HE910 AT Commands Reference Guide

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Making machines talk.

APPLICABILITY TABLE

PRODUCT
HE910

SW Version
12.00.000-B001

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Contents

1. Introduction

1.1. Scope

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

1.2. Audience

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

1.3. Contact Information, Support

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

TS-EMEA@telit.com
TS-NORTHAMERICA@telit.com
TS-LATINAMERICA@telit.com
TS-APAC@telit.com

Alternatively, use:
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Our aim is to make this guide as helpful as possible. Keep us informed of your comments and suggestions for improvements.
Telit appreciates feedback from the users of our information.

1.4. Document Organization

This document contains the following chapters:

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

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

Chapter 3: "AT Commands" The core of this reference guide.

1.5. Text Conventions

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

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

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

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

1.6. Related Documents

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

2. Overview

2.1. About the document

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

3. AT COMMANDS

The Telit wireless module family can be controlled via the serial interface using the standard AT commands[1]. The Telit wireless module family is compliant with:

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

Moreover Telit wireless module family supports also Telit proprietary AT commands for special purposes.
The following is a description of how to use the AT commands with the Telit wireless module family.

3.1. Definitions

The following syntactical definitions apply:

<CR> **Carriage return character**, is the command line and result code terminator character, which value, in decimal ASCII between 0 and 255,is specified within parameter **S3**. The default value is 13.

<LF> **Linefeed character**, is the character recognised as line feed character. Its value, in decimal ASCII between 0 and 255, is specified within parameter **S4**. The default value is 10. The line feed character is output after carriage return character if verbose result codes are used (**V1** option used) otherwise, if numeric format result codes are used (**V0** option used) it will not appear in the result codes.

<...> Name enclosed in angle brackets is a syntactical element. They do not appear in the command line.

[...] Optional subparameter of a command or an optional part of TA information response is enclosed in square brackets. Brackets themselves do not appear in the command line. When subparameter is not given in AT commands which have a Read command, new value equals to its previous value. In AT commands which do not store the values of any of their subparameters, and so have not a Read command, which are called *action type* commands, action should be done on the basis of the recommended default setting of the subparameter.

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

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** (or **#CMD** or **$CMD**) are optional, issuing **AT+CMD=<CR>** (or **AT#CMD=<CR>** or **AT$CMD=<CR>**) causes the **OK** result code to be returned and the previous values of the omitted subparameters to be retained.

3.2.1. String Type Parameters

A string, either enclosed between quotes or not, is considered to be a valid string type parameter input. According to V25.ter space characters are ignored on the command line and may be used freely for formatting purposes, unless they are embedded in numeric or quoted string constants; therefore a string containing a space character has to be enclosed between quotes to be

considered a valid string type parameter (e.g. typing **AT+COPS=1,0,"A1"** is the same as typing **AT+COPS=1,0,A1**; typing **AT+COPS=1,0,"A BB"** is different from typing **AT+COPS=1,0,A BB**).

A string is always case sensitive.

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

3.2.2. Command Lines

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

The **command line prefix** consists of the characters "**AT**" or "**at**", or, to repeat the execution of the previous command line, the characters "**A/**" or "**a/**" or **AT#/** or **at#/**.
The **termination character** may be selected by a user option (parameter S3), the default being **<CR>**.
The basic structures of the command line are:

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

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

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

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

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

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 80 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
15	SIM wrong
16	incorrect password
17	SIM PIN2 required
18	SIM PUK2 required
20	memory full
21	invalid index
22	not found

Numeric Format	Verbose Format
23	memory failure
24	text string too long
25	invalid characters in text string
26	dial string too long
27	invalid characters in dial string
30	no network service
31	network time-out
32	network not allowed - emergency calls only
40	network personalization PIN required
41	network personalization PUK required
42	network subset personalization PIN required
43	network subset personalization PUK required
44	service provider personalization PIN required
45	service provider personalization PUK required
46	corporate personalization PIN required
47	corporate personalization PUK required
General purpose error:	
100	unknown
GPRS related errors to a failure to perform an Attach:	
103	Illegal MS (#3)*
106	Illegal ME (#6)*
107	GPRS service not allowed (#7)*
111	PLMN not allowed (#11)*
112	Location area not allowed (#12)*
113	Roaming not allowed in this location area (#13)*
GPRS related errors to a failure to Activate a Context and others:	
132	service option not supported (#32)*
133	requested service option not subscribed (#33)*
134	service option temporarily out of order (#34)*
148	unspecified GPRS error
149	PDP authentication failure
150	invalid mobile class
IP Easy related errors:	
550	generic undocumented error
551	wrong state
552	wrong mode
553	context already activated
554	stack already active
555	activation failed
556	context not opened
557	cannot setup socket
558	cannot resolve DN
559	time-out in opening socket
560	cannot open socket
561	remote disconnected or time-out
562	connection failed
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

Numeric Format	Verbose Format
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)

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

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

Syntax: **+CMS ERROR: <err>**
Parameter: **<err>** - numeric error code.

The **<err>** values are reported in the table:

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

Numeric Format	Meaning
318	SIM PUK2 required
320	memory failure
321	invalid memory index
322	memory full
330	SMSC address unknown
331	no network service
332	network time-out
500	unknown error

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>[3]
2	RING
3	NO CARRIER
4	ERROR
6	NO DIALTONE
7	BUSY
8	NO ANSWER

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

Result Codes	
10	CONNECT 2400[4]
11	CONNECT 4800[4]
12	CONNECT 9600[4]
15	CONNECT 14400[4]
23	CONNECT 1200/75[4]

3.2.4. Command Response Time-Out

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

3.2.5. Command Issuing Timing

The chain Command -> Response shall always be respected and a new command must not be issued before the module has terminated all the sending of its response result code (whatever it may be).
This applies especially to applications that “sense” the **OK** text and therefore may send the next command before the complete code **<CR><LF>OK<CR><LF>** is sent by the module.
It is advisable anyway to wait for at least 20ms between the end of the reception of the response and the issue of the next AT command.
If the response codes are disabled and therefore the module does not report any response to the command, then at least the 20ms pause time shall be respected.
During command mode, due to hardware limitations, under severe CPU load the serial port can loose some characters if placed in autobauding at high speeds. Therefore if you encounter this problem fix the baud rate with **+IPR** command.

3.3. Storage

3.3.1. Factory Profile And User Profiles

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

The **&W** command is used to save the actual values of **both sections** of profiles into the NVM user profile.
Commands **&Y** and **&P** are both used to set the profile to be loaded at startup. **&Y** instructs the device to load at startup only the **base section**. **&P** instructs the device to load at startup the full profile: **base + extended sections**.
The **&F** command resets to factory profile values only the command of the base section of profile, while the **&F1** resets to factory profile values the full set of base + extended section commands.

The values set by other commands are stored in NVM outside the profile: some of them are stored always, without issuing any **&W**, some other are stored issuing specific commands (**+CSAS**, **#SLEDSAV**, **#VAUXSAV**, **#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:

GSM DATA MODE	+CBST
115200	+IPR
COMMAND ECHO	E
RESULT MESSAGES	Q
VERBOSE MESSAGES	V
EXTENDED MESSAGES	X
FLOW CONTROL OPTIONS	&K, +IFC
DSR (C107) OPTIONS	&S
DTR (C108) OPTIONS	&D
DCD (C109) OPTIONS	&C
RI (C125) OPTIONS	\R
DEFAULT PROFILE	&Y0
S REGISTERS	S0;S3;S4;S5;S7;S25;S30;S38
CHARACTER FORMAT	+ICF

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

+FCLASS	+CSCS	+CR
+CREG	+CLIP	+CRLP
+CRC	+CLIR	+CVHU
+CCWA	+CUSD	+CAOC
+CSSN	+CIND	+CMER
+CPBS	+CMEE	+CGREG
+CGEREP	+CMGF	+CSDH
+CNMI	#QSS	#ECAM
#SMOV	#MWI	#NITZ
#SKIPESC	#CFF	#CFLO
+CSTF	+CSDF	+CTZU
+CAPD	+CCWE	+CSIL
+CTZR		

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

+CALM	+CRSL	+CMUT[5]
+CLVL[5]	+VTD	+CSCB[4]
#CAP[5]	#SRS[5]	#SRP[5]
#STM[5]	#TSVOL	#E2SMSRI
#DAC	#CODEC	#SHFEC[5]
#HFMICG[5]	#HSMICG	#SHFSD[5]
#SPKMUT	#NITZ	#E2SLRI
#HFRECG	#HSRECG	#SHFAGC
#SHSAGC	#SHSEC	#SHSNR
#SHFNR	#SHSSD	

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

#SELINT	+COPS[5]	+CGCLASS
+CGDCONT	+CGQMIN	+CGQREQ
#ENS	#SCFG	#AUTOATT
#DNS	#ICMP	#GSMCONT
+CGSMS		

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

+CSCA	+CSMP	+CSCB

stored by +CSAS[6] command and restored by +CRES[9] command

#SLED		

stored by #SLEDSAV command

#VAUX		

stored by #VAUXSAV command

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

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

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

[5] It is partially stored in NVM; see command description.

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

#ESMTP	#EADDR	#EUSER
#EPASSW		

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

3.4. AT Commands References

3.4.1. Command Line General Format

3.4.1.1. Command Line Prefixes

3.4.1.1.1. Starting A Command Line - AT

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

3.4.1.1.2. Last Command Automatic Repetition - A/

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

3.4.1.1.3. Repeat Last Command - AT#/

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

3.4.2. General Configuration Commands

3.4.2.1.1. 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:

#SELINT - Select Interface Style	SELINT 2
	<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.

3.4.3. Hayes Compliant AT Commands

3.4.3.1. Generic Modem Control

3.4.3.1.1. Set To Factory-Defined Configuration - &F

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

3.4.3.1.2. Soft Reset - Z

Z - Soft Reset	SELINT 2
ATZ[<n>]	Execution command loads the base section of the specified user profile and the extended section of the default factory profile. Parameter: **<n>** 0..1 - user profile number Note: any call in progress will be terminated.

Z - Soft Reset	SELINT 2
	Note: if parameter **<n>** is omitted, the command has the same behaviour as **ATZ0**.
Reference	V25ter.

3.4.3.1.3. 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

3.4.3.1.4. 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**

3.4.3.1.5. 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,

&P - Default Reset Full Profile Designation	SELINT 2
	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

3.4.3.1.6. Store Current Configuration - &W

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

3.4.3.1.7. Store Telephone Number - &Z

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

3.4.3.1.8. Display Stored Numbers - &N

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

3.4.3.1.9. Manufacturer Identification - +GMI

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

3.4.3.1.10. Model Identification - +GMM

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

3.4.3.1.11. Revision Identification - +GMR

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

3.4.3.1.12. 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

3.4.3.1.13. 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

3.4.3.1.14. Display Configuration And Profile - &V

&V - Display Current Base Configuration And Profile	SELINT 2
AT&V	Execution command returns some of the base configuration parameters settings. Note: the row of information about **CTS (C106) OPTIONS** is in the output of **&V** only for compatibility reasons and represents only a dummy value.

3.4.3.1.15. Display Configuration And Profile - &V0

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

3.4.3.1.16. S Registers Display - &V1

&V1 - S Registers Display	SELINT 2
AT&V1	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..005 007 012 025 038 **<dec>** - current value in decimal notation **<hex>** - current value in hexadecimal notation

3.4.3.1.17. 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**

&V3 - Extended S Registers Display	SELINT 2
	<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

3.4.3.1.18. Display Last Connection Statistics - &V2

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

3.4.3.1.19. 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

3.4.3.1.20. Country Of Installation - +GCI

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

3.4.3.1.21. Line Signal Level - %L

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

3.4.3.1.22. Line Quality - %Q

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

3.4.3.1.23. Speaker Loudness - L

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

3.4.3.1.24. Speaker Mode - M

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

3.4.3.2. DTE - Modem Interface Control

3.4.3.2.1. 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

3.4.3.2.2. Quiet Result Codes - Q

Q - Quiet Result Codes	SELINT 2
ATQ[<n>]	Set command enables or disables the result codes. Parameter: **<n>**

Q - Quiet Result Codes	SELINT 2
	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

3.4.3.2.3. Response Format - V

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

3.4.3.2.4. 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

3.4.3.2.5. 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

3.4.3.2.6. Data Carrier Detect (DCD) Control - &C

&C - Data Carrier Detect (DCD) Control	SELINT 2
AT&C[<n>]	Set command controls the RS232 **DCD** output behaviour. Parameter: **<n>** 0 - **DCD** remains **high** always. 1 - **DCD** follows the Carrier detect status: if carrier is detected **DCD** is high,

&C - Data Carrier Detect (DCD) Control	SELINT 2
	otherwise **DCD** is **low**. (factory default) 2 - **DCD off** while disconnecting Note: if parameter is omitted, the command has the same behaviour of **AT&C0**
Reference	V25ter

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

&D - Data Terminal Ready (DTR) Control	SELINT 2
AT&D[<n>]	Set command controls the Module behaviour to the RS232 **DTR** transitions. Parameter: **<n>** 0 - device ignores **DTR** transitions (factory default); if **+CVHU** current setting is **different from 2** then every setting **AT&D0** is equivalent to **AT&D5** 1 - when the MODULE is connected, the **High** to **Low** transition of **DTR** pin sets the device in command mode, the current connection is NOT closed; if **+CVHU** current setting is **different from 2** then issuing **AT&D1** is equivalent to **AT&D5 (not yet implemented)** 2 - when the MODULE is connected , the **High** to **Low** transition of **DTR** pin sets the device in command mode and the current connection is closed; if **+CVHU** current setting is **different from 2** then issuing **AT&D2** is equivalent to **AT&D5** 3 - device ignores **DTR** transitions; if **+CVHU** current setting is **different from 2** then issuing **AT&D3** is equivalent to **AT&D5** 4 - **C108/1** operation is disabled; if **+CVHU** current setting is **different from 2** then issuing **AT&D4** is equivalent to **AT&D5** 5 - **C108/1** operation is enabled; same behaviour as for **<n>=2** Note: if a connection has been set up issuing **#SKTD**, then **AT&D1** has the same effect as **AT&D2**. If a connection has been set up issuing **AT#SD** then **AT&D1** and **AT&D2** have different effect, as described above. Note: if **AT&D2** has been issued and the **DTR** has been tied **Low**, autoanswering is inhibited and it is possible to answer only issuing command **ATA**. Note: if parameter is omitted, the command has the same behaviour of **AT&D0**
Reference	V25ter

3.4.3.2.8. 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 1 - software bi-directional with filtering (**XON/XOFF**) **(not yet implemented)** 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

3.4.3.2.9. 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) 4 - software bi-directional with filtering (**XON/XOFF**) **(not yet implemented)** 5 - pass through: software bi-directional without filtering (**XON/XOFF**) **(not yet implemented)** 6 - both hardware bi-directional flow control (both **RTS/CTS** active) and software bi-directional flow control (**XON/XOFF**) with filtering **(not yet implemented)** 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.

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

&S - Data Set Ready (DSR) Control	SELINT 2
AT&S[<n>]	Set command controls the RS232 **DSR** pin behaviour. Parameter: **<n>** 0 - always **High**

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

3.4.3.2.11. Ring (RI) Control - \R

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

3.4.3.2.12. Fixed DTE Interface Rate - +IPR

+IPR - Fixed DTE Interface Rate	SELINT 2
AT+IPR=<rate>	Set command specifies the **DTE** speed at which the device accepts commands during command mode operations; it may be used to fix the **DTE-DCE** interface speed. Parameter: **<rate>** ..300 1200 2400 4800 9600 19200 38400 57600

+IPR - Fixed DTE Interface Rate	SELINT 2
	115200 (default value)
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

3.4.3.2.13. DTE-Modem Local Flow Control - +IFC

+IFC - DTE-Modem Local Flow Control	SELINT 2
AT+IFC=<by_te>, <by_ta>	Set command selects the flow control behaviour of the serial port in both directions: from **DTE** to **modem** (**<by_ta>** option) and from **modem** to **DTE** (**<by_te>**) Parameters: **<by_te>** - flow control option for the data received by **DTE** 0 - flow control None 1 - **XON/XOFF** filtered **(not yet implemented)** 2 - **C105** (**RTS**) (factory default) 3 - **XON/XOFF** not filtered **(not yet implemented)** **<by_ta>** - flow control option for the data sent by **modem** 0 - flow control None 1 - **XON/XOFF (not yet implemented)** 2 - **C106** (**CTS**) (factory default) Note: Hardware flow control (**AT+IFC=2,2**) is not active in command mode. Note: This command is equivalent to **&K** command. Note: only bi-directional combinations are allowed
AT+IFC?	Read command returns active flow control settings. Note: If flow control behavior has been set with **AT&Kn** command with the parameter that is not allowed by **AT+IFC** the read command **AT+IFC?** will return: **+IFC: 0,0**
AT+IFC=?	Test command returns all supported values of the parameters **<by_te>** and **<by_ta>**.
Reference	V25ter

3.4.3.2.14. DTE-Modem Character Framing - +ICF

+ICF - DTE-Modem Character Framing	SELINT 2
AT+ICF=<format> [,<parity>]	Set command defines the asynchronous character framing to be used when autobauding is disabled. Parameters: **<format>** - determines the number of bits in the data bits, the presence of a parity bit, and the number of stop bits in the start-stop frame. 0 - autodetection 1 - 8 Data, 2 Stop 2 - 8 Data, 1 Parity, 1 Stop 3 - 8 Data, 1 Stop 5 - 7 Data, 1 Parity, 1 Stop **<parity>** - determines how the parity bit is generated and checked, if present; setting this subparameter is mandatory and has a meaning only if **<format>** subparameter is either 2 or 5. 0 - Odd 1 - Even
AT+ICF?	Read command returns current settings for subparameters **<format>** and **<parity>**. If current setting of subparameter **<format>** is neither 2 nor 5, the current setting of subparameter **<parity>** will always represented as 0.
AT+ICF=?	Test command returns the ranges of values for the parameters **<format>** and **<parity>**
Reference	V25ter

Example	*Auto detect*
	`AT+ICF = 0`
	`OK`
	
	8N2
	`AT+ICF = 1`
	`OK`
	
	8O1
	`AT+ICF = 2,0`
	`OK`
	
	8E1
	`AT+ICF = 2,1`
	`OK`

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

3.4.3.3. Call Control

3.4.3.3.1. Dial - D

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

D – Dial	SELINT 2
	Parameters: **<mem>** - phonebook memory storage; it must not be enclosed in quotation marks. SM - SIM phonebook FD - SIM fixed dialling-phonebook LD - SIM last-dialling-phonebook MC - device missed (unanswered received) calls list RC - ME received calls list MB - mailbox numbers stored on SIM, if this service is provided by the SIM (see **#MBN**). **<n>** - entry location; it should be in the range of locations available in the memory used.
ATD><n>[;]	Issues a call to phone number in entry location **<n>** of the active phonebook 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 (see **+CGDATA** command). For communications software that does not support

D – Dial	SELINT 2
	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).

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`
	
	To call the entry with alphanumeric field "Name":
	`ATD>"Name";`
	`OK`

Reference	V25ter.

3.4.3.3.2. Tone Dial - T

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

3.4.3.3.3. Pulse Dial - P

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

3.4.3.3.4. Answer - A

A - Answer	SELINT 2
ATA	Execution command is used to answer to an incoming call if automatic answer is disabled. Note: This command MUST be the last in the command line and must be followed immediately by a **<CR>** character.
Reference	V25ter.

3.4.3.3.5. Disconnect - H

H - Disconnect	SELINT 2
ATH	Execution command is used to close the current conversation (voice or data). Note: this command can be issued only in command mode; when a data conversation is active the device is in on-line mode (commands are not sensed and characters are sent to the other party), hence escape sequence is required before issuing this command, otherwise if **&D1** option is active, **DTR** pin has to be tied **Low** to return in command mode.
Reference	V25ter.

3.4.3.4. Modulation Control

3.4.3.4.1. 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.

3.4.3.5. Compression Control

3.4.3.5.1. 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

3.4.3.5.2. Data Compression Reporting - +DR

+DR - Data Compression Reporting	SELINT 2
AT+DR=<n>	Set command enables/disables the data compression reporting upon connection. Parameter: **<n>** 0 - data compression reporting disabled; 1 - data compression reporting enabled upon connection.

+DR - Data Compression Reporting	SELINT 2
	Note: if enabled, the following intermediate result code is transmitted before the final result code: **+DR: <compression>** (the only supported value for **<compression>** is "**NONE**")
AT+DR?	Read command returns current value of **<n>**.
AT+DR=?	Test command returns all supported values of the parameter **<n>**
Reference	V25ter

3.4.3.6. 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.

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

1. **ATS*n*<CR>** selects ***n*** as current parameter number. If the value of ***n*** is in the range (0, 2, 3, 4, 5, 7, 10, 12, 25, 30, 38), this command establishes **S*n*** as last selected parameter. Every value out of this range and less than 256 can be used but has no meaning and is maintained only for backward compatibility with landline modems.
2. **AT=<value><CR>** or **ATS=<value><CR>** set the contents of the selected **S-parameter**

Example:

ATS7<CR>	establishes **S7** as last selected parameter.
AT=40<CR>	sets the content of **S7** to 40
ATS=15<CR>	sets the content of **S7** to 15.

3. **AT?** returns the current value of the last **S-parameter** accessed

Reference	V25ter and RC56D/RC336D

3.4.3.6.1. 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**.
Reference	V25ter

3.4.3.6.2. Ring Counter - S1

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

3.4.3.6.3. Command Line Termination Character - S3

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

3.4.3.6.4. 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

3.4.3.6.5. Command Line Editing Character - S5

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

3.4.3.6.6. Connection Completion Time-Out - S7

S7 - Connection Completion Time-Out	SELINT 2
ATS7=[<tout>]	Set command sets the amount of time, in seconds, that the device shall allow between either answering a call (automatically or by **A** command) or completion of signalling of call addressing information to network (dialling), and establishment of a connection with the remote device.

S7 - Connection Completion Time-Out	SELINT 2
	Parameter: **<tout>** - number of seconds 1..255 - factory default value is 60
ATS7?	Read command returns the current value of **S7 parameter**. Note: the format of the numbers in output is always 3 digits, left-filled with 0s
Reference	V25ter

1.1.1.1.1 – Carrier Off With Firm Time - S10

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

3.4.3.6.7. Delay To DTR Off - S25

S25 -Delay To DTR Off	SELINT 2
ATS25=[<time>]	Set command defines the amount of time, in hundredths of second, that the device will ignore the **DTR** for taking the action specified by command **&D**. Parameter: **<time>** - expressed in hundredths of a second 0..255 - factory default value is 5. Note: the delay is effective only if its value is greater than 5. Note: command not yet implemented
ATS25?	Read command returns the current value of **S25 parameter**. Note: the format of the numbers in output is always 3 digits, left-filled with 0s

3.4.4. 3GPP TS 27.007 AT Commands

3.4.4.1. General

3.4.4.1.1. 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.

+CGMI - Request Manufacturer Identification	SELINT 2
Reference	3GPP TS 27.007

3.4.4.1.2. 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

3.4.4.1.3. 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

3.4.4.1.4. 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

3.4.4.1.5. Select TE Character Set - +CSCS

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

+CSCS - Select TE Character Set		SELINT 2
AT+CSCS=?	Test command returns the supported values for parameter **<chset>**.	
Reference	3GPP TS 27.007	

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

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

3.4.4.1.7. Multiplexing Mode - +CMUX

+CMUX - Multiplexing Mode		SELINT 2
AT+CMUX= <mode> [,<subset>]	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. Note: after entering the ***Multiplexed Mode*** an inactive timer of five seconds starts. If no CMUX control channel is established before this inactivity timer expires the engine returns to ***AT Command Mode*** Note: all the CMUX protocol parameter are fixed as defined in GSM07.10 and cannot be changed. Note: the maximum frame size is fixed: **N1=128**	
AT+CMUX?	Read command returns the current value of **<mode>** and **<subset>** parameters, in the format: **+CMUX: <mode>,<subset>**	
AT+CMUX=?	Test command returns the range of supported values for parameters **<mode>** and **<subset>**.	
Reference	3GPP TS 27.007, 3GPP TS 27.010	

3.4.4.2. Call Control

3.4.4.2.1. Hang Up Call - +CHUP

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

3.4.4.2.2. Select Bearer Service Type - +CBST

+CBST - Select Bearer Service Type	SELINT 2
AT+CBST= **[<speed>** **[,<name>** **[,<ce>]]]**	Set command sets the bearer service **<name>** with data rate **<speed>**, and the connection element **<ce>** to be used when data calls are originated. This setting is also used during mobile terminated data call setup, in case of single numbering scheme calls (refer **+CSNS**). Parameters: **<speed>** - data rate 0 - autobauding (automatic selection of the speed, factory default) 4 - 2400 bps (V.22bis) 5 - 2400 bps (V.26ter) 6 - 4800 bps (V.32) 7 - 9600 bps (V.32) 12 - 9600 bps (V.34) 14 - 14400 bps (V.34) 15 – 19200 bps (V.34) 16 – 28800 bps (V.34) 17 - 33600 bps (V.34) 68 - 2400 bps (V.110 or X.31 flag stuffing) 70 - 4800 bps (V.110 or X.31 flag stuffing) 71 - 9600 bps (V.110 or X.31 flag stuffing) 75 - 14400 bps (V110 or X.31 flag stuffing) 79 - 19200 bps (V.110 or X.31 flag stuffing) 80 - 28800 bps (V.110 or X.31 flag stuffing) 81 - 38400 bps (V.110 or X.31 flag stuffing) 82 - 48000 bps (V.110 or X.31 flag stuffing) 83 - 56000 bps (V.110 or X.31 flag stuffing) 84 – 64000 bps (X.31 flag stuffing) 115 – 56000 bps (bit transparent) 116 – 64000 bps (bit transparent) 120 – 32000 bps (PIAFS32k) 121 – 64000 bps (PIAFS64k) 130 – 28800 bps (multimedia) 131 – 32000 bps (multimedia)

+CBST - Select Bearer Service Type	SELINT 2
	132 – 33600 bps (multimedia) 133 – 56000 bps (multimedia) 134 - 64000 bps (multimedia) **<name>** - bearer service name 0 - data circuit asynchronous (factory default) **<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: 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

3.4.4.2.3. Radio Link Protocol - +CRLP

+CRLP - Radio Link Protocol	SELINT 2
AT+CRLP=[<iws>[,<mws>[,<T1>[,<N2>[,<ver>]]]]]	Set command sets Radio Link Protocol (RLP) parameters used when non-transparent data calls are originated Parameters: **<iws>** - IWF window Dimension 1..61 - factory default value is 61 **<mws>** - MS window Dimension 1..61 - default value is 61 **<T1>** - acknowledge timer (10 ms units). 39..255 - default value is 78 **<N2>** - retransmission attempts 1..255 - default value is 6 **<ver>** - protocol version

+CRLP - Radio Link Protocol	SELINT 2
	0
AT+CRLP?	Read command returns the current value of the RLP protocol parameters.
AT+CRLP=?	Test command returns supported range of values of the RLP protocol parameters.
Reference	3GPP TS 27.007

3.4.4.2.4. Service Reporting Control - +CR

+CR - Service Reporting Control	SELINT 2
AT+CR=[<mode>]	Set command controls whether or not intermediate result code **+CR** is returned from **TA** to **TE**. Parameter: **<mode>** 0 - disables **+CR** reporting (factory default) 1 - enables **+CR** reporting: the intermediate result code is transmitted at the point during connect negotiation at which the **TA** has determined which speed and quality of service will be used, before any error control or data compression reports are transmitted, and before the intermediate result code **CONNECT** is transmitted. Its format is: **+CR: <serv>** where: **<serv>** ASYNC - asynchronous transparent SYNC - synchronous transparent 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

3.4.4.2.5. 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 - Extended Error Report	SELINT 2
	+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

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

3.4.4.3. Network Service Handling

3.4.4.3.1. Subscriber Number - +CNUM

+CNUM - Subscriber Number	SELINT 2
AT+CNUM	If the ENS functionality has not been previously enabled (see **#ENS**) 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>** If the ENS functionality has been previously enabled (see **#ENS**) 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

3.4.4.3.2. 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**)

+COPN - Read Operator Names	SELINT 2
	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

3.4.4.3.3. Network Registration Report - +CREG

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

+CREG - Network Registration Report	SELINT 2
AT+CREG?	Read command reports the **<mode>** and **<stat>** parameter values in the format: **+CREG: <mode>,<stat>[,<Lac>,<Ci>]** Note: **<Lac>** and **<Ci>** are reported only if **<mode>=2** and the mobile is registered on some network cell.
AT+CREG=?	Test command returns the range of supported **<mode>**
Example	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

3.4.4.3.4. 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 - Operator Selection	SELINT 2
	+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)] **<oper>**: network operator in format defined by **<format>** parameter. **<AcT>** access technology selected: 0 GSM 2 UTRAN Note: **<mode>** parameter setting is stored in NVM and available at next reboot, if it is not **3** (i.e.: set only **<format>** parameter). Note: if **<mode>=1 or 4**, the selected network is stored in NVM too and is available at next reboot (this will happen even with a new SIM inserted) Note: **<format>** parameter setting is never stored in NVM
AT+COPS?	Read command returns current value of **<mode>**,**<format>**,**<oper>** and **<AcT>** in format **<format>**; if no operator is selected, **<format>**, **<oper>** and **<AcT>** are omitted **+COPS: <mode>**[, **<format>**, **<oper>**,**< AcT>**]
AT+COPS=?	Test command returns a list of quadruplets, each representing an operator present in the network. The quadruplets in the list are separated by commas: **+COPS: [list of supported (<stat> ,<oper (in <format>=0)>,,** **<oper (in <format>=2)>,< AcT>)s][,,(list of supported <mode>s),** **(list of supported<format>s)]** where **<stat>** - operator availability 0 - unknown 1 - available 2 - current 3 - forbidden **<AcT>** access technology selected: 0 GSM 2 UTRAN Note: since with this command a network scan is done, this command may require some seconds before the output is given.
Reference	3GPP TS 27.007

3.4.4.3.5. 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.
AT+WS46?	Read command reports the currently selected cellular network, in the format: **+ WS46: <n>**
AT+WS46=?	Test command reports the range for the parameter **<n>**.
Reference	3GPP TS 27.007

3.4.4.3.6. 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** o 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 dialling memory feature (if PIN2 authentication has not been

+CLCK - Facility Lock/Unlock	SELINT 2
	done during the current session, PIN2 is required as **<passwd>**) "PN" - network Personalisation "PU" - network subset Personalisation "PP" - service Provider Personalization "PC" - Corporate Personalization "MC" – Multi Country Lock[7] **<mode>** - defines the operation to be done on the facility 0 - unlock facility 1 - lock facility 2 - query status **<passwd>** - shall be the same as password specified for the facility from the **DTE** user interface or with command Change Password **+CPWD** **<class>** - sum of integers each representing a class of information (default is 7) 1 - voice (telephony) 2 - data (refers to all bearer services) 4 - fax (facsimile services) 8 - short message service 16 - data circuit sync 32 - data circuit async 64 - dedicated packet access 128 - dedicated PAD access Note: when **<mode>=2** and command successful, it returns: **+CLCK: <status>[,<class1>[<CR><LF>+CLCK: <status>,<class2>[…]]** where **<status>** - the current status of the facility 0 - not active 1 - active **<class*n*>** - class of information of the facility
AT+CLCK=?	Test command reports all the facilities supported by the device.
Reference	3GPP TS 27.007

Example	*Querying such a facility returns an output on three rows, the first for voice, the second for data, the third for fax:*
	
	`AT+CLCK =”AO”,2`
	`+CLCK: <status>,1`
	`+CLCK: <status>,2`
	`+CLCK: <status>,4`

3.4.4.3.7. Change Facility Password - +CPWD

+CPWD - Change Facility Password	SELINT 2

[7] Only available on software version 10.00.00x

+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

3.4.4.3.8. 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>** **<type>** - type of address octet in integer format 128 - both the type of number and the numbering plan are unknown

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

3.4.4.3.9. 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:

+CLIR - Calling Line Identification Restriction	SELINT 2
	<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.

3.4.4.3.10. Call Forwarding Number And Conditions - +CCFC

+CCFC - Call Forwarding Number And Condition	SELINT 2
AT+CCFC= <reason>, <cmd>[,<number>[,<type>[,<class>[,,,<time>]]]	Execution command controls the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported. Parameters: **<reason>** 0 - unconditional 1 - mobile busy 2 - no reply 3 - not reachable 4 - all calls (not with query command) 5 - all conditional calls (not with query command) **<cmd>** 0 - disable 1 - enable 2 - query status 3 - registration 4 - erasure **<number>** - string type phone number of forwarding address in format specified by **<type>** parameter **<type>** - type of address octet in integer format :

+CCFC - Call Forwarding Number And Condition	SELINT 2
	129 - national numbering scheme 145 - international numbering scheme (contains the character "**+**") **<class>** - sum of integers each representing a class of information which the command refers to; default 7 (voice + data + fax) 1 - voice (telephony) 2 - data 4 - fax (facsimile services) 8 - short message service 16 - data circuit sync 32 - data circuit async 64 - dedicated packet access 128 - dedicated PAD access **<time>** - time in *seconds* to wait before call is forwarded; it is valid only when **<reason>** "no reply" is enabled (**<cmd>**=1) or queried (**<cmd>**=2) 1..30 - automatically rounded to a multiple of 5 seconds (default is 20) Note: when **<cmd>=2** and command successful, it returns: **+CCFC: <status>,<class1>[,<number>,<type>[,,,<time>]][<CR><LF>** **+CCFC: <status>,<class2>[,<number>,<type>[,,,<time>]][…]]** 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>**.

3.4.4.3.11. 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:

+CCWA - Call Waiting	SELINT 2
	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>[…]]** where **<status>** represents the status of the service: 0 - inactive 1 - active **<class*n*>** - same as **<class>** Note: the unsolicited result code enabled by parameter **<n>** is in the format:: **+CCWA: <number>,<type>,<class>,[<alpha>][,<cli_validity>]** where: **<number>** - string type phone number of calling address in format specified by **<type>** **<type>** - type of address in integer format **<class>** - see before **<alpha>** - string type; alphanumeric representation of **<number>** corresponding to the entry found in phonebook; used character set should be the one selected with **+CSCS**. **<cli_validity>** 0 - CLI valid 1 - CLI has been withheld by the originator 2 - CLI is not available due to interworking problems or limitations of originating network Note: if parameter **<cmd>** is omitted then network is not interrogated.

+CCWA - Call Waiting	SELINT 2
	Note: in the query command the class parameter must not be issued. Note: the difference between call waiting report disabling (**AT+CCWA = 0,1,7**) and call waiting service disabling (**AT+CCWA = 0,0,7**) is that in the first case the call waiting indication is sent to the device by network but this last one does not report it to the **DTE**; instead in the second case the call waiting indication is not generated by the network. Hence the device results busy to the third party in the 2nd case while in the 1st case a ringing indication is sent to the third party. Note: The command **AT+CCWA=1,0** has no effect a non sense and must not be issued..
AT+CCWA?	Read command reports the current value of the parameter **<n>**.
AT+CCWA=?	Test command reports the supported values for the parameter **<n>**.
Reference	3GPP TS 27.007

3.4.4.3.12. 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.

+CHLD - Call Holding Services	SELINT 2
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

3.4.4.3.13. Call deflection - +CTFR

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

3.4.4.3.14. Unstructured Supplementary Service Data - +CUSD

+CUSD - Unstructured Supplementary Service Data	SELINT 2
AT+CUSD= **[<n>[,<str>** **[,<dcs>]]]**	Set command allows control of the Unstructured Supplementary Service Data (USSD [GSM 02.90]). Parameters: **<n>** - is used to disable/enable the presentation of an unsolicited result code. 0 - disable the result code presentation in the **DTA** 1 - enable the result code presentation in the **DTA** 2 - cancel an ongoing USSD session (not applicable to read command response) **<str>** - USSD-string (when **<str>** parameter is not given, network is not interrogated)

+CUSD - Unstructured Supplementary Service Data	SELINT 2
	- If **<dcs>** indicates that GSM338 default alphabet is used **ME/TA** converts GSM alphabet into current TE character set (see **+CSCS**). - If **<dcs>** indicates that 8-bit data coding scheme is used: **ME/TA** converts each 8-bit octet into two IRA character long hexadecimal number; e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65). **<dcs>** - GSM 3.38 Cell Broadcast Data Coding Scheme in integer format (default is 0). Note: the unsolicited result code enabled by parameter **<n>** is in the format: **+CUSD: <m>[,<str>,<dcs>]** to the TE 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
Note	Only mobile initiated operations are supported

3.4.4.3.15. 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

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

3.4.4.3.16. List Current Calls - +CLCC

+CLCC - List Current Calls	SELINT 2
AT+CLCC	Execution command returns the list of current calls and their characteristics in the format: **[+CLCC:<id1>,<dir>,<stat>,<mode>,<mpty>,<number>,<type>** **,<alpha>[<CR><LF>+CLCC:<id2>,<dir>,<stat>,<mode>,** **<mpty>,<number>,<type>,<alpha>[…]]]**

+CLCC - List Current Calls	SELINT 2
	where: **<id*n*>** - call identification number **<dir>** - call direction 0 - mobile originated call 1 - mobile terminated call **<stat>** - state of the call 0 - active 1 - held 2 - dialing (**MO** call) 3 - alerting (**MO** call) 4 - incoming (**MT** call) 5 - waiting (**MT** call) **<mode>** - call type 0 - voice 1 - data 9 - unknown **<mpty>** - multiparty call flag 0 - call is not one of multiparty (conference) call parties 1 - call is one of multiparty (conference) call parties **<number>** - string type phone number in format specified by **<type>** **<type>** - type of phone number octet in integer format 129 - national numbering scheme 145 - international numbering scheme (contains the character "**+**") **<alpha>** - string type; alphanumeric representation of **<number>** corresponding to the entry found in phonebook; used character set should be the one selected with **+CSCS**. Note: If no call is active then only **OK** message is sent. This command is useful in conjunction with command **+CHLD** to know the various call status for call holding.
AT+CLCC=?	Test command returns the **OK** result code
Reference	3GPP TS 27.007

3.4.4.3.17. 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

+CSSN - SS Notification	SELINT 2
	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>**: 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

3.4.4.3.18. Closed User Group - +CCUG

+CCUG - Closed User Group Supplementary Service Control	SELINT 2
AT+CCUG= **[<n>[,<index>** **[,<info>]]]**	Set command allows control of the Closed User Group supplementary service [GSM 02.85]. Parameters: **<n>** 0 - disable CUG temporary mode (factory default). 1 - enable CUG temporary mode: it enables to control the CUG information on the air interface as a default adjustment for all following outgoing calls. **<index>** 0..9 - CUG index 10 - no index (preferential CUG taken from subscriber data) (default) **<info>** 0 - no information (default)

+CCUG - Closed User Group Supplementary Service Control	SELINT 2
	1 - suppress Outgoing Access (OA) 2 - suppress preferential CUG 3 - suppress OA and preferential CUG
AT+CCUG?	Read command reports the current value of the parameters
AT+CCUG=?	Test command returns the **OK** result code
Reference	3GPP TS 27.007

3.4.4.3.19. Preferred Operator List - +CPOL

+CPOL - Preferred Operator List	SELINT 2
AT+CPOL=[<index>][,<format>[,<oper>[,<GSM_AcT>,<GSM_Compact_AcT>, <UTRAN_AcT>]]]	Execution command writes an entry in the SIM list of preferred operators. Parameters: **<index>** - integer type; the order number of operator in the SIM preferred operator list 1..*n* **<format>** 2 - numeric **<oper>** **<oper>** - string type **<GSM_AcT>** - GSM access technology 0 – access technology not selected 1 – access technology selected **<GSM_Compact_AcT>** - GSM compact access technology 0 – access technology not selected 1 – access technology selected **<UTRAN_AcT>** - UTRAN acess technology 0 – access technology not selected 1 – access technology selected Note: if **<index>** is given but **<oper>** is left out, entry is deleted. If **<oper>** is given but **<index>** is left out, **<oper>** is put in the next free location. If only **<format>** is given, the format of the **<oper>** in the read command is changed.
AT+CPOL?	Read command returns all used entries from the SIM list of preferred operators.
AT+CPOL=?	Test command returns the whole **<index>** range supported by the SIM and the range for the parameter **<format>**
Reference	3GPP TS 27.007

3.4.4.3.20. 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.

3.4.4.4. Mobile Equipment Control

3.4.4.4.1. Phone Activity Status - +CPAS

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

Example	`ATD03282131321;`
	`OK`
	`AT+CPAS`
	`+CPAS: 4` *the called phone has answered to your call*
	
	`OK`
	`ATH`
	`OK`

Reference	3GPP TS 27.007

3.4.4.4.2. Enter PIN - +CPIN

+CPIN - Enter PIN	**SELINT 2**
AT+CPIN=<pin> [,<newpin>]	Set command sends to the device a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.). If the PIN required is SIM PUK or SIM PUK2, the **<newpin>** is required. This second pin, **<newpin>** will replace the old pin in the SIM. The command may be used to change the SIM PIN by sending it with both parameters **<pin>** and **<newpin>** when PIN request is pending; if no PIN request is pending the command will return an error code and to change the PIN the command **+CPWD** must be used instead. Parameters: **<pin>** - string type value **<newpin>** - string type value. To check the status of the PIN request use the command **AT+CPIN?** Note: If all parameters are omitted then the behaviour of Set command is the same as Read command.
AT+CPIN?	Read command reports the PIN/PUK/PUK2 request status of the device in the form: **+CPIN: <code>** where: **<code>** - PIN/PUK/PUK2 request status code READY - ME is not pending for any password SIM PIN - ME is waiting SIM PIN to be given SIM PUK - ME is waiting SIM PUK to be given PH-SIM PIN - ME is waiting phone-to-SIM card password to be given PH-FSIM PIN - ME is waiting phone-to-very first SIM card password to be given PH-FSIM PUK - ME is waiting phone-to-very first SIM card unblocking password to be given SIM PIN2 - ME is waiting SIM PIN2 to be given; this **<code>** is returned only when the last executed command resulted in PIN2 authentication failure (i.e. **+CME ERROR: 17**) SIM PUK2 - ME is waiting SIM PUK2 to be given; this **<code>** is returned only when the last executed command resulted in PUK2 authentication failure (i.e. **+CME ERROR: 18**) PH-NET PIN - ME is waiting network personalization password to be given PH-NET PUK - ME is waiting network personalization unblocking password to be given PH-NETSUB PIN - ME is waiting network subset personalization password to be given PH-NETSUB PUK - ME is waiting network subset personalization unblocking password to be given

+CPIN - Enter PIN	SELINT 2
	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

3.4.4.4.3. Signal Quality - +CSQ

+CSQ - Signal Quality	SELINT 2
AT+CSQ	Execution command reports received signal quality indicators in the form: **+CSQ: <rssi>,<ber>** where **<rssi>** - received signal strength indication 0 - (-113) dBm or less 1 - (-111) dBm 2..30 - (-109)dBm..(-53)dBm / 2 dBm per step 31 - (-51)dBm or greater 99 - not known or not detectable **<ber>** - bit error rate (in percent) 0 - less than 0.2% 1 - 0.2% to 0.4% 2 - 0.4% to 0.8% 3 - 0.8% to 1.6% 4 - 1.6% to 3.2% 5 - 3.2% to 6.4% 6 - 6.4% to 12.8% 7 - more than 12.8% 99 - not known or not detectable Note: this command should be used instead of the **%Q** and **%L** commands, since GSM relevant parameters are the radio link ones and no line is present, hence **%Q**

+CSQ - Signal Quality	SELINT 2
	and **%L** have no meaning.
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

3.4.4.4.4. Indicator Control - +CIND

+CIND - Indicator Control	SELINT 2
AT+CIND= **[<state>** **[,<state>[,…]]]**	Set command is used to control the registration state of ME indicators, in order to automatically send the **+CIEV** URC, whenever the value of the associated indicator changes. The supported indicators (**<descr>**) and their order appear from test command **AT+CIND=?** Parameter: **<state>** - registration state 0 - the indicator is deregistered; there's no unsolicited result code (**+CIEV** URC) automatically sent by the ME to the application, whenever the value of the associated indicator changes; the value can be directly queried with **+CIND?** 1 - the indicator is registered: an unsolicited result code (**+CIEV** URC) is automatically sent by the ME to the application, whenever the value of the associated indicator changes; it is still possible to query the value through **+CIND?** (default) Note: When the ME is switched on all of the indicators are in registered mode.
AT+CIND?	Read command returns the current value of ME indicators, in the format: **+CIND: <ind>[,<ind>[,…]]** Note: the order of the values **<ind>s** is the same as that in which the associated indicators appear from test command **AT+CIND=?**
AT+CIND=?	Test command returns pairs, where string value **<descr>** is a description (max. 16 chars) of the indicator and compound value is the supported values for the indicator, in the format: **+CIND: ((<descr>, (list of supported <ind>s))[,(<descr>, (list of supported <ind>s))[,…]])** where: **<descr>** - indicator names as follows (along with their **<ind>** ranges) "battchg" - battery charge level **<ind>** - battery charge level indicator range 0..5 99 - not measurable "signal" - signal quality **<ind>** - signal quality indicator range 0..7 99 - not measurable

+CIND - Indicator Control	SELINT 2
	"service" - service availability **<ind>** - service availability indicator range 0 - not registered to any network 1 - registered "sounder" - sounder activity **<ind>** - sounder activity indicator range 0 - there's no any sound activity 1 - there's some sound activity "message" - message received **<ind>** - message received indicator range 0 - there is no unread short message at memory location "SM" 1 - unread short message at memory location "SM" "call" - call in progress **<ind>** - call in progress indicator range 0 - there's no calls in progress 1 - at least a call has been established "roam" - roaming **<ind>** - roaming indicator range 0 - registered to home network or not registered 1 - registered to other network "smsfull" - a short message memory storage in the MT has become full (1), or memory locations are available (0) **<ind>** - short message memory storage indicator range 0 - memory locations are available 1 - a short message memory storage in the MT has become full. "rssi" - received signal (field) strength **<ind>** - received signal strength level indicator range 0 - signal strength ≤ (-112) dBm 1..4 - signal strength in (-97) dBm..(-66) dBm (15 dBm steps) 5 - signal strength ≥ (-51) dBm 99 - not measurable
Example	*Next command causes all the indicators to be registered* AT+CIND=1,1,1,1,1,1,1,1,1 *Next command causes all the indicators to be de-registered* AT+CIND=0,0,0,0,0,0,0,0,0 *Next command to query the current value of all indicators* AT+CIND? CIND: 4,0,1,0,0,0,0,0,2 OK
Note	See command **+CMER**
Reference	3GPP TS 27.007

3.4.4.4.5. 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 - discard **+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 replaced with a **Break** (100 ms), and is stored in a buffer; once the ME goes into command mode (after **+++** was entered), all URCs stored in the buffer will be output. **<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 Note: After AT+CMER has been switched on, URCs for all registered indicators will be issued. Although it is possible to issue the command when SIM PIN is pending, it will answer ERROR if “message” or “smsfull” indicators are enabled in AT+CIND, because with pending PIN it is not possible to give a correct indication about SMS status. To issue the command when SIM PIN is pending you have to disable “message” and “smsfull” indicators in AT+CIND first.
AT+CMER?	Read command returns the current setting of parameters, in the format: **+CMER: <mode>,<keyp>,<disp>,<ind>,<bfr>**
AT+CMER=?	Test command returns the range of supported values for parameters **<mode>, <keyp>, <disp>, <ind>, <bfr>**, in the format: **+CMER: (list of supported <mode>s),(list of supported <keyp>s), (list of supported <disp>s),(list of supported <ind>s),(list of supported <bfr>s)**
Reference	3GPP TS 27.007

3.4.4.4.6. Select Phonebook Memory Storage - +CPBS

+CPBS - Select Phonebook Memory Storage	SELINT 2
AT+CPBS= <storage>	Set command selects phonebook memory storage **<storage>**, which will be used by other phonebook commands. Parameter: **<storage>** "SM" - SIM phonebook "FD" - SIM fixed dialling-phonebook (only phase 2/2+ SIM) "LD" - SIM last-dialling-phonebook **(+CPBF** is not applicable for this storage) "MC" - device missed (unanswered received) calls list **(+CPBF** is not applicable for this storage) "RC" - ME received calls list **(+CPBF** is not applicable for this storage). "MB" - mailbox numbers stored on SIM; it is possible to select this storage only if the **mailbox** service is provided by the SIM (see **#MBN**).
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

3.4.4.4.7. 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**).

+CPBR - Read Phonebook Entries	SELINT 2
	The response format is: **[+CPBR: <index1>,<number>,<type>,<text>[<CR><LF>** **+CPBR: <index2>,<number>,<type>,<text>[…]]]** 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.** Note: if "MC" is the currently selected phonebook memory storage, a sequence of missed calls coming from the same number will be saved as one missed call and **+CPBR** will show just one line of information. Note: If all queried locations are empty (but available), no information text lines will be returned, while if listing fails in an **ME** error, **+CME ERROR: <err>** is returned.
AT+CPBR=?	Test command returns the supported range of values for parameters **<index*n*>** and the maximum lengths of **<number>** and **<text>** fields, in the format: **+CPBR: (<minIndex>** - **<maxIndex>),<nlength>,<tlength>** where: **<minIndex>** - the minimum **<index>** number, integer type **<maxIndex>**- the maximum **<index>** number, integer type **<nlength>** - maximum **<number>** field length, integer type **<tlength>** - maximum **<name>** field length, integer type Note: the value of **<nlength>** could vary, depending on whether or not the ENS functionality has been previously enabled (see **#ENS**), in the following situations: 1. if "SM" memory storage has been selected (see **+CPBS**) and the **SIM** supports the **Extension1** service 2. if "FD" memory storage has been selected (see **+CPBS**) and the **SIM** supports the **Extension2** service 3. if "MB" memory storage has been selected (see **+CPBS**) and the **SIM** supports the **Extension6** service
Note	Remember to select the PB storage with **+CPBS** command before issuing PB commands.
Reference	3GPP TS 27.007

3.4.4.4.8. Find Phonebook Entries - +CPBF

+CPBF - Find Phonebook Entries	SELINT 2

+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>[<CR><LF>** **+CPBF: <index2>,<number>,<type>,<text>[…]]]** 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.** Note: **+CPBF** is not applicable if the current selected storage (see **+CPBS**) is either “MC”, either “RC” or “LD”. Note: if **<findtext>=””** the command returns all the phonebook records. Note: if no PB records satisfy the search criteria then an **ERROR** message is reported.
AT+CPBF=?	Test command reports the maximum lengths of **<number>** and **<text>** fields, in the format: **+CPBF: [<nlength>],[<tlength>]** where: **<nlength>** - maximum length of field **<number>**, integer type **<tlength>** - maximum length of field **<text>**, integer type Note: the value of **<nlength>** could vary, depending on whether or not the ENS functionality has been previously enabled (see **#ENS**), in the following situations: 1. if “SM” memory storage has been selected (see **+CPBS**) and the **SIM** supports the **Extension1** service 2. if “FD” memory storage has been selected (see **+CPBS**) and the **SIM** supports the **Extension2** service 1. if “MB” memory storage has been selected (see **+CPBS**) and the **SIM** supports the **Extension6** service

+CPBF - Find Phonebook Entries	SELINT 2
Note	Remember to select the PB storage with **+CPBS** command before issuing PB commands.
Reference	3GPP TS 27.007

3.4.4.4.9. Write Phonebook Entry - +CPBW

+CPBW - Write Phonebook Entry	SELINT 2
AT+CPBW= **[<index>]** **[,<number> [,<type>** **[,<text>]]]**	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**. 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.
AT+CPBW=?	Test command returns location range supported by the current storage as a compound value, the maximum length of **<number>** field, supported number format of the storage and maximum length of **<text>** field. The format is: **+CPBW: (list of supported <index>s),<nlength>,** **(list of supported <type>s),<tlength>** where: **<nlength>** - integer type value indicating the maximum length of field **<number>**.

+CPBW - Write Phonebook Entry	SELINT 2
	<tlength> - integer type value indicating the maximum length of field **<text>** Note: the value of **<nlength>** could vary, depending on whether or not the ENS functionality has been previously enabled (see **#ENS**), in the following situations: 1. if "SM" memory storage has been selected (see **+CPBS**) and the **SIM** supports the **Extension1** service 2. if "FD" memory storage has been selected (see **+CPBS**) and the **SIM** supports the **Extension2** service 1. if "MB" memory storage has been selected (see **+CPBS**) and the **SIM** supports the **Extension6** service
Reference	3GPP TS 27.007
Note	Remember to select the PB storage with **+CPBS** command before issuing PB commands.

3.4.4.4.10. 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`

+CCLK - Clock Management	SELINT 2
	AT+CCLK? +CCLK: 02/09/07,22:30:25 OK
Reference	3GPP TS 27.007

3.4.4.4.11. Alarm Management - +CALA

+CALA - Alarm Management	SELINT 2
AT+CALA=<time>[,<n>[,<type>[,<text>[,<recurr>[,<silent>]]]]]	Set command stores in the internal Real Time Clock an alarm time with respective settings. It is possible to set up a recurrent alarm for one or more days in the week. Currently just one alarm can be set. When the RTC time reaches the alarm time then the alarm starts, the behaviour of the MODULE depends upon the setting **<type>** and if the device was already ON at the moment when the alarm time had come. Parameters: **<time>** - current alarm time as quoted string "" - (empty string) deletes the current alarm and resets all the **+CALA** parameters to the "factory default" configuration "hh:mm:ss±zz" - format to be used only when issuing **+CALA** with parameter **<recurr>** too. "yy/MM/dd,hh:mm:ss±zz" - generic format: it's the same as defined for **+CCLK** (see) **<n>** - index of the alarm 0 - The only value supported is 0. **<type>** - alarm behaviour type 0 - reserved for other equipment use. 1 - the MODULE simply wakes up fully operative as if the ON/OFF button had been pressed. If the device is already ON at the alarm time, then it does nothing (default). 2 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE issues an unsolicited code every 3s: **+CALA: <text>** where **<text>** is the **+CALA** optional parameter previously set. The device keeps on sending the unsolicited code every 3s until a **#WAKE** or **#SHDN** command is received or a 90 seconds timer expires. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s then it shuts down.

+CALA - Alarm Management	SELINT 2
	3 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE starts playing the alarm tone on the selected path for the ringer (see command **#SRP**) The device keeps on playing the alarm tone until a **#WAKE** or **#SHDN** command is received or a 90 s time-out occurs. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s then it shuts down. 4 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE brings the pin GPIO6 high, provided its **<direction>** has been set to alarm output, and keeps it in this state until a **#WAKE** or **#SHDN** command is received or a 90 seconds timer expires. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s then it shuts down. 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. Note: it is mandatory to set at least once the RTC (issuing **+CCLK**) before it is possible to issue **+CALA** with **<type>=8**
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 - Alarm Management	SELINT 2
	+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

3.4.4.4.12. Delete Alarm - +CALD

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

3.4.4.4.13. Postpone alarm - +CAPD

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

3.4.4.4.14. Setting date format - +CSDF

+CSDF – setting date format	SELINT 2
AT+CSDF=[<mode> [,<auxmode>]]	This command sets the date format of the date information presented to the user, which is specified by use of the **<mode>** parameter. The **<mode>** affects the date format on the phone display and doesn't affect the date format of the AT command serial interface, so it not used.

	The command also sets the date format of the TE-TA interface, which is specified by use of the **<auxmode>** parameter (i.e., the **<auxmode>** affects the **<time>** of AT+CCLK and AT+CALA). If the parameters are omitted then this sets the default value of **<mode>**. Parameters: **<mode>:** 1 DD-MMM-YYYY (default) 2 DD-MM-YY 3 MM/DD/YY 4 DD/MM/YY 5 DD.MM.YY 6 YYMMDD 7 YY-MM-DD **<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>**

3.4.4.4.15. 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>**

3.4.4.4.16. Time Zone reporting - +CTZR

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

3.4.4.4.17. Automatic Time Zone update - +CTZU

+CTZU – automatic Time Zone update	**SELINT 2**
AT+CTZU=<onoff>	This command enables and disables automatic time zone update via NITZ. Parameters: **<onoff>:** 0 Disable automatic time zone update via NITZ (default) 1 Enable automatic time zone update via NITZ Note: despite of the name, the command AT+CTZU=1 enables automatic update of the date and time set by AT+CCLK command (not only time zone). This happens when a Network Identity and Time Zone (NITZ) message is sent by the network. This command is the ETSI standard equivalent of Telit custom command AT#NITZ=1. If command AT+CTZU=1, or AT#NITZ=1 (or both) has been issued, NITZ message will cause a date and time update.

AT+CTZU?	Read command reports the currently selected **<onoff>** in the format: **+CTZU: <onoff>**
AT+CTZU=?	Test command reports the supported range of values for parameter **<onoff>**

3.4.4.4.18. 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.

+CRSM - Restricted SIM Access	SELINT 2
	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

3.4.4.4.19. Generic SIM access - +CSIM

+CSIM – Generic SIM access	SELINT 2
AT+CSIM=<lock>	Between two successive +CSIM command the SIM-ME interface must be locked to avoid commands can modify wrong SIM file. The locking and unlocking of the SIM-ME interface must be done explicitly respectively at the beginning and at the end of the +CSIM commands sequence. Parameters: **<lock>**=1 locking of the interface **<lock>**=0 unlocking of the interface In case that TE application does not use the unlock command in a certain timeout value, ME releases the locking.
AT+CSIM=<length>, <command>	The ME shall send the **<command>** as it is to the SIM. As response to the command, ME sends back the actual SIM **<response>** to the TA as it is. Parameters: **<lenght>:** number of the characters that are sent to TE in <command> or <response> (two times the actual length of the command or response) **<command>:** command passed on by the ME to the SIM in the format as described in GSM 11.11 (hexadecimal character format) The response of the command is in the format: **+CSIM: <length>,<response>** where: **<response>** : response to the command passed on by the SIM to the ME in the format as described in GSM 11.11 (hexadecimal character format). Error case: *+CME ERROR: <err>* possible <err> values (numeric format followed by verbose format):

+CSIM – Generic SIM access	SELINT 2
	3 operation not allowed *(operation mode is not allowed by the ME, wrong interface lock/unlock status)* 4 operation not supported *(wrong format or parameters of the command)* 13 SIM failure *(SIM no response)*
AT+CSIM=?	Test command returns the **OK** result code.
Example	***Lock SIM interface*** **AT+CSIM=1** **OK** *STATUS* AT+CSIM=10,"A0F2000002" +CSIM: 8,"00009000" OK *STATUS* AT+CSIM=10,A0F2000016 +CSIM:48,"000002A87F2002000000000009930022080083 8A838A9000" OK *SELECT EF 6F07* AT+CSIM=14,A0A40000026F07 +CSIM: 4,"9F0F" OK *GET RESPONSE* AT+CSIM=10,A0C000000F +CSIM: 34,"000000096F0704001A001A010200009000" OK *SELECT EF 6F30* AT+CSIM=14,A0A40000026F30 +CSIM: 4,"9F0F" OK *READ BINARY* AT+CSIM=10,A0B00000FC

+CSIM – Generic SIM access	SELINT 2
	+CSIM:508,"FFFFFF130083130090130054130030130065130038130 08013018013000113110913013013009813007713005913004313008 1130095130140130023130016330420130041FFFFFFFFFFFF2143654 2F41922F28822F201FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFF9000" OK ***Unlock SIM interface*** **AT+CSIM=0** **OK**
Note	For the following instructions (value of the second byte): A4 : SELECT 10 : TERMINAL PROFILE C2 : ENVELOPE 14 : TERMINAL RESPONSE A2 : SEEK the value of the fifth byte of **<command>** must be equal to the number of bytes which follow (data starting from 6th byte) and this must be equal to **<length>**/2 – 5 otherwise the command is not send to the SIM and CME_ERROR=4 is returned.
Note	After the locking of the SIM-ME interface (AT+CSIM=1) the SIM will be accessible only by AT+CSIM commands (#QSS: 0). The GSM and GPRS services will be automatically deregistered to avoid the TE commands alter the GSM application. They will be automatically reconditioned after the unlocking of the SIM-ME interface. After the unlocking of the SIM-ME interface if PIN is required it will be necessary to enter it another time.

3.4.4.4.20. 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

+CALM - Alert Sound Mode	SELINT 2
	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

3.4.4.4.21. 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

3.4.4.4.22. Loudspeaker Volume Level - +CLVL

+CLVL - Loudspeaker Volume Level	SELINT 2
AT+CLVL=<level>	Set command is used to select the volume of the internal loudspeaker audio output of the device. Parameter: **<level>** - loudspeaker volume 0..*max* - the value of *max* can be read by issuing the Test command **AT+CLVL=?**
AT+CLVL?	Read command reports the current **<level>** setting of the loudspeaker volume in

+CLVL - Loudspeaker Volume Level	SELINT 2
	the format: **+CLVL: <level>**
AT+CLVL=?	Test command reports **<level>** supported values range in the format: **+CLVL: (0-*max*)**
Reference	3GPP TS 27.007

3.4.4.4.23. Microphone Mute Control - +CMUT

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

3.4.4.4.24. 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>**

3.4.4.4.25. 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

3.4.4.4.26. Accumulated Call Meter Maximum - +CAMM

+CAMM - Accumulated Call Meter Maximum	SELINT 2
AT+CAMM= **[<acmmax>** **[,<pwd>]]**	Set command sets the Advice of Charge related Accumulated Call Meter Maximum Value stored in SIM (ACMmax). This value represents the maximum number of home units allowed to be consumed by the subscriber. When ACM reaches **<acmmax>** value further calls are prohibited. Parameter: **<acmmax>** - ACMmax value, integer type: it is the maximum number of home units allowed to be consumed by the subscriber. **<pwd>** - PIN2; if PIN2 has been already input once after startup, it is required no more Note: **<acmmax>** = 0 value disables the feature.
AT+CAMM?	Read command reports the ACMmax value stored in SIM in the format: **+CAMM : <acmm>**

+CAMM - Accumulated Call Meter Maximum	SELINT 2
	where: **<acmm>** - ACMmax value in home units, string type: three bytes of the ACMmax value in hexadecimal format (e.g. "00001E" indicates decimal value 30)
AT+CAMM=?	Test command returns the **OK** result code
Reference	3GPP TS 27.007

3.4.4.4.27. Price per Unit and Currency Table - +CPUC

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

3.4.4.4.28. Call meter maximum event - +CCWE

+CCWE – Call Meter maximum event	SELINT 2
AT+CCWE=<mode>	Set command is used to enable/disable sending of an unsolicited result code +CCWV shortly before the ACM (Accumulated Call Meter) maximum value is reached. The warning is issued approximately when 30 seconds call time remains. It is also issued when starting a call if less than 30 seconds call time remains. Parameters: **<mode>:** 0 Disable the call meter warning event (default) 1 Enable the call meter warning event

	Note: the set command will respond with an error if the Accumulated Call Meter service is not active in SIM
AT+CCWE?	Read command reports the currently selected <mode> in the format: **+CCWE: <mode>**
AT+CCWE=?	Test command reports the supported range of values for parameter **<mode>**

3.4.4.4.29. Available AT Commands - +CLAC

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

3.4.4.5. Mobile Equipment Errors

3.4.4.5.1. 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 - Report Mobile Equipment Error	SELINT 2
	+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

3.4.4.6. Voice Control

3.4.4.6.1. DTMF Tones Transmission - +VTS

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

3.4.4.6.2. Tone Duration - +VTD

+VTD - Tone Duration	SELINT 2
AT+VTD=<duration>	Set command sets the length of tones transmitted with **+VTS** command.

+VTD - Tone Duration	SELINT 2
	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

3.4.4.7. Commands For GPRS

3.4.4.7.1. GPRS Mobile Station Class - +CGCLASS

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

3.4.4.7.2. GPRS Attach Or Detach - +CGATT

+CGATT - GPRS Attach Or Detach	SELINT 2
AT+CGATT=[<state>]	Execution command is used to attach the terminal to, or detach the terminal from, the GPRS service depending on the parameter **<state>**. Parameter: **<state>** - state of GPRS attachment 0 - detached 1 - attached
AT+CGATT?	Read command returns the current GPRS service state.

+CGATT - GPRS Attach Or Detach	SELINT 2
AT+CGATT=?	Test command requests information on the supported GPRS service states.
Example	AT+CGATT? +CGATT: 0 OK AT+CGATT=? +CGATT: (0,1) OK AT+CGATT=1 OK
Reference	3GPP TS 27.007

3.4.4.7.3. 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**

+CGEREP - GPRS Event Reporting	SELINT 2
	+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 **+CGEV: ME DETACH** The mobile equipment has forced a GPRS detach. This implies that all active contexts have been deactivated. These are not reported separately **+CGEV: ME CLASS <class>** The mobile equipment has forced a change of MS class. The highest available class is reported (see **+CGCLASS**)
AT+CGEREP?	Read command returns the current <mode> and <bfr> settings, in the format: **+CGEREP: <mode>,<bfr>**
AT+CGEREP=?	Test command reports the supported range of values for the **+CGEREP** command parameters.
Reference	3GPP TS 27.007

3.4.4.7.4. GPRS Network Registration Status - +CGREG

+CGREG - GPRS Network Registration Status	SELINT 2
AT+CGREG=[<n>]	Set command controls the presentation of an unsolicited result code **+CGREG: (see format below)**. Parameter: **<n>** - result code presentation mode 0 - disable network registration unsolicited result code 1 - enable network registration unsolicited result code; if there is a change in the terminal GPRS network registration status, it is issued the unsolicited result code: **+CGREG: <stat>** where:

+CGREG - GPRS Network Registration Status	SELINT 2
	<stat> - registration status 0 - not registered, terminal is not currently searching a new operator to register to 1 - registered, home network 2 - not registered, but terminal is currently searching a new operator to register to 3 - registration denied 4 - unknown 5 - registered, roaming 2 - enable network registration and location information unsolicited result code; if there is a change of the network cell, it is issued the unsolicited result code: **+CGREG: <stat>[,<lac>,<ci>]** where: **<stat>** - registration status (see above for values) **<lac>** - location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal) **<ci>** - cell ID in hexadecimal format.
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>**
AT+CGREG=?	Test command returns supported values for parameter **<n>**
Reference	3GPP TS 27.007

3.4.4.7.5. 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 **<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.

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

Example	`AT+CGDCONT=1,"IP","APN","10.10.10.10",0,0`
	`OK`
	`AT+CGDCONT?`
	`+CGDCONT: 1,"IP","APN","10.10.10.10",0,0`
	
	`OK`
	`AT+CGDCONT=?`
	`+CGDCONT: (1-5),"IP",,,(0-1),(0-1)`
	
	`OK`

Reference	3GPP TS 27.007

3.4.4.7.6. 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

+CGQMIN - Quality Of Service Profile (Minimum Acceptable)	SELINT 2
	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

3.4.4.7.7. Quality Of Service Profile - +CGQREQ

+CGQREQ - Quality Of Service Profile (Requested)	SELINT 2
AT+CGQREQ= [<cid> [,<precedence> [,<delay> [,<reliability> [,<peak> [,<mean>]]]]]]	Set command allows to specify a Quality of Service Profile that is used when the terminal sends an Activate PDP Context Request message to the network. It specifies a profile for the context identified by the (local) context identification parameter, **<cid>**. Parameters: **<cid>** - PDP context identification (see **+CGDCONT** command). **<precedence>** - precedence class **<delay>** - delay class

+CGQREQ - Quality Of Service Profile (Requested)	SELINT 2
	<reliability> - reliability class **<peak>** - peak throughput class **<mean>** - mean throughput class If a value is omitted for a particular class then this class is not checked. Note: a special form of the Set command, **+CGQREQ=<cid>** causes the requested profile for context number **<cid>** to become undefined. Note: set command can modify the 3G QoS according to 3GPP 23.107 (see **+CGEQREQ**).
AT+CGQREQ?	Read command returns the current settings for each defined context in the format: **+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>, <mean>[<CR><LF>+CGQREQ: <cid>,<precedence>, <delay>,<reliability>,<peak>,<mean>[…]]** If no PDP context has been defined, it has no effect and **OK** result code is returned.
AT+CGQREQ=?	Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format: **+CGQREQ: <PDP_Type>,(list of supported <precedence>s), (list of supported <delay>s),(list of supported <reliability>s), (list of supported <peak>s),(list of supported <mean>s)** Note: only the "IP" **<PDP_Type>** is currently supported.

Example	`AT+CGQREQ?`
	`+CGQREQ: 1,0,0,3,0,0`
	
	`OK`
	`AT+CGQREQ=1,0,0,3,0,0`
	`OK`
	`AT+CGQREQ=?`
	`+CGQREQ: "IP",(0-3),(0-4),(0-5),(0-9),(0-18,31)`
	
	`OK`

Reference	3GPP TS 27.007; GSM 03.60

3.4.4.7.8. 3G Quality Of Service Profile (Requested) - +CGEQREQ

+CGEQREQ – 3G Quality Of Service Profile (Requested)	SELINT 2
AT+CGEQREQ= [<cid> [,<Traffic class> [,<Maximum bitrate UL> [,<Maximum bitrate DL>	Set command allows to specify a 3G quality of service profile for the context identified by the(local) context identification parameter <cid> which is used when the MT sends an Activate PDP Context Request message to the network. Parameters:

[,<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>]]]]]]]]]]]]]]	**<cid>** - PDP context identification (see **+CGDCONT** command). **<Traffic class>** - Traffic class 0 - conversational 1 - streaming 2 - interactive 3 - background 4 - subscribed value (default value) **<Maximum bitrate UL>** - Maximum bitrate Up Link (kbits/s) 0 - subscribed value (default value) 1…568 576…8640 **<Maximum bitrate DL>** - Maximum bitrate down link (kbits/s) 0 - subscribed value (default value) 1…568 576…8640 8700…16000 **<Guaranteed bitrate UL>** - the guaranteed bitrate up link(kbits/s) 0 - subscribed value (default value) 1…568 576…8640 **<Guaranteed bitrate DL>** - the guaranteed bitrate down link(kbits/s) 0 - subscribed value (default value) 1…568 576…8640 8700…16000 **<Delivery order>** - SDU Delivery oreder 0 - no (for IPv4 is the only allowable 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…150 100…950 1000…4000 **<Traffic handling priority >** - Traffic handling priority 0 - subscribed value (default value) 1…3 Note: a special form of the Set command, **+CGEQREQ=<cid>** causes the requested profile for context number **<cid>** to become undefined.
AT+CGEQREQ?	Read command returns the current settings for each defined context in the format: **[+CGEQREQ: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic handling><CR><LF>]** **[+CGEQREQ:…]** If no PDP context has been defined, it has no effect and **OK** result code is returned.

AT+CGEQREQ=?	Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format: **+CGQEQREQ: <PDP_Type>,(list of supported <Traffic class>s), (list of supported <Maximum bitrate UL>s),(list of supported <Maximum bitrate DL>s),(list of supported <Guaranteed bitrate UL>s),(list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s),(list of supported<Maximum SDU size>s),(list of supported<SDU error ratio>s),(list of supported<Residual bit error ratio>s),(list of supported <Delivery of erroneous SDUs>s),(list of supported <Transfer delay>s),(list of supported <Traffic handling priority>s** Note: only the "IP" **<PDP_Type>** is currently supported. Note: set command can modify the 2G QoS according to 3GPP 23.107 (see **+CGQREQ**).
Reference	3GPP TS 27.007

3.4.4.7.9. 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>**]]]]]]]]]]]]]]	Set command allows to specify 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 (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 **<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…568 576…8640 8700…16000 **<Delivery order>** - SDU Delivery oreder 0 - no (for IPv4 is the only allowable value) **<Maximum SDU size>** - Maximum SDU size in octets 0 (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 bit 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 (default value) 1 – yes 2 – no detect **<Transfer delay >** - Transfer delay (milliseconds) 0 (default value) 10…150 100…950 1000…4000 **<Traffic handling priority >** - Traffic handling priority 0 (default value as undefined) 1…3 Note: a special form of the Set command, **+CGEQMIN=<cid>** causes the requested profile for context number **<cid>** to become undefined. 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><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 If no PDP context has been defined, it has no effect and OK result code is returned.
AT+CGEQMIN=?	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 <Traffic class>s), (list of supported <Maximum bitrate UL>s),(list of supported <Maximum bitrate DL>s),(list of supported <Guaranteed bitrate UL>s),(list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s),(list of supported<Maximum SDU size>s),(list of supported<SDU error ratio>s),(list of supported<Residual bit error ratio>s),(list of supported <Delivery of erroneous SDUs>s),(list of supported <Transfer delay>s),(list of supported <Traffic handling priority>s Note: only the "IP" **<PDP_Type>** is currently supported.
Reference	3GPP TS 27.007

3.4.4.7.10. 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**): **[+CGEQNEG: <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>]** **[+CGEQNEG:...]**
AT+CGEQNEG=?	Test command returns a list of **<cid>**s associated with active contexts.
Reference	3GPP TS 27.007

3.4.4.7.11. PDP Context - +CGACT

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

Example	`AT+CGACT=1,1`
	`OK`
	`AT+CGACT?`
	`+CGACT: 1,1`
	
	`OK`

Reference	3GPP TS 27.007

3.4.4.7.12. 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:

+CGPADDR - Show PDP Address	SELINT 2
	<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

3.4.4.7.13. Modify PDP context - +CGCMOD

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

3.4.5. 3GPP TS 27.005 AT Commands for SMS and CBS

3.4.5.1. General Configuration

3.4.5.1.1. Select Message Service - +CSMS

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

3.4.5.1.2. 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 **<memw>** - memory to which writing and sending operations are made "SM" - SIM SMS memory storage

+CPMS - Preferred Message Storage	SELINT 2
	<mems> - memory to which received SMs are preferred to be stored "SM" - SIM SMS memory 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: The only supported memory storage for reading, writing and sending SMs is the SIM internal memory "SM": **<memr>=<memw>=<mems>="SM"**.
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`
	(you have 5 out of 10 SMS SIM positions occupied)

Reference	GSM 27.005

3.4.5.1.3. Message Format - +CMGF

+CMGF - Message Format	SELINT 2
AT+CMGF=[<mode>]	Set command selects the format of messages used with send, list, read and write commands. Parameter: **<mode>** 0 - PDU mode, as defined in GSM 3.40 and GSM 3.41 (factory default)

+CMGF - Message Format	SELINT 2
	1 - text mode
AT+CMGF?	Read command reports the current value of the parameter **<mode>**.
AT+CMGF=?	Test command reports the supported value of **<mode>** parameter.
Reference	GSM 27.005

3.4.5.2. Message Configuration

3.4.5.2.1. Service Center Address - +CSCA

+CSCA -Service Center Address	SELINT 2
AT+CSCA= <number> [,<type>]	Set command sets the Service Center Address to be used for mobile originated SMS transmissions. Parameter: **<number>** - SC phone number in the format defined by **<type>** **<type>** - the type of number 129 - national numbering scheme 145 - international numbering scheme (contains the character "**+**") Note: to use the SM service, is mandatory to set a Service Center Address at which service requests will be directed. 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	GSM 27.005

3.4.5.2.2. Set Text Mode Parameters - +CSMP

+CSMP - Set Text Mode Parameters	SELINT 2
AT+CSMP= [<fo> [,<vp> [,<pid>	Set command is used to select values for additional parameters for storing and sending SMs when the text mode is used (**AT+CMGF=1**) Parameters:

+CSMP - Set Text Mode Parameters	SELINT 2
[,<dcs>]]]]	**<fo>** - first octet of 3GPP TS 23.040 SMS-SUBMIT or SMS-DELIVER, in integer format (default 17, i.e. SMS-SUBMIT with validity period in relative format). As first octet of a PDU has the following bit field description (**bit[7]bit[6]bit[5]bit[4]bit[3]bit[2]bit[1]bit[0]**): **bit[1]bit[0]**: Message Type Indicator, 2-bit field describing the message type; [00] - SMS-DELIVER; [01] - SMS-SUBMIT (default) ; **bit[2]**: Reject Duplicates, 1-bit field: user is not responsible for setting this bit and, if any set, it will have no meaning (default is [0]); **bit[4]bit[3]**: Validity Period Format, 2-bit field indicating whether or not the Validity Period field is present (default is [10]): [00] - Validity Period field *not present* [01] - Validity Period field present in *enhanced format*(i.e. quoted time-string type, see below) [10] - Validity Period field present in *relative format*, (i.e. integer type, see below) [11] - Validity Period field present in *absolute format* (i.e. quoted time-string type, see below) **bit[5]**: Status Report Request, 1-bit field indicating the MS is requesting a status report (default is [0]); [0] - MS is not requesting a status report [1] - MS is requesting a status report **bit[6]**: User Data Header Indicator, 1-bit field: user is not responsible for setting this bit and, if any set, it will have no meaning (default is [0]); **bit[7]**: Reply Path, 1-bit field indicating the request for Reply Path (default is [0]); [0] - Reply Path not requested [1] - Reply Path requested **<vp>** - depending on **<fo>** setting: a) if **<fo>** asks for a *Not Present* Validity Period, **<vp>** can be any type and it will be not considered; b) if **<fo>** asks for a Validity Period in *relative format*, **<vp>** shall be integer type (default 167, i.e. 24 hours); 0..143 - (**<vp>** + 1) x 5 minutes 144..167 - 12 hours + ((**<vp>** - 143) x 30 minutes) 168..196 - (**<vp>** - 166) x 1 day 197..255 - (**<vp>** - 192) x 1 week c) if **<fo>** asks for a Validity Period in *absolute format*, **<vp>** shall be quoted time-string type (see **+CCLK**) d) if **<fo>** asks for a Validity Period in *enhanced format*, **<vp>** shall be the 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

+CSMP - Set Text Mode Parameters	SELINT 2
	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. **<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*
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:*
	
	`AT+CSMP=17,167,0,0`
	`OK`
	
	*Set the parameters for an outgoing message with validity period in enhanced format: the **<vp>** string actually codes 24 hours of validity period.*
	
	`AT+CSMP=9,"01A80000000000"`
	`OK`
	
	Set the parameters for an outgoing message with validity period in enhanced

+CSMP - Set Text Mode Parameters	SELINT 2
	format: the ***<vp>*** *string actually codes 60 seconds of validity period.* AT+CSMP=9,"023C0000000000" OK *Set the parameters for an outgoing message with validity period in enhanced format: the* ***<vp>*** *string actually codes 29 hours 85 minutes 30 seconds of validity period.* AT+CSMP=9,"03925803000000" OK
Reference	GSM 27.005; 3GPP TS 23.040; 3GPP TS 23.038

3.4.5.2.3. Show Text Mode Parameters - +CSDH

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

3.4.5.2.4. 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>**

+CSCB -Select Cell Broadcast Message Types	SELINT 2
	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	GSM 27.005, 3GPP TS 23.041, 3GPP TS 23.038.

3.4.5.2.5. Save Settings - +CSAS

+CSAS - Save Settings	SELINT 2
AT+CSAS [=<profile>]	Execution command saves settings which have been made by the **+CSCA**, **+CSMP** and **+CSCB** commands in local non volatile memory. Parameter: **<profile>** 0 - it saves the settings to NVM (factory default). 1..n - SIM profile number; the value of n depends on the SIM and its max is 3. Note: certain settings may not be supported by the SIM and therefore they are always saved to NVM, regardless the value of **<profile>**. Note: If parameter is omitted the settings are saved in the non volatile memory. Note: +CSCB <mids> (Message Identifiers) parameter can be saved to SIM only if the “Cell broadcast message identifier selection” file is present on the SIM itself. This file, if present, has storage for only a single set of data. Therefore, it is not possible to save different <mids> in different SIM profiles; <mids> value, once changed and saved, will be the same for all SIM profiles.
AT+CSAS=?	Test command returns the possible range of values for the parameter **<profile>**.
Reference	GSM 27.005

3.4.5.2.6. Restore Settings - +CRES

+CRES - Restore Settings	SELINT 2
AT+CRES [=<profile>]	Execution command restores message service settings saved by **+CSAS** command from either NVM or SIM. Parameter: **<profile>** 0 - it restores message service settings from NVM. 1..n - it restores message service settings from SIM. The value of n depends on the SIM and its max is 3. Note: certain settings may not be supported by the SIM and therefore they are always restored from NVM, regardless the value of **<profile>**. Note: If parameter is omitted the command restores message service settings from NVM.
AT+CRES=?	Test command returns the possible range of values for the parameter **<profile>**.
Reference	GSM 27.005

3.4.5.3. Message Receiving And Reading

3.4.5.3.1. New Message Indications - +CNMI

+CNMI - New Message Indications To Terminal Equipment	SELINT 2
AT+CNMI=[<mode>[,<mt> [,<bm>[,<ds> [,<bfr>]]]]]	Set command selects the behaviour of the device on how the receiving of new messages from the network is indicated to the **DTE**. Parameter: **<mode>** - unsolicited result codes buffering option 0 - Buffer unsolicited result codes in the **TA**. If **TA** result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications. 1 - Discard indication and reject new received message unsolicited result codes when **TA-TE** link is reserved, otherwise forward them directly to the **TE**. 2 - Buffer unsolicited result codes in the TA in case the **DTE** is busy and flush them to the TE after reservation. Otherwise forward them directly to the TE. 3 - if **<mt>** is set to 1 an indication via 100 ms break is issued when a SMS is received while the module is in GPRS online mode. It enables the hardware ring line for 1 s. too. **<mt>** - result code indication reporting for SMS-DELIVER

+CNMI - New Message Indications To Terminal Equipment	SELINT 2

0 - No SMS-DELIVER indications are routed to the TE and messages are stored in SIM.

1 - If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using the following unsolicited result code:

+CMTI: <mems>,<index>

where:

<mems> - memory storage where the new message is stored (see **+CPMS**)

<index> - location on the memory where SMS is stored.

2 - SMS-DELIVERs (except class 2 messages and messages in the "store" message waiting indication group) are routed directly to the TE using the following unsolicited result code:

(PDU Mode)

+CMT: <alpha>,<length><CR><LF><pdu>

where:

<alpha> - alphanumeric representation of originator/destination number corresponding to the entry found in MT phonebook; used character set should be the one selected with command **+CSCS**.

<length> - PDU length

<pdu> - PDU message

(TEXT Mode)

+CMT:<oa>,<alpha>,<scts>*[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]*<CR><LF><data> (the information written in italics will be present depending on **+CSDH** last setting)

where:

<oa> - originating address, string type converted in the currently selected character set (see **+CSCS**)

<alpha> - alphanumeric representation of **<oa>**; used character set should be the one selected with command **+CSCS**.

<scts> - arrival time of the message to the SC

<tooa>*, *<tosca> - type of number **<oa>** or ***<sca>***:

129 - number in national format

145 - number in international format (contains the "**+**")

<fo> - first octet of 3GPP TS 23.040

<pid> - Protocol Identifier

<dcs> - Data Coding Scheme

<sca> - Service Centre address, string type, converted in the currently selected character set (see **+CSCS**)

<length> - text length

<data> - TP-User-Data

- 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

+CNMI - New Message Indications To Terminal Equipment	SELINT 2

<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

<pag> - page number

<pags> - total number of pages of the message

<data> - CBM Content of Message

- If **<dcs>** indicates that GSM03.38 default alphabet is used , each character of GSM alphabet will be converted into current TE character set (see **+CSCS**)
- If **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41)

<ds> - SMS-STATUS-REPORTs reporting option

0 - status report receiving is not reported to the **DTE** and is not stored

1 - the status report is sent to the **DTE** with the following unsolicited result code:

(PDU Mode)

+CDS: <length><CR><LF><PDU>

where:

<length> - PDU length

<PDU> - message PDU

+CNMI - New Message Indications To Terminal Equipment	SELINT 2
	(TEXT Mode) **+CDS: <fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st>** where: **<fo>** - first octet of the message PDU **<mr>** - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format **<ra>** - recipient address, string type, represented in the currently selected character set (see **+CSCS**) **<tora>** - type of number **<ra>** **<scts>** - arrival time of the message to the SC **<dt>** - sending time of the message **<st>** - message status as coded in the PDU 2 - if a status report is stored, then the following unsolicited result code is sent: **+CDSI: <memr>,<index>** where: **<memr>** - memory storage where the new message is stored "SM" **<index>** - location on the memory where SMS is stored **<bfr>** - buffered result codes handling method: 0 - **TA** buffer of unsolicited result codes defined within this command is flushed to the **TE** when **<mode>=1..3** is entered (**OK** response shall be given before flushing the codes) 1 - **TA** buffer of unsolicited result codes defined within this command is cleared when **<mode>=1..3** is entered.
AT+CNMI?	Read command returns the current parameter settings for **+CNMI** command in the form: **+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>**
AT+CNMI=?	Test command reports the supported range of values for the **+CNMI** command parameters.
Reference	GSM 27.005
Note	**DTR** signal is ignored, hence the indication is sent even if the **DTE** is inactive (**DTR** signal is **Low**). In this case the unsolicited result code may be lost so if MODULE remains active while **DTE** is not, at **DTE** startup is suggested to check whether new messages have reached the device meanwhile with command **AT+CMGL=0** that lists the new messages received.
Note	It has been necessary to take the following decisions to get over any incoherence problem in a multiplexed environment (see **+CMUX**), due to the possibility to have contemporaneous different settings of parameter **<mt>** in different sessions: **Message Class** or **Indication group**, as in the **DCS** / SM **Class** is **No Class** ***OR*** SM **Class** is **0** or **1** or **3** / SM **Class** is **3**

+CNMI - New Message Indications To Terminal Equipment		SELINT 2

<mt> settings in different sessions	*OR* SM is an **Indication** with group "**Discard**"	
<mt>=2 for session "0" *AND* **<mt>=*anyvalue*** for other session(s)	**URC is shown only on session "0"**	
<mt>=3 for session "0" *AND* **<mt>=0** or **1** for other session(s)		**URC is shown only on session "0"**

Note

The following table clarifies which URC is shown and if the DELIVER SM is stored, depending on the **<mt>** parameter value and the SM class.

		SM CLASS				
		0 / msg waiting discard	**1 / no class**	**2**	**3**	**msg waiting store**
<mt>	**0**	Store in <mems>	Store in <mems>	Store in SIM	Store in <mems>	Store in <mems>
	1	Store in <mems> - Send ind **+CMTI**	Store in <mems> - Send ind **+CMTI**	Store in SIM - Send ind **+CMTI**	Store in <mems> - Send ind **+CMTI**	Store in <mems> - Send ind **+CMTI**
	2	*Route msg to TE:* ***+CMT***[8]	*Route msg to TE:* ***+CMT***[8]	Store in SIM - Send ind **+CMTI**	*Route msg to TE:* ***+CMT***[8]	Store in <mems> - Send ind **+CMTI**
	3	Store in <mems> - Send ind **+CMTI**	Store in <mems>- Send ind **+CMTI**	Store in SIM - Send ind **+CMTI**	*Route msg to TE:* ***+CMT***[8]	Store in <mems> - Send ind **+CMTI**

where <mems> is the memory where the received messages are stored (see **+CPMS**)

Note

It has been necessary to take the following decision to get over an incoherence problem in a multiplexed environment (see **+CMUX**), due to the possibility to have contemporaneous different settings of parameter **<ds>** in different sessions:

<ds> settings in different sessions	

[8] The SM is not stored!

+CNMI - New Message Indications To Terminal Equipment		SELINT 2
	<ds>=1 for session "0" ***AND*** **<ds>=2** for at least one of the other sessions	**URC +CDS is shown only on session "0" and no status report is stored on SIM**
	<ds>=0 for session "0" ***AND*** **<ds>=2** for at least one of the other sessions	**no URC is shown on any session and no status report is stored on SIM**

3.4.5.3.2. 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 GSM 3.40 **(Text Mode)** Parameter: **<stat>** "REC UNREAD" - new message

+CMGL - List Messages	SELINT 2

"REC READ" - read message
"STO UNSENT" - stored message not yet sent
"STO SENT" - stored message already sent
"ALL" - all messages.

The representation format for stored messages (either sent or unsent) or received messages (either read or unread, not message delivery confirm) is (the information written in italics will be present depending on **+CSDH** last setting):

**+CMGL: <index>,<stat>,<oa/da>,<alpha>,<scts>*[,<tooa/toda>,*
***<length>]*<CR><LF><data>[<CR><LF>**
+CMGL: <index>,<stat>,<oa/da>,<alpha>,<scts>*[,<tooa/toda>,*
***<length>]*<CR><LF><data>[...]]**

where:
<index> - message position in the storage
<stat> - message status
<oa/da> - originator/destination address, string type , represented in the currently selected character set (see **+CSCS**)
<alpha> - string type alphanumeric representation of **<da>** or **<oa>**, corresponding to an entry found in the phonebook; used character set is the one selected with command **+CSCS**.
<scts> - TP-Service Centre Time Stamp in Time String Format
<tooa/toda> - type of number **<oa/da>**
129 - number in national format
145 - number in international format (contains the "**+**")
<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)
- If <fo> indicates that a UDH is present each 8-bit octet will be converted into two IRA character long hexadecimal number. The <length> indicates text length in characters without UDH length.

If there is at least one message delivery confirm to be listed the representation format is**:**

+CMGL: <index>,<stat>,<fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st>
[<CR><LF>
+CMGL: <index>,<stat>,<fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st>
[...]]

+CMGL - List Messages	SELINT 2
	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	GSM 27.005, 3GPP TS 23.040

3.4.5.3.3. 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 **<stat>** - status of the message 0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent **<alpha>** - string type alphanumeric representation of **<da>** or **<oa>**,

+CMGR - Read Message	SELINT 2

corresponding to an entry found in the phonebook; used character set is the one selected with command **+CSCS**.

<length> - length of the PDU in bytes.

<pdu> - message in PDU format according to GSM 3.40.

The status of the message and entire message data unit **<pdu>** is returned.

(Text Mode)

If there is a **Received** message in location **<index>** the output format is (the information written in *italics* will be present depending on **+CSDH** last setting)*:*

+CMGR: <stat>,<oa>,<alpha>,<scts>*[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]*<CR><LF><data>

If there is either a **Sent** or an **Unsent** message in location **<index>** the output format is:

+CMGR: <stat>,<da>,<alpha>*[,<toda>,<fo>,<pid>,<dcs>,[<vp>],<sca>,<tosca>,<length>]*<CR><LF><data>

If there is a **Message Delivery Confirm** in location **<index>** the output format is:

+CMGR: <stat>,<fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st>

where:

<stat> - status of the message
"REC UNREAD" - new received message unread
"REC READ" - received message read
"STO UNSENT" - message stored not yet sent
"STO SENT" - message stored already sent

<fo> - first octet of the message PDU

<mr> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format

<ra> - recipient address, string type, represented in the currently selected character set (see **+CSCS**)

<tora> - type of number **<ra>**

<scts> - arrival time of the message to the SC

<dt> - sending time of the message

<st> - message status as coded in the PDU

<pid> - Protocol Identifier

<dcs> - Data Coding Scheme

<vp> - Validity Period; its format depends on SMS-SUBMIT **<fo>** setting (see **+CSMP**):

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

+CMGR - Read Message	SELINT 2
	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	GSM 27.005

3.4.5.4. Message Sending And Writing

3.4.5.4.1. Send Message - +CMGS

+CMGS - Send Message	SELINT 2
(PDU Mode) **AT+CMGS=<length>**	**(PDU Mode)** Execution command sends to the network a message. Parameter: **<length>** - length of the PDU to be sent in bytes (excluding the SMSC address octets). 7..164 After command line is terminated with **<CR>**, the device responds sending a four character sequence prompt: **<CR><LF><greater_than><space> (IRA 13, 10, 62, 32)** and waits for the specified number of bytes.

+CMGS - Send Message	SELINT 2
	Note: the **DCD** signal shall be in **ON** state while PDU is given. Note: the echoing of given characters back from the TA is controlled by echo command **E** Note: the **PDU** shall be hexadecimal format (each octet of the **PDU** is given as two IRA character long hexadecimal number) and given in one line. Note: when the length octet of the SMSC address (given in the **PDU**) equals zero, the SMSC address set with command **+CSCA** is used; in this case the SMSC Type-of-Address octet shall not be present in the **PDU**. To send the message issue **Ctrl-Z** char (**0x1A** hex). To exit without sending the message issue **ESC** char (**0x1B** hex). If message is successfully sent to the network, then the result is sent in the format: **+CMGS: <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. Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.
(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

+CMGS - Send Message	SELINT 2
	and current **<fo>** (see **+CSMP**) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM alphabet, according to GSM 27.005, Annex A; **backspace** can be used to delete last character and **carriage returns** can be used; 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. Note: if message sending fails for some reason, an error code is reported. Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued. Note: it is possible to send a concatenation of at most 10 SMs; the maximum number of chars depends on the **<dcs>**: 1520 chars if 3GPP TS 23.038 default alphabet is used, 1330 chars if 8-bit is used, 660 chars if UCS2 is used. If entered text is longer than this maximum value an error is raised
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	GSM 27.005

3.4.5.4.2. Send Message From Storage - +CMSS

+CMSS - Send Message From Storage	SELINT 2

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

3.4.5.4.3. 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

+CMGW - Write Message To Memory	SELINT 2
	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.
(Text Mode) **AT+CMGW[=<da>[,<toda>[,<stat>]]]**	**(Text Mode)** Execution command writes in the **<memw>** memory storage a new 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 "**+**") **<stat>** - message status. "REC UNREAD" - new received message unread (default for DELIVER messages) "REC READ" - received message read "STO UNSENT" - message stored not yet sent (default for SUBMIT messages) "STO SENT" - message stored already sent After command line is terminated with **<CR>**, the device responds sending a four character sequence prompt:

+CMGW - Write Message To Memory	SELINT 2

<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 GSM 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 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: 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.

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

3.4.5.4.4. 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 stored mobile originated messages (whether sent or not) untouched 2 - delete all read messages from **<memr>** storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched 3 - delete all read messages from **<memr>** storage, sent and unsent mobile originated messages, leaving unread messages untouched 4 - delete all messages from **<memr>** storage. Note: if **<delflag>** is present and not set to 0 then, if <index> is greater than 0, **<index>** is ignored and ME shall follow the rules for **<delflag>** shown above.
AT+CMGD=?	Test command shows the valid memory locations and optionally the supported values of **<delflag>**. **+CMGD: (supported <index>s list)[,(supported <delflag>s list)]**

Example	`AT+CMGD=?`
	`+CMGD: (1,2,3,6,7,17,18,19,20,37,38,39,47),(0-4)`
	
	`OK`

Reference	GSM 27.005

3.4.5.4.5. Select service for MO SMS messages - +CGSMS

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

3.4.6. Custom AT Commands

3.4.6.1. General Configuration AT Commands

3.4.6.1.1. 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.	
Note	The command is available only if the ENS functionality has been previously enabled (see **#ENS**)	

3.4.6.1.2. 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.	

3.4.6.1.3. 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.	

3.4.6.1.4. 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.	

3.4.6.1.5. Product Serial Number Identification - #CGSN

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

3.4.6.1.6. 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.	

3.4.6.1.7. 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.	

3.4.6.1.8. 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.	

3.4.6.1.9. 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>**	

#CEER – Extended numeric error report	SELINT 2

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

Value	Diagnostic
0	No error
1	Unassigned (unallocated) number
3	No route to destination
6	Channel unacceptable
8	Operator determined barring
16	Normal call clearing
17	User busy
18	No user responding
19	User alerting, no answer
21	Call rejected
22	Number changed
26	Non selected user clearing
27	Destination out of order
28	Invalid number format (incomplete number)
29	Facility rejected
30	Response to STATUS ENQUIRY
31	Normal, unspecified
34	No circuit/channel available
38	Network out of order
41	Temporary failure
42	Switching equipment congestion
43	Access information discarded
44	Requested circuit/channel not available
47	Resources unavailable, unspecified
49	Quality of service unavailable
50	Requested facility not subscribed
55	Incoming calls barred with in the CUG
57	Bearer capability not authorized
58	Bearer capability not presently available
63	Service or option not available, unspecified
65	Bearer service not implemented
68	ACM equal to or greater than ACMmax
69	Requested facility not implemented

#CEER – Extended numeric error report		SELINT 2
	70	Only restricted digital information bearer capability is available
	79	Service or option not implemented, unspecified
	81	Invalid transaction identifier value
	87	User not member of CUG
	88	Incompatible destination
	91	Invalid transit network selection
	95	Semantically incorrect message
	96	Invalid mandatory information
	97	Message type non-existent or not implemented
	98	Message type not compatible with protocol state
	99	Information element non-existent or not implemented
	100	Conditional IE error
	101	Message not compatible with protocol state
	102	Recovery on timer expiry
	111	Protocol error, unspecified
	127	Interworking, unspecified
	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

#CEER – Extended numeric error report				SELINT 2
		254	Call impossible	
		255	Lower layer failure	
AT#CEER=?	Test command returns **OK** result code.			
Reference	GSM 04.08			

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

#CEERNET – Ext error report for Network reject cause	SELINT 2
AT#CEERNET	Execution command causes the TA to return a numeric code in the format **#CEERNET: <code>** which should offer the user of the TA a report for the last mobility management(GMM/MM) or session management(SM) procedure not accepted by the network and a report of detach or deactivation causes from network. **<code>** values as follows

Value	Diagnostic
2	IMSI UNKNOWN IN HLR
3	ILLEGAL MS
4	IMSI UNKNOWN IN VISITOR LR
5	IMEI NOT ACCEPTED
6	ILLEGAL ME
7	GPRS NOT ALLOWED
8	OPERATOR DETERMINED BARRING(SM cause failure)/ GPRS AND NON GPRS NOT ALLOWED(GMM cause failure)
9	MS IDENTITY CANNOT BE DERIVED BY NETWORK
10	IMPLICITLY DETACHED
11	PLMN NOT ALLOWED
12	LA NOT ALLOWED
13	ROAMING NOT ALLOWED
14	GPRS NOT ALLOWED IN THIS PLMN
15	NO SUITABLE CELLS IN LA
16	MSC TEMP NOT REACHABLE
17	NETWORK FAILURE
20	MAC FAILURE
21	SYNCH FAILURE
22	CONGESTION
23	GSM AUTHENTICATION UNACCEPTABLE
24	MBMS BEARER CAPABILITIES INSUFFICIENT FOR THE SERVICE
25	LLC OR SNDCP FAILURE
26	INSUFFICIENT RESOURCES
27	MISSING OR UNKNOWN APN
28	UNKNOWN PDP ADDRESS OR PDP TYPE
29	USER AUTHENTICATION FAILED
30	ACTIVATION REJECTED BY GGSN
31	ACTIVATION REJECTED UNSPECIFIED
32	SERVICE OPTION NOT SUPPORTED

#CEERNET – Ext error report for Network reject cause		SELINT 2
	33	REQ. SERVICE OPTION NOT SUBSCRIBED
	34	SERV.OPTION TEMPORARILY OUT OF ORDER
	35	NSAPI ALREADY USED
	36	REGULAR DEACTIVATION
	37	QOS NOT ACCEPTED
	38	CALL CANNOT BE IDENTIFIED(MM cause failure) / ~~SMN~~ NETWORK FAILURE(SM cause failure)
	39	REACTIVATION REQUIRED
	40	NO PDP CTXT ACTIVATED(GMM cause failure)/ FEATURE NOT SUPPORTED(SM cause failure)
	41	SEMANTIC ERROR IN TFT OPERATION
	42	SYNTACTICAL ERROR IN TFT OPERATION
	43	UNKNOWN PDP CNTXT
	44	SEM ERR IN PKT FILTER
	45	SYNT ERR IN PKT FILTER
	46	PDP CNTXT WITHOUT TFT ACTIVATED
	47	MULTICAST GROUP MEMBERSHIP TIMEOUT
	48	RETRY ON NEW CELL BEGIN(if MM cause failure) / ACTIVATION REJECTED BCM VIOLATION(if SM cause failure)
	50	PDP TYPE IPV4 ONLY ALLOWED
	51	PDP TYPE IPV6 ONLY ALLOWED
	52	SINGLE ADDRESS BEARERS ONLY ALLOWED
	63	RETRY ON NEW CELL END
	81	INVALID TRANSACTION IDENTIFIER
	95	SEMANTICALLY INCORRECT MESSAGE
	96	INVALID MANDATORY INFORMATION
	97	MSG TYPE NON EXISTENT OR NOT IMPLEMENTED
	98	MSG TYPE NOT COMPATIBLE WITH PROTOCOL STATE
	99	IE NON_EXISTENT OR NOT IMPLEMENTED
	100	CONDITIONAL IE ERROR
	101	MSG NOT COMPATIBLE WITH PROTOCOL STATE
	111	PROTOCOL ERROR UNSPECIFIED
	112	APN RESTRICTION VALUE INCOMPATIBLE WITH ACTIVE PDP CONTEXT
AT#CEERNET=?	Test command returns **OK** result code.	
Reference	3GPP 24.008	

3.4.6.1.11. 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.	

#PCT - Display PIN Counter	SELINT 2
	1..10 - if the device is waiting either SIM PUK or SIM PUK2 to be given.
AT#PCT=?	Test command returns the OK result code.

3.4.6.1.12. Software Shut Down - #SHDN

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

3.4.6.1.13. Extended Reset - #Z

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

3.4.6.1.14. Periodic Reset - #ENHRST

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

#ENHRST – Periodic ReSeT	SELINT 2
	Note: the particular case AT#ENHRST=1,0 causes the immediate module reboot. In this case if AT#ENHRST=1,0 follows an AT command that stores some parameters in NVM, it is recommended to insert a delay of at least 5 seconds before to issue AT#ENHRST=1,0, to permit the complete NVM storing.
AT#ENHRST?	Read command reports the current parameter settings for **# 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 …`

3.4.6.1.15. 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**.

#WAKE - Wake From Alarm Mode	SELINT 2
	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.
AT#WAKE?	Read command returns the **operating status** of the device in the format: **#WAKE: <status>** where: **<status>** 0 - normal operating mode 1 - alarm mode or normal operating mode with some alarm activity.
AT#WAKE=?	Test command returns **OK** result code.

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

#GPIO - General Purpose Input/Output Pin Control	SELINT 2
AT#GPIO=[<pin>, <mode>[,<dir>]]	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: **<pin>** - GPIO pin number; supported range is from 1 to a value that depends on the hardware. **<mode>** - its meaning depends on **<dir>** setting: 0 - no meaning if **<dir>=0** - INPUT - output pin cleared to 0 (**Low**) if **<dir>=1** - OUTPUT - no meaning if **<dir>=2** - ALTERNATE FUNCTION - no meaning if **<dir>=3** – TRISTATE PULL DOWN 1 - no meaning if **<dir>=0** - INPUT - output pin set to 1 (**High**) if **<dir>=1** - OUTPUT - no meaning if **<dir>=2** - ALTERNATE FUNCTION - no meaning if **<dir>=3** – TRISTATE PULL DOWN 2 - Reports the read value from the input pin if **<dir>=0** - INPUT - Reports the read value from the input pin if **<dir>=1** - OUTPUT - Reports a no meaning value if **<dir>=2** - ALTERNATE FUNCTION - Reports a no meaning if **<dir>=3** – TRISTATE PULL DOWN **<dir>** - GPIO pin direction 0 - pin direction is INPUT 1 - pin direction is OUTPUT 2 - pin direction is ALTERNATE FUNCTION (see Note). 3 - pin is set to PULL DOWN (see Note) Note: when **<mode>=2** (and **<dir>** is omitted) the command reports the direction

#GPIO - General Purpose Input/Output Pin Control	SELINT 2
	and value of pin **GPIO<pin>** in the format: **#GPIO: <dir>,<stat>** where: **<dir>** - current direction setting for the **GPIO<pin>** **<stat>** □ logic value read from pin **GPIO<pin>** in the case the pin **<dir>** is set to input; □ logic value present in output of the pin **GPIO<pin>** in the case the pin **<dir>** is currently set to output; □ no meaning value for the pin **GPIO<pin>** in the case the pin **<dir>** is set to alternate function or Tristate pull down Note: "ALTERNATE FUNCTION" value is valid only for following pins: □ **GPIO4** - alternate function is “RF Transmission Control” □ **GPIO5** - alternate function is “RF Transmission Monitor” □ **GPIO6** - alternate function is "Alarm Output" (see **+CALA**) □ **GPIO7** - alternate function is "Buzzer Output" (see **#SRP**) Note: while using the pins in the alternate function, the GPIO read/write access to that pin is not accessible and shall be avoided. *For GM862 family products only* □ **GPIO1** is input only and **GPIO2** is output only. □ since the **GPIO1** reading is done after an insulating transistor, the reported value is the opposite of the logic status of the **GPIO1** input pin 1. **GPIO2** is an OPEN COLLECTOR output, the command sets the transistor base level, hence the open collector output is negated Note: Tristate pull down settings is available only on some products and GPIO. In case it is not available, automatically the setting is reverted to INPUT. Check the product HW userguide to verify if Tristate pull down settings is available and if it is the default at system startup
AT#GPIO?	Read command reports the read direction and value of all **GPIO** pins, in the format: **#GPIO: <dir>,<stat>[<CR><LF>#GPIO: <dir>,<stat>[…]]** where **<dir>** - as seen before **<stat>** - as seen before
AT#GPIO=?	Test command reports the supported range of values of the command parameters **<pin>**, **<mode>** and **<dir>**.
Example	AT#GPIO=3,0,1

#GPIO - General Purpose Input/Output Pin Control	SELINT 2
	OK AT#GPIO=3,2 #GPIO: 1,0 OK AT#GPIO=4,1,1 OK AT#GPIO=5,0,0 OK AT#GPIO=6,2 #GPIO: 0,1 OK

3.4.6.1.17. STAT_LED GPIO Setting - #SLED

#SLED - STAT_LED GPIO Setting	SELINT 2
AT#SLED=<mode>[,<on_duration>[,<off_duration>]]	Set command sets the behaviour of the **STAT_LED** GPIO Parameters: **<mode>** - defines how the **STAT_LED** GPIO is handled 0 - GPIO tied **Low** (default for GL865-DUAL and GL868-DUAL) 1 - GPIO tied **High** 2 - GPIO handled by Module Software (factory default) 3 - GPIO is turned on and off alternatively, with period defined by the sum **<on_duration> + <off_duration>** **<on_duration>** - duration of period in which **STAT_LED** GPIO is tied **High** while **<mode>=3** 1..100 - in tenth of seconds (default is 10) **<off_duration>** - duration of period in which **STAT_LED** GPIO is tied **Low** while **<mode>=3** 1..100 - in tenth of seconds (default is 10) Note: values are saved in NVM by command **#SLEDSAV** Note: at module boot the **STAT_LED** GPIO is always tied **High** and holds this value until the first NVM reading.
AT#SLED?	Read command returns the **STAT_LED** GPIO current setting, in t he format: **#SLED: <mode>,<on_duration>,<off_duration>**
AT#SLED=?	Test command returns the range of available values for parameters **<mode>**, **<on_duration>** and **<off_duration>**.

3.4.6.1.18. Save STAT_LED GPIO Setting - #SLEDSAV

#SLEDSAV - Save STAT_LED GPIO Setting	SELINT 2
AT#SLEDSAV	Execution command saves **STAT_LED** setting in NVM.

#SLEDSAV - Save STAT_LED GPIO Setting		SELINT 2
AT#SLED=?	Test command returns **OK** result code.	

3.4.6.1.19. 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>**

3.4.6.1.20. Auxiliary Voltage Output Control - #VAUX

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

#VAUX- Auxiliary Voltage Output Control	SELINT 2
	0 - output off 1 - output on 2 - query current value of **VAUX** pin Note: when **<stat>=2** and command is successful, it returns: **#VAUX: <value>** where: **<value>** - power output status 0 - output off 1 - output on Note: the current setting is stored through **#VAUXSAV**
AT#VAUX?	Read command reports whether the Auxiliary Voltage pin output is currently enabled or not, in the format: **#VAUX: <value>**
AT#VAUX=?	Test command reports the supported range of values for parameters **<n>**, **<stat>**.

3.4.6.1.21. Auxiliary Voltage Output Save - #VAUXSAV

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

3.4.6.1.22. 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:

#V24CFG - V24 Output Pins Configuration	SELINT 2
	0 - AT commands serial port mode: output pins are controlled by serial port device driver. (default) 1 - GPIO mode: output pins are directly controlled by **#V24** command only.
AT#V24CFG?	Read command returns actual mode for all the pins (either output and input) in the format: **#V24CFG: <pin1>,<mode1>[<CR><LF><CR><LF>** **#V24CFG: <pin2>,<mode2>[...]]** Where: **<pin*n*> -** AT command serial port interface HW pin **<mode*n*>** - AT commands serial port interface hardware pin mode
AT#V24CFG=?	Test command reports supported range of values for parameters **<pin>** and **<mode>**.

3.4.6.1.23. V24 Output Pins Control - #V24

#V24 - V24 Output Pins Control	SELINT 2
AT#V24=<pin>[,<state>]	Set command sets the AT commands serial port interface output pins state. 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**" **<state>** - State of AT commands serial port interface output hardware pins(0, 1, 2, 3) when pin is in GPIO mode (see **#V24CFG**): 0 - Low 1 - High Note: if **<state>** is omitted the command returns the actual state of the pin **<pin>**.
AT#V24?	Read command returns actual state for all the pins (either output and input) in the format: **#V24: <pin1>,<state1>[<CR><LF>** **#V24: <pin2>,<state2>[...]]** where

#V24 - V24 Output Pins Control	SELINT 2
	<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>**.

3.4.6.1.24. 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>**.

3.4.6.1.25. Multislot Class Control - #MSCLASS

#MSCLASS - Multislot Class Control	SELINT 2
AT#MSCLASS=[<class>[,<autoattach>]]	Set command sets the multislot class Parameters: **<class>** - multislot class; take care: class 7 is not supported. (1-12),(30-33),(35-38) - GPRS (EGPRS) class (12 factory default) **<autoattach>** 0 - the new multislot class is enabled only at the next detach/attach or after a reboot. 1 - the new multislot class is enabled immediately, automatically forcing a detach / attach procedure. Note: DTM multislot class is automatically chosen with maximum allowed value for every GPRS (EGPRS) subset

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

3.4.6.1.26. Cell Monitor - #MONI

#MONI - Cell Monitor	SELINT 2
AT#MONI[=[<number>]]	**#MONI** is both a set and an execution command. Set command sets one cell out of seven, in the neighbour list of the serving cell including it, from which extract GSM /UMTS-related information. Parameter: **<number>** **(GSM network)** 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 active set **1** – it is the candidate set **2** – it is the syncronized neighbour set **3** – it is the asyncronized neighbour set **4..7** – 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: <netmame> PSC:<psc> RSCP:<rscp> LAC:<lac> Id:<id>EcIo:<ecio> UARFCN:<uarfcn> PWR:<dBm> dBm DRX:<drx> SCR:<scr>**

#MONI - Cell Monitor	SELINT 2

b) When the network name is unknown, the format is:

(GSM network)
#MONI: Cc:<cc> Nc:<nc> BSIC:<bsic> RxQual:<qual> LAC:<lac> Id:<id> ARFCN:<arfcn> PWR:<dBm> dBm TA: <timadv>
(UMTS network)
#MONI: Cc:<cc> Nc:<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, the format is:

(GSM network)
#MONI: Adj Cell<n> [LAC:<lac> Id:<id>] ARFCN:<arfcn> PWR:<dBm> dBm
(UMTS network)
#MONI: PSC:<psc> RSCP:<rscp> EcIo:<ecio> UARFCN:<uarfcn> SCR:<scr>

where:
<netname> - name of network operator
<cc> - country code
<nc> - network operator code
<n> - progressive number of adjacent cell
<bsic> - base station identification code
<qual> - quality of reception
0..7
<lac> - localization area code
<id> - cell identifier
<arfcn> - assigned radio channel
<dBm> - received signal strength in dBm
<timadv> - timing advance
<psc> - primary synchronisation code
<rscp> - Received Signal Code Power in dBm
<ecio> - chip energy per total wideband power in dBm
<uarfcn> - UMTS assigned radio channel
<drx> - Discontinuous reception cycle length
<scr> - Scrambling code

Note: TA: **<timadv>** is reported only for the serving cell.

2. If the last setting done by **#MONI** is **7**, the execution command produces a table-like formatted output, as follows:

a. First row reports the identifying name of the 'columns'
#MONI:
Cell BSIC LAC CellId ARFCN Power C1 C2 TA RxQual PL MN<CR><LF>

#MONI - Cell Monitor	SELINT 2
	b. Second row reports a complete set of GSM-related information for the serving cell: **#MONI:** **S: <bsic> <lac> <id> <arfcn> <dBm> <C1value> <C2value> <timadv> <qual> <netname><CR><LF>** c. 3rd to 8th rows report a reduced set of GSM-related information for the cells in the neighbours: **#MONI:** **N<n> <bsic> <lac> <id> <arfcn> <dBm> <C1value> <C2value>[<CR><LF>]** where: **<C1value>** - C1 reselection parameter **<C2value>** - C2 reselection parameter other parameters as before NOTE: Currently, AT#MONI=7 is only available in case of GSM network.
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 informations, along with the ordinal number of the current selected cell, in the format: **#MONI: (<MaxCellNo>,<CellSet>)** where: **<MaxCellNo>** - maximum number of cells, in ~~a~~ the neighbour list of the serving cell and excluding it, from which we can extract GSM-related informations. This value is always **6**. **<CellSet>** - the last setting done with command **#MONI**.

Example	*Set command selects the cell 0*
	`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`
	
	`OK`
	
	Set command selects the special request to obtain GSM-related information from the whole set of seven cells in the neighbour list of the serving cell
	`at#moni=7`
	`OK`
	
	Execution command reports the requested information in table-like format

#MONI - Cell Monitor	SELINT 2
	at#moni #MONI: Cell BSIC LAC CellId ARFCN Power C1 C2 TA RxQual PLMN #MONI: S 70 55FA 1D23 736 -83dbm 19 33 1 0 I WIND #MONI: N1 75 55FA 1297 983 -78dbm 26 20 #MONI: N2 72 55FA 1289 976 -82dbm 22 16 #MONI: N3 70 55FA 1D15 749 -92dbm 10 18 #MONI: N4 72 55FA 1D0D 751 -92dbm 10 18 #MONI: N5 75 55FA 1296 978 -95dbm 9 3 #MONI: N6 70 55FA 1D77 756 -99dbm 3 11 OK
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.

3.4.6.1.27. Serving Cell Information - #SERVINFO

#SERVINFO - Serving Cell Information	SELINT 2
AT#SERVINFO	Execution command reports information about serving cell, in the format: (**GSM network**) **#SERVINFO: <B-ARFCN>,<dBM>,<NetNameAsc>,<NetCode>,** **<BSIC>,<LAC>,<TA>,<GPRS>[,[<PB-ARFCN>],[<NOM>],** **<RAC>,[<PAT>]]** (**UMTS network**) #SERVINFO: <UARFCN>, <dBM>, <NetNameAsc>,<NetCode>, <PSC>,<LAC>,<DRX>,<SD>,<RSCP>, <NOM>,<RAC> where: **<B-ARFCN>** - BCCH ARFCN of the serving cell **<dBM>** - received signal strength in dBm **<NetNameAsc>** - operator name, quoted string type **<NetCode>** - country code and operator code, hexadecimal representation **<BSIC>** - Base Station Identification Code **<LAC>** - Localization Area Code **<TA>** - Time Advance: it's available only if a GSM or GPRS is running **<GPRS>** - GPRS supported in the cell 0 - not supported 1 - supported The following information will be present only if GPRS is supported in the cell **<PB-ARFCN>** - if PBCCH is supported by the cell, PBCCH ARFCN of the serving cell otherwise the label **"hopping"** will be printed

#SERVINFO - Serving Cell Information	SELINT 2
	<NOM> - Network Operation Mode .."I" "II" .."III" **<RAC>** - Routing Area Colour Code **<PAT>** - Priority Access Threshold ..0 ..3..6 **<UARFCN>** - UMTS ARFCN of the serving cell **<PSC>** - Primary Synchronisation Code **<DRX>** - Discontinuous reception cycle length **<SD>** - Service Domain 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.

3.4.6.1.28. Read current network status - #RFSTS

#RFSTS – Read current network status	SELINT 2

#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 **<RR>** - Radio Resource state **<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>,<RSCP>,<RSSI>,<LAC>,** **<RAC>,<TXPWR>,<DRX>,<MM>,<RRC>,<NOM>,<BLER>,<CID>,<IMSI>,** **<NetNameAsc>,<SD>,<nAST>** 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

#RFSTS – Read current network status	SELINT 2
	<RAC> - Routing Area Code **<TXPWR>** - Tx Power **<DRX>** - Discontinuous reception cycle Length (cycle length in ms) **<MM>** - Mobility Management state **<RR>** - Radio Resource state **<NOM>** - Network Operator Mode **<BLER>** - Block Error Rate (e.g., 005 means 0.5 %) **<CID>** - Cell ID **<IMSI>** - International Mobile Station ID **<NetNameAsc>** - Operator name **<SD>** - Service Domain (see above) **<nAST>** - Number of Active Set (Maximum 6)
AT#RFSTS=?	Test command tests for command existence.

3.4.6.1.29. 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 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)
AT#QSS=?	Test command returns the supported range of values for parameter **<mode>**.

3.4.6.1.30. ATD Dialing Mode - #DIALMODE

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

3.4.6.1.31. 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

#ECAM - Extended Call Monitoring	SELINT 2
	<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>**

3.4.6.1.32. SMS Overflow - #SMOV

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

#SMOV - SMS Overflow		SELINT 2
	#SMOV: <mode>	
AT#SMOV=?	Test command returns the supported range of values of parameter **<mode>**.	

3.4.6.1.33. Mailbox Numbers - #MBN

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

3.4.6.1.34. 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	

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

#MWI - Message Waiting Indication		SELINT 2
	#MWI: <enable>,<status>,<indicator>[,<count>][...]]]	
AT#MWI=?	Test command returns the range of available values for parameter **<enable>**.	

3.4.6.1.35. Call Forwarding Flags - #CFF

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

3.4.6.1.36. Audio Codec - #CODEC

#CODEC - Audio Codec	SELINT 2
AT#CODEC= [<codec>]	Set command sets the audio codec mode. Parameter: **<codec>** 0 - all the codec modes are enabled (factory default) 1..31 - sum of integers each representing a specific codec mode: 1 - **FR**, full rate mode enabled 2 - **EFR**, enhanced full rate mode enabled 4 - **HR**, half rate mode enabled 8 - **AMR-FR**, AMR full rate mode enabled 16 - **AMR-HR**, AMR half rate mode enabled Note: the full rate mode is added by default to any setting in the SETUP message (as specified in ETSI 04.08). Note: the setting 0 is equivalent to the setting 31. Note: The codec setting is saved in the profile parameters.
AT#CODEC?	Read command returns current audio codec mode in the format: **#CODEC: <codec>**
AT#CODEC=?	Test command returns the range of available values for parameter **<codec>**

Example	`AT#CODEC=14`
	`OK`
	
	sets the codec modes HR (4), EFR (2) and AMR-FR (8)

3.4.6.1.37. Network Timezone - #NITZ

#NITZ - Network Timezone	SELINT 2
AT#NITZ=	Set command enables/disables (a) automatic date/time updating, (b) Full Network

#NITZ - Network Timezone	**SELINT 2**
[<val> **[,<mode>]]**	Name applying and (c) **#NITZ** URC; moreover it permits to change the **#NITZ** URC format. Date and time information can be sent by the network after GSM registration or after GPRS attach. Parameters: **<val>** 0 - disables (a) automatic data/time updating, (b) Full Network Name applying and (c) **#NITZ** URC; moreover it sets the **#NITZ** URC *'basic'* format (see **<datetime>** below) (factory default for all products except GE865-QUAD and GE864-DUAL V2) 1..15 - as a sum of: 1 - enables automatic date/time updating 2 - enables Full Network Name applying 4 - it sets the **#NITZ** URC *'extended'* format (see **<datetime>** below) 8 - it sets the **#NITZ** URC *'extended'* format with Daylight Saving Time (DST) support (see **<datetime>** below) (default for GE865-QUAD and GE864-DUAL V2: 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"**

#NITZ - Network Timezone	SELINT 2
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>**.

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

Example	`AT#CCLK="02/09/07,22:30:00+04,1"`
	`OK`
	`AT#CCLK?`

#CCLK - Clock Management	SELINT 2
	#CCLK: 02/09/07,22:30:25+04,1 OK

3.4.6.1.39. Enhanced Network Selection - #ENS

#ENS - Enhanced Network Selection	SELINT 2
AT#ENS=[<mode>]	Set command is used to activate the ENS functionality. Parameter: **<mode>** 0 - disable ENS functionality (default) 1 - enable ENS functionality; if **AT#ENS=1** has been issued, the following functionalities are enabled: a. extension of available records in **+CNUM** and **#SNUM** commands b. handling of telephon number extended length in phonebook commands (see **+CPBR**, **+CPBF**, **+CPBW**) c. availability of **+PACSP** command and the following values will be automatically set: ➢ at every next power-up a Band GSM 850 and PCS enabled (**AT#BND=3**) ➢ just at first next power-up a Automatic Band Selection enabled (**AT#AUTOBND=1**) only if the previous setting was different from **AT#AUTOBND=2** Note: the new setting will be available just at first next power-up. Note: If 'Four Band' Automatic Band Selection has been activated (**AT#AUTOBND=2**), at power-up the value returned by **AT#BND?** could be different from 3 when ENS functionality is enabled.
AT#ENS?	Read command reports whether the ENS functionality is currently enabled or not, in the format: **#ENS: <mode>** where: **<mode>** as above
AT#ENS=?	Test command reports the available range of values for parameter **<mode>**.
Reference	Cingular Wireless LLC Requirement

3.4.6.1.40. Select Band - #BND

#BND - Select Band	SELINT 2
AT#BND= **[<band>] [,** **<UMTS band>]**	Set command selects the current GSM and UMTS bands. Parameter **<band>**: 0 - GSM 900MHz + DCS 1800MHz 1 - GSM 900MHz + PCS 1900MHz; this value is not available if the ENS functionality has been activated (see **#ENS**) 2 - GSM 850MHz + DCS 1800MHz (available only on quadri-band modules); this value is not available if the ENS functionality has been activated (see **#ENS**) 3 - GSM 850MHz + PCS 1900MHz (available only on quadri-band modules) <UMTS band>: 0 - 2100MHz(FDD I) 1 - 1900MHz(FDD II) 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) 6 - 2100MHz(FDD I) + 900MHz(FDD VIII) 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.
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>**.

3.4.6.1.41. 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 (default for all products, except GE865-QUAD) 1 - enables automatic band selection at ***next*** power-up; the automatic band selection stops as soon as a GSM cell is found (deprecated). 2 – (default for GE865-QUAD) enables automatic band selection in four bands (at 850/1900 and 900/1800); differently from previous settings it takes ***immediate*** effect Note: necessary condition to *effectively* have automatic band selection at next power-up (due to either **AT#AUTOBND=1** or **AT#AUTOBND=2**) is that **AT+COPS=0** has to be previously issued Note: if automatic band selection is enabled **(AT#AUTOBND=1)** the band changes every about 90 seconds through available bands until a GSM cell is found. Note: if the current setting is different from **AT#AUTOBND=2** and we're issuing **AT#ENS=1**, at ***first next*** power-up after the ENS functionality has been activated (see **#ENS**) the automatic band selection (**AT#AUTOBND=1**) is enabled.
AT#AUTOBND?	Read command returns whether the automatic band selection is enabled or not in the form: **#AUTOBND: <value>**
AT#AUTOBND=?	Test command returns the range of supported values for parameter **<value>**.
Note:	Not available for GC864-DUAL, GC864-DUAL V2 and GE864-DUAL V2

3.4.6.1.42. Skip Escape Sequence - #SKIPESC

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

#SKIPESC - Skip Escape Sequence	SELINT 2
AT#SKIPESC?	Read command reports whether escape sequence skipping is currently enabled or not, in the format: **#SKIPESC: <mode>**
AT#SKIPESC=?	Test command reports supported range of values for parameter **<mode>**.

3.4.6.1.43. 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 the ENS functionality has not been previously enabled (see **#ENS**), **<index>**=1 is the only value admitted. If only **<index>** value is given, then delete the EFmsisdn record in location **<index>** is deleted. **<number>** - string containing the phone number The string could be written between quotes. If the ENS functionality has been previously enabled (see **#ENS**) "+" at start only is also admitted (international numbering scheme). **<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

3.4.6.1.44. GSM Context Definition - #GSMCONT

#GSMCONT - GSM Context Definition	SELINT 2
AT#GSMCONT=<cid>[,<P_type>,<CSD_num>]	Set command specifies context parameter values for the only GSM context, identified by the (local) context identification parameter 0. Parameters:

	<cid> - context Identifier; numeric parameter which specifies the only GSM context 0 **<P_type>** - protocol type; a string parameter which specifies the type of protocol "IP" - Internet Protocol **<CSD_num>** - phone number of the internet service provider Note: issuing **#GSMCONT=0** causes the values for context number **0** to become undefined. Note: command not yet implemented
AT#GSMCONT?	Read command returns the current settings for the GSM context, if defined, in the format: **+GSMCONT: <cid>,<P_type>,<CSD_num>**
AT#GSMCONT=?	Test command returns the supported range of values for all the parameters.

3.4.6.1.45. IPEGSM configurations - #GSMCONTCFG

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

3.4.6.1.46. 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`
	`AT#CGPADDR=0`
	`#CGPADDR: 0,”xxx.yyy.zzz.www”`
	
	`OK`

	AT#CGPADDR=? #CGPADDR: (0) OK

3.4.6.1.47. Call Establishment Lock - #CESTHLCK

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

3.4.6.1.48. Control Command Flow - #CFLO

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

3.4.6.1.49. Report concatenated SMS indexes - #CMGLCONCINDEX

#CMGLCONCINDEX – Report concatenated SMS indexes	SELINT 2

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

Example	`at#cmglconcindex`
	`#CMGLCONCINDEX: 3,0,2,3`
	`#CMGLCONCINDEX: 5,4,5,6,0,8`
	
	`OK`

3.4.6.1.50. 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]]]**

#CODECINFO – Codec Information	SELINT 2

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:

(if **<format>=0**)
<codec_used> - one of the following channel modes:
0 – no TCH
1 - full rate speech 1 on TCH
2 - full rate speech 2 on TCH
4 - half rate speech 1 on TCH
8 - full rate speech 3 – AMR on TCH
16 - half rate speech 3 – AMR on TCH
128 – full data 9.6
129 – full data 4.8
130 – full data 2.4
131 – half data 4.8
132 – half data 2.4
133 – full data 14.4

<codec_set>
1..31 - sum of integers each representing a specific codec mode:
1 - FR, full rate mode enabled
2 - EFR, enhanced full rate mode enabled
4 - HR, half rate mode enabled
8 - FAMR, AMR full rate mode enabled
16 - HAMR, AMR half rate mode enabled

(if **<format>=1**)
<codec_used> - one of the following channel modes:
None – no TCH
FR - full rate speech 1 on TCH

#CODECINFO – Codec Information	SELINT 2
	EFR - full rate speech 2 on TCH HR - half rate speech 1 on TCH FAMR - full rate speech 3 – AMR on TCH HAMR - half rate speech 3 – AMR on TCH FD96 - full data 9.6 FD48 - full data 4.8 FD24 - full data 2.4 HD48 - half data 4.8 HD24 - half data 2.4 FD144 - full data 14.4 **<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 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 31 (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>**.

3.4.6.1.51. Second Interface Instance - #SII

#SII – Second Interface Instance	SELINT 2
AT#SII=<inst>[,<rate>[,<format>[,<parity>]]]	This command activates one of the three AT instances available, and assigns it to the ASC1 serial port at a particular speed and format. Parameters: **<inst>:** is a number that identifies the instance that will be activated on ASC1. The parameter is mandatory and can be 0, 1 or 2: 0 – disables the other AT instance and restores the trace service; 1 – enables instance 1; 2 – enables instance 2;

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

	#SII: <inst>[,<rate>,<format>,<parity>] Note: the **<rate>, <format>** and **<parity>** parameters values are showed only if **<inst>** parameter has value either 1 or 2.
AT#SII=?	Test command reports the supported range of values for parameter **<inst>**, **<rate>**, **<format>** and **<parity>**

3.4.6.1.52. Select language - #LANG

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

3.4.6.2. AT Run Commands

3.4.6.2.1. Enable SMS Run AT Service - #SMSATRUN

#SMSATRUN – Enable SMS AT Run service	SELINT 2
AT#SMSATRUN=<mod>	Set command enables/disables the SMS AT RUN service. Parameter: **< mod >** 0: Service Disabled 1: Service Enabled Note1: When the service is active on a specific AT instance (see AT#SMSATRUNCFG), that instance cannot be used for any other scope, except for OTA service that has the highest priority. For example in the multiplexer request to establish the Instance, the request will be rejected. Note2: the current settings are stored in NVM.

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

3.4.6.2.2. Set SMS Run AT Service parameters - #SMSATRUNCFG

#SMSATRUNCFG – Set SMS AT Run Parameters	SELINT 2
AT#SMSATRUNCFG= <instance> [,<urcmod> [,<timeout>]]	Set command configures the SMS AT RUN service. Parameter: **<instance>:** AT instance that will be used by the service to run the AT Command. Range 2 - 3, default 3. **<urcmod>:** 0 – disable unsolicited message 1 - enable an unsolicited message when an AT command is requested via SMS (default). When unsolicited is enabled, the AT Command requested via SMS is indicated to TE with unsolicited result code: #SMSATRUN: <Text> e.g.: #SMSATRUN: 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. Range 1 – 60, default 5. Note 1: the current settings are stored in NVM.

#SMSATRUNCFG – Set SMS AT Run Parameters	SELINT 2
	Note 2: the instance used for the SMS AT RUN service is the same used for the EvMoni service. Therefore, when the #SMSATRUNCFG sets the <instance> parameter, the change is reflected also in the <instance> parameter of the #ENAEVMONICFG command, and viceversa. 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#SMSATRUNCFG?	Read command returns the current settings of parameters in the format: **#SMSATRUNCFG:<instance>,<urcmod>,<timeout>**
AT#SMSATRUNCFG=?	Test command returns the supported values for the SMSATRUNCFG parameters

3.4.6.2.3. SMS AT Run White List - #SMSATWL

#SMSATWL – SMS AT Run White List	SELINT 2
AT#SMSATWL= <action> ,<index> [,<entryType> [,<string>]]	Set command to handle the white list. **<action >:** 0 – Add an element to the WhiteList 1 – Delete an element from the WhiteList 2 – Print and element of the WhiteList **< index >:** Index of the WhiteList. Range 1-8 **< entryType >:** 0 – Phone Number 1 – Password NOTE: A maximum of two Password Entry can be present at same time in the white List **<string>:** string parameter enclosed between double quotes containing or the phone number or the password Phone number shall contain numerical characters and/or the character “+” at the beginning of the string and/or the character “*” at the end of the string. Password shall be 16 characters length NOTE: When the character “*” is used, it means that all the numbers that begin

#SMSATWL – SMS AT Run White List	SELINT 2
	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>**

3.4.6.2.4. Set TCP Run AT Service parameter - #TCPATRUNCFG

#TCPATRUNCFG– Set TCP AT Run Service Parameters	SELINT 2
AT#TCPATRUNCFG= **<connId>** **,<instance>** **,<tcpPort>** **,<tcpHostPort>** **,<tcpHost>** **[,<urcmod>** **[,<timeout>** **[,<authMode>** **[,<retryCnt>** **[,<retryDelay>]]]]]**	Set command configures the TCP AT RUN service Parameters: **<connId>** socket connection identifier. Default 1. Range 1..6. This parameter is mandatory. **<instance>:** AT instance that will be used by the service to run the AT Command. Default 2. Range 2 - 3. This parameter is mandatory. **<tcpPort>** Tcp Listen port for the connection to the service in server mode. Default 1024. Range 1...65535. This parameter is mandatory. **<tcpHostPort>** Tcp remote port of the Host to connect to, in client mode. Default 1024. Range 1...65535. This parameter is mandatory. **<tcpHost>** IP address of the Host, string type. This parameter can be either: - any valid IP address in the format: "xxx.xxx.xxx.xxx" - any host name to be solved with a DNS query This parameter is mandatory. Default "". **<urcmod>:** 0 – disable unsolicited messages 1 - enable an unsolicited message when the TCP socket is connected or disconnect (default).

#TCPATRUNCFG– Set TCP AT Run Service Parameters	SELINT 2
	When unsolicited is enabled, an asynchronous TCP Socket connection is indicated to TE with unsolicited result code: #TCPATRUN: <iphostaddress> When unsolicited is enabled, the TCP socket disconnection is indicated to TE with unsolicited result code: #TCPATRUN: <DISCONNECT> Unsolicited is dumped on the instance that requested the service activation. **<timeout>:** Define in minutes the maximum time for a command execution. If timeout expires the module will be rebooted. The default value is 5 minutes. Range 1…5. **<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#

#TCPATRUNCFG– Set TCP AT Run Service Parameters	SELINT 2
	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

3.4.6.2.5. TCP Run AT Service in listen (server) mode - #TCPATRUNL

#TCPATRUNL– Enables TCP AT Run Service in listen (server) mode	SELINT 2
AT#TCPATRUNL= <mod>	Set command enables/disables the TCP AT RUN service in server mode. When this service is enabled, the module tries to put itself in TCP listen state. 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 requests to establish the Instance, the request will be rejected. Note3: the current settings 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).
AT#TCPATRUNL?	Read command returns the current settings of <mode> and the value of <stat> in the format: **#TCPATRUNL: <mod>,<stat>** where: **<stat>** - connection status 0 – not in listen 1 - in listen or active

#TCPATRUNL– Enables TCP AT Run Service in listen (server) mode	SELINT 2
AT#TCPATRUNL=?	Test command returns the supported values for the TCPATRUNL parameters

3.4.6.2.6. 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>** **…**

#TCPATRUNFRWL – TCP AT Run Firewall List	SELINT 2
	OK
AT#TCPATRUNFRWL=?	Test command returns the allowed values for parameter **<action>.**

3.4.6.2.7. TCP AT Run Authentication Parameters List - #TCPATRUNAUTH

#TCPATRUNAUTH – TCP AT Run Authentication Parameters List	SELINT 2
AT#TCPATRUNAUTH= **<action>,** **<userid>,** **<passw>**	Execution command controls the authentication parameters for the TCPATRUN connection. Parameters: **<action>** - command action 0 - remove selected chain 1 - add an **ACCEPT** chain 2 - remove all chains (**DROP** everything); **< userid >** and **< passw >** has no meaning in this case. **< userid >** - user to be added into the **ACCEPT** chain; string type, maximum length 50 **< passw >** - password of the user on the **< userid >**; string type, maximum length 50 Command returns **OK** result code if successful. Note1: A maximum of 3 entry (password and userid) can be present at same time in the List. Note2: the Authentication Parameters List is saved in NVM.
AT#TCPATRUNAUTH?	Read command reports the list of all ACCEPT chain rules registered in the Authentication settings in the format: **#TCPATRUNAUTH: <user_id>,<passw>** **#TCPATRUNAUTH: <user_id>,<passw>** **….** **OK**
AT#TCPATRUNAUTH=?	Test command returns the allowed values for parameter **<action>**.

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

#TCPATRUND – Enables TCP Run AT Service in dial (client) mode	SELINT 2
AT#TCPATRUND=<mod>	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).

#TCPATRUND – Enables TCP Run AT Service in dial (client) mode	SELINT 2
	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

3.4.6.2.9. Closing TCP Run AT Socket - #TCPATRUNCLOSE

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

#TCPATRUNCLOSE – Closes TCP Run AT Socket		SELINT 2
AT#TCPATRUNCLOSE =?	Test command returns OK	

3.4.6.2.10. TCP AT Run Command Sequence - #TCPATCMDSEQ

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

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

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

#TCPATCONSER – Connects the TCP Run AT service to a serial port	SELINT 2
	sequence (+++) has to be sent on the TCP ATRUN instance
AT#TCPATCONSER =?	Test command returns the supported values for the TCPATCONSER parameters

3.4.6.2.12. Run AT command execution - #ATRUNDELAY

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

3.4.6.2.13. Enable EvMoni Service - #ENAEVMONI

#ENAEVMONI – Enable EvMoni Service	SELINT 2
AT#ENAEVMONI= <mod>	Set command enables/disables the EvMoni service. Parameter: **< mod >** 0: Service Disabled (default) 1: Service Enabled Note1: When the service is active on a specific AT instance, that instance

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

3.4.6.2.14. 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 2 - 3. (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)

#ENAEVMONICFG – Set EvMoni Service Parameters	SELINT 2
	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

3.4.6.2.15. Event Monitoring - #EVMONI

#EVMONI – Set the single Event Monitoring	SELINT 2
AT#EVMONI= <label>, <mode>, [,<paramType > ,<param>]	Set command enables/disables the single event monitoring, configures the related parameter and associates the AT command **<label>:** string parameter (that has to be enclosed between double quotes) indicating the event under monitoring. It can assume the following values: • VBATT - battery voltage monitoring (not yet implemented) • DTR - DTR monitoring (not yet implemented) • ROAM - roaming monitoring • CONTDEACT - context deactivation monitoring • RING - call ringing monitoring • STARTUP – module start-up monitoring • REGISTERED – network registration monitoring • GPIO1 – monitoring on a selected GPIO in the GPIO range • GPIO2 – monitoring on a selected GPIO in the GPIO range • GPIO3 – monitoring on a selected GPIO in the GPIO range • GPIO4 – monitoring on a selected GPIO in the GPIO range • GPIO5 – monitoring on a selected GPIO in the GPIO range • ADCH1 – ADC High Voltage monitoring (not yet implemented) • ADCL1 – ADC Low Voltage monitoring (not yet implemented) • DTMF1 –monitoring on user defined DTMF string (not yet implemented) • DTMF2 –monitoring on user defined DTMF string (not yet implemented) • DTMF3 –monitoring on user defined DTMF string (not yet implemented) • DTMF4 –monitoring on user defined DTMF string (not yet implemented)

#EVMONI – Set the single Event Monitoring	SELINT 2
	<mode>: 0 – disable the single event monitoring (default) 1 – enable the single event monitoring **< paramType >:** numeric parameter indicating the type of parameter contained in **<param>**. The 0 value indicates that **<param>** contains the AT command string to execute when the related event has occurred. Other values depend from the type of event. **<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

#EVMONI – Set the single Event Monitoring	SELINT 2
	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) o if **<paramType>** = 2, **<param>** indicates the status high or low under monitoring. The values are 0 (low) and 1 (high) . (Default: 0) o if **<paramType>** = 3, **<param>** indicates the time interval in seconds after that the selected GPIO pin in the status specified with **<paramType>** = 1 causes the event. The range is 0 – 255. (Default: 0) • If **<label>** is ADCH1, **<paramType>** can assume values in the range 0 - 3. o if **<paramType>** = 1, **<param>** indicates the ADC pin number; supported range is from 1 to a value that depends on the hardware. (Default: 1) o if **<paramType>** = 2, **<param>** indicates the ADC High voltage threshold in the range 0 – 2000 mV. (Default: 0) o if **<paramType>** = 3, **<param>** indicates the time interval in seconds after that the selected ADC pin above the value specified with **<paramType>** = 1 causes the event. The range is 0 – 255. (Default: 0) • If **<label>** is ADCL1, **<paramType>** can assume values in the range 0 - 3. o if **<paramType>** = 1, **<param>** indicates the ADC pin number; supported range is from 1 to a value that depends on the hardware. (Default: 1) o if **<paramType>** = 2, **<param>** indicates the ADC Low voltage threshold in the range 0 – 2000 mV. (Default: 0) o if **<paramType>** = 3, **<param>** indicates the time interval in seconds after that the selected ADC pin under the value specified with **<paramType>** = 1 causes the event. The range is 0 – 255. (Default: 0) • If **<label>** is DTMFX, **<paramType>** can assume values in the range 0 - 2. o if **<paramType>** = 1, **<param>** indicates the DTMF string; the single DTMF characters have to belong to the range ((0-9),#,*,(A-D)); the maximum number of characters in the string is 15 o if **<paramType>** = 2, **<param>** indicates the timeout in milliseconds. It is the maximum time interval within which a DTMF tone must be detected after detecting the previous one, to be considered as belonging to the DTMF string. The range is (500 – 5000). (Default: 1000) Note: the DTMF string monitoring is available only for 10.0x.xx5 and following versions and if the DTMF decode has been enabled (see **#DTMF** command)
AT# EVMONI?	Read command returns the current settings for each event in the format:

#EVMONI – Set the single Event Monitoring	SELINT 2
	#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

3.4.6.2.16. Send Message - #CMGS

#CMGS - Send Message	SELINT 2
(PDU Mode) **AT#CMGS=** **<length>,<pdu>**	**(PDU Mode)** Execution command sends to the network a message. Parameter: **<length>** - length of the PDU to be sent in bytes (excluding the SMSC address octets). 7..164 **<pdu>** - PDU in hexadecimal format (each octet of the PDU is given as two IRA character long hexadecimal number) and given in one line. Note: when the length octet of the SMSC address (given in the **<pdu>**) equals zero, the SMSC address set with command **+CSCA** is used; in this case the SMSC Type-of-Address octet shall not be present in the **<pdu>**. 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.
(Text Mode) **AT#CMGS=<da>** **,<text>**	**(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**). **<text>** - text to send The entered text should be enclosed between double quotes and formatted as follows:

#CMGS - Send Message	SELINT 2
	- if current **<dcs>** (see **+CSMP**) indicates that GSM03.38 default alphabet is used and current **<fo>** (see **+CSMP**) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM alphabet, according to GSM 27.005, Annex A. - if current **<dcs>** (see **+CSMP**) indicates that 8-bit or UCS2 data coding scheme is used or current **<fo>** (see **+CSMP**) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the **'asterisk'** will be entered as **2A** (**IRA50** and **IRA65**) and this will be converted to an octet with integer value **0x2A**) 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	GSM 27.005

3.4.6.2.17. Write Message To Memory - #CMGW

#CMGW - Write Message To Memory	SELINT 2
(PDU Mode) **AT#CMGW=<length>,<pdu>**	**(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 **<pdu>** - PDU in hexadecimal format (each octet of the PDU is given as two IRA character long hexadecimal number) and given in one line. If message is successfully written in the memory, then the result is sent in the format: **#CMGW: <index>**

#CMGW - Write Message To Memory	SELINT 2
	where: **<index>** - message location index in the memory **<memw>**. If message storing fails for some reason, an error code is reported.
(Text Mode) **AT#CMGW=<da>** **,<text>**	**(Text Mode)** Execution command writes in the **<memw>** memory storage a new message. Parameters: **<da>** - destination address, string type represented in the currently selected character set (see **+CSCS**). **<text>** - text to write The entered text should be enclosed between double quotes and 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 GSM 27.005, Annex A. - if current **<dcs>** (see **+CSMP**) indicates that 8-bit or UCS2 data coding scheme is used or current **<fo>** (see **+CSMP**) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the **'asterisk'** will be entered as **2A** (**IRA50** and **IRA65**) and this will be converted to an octet with integer value **0x2A**) 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.
AT#CMGW=?	Test command returns the **OK** result code.
Reference	GSM 27.005
Note	To avoid malfunctions is suggested to wait for the **#CMGW: <index>** or **+CMS ERROR: <err>** response before issuing further commands.

3.4.6.3. Multisocket AT Commands

3.4.6.3.1. Socket Status - #SS

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

#SS - Socket Status	SELINT 2
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

3.4.6.3.2. Socket Info - #SI

#SI - Socket Info	SELINT 2
AT#SI[=<connId>]	Execution command is used to get information about socket data traffic. Parameters: **<connId>** - socket connection identifier 1..6 The response format is: **#SI: <connId>,<sent>,<received>,<buff_in>,<ack_waiting>** where: **<connId>** - socket connection identifier, as before **<sent>** - total amount (in bytes) of sent data since the last time the socket connection identified by **<connId>** has been opened **<received>** - total amount (in bytes) of received data since the last time the

#SI - Socket Info	SELINT 2
	socket connection identified by **<connId>** has been opened **<buff_in>** - total amount (in bytes) of data just arrived through the socket connection identified by **<connId>** and currently buffered, not yet read **<ack_waiting>** - total amount (in bytes) of sent and not yet acknowledged data since the last time the socket connection identified by **<connId>** has been opened Note: not yet acknowledged data are available only for TCP connections; the value **<ack_waiting>** is always 0 for UDP connections. Note: issuing **#SI<CR>** causes getting information about data traffic of all the sockets; the response format is: **#SI: <connId1>,<sent1>,<received1>,<buff_in1>,<ack_waiting1>** **<CR><LF>** **...** **#SI: <connId6>,<sent6>,<received6>,<buff_in6>,<ack_waiting6>**
AT#SI=?	Test command reports the range for parameter **<connId>**.

Example	`AT#SI`
	
	`#SI: 1,123,400,10,50`
	`#SI: 2,0,100,0,0`
	`#SI: 3,589,100,10,100`
	`#SI: 4,0,0,0,0`
	`#SI: 5,0,0,0,0`
	`#SI: 6,0,98,60,0`
	
	`OK`
	
	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

3.4.6.3.3. 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)

#ST – Socket Type	SELINT 2
	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>**
AT#ST=?	Test command reports the range for parameter <connId>.
Example	single socket: AT#ST=3 #ST: 3,2,1 Socket 3 is an UDP dialer. All sockets: AT#ST #ST: 1,0,0 #ST: 2,0,0 #ST: 3,2,1 #ST: 4,2,2 #ST: 5,1,1

#ST – Socket Type	SELINT 2
	#ST: 6,1,2 Socket 1 is closed. Socket 2 is closed. Socket 3 is an UDP dialer Socket 4 is an UDP listener Socket 5 is a TCP dialer Socket 6 is a TCP listener

3.4.6.3.4. Context Activation - #SGACT

#SGACT - Context Activation	SELINT 2
AT#SGACT=<cid>, <stat>[,<userId>, <pwd>]	Execution command is used to activate or deactivate either the GSM context or the specified PDP context. Parameters: **<cid>** - PDP context identifier 0 - specifies the GSM context 1..5 - numeric parameter which specifies a particular PDP context definition **<stat>** 0 - deactivate the context 1 - activate the context **<userId>** - string type, used only if the context requires it **<pwd>** - string type, used only if the context requires it Note: context activation/deactivation returns **ERROR** if there is not any socket associated to it (see **AT#SCFG**). Note: after the GSM context has been activated, you can use either Multisocket, or FTP or Email AT commands to send/receive TCP/IP packets via GSM. Note: to deactivate the GSM context, **AT#SGACT=0,0** has to be issued on the same serial port used when the context was activated. Note: GSM context activation is affected by **AT+CBST** command. In particular, GSM context activation is just allowed with “non transparent” data calls. Note: activating a GSM context while a PDP context is already activated causes the PDP context to be suspended. Note: if GSM context is active, it is not allowed any PDP context activation.
AT#SGACT?	Returns the state of all the contexts that have been defined through the commands **+CGDCONT** or **#GSMCONT**

#SGACT - Context Activation	SELINT 2
	#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.

3.4.6.3.5. 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
AT#SH=?	Test command reports the range for parameter **<connId>**.

3.4.6.3.6. 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 exchange within this timeout period the connection is closed. 0 - no timeout 1..65535 - timeout value in seconds (default 90 s.) **<connTo>** - connection timeout; if we can't establish a connection to the remote within this timeout period, an error is raised. 10..1200 - timeout value in hundreds of milliseconds (default 600)

#SCFG - Socket Configuration	SELINT 2
	<txTo> - data sending timeout; after this period data are sent also if they're less than max packet size. 0 - no timeout 1..255 - timeout value in hundreds of milliseconds (default 50) Note: these values are automatically saved in NVM.
AT#SCFG?	Read command returns the current socket configuration parameters values for all the six sockets, in the format: **#SCFG: <connId1>,<cid1>,<pktsz1>,<maxTo1>,<connTo1>,<txTo1>** **<CR><LF>** **. . .** **#SCFG: <connId6>,<cid6>,<pktsz6>,<maxTo6>,<connTo6>,<txTo6>** **<CR><LF>**
AT#SCFG=?	Test command returns the range of supported values for all the subparameters.

Example	`at#scfg?`
	`#SCFG: 1,1,300,90,600,50`
	`#SCFG: 2,2,300,90,600,50`
	`#SCFG: 3,2,250,90,600,50`
	`#SCFG: 4,1,300,90,600,50`
	`#SCFG: 5,1,300,90,600,50`
	`#SCFG: 6,1,300,90,600,50`
	
	`OK`

3.4.6.3.7. 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 **<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 hexadecimal number Note: these values are automatically saved in NVM. Note: Keepalive is available only on TCP connections. Note: for the behaviour of AT#SL and AT#SLUDP in case of auto-response mode or in case of no auto-response mode, see the description of the two commands.
AT#SCFGEXT?	Read command returns the current socket extended configuration parameters values for all the six sockets, in the format: **#SCFGEXT:<connId1>, <srMode1>,<dataMode1>,*<keepalive1>*, *<ListenAutoRsp1>*,*0*<CR><LF>** **. . .** **#SCFGEXT:<connId6>, <srMode6>,<dataMode6>,*<keepalive6>*, *<ListenAutoRsp6>*,*0*<CR><LF>**
AT#SCFGEXT=?	Test command returns the range of supported values for all the subparameters.

Example	Socket 1 set with data view sring, text data mode, a keepalive time of 30 minutes and listen auto-response set.
	
	Socket 3 set with data amount sring, hex recv data mode, no keepalive and listen auto-response not set.
	
	Socket 4 set with hex recv and send data mode
	
	`at#scfgext?`
	`#SCFGEXT: 1,2,0,30,1,0`
	`#SCFGEXT: 2,0,0,0,0,0`
	`#SCFGEXT: 3,1,1,0,0,0`
	`#SCFGEXT: 4,0,1,0,0,1`
	`#SCFGEXT: 5,0,0,0,0,0`
	`#SCFGEXT: 6,0,0,0,0,0`
	`OK`

3.4.6.3.8. Socket configuration Extended 2 - #SCFGEXT2

#SCFGEXT2 - Socket Configuration Extended	
AT#SCFGEXT2= **<connId>,<bufferStart>,** **[,<abortConnAttempt>** **[,<unused_B >** **[,<unused_C >[,<unused_D>]]]]**	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/#SKTOP) 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.
AT#SCFGEXT2?	Read command returns the current socket extended configuration parameters values for all the six sockets, in the format: **#SCFGEXT2:<connId1>,<bufferStart1>,0,0,0,0<CR><LF>** **. . .** **#SCFGEXT2:<connId6>,<bufferStart6>,0,0,0,0<CR><LF>**
AT#SCFGEXT2=?	Test command returns the range of supported values for all the subparameters.
Example	AT#SCFGEXT2=1,1 OK AT#SCFGEXT2=2,1 OK AT#SCFGEXT2? #SCFGEXT2: 1,1,0,0,0,0 #SCFGEXT2: 2,1,0,0,0,0 #SCFGEXT2: 3,0,0,0,0,0 #SCFGEXT2: 4,0,0,0,0,0 #SCFGEXT2: 5,0,0,0,0,0 #SCFGEXT2: 6,0,0,0,0,0 OK AT#SCFG? #SCFG: 1,1,300,90,600,50

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

3.4.6.3.9. Socket Dial - #SD

#SD - Socket Dial	SELINT 2
AT#SD=<connId>,<txProt>,<rPort>,<IPaddr>[,<closureType>[,<lPort>[,<connMode>]]]	Execution command opens a remote connection via socket. Parameters: **<connId>** - socket connection identifier 1..6 **<txProt>** - transmission protocol 0 - TCP 1 - UDP **<rPort>** - remote host port to contact 1..65535 **<IPaddr>** - address of the remote host, string type. This parameter can be either: - any valid IP address in the format: "xxx.xxx.xxx.xxx" - any host name to be solved with a DNS query **<closureType>** - socket closure behaviour for TCP 0 - local host closes immediately when remote host has closed (default) 255 - local host closes after an escape sequence (**+++**) **<lPort>** - UDP connections local port 1..65535 **<connMode>** - Connection mode 0 - online mode connection (default) 1 - command mode connection Note: **<closureType>** parameter is valid for TCP connections only and has no effect (if used) for UDP connections.

#SD - Socket Dial	SELINT 2
	Note: **<lPort>** parameter is valid for UDP connections only and has no effect (if used) for TCP connections. Note: if we set **<connMode>** to **online mode connection** and the command is successful we enter in **online data mode** and we see the intermediate result code **CONNECT**. After the **CONNECT** we can suspend the direct interface to the socket connection (nb the socket stays open) using the escape sequence (**+++**): the module moves back to **command mode** and we receive the final result code **OK** after the suspension. After such a suspension, it's possible to resume it in every moment (unless the socket inactivity timer timeouts, see **#SCFG**) by using the **#SO** command with the corresponding **<connId>**. Note: if we set **<connMode>** to **command mode connection** and the command is successful, the socket is opened and we remain in **command mode** and we see the result code **OK**. Note: if there are input data arrived through a connected socket and not yet read because the module entered **command mode** before reading them (after an escape sequence or after **#SD** has been issued with **<connMode>** set to **command mode connection**), these data are buffered and we receive the **SRING** URC (**SRING** presentation format depends on the last **#SCFGEXT** setting); it's possible to read these data afterwards issuing **#SRECV**. Under the same hypotheses it's possible to send data while in **command mode** issuing **#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.
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`

3.4.6.3.10. 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.

#SO - Socket Restore	SELINT 2
	Parameter: **<connId>** - socket connection identifier 1..6
AT#SO=?	Test command reports the range of values for **<connId>** parameter.

3.4.6.3.11. Socket Listen - #SL

#SL - Socket Listen	SELINT 2
AT#SL=<connId>, <listenState>, <listenPort> >[,<closure type>]	This command opens/closes a socket listening for an incoming TCP 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 **<closure type>** - socket closure behaviour for TCP 0 - local host closes immediately when remote host has closed (default) 255 - local host closes after an escape sequence (**+++**) Note: if successful, the command returns a final result code **OK**. If the ListenAutoRsp flag has not been set through the command AT#SCFGEXT (for the specific connId), then, when a TCP connection request comes on the input port, if the sender is not filtered by internal firewall (see **#FRWL**), an URC is received: **+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 a TCP connection request comes on the input port, if the sender is not filtered by the internal firewall (see command **#FRWL**), the connection is automatically accepted: the **CONNECT** indication is given and the modem goes into **online data mode**. If the socket is closed by the network the following URC is received: **#SL: ABORTED** Note: when closing the listening socket <listenPort> is a don't care parameter
AT#SL?	Read command returns all the actual listening TCP sockets.

#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`

3.4.6.3.12. 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

#SLUDP - Socket Listen UDP	SELINT 2
AT#SLUDP?	Read command returns all the actual listening UDP sockets.
AT#SLUDP=?	Test command returns the range of supported values for all the subparameters.

Example	*Next command opens a socket listening for UDP on port 3500.*
	
	`AT#SLUDP=1,1,3500`
	`OK`

3.4.6.3.13. Socket Accept - #SA

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

3.4.6.3.14. Receive Data In Command Mode - #SRECV

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

#SRECV - Receive Data In Command Mode	SELINT 2
	<connId> - socket connection identifier 1..6 **<maxByte>** - max number of bytes to read 1..1500 Note: issuing **#SRECV** when there's no buffered data raises an error.
AT#SRECV=?	Test command returns the range of supported values for parameters < connId > and < maxByte >
Example	**SRING URC (<srMode> be 0, <dataMode> be 0)** *telling data have just come through connected socket identified by <connId>=1 and are now buffered* SRING: 1 *Read in text format the buffered data* AT#SRECV=1,15 #SRECV: 1,15 stringa di test OK **SRING URC (<srMode> be 1, <dataMode> be 1)** *telling 15 bytes data have just come through connected socket identified by <connId>=2 and are now buffered* SRING: 2,15 *Read in hexadecimal format the buffered data* AT#SRECV=2,15 #SRECV: 2,15 737472696e676120646920746573374 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

3.4.6.3.15. 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

#SSEND - Send Data In Command Mode	SELINT 2
	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 1024 bytes for versions till 7.03.02/7.02.07 and from 10.0x.xx0 till 10.0x.xx2, 1500 bytes for versions starting from 10.0x.xx3 ; 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 the ME is raising an error. Note: a byte corresponding to BS char(0x08) is treated with its corresponding meaning; therefore previous byte will be cancelled(and BS char itself will not be sent)
Example	*Send data through socket number 2* AT#SSEND=2 >Test<CTRL-Z> OK

3.4.6.3.16. 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.

#SSENDEXT - Send Data In Command Mode extended	SELINT 2
	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.

3.4.6.3.17. IP Easy Authentication Type - #SGACTAUTH

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

3.4.6.3.18. Context activation and configuration - #SGACTCFG

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

3.4.6.3.19. Context activation and configuration extended - #SGACTCFGEXT

#SGACTCFGEXT - context activation configuration extended	**SELINT 2**
AT#SGACTCFGEXT= **<cid>,** **<abortAttemptEnable>** **[,<unused>** **[,<unused>** **[,<unused>** **]]]**	Execution command is used to enable new features related to context activation. Parameters: **<cid>** - PDP context identifier (see **+CGDCONT** command) 1..5 - numeric parameter which specifies a particular PDP context definition **< abortAttemptEnable >** 0 – old behaviour: no abort possible while attempting context activation 1 – abort during context activation attempt is possible by sending a byte on the serial port. It takes effect on successive GPRS context activation attempt through #SGACT command in the following manner. While waiting for AT#SGACT=<cid>,1 response(up to 150 s) is possible to abort attempt by sending a byte and get back AT interface control(NO CARRIER indication).

	Note: If we receive delayed CTXT ACTIVATION ACCEPT after abort, network will be automatically informed of our aborted attempt through relative protocol messages(SM STATUS) and will also close on its side. Otherwise, if no ACCEPT is received after abort, network will be informed later of our PDP state through other protocol messages (routing area update for instance).
AT#SGACTCFGEXT?	Read command reports the state of all the five contexts, in the format: **#SGACTCFGEXT: <cid1>,< abortAttemptEnable1 >,0,0,0<CR><LF>** **…** **#SGACTCFGEXT: <cid5>,< abortAttemptEnable5 >,0,0,0<CR><LF>** where: **<cid*n*>** - as **<cid>** before **< abortAttemptEnable *n*>** - as **< abortAttemptEnable >** before Note: values are automatically saved in NVM.
AT#SGACTCFGEXT=?	Test command reports supported range of values for all parameters

3.4.6.3.20. 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>**.

3.4.6.3.21. PAD forward character - #PADFWD

#PADFWD – PAD forward character	**SELINT 2**
AT#PADFWD=<char>	This command sets the char that immediately flushes pending data to

[,<mode>]	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>**.

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

#BASE64 – Base64 encoding/decoding of socket sent/received data	**SELINT 2**
AT#BASE64= **<connId>,<enc>,<dec>** **[,<unused_B >** **[,<unused_C >]]**	Set command enables base64 encoding and/or decoding of data sent/received to/from the socket in online or in command mode. Parameters: **<connId>** - socket connection identifier 1..6 **<enc>** 0 – no encoding of data received from serial port. 1 - MIME RFC2045 base64 encoding of data received from serial port that have to be sent to <connId> socket. Note: as indicated from RFC2045 the encoded output stream is represented in lines of no more than 76 characters each. Lines are defined as sequences of octets separated by a CRLF sequence. 2 - RFC 3548 base64 encoding of data received from serial port that have to be sent to <connId> socket. Note: as indicated from RFC3548 CRLF have not to be added. **<dec>** 0 – no decoding of data received from socket <connId>. 1 - MIME RFC2045 base64 decoding of data received from socket <connId> and sent to serial port. (Same rule as for <enc> regarding line feeds in the received file that has to

	be decoded) 2 - RFC3548 base64 decoding of data received from socket <connId> and sent to serial port. (Same rule as for <enc> regarding line feeds in the received file that has to be decoded) Note: it is possible to use command to change current <enc>/<dec> settings for a socket already opened in command mode or in online mode after suspending it. (In this last case obviously it is necessary to set AT#SKIPESC=1). Note: to use #BASE64 in command mode, if data to send exceed maximum value for #SSENDEXT command, they have to be divided in multiple parts. These parts have to be a multiple of 57 bytes, except for the last one, to distinguish EOF condition. (Base64 encoding rules) For the same reason if #SRECV command is used by the application to receive data, a multiple of 78 bytes has to be considered. 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: on version 10.0x.xx3 only <connId> 1 is available. 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
	
	AT#SO=<connId>
	CONNECT
	// Data received from socket are decoded
	// base64 before to be sent on the serial port
	+++ (suspension)
	……

3.4.6.4. FTP AT Commands

3.4.6.4.1. 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>**	

3.4.6.4.2. FTP Open - #FTPOPEN

#FTPOPEN - FTP Open	SELINT 2
AT#FTPOPEN=[<server:port>,<username>,<password>[,<mode>]]	Execution command opens an FTP connection toward the FTP server. Parameters: **<server:port>** - string type, address and port of FTP server (factory default port 21). **<username>** - string type, authentication user identification string for FTP. **<password>** - string type, authentication password for FTP. **<mode>** 0 - active mode (factory default) 1 - passive mode Note: Before opening an FTP connection either the GSM context must have been activated by **AT#SGACT=0,1** or the PDP context #1 must have been activated by **AT#SGACT=1,1** or by **AT#GPRS=1**
AT#FTPOPEN=?	Test command returns the **OK** result code.

3.4.6.4.3. FTP Close - #FTPCLOSE

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

3.4.6.4.4. FTP Put - #FTPPUT

#FTPPUT - FTP Put	SELINT 2
AT#FTPPUT=[<filename>]	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. Parameter: **<filename>** - string type, name of the file (maximum length 200 characters) 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.

#FTPPUT - FTP Put		SELINT 2
AT#FTPPUT=?	Test command returns the **OK** result code.	

3.4.6.4.5. FTP Get - #FTPGET

#FTPGET - FTP Get		SELINT 2
AT#FTPGET= [<filename>]	Execution command, issued during an FTP connection, opens a data connection and starts getting a file from the FTP server. If the data connection succeeds a **CONNECT** indication is sent. The file is received on the serial port. Parameter: **<filename>** - file name, string type. Note: The command causes an **ERROR** result code to be returned in case no FTP connection has been opened yet. Note: Command closure should always be handled by application. In order to avoid download stall situations a timeout should be implemented by the application.	
AT#FTPGET=?	Test command returns the OK result code.	

3.4.6.4.6. FTP GET in command mode - #FTPGETPKT

#FTPGETPKT - FTP Get in command mode		SELINT 2
AT#FTPGETPKT= <filename> [,<viewMode>]	Execution command, issued during an FTP connection, opens a data connection and starts getting a file from the FTP server while remaining in **command mode**. The data port is opened and we remain in **command mode** and we see the result code **OK**. Retrieval from FTP server of "remotefile" is started, but data are only buffered in the module. It's possible to read data afterwards issuing #FTPRECV command Parameters: **<filename>** - file name, string type. **<viewMode>** - permit to choose view mode (text format or Hexadecimal) Note: The command causes an **ERROR** result code to be returned in case no FTP connection has been opened yet. Note: Command closure should always be handled by application. In	

#FTPGETPKT - FTP Get in command mode	SELINT 2
	order to avoid download stall situations a timeout should be implemented by the application.
AT#FTPGETPKT?	Read command reports current download state for <filename> with <viewMode> chosen, in the format: #FTPGETPKT: <remotefile>,<viewMode>,<eof> <eof> 0 = file currently being transferred 1 = complete file has been transferred to FTP client
AT#FTPGETPKT=?	Test command returns the OK result code.

3.4.6.4.7. 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)**

3.4.6.4.8. 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.

3.4.6.4.9. FTP Delete - #FTPDELE

#FTPDELE - FTP Delete	SELINT 2
AT#FTPDELE=[<filename>]	Execution command, issued during an FTP connection, deletes a file from the remote working directory. Parameter: **<filename>** - string type, it's the name of the file to delete. Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. Note: In case of delayed server response, it is necessary to check if ERROR indication is temporary due to timing out while waiting. In this case #FTPMSG response will result temporary empty. (Checking later #FTPMSG response will match with delayed server response)
AT#FTPDELE=?	Test command returns the **OK** result code.

3.4.6.4.10. FTP Print Working Directory - #FTPPWD

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

3.4.6.4.11. FTP Change Working Directory - #FTPCWD

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

#FTPCWD - FTP Change Working Directory		SELINT 2
AT#FTPCWD=?	Test command returns the **OK** result code.	

3.4.6.4.12. 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.

3.4.6.4.13. 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.

3.4.6.4.14. FTP Append - #FTPAPP

#FTPAPP - FTP Append	SELINT 2
AT#FTPAPP= [<filename>]	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. Parameter: **<filename>** - string type, name of the file.

#FTPAPP - FTP Append	SELINT 2
	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 returns the **OK** result code.

3.4.6.4.15. Set restart position - # FTPREST

#FTPREST – Set restart position for FTP GET	SELINT 2
AT#FTPREST= <restartposition>	Set command sets the restart position for successive FTPGET (or FTPGETPKT) command. It permits to restart a previously interrupted FTP download from the selected position in byte. Parameter: <restartposition> position in byte of restarting for successive FTPGET (or FTPGETPKT) Note: It's necessary to issue FTPTYPE=0 before successive FTPGET (or FTPGETPKT command) to set binary file transfer type. Note: Setting <restartposition> has effect on successive FTP download. After successive successfully initiated FTPGET(or FTPGETPKT) command <restartposition> is automatically reset. Note: value set for <restartposition> has effect on next data transfer(data port opened by FTPGET or FTPGETPKT). Then <restartposition> value is automatically assigned to 0 for next download.
AT#FTPREST?	Read command returns the current <restartposition> #FTPREST: <restartposition>
AT#FTPREST=?	Test command returns the OK result code.

3.4.6.4.16. 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.

Example	`AT#FTPRECV?`
	`#FTPRECV: 3000`
	
	`OK`
	
	Read required part of the buffered data:
	
	`AT#FTPRECV=400`

#FTPRECV – Receive Data In Command Mode	SELINT 2
	#FTPRECV: 400 Text row number 1 * 11111111111111111111111 * Text row number 2 * 22222222222222222222222 * Text row number 3 * 33333333333333333333333 * Text row number 4 * 44444444444444444444444 * Text row number 5 * 55555555555555555555555 * Text row number 6 * 66666666666666666666666 * Text row number 7 * 77777777777777777777777 * Text row number 8 * 88888888888888888 OK AT#FTPRECV =200 #FTPRECV: 200 88888 * Text row number 9 * 99999999999999999999999 * Text row number 10 * AAAAAAAAAAAAAAAAAAAAAAAAA * Text row number 12 * BBBBBBBBBBBBBBBBBBBBBBBBB * Text row number 13 * CCCCCCCCCCCCCCCC OK Note: to check when you have received complete file it's possible to use AT#FTPGETPKT read command: AT#FTPGETPKT? #FTPGETPKT: sample.txt,0,1 OK (you will get <eof> set to 1)

3.4.6.5. Enhanced IP Easy Extension AT Commands

3.4.6.5.1. Authentication User ID - #USERID

#USERID - Authentication User ID	SELINT 2
AT#USERID=[<user>]	Set command sets the user identification string to be used during the authentication step. Parameter: **<user>** - string type, it's the authentication User Id; the max length for this value is the output of Test command, **AT#USERID=?** (factory default is the empty string "").

#USERID - Authentication User ID	SELINT 2
	Note: this command is not allowed for sockets associated to a GSM context (see **#SCFG**).
AT#USERID?	Read command reports the current user identification string, in the format: **#USERID: <user>**
AT#USERID=?	Test command returns the maximum allowed length of the string parameter **<user>**.

Example	`AT#USERID="myName"`
	`OK`
	`AT#USERID?`
	`#USERID: "myName"`
	
	`OK`

3.4.6.5.2. Authentication Password - #PASSW

#PASSW - Authentication Password	SELINT 2
AT#PASSW=[<pwd>]	Set command sets the user password string to be used during the authentication step. Parameter: **<pwd>** - string type, it's the authentication password; the max length for this value is the output of Test command, **AT#PASSW=?** (factory default is the empty string ""). Note: this command is not allowed for sockets associated to a GSM context (see **#SCFG**).
AT#PASSW=?	Test command returns the maximum allowed length of the string parameter **<pwd>**.
Example	`AT#PASSW="myPassword"` `OK`

3.4.6.5.3. 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.

#PKTSZ - Packet Size	SELINT 2
	Note: after issuing command **AT#PKTSZ=0**, the Read command reports the value automatically chosen by the device.
AT#PKTSZ=?	Test command returns the allowed values for the parameter **<size>**.
Example	AT#PKTSZ=100 OK AT#PKTSZ? #PKTSZ: 100 OK AT#PKTSZ=0 OK AT#PKTSZ? #PKTSZ: 300 *->value automatically chosen by device* OK

3.4.6.5.4. 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 had been received and full packet size reached. Note: this command is not allowed for sockets associated to a GSM context (see **#SCFG**).
AT#DSTO?	Read command reports the current data sending time-out value.
AT#DSTO=?	Test command returns the allowed values for the parameter **<tout>**.
Example	AT#DSTO=10 ->1 sec. time-out OK AT#DSTO? #DSTO: 10 OK

3.4.6.5.5. Socket Inactivity Time-Out - #SKTTO

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

Example	`AT#SKTTO=30  ->(30 sec. time-out)`
	`OK`
	`AT#SKTTO?`
	`#SKTTO: 30`
	
	`OK`

3.4.6.5.6. Socket Definition - #SKTSET

#SKTSET - Socket Definition	SELINT 2
AT#SKTSET= **[<socket type>,** **<remote port>,** **<remote addr>,** **[<closure type>],** **[<local port>]]**	Set command sets the socket parameters values. Parameters: **<socket type>** - socket protocol type 0 - TCP (factory default) 1 - UDP **<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 0 - local host closes immediately when remote host has closed (default) 255 - local host closes after an escape sequence (**+++**) or after an abortive disconnect from remote. **<local port>** - local host port to be used on UDP socket 0..65535 - port number

#SKTSET - Socket Definition	SELINT 2
	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.

3.4.6.5.7. Query DNS - #QDNS

#QDNS - Query DNS	SELINT 2
AT#QDNS= [<host name>]	Execution command executes a DNS query to solve the host name into an IP address. Parameter: **<host name>** - host name, string type. If the DNS query is successful then the IP address will be reported in the result code, as follows: **#QDNS: <host name>,<IP address>** where **<host name>** - string type **<IP address>** - string type, in the format **"xxx.xxx.xxx.xxx"** Note: the command has to activate the GPRS context if it was not previously

#QDNS - Query DNS	SELINT 2
	activated. In this case the context is deactivated after the DNS query. It also works with GSM context, but the GSM context has to be activated before.
AT#QDNS=?	Test command returns the **OK** result code.
Note	This command requires that the authentication parameters are correctly set and that the GPRS network is present (or GSM, if GSM context is used).
Note	Issuing command **#QDNS** will overwrite **<remote addr>** setting for command **#SKTSET**.
Note	This command is available only on the first virtual port of CMUX and works on the PDP context 1 and on the first ConnId (see AT#SCFG)

3.4.6.5.8. 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”**

3.4.6.5.9. Manual DNS Selection - #DNS

#DNS – Manual DNS Selection	SELINT 2
AT#DNS=<cid>, <primary>, <secondary>	Set command allows to manually set primary and secondary DNS servers either for a PDP context defined by **+CGDCONT** or for a GSM context defined by **#GSMCONT** Parameters: **<cid>** - context identifier 0 - specifies the GSM context 1..5 - numeric parameter which specifies a particular PDP context definition **<primary>** - **manual primary DNS server**, string type, in the format **"xxx.xxx.xxx.xxx"** used for the specified cid; we're using this value instead of the **primary DNS server** come from the network (default is "0.0.0.0") **<secondary>** - **manual secondary DNS server**, string type, in the format **"xxx.xxx.xxx.xxx"** used for the specified cid; we're using this value instead of the **secondary DNS server** come from the network (default is "0.0.0.0"). Note: if **<primary> is "0.0.0.0"** and **<secondary> is not "0.0.0.0"**, then issuing **AT#DNS=…** raises an error. Note: if **<primary> is "0.0.0.0"** we're using the **primary DNS server** come from the network as consequence of a context activation. Note: if **<primary> is not "0.0.0.0"** and **<secondary> is "0.0.0.0"**, then we're using only the **manual primary DNS server.** Note: the context identified by **<cid>** has to be previously defined, elsewhere issuing **AT#DNS=…** raises an error. Note: the context identified by **<cid>** has to be not activated yet, elsewhere issuing **AT#DNS=…** raises an error.
AT#DNS?	Read command returns the manual DNS servers set either for every defined PDP context and for the single GSM context (only if defined), in the format: **[#DNS: <cid>,<primary>,<secondary>[<CR><LF>** **#DNS: <cid>,<primary>,<secondary>]]**
AT#DNS=?	Test command reports the supported range of values for the **<cid>** parameter.only, in the format: **#DNS: (0,5),,**

3.4.6.5.10. 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.

3.4.6.5.11. 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`

#SKTSAV - Socket Parameters Save	SELINT 2
	socket parameters have been saved in NVM
Note	If some parameters have not been previously specified then a default value will be stored.

3.4.6.5.12. Socket Parameters Reset - #SKTRST

#SKTRST - Socket Parameters Reset	SELINT 2
AT#SKTRST	Execution command resets the socket parameters to the "factory default" configuration and stores them in the NVM of the device. The socket parameters to reset are: - User ID - Password - Packet Size - Socket Inactivity Time-Out - Data Sending Time-Out - Socket Type - Remote Port - Remote Address - TCP Connection Time-Out
AT#SKTRST=?	Test command returns the **OK** result code.

Example	`AT#SKTRST`
	`OK`
	socket parameters have been reset

3.4.6.5.13. GPRS Context Activation - #GPRS

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

#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.

3.4.6.5.14. Socket Dial - #SKTD

#SKTD - Socket Dial	**SELINT 2**
AT#SKTD= **[<socket type>,** **<remote port>,** **<remote addr>,** **[<closure type>],** **[<local port>]]**	Set command opens the socket towards the peer specified in the parameters. Parameters: **<socket type>** - socket protocol type 0 - TCP (factory default) 1 - UDP **<remote port>** - remote host port to be opened **1**..65535 - port number **<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 0 - local host closes immediately when remote host has closed (default) 255 - local host closes after an escape sequence (**+++**) or after 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 **#SKTD** command, then an error message will be issued. 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** Note: this command is not allowed for sockets associated to a GSM context (see **#SCFG**).
AT#SKTD?	Read command reports the socket dial parameters values, in the format: **AT#SKTD: <socket type>,<remote port>,<remote addr>,** **<closure type>,<local port>**
AT#SKTD=?	Test command returns the allowed values for the parameters.

#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

3.4.6.5.15. 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 0 - local host closes immediately when remote host has closed (default) 255 - local host closes after an escape sequence (**+++**) 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
	modem goes into data transfer mode. On connection close or when context is closed with **#GPRS=0** the socket is closed and no listen is anymore active. If the context is closed by the network while in listening, the socket is closed, no listen is anymore active and an unsolicited code is reported: **#SKTL: ABORTED** Note: when closing the listening socket <input port> is a don't care parameter
AT#SKTL?	Read command returns the current socket listening **status** and the last settings of parameters **<input port>** and **<closure type>**, in the format: **#SKTL: <status>,<socket type>, <input port>,<closure type>** Where **<status>** - socket listening status 0 - socket not listening 1 - socket listening
AT#SKTL=?	Test command returns the allowed values for parameters **<mode>**, **<socket type>**, **<input port>** and **<closure type>**.

Example	*Activate GPRS*
	`AT#GPRS=1`
	`+IP: ###.###.###.###`
	
	`OK`
	Start TCP listening
	`AT#SKTL=1,0,1024`
	`OK`
	or
	`AT#SKTL=1,0,1024,255`
	`OK`
	
	Receive TCP connection requests
	`+CONN FROM: 192.164.2.1`
	`CONNECT`
	
	exchange data with the remote host
	
	send escape sequence
	`+++`
	`NO CARRIER`
	Now listen is not anymore active
	
	to stop listening
	`AT#SKTL=0,0,1024, 255`
	`OK`

#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.

3.4.6.5.16. 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>.**

3.4.6.5.17. 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

#FRWL - Firewall Setup	SELINT 2
	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#FRWL?	Read command reports the list of all **ACCEPT** chain rules registered in the Firewall settings in the format: **#FRWL: <ip_addr>,<net_mask>** **#FRWL: <ip_addr>,<net_mask>** **….** **OK**
AT#FRWL=?	Test command returns the allowed values for parameter **<action>.**

Example	*Let assume we want to accept connections only from our devices which are on the IP addresses ranging from*
	197.158.1.1 to 197.158.255.255
	
	We need to add the following chain to the firewall:
	`AT#FRWL=1,"197.158.1.1","255.255.0.0"`
	`OK`

Note	For outgoing connections made with **#SKTD** the remote host is dynamically inserted into the **ACCEPT** chain for all the connection duration. Therefore the **#FRWL** command shall be used only for defining the **#SKTL** behaviour, deciding which hosts are allowed to connect to the local device. Rules are not saved in NVM, at startup the rules list will be empty.

3.4.6.5.18. GPRS Data Volume - #GDATAVOL

#GDATAVOL - GPRS Data Volume	SELINT 2
AT#GDATAVOL=[<mode>]	Execution command reports, for every active PDP context, the amount of data the last GPRS session (and the last GSM session, if GSM context is active) received and transmitted, or it will report the total amount of data received and transmitted during all past GPRS (and GSM) sessions, since last reset. Parameter: **<mode>** 0 - it resets the GPRS data counter for the all the available PDP contexts (1-5) and GSM data counter for GSM context 0 1 - it reports the last GPRS session data counter for the all the set PDP contexts (i.e. all the PDP contexts with APN parameter set using **+CGDCONT**) (and the last GSM session data counter for the GSM context, if set through

#GDATAVOL - GPRS Data Volume	SELINT 2
	#GSMCONT), in the format: **#GDATAVOL: <cid*n*>,<tot*n*>,<sent*n*>,<received*n*>[<CR><LF>** **#GDATAVOL: <cid*m*>,<tot*m*>,<sent*m*>,<received*m*>[…]]** where: **<cid*n*>** - PDP context identifier 0 - specifies the GSM context 1..5 - numeric parameter which specifies a particular PDP context definition **<tot*n*>** - number of bytes either received or transmitted in the last GPRS (or GSM) session for **<cid*n*>** PDP context; **<sent*n*>** - number of bytes transmitted in the last GPRS (or GSM) session for **<cid*n*>** PDP context; **<received*n*>** - number of bytes received in the last GPRS (or GSM) session for **<cid*n*>** PDP context; 2 - it reports the total GPRS data counter, since last reset, for the all the set PDP contexts (i.e. all the PDP context with APN parameter set using **+CGDCONT**) and the total GSM data counter for the GSM context, if set through **#GSMCONT**, in the format: **#GDATAVOL: <cid*n*>,<tot*n*>,<sent*n*>,<received*n*>[<CR><LF>** **#GDATAVOL: <cid*m*>,<tot*m*>,<sent*m*>,<received*m*>[…]]** where: **<cid*n*>** - PDP context identifier 0 - specifies the GSM context 1..5 - numeric parameter which specifies a particular PDP context definition **<tot*n*>** - number of bytes either received or transmitted, in every GPRS (or GSM) session since last reset, for **<cid*n*>** PDP context; **<sent*n*>** - number of bytes transmitted, in every GPRS (or GSM) session since last reset, for **<cid*n*>** PDP context; **<received*n*>** - number of bytes received, in every GPRS (or GSM) session 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>.**

3.4.6.5.19. ICMP Ping Support - #ICMP

#ICMP - ICMP Ping Support	SELINT 2
AT#ICMP=<mode>	Set command enables/disables the ICMP Ping support. Parameter:

#ICMP - ICMP Ping Support	SELINT 2
	<mode> 0 - disable ICMP Ping support (default) 1 - enable firewalled ICMP Ping support: the module is sending a proper ECHO_REPLY only to a subset of IP Addresses pinging it; this subset of IP Addresses has been previously specified through **#FRWL** (see) 2 - enable free ICMP Ping support; the module is sending a proper ECHO_REPLY to every IP Address pinging it.
AT#ICMP?	Read command returns whether the ICMP Ping support is currently enabled or not, in the format: **#ICMP: <mode>**
AT#ICMP=?	Test command reports the supported range of values for the **<mode>** parameter.

3.4.6.5.20. PING request - #PING

#PING – Send PING request	
AT#PING=<IPaddr>[,<retryNum>[,<len>[,<timeout>[,<ttl>]]]]	This command is used to send Ping Echo Request messages and to receive the corresponding Echo Reply. Parameters: **<IPaddr>** - 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 **<retryNum>** - the number of Ping Echo Request to send 1-64 (default 4) **<len>** - the lenght of Ping Echo Request message 32-1460 (default 32) **<timeout>** - the timeout, in 100 ms units, waiting a single Echo Reply 1-600 (default 50) **<ttl>** - time to live 1-255 (default 128) Once the single Echo Reply message is receive a string like that is displayed: **#PING: <replyId>,<Ip Address>,<replyTime>,<ttl>** Where: **<replyId>** - Echo Reply number **<Ip Address>** - IP address of the remote host **<replyTime>** - time, in 100 ms units, required to receive the response **<ttl>** - time to live of the Echo Reply message

#PING – Send PING request	
	Note1: when the Echo Request timeout expires (no reply received on time) the response will contain **<replyTime>** set to 600 and **<ttl>** set to 255 Note2: To receive the corresponding Echo Reply is not required to enable separately AT#ICMP Note3: Before send PING Request the GPRS context must have been activated by AT#SGACT=1,1
AT#ICMP=?	Test command reports the supported range of values for the **#PING** command parameters.
Example	AT#PING=”www.telit.com” #PING: 01,"81.201.117.177",6,50 #PING: 02,"81.201.117.177",5,50 #PING: 03,"81.201.117.177",6,50 #PING: 04,"81.201.117.177",5,50 OK

3.4.6.6. E-mail Management AT Commands

3.4.6.6.1. E-mail SMTP Server - #ESMTP

#ESMTP - E-mail SMTP Server	**SELINT 2**
AT#ESMTP=[<smtp>]	Set command sets the SMTP server address, used for E-mail sending. SMTP server can be specified as IP address or as nick name. Parameter: **<smtp>** - SMTP server address, string type. This parameter can be either: - 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 “”) Note: the max length for **<smtp>** is the output of Test command.
AT#ESMTP?	Read Command reports the current SMTP server address, in the format: **#ESMTP: <smtp>**
AT#ESMTP=?	Test command returns the max length for the parameter **<smtp>.**
Example	AT#ESMTP="smtp.mydomain.com" OK
Note	The SMTP server used shall be inside the APN space (the smtp server provided by

#ESMTP - E-mail SMTP Server	SELINT 2
	the network operator) or it must allow the Relay, otherwise it will refuse to send the e-mail.

3.4.6.6.2. E-mail Sender Address - #EADDR

#EADDR - E-mail Sender Address	SELINT 2
AT#EADDR= [<e-add>]	Set command sets the sender address string to be used for sending the e-mail. Parameter: **<e-addr>** - sender address, string type. - any string value up to max length reported in the Test command. (factory default is the empty string "")
AT#EADDR?	Read command reports the current sender address, in the format: **#EADDR: <e-addr>**
AT#EADDR=?	Test command returns the maximum allowed length of the string parameter **<e-addr>.**
Example	AT#EADDR="me@email.box.com" OK AT#EADDR? #EADDR: "me@email.box.com" OK

3.4.6.6.3. 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 - E-mail Authentication User Name	SELINT 2

	`#EUSER: "myE-Name"`
	
	`OK`

Note	It is a different user field than the one used for GPRS authentication (see **#USERID**).

3.4.6.6.4. 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**).

3.4.6.6.5. E-mail Sending - #EMAILD

#EMAILD - E-mail Sending	SELINT 2
AT#EMAILD=[<da>,<subj>]	Execution command sends an e-mail message if GPRS context has already been activated by either **AT#SGACT=1,1** or **AT#GPRS=1**. It is also possible to send an e-mail on the GSM context, if it has already been activated by **AT#SGACT=0,1**. Parameters: **<da>** - destination address, string type. (maximum length 100 characters)

#EMAILD - E-mail Sending	SELINT 2
	<subj> - subject of the message, string type. (maximum length 100 characters) The device responds to the command with the prompt '**>**' and awaits for the message body text. To complete the operation send **Ctrl-Z** char (**0x1A** hex); to exit without writing the message send **ESC** char (**0x1B** hex). If e-mail message is successfully sent, then the response is **OK**. If message sending fails for some reason, an error code is reported. Note: if the length of one of the string type parameters exceeds the maximum length, then the string is truncated. Note: Care must be taken to ensure that during the command execution, no other commands are issued. To avoid malfunctions is suggested to wait for the **OK** or **ERROR / +CMS ERROR:<err>** response before issuing further commands. Note: maximum length for message body is 1024 bytes for versions till 7.03.02/7.02.07 and from 10.0x.xx0 till 10.0x.xx2, 1500 bytes for versions starting from 10.0x.xx3, trying to send more data will cause the surplus to be discarded and lost.
AT#EMAILD=?	Test command returns the **OK** result code.

Example	`AT#EMAILD="me@myaddress.com","subject of the mail"`
	`>message body… this is the text of the mail message…`
	`CTRL-Z`
	
	..wait..
	`OK`
	Message has been sent.

3.4.6.6.6. 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

#ESAV - E-mail Parameters Save	SELINT 2
AT#ESAV=?	Test command returns the **OK** result code.
Note	If some parameters have not been previously specified then a default value will be taken.

3.4.6.6.7. 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.

3.4.6.6.8. 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.

3.4.6.6.9. 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. Encoding of data received on the serial port is performed if required (binary data), before transmission on the SMTP socket. Parameters:

	<da> - destination address, string type. (maximum length 100 characters) **<subj>** - subject of the message, string type. (maximum length 100 characters) **<att>** - attached file flag 0 – no attachment 1 – attach a txt file 2 – attach a binary file(jpg,bin,pdf,...) **<filename>** - attached file name (maximum length 50 characters) **<encod>** -Content-Transfer-Encoding used for attachment 0 – "7bit" means data all represented as short lines of US-ASCII data 1 – "base64" designed to represent arbitrary sequences of octets in a form that need not be humanly readable Note: if no attachment (**<att>** 0) has to be sent, the behavior is the same as with #EMAILD. OK after CTRL-Z is returned(if connection was successful), the switch to online mode is not performed. Note: If a txt file (**<att>**=1) is attached, only **<encod>**0("7bit") is possible. If a binary file (**<att>**=2) is attached, only **<encod>**1("base64") is possible. Note: if **<att>**=0 and **<filename>** is present and not empty, the attachment won't be considered Note: if **<att>** 1 or 2 and **<filename>** is not present, command will return an ERROR
AT#SMTPCL=?	Test command reports the supported range of values for parameters **<da>,<subj>,<att>[,<filename>,<encod>]**
Examples	at#smtpcl="me@myaddress.com","test1",1,"sample.txt",0 >message body...this is the text of the mail message… *Send CTRL-Z* CONNECT *…data received on the serial port are sent as attachment….* *Send escape sequence to close the SMTP connection* +++ NO CARRIER

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

3.4.6.7. Easy Script® Extension - Python[9] Interpreter, AT Commands

3.4.6.7.1. 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 hidden, **#RSCRIPT** command will report empty file. The device shall prompt a five character sequence **<CR><LF><greater_than><greater_than><greater_than>** **(IRA 13, 10, 62, 62, 62)**

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

#WSCRIPT - Write Script	SELINT 2
	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** extension; file names are case sensitive. Note: when sending the script be sure that the line terminator is **<CR><LF>** and that your terminal program does not change it. Note: with the hidden attribute it is possible to protect your files from being viewed and copied, only the file name can be viewed, its content is hidden even if the file is still being run correctly. It's your care to maintain knowledge on what the file contains.
AT#WSCRIPT=?	Test command returns **OK** result code.

Example	`AT#WSCRIPT="First.py ",54,0`
	>>> here receive the prompt; then type or send the textual script, sized 54 bytes
	
	`OK`
	
	Textual script has been stored

Note	It's recommended to use the extension **.py** only for textual script files and the extension **.pyo** only for pre-compiled executable script files.

3.4.6.7.2. Select Active Script - #ESCRIPT

#ESCRIPT - Select Active Script	SELINT 2
AT#ESCRIPT=[<script_name>]	Set command selects either a) the name of the textual script file that will be compiled and executed by the Easy Script® compiler at startup according to last **#STARTMODESCR** setting, or b) the name of the pre-compiled executable file that will be executed at startup according to last **#STARTMODESCR** setting. We call this file (either textual or pre-compiled) the **current script**. Parameter: **<script_name>** - file name, string type (max 16 chars, case sensitive). Note: all textual script files must have **.py** extension; all pre-compiled executable

#ESCRIPT - Select Active Script	SELINT 2
	files must have **.pyo** extension. Note: **<script_name>** must match to the name of a file written by **#WSCRIPT** in order to have it run. Note: the command does not check whether a textual script named **<script_name>** does exist or not in the Easy Script® related NVM. If the file **<script_name>** is not present at startup then the compiler will not execute.
AT#ESCRIPT?	Read command reports as a quoted string the file name of the **current script**.
AT#ESCRIPT=?	Test command returns **OK** result code.

3.4.6.7.3. 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. 2 - **current script** will be executed at startup in any case. **DTR** line and if the user does not send any AT command on the serial port have no influence on script execution. But AT command interface will be available on serial port ASC0 and connected to third AT parser instance. See ”Easy Script in Python” document for further details on this execution start mode. **<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).

#STARTMODESCR - Script Execution Start Mode	SELINT 2
AT#STARTMODESCR?	Read command reports the **current script** start mode and the **current script** start time-out, in the format: **#STARTMODESCR= <script_start_mode>,<script_start_timeout>**
AT#STARTMODESCR=?	Test command returns the range of available values for parameters **<script_start_mode>** and **<script_start_timeout>**, in the format: **#STARTMODESCR: (0-2),(10-60)**

3.4.6.7.4. Execute Active Script - #EXECSCR

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

3.4.6.7.5. Read Script - #RSCRIPT

#RSCRIPT - Read Script	SELINT 2
AT#RSCRIPT= [<script_name>]	Execution command reports the content of file **<script_name>**. Parameter: **<script_name>** - file name, string type (max 16 chars, case sensitive). The device shall prompt a five character sequence **<CR><LF><less_than><less_than><less_than>** **(IRA 13, 10, 60, 60, 60)** followed by the file content. Note: if the file **<script_name>** was saved with the hidden attribute, then an empty file is reported with the **OK** result code. Note: If the file **<script_name>** is not present an error code is reported.
AT#RSCRIPT=?	Test command returns **OK** result code.

Example	`AT#RSCRIPT="First.py "`
	hereafter receive the prompt; then the script is displayed, immediately after the prompt
	`<<<import MDM`
	
	`MDM.send('AT\r',10)`
	`Ans=MDM.receive(20)`
	`OK`

#RSCRIPT - Read Script	SELINT 2

3.4.6.7.6. 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 CRC16-CCITT x^16+x^12+x^5+1 polynomial (0x1021 representation) 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

#LCSCRIPT - List Script Names	SELINT 2
	command is executed by a Python script because at least the file pointed by #ESCRIPT is in use.
AT#LCSCRIPT=<script_name>	Execution command reports size and CRC16 information of file **<script_name>** in the format: **[#LCSCRIPT: <script_name>,<size>[,<crc>]]** where: **<script-name>** - file name, quoted string type (max 16 chars, case sensitive) **<size>** - size of script in bytes **<crc>** - CRC16 poly (x^16+x^12+x^5+1) of script in hex format Parameter: **<script_name>** - file name, string type (max 16 chars, case sensitive). Note: CRC16 is calculated using the standard CRC16-CCITT x^16+x^12+x^5+1 polynomial (0x1021 representation) with initial value FFFF. Note: if file **<script_name>** is in use than CRC16 cannot be calculated and execution command does not report **<crc>**. Note: if file **<script_name>** is not in the list of files stored in NVM execution command exits with error message.
AT#LCSCRIPT=?	Test command returns **OK** result code.

Example	`AT#LCSCRIPT`
	`#LCSCRIPT: “First.py”,51,8FD6`
	`#LCSCRIPT: “Second.py”,178,A034`
	`#LCSCRIPT: “Third.py”,120,7C48`
	`#LCSCRIPT: free bytes: 20000`
	
	`OK`
	
	`AT#LCSCRIPT=“Second.py”`
	`#LCSCRIPT: “Second.py”,178,A034`
	
	`OK`
	
	If file Third.py is already in use.
	`AT#LCSCRIPT`
	`#LCSCRIPT: “First.py”,51,8FD6`
	`#LCSCRIPT: “Second.py”,178,A034`
	`#LCSCRIPT: “Third.py”,120`
	`#LCSCRIPT: free bytes: 20000`
	
	`OK`

3.4.6.7.7. 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

3.4.6.7.8. 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 …

3.4.6.7.9. CMUX Interface Enable - #CMUXSCR

#CMUXSCR - CMUX Interface Enable	SELINT 2
AT#CMUXSCR=<enable>,[<rate>]	Set command enables/disables the 3GPP TS 27.010 multiplexing protocol control channel (see **+CMUX**) at startup before the **current script** (see **#ESCRIPT**)

#CMUXSCR - CMUX Interface Enable	SELINT 2
	execution and specifies the **DTE** speed at which the device sends and receives CMUX frames (used to fix the **DTE-DCE** interface speed). Parameters: **<enable>** - enables/disables CMUX interface at startup. 0 - it disables CMUX interface at startup, before **current script** execution (factory default) 1 - it enables CMUX interface at startup, before **current script** execution **<rate>** 300 1200 2400 4800 9600 19200 38400 57600 115200 (default) If **<rate>** is omitted the value is unchanged **<enable>** and **<rate>** values are saved in NVM
AT#CMUXSCR ?	Read command returns the current value of **#CMUXSCR** parameters in the format: **#CMUXSCR: <enable>,<rate>**
AT#CMUXSCR =?	Test command reports the range for the parameters **<enable>** and **<rate>**

3.4.6.8. GPS AT Commands Set

3.4.6.8.1. GPS Software Version - $GPSSW

$GPSSW - GPS Software Version	SELINT 2
AT$GPSSW	Execution command provides GPS Module software version in the format: **$GPSSW: <sw version>**
AT$GPSSW?	Read command has the same meaning as the Execution command
AT$GPSSW=?	Test command returns the **OK** result code

Example	`AT$GPSSW`
	`$GPSSW: GSW3.1.1_3.1.00.07-C23P1.00`
	`OK`

3.4.6.9. Audio Commands

These are not the only audio commands available. See par. 3.5.4.4.

3.4.6.9.1. Basic configuration

3.5.6.16.1.1. 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>**.

3.5.6.16.1.2. 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:

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

3.5.6.16.1.3. Select Ringer Path - #SRP

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

Example	`AT#SRP=?`
	`#SRP: (0-3)`
	
	`OK`
	`AT#SRP=3`
	`OK`

3.5.6.16.1.4. Handsfree Microphone Gain - #HFMICG

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

3.5.6.16.1.5. Handset Microphone Gain - #HSMICG

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

3.5.6.16.1.6. 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>**.

3.5.6.16.1.7. 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>**.

3.5.6.16.1.8. Set Handsfree Sidetone - #SHFSD

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

3.5.6.16.1.9. Set Handset Sidetone - #SHSSD

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

3.5.6.16.1.10. Speaker Mute Control - #SPKMUT

#SPKMUT - Speaker Mute Control	SELINT 2
AT#SPKMUT=<n>	Set command enables/disables the global muting of the speaker audio line, for every audio output (ring, incoming sms, voice, Network coverage) Parameter: **<n>** 0 - mute off, speaker active (factory default) 1 - mute on, speaker muted. Note: this command mutes/activates both speaker audio paths, internal speaker and external speaker.

#SPKMUT - Speaker Mute Control	SELINT 2
AT#SPKMUT?	Read command reports whether the muting of the speaker audio line during a voice call is enabled or not, in the format: **#SPKMUT: <n>**
AT#SPKMUT=?	Test command reports the supported values for **<n>** parameter.

3.5.6.16.1.11. Open Audio Loop - #OAP

#OAP - Open Audio Loop	SELINT 2
AT#OAP=[<mode>]	Set command sets Open Audio Path. Parameter: 0 - disables Open Audio Path (default) 1 - enables Open Audio Path
AT#OAP?	Read command reports whether the Open Audio Path is currently enabled or not, in the format: **#OAP: <mode>**
AT#OAP=?	Test command returns the supported range of values of parameter **<mode>**.
Note	The audio loop will be established between microphone and speaker using sidetone scaling value.

3.4.6.9.2. Tones configuration

3.5.6.16.1.12. Signaling Tones Mode - #STM

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

#STM - Signaling Tones Mode		SELINT 2
	#STM: <mode>	
AT#STM=?	Test command reports supported range of values for parameter **<mode>**.	

3.5.6.16.1.13. Tone Playback - #TONE

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

3.5.6.16.1.14. 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>.**

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

3.5.6.16.1.15. 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 **<class>**; it is mandatory if **<mode>** is **1**. 0..*max* - the value of *max* can be read issuing the Test command **AT#TSVOL=?** Note: The class DTMF Tones (**<class>**=16) refers only to the volume for locally generated DTMF tones. It doesn't affect the level of the DTMF generated by the network as result of AT+VTS command
AT#TSVOL?	Read command returns for each class of tones the last setting of **<mode>** and, if **<mode>** is not **0**, of **<volume>** too, in the format: **#TSVOL: 1,<mode1>[,<volume1>]<CR><LF>** **…** **#TSVOL:128,<mode128>[,<volume128>]**
AT#TSVOL=?	Test command returns the supported range of values of parameters **<class>**, **<mode>** and **<volume>**.

Example	`AT#TSVOL=64,1,5`
	
	`OK`
	
	`AT#TSVOL?`
	`#TSVOL:1,0`
	`#TSVOL:2,0`
	`#TSVOL:4,1,5`
	`#TSVOL:8,0`
	`#TSVOL:16,1,5`

#TSVOL – Tone Classes Volume	SELINT 2
	#TSVOL:32,0 #TSVOL:64,1,5 #TSVOL:128,0 OK

3.5.6.16.1.16. 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.

3.5.6.16.1.17. User Defined Tone SAVE - #UDTSAV command

#UDTSAV – User Defined Tone SAVe	SELINT 2
AT#UDTSAV	Execution command saves the actual values of frequency and amplitude parameters that have been set with the command **#UDTSET**

#UDTSAV – User Defined Tone SAVe	SELINT 2
AT#UDTSAV =?	Test command returns the OK result code.
Example	AT#UDTSAV OK Current tones are saved in NVM

3.5.6.16.1.18. User Defined Tone Reset - #UDTRST command

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

3.5.6.16.1.19. 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>**.

3.5.6.16.1.20. 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>**.

3.5.6.16.1.21. Handsfree Automatic Gain Control - #SHFAGC

#SHFAGC - Handsfree Automatic Gain Control	SELINT 2
AT# SHFAGC = <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# SHFAGC?	Read command reports the value of parameter **<mode>**, in the format: **#SHFAGC: <mode>**
AT# SHFAGC =?	Test command returns the supported range of values of parameter **<mode>**.

3.5.6.16.1.22. Handset Automatic Gain Control - #SHSAGC

#SHSAGC - Handset Automatic Gain Control	SELINT 2
AT#SHSAGC = <mode>	Set command enables/disables the automatic gain control function on audio handset input. Parameter: **<mode>** 0 - disables automatic gain control for handset mode (default) 1 - enables automatic gain control for handset mode

#SHSAGC - Handset Automatic Gain Control	SELINT 2
	Note: This parameter is saved in NVM issuing AT&W command.
AT#SHSAGC?	Read command reports whether the automatic gain control function on audio handset input is currently enabled or not, in the format: **#SHSAGC: <mode>**
AT#SHSAGC =?	Test command returns the supported range of values of parameter **<mode>**.

3.5.6.16.1.23. 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>**.

3.5.6.16.1.24. 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>**.

4. List of acronyms

ARFCN	Absolute Radio Frequency Channel Number
AT	Attention command
BA	BCCH Allocation
BCCH	Broadcast Control Channel
CA	Cell Allocation
CBM	Cell Broadcast Message
CBS	Cell Broadcast Service
CCM	Current Call Meter
CLIR	Calling Line Identification Restriction
CTS	Clear To Send
CUG	Closed User Group
DCD	Data Carrier Detect
DCE	Data Communication Equipment
DCS	Digital Cellular System
DGPS	Differential GPS, the use of GPS measurements, which are differentially corrected
DNS	Domain Name System
DSR	Data Set Ready
DTE	Data Terminal Equipment
DTMF	Dual Tone Multi 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
MO	Mobile Originated
MT	*either* Mobile Terminated *or* Mobile Terminal

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

4.1. Document history

Revision	Date	SW release	Changes
ISSUE #0	2011-05-10	12.00.000-B001	Initial release