** char (**0x1A** hex); to exit without writing the message send **ESC** char (**0x1B** hex). If data are successfully sent, then the response is **OK**. If data sending fails for some reason, an error code is reported Note: the maximum number of bytes to send is 140; trying to send more data will cause the surplus to be discarded and lost.
AT#MSDSEND=?	Test command returns the **OK** result code.

	<security> - Flag indicating if the SSL encryption is enabled. 0 – SSL encryption disabled (default) 1 – SSL encryption enabled If SSL encryption enabling is required, some initial settings have to be done as follows. For further details, refer to "SSL/TLS User Guide". SSL channel has to be enabled as follows: AT#SSLEN=1,1 OK If server authentication is needed, **#SSLSECCFG** has to be set as follows: AT#SSLSECCFG=1,0,1,0 OK Then, CA Certificate(DER format) has to be stored as follows: AT#SSLSECDATA=1,1,1,<size> > …… // store CA Certificate OK Note: Only the configuration SSL commands listed above are admitted. DW connection in secure mode cannot be used contemporarily to any command starting an SSL connection (including SSL sockets, FTPS, secure SMTP and HTPS). **<heartBeat>** - If no packets are received in the number of seconds specified in the heartbeat field, a heartbeat message will be sent to keep the connection alive. Default: 60 Range: 10 - 86400 **<autoReconnect>** - Flag indicating if the connection manager should automatically reconnect to the service. 0 – auto-reconnect disabled 1 – auto-reconnect lazy - reconnect on next send and every 3600 seconds. 2 – auto-reconnect moderate (default) - reconnect 120 seconds, then every 3600 seconds after the first day. 3 – auto-reconnect aggressive - reconnect every 120 seconds.

	Note: if the secure mode connection has been enabled, it cannot be used contemporarily to any command starting an SSL connection (including SSL sockets, FTPS, secure SMTP and HTPS).
AT#DWCONN?	Read command returns the current settings for all parameters in the format: **#DWCONN: <connect>>,<status>** Where: **<connect>** is defined as above **<status>** is the real connection status. Values: 0 = disconnected 1 = trying to connect 2 = connected 3 = waiting to connect
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	Execution command returns the status of the connection, including some runtime statistics. Note, all statistics should be stored in RAM, not NVM. The Cloud will return a generic structure **#DWSTATUS:** **<connected><lastErrorCode>,<latency>,<pktsIn>,<pktsOut>,<bytesIn>,<bytesOut>** **<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.
AT#DWSTATUS=?	Test command reports **OK** result code

	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). Note: the response to the **AT#DWSEND** command reports the **<msgId>** value that identifies the sending. Note: if data are successfully sent, then the response is OK. If data sending fails for some reason, an error code is reported. Note: it's possible to use **AT#DWSEND** only if the connection has been opened with **AT#DWCONN**
AT#DWSEND=?	Test command reports the maximum length of **<type>** parameter.

5.1.6.20.5. Send raw data to M2M Service - #DWSENDR

#DWSENDR – send raw data to M2M Service	SELINT 2
AT#DWSENDR=<dataLen>	Execution command permits to send raw data to the M2M Service. Content must be valid JSON. Parameters: **<dataLen>** - number of bytes to be sent Range: 1 - 1500 The module responds to the command with the prompt <greater_than><space> and waits for the data to send. When **<dataLen>** bytes have been sent, operation is automatically completed. If data are successfully sent, then the response is OK. If data sending fails for some reason, an error code is reported. Note: the response to the **AT#DWSENDR** command reports the **<msgId>** value that identifies the sending. There is also a limit of 20 messages on the receive queue. If the queue is full, the consequent send will still succeed but the response for that particular request will be dropped until an item is removed from this queue (See command AT#DWRCV and AT#DWRCVR). Note: it's possible to use **AT#DWSENDR** only if the connection has been opened with **AT#DWCONN**

#DWRCV – Receive data from M2M Service	SELINT 2
	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).
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
AT#DWRCVR=<msgId>	Execution command permits the user to read raw data arriving from M2M Service; the module is notified of these data by the URC **#DWRING**. Parameters: **<msgId>** - index of the data message to receive, as indicated in the URC **#DWRING** Range: >=1 If the data received are the consequence of a previous data sending (issued by **AT#DWSENDR**), then the **<msgId>** value is the same of the **<msgId>** value reported in the answer of **AT#DWSENDR**. The incoming Server data are notified by the URC **#DWRING** with the following format: **#DWRING: <type>,<msgId>,<len>** where: **<type>** - type of the data message to receive **<msgId>** - index of the data message to receive **<len>** - length of data message to receive If the incoming data are accepted with **AT#DWRCVR**, then the data are received and showed with the following URC: **#DWRDATA: <msgId>,<error>,<len>,<data>** 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 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.

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

5.1.6.21. Advanced Encryption Standard AT commands

5.1.6.21.1. Load the security data - #AESSECDATA

#AESSECDATA – Load the security data	**SELINT 2**
AT#AESSECDATA=<Action>[,<Size>]	Execution command allows to store, delete and read security data AES key into NVM. Parameters: <Action> - Action to do. 0 – Delete data from NVM. 1 – Store data into NVM. 2 – Get MD5 digest of data into NVM <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 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. If data are successfully sent, then the response is OK If data sending fails for some reason, an error code is reported Note: <size> parameter is mandatory if the store action is issued, but

	When 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 Note: the command accept only 1 block of 16 bytes Note: If AES key isn't loaded the command returns error
AT#AESDECRYPT=?	Test command returns the number of bytes to be sent after the prompt #AESDECRYPT: (16) If AES key isn't loaded the command returns: **#AESDECRYPT: (0)**

5.1.6.21.4. Result of AES calculation - #AESGETRESULT

#AESGETRESULT– result of calculation AES	SELINT 2
AT#AESGETRESULT	Execution command reads calculated data, result of AES encrypt or decrypt. Note: If the AES algorithm is idle or working mode, then the command returns ERROR
AT# AESGETRESULT?	Read command returns the state of AES encrypt or decrypt previously given **#AESGETRESULT: <ResultAES>** Where **<ResultAES>** can assume the following values: 0: Idle or working mode 1: AES encrypt/decrypt finished
AT# AESGETRESULT=?	Test command returns **OK** result code

5.1.6.22.2. ECM configure - #ECMC

#ECMC – Ethernet Control Model configure	SELINT 2
AT#ECMC=<Did>,<Parid>,<Address>	This command configures an Ethernet Control Model (ECM) session. Parameters: <Did> - Device id, currently limited to 0 (only one device) <Parid> - Parameter id: 0 – custom address 1 – custom mask 2 – custom gateway 3 – custom dns 1 4 – custom dns 2 <Address> - Parameter id: a valid IP address in the format xxx.xxx.xxx.xxx Note: if a parameter is different from 0.0.0.0 then it is used instead the default one.
AT#ECMC?	Read command returns the last session configuration in the following format: # ECMC: <Did>,<State>,<Address>,<Address_Mask>,<Address_Gateway>,<Address_Dns1>,<Address_Dns2>,<Address_Custom>,<Address_CustomMask>,<Address_CustomGateway>,<Address_CustomDns1>,<Address_CustomDns2> ... OK where <Did> is currently 0 <State> can be: 0 - disabled 1 – enabled <Address> is the IP address assigned by the network <Address_Mask> is the default mask obtained from IP address <Address_Gateway> is the default IP address of gateway, obtained from IP address <Address_Dns1> is the IP address of the first DNS server, assigned by the network <Address_Dns2> is the IP address of the second DNS server,

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 Fraquency
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

6.1. Document history

Revision	Date	SW release	Changes
ISSUE #0	2011-05-10	12.00.000-B001	Initial release
ISSUE #1	2011-09-30	12.00.xx1	Update to the correct sw release label
ISSUE#2	2011-12-01	Internal version	
ISSUE#3	2012-03-01	12.00.xx2	Updated commands: #AUTOBND, #BND, #EMAILD, #ENS, #MONI, #NITZ, #RFSTS, #SCFGEXT2, #SKTD, #SSEND, &D, +CBST, +CGACT, +CGEQMIN, +CGEQREQ, +CGREG, +CLCK, +CMER, +CMUX, +CNMA, +COLP, +CREG, +CSIM, +CSMS, +CSQ, +IPR, $GPSSW, #BASE64, #BND, #CFF, #EVMONI, #FTPAPP, #FTPPUT, #SLED, #SNUM, #STARTMODESCR, +CMUX, +CNMI, +CNUM, +CPBF, +CPBR, +CPBW, +CRLP, +CSQ, +PACSP New commands: +CNMA, +CBST, #TTY, #SIMDET, #RXDIV, #PSNT, #PSMRI, #PORTCFG, #I2C, #GAUTH, #FTPAPPEXT, #ENCALG, #DVIEXT, #DVI, #ACAL, #ACALEXT, +CVHU, #ADC, #BIQUADIN, #BIQUADINEX, #BIQUADOUT, #BIQUADOUTEX, #CPBD, #DTMF, #DVI, #DVIEX, #ENCALG, #GAUTH, #NWEN, #PORTCFG, #PRST, #PSAV, #PSEL, #PSNT, #RXDIV, #SIMPR, #SPCM, #SSENDUDP, #SSENDUDPEXT, #TTY, +CFUN, +CMMS, +CPBS, +CSTA, +CSVM, #STIA, #STGI, #STSR, #STTA, $GPSP, $GPSR, $GPSNMUN, $GPSACP, $GPSSAV, $GPSRST, $GPSNVRAM, $GPSQOS, $GPSSLSR, $GPSSTOP, $LCSSLP, $LCSLUI, $LCSTER, $LICLS, $LCSLRMT, $LCSLRV, $LTC, $LCSLK
ISSUE#4	2012-07-02	12.00.xx3	Updated commands: #AUTOBND, #BND, #CODEC, #CODECINFO, #DVI, #DVIEXT, #ENS, #EVMONI, #FTPGETPKT, #GPIO, #I2CWR, #MONI, #PING, #PORTCFG, #PSMRI, #RXDIV, #SCFGEXT, #SPCM, #SRECV, #STIA, #TCPATCONSER, #GPSACP, #GPSQOS, #GPSR, #GPSSTOP, $LTC, +CBST, +CFUN, +ATA, +ATD, +ATO, +ATS0, #ENHRST, #GAUTH, &D,#SERVINFO, +CSMP, #FTPAPP, #FTPPUT, #SD, #SL, #SKTSET, #SKTD, #SKTL, #SGACT New commands: +ICF, +IFC, #ALARMPIN, #CFLO , #FTPCFG, #TEMPMON

			#ENACONSUME, #CONSUMECFG, #BLOCKCONSUME, #STATSCONSUME, #IPCONSUMECFG, #SSENDLINE, #MONIZIP, #UDUB, #DTMFCFG, #TESTMODE, #ESMTPORT, #FPLMN, #GPPPCFG, #SCT, #SCI, #WCDMADOM, #SECCFG
ISSUE#8	2015-01-13	12.00.xx6	Remove HE910-GA in applicability table. Par3.3.1 Updated commands: #ANAMICG, #DIGMICG, #GPIO, $GPSAV, $GPRST, $GPSNMUN, $GPSACP, $GPSR, #SIMDET, #ENCALG, #SIMDET, #HTTPCFG, #SSLD, #SSLDECCFG, #SSLSECDATA, #SSLSEND, #SSLS, #SSLD, #SSLCFG, #JDR, #PORTCFG, +CPIN, #SD, #SL, #TESTMODE, #SSLRECV, #FPLMN, #GPPPCFG, #SSLRECV, +CGACT, +CFUN, #MONIZIP, #RSCRIPT , #SMOV 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, #DWCFG, #DWCONN, #DWSTATUS, #DWSEND, #DWSENDR, #DWRCVR, #DWRCV, #DWLRCV, #DWEN, #FDOR, #RXTOGGLE
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#10	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