AT Commands Reference Guide

GC868-DUAL

80343ST10057a Rev. 1 – May 2009

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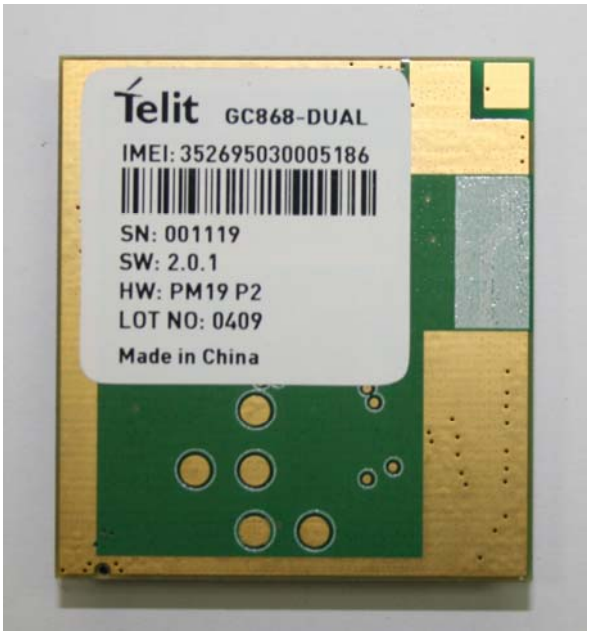

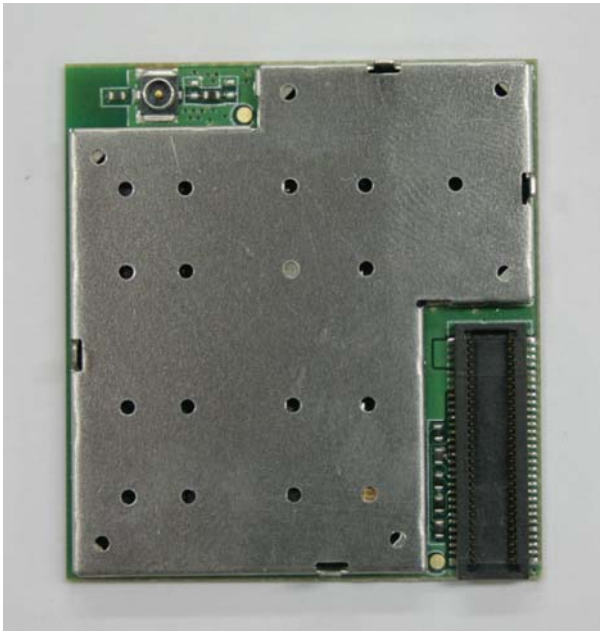

Model	P/N
GC868-DUAL	4990250047

Contents

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1 INTRODUCTION

1.1 Scope of Document

To describe all AT commands implemented on the following Telit wireless modules:

Model	P/N
GC868-DUAL	4990250047

SW Version
2.0.1

2 APPLICABLE DOCUMENTS

a) ETSI GSM 07.07 specification and rules
b) ETSI GSM 07.05 specification and rules
c) Hayes standard AT command set

3 AT COMMANDS

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

1. Hayes standard AT command set, in order to maintain the compatibility with existing SW programs.
2. ETSI GSM 07.07 specific AT command and GPRS specific commands.
3. ETSI GSM 07.05 specific AT commands for SMS (Short Message Service) and CBS (Cell Broadcast Service)

Moreover Telit wireless module supports also Telit proprietary AT commands for special purposes.
In the following is described how to use the AT commands with the Telit wireless module family.

NOTE: All AT commands described in this document are fully compatible with Telit's unified AT command interface (only SELINT=2). This gives a possibility to all system integrators that use GC868-DUAL in their application design to migrate to any other module from the Telit Unified Form Factor range (GC868, CC864, UC864) to access to different communication technologies and markets.

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.

[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.

[...] 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.

3.2 AT Command Syntax

The syntax rules followed by Telit implementation of either Hayes AT commands, GSM commands and FAX 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:
    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**). The string enclosed between quotes is 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/**".
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 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

[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**

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 GSM 07.07** 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
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

Numeric Format	Verbose Format
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
Easy GPRS® 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
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
Network survey errors:	
657	Network survey error (No Carrier)*
658	Network survey error (Busy)*
659	Network survey error (Wrong request)*
660	Network survey error (Aborted)*
SAP related errors:	
731	Unspecified

Numeric Format	Verbose Format
732	Activation command is busy
733	Activation started with CMUX off
734	Activation started on invalid CMUX
736	Remote SIM already active
737	Invalid parameter

*(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 GSM 07.05 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	GSM 03.40 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
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
2	RING
3	NO CARRIER
4	ERROR
6	NO DIALTONE
7	BUSY
8	NO ANSWER

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 from command to command and may depend also from the network on which the command may interact. As a result every command is provided with a proper time-out period, if this time elapses without any result from the operation, then an **ERROR** response can be reported as if the operation was not successful and the operation is anyway terminated.

The time-out period is quite short for commands that imply only internal set up commands, but may be very long for command that interact with the network (or even a set of Networks).
The default time-out is **100 ms** for all the commands that have no interaction with the network or upper software layers.
In the table below are listed all the commands whose time-out differs from the default **100 ms** and their effective time-out is reported:

Command	**Time-Out (Seconds)**
+CBST	0.2
+CR	0.2
+CRC	0.2

Command	Time-Out (Seconds)
+CRLP	0.2
+CSCS	0.2
+CEER	5
+CGMI	5
+CGMM	5
+CGMR	5
+CGSN	20
+CIMI	20
+CNUM	20
+CREG	5
+COPS	180
+CLCK	180
+CPWD	180
+CLIP	180
+CLIR	180
+CCFC	180
+CCWA	20
+CHLD	20
+CUSD	180
+CAOC	20
+CSSN	20
+CLCC	20
+CPAS	5
+CPIN	20
+CSQ	5
+CPBS	5
+CPBR	20
+CPBF	20
+CPBW	20
+CALM	5
+CRSL	5
+CLVL	5
+CMUT	5
+CACM	20
+CAMM	20
+CPUC	20
+CMEE	5
+VTS	20
+GMI	5
+GMM	5
+GMR	5
+GSN	20
I3	5
I4	5
I5	5

Command	Time-Out (Seconds)
+CSMS	5
+CPMS	5
+CMGF	5
+CSCA	20
+CSMP	5
+CSDH	5
+CSAS	5
+CRES	5
+CNMI	5
+CMGS	180 / 5 for prompt”>”
+CMSS	180
+CMGW	5 / 5 for prompt”>”
+CMGD	5
+CMGR	5
+CMGL	5
#CAP	10
#SRS	10
#SRP	10
#STM	10
#PCT	10
#SHDN	10
#QTEMP	10
#SGPO	10
#GGPI	10
#MONI	10
#CGMI	5
#CGMM	5
#CGMR	5
#CGSN	20
#CIMI	5
+CGACT	180
+CGATT	180
+CGDATA	20
+CGDCONT	20
+CGPADDR	20
+CGQMIN	20
+CGQREQ	20

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** and **#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 CMUX instance:

GSM DATA MODE:	+CBST
AUTOBAUD:	+IPR
COMMAND ECHO:	E
RESULT MESSAGES:	Q
VERBOSE MESSAGES:	V
EXTENDED MESSAGES:	X
FLOW CONTROL OPTIONS:	&K, +IFC
CTS OPTIONS:	&B
DSR OPTIONS:	&S
DTR OPTIONS:	&D
DCD OPTIONS:	&C
RI OPTIONS:	\R
POWER SAVING:	+CFUN
DEFAULT PROFILE:	&Y0
S REGISTERS:	S0;S1;S2;S3;S4;S5;S7;S12;S25;S30;S38
CHARACTER FORMAT:	+ICF

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

+FCLASS,	+ILRR,	+DR,

+CSCS,	+CR,	+CRLP,
+CRC,	+CSNS,	+CVHU,
+CREG,	+CLIP,	+CLIR,
+CCWA,	+CUSD,	+CAOC,
+CSSN,	+CIND,	+CMER,
+CPBS,	+CMEE,	+CGREG,
+CMGF,	+CSCA,	+CSDH,
+CNMI,	#ACAL,[3]	#STIA
#ACALEXT,	#ECAM,	#SMOV,
#MWI,	#NITZ,	#SKIPESC,
#E2ESC,		

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

+CALM,	+CRSL,	+CMUT[3],
+CLVL[3],	+VTD,	+CSCB,
#CAP[3],	#SRS[3],	#SRP[3],
#STM[3],	#DVI,	#E2SMSRI,
#CODEC,	#SHFEC[3],	#HFMICG[3],
#HSMICG,	#SHFSD[3],	#SPKMUT,
#NITZ,	#E2SLRI	

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:

+COPS[4],	+CGCLASS,	
+CGDCONT,	+CGQMIN,	+CGQREQ,
#COPSMODE,	#DIALMODE,	#PLMNMODE,
#SCFG		

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[5] command and restored by +CRES[5] 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.

#ESMTP,	#EADDR,	#EUSER,
#EPASSW		

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

[3] they depend on the CMUX 0 instance only
[4] It is partially stored in NVM; see command description.
[5] 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.

3.4 AT Commands Availability Table

The following table lists the AT commands set that is available for GC868-DUAL module:

COMMAND	Function	Page
	Command Line General Format - Command Line Prefixes	
AT	Starting A Command Line	27
A/	Last Command Automatic Repetition Prefix	27
	Hayes AT Commands - Generic Modem Control	
&F	Set To Factory-Defined Configuration	28
Z	Soft Reset	28
+FCLASS	Select Active Service Class	28
&Y	Designate A Default Reset Basic Profile	29
&P	Designate A Default Reset Full Profile	29
&W	Store Current Configuration	30
&Z	Store Telephone Number In The Module Internal Phonebook	30
&N	Display Internal Phonebook Stored Numbers	30
+GMI	Manufacturer Identification	31
+GMM	Model Identification	31
+GMR	Revision Identification	31
+GCAP	Capabilities List	31
+GSN	Serial Number	31
&V	Display Current Base Configuration And Profile	31
&V0	Display Current Configuration And Profile	32
&V1	S Registers Display	32
&V3	Extended S Registers Display	32
&V2	Display Last Connection Statistics	33
\V	Single Line Connect Message	33
+GCI	Country Of Installation	33
%L	Line Signal Level	33
%Q	Line Quality	33
L	Speaker Loudness	34
M	Speaker Mode	34
	Hayes AT Commands - DTE-Modem Interface Control	
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V	Response Format	35
X	Extended Result Codes	35
I	Identification Information	36
&C	Data Carrier Detect (DCD) Control	36
&D	Data Terminal Ready (DTR) Control	37
\Q	Standard Flow Control	37
&K	Flow Control	38
&S	Data Set Ready (DSR) Control	38
\R	Ring (RI) Control	39
+IPR	Fixed DTE Interface Rate	39
+IFC	DTE-Modem Local Flow Control	40
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	Hayes AT Commands - Call Control	
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P	Pulse Dial	43
A	Answer	44
H	Disconnect	44
O	Return To On Line Mode	44

3.5 AT Commands References

3.5.1 Command Line General Format

3.5.1.1 Command Line Prefixes

3.5.1.1.1 Starting A Command Line - AT

AT - Starting A Command Line	
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
Reference	GSM 07.07

3.5.1.1.2 Last Command Automatic Repetition - A/

A/ - Last Command Automatic Repetition	
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 command **#/** has been defined: it causes the last command to be executed again too; but it doesn't need a fixed IPR.
Reference	V25ter

3.5.2 Hayes Compliant AT Commands

3.5.2.1 Generic Modem Control

3.5.2.1.1 Set To Factory-Defined Configuration - &F

&F - Set To Factory-Defined Configuration	
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.

3.5.2.1.2 Soft Reset - Z

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

3.5.2.1.3 Select Active Service Class - +FCLASS

+FCLASS - Select Active Service Class	
AT+FCLASS=<n>	Set command sets the wireless module in specified connection mode (data, fax, voice), hence all the calls done afterwards will be data or voice. Parameter: **<n>**

+FCLASS - Select Active Service Class	
	0 - data 1 - fax class 1 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	GSM 07.07

3.5.2.1.4 Default Reset Basic Profile Designation - &Y

&Y - Default Reset Basic Profile Designation	
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**

3.5.2.1.5 Default Reset Full Profile Designation - &P

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

3.5.2.1.6 Store Current Configuration - &W

&W - Store Current Configuration	
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**.

3.5.2.1.7 Store Telephone Number In The Module Internal Phonebook - &Z

&Z - Store Telephone Number In The Wireless Module Internal Phonebook	
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*>**.

3.5.2.1.8 Display Internal Phonebook Stored Numbers - &N

&N - Display Internal Phonebook Stored Numbers	
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.

3.5.2.1.9 Manufacturer Identification - +GMI

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

3.5.2.1.10 Model Identification - +GMM

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

3.5.2.1.11 Revision Identification - +GMR

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

3.5.2.1.12 Capabilities List - +GCAP

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

3.5.2.1.13 Serial Number - +GSN

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

3.5.2.1.14 Display Current Base Configuration And Profile - &V

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

3.5.2.1.15 Display Current Configuration And Profile - &V0

&V0 - Display Current Configuration And Profile	
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.

3.5.2.1.16 S Registers Display - &V1

&V1 - S Registers Display	
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

3.5.2.1.17 Extended S Registers Display - &V3

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

3.5.2.1.18 Display Last Connection Statistics - &V2

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

3.5.2.1.19 Single Line Connect Message - \V

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

3.5.2.1.20 Country Of Installation - +GCI

+GCI - Country Of Installation	
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.

3.5.2.1.1 Line Signal Level - %L

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

3.5.2.1.2 Line Quality - %Q

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

3.5.2.1.3 Speaker Loudness - L

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

3.5.2.1.4 Speaker Mode - M

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

3.5.2.2 DTE - Modem Interface Control

3.5.2.2.1 Command Echo - E

E - Command Echo	
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

3.5.2.2.2 Quiet Result Codes - Q

Q - Quiet Result Codes	
ATQ[<n>]	Set command enables or disables the result codes. Parameter: **<n>** 0 - enables result codes (factory default) 1 - disables result codes 2 - disables result codes (only for backward compatibility) Note: After issuing either **ATQ1** or **ATQ2** every information text transmitted in response to commands is not affected Note: if parameter is omitted, the command has the same behaviour of

Q - Quiet Result Codes	
	ATQ0
Example	*After issuing ATQ1 or ATQ2* AT+CGACT=? **+CGACT: (0-1) nothing is appended to the response**
Reference	V25ter

3.5.2.2.3 Response Format - V

V - Response Format	
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

3.5.2.2.4 Extended Result Codes - X

X - Extended Result Codes	
ATX[<n>]	Set command selects the result code messages subset used by the modem

X - Extended Result Codes	
	to inform the **DTE** of the result of the commands. Parameter: **<n>** 0 - send only **OK**, **CONNECT**, **RING**, **NO CARRIER**, **ERROR**, **NO ANSWER** results. Busy tones reporting is disabled. 1..4 - reports all messages (factory default is 1). 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

3.5.2.2.5 Identification Information - I

I - Identification Information	
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

3.5.2.2.6 Data Carrier Detect (DCD) Control - &C

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

&C - Data Carrier Detect (DCD) Control	
	AT&C0
Reference	V25ter

3.5.2.2.7 Data Terminal Ready (DTR) Control - &D

&D - Data Terminal Ready (DTR) Control	
AT&D[<n>]	Set command controls the Module behaviour to the RS232 **DTR** transitions. Parameter: **<n>** 0 - **DTR** transitions are ignored. (factory default) 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. 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. 3 - **C108/1** operation is enabled. 4 - **C108/1** operation is disabled. Note: if a connection has been set up issuing either **#SKTD** or **#SKTOP**, then **AT&D1** has the same effect as **AT&D2**. 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

3.5.2.2.8 Standard Flow Control - \Q

\Q - Standard Flow Control	
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**) 2 - hardware mono-directional flow control (only **CTS** active) 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**

\Q - Standard Flow Control	
	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

3.5.2.2.9 Flow Control - &K

&K - Flow Control	
AT&K[<n>]	Set command controls the RS232 flow control behaviour. Parameter: **<n>** 0 - no flow control 1 - hardware mono-directional flow control (only **CTS** active) 2 - software mono-directional flow control (**XON/XOFF**) 3 - hardware bi-directional flow control (both **RTS/CTS** active) (factory default) 4 - software bi-directional with filtering (**XON/XOFF**) 5 - pass through: software bi-directional without filtering (**XON/XOFF**) 6 - both hardware bi-directional flow control (both **RTS/CTS** active) and software bi-directional flow control (**XON/XOFF**) with filtering 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.

3.5.2.2.10 Data Set Ready (DSR) Control - &S

&S - Data Set Ready (DSR) Control	
AT&S[<n>]	Set command controls the RS232 **DSR** pin behaviour. Parameter: **<n>** 0 - always **High** 1 - follows the GSM traffic channel indication. 2 - **High** when connected 3 - **High** when device is ready to receive commands (factory default). 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**.

&S - Data Set Ready (DSR) Control	
	Note: if parameter is omitted, the command has the same behaviour of **AT&S0**

3.5.2.2.11 Ring (RI) Control - \R

\R - Ring (RI) Control	
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**

3.5.2.2.12 Fixed DTE Interface Rate - +IPR

+IPR - Fixed DTE Interface Rate	
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>** 0 ..300 1200 2400 4800 9600 19200 38400 57600 115200 If **<rate>** is set to 0, then automatic speed detection is enabled and also character format (see **+ICF**) is set to auto-detect. (default) If **<rate>** is specified and not 0, **DTE-DCE** speed is fixed at that speed, hence no speed auto-detection (autobauding) is enabled.
AT+IPR?	Read command returns the current value of **+IPR** parameter.
AT+IPR=?	Test command returns the list of supported autodetectable **<rate>** values

+IPR - Fixed DTE Interface Rate	
	and the list of fixed-only **<rate>** values in the format: **+IPR**:(list of supported autodetectable **<rate>** values), (list of fixed-only **<rate>** values)
Reference	V25ter

3.5.2.2.13 DTE-Modem Local Flow Control - +IFC

+IFC - DTE-Modem Local Flow Control	
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 2 - **C105** (**RTS**) (factory default) 3 - **XON/XOFF** not filtered **<by_ta>** - flow control option for the data sent by **modem** 0 - flow control None 1 - **XON/XOFF** 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.
AT+IFC?	Read command returns active flow control settings.
AT+IFC=?	Test command returns all supported values of the parameters **<by_te>** and **<by_ta>**.
Reference	V25ter

3.5.2.2.14 DTE-Modem Local Rate Reporting - +ILRR

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

3.5.2.2.15 DTE-Modem Character Framing - +ICF

+ICF - DTE-Modem Character Framing	
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 4 - 7 Data, 2 Stop 5 - 7 Data, 1 Parity, 1 Stop **<parity>** - determines how the parity bit is generated and checked, if present 0 - Odd 1 - Even
AT+ICF?	Read command returns current settings for subparameters **<format>** and **<parity>**.
AT+ICF=?	Test command returns the ranges of values for the parameters **<format>** and **<parity>**
Reference	V25ter

Example	`AT+ICF = 0 - auto detect`
	`AT+ICF = 1 - 8N2`
	`AT+ICF = 2,0 - 8O1`
	`AT+ICF = 2,1 - 8E1`
	`AT+ICF = 3 - 8N1 (default)`
	`AT+ICF = 5,0 - 7O1`
	`AT+ICF = 5,1 - 7E1`

3.5.2.3 Call Control

3.5.2.3.1 Dial - D

D - Dial	
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

D - Dial	
	Note: type of call (**data**, **fax** or **voice**) depends on last **+FCLASS** setting. Note: the numbers accepted are 0-9 and *,#,"A", "B", "C", "D","+".
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: 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. 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[;]	Issues a call overwriting the CLIR supplementary service subscription

D - Dial	
ATD<number>i[;]	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 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.

3.5.2.3.1 Tone Dial - T

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

3.5.2.3.2 Pulse Dial - P

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

3.5.2.3.3 Answer - A

A - Answer	
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.

3.5.2.3.4 Disconnect - H

H - Disconnect	
ATH	Execution command is used to close the current conversation (voice, data or fax). 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 (see **register S2**) 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.

3.5.2.3.5 Return To On Line Mode - O

O - Return To On Line Mode	
ATO	Execution command is used to return to on-line mode from command mode. If there's no active connection it returns **NO CARRIER**. Note: After issuing this command, if the device is in conversation, to send other commands to the device you must return to command mode by issuing the escape sequence (see **register S2**) or tying low **DTR** pin if **&D1** option is active.
Reference	V25ter.

3.5.2.3.1 Guard Tone - &G

&G - Guard Tone	
AT&G	Set command has no effect is included only for backward compatibility with landline modems.

3.5.2.3.2 Sync/Async Mode - &Q

&Q - Sync/Async Mode	
AT&Q	Set command has no effect is included only for backward compatibility with landline modems.

3.5.2.4 Modulation Control

3.5.2.4.1 Modulation Selection - +MS

+MS - Modulation Selection	
AT+MS= <carrier> [,<automode> [,<min_rate> [,<max_rate>]]]	Set command has no effect is included only for backward compatibility with landline modems. Parameters: **<carrier>** - a string which specifies the preferred modem carrier to use in originating or answering a connection V21 V22 V22B V23C V32 V34 **<automode>** - it enables/disables automatic modulation negotiation. 0 - disabled 1 - enabled. It has effect only if it is defined for the associated modulation. **<min_rate>** - it specifies the lowest value at which the **DCE** may establish a connection. 0 - unspecified **<max_rate>** - it specifies the highest value at which the **DCE** may establish a connection. 0 - unspecified 300..14400 - rate in bps Note: to change modulation requested use **+CBST** command.
AT+MS?	Read command returns the current value of **<carrier>**, **<automode>**, **<min_rate>**, **<max_rate>** parameters.
AT+MS=?	Test command returns all supported values of the **<carrier>**, **<automode>**, **<min_rate>**, **<max_rate>** parameters.

3.5.2.4.2 Line Quality Monitor And Auto Retrain Or Fallback/Fallforward - %E

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

%E - Line Quality Monitor And Auto Retrain Or Fallback/Fallforward	
	compatibility with landline modems.

3.5.2.5 Compression Control

3.5.2.5.1 Data Compression - +DS

+DS - Data Compression	
AT+DS=<n>	Set command sets the V42 compression parameter. Parameter: **<n>** 0 - no compression, it is currently the only supported value
AT+DS?	Read command returns current value of the data compression parameter.
AT+DS=?	Test command returns all supported values of the parameter **<n>**
Reference	V25ter

3.5.2.5.2 Data Compression Reporting - +DR

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

3.5.2.6 Break Control

3.5.2.6.1 Transmit Break To Remote - \B

\B - Transmit Break To Remote	
AT\B	Execution command has no effect and is included only for backward compatibility with landline modems

3.5.2.6.2 Break Handling - \K

\K - Break Handling	
AT\K[<n>]	Execution command has no effect and is included only for backward compatibility with landline modems Parameter: **<n>** 0..5

3.5.2.6.3 Operating Mode - \N

\N - Operating Mode	
AT\N	Execution command has no effect and is included only for backward compatibility with landline modems

3.5.2.7 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, 12, 25, 30, 38), this command establishes **S*n*** as last selected parameter.
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.

3.5.2.7.1 Number Of Rings To Auto Answer - S0

S0 - Number Of Rings To Auto Answer	
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

3.5.2.7.2 Ring Counter - S1

S1 - Ring Counter	
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.

3.5.2.7.3 Escape Character - S2

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

3.5.2.7.4 Command Line Termination Character - S3

S3 - Command Line Termination Character	
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

3.5.2.7.5 Response Formatting Character - S4

S4 - Response Formatting Character	
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

S4 - Response Formatting Character	
	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

3.5.2.7.6 Command Line Editing Character - S5

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

3.5.2.7.7 Connection Completion Time-Out - S7

S7 - Connection Completion Time-Out	
ATS7=[<tout>]	Set command sets the amount of time, in seconds, that the device shall allow between either answering a call (automatically or by **A** command) or completion of signalling of call addressing information to network (dialling), and establishment of a connection with the remote device. Parameter: **<tout>** - number of seconds 1..255 - factory default value is 60
ATS7?	Read command returns the current value of **S7 parameter**. Note: the format of the numbers in output is always 3 digits, left-filled with 0s
Reference	V25ter

3.5.2.7.8 Escape Prompt Delay - S12

S12 - Escape Prompt Delay	
ATS12=[<time>]	Set command sets: 1) the minimum period, before receipt of the first character of the three escape character sequence, during which no other character has to be detected in order to accept it as valid first character; 2) the maximum period allowed between receipt of first or second

S12 - Escape Prompt Delay	
	character of the three escape character sequence and receipt of the next; 3) the minimum period, after receipt of the last character of the three escape character sequence, during which no other character has to be detected in order to accept the escape sequence as a valid one. Parameter: **<time>** - expressed in fiftieth of a second 20..255 - factory default value is 50. Note: the minimum period **S12** has to pass after **CONNECT** result code too, before a received character is accepted as valid first character of the three escape character sequence.
ATS12?	Read command returns the current value of **S12 parameter**. Note: the format of the numbers in output is always 3 digits, left-filled with 0s

3.5.2.7.9 Delay To DTR Off - S25

S25 -Delay To DTR Off	
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.
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

3.5.2.7.10 Disconnect Inactivity Timer - S30

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

3.5.2.7.11 Delay Before Forced Hang Up - S38

S38 -Delay Before Forced Hang Up	
ATS38=[<delay>]	Set command sets the delay, in seconds, between the device's receipt of **H** command (or **ON**-to-**OFF** transition of **DTR**) and the disconnect operation. Parameter: **<delay>** - acknowledge timer in units of seconds 0..254 - the device will wait **<delay>** seconds for the remote device to acknowledge all data in the device buffer before disconnecting (factory default value is 20). 255 - the device doesn't time-out and continues to attempt to deliver data in the buffer until the connection is lost or the data is delivered. Note: **<delay>** parameter can be used to ensure that data in device buffer is sent before device disconnects.
ATS38?	Read command returns the current value of **S38 parameter**. Note: the format of the numbers in output is always 3 digits, left-filled with 0s

3.5.3 ETSI GSM 07.07 AT Commands

3.5.3.1 General

3.5.3.1.1 Request Manufacturer Identification - +CGMI

+CGMI - Request Manufacturer Identification	
AT+CGMI	Execution command returns the device manufacturer identification code without command echo.
AT+CGMI=?	Test command returns **OK** result code.
Reference	GSM 07.07

3.5.3.1.2 Request Model Identification - +CGMM

+CGMM - Request Model Identification	
AT+CGMM	Execution command returns the device model identification code without command echo.
AT+CGMM=?	Test command returns **OK** result code.
Reference	GSM 07.07

3.5.3.1.3 Request Revision Identification - +CGMR

+CGMR - Request Revision Identification	
AT+CGMR	Execution command returns device software revision number without command echo.
AT+CGMR=?	Test command returns **OK** result code.
Reference	GSM 07.07

3.5.3.1.4 Request Product Serial Number Identification - +CGSN

+CGSN - Request Product Serial Number Identification	
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	GSM 07.07

3.5.3.1.5 Select TE Character Set - +CSCS

+CSCS - Select TE Character Set	
AT+CSCS= **[<chset>]**	Set command sets the current character set used by the device. Parameter: **<chset>** - character set “GSM” - GSM default alphabet (GSM 03.38) “IRA” - international reference alphabet (ITU-T T.50)

+CSCS - Select TE Character Set	
	”8859-1” - ISO 8859 Latin 1 character set ”PCCP437” - PC character set Code Page 437 ”UCS2” - 16-bit universal multiple-octet coded character set (ISO/IEC10646)
AT+CSCS?	Read command returns the current value of the active character set.
AT+CSCS=?	Test command returns the supported values for parameter **<chset>**.
Reference	GSM 07.07

3.5.3.1.6 Request International Mobile Subscriber Identity (IMSI) - +CIMI

+CIMI - Request International Mobile Subscriber Identify (IMSI)	
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	GSM 07.07

3.5.3.1.7 Multiplexing Mode - +CMUX

+CMUX - Multiplexing Mode	
AT+CMUX= <mode> [,<subset>]	Set command is used to enable/disable the GSM 07.10 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 inactivity timer of five seconds starts. If no CMUX control channel is established before this inactivity timer times out 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>**.

+CMUX - Multiplexing Mode	
Reference	GSM 07.07, GSM 07.10

3.5.3.1.8 PCCA STD-101 Select Wireless Network - +WS46

+WS46 - PCCA STD-101 Select Wireless Network	
AT+WS46=[<n>]	Set command selects the cellular network (Wireless Data Service, WDS) to operate with the **TA** (WDS-Side Stack Selection). Parameter: **<n>** - integer type, it is the WDS-Side Stack to be used by the **TA**. 12 - GSM digital cellular
AT+WS46?	Read command reports the currently selected cellular network, in the format: **+ WS46: <n>**
AT+WS46=?	Test command reports the range for the parameter **<n>**.
Reference	GSM 07.07

3.5.3.2 Call Control

3.5.3.2.1 Hang Up Call - +CHUP

+CHUP - Hang Up Call	
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	GSM 07.07

3.5.3.2.2 Select Bearer Service Type - +CBST

+CBST - Select Bearer Service Type	
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) 1 - 300 bps (V.21) 2 - 1200 bps (V.22) 3 - 1200/75 bps (V.23) 4 - 2400 bps (V.22bis) 6 - 4800 bps (V.32)

+CBST - Select Bearer Service Type	
	7 - 9600 bps (V.32) 14 - 14400 bps (V.34) 65 - 300 bps (V.110) 66 - 1200 bps (V.110) 68 - 2400 bps (V.110 or X.31 flag stuffing) 70 - 4800 bps (V.110 or X.31 flag stuffing) 71 - 9600 bps (V.110 or X.31 flag stuffing) 75 - 14400 bps (V110 or X.31 flag stuffing) **<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.
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	GSM 07.07

3.5.3.2.3 Radio Link Protocol - +CRLP

+CRLP - Radio Link Protocol	
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 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

+CRLP - Radio Link Protocol	
	parameters.
Reference	GSM 07.07

3.5.3.2.4 Service Reporting Control - +CR

+CR - Service Reporting Control	
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	GSM 07.07

3.5.3.2.5 Extended Error Report - +CEER

+CEER - Extended Error Report	
AT+CEER	Execution command returns one or more lines of information text **<report>** offering the TA user an extended error report, in the format: **+CEER: <report>** This report regards some error condition that may occur:

+CEER - Extended Error Report	
	- 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 this condition has occurred since power up then No Error condition is reported
AT+CEER=?	Test command returns **OK** result code.
Reference	GSM 07.07

3.5.3.2.6 Cellular Result Codes - +CRC

+CRC - Cellular Result Codes	
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 FAX - facsimile (TS 62) 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	GSM 07.07

3.5.3.2.7 Single Numbering Scheme - +CSNS

+CSNS - Single Numbering Scheme	
AT+CSNS= **[<mode>]**	Set command selects the bearer to be used when mobile terminated single numbering scheme call is established. Parameter values set with **+CBST**

+CSNS - Single Numbering Scheme	
	command shall be used when **<mode>** equals to a data service. Parameter: **<mode>** 0 - voice (factory default) 2 - fax (TS 62) 4 - data Note: if **+CBST** parameter is set to a value that is not applicable to single numbering calls, ME/TA shall map the value to the closest valid one. E.g. if user has set **<speed>=71**, **<name>=0** and **<ce>=1** (non-trasparent asynchronous 9600 bps V.110 ISDN connection) for mobile originated calls, ME/TA shall map the values into non-trasparent asynchronous 9600 bps V.32 modem connection when single numbering scheme call is answered.
AT+CSNS?	Read command returns current value of the parameter **<mode>**.
AT+CSNS=?	Test command returns supported values of parameter **<mode>**.
Reference	GSM 07.07

3.5.3.2.8 Voice Hang Up Control - +CVHU

+CVHU - Voice Hang Up Control	
AT+CVHU= **[<mode>]**	Set command selects whether **ATH** ~~or "**drop DTR**"~~ shall cause a voice connection to be disconnected or not. Parameter: **<mode>** 0 - "**Drop DTR**" ignored but **OK** result code given. **ATH** disconnects. 1 - "**Drop DTR**" and **ATH** ignored but **OK** result code given. 2 - "**Drop DTR**" behaviour according to **&D** setting. **ATH** disconnects (factory default).
AT+CVHU?	Read command reports the current value of the **<mode>** parameter, in the format: **+CVHU: <mode>**
AT+CVHU=?	Test command reports the range of supported values for parameter **<mode>**

3.5.3.3 Network Service Handling

3.5.3.3.1 Subscriber Number - +CNUM

+CNUM - Subscriber Number	
AT+CNUM	Execution command returns the MSISDN stored in the SIM related to the subscriber, in the format: **+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	GSM 07.07

3.5.3.3.2 Read Operator Names - +COPN

+COPN - Read Operator Names	
AT+COPN	Execution command returns the list of operator names from the **ME** in the format: **+COPN: <numeric1>,<alpha1>[<CR><LF>** **+COPN: <numeric2>,<alpha2>[…]]** where: **<numeric*n*>** - string type, operator in numeric format (see **+COPS**) **<alpha*n*>** - string type, operator in long alphanumeric format (see **+COPS**) Note: each operator code **<numeric*n*>** that has an alphanumeric equivalent **<alpha*n*>** in the ME memory is returned
AT+COPN=?	Test command returns the **OK** result code
Reference	GSM 07.07

3.5.3.3.3 Network Registration Report - +CREG

+CREG - Network Registration Report	
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)

+CREG - Network Registration Report	
	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.
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

+CREG - Network Registration Report	
	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	GSM 07.07

3.5.3.3.4 Operator Selection - +COPS

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

+COPS - Operator Selection	
	Note: **<format>** parameter setting is never stored in NVM
AT+COPS?	Read command returns current value of **<mode>**,**<format>** and **<oper>** in format **<format>**; if no operator is selected, **<format>** and **<oper>** are omitted **+COPS: <mode>**[, **<format>**, **<oper>**]
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)>)s][,,(list of supported <mode>s), (list of supported<format>s)]** where **<stat>** - operator availability 0 - unknown 1 - available 2 - current 3 - forbidden Note: since with this command a network scan is done, this command may require some seconds before the output is given.
Reference	GSM 07.07

3.5.3.3.5 Facility Lock/Unlock - +CLCK

+CLCK - Facility Lock/Unlock	
AT+CLCK= <fac>,<mode> [,<passwd> [,<class>]]	Execution command is used to lock or unlock a **ME** o a network facility. Parameters: **<fac>** - facility "SC" - SIM (PIN request) (device asks SIM password at power-up and when this lock command issued) "AO"- BAOC (Barr All Outgoing Calls) "OI" - BOIC (Barr Outgoing International Calls) "OX" - BOIC-exHC (Barr Outgoing International Calls except to Home Country) "AI" - BAIC (Barr All Incoming Calls) "IR" - BIC-Roam (Barr Incoming Calls when Roaming outside the home country) "AB" - All Barring services (applicable only for **<mode>=0**) "AG" - All outGoing barring services (applicable only for **<mode>=0**) "AC" - All inComing barring services (applicable only for **<mode>=0**) "FD" - SIM fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as **<passwd>**)

+CLCK - Facility Lock/Unlock	
	"PN" - network Personalisation "PU" - network subset Personalisation **<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	GSM 07.07
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 =”A0”,2 +CLCK: <status>,1 +CLCK: <status>,2 +CLCK: <status>,4

3.5.3.3.6 Change Facility Password - +CPWD

+CPWD - Change Facility Password	
AT+CPWD=<fac>, <oldpwd>, <newpwd>	Execution command changes the password for the facility lock function defined by command Facility Lock **+CLCK**. Parameters:

+CPWD - Change Facility Password	
	<fac> - facility “SC” - SIM (PIN request) “AB” - All barring services “P2” - SIM PIN2 **<oldpwd>** - string type, it shall be the same as password specified for the facility from the ME user interface or with command **+CPWD**. **<newpwd>** - string type, it is the new password Note: parameter **<oldpwd>** is the old password while **<newpwd>** is the new one.
AT+CPWD=?	Test command returns a list of pairs **(<fac>**,**<pwdlength>)** which presents the available facilities and the maximum length of their password (**<pwdlength>**)
Reference	GSM 07.07

3.5.3.3.7 Calling Line Identification Presentation - +CLIP

+CLIP - Calling Line Identification Presentation	
AT+CLIP=[<n>]	Set command enables/disables the presentation of the CLI (Calling Line Identity) at the **TE**. This command refers to the GSM supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to get the CLI of the calling party when receiving a mobile terminated call. Parameters: **<n>** 0 - disables CLI indication (factory default) 1 - enables CLI indication If enabled the device reports after each RING the response: **+CLIP: <number>,<type>,””,128,<alpha>,<CLI_validity>** where: **<number>** - string type phone number of format specified by **<type>** **<type>** - type of address octet in integer format 128 - both the type of number and the numbering plan are unknown 129 - unknown type of number and ISDN/Telephony numbering plan 145 - international type of number and ISDN/Telephony numbering plan (contains the character "**+**") **<alpha>** - string type; alphanumeric representation of **<number>** corresponding to the entry found in phonebook; used character set should be the one selected with command Select **TE** character set **+CSCS**. **<CLI_validity>**

+CLIP - Calling Line Identification Presentation	
	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	GSM 07.07
Note	The command changes only the report behaviour of the device, it does not change CLI supplementary service setting on the network.

3.5.3.3.8 Calling Line Identification Restriction - +CLIR

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

+CLIR - Calling Line Identification Restriction	
	<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	GSM 07.07
Note	This command sets the default behaviour of the device in outgoing calls.

3.5.3.3.9 Call Forwarding Number And Conditions - +CCFC

+CCFC - Call Forwarding Number And Condition	
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 : 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)

+CCFC - Call Forwarding Number And Condition	
	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	GSM 07.07
Note	When querying the status of a network service **(<cmd>=2**) the response line for 'not active' case **(<status>=0**) should be returned only if service is not active for any **<class>**.

3.5.3.3.10 Call Waiting - +CCWA

+CCWA - Call Waiting	
AT+CCWA= **[<n>[,<cmd>** **[,<class>]]]**	Set command allows the control of the call waiting supplementary service. Activation, deactivation, and status query are supported. Parameters: **<n>** - enables/disables the presentation of an unsolicited result code: 0 - disable 1 - enable **<cmd>** - enables/disables or queries the service at network level: 0 - disable 1 - enable 2 - query status **<class>** - is a sum of integers each representing a class of information

+CCWA - Call Waiting	
	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. 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

+CCWA - Call Waiting	
	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	GSM 07.07

3.5.3.3.11 Call Holding Services - +CHLD

+CHLD - Call Holding Services	
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 Note: "X" is the numbering (starting with 1) of the call given by the sequence of setting up or receiving the calls (active, held or waiting) as seen by the served subscriber. Calls hold their number until they are released. New calls take the lowest available number. Note: where both a held and a waiting call exist, the above procedures apply to the waiting call (i.e. not to the held call) in conflicting situation.
AT+CHLD=?	Test command returns the list of supported **<n>s**. **+CHLD: (0,1,1X,2,2X,3)**
Reference	GSM 07.07
Note	ONLY for VOICE calls

3.5.3.3.12 Unstructured Supplementary Service Data - +CUSD

+CUSD - Unstructured Supplementary Service Data	
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) - 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 Note: in case of successful mobile initiated operation, **DTA** waits the USSD response from the network and sends it to the **DTE** before the final result code. This will block the **AT** command interface for the period of the operation.
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	GSM 07.07
Note	Only mobile initiated operations are supported

3.5.3.3.13 Advice Of Charge - +CAOC

+CAOC - Advice Of Charge	
AT+CAOC= <mode>	Set command refers to the Advice of Charge supplementary services that enable subscriber to get information about the cost of calls; the command also includes the possibility to enable an unsolicited event reporting of the Current Call Meter (CCM) information. Parameter: **<mode>** 0 - query CCM value 1 - disables unsolicited CCM reporting 2 - enables unsolicited CCM reporting Note: the unsolicited result code enabled by parameter **<mode>** is in the format: **+CCCM: <ccm>** where: **<ccm>** - current call meter in home units, string type: three bytes of the CCM value in hexadecimal format (e.g. “00001E” indicates decimal value 30) Note: the unsolicited result code **+CCCM** is sent when the CCM value changes, but not more than every 10 seconds.
AT+CAOC?	Read command reports the value of parameter **<mode>** in the format: **+CAOC: <mode>**
AT+CAOC=?	Test command reports the supported values for **<mode>** parameter.
Reference	GSM 07.07
Note	**+CAOC** command returns an estimate of the cost of the current call only, produced by the MS and based on the information provided by either AoCI or AOCC supplementary services; it is not stored in the SIM.

3.5.3.3.14 List Current Calls - +CLCC

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

+CLCC - List Current Calls	
	<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 2 - fax 9 - unknown **<mpty>** - multiparty call flag 0 - call is not 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	GSM 07.07

3.5.3.3.15 SS Notification - +CSSN

+CSSN - SS Notification	
AT+CSSN=[<n>[,<m>]]	It refers to supplementary service related network initiated notifications. Set command enables/disables the presentation of notification result codes from **TA** to **TE**. Parameters: **<n>** - sets the **+CSSI** result code presentation status 0 - disable 1 - enable **<m>** - sets the **+CSSU** result code presentation status 0 - disable 1 - enable

+CSSN - SS Notification	
	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	GSM 07.07

3.5.3.3.16 Closed User Group Supplementary Service Control - +CCUG

+CCUG - Closed User Group Supplementary Service Control	
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) 1 - suppress Outgoing Access (OA)

+CCUG - Closed User Group Supplementary Service Control	
	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	GSM 07.07

3.5.3.3.17 Preferred Operator List - +CPOL

+CPOL - Preferred Operator List	
AT+CPOL=[<index>][,<format>[,<oper>]]	Execution command writes an entry in the SIM list of preferred operators. Parameters: **<index>** - integer type; the order number of operator in the SIM preferred operator list 1..*n* **<format>** 2 - numeric **<oper>** **<oper>** - string type Note: if **<index>** is given but **<oper>** is left out, entry is deleted. If **<oper>** is given but **<index>** is left out, **<oper>** is put in the next free location. If only **<format>** is given, the format of the **<oper>** in the read command is changed.
AT+CPOL?	Read command returns all used entries from the SIM list of preferred operators.
AT+CPOL=?	Test command returns the whole **<index>** range supported by the SIM and the range for the parameter **<format>**
Reference	GSM 07.07

3.5.3.4 Mobile Equipment Control

3.5.3.4.1 Phone Activity Status - +CPAS

+CPAS - Phone Activity Status	
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)

+CPAS - Phone Activity Status	
	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	GSM 07.07

3.5.3.4.2 Set Phone Functionality - +CFUN

+CFUN - Set Phone Functionality	
AT+CFUN=[<fun>[,<rst>]]	Set command selects the level of functionality in the ME. Parameters: **<fun>** - is the power saving function mode 0 - minimum functionality, NON-CYCLIC SLEEP mode: in this mode, the AT interface is not accessible. Consequently, once you have set **<fun>** level 0, do not send further characters. Otherwise these characters remain in the input buffer and may delay the output of an unsolicited result code. The first wake-up event stops power saving and takes the ME back to full functionality level **<fun>=1**. 1 - mobile full functionality with power saving disabled (factory default) 2 - disable TX 4 - disable both TX and RX 5 - mobile full functionality with power saving enabled **<rst>** - reset flag 0 - do not reset the ME before setting it to **<fun>** functionality level Note: issuing **AT+CFUN=4[,0]** actually causes the module to perform either a network deregistration and a SIM deactivation. Note: if power saving enabled, it reduces the power consumption during the idle time, thus allowing a longer standby time with a given battery capacity. Note: to place the module in power saving mode, set the **<fun>** parameter at value = 5 and the line **DTR** (RS232) must be set to **OFF**. Once in power saving, the **CTS** line switch to the **OFF** status to signal that the module is really in power saving condition. During the power saving condition, before sending any **AT** command on the

+CFUN - Set Phone Functionality	
	serial line, the **DTR** must be enabled and it must be waited for the **CTS** (RS232) line to go in **ON** status. Until the **DTR** line is **ON**, the module will not return back in the power saving condition. Note: the power saving function does not affect the network behavior of the MODULE, even during the power save condition the module remains registered on the network and reachable for incoming calls or SMS. If a call incomes during the power save, then the module will wake up and proceed normally with the unsolicited incoming call code
AT+CFUN?	Read command reports the current setting of **<fun>**.
AT+CFUN=?	Test command returns the list of supported values for **<fun>** and **<rst>**.
Reference	GSM 07.07

3.5.3.4.3 Enter PIN - +CPIN

+CPIN - Enter PIN	
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

+CPIN - Enter PIN	
	SIM PIN2 - ME is waiting SIM PIN2 to be given; this **<code>** is returned only when the last executed command resulted in PIN2 authentication failure (i.e. **+CME ERROR: 17**) SIM PUK2 - ME is waiting SIM PUK2 to be given; this **<code>** is returned only when the last executed command resulted in PUK2 authentication failure (i.e. **+CME ERROR: 18**) PH-NET PIN - ME is waiting network personalization password to be given PH-NET PUK - ME is waiting network personalization unblocking password to be given PH-NETSUB PIN - ME is waiting network subset personalization password to be given PH-NETSUB PUK - ME is waiting network subset personalization unblocking password to be given PH-SP PIN - ME is waiting service provider personalization password to be given PH-SP PUK - ME is waiting service provider personalization unblocking password to be given PH-CORP PIN - ME is waiting corporate personalization password to be given PH-CORP PUK - ME is waiting corporate personalization unblocking password to be given 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>**
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
Note	What follows is a list of the commands which are accepted when ME is pending SIM PIN or SIM PUK

A	**#PCT**	**#ESAV**	**+CRLP**
D	**#SHDN**	**#ERST**	**+CR**
H	**#WAKE**	**#EMAILMSG**	**+CRC**
O	**#QTEMP**	**#CSURV**	**+CSNS**
E	**#GPIO**	**#CSURVC**	**+CREG**
I		**#CSURVU**	**+COPS**
L		**#CSURVUC**	**+CLIP**
M	**#VAUX**	**#CSURVB**	**+CPAS**
P	**#VAUXSAV**	**#CSURVBC**	**+CFUN**
Q	**#**	**#CSURVF**	**+CPIN**

+CPIN - Enter PIN	

S	#AUTOATT	#CSURVNLF	+CSQ
T	#MONI	#CSURVEXT	+CIND
V	#SERVINFO	#JDR	+CMER
X	#	#RSEN	+CCLK
Z	#DIALMODE	#CCID	+CALA
&C	#ACAL	#SSCTRACE	+CALD
&D	#ACALEXT	#PLMNMODE	+CRSM
&F	#CODEC	#V24CFG	+CALM
&K	#SHFEC	#V24	+CRSL
&N	#HFMICG	+FCLASS	+CLVL
&P	#HSMICG	+GCAP	+CMUT
&S	#SHFSD	+GCI	+CLAC
&V	#RTCSTAT	+IPR	+CMEE
&W	#USERID	+IFC	+CGREG
&Y	#PASSW	+ILRR	+
&Z	#PKTSZ	+ICF	+CSDH
%E	#DSTO	+MS	+CNMI
%L	#SKTTO	+DS	+FMI
%Q	#SKTSET	+DR	+FMM
\Q	#SKTOP	+CGMI	+FMR
\R	#SKTCT	+CGMM	+FTS
\V	#SKTSAV	+CGMR	+FRS
#CGMI	#SKTRST	+GMI	+FTM
#CGMM	#SPKMUT	+GMM	+FRM
#CGMR	#ESMTP	+GMR	+FTH
#CGSN	#EADDR	+CGSN	+FRH
#CAP	#EUSER	+GSN	+FLO
#SRS	#EPASSW	+CMUX	+FPR
#SRP	#SEMAIL	+CHUP	+FDD
#STM	#EMAILD		

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

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

Reference	GSM 07.07

3.5.3.4.4 Signal Quality - +CSQ

+CSQ - Signal Quality	
AT+CSQ	Execution command reports received signal quality indicators in the form:

+CSQ - Signal Quality	
	+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** 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	GSM 07.07

3.5.3.4.5 Indicator Control - +CIND

+CIND - Indicator Control	
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)

+CIND - Indicator Control	
AT+CIND?	Read command returns the current value of ME indicators, in the format: **+CIND: <ind>[,<ind>[,…]]** Note: the order of the values **<ind>s** is the same as that in which the associated indicators appear from test command **AT+CIND=?**
AT+CIND=?	Test command returns pairs, where string value **<descr>** is a description (max. 16 chars) of the indicator and compound value is the supported values for the indicator, in the format: **+CIND: (<descr>, (list of supported <ind>s))[,(<descr>, (list of supported <ind>s))[,…]]** where: **<descr>** - indicator names as follows (along with their **<ind>** ranges) “battchg” - battery charge level **<ind>** - battery charge level indicator range 0..5 99 - not measurable “signal” - signal quality **<ind>** - signal quality indicator range 0..7 99 - not measurable “service” - service availability **<ind>** - service availability indicator range 0 - not registered to any network 1 - registered to home network “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

+CIND - Indicator Control	
	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 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	GSM 07.07

3.5.3.4.6 Mobile Equipment Event Reporting - +CMER

+CMER - Mobile Equipment Event Reporting	
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; onche 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

+CMER - Mobile Equipment 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
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	GSM 07.07

3.5.3.4.7 Select Phonebook Memory Storage - +CPBS

+CPBS - Select Phonebook Memory Storage	
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	GSM 07.07

3.5.3.4.8 Read Phonebook Entries - +CPBR

+CPBR - Read Phonebook Entries	
AT+CPBR= <index1> [,<index2>]	Execution command returns phonebook entries in location number range **<index1>**..**<index2>** from the current phonebook memory storage selected with **+CPBS**. If **<index2>** is omitted, only location **<index1>** is returned. Parameters: **<index1>** - integer type, value in the range of location numbers of the currently selected phonebook memory storage (see **+CPBS**). **<index2>** - integer type, value in the range of location numbers of the currently selected phonebook memory storage (see **+CPBS**). The response format is: **[+CPBR: <index1>,<number>,<type>,<text>[<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	Remember to select the PB storage with **+CPBS** command before issuing PB commands.
Reference	GSM 07.07

3.5.3.4.9 Find Phonebook Entries - +CPBF

+CPBF - Find Phonebook Entries	
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	Remember to select the PB storage with **+CPBS** command before issuing PB commands.
Reference	GSM 07.07

3.5.3.4.10 Write Phonebook Entry - +CPBW

+CPBW - Write Phonebook Entry	
AT+CPBW=	Execution command writes phonebook entry in location number **<index>** in

+CPBW - Write Phonebook Entry	
[<index>] **[,<number>** **[,<type>** **[,<text>]]]**	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 left out, but **<number>** is given, entry is written in the first free phonebook location. 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>**. **<tlength>** - integer type value indicating the maximum length of field **<text>**
Reference	GSM 07.07
Note	Remember to select the PB storage with **+CPBS** command before issuing PB commands.

3.5.3.4.11 Clock Management - +CCLK

+CCLK - Clock Management	
AT+CCLK=<time>	Set command sets the real-time clock of the **ME**. Parameter:

+CCLK - Clock Management	
	<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), range is 01..31 (if the month MM has less than 31 days, the clock will be set for the next month) 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>** are not returned by **+CCLK?** because the **ME** doesn't support time zone information.
AT+CCLK=?	Test command returns the **OK** result code.

Example	`AT+CCLK="02/09/07,22:30:00+00"`
	OK
	`AT+CCLK?`
	`+CCLK: 02/09/07,22:30:25`
	
	OK

Reference	GSM 07.07

3.5.3.4.12 Alarm Management - +CALA

+CALA - Alarm Management	
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 in the same format as defined for **+CCLK** command (i.e. "yy/MM/dd,hh:mm:ss±zz"), unless the **<recurr>** parameter is used: in this case **<time>** must not contain a date (i.e. "hh:mm:ss±zz") **<n>** - index of the alarm 0 - The only value supported is 0. **<type>** - alarm behaviour type 0 - reserved for other equipment use.

+CALA - Alarm Management	
	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. 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 times out. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90 seconds then it shuts down. (default) 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 90s 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 times out. 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 90 seconds timer expires. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90 seconds then it shuts down. **<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.

+CALA - Alarm Management	
	<silent> - integer type indicating if the alarm is silent or not. 0 - the alarm will not be silent; 1 - the alarm will be silent. During the "alarm mode" the device will not make any network scan and will not register to any network and therefore is not able to dial or receive any call or SMS, the only commands that can be issued to the MODULE in this state are the **#WAKE** and **#SHDN**, every other command must not be issued during this state.
AT+CALA?	Read command returns the list of current active alarm settings in the ME, in the format: **[+CALA: <time>,<n>,<type>,[<text>],<recurr>,<silent>]**
AT+CALA=?	Test command returns the list of supported index values (currently just 0), alarm types, maximum length of the text to be displayed, maximum length of **<recurr>** and supported **<silent>**s, in the format: **+CALA: (list of supported <n>s),(list of supported <type>s),<tlength>, <rlength>,(list of supported <silent>s)**
Example	AT+CALA="02/09/07,23:30:00+00" OK
Reference	ETSI 07.07, ETSI 27.007

3.5.3.4.13 Restricted SIM Access - +CRSM

+CRSM - Restricted SIM Access	
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

+CRSM - Restricted SIM Access	
	<data> - information to be read/written to the SIM (hexadecimal character format). The response of the command is in the format: **+CRSM: <sw1>,<sw2>[,<response>]** where: **<sw1>**,**<sw2>** - information from the SIM about the execution of the actual command either on successful or on failed execution. **<response>** - on a successful completion of the command previously issued it gives the requested data (hexadecimal character format). It's not returned after a successful UPDATE BINARY or UPDATE RECORD command. Note: this command requires PIN authentication. However commands READ BINARY and READ RECORD can be issued before PIN authentication and if the SIM is blocked (after three failed PIN authentication attempts) to access the contents of the Elementary Files. Note: use only decimal numbers for parameters **<command>**, **<fileid>**, **<P1>**, **<P2>** and **<P3>**.
AT+CRSM=?	Test command returns the **OK** result code
Reference	GSM 07.07, GSM 11.11

3.5.3.4.14 Alert Sound Mode - +CALM

+CALM - Alert Sound Mode	
AT+CALM=<mode>	Set command is used to select the general alert sound mode of the device. Parameter: **<mode>** 0 - normal mode 1 - silent mode; no sound will be generated by the device, except for alarm sound 2 - stealth mode; no sound will be generated by the device Note: if silent mode is selected then incoming calls will not produce alerting sounds but only the unsolicited messages **RING** or **+CRING**.
AT+CALM?	Read command returns the current value of parameter **<mode>**.
AT+CALM=?	Test command returns the supported values for the parameter **<mode>** as compound value. **+CALM: (0-2)**
Reference	GSM 07.07

3.5.3.4.15 Ringer Sound Level - +CRSL

+CRSL - Ringer Sound Level	
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	GSM 07.07

3.5.3.4.16 Loudspeaker Volume Level - +CLVL

+CLVL - Loudspeaker Volume Level	
AT+CLVL=<level>	Set command is used to select the volume of the internal loudspeaker audio output of the device. Parameter: **<level>** - loudspeaker volume 0..*max* - the value of *max* can be read by issuing the Test command **AT+CLVL=?**
AT+CLVL?	Read command reports the current **<level>** setting of the loudspeaker volume in the format: **+CLVL: <level>**
AT+CLVL=?	Test command reports **<level>** supported values range in the format: **+CLVL: (0-*max*)**
Reference	GSM 07.07

3.5.3.4.17 Microphone Mute Control - +CMUT

+CMUT - Microphone Mute Control	
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)

+CMUT - Microphone Mute Control	
	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	GSM 07.07

3.5.3.4.18 Accumulated Call Meter - +CACM

+CACM - Accumulated Call Meter	
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	GSM 07.07

3.5.3.4.19 Accumulated Call Meter Maximum - +CAMM

+CAMM - Accumulated Call Meter Maximum	
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.

+CAMM - Accumulated Call Meter Maximum	
	<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>** 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	GSM 07.07

3.5.3.4.20 Price per Unit and Currency Table - +CPUC

+CPUC - Price Per Unit And Currency Table	
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: **+CACM : <currency>,<ppu>**
AT+CPUC=?	Test command returns the **OK** result code
Reference	GSM 07.07

3.5.3.4.21 Available AT Commands - +CLAC

+CLAC - Available AT Commands	
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>[…]]**

+CLAC - Available AT Commands	
	where: **<AT cmd*n*>** - defines the AT command including the prefix **AT**
AT+CLAC=?	Test command returns the **OK** result code
Reference	GSM 07.07

3.5.3.4.22 Delete Alarm - +CALD

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

3.5.3.5 Mobile Equipment Errors

3.5.3.5.1 Report Mobile Equipment Error - +CMEE

+CMEE - Report Mobile Equipment Error	
AT+CMEE=[<n>]	Set command enables/disables the report of result code: **+CME ERROR: <err>** as an indication of an error relating to the +**Cxxx** commands issued. When enabled, device related errors cause the **+CME ERROR: <err>** final result code instead of the default **ERROR** final result code. **ERROR** is anyway returned normally when the error message is related to syntax, invalid parameters, or **DTE** functionality. Parameter: **<n>** - enable flag 0 - disable **+CME ERROR:<err>** reports, use only **ERROR** report. 1 - enable **+CME ERROR:<err>** reports, with **<err>** in numeric format 2 - enable **+CME ERROR: <err>** reports, with **<err>** in verbose format
AT+CMEE?	Read command returns the current value of subparameter **<n>**: **+CMEE: <n>**
AT+CMEE=?	Test command returns the range of values for subparameter **<n>**
Note	**+CMEE** has no effect on the final result code **+CMS**
Reference	GSM 07.07

3.5.3.6 Voice Control

3.5.3.6.1 DTMF Tones Transmission - +VTS

+VTS - DTMF Tones Transmission	
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)**; the string can be at most 255 **<dtmf>s** long; 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**).
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	GSM 07.07 and TIA IS-101

3.5.3.6.2 Tone Duration - +VTD

+VTD - Tone Duration	
AT+VTD= <duration>	Set command sets the length of tones transmitted with **+VTS** command. Parameter: **<duration>** - duration of a tone 0 - the duration of every single tone is dependent on the network (factory default) 1..255 - duration of every single tone in 1/10 sec.
AT+VTD?	Read command reports the current Tone Duration, in the format: **<duration>**
AT+VTD=?	Test command provides the list of supported **<duration>s** in the format: **(list of supported <duration>s)**
Reference	GSM 07.07 and TIA IS-101

3.5.3.7 Commands For GPRS

3.5.3.7.1 GPRS Mobile Station Class - +CGCLASS

+CGCLASS - GPRS mobile station class	
AT+CGCLASS= [<class>]	Set command sets the GPRS class according to **<class>** parameter. Parameter: **<class>** - GPRS class "B" - GSM/GPRS (factory default) "CG" - class C in GPRS only mode (GPRS only) "CC" - class C in circuit switched only mode (GSM only) 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>**

3.5.3.7.2 GPRS Attach Or Detach - +CGATT

+CGATT - GPRS Attach Or Detach	
AT+CGATT=[<state>]	Execution command is used to attach the terminal to, or detach the terminal from, the GPRS service depending on the parameter **<state>**. Parameter: **<state>** - state of GPRS attachment 0 - detached 1 - attached
AT+CGATT?	Read command returns the current GPRS service state.
AT+CGATT=?	Test command requests information on the supported GPRS service states.
Example	AT+CGATT? +CGATT: 0 OK AT+CGATT=? +CGATT: (0,1) OK AT+CGATT=1 OK
Reference	GSM 07.07

3.5.3.7.3 GPRS Network Registration Status - +CGREG

+CGREG - GPRS Network Registration Status	
AT+CGREG=[<n>]	Set command controls the presentation of an unsolicited result code

+CGREG - GPRS Network Registration Status	
	+CGREG: (see format below). Parameter: **<n>** - result code presentation mode 0 - disable network registration unsolicited result code 1 - enable network registration unsolicited result code; if there is a change in the terminal GPRS network registration status, it is issued the unsolicited result code: **+CGREG: <stat>** where: **<stat>** - registration status 0 - not registered, terminal is not currently searching a new operator to register to 1 - registered, home network 2 - not registered, but terminal is currently searching a new operator to register to 3 - registration denied 4 - unknown 5 - registered, roaming 2 - enable network registration and location information unsolicited result code; if there is a change of the network cell, it is issued the unsolicited result code: **+CGREG: <stat>[,<lac>,<ci>]** where: **<stat>** - registration status (see above for values) **<lac>** - location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal) **<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	GSM 07.07

3.5.3.7.4 Define PDP Context - +CGDCONT

+CGDCONT - Define PDP Context	
AT+CGDCONT= **[<cid>** **[,<PDP_type>** **[,<APN>**	Set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, **<cid>** Parameters:

+CGDCONT - Define PDP Context	
[,<PDP_addr> **[,<d_comp>** **[,<h_comp>** **[,<pd1>** **[,…[,pdN]]]]]]]]**	**<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 "PPP" - Point to Point 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 null 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. **<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	GSM 07.07

3.5.3.7.5 Quality Of Service Profile (Minimum Acceptable) - +CGQMIN

+CGQMIN - Quality Of Service Profile (Minimum Acceptable)	
AT+CGQMIN= **[<cid>** **[,<precedence>** **[,<delay>** **[,<reliability>** **[,<peak>** **[,<mean>]]]]]]**	Set command allows to specify a minimum acceptable profile which is checked by the terminal against the negotiated profile returned in the Activate PDP Context Accept message. Parameters: **<cid>** - PDP context identification (see **+CGDCONT** command). **<precedence>** - precedence class **<delay>** - delay class **<reliability>** - reliability class **<peak>** - peak throughput class **<mean>** - mean throughput class If a value is omitted for a particular class then this class is not checked. Note: a special form of the Set command, **+CGQMIN=<cid>** causes the requested profile for context number **<cid>** to become undefined.
AT+CGQMIN?	Read command returns the current settings for each defined context in the format: **+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,** **<mean>[<CR><LF>+CGQMIN: <cid>,<precedence>,** **<delay>,<reliability>,<peak>,<mean>[…]]** 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),(0-19,31)`
	
	`OK`

Reference	GSM 07.07; GSM 03.60

3.5.3.7.6 Quality Of Service Profile (Requested) - +CGQREQ

+CGQREQ - Quality Of Service Profile (Requested)	
AT+CGQREQ= **[<cid>** **[,<precedence>** **[,<delay>** **[,<reliability>** **[,<peak>** **[,<mean>]]]]]]**	Set command allows to specify a Quality of Service Profile that is used when the terminal sends an Activate PDP Context Request message to the network. It specifies a profile for the context identified by the (local) context identification parameter, **<cid>**. Parameters: **<cid>** - PDP context identification (see **+CGDCONT** command). **<precedence>** - precedence class **<delay>** - delay class **<reliability>** - reliability class **<peak>** - peak throughput class **<mean>** - mean throughput class If a value is omitted for a particular class then this class is not checked. Note: a special form of the Set command, **+CGQREQ=<cid>** causes the requested profile for context number **<cid>** to become undefined.
AT+CGQREQ?	Read command returns the current settings for each defined context in the format: **+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,** **<mean>[<CR><LF>+CGQREQ: <cid>,<precedence>,** **<delay>,<reliability>,<peak>,<mean>[…]]** If no PDP context has been defined, it has no effect and **OK** result code is returned.
AT+CGQREQ=?	Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format: **+CGQREQ: <PDP_Type>,(list of supported <precedence>s),** **(list of supported <delay>s),(list of supported <reliability>s),** **(list of supported <peak>s),(list of supported <mean>s)** Note: only the “IP” PDP_Type is currently supported.
Example	AT+CGQREQ? +CGQREQ: 1,0,0,3,0,0 OK AT+CGQREQ=1,0,0,3,0,0 OK AT+CGQREQ=? +CGQREQ: ”IP”,(0-3),(0-4),(0-5),(0-9),(0-19,31) OK
Reference	GSM 07.07; GSM 03.60

3.5.3.7.7 PDP Context Activate Or Deactivate - +CGACT

+CGACT - PDP Context Activate Or Deactivate	
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	GSM 07.07

3.5.3.7.8 Show PDP Address - +CGPADDR

+CGPADDR - Show PDP Address	
AT+CGPADDR= **[<cid>[,<cid>** **[,…]]]**	Execution command returns a list of PDP addresses for the specified context identifiers in the format: **+CGPADDR: <cid>,<PDP_addr>[<CR><LF>+CGPADDR: <cid>,** **<PDP_addr>[…]]** Parameters: **<cid>** - a numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command). If no **<cid>** is specified, the addresses for all defined contexts are returned. **<PDP_addr>** - a string that identifies the terminal in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the **+CGDCONT** command when the context was defined. For a

+CGPADDR - Show PDP Address	
	dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to by **<cid>**; **<PDP_addr>** is omitted if none is available
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	GSM 07.07

3.5.3.7.9 Enter Data State - +CGDATA

+CGDATA - Enter Data State	
AT+CGDATA=[<L2P>,[<cid>[,<cid>[,…]]]]	Execution command causes to perform whatever actions are necessary to establish a communication with the network using one or more GPRS PDP types. Parameters: **<L2P>** - string parameter that indicates the layer 2 protocol to be used "PPP" - PPP Point-to-point protocol **<cid>** - numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command). Note: if parameter **<L2P>** is omitted, the layer 2 protocol is unspecified
AT+CGDATA=?	Test command reports information on the supported layer 2 protocols.
Example	AT+CGDATA=? +CGDATA: ("PPP") OK AT+CGDATA="PPP",1 OK
Reference	GSM 07.07

3.5.4 ETSI GSM 07.05 AT Commands for SMS and CBS

3.5.4.1 General Configuration

3.5.4.1.1 Select Message Service - +CSMS

+CSMS - Select Message Service	
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 07.05 Phase 2 version 4.7.0 (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 07.05; GSM 03.40; GSM 03.41

3.5.4.1.2 Preferred Message Storage - +CPMS

Note: the behaviour of command **+CPMS** differs depending on whether or not the improved SMS commands operation mode has been enabled (see **#SMSMODE**).

+CPMS - Preferred Message Storage		
(#SMSMODE=0)		
#SMSMODE=0 #SMSMODE=0 #SMSMODE=0 #SMS	**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 "ME" - **ME** internal storage (read only, no delete) **<memw>** - memory to which writing and sending operations are made "SM" - SIM SMS memory storage **<mems>** - memory to which received SMs are preferred to be stored "SM" - SIM SMS memory storage 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 writing and sending SMs is the SIM internal memory "SM", so **<memw>=<mems>="SM"**. Note: the received class 0 SMS are stored in the "ME" memory regardless the **<mems>** setting and they are automatically deleted at power off.
	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

+CPMS - Preferred Message Storage		
M		*(you have 5 out of 10 SMS SIM positions occupied)*
	Reference	GSM 07.05
	(#SMSMODE=1)	
#SMSMODE=1	**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 **<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"**.
#SMSMODE=1	**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 07.05

3.5.4.1.3 Message Format - +CMGF

+CMGF - Message Format	
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) 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 07.05

3.5.4.2 Message Configuration

3.5.4.2.1 Service Center Address - +CSCA

+CSCA -Service Center Address	
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 07.05

3.5.4.2.2 Set Text Mode Parameters - +CSMP

Note: the behaviour of command **+CSMP** differs depending on whether or not the improved SMS commands operation mode has been enabled (see **#SMSMODE**).

+CSMP - Set Text Mode Parameters		
	(#SMSMODE=0)	
#SMSMODE=0 #SMSMODE=0 #SMSMODE=0 #	**AT+CSMP= [<fo> [,<vp> [,<pid> [,<dcs>]]]]**	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: **<fo>** - first octet of GSM 03.40 SMS-SUBMIT in integer format (default 17, i.e. SMS-SUBMIT with validity period in relative format). As first octet of a PDU has the following bit field description (we'll refer to **bit[7]bit[6]bit[5]bit[4]bit[3]bit[2]bit[1]bit[0]**): **bit[1]bit[0]**: Message Type Indicator, 2-bit field describing the message type: all the combinations are converted in [01] (default is [01]); [00] - converted in [01] [01] - SMS-SUBMIT [10] - converted in [01] [11] - converted in [01] **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*: it is currently converted in [00], i.e. *not present* [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); we strongly suggest to not use this format because its implementation is currently under refinement **bit[5]**: Reply Path, 1-bit field indicating the request for Reply Path (default is [0]); [0] - Reply Path not requested [1] - Reply Path requested **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]**: 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

+CSMP - Set Text Mode Parameters		
S M S M O D E = 0 # S M S M O D E = 0		**<vp>** - depending on **<fo>** setting: if **<fo>** asks for a Validity Period in *relative format* **<vp>** shall be integer type (default 167, i.e. 24 hours); if **<fo>** asks for a Validity Period in *absolute format* we strongly suggest to modify it in *relative format*, because the implementation of this topic is currently under refinement and it is currently not possible to set **<vp>** with a quoted time string type. (for *relative format* only:) 0..143 - (**<vp>** + 1) x 5 minutes; 144..167 - 12 hours + ((**<vp>** - 143) x 30 minutes); 168..196 - (**<vp>** - 166) x 1 day; 197..255 - (**<vp>** - 192) x 1 week; **<pid>** - GSM 03.40 TP-Protocol-Identifier in integer format. **<dcs>** - depending on the command or result code: GSM 03.38 SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme Note: the current settings are stored through +CSAS
	AT+CSMP?	Read command reports the current setting in the format: **+CSMP: < fo>,<vp>,<pid>,<dcs>**
	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`

	Reference	GSM 07.05; GSM 03.40; GSM 03.38
(#SMSMODE=1)		
# S M S M O D E = 1 # S M	**AT+CSMP=** **[<fo>** **[,<vp>** **[,<pid>** **[,<dcs>]]]]**	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: **<fo>** - first octet of GSM 03.40 SMS-SUBMIT, in integer format (default 17, i.e. SMS-SUBMIT with validity period in relative format). As first octet of a PDU has the following bit field description (**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; [01] - SMS-SUBMIT (default) ;any other combination will generate an error **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

+CSMP - Set Text Mode Parameters

SMODE=1 #SMSMODE=1		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]**: Reply Path, 1-bit field indicating the request for Reply Path (default is [0]); [0] - Reply Path not requested [1] - Reply Path requested **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]**: 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
SMODE=1 #SMSMODE=1		**<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 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

+CSMP - Set Text Mode Parameters		
#SMSMODE=1 #SMSMODE=1		[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>** - GSM 03.40 TP-Protocol-Identifier in integer format. **<dcs>** - depending on the command or result code: GSM 03.38 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*
#SMSMODE=1 #SMSMODE=1	**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 null string (**""**).
#SMSMODE=1	**AT+CSMP=?**	Test command returns the **OK** result code.
#SMSMODE=1 #SMSM	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 format: the* ***<vp>*** *string actually codes 60 seconds of validity period.* AT+CSMP=9,"023C0000000000" OK

+CSMP - Set Text Mode Parameters		
O D E = 1		*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 07.05; GSM 03.40; GSM 03.38

3.5.4.2.3 Show Text Mode Parameters - +CSDH

+CSDH - Show Text Mode Parameters	
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 07.05

3.5.4.2.4 Select Cell Broadcast Message Types - +CSCB

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

+CSCB -Select Cell Broadcast Message Types	
	<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 07.05, GSM 03.41, GSM 03.38.

3.5.4.2.5 Save Settings - +CSAS

+CSAS - Save Settings	
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.
AT+CSAS=?	Test command returns the possible range of values for the parameter **<profile>**.
Reference	GSM 07.05

3.5.4.2.6 Restore Settings - +CRES

+CRES - Restore Settings	
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

+CRES - Restore 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 07.05

3.5.4.3 Message Receiving And Reading

3.5.4.3.1 New Message Indications To Terminal Equipment - +CNMI

Note: the behaviour of command **+CNMI** differs depending on whether or not the improved SMS commands operation mode has been enabled (see **#SMSMODE**).

+CNMI - New Message Indications To Terminal Equipment		
(#SMSMODE=0)		
#SMSMODE=0 #SMSMODE=	**AT+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]]**	Set command selects the behaviour of the device on how the receiving of new messages from the network is indicated to the **DTE**. Parameter: **<mode>** - unsolicited result codes buffering option 0 - Buffer unsolicited result codes in the **TA**. If **TA** result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications. 1 - Discard indication and reject new received message unsolicited result codes when **TA-TE** link is reserved, otherwise forward them directly to the **TE**. 2 - Buffer unsolicited result codes in the TA in case the **DTE** is busy and flush them to the TE after reservation. Otherwise forward them directly to the TE. 3 - if **<mt>** is set to 1 an indication via 100 ms break is issued when a SMS is received while the module is in GPRS online mode. It enables the hardware ring line for 1 s. too. **<mt>** - result code indication reporting for SMS-DELIVER 0 - No SMS-DELIVER indications are routed to the TE and messages are stored in SIM. 1 - If SMS-DELIVER is stored into ME/TA, indication of the memory

+CNMI - New Message Indications To Terminal Equipment		
0 # S M S M O D E = 0 # S M S M O D E = 0 # S M S M O D E = 0 # S M S		location is routed to the TE using the following unsolicited result code: **+CMTI: <memrs>,<index>** where: **<memrs>** - 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 GSM 03.40 ***<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

+CNMI - New Message Indications To Terminal Equipment

MODE=0 #SMSMODE=0		used or **<fo>** indicates that GSM03.40 TP-User-Data-Header-Indication is set (bit 6 of **<fo>** is 1), each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41) Class 2 messages and messages in the "store" message waiting indication group result in indication as defined in **<mt>=1**. 3 - Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in **<mt>=2**. Messages of other data coding schemes result in indication as defined in **<mt>=1**. **<bm>** - broadcast reporting option 0 - Cell Broadcast Messages are not sent to the **DTE** 2 - New Cell Broadcast Messages are sent to the **DTE** with the unsolicited result code: **(PDU Mode)** **+CBM: <length><CR><LF><PDU>** where: **<length>** - PDU length **<PDU>** - message PDU **(TEXT Mode)** **+CBM:<sn>,<mid>,<dcs>,<pag>,<pags><CR><LF><data>** where: **<sn>** - message serial number **<mid>** - message ID **<dcs>** - Data Coding Scheme **<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** 1 - the status report is sent to the **DTE** with the following unsolicited result code: **(PDU Mode)** **+CDS: <length><CR><LF><PDU>** where:
#SMSMODE=0		
MODE=0 #SMSMODE=0		

+CNMI - New Message Indications To Terminal Equipment		
#SMSMODE=0 #SMSMODE=0 #SMSMODE=0		**<length>** - PDU length **<PDU>** - message PDU **(TEXT Mode)** **+CDS: <fo>,<mr>,,,<scts>,<dt>,<st>** where: **<fo>** - first octet of the message PDU **<mr>** - message reference number; GSM 03.40 TP-Message-Reference in integer format **<scts>** - arrival time of the message to the SC **<dt>** - sending time of the message **<st>** - message status as coded in the PDU 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.
#SMSMODE=0	**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 07.05
	Note	**DTR** signal is ignored, hence the indication is sent even if the **DTE** is inactive (**DTR** signal is **Low**). In this case the unsolicited result code may be lost so if MODULE remains active while **DTE** is not, at **DTE** startup is suggested to check whether new messages have reached the device meanwhile with command **AT+CMGL=0** that lists the new messages received.
(#SMSMODE=1)		
#SM	**AT+CNMI=[<mode>[,<mt>[,<bm>[,<ds>**	Set command selects the behaviour of the device on how the receiving of new messages from the network is indicated to the **DTE**.

+CNMI - New Message Indications To Terminal Equipment		
S M O D E = 1 # S M S M O D E = 1 # S M S M O D E = 1 # S M S M O D E = 1	**[,<bfr>]]]]]**	Parameter: **<mode>** - unsolicited result codes buffering option 0 - Buffer unsolicited result codes in the **TA**. If **TA** result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications. 1 - Discard indication and reject new received message unsolicited result codes when **TA-TE** link is reserved, otherwise forward them directly to the **TE**. 2 - Buffer unsolicited result codes in the TA in case the **DTE** is busy and flush them to the TE after reservation. Otherwise forward them directly to the TE. 3 - if **<mt>** is set to 1 an indication via 100 ms break is issued when a SMS is received while the module is in GPRS online mode. It enables the hardware ring line for 1 s. too. **<mt>** - result code indication reporting for SMS-DELIVER 0 - No SMS-DELIVER indications are routed to the TE 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**)

+CNMI - New Message Indications To Terminal Equipment

#SMSMODE=1

#SMSMODE=1

#SMSMODE=1

#SMSMO

<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 GSM 03.40
<pid> - Protocol Identifier
<dcs> - Data Coding Scheme
<sca> - Service Centre address, string type, converted in the currently selected character set (see **+CSCS**)
<length> - text length
<data> - TP-User-Data

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

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

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

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

+CNMI - New Message Indications To Terminal Equipment

DE=1 #SMSMODE=0 #SMSMODE=1 #SMSMODE=1 #

<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**
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

(TEXT Mode)
+CDS: <fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st>
where:
<fo> - first octet of the message PDU
<mr> - message reference number; GSM 03.40 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)

+CNMI - New Message Indications To Terminal Equipment

SMSMODE=1 #SMSMODE=1 #SMSMODE=1		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 07.05
	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** / **<mt>** settings in different sessions	SM **Class** is **No Class** ***OR*** SM **Class** is **0** or **1** or **3** ***OR*** SM is an **Indication** with group "**Discard**"	SM **Class** is **3**
<mt>=2 for session "0" ***AND*** **<mt>=*anyvalue*** for other session(s)	**URC is shown only on session "0"**	
<mt>=3 for session "0" ***AND*** **<mt>=0** or **1** for other session(s)		**URC is shown only on session "0"**

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	
<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**

+CNMI - New Message Indications To Terminal Equipment		

3.5.4.3.2 List Messages - +CMGL

Note: the behaviour of command **+CMGL** differs depending on whether or not the improved SMS commands operation mode has been enabled (see **#SMSMODE**).

+CMGL - List Messages		
(#SMSMODE=0)		
#SMSMODE=0 #SMSMODE=0 #SMSMODE=0	**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>**

+CMGL - List Messages

#SMSMODE=0 #SMSMODE=0 #SMSMODE=0 #SMSM		"REC UNREAD" - new message "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 there is at least one message delivery confirm to be listed the representation format is**:** **+CMGL: <index>,<stat>,<fo>,<mr>,,,<scts>,<dt>,<st>[<CR><LF>** **+CMGL: <index>,<stat>,<fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st>[...]]** where

+CMGL - List Messages		
ODE=0 #SMSMODE=0		**<index>** - message position in the storage **<stat>** - message status **<fo>** - first octet of the message PDU **<mr>** - message reference number; GSM 03.40 TP-Message-Reference in integer format **<scts>** - arrival time of the message to the SC **<dt>** - sending time of the message **<st>** - message status as coded in the PDU 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** is the same order in which these messages have been processed by the module
	AT+CMGL=?	Test command returns a list of supported **<stat>**s
	Reference	GSM 07.05, GSM 03.40
(#SMSMODE=1)		
#SMSMODE=1 #SMSMODE=1	**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.

+CMGL - List Messages

#SMSMODE=1 #SMSMODE=1 #SMSMODE=1 #SMSMODE		**<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 "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

+CMGL - List Messages		
= 1 #SMSMODE=1 #SMSMODE=1		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>** **[...]]** where **<index>** - message position in the storage **<stat>** - message status **<fo>** - first octet of the message PDU **<mr>** - message reference number; GSM 03.40 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 07.05, GSM 03.40

3.5.4.3.3 Read Message - +CMGR

Note: the behaviour of command **+CMGR** differs depending on whether or not the improved SMS commands operation mode has been enabled (see **#SMSMODE**).

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

+CMGR - Read Message		
S M O D E = 0 # S M S M O D E = 0 # S M S M O D E = 0 # S M S M O D E = 0		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>**, 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 a **Sent** message in location **<index>** the o~~O~~utput 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>,,,<scts>,<dt>,<st>** where: **<stat>** - status of the message "REC UNREAD" - new received message unread "REC READ" - received message read

+CMGR - Read Message		
#SMSMODE=0 #SMSMODE=0 #SMSMODE=0		"STO UNSENT" - message stored not yet sent "STO SENT" - message stored already sent **<*fo*>** - first octet of the message PDU **<mr>** - message reference number; GSM 03.40 TP-Message-Reference in integer format **<scts>** - arrival time of the message to the SC **<dt>** - sending time of the message **<st>** - message status as coded in the PDU **<*pid*>** - Protocol Identifier **<*dcs*>** - Data Coding Scheme **<*vp*>** - Validity period; only the integer format is supported pippopippo **<oa>** - Originator address, string type represented in the currently selected character set (see **+CSCS**) **<da>** - Destination address, string type represented in the currently selected character set (see **+CSCS**) **<alpha>** - string type alphanumeric representation of **<da>** or **<oa>**, corresponding to an entry found in the phonebook; used character set is the one selected with command **+CSCS**. **<*sca*>** - Service Centre number **<*tooa*>,<*toda* >,<*tosca*>** - type of number **<oa>**,**<da>**,**<*sca*>** 129 - number in national format 145 - number in international format (contains the "**+**") **<*length*>** - text length **<data>** - TP-User_data • If **<dcs>** indicates that GSM03.38 default alphabet is used , each character of GSM alphabet will be converted into current TE character set (see **+CSCS**) • If **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41) Note: in both cases if status of the message is 'received unread', status in the storage changes to 'received read'. Note: an error result code is sent on empty record **<index>**.
	AT+CMGR=?	Test command returns the **OK** result code
	Reference	GSM 07.05
(#SMSMODE=1)		
#SMSM	**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:

+CMGR - Read Message		
ODE=1 #SMSMODE=1 #SMSMODE=1 #SMSMODE=1		**<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>**, 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 a **Sent** 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

+CMGR - Read Message		
#SMSMODE=1 #SMSMODE=1 #SMSMODE=1		***<fo>*** - first octet of the message PDU **<mr>** - message reference number; GSM 03.40 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 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 07.05

3.5.4.4 Message Sending And Writing

3.5.4.4.1 Send Message - +CMGS

Note: the behaviour of command **+CMGS** differs depending on whether or not the improved SMS commands operation mode has been enabled (see **#SMSMODE**).

+CMGS - Send Message		
(#SMSMODE=0)		
# S M S M O D E = 0	*(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. 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>**
# S M S M O D E = 0		

+CMGS - Send Message		
#SMSMODE=0		where **<mr>** - message reference number; GSM 03.40 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.
#SMSMODE=0	*(Text Mode)* **AT+CMGS=<da>[,<toda>]**	**(Text Mode)** Execution command sends to the network a message. Parameters: **<da>** - destination address, string type represented in the currently selected character set (see **+CSCS**). **<toda>** - type of destination address 129 - number in national format 145 - number in international format (contains the "**+**") After command line is terminated with **<CR>**, the device responds sending a four character sequence prompt: **<CR><LF><greater_than><space> (IRA 13, 10, 62, 32)** After this prompt text can be entered; the entered text should be formatted as follows: - if current **<dcs>** (see **+CSMP**) indicates that GSM03.38 default alphabet is used and current **<fo>** (see **+CSMP**) indicates that GSM 03.40 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM alphabet, according to GSM 07.05, Annex A; **backspace** can be used to delete last character and **carriage returns** can be used. - if current **<dcs>** (see **+CSMP**) indicates that 8-bit or UCS2 data coding scheme is used or current **<fo>** (see **+CSMP**) indicates that GSM 03.40 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**
#SMSMODE=0		
#SMSM		

+CMGS - Send Message		
O D E = 0 # S M S M O D E = 0		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; GSM 03.40 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>**: 1530 chars if GSM 03.38 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used.
	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 07.05
(#SMSMODE=1)		
# S M S M O D E = 1 # S M	*(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. Note: the **DCD** signal shall be in **ON** state while PDU is given.

+CMGS - Send Message		
SMODE=1 #SMSMODE=1		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; GSM 03.40 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.
SMODE=1 #SMSMODE=1	*(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

+CMGS - Send Message		
#SMSMODE=1 #SMSMODE=1 #SMSMODE=1		formatted as follows: - if current **<dcs>** (see **+CSMP**) indicates that GSM03.38 default alphabet is used and current **<fo>** (see **+CSMP**) indicates that GSM 03.40 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM alphabet, according to GSM 07.05, 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 GSM 03.40 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; GSM 03.40 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>**: 1530 chars if GSM 03.38 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

+CMGS - Send Message		
	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 07.05

3.5.4.4.2 Send Message From Storage - +CMSS

+CMSS - Send Message From Storage	
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; GSM 03.40 TP-Message-Reference in integer format. 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 07.05

3.5.4.4.3 Write Message To Memory - +CMGW

Note: the behaviour of command **+CMGW** differs depending on whether or not the improved SMS commands operation mode has been enabled (see **#SMSMODE**).

+CMGW - Write Message To Memory		
(#SMSMODE=0)		
#SMSMODE=0 #SMSMODE=0 #SMSMODE=0	*(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 1 - read message 2 - stored message not yet sent (default) 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.
#SMSMODE=0 #SMSMODE=0 #	*(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.

+CMGW - Write Message To Memory

SMSMODE=0 #SMSMODE=0 #SMSMODE=0 #SMSMODE=		129 - number in national format 145 - number in international format (contains the "**+**") **<stat>** - message status. "REC UNREAD" - new received message unread "REC READ" - received message read "STO UNSENT" - message stored not yet sent (default) "STO SENT" - message stored already sent After command line is terminated with **<CR>**, the device responds sending a four character sequence prompt: **<CR><LF><greater_than><space> (IRA 13, 10, 62, 32)** After this prompt text can be entered; the entered text should be formatted as follows: - if current **<dcs>** (see **+CSMP**) indicates that GSM03.38 default alphabet is used and current **<fo>** (see **+CSMP**) indicates that GSM 03.40 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM alphabet, according to GSM 07.05, Annex A; **backspace** can be used to delete last character and **carriage returns** can be used. - if current **<dcs>** (see **+CSMP**) indicates that 8-bit or UCS2 data coding scheme is used or current **<fo>** (see **+CSMP**) indicates that GSM 03.40 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.

+CMGW - Write Message To Memory		
0		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 GSM 03.38 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used.
	AT+CMGW=?	Test command returns the **OK** result code.
	Reference	GSM 07.05
	Note	To avoid malfunctions is suggested to wait for the **+CMGW: <index>** or **+CMS ERROR: <err>** response before issuing further commands.
	(#SMSMODE=1)	
# S M S M O D E = 1 # S M S M O D E = 1 # S M S M O	*(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 1 - read message 2 - stored message not yet sent (default) 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.

+CMGW - Write Message To Memory		
D E = 1 # S M S M O D E = 1 # S M S M O D E = 1 # S M S M O D E = 1 #	*(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 "REC READ" - received message read "STO UNSENT" - message stored not yet sent (default) "STO SENT" - message stored already sent After command line is terminated with **<CR>**, the device responds sending a four character sequence prompt: **<CR><LF><greater_than><space> (IRA 13, 10, 62, 32)** 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 GSM 03.40 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM alphabet, according to GSM 07.05, 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 GSM 03.40 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).

+CMGW - Write Message To Memory		
SMSMODE=1		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 GSM 03.38 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
	AT+CMGW=?	Test command returns the **OK** result code.
	Reference	GSM 07.05
	Note	To avoid malfunctions is suggested to wait for the **+CMGW: <index>** or **+CMS ERROR: <err>** response before issuing further commands.

3.5.4.4.4 Delete Message - +CMGD

Note: the behaviour of command **+CMGD** differs depending on whether or not the improved SMS commands operation mode has been enabled (see #**SMSMODE**).

+CMGD - Delete Message		
	(#SMSMODE=0)	
#SMSMODE=0 #	**AT+CMGD=<index>[,<delflag>]**	Execution command deletes from memory **<memr>** the message(s). Parameter: **<index>** - message index in the selected storage **<memr>** **<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

+CMGD - Delete Message		
SMSMODE=0		4 - delete all messages from **<memr>** storage. Note: if **<delflag>** is present and not set to 0 then **<index>** is ignored and ME shall follow the rules for **<delflag>** shown above. Note: if the location to be deleted is empty, an error message is reported.
	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 07.05
(#SMSMODE=1)		
#SMSMODE=1 #SMSMODE=1	**AT+CMGD=<index>[,<delflag>]**	Execution command deletes from memory **<memr>** the message(s). Parameter: **<index>** - message index in the selected storage **<memr>** **<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 **<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 07.05

3.5.5 Custom AT Commands

3.5.5.1 General Configuration AT Commands

3.5.5.1.1 Network Selection Menu Availability - +PACSP

+PACSP - Network Selection Menu Availability	
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.

3.5.5.1.2 Manufacturer Identification - #CGMI

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

3.5.5.1.3 Model Identification - #CGMM

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

3.5.5.1.4 Revision Identification - #CGMR

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

3.5.5.1.5 Product Serial Number Identification - #CGSN

#CGSN - Product Serial Number Identification	
AT#CGSN	Execution command returns the product serial number, identified as the IMEI of the mobile, with command echo.

#CGSN - Product Serial Number Identification	
AT#CGSN=?	Test command returns the **OK** result code.

3.5.5.1.6 International Mobile Subscriber Identity (IMSI) - #CIMI

#CIMI - International Mobile Subscriber Identity (IMSI)	
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.

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

#CCID - Read ICCID	
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.

3.5.5.1.8 Service Provider Name - #SPN

#SPN - Service Provider Name	
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?	Read command has the same effect as execution command.
AT#SPN=?	Test command returns the **OK** result code.

3.5.5.1.9 Extended Numeric Error report - #CEER

#CEER – Extended numeric error report	
AT#CEER	Execution command causes the TA to return a numeric code in the format **#CEER:<code>** which should offer the user of the TA a report of the reason for - the failure in the last unsuccessful call setup (originating or answering); - the last call release; - the last unsuccessful GPRS attach or unsuccessful PDP context activation; - the last GPRS detach or PDP context deactivation.

#CEER – Extended numeric error report

<code> values are taken from failure Cause from GSM 04.08 recommendation:

Cause Value	Diagnostic
1	Unassigned (unallocated) number
3	No route to destination
6	Channel unacceptable
8	Operator determined barring
16	Normal call clearing
17	User busy
18	No user responding
19	User alerting, no answer
21	Call rejected
22	Number changed
26	Non selected user clearing
27	Destination out of order
28	Invalid number format (incomplete number)
29	Facility rejected
30	Response to STATUS ENQUIRY
31	Normal, unspecified
34	No circuit/channel available
38	Network out of order
41	Temporary failure
42	Switching equipment congestion
43	Access information discarded
44	Requested circuit/channel not available
47	Resources unavailable, unspecified
49	Quality of service unavailable
50	Requested facility not subscribed
55	Incoming calls barred with in the CUG
57	Bearer capability not authorized
58	Bearer capability not presently available
63	Service or option not available, unspecified
65	Bearer service not implemented
68	ACM equal to or greater than ACMmax
69	Requested facility not implemented
70	Only restricted digital information bearer capability is available
79	Service or option not implemented, unspecified
81	Invalid transaction identifier value
87	User not member of CUG
88	Incompatible destination
91	Invalid transit network selection
95	Semantically incorrect message
96	Invalid mandatory information
97	Message type non-existent or not implemented

#CEER – Extended numeric error report	
	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 Other custom values are 240 FDN is active and number is not in FDN 241 Call operation not allowed 252 Call barring on outgoing calls 253 Call barring on incoming calls 254 Call impossible 255 Lower layer failure Note: if none of this condition has occurred since power up then No Error condition is reported (<code> is 0).
AT#CEER=?	Test command returns **OK** result code.

3.5.5.1.10 Change Audio Path - #CAP

#CAP - Change Audio Path	
AT#CAP=[<n>]	Set command switches the active audio path depending on parameter **<n>** Parameter: **<n>** - audio path 1 - enables handsfree external mic/ear audio path 2 - enables internal mic/ear audio path

#CAP - Change Audio Path	
	Note: The audio path are mutually exclusive, enabling one disables the other. Note: when changing the audio path, the volume level is set at the previously stored value for that audio path (see **+CLVL**).
AT#CAP?	Read command reports the active audio path in the format: **#CAP: <n>**.
AT#CAP=?	Test command reports the supported values for the parameter **<n>**.

3.5.5.1.11 Select Ringer Sound - #SRS

#SRS - Select Ringer Sound	
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. 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: <n>,<status>** where: **<n>** - ringing tone number 1..*max*

#SRS - Select Ringer Sound	
	<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>**

3.5.5.1.12 Select Ringer Path - #SRP

#SRP - Select Ringer Path	
AT#SRP=[<n>]	Set command selects the ringer path towards whom sending ringer sounds and all signalling tones. Parameter: **<n>** - ringer path number 0 - sound output towards current selected audio path (see command **#CAP**) 1 - sound output towards handsfree 2 - sound output towards handset 3 - sound output towards Buzzer Output pin GPIO7 Note: In order to use the Buzzer Output an external circuitry must be added to drive it properly from the GPIO7 pin, furthermore the GPIO7 pin direction must be set to Buzzer output (Alternate function); see command **#GPIO.**
AT#SRP?	Read command reports the selected ringer path in the format: **#SRP: <n>**.
AT#SRP=?	Test command reports the supported values for the parameter **<n>**.
Example	AT#SRP=? #SRP: (0-3) OK AT#SRP=3 OK

3.5.5.1.13 Signaling Tones Mode - #STM

#STM - Signaling Tones Mode	
AT#STM=[<mode>]	Set command enables/disables the signalling tones output on the audio path selected with **#SRP** command Parameter: **<mode>** - signalling tones status 0 - signalling tones disabled 1 - signalling tones enabled

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

3.5.5.1.14 Tone Playback - #TONE

#TONE - Tone Playback	
AT#TONE=<tone> [,<duration>]	Execution command allows the playback of either a single DTMF tone or a dial tone for a specified period of time. Parameters: **<tone>** - tone to be reproduced (0..9), #, *, (A..D) - dtmf tone Y - dial tone Z - busy tone **<duration>** - playback duration in 1/10 sec. 1..300 - tenth of seconds (default is 30)
AT#TONE=?	Test command returns the supported range of values for parameters **<tone>** and **<duration>**.

3.5.5.1.15 SMS Commands Operation Mode - #SMSMODE

#SMSMODE - SMS Commands Operation Mode	
AT#SMSMODE= <mode>	Set command enables/disables the improved SMS commands operation mode Parameter: **<mode>** - SMS commands operation mode 0 - disable improved SMS commands operation mode (default) 1 - enable improved SMS commands operation mode Note: <**mode**> parameter is saved in NVM
AT#SMSMODE?	Read command reports whether the improved SMS commands operation mode is enabled or not, in the format: **#SMSMODE: <mode>** (**<mode>** described above)
AT#SMSMODE=?	Test command reports the supported range of values for parameter <**mode**>
Note	The SMS commands affected by **#SMSMODE** are: **+CPMS**, **+CNMI**, **+CMGS**, **+CMGW**, **+CMGL**, **+CMGR**, **+CMGD**, **+CSMP**

3.5.5.1.16 PLMN List Selection - #PLMNMODE

#PLMNMODE - PLMN List Selection	
AT#PLMNMODE=[<plmnlist>]	Set command selects the list of PLMN names to be used currently Parameter: **<plmnlist>** - list of PLMN names 0 - PLMN names list, currently used in commands like **+COPS** or **#MONI**, is fixed (default) 1 - PLMN names list is not fixed and can be updated in newer software versions Note: <**plmnmode**> parameter is saved in NVM
AT#PLMNMODE?	Read command reports whether the currently used list of PLMN names is fixed or not, in the format: **#PLMNMODE: <plmnlist>** (**<plmnlist>** described above)
AT#PLMNMODE=?	Test command returns the supported range of values for parameter **<plmnlist>**.

3.5.5.1.17 Display PIN Counter - #PCT

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

3.5.5.1.18 Software Shut Down - #SHDN

#SHDN - Software Shutdown	
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.

3.5.5.1.19 Extened Reset - #Z

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

3.5.5.1.20 Wake From Alarm Mode - #WAKE

#WAKE - Wake From Alarm Mode	
AT#WAKE= [<opmode>]	Execution command stops any eventually present alarm activity and, if the module is in **alarm mode**, it exits the **alarm mode** and enters the **normal operating mode**. Parameter: **<opmode>** - operating mode 0 - normal operating mode; the module exits the **alarm mode**, enters the **normal operating mode**, any alarm activity is stopped (e.g. alarm tone playing) and an **OK** result code is returned. Note: the **alarm mode** is indicated by status **ON** of hardware pin **CTS** and by status **ON** of pin **DSR**; the **power saving** status is indicated by a **CTS - OFF** and **DSR - OFF** status; the **normal operating status** is indicated by **DSR - ON**. Note: during the **alarm mode** the device will not make any network scan and will not register to any network and therefore is not able to dial or receive any call or SM, the only commands that can be issued to the MODULE in this state are the **#WAKE** and **#SHDN**, every other command must not be issued during this state.
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.

3.5.5.1.21 Query Temperature Overflow - #QTEMP

#QTEMP - Query Temperature Overflow

#QTEMP - Query Temperature Overflow	
AT#QTEMP= **[<mode>]**	Set command has currently no effect. The interpretation of parameter **<mode>** is currently not implemented: any value assigned to it will simply have no effect.
AT#QTEMP?	Read command queries the device internal temperature sensor for over temperature and reports the result in the format: **#QTEMP: <temp>** where **<temp>** - over temperature indicator 0 - the device temperature is in the working range 1 - the device temperature is out of the working range
#QTEMP=?	Test command reports supported range of values for parameter **<mode>**.
Note	The device should not be operated out of its working temperature range, elsewhere proper functioning of the device is not ensured.

3.5.5.1.22 Temperature Monitor - #TEMPMON

#TEMPMON - Temperature Monitor	
AT#TEMPMON= **<mod>** **[,<urcmode>** **[,<action>** **[,<hyst_time>** **[,<GPIO>]]]]**	Set command sets the behaviour of the module internal temperature monitor. Parameters: **<mod>** 0 - sets the command parameters. 1 - triggers the measurement of the module internal temperature, reporting the result in the format: **#TEMPMEAS: <level>,<value>** where: **<level>** - threshold level -2 - extreme temperature lower bound (see Note) -1 - operating temperature lower bound (see Note) 0 - normal temperature 1 - operating temperature upper bound (see Note) 2 - extreme temperature upper bound (see Note) **<value>** actual temperature expressed in Celsius degrees **<urcmode> -** URC presentation mode. It has meaning only if

<mod>=0.

0 - it disables the presentation of the temperature monitor URC

1 - it enables the presentation of the temperature monitor URC, whenever the module internal temperature reaches either operating or extreme levels; the unsolicited message is in the format:

#TEMPMEAS: <level>,<value>

where:

<level> and **<value>** are as before

<action> - sum of integers, each representing the action to be done whenever the module internal temperature reaches either operating or extreme levels (default is 0). It has meaning only if **<mod>=0**. If **<action>** is not zero, it is mandatory to set the **<hyst_time>** parameter too.

0 - no action

1 - automatic shut-down when the temperature is beyond the extreme bounds

2 - RF TX circuits automatically disabled (using **+CFUN=2**) when operating temperature bounds are reached. When the temperature is back to normal the module is brought back to the previous state, before RF TX disabled.

4 - the output pin **<GPIO>** is tied HIGH when operating temperature bounds are reached; when the temperature is back to normal the output pin **<GPIO>** is tied LOW. If this **<action>** is required, it is mandatory to set the **<GPIO>** parameter too.

<hyst_time> - hysteresis time: all the actions happen only if the extreme or operating bounds are maintained at least for this period. It has meaning only if **<mod>=0**. This parameter is needed and required if **<action>** is not zero.

0..255 - time in seconds

<GPIO> - GPIO number. Valid range is “any output pin” (see “Hardware User’s Guide”. This parameter has meaning only if **<mod>=0** and is needed and required only if **<action>=4** is enabled.

Note: the URC presentation mode **<urcmode>** is related to the current multiplexed instance only (see **+cmux**); last **<urcmode>** settings are saved for every instance as extended profile parameters, thus it is possible to restore them either if the multiplexer control channel is released and set up, back and forth.

Note: last **<action>**, **<hyst_time>** and **<GPIO>** settings are global

	parameters saved in NVM
AT#TEMPMON?	Read command reports the current parameter settings for **#TEMPMON** command in the format: **#TEMPMON: <urcmode>,<action>[,<hyst_time>[,<GPIO>]]**
AT#TEMPMON=?	Test command reports the supported range of values for parameters **<mod>**, **<urcmode>**, **<action>**, **<hyst_time>** and **<GPIO>**
Note	

Extreme Temperature Lower Bound(*)	-3025°C
Operating Temperature Lower Bound(*)	-10°20C
Operating Temperature	
Operating Temperature Upper Bound(*)	+55°C
Extreme Temperature Upper Bound(*)	+8070°C

(*) Due to temperature measurement uncertainty there is a tolerance of +/-2°C

3.5.5.1.23 General Purpose Input/Output Pin Control - #GPIO

#GPIO - General Purpose Input/Output Pin Control	
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 configuration 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 1 - no meaning if **<dir>=0** - INPUT - output pin set to 1 (**High**) if **<dir>=1** - OUTPUT - no meaning if **<dir>=2** - ALTERNATE FUNCTION 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 **<dir>** - GPIO pin direction 0 - pin direction is INPUT 1 - pin direction is OUTPUT 2 - pin direction is ALTERNATE FUNCTION (see Note). Note: when **<mode>=2** (and **<dir>** is omitted) the command reports the

#GPIO - General Purpose Input/Output Pin Control	
	direction 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. Note: "ALTERNATE FUNCTION" value is valid only for following pins: • **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.
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`
	`OK`
	`AT#GPIO=3,2`
	`#GPIO: 1,0`
	`OK`
	`AT#GPIO=6,1,1`
	`OK`
	`AT#GPIO=7,0,0`
	`OK`
	`AT#GPIO=6,2`
	`#GPIO: 0,1`
	`OK`

3.5.5.1.24 STAT_LED GPIO Setting - #SLED

#SLED - STAT_LED GPIO Setting	
AT#SLED=<mode>	Set command sets the behaviour of the **STAT_LED** GPIO

#SLED - STAT_LED GPIO Setting	
[,<on_duration> [,<off_duration>]]	Parameters: **<mode>** - defines how the **STAT_LED** GPIO is handled 0 - GPIO tied **Low** 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>**.

3.5.5.1.25 Save STAT_LED GPIO Setting - #SLEDSAV

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

3.5.5.1.26 Digital Voiceband Interface - #DVI

#DVI - Digital Voiceband Interface	
AT#DVI=<mode> [,<dviport>, <clockmode>]	Set command enables/disables the Digital Voiceband Interface. Parameters: **<mode>** - enables/disables the DVI. 0 - disable DVI; audio is forwarded to the analog line; DVI pins can be used for other purposes, like GPIO, etc. (factory default) 1 - enable DVI; audio is forwarded to the DVI block 2 - enable DVI; audio is forwarded both to the DVI block and to the analog lines (microphone and headphones) **<dviport>** 1 - DVI port 1 will be used (factory default) 2 - DVI port 2 will be used

#DVI - Digital Voiceband Interface	
	<clockmode> 0 - DVI slave 1 - DVI master (factory default) Note: **#DVI** parameters are saved in the extended profile
AT#DVI?	Read command reports last setting, in the format: **#DVI: <mode>,<dviport>,<clockmode>**
AT#DVI=?	Test command reports the range of supported values for parameters **<mode>,<dviport>** and **<clockmode>**
Example	AT#DVI=2,1,1 OK *Both analog and DVI activated for audio. DVI is configured as master providing on DVI Port #1*

3.5.5.1.27 SMS Ring Indicator - #E2SMSRI

#E2SMSRI - SMS Ring Indicator	
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>**

3.5.5.1.28 V24 Output Pins Configuration - #V24CFG

#V24CFG - V24 Output Pins Configuration	
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) **<mode>** - AT commands serial port interface hardware pins mode: 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 in the format: **#V24CFG: <pin1>,<mode1>[<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>**.

3.5.5.1.29 V24 Output Pins Control - #V24

#V24 - V24 Output Pins Control	
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) 5 - **RTS** (Request To Send) **<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 state of the pin.
AT#V24?	Read command returns actual state for all the pins in the format: **#V24: <pin1>,<state1>[<CR><LF>** **#V24: <pin2>,<state2>[...]]**

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

3.5.5.1.30 GPRS Auto-Attach Property - #AUTOATT

#AUTOATT - Auto-Attach Property	
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>**.

3.5.5.1.31 Multislot Class Control - #MSCLASS

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

3.5.5.1.32 Cell Monitor - #MONI

#MONI - Cell Monitor	
AT#MONI[= [<number>]]	**#MONI** is both a set and an execution command. Set command sets one cell out of seven, in a neighbour of the serving cell including it, from which extract GSM-related information. Parameter: **<number>** 0..6 - it is the ordinal number of the cell, in a neighbour 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 of the serving cell. Execution command (**AT#MONI<CR>)** reports GSM-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: **#MONI: <netname> BSIC:<bsic> RxQual:<qual> LAC:<lac> Id:<id> ARFCN:<arfcn> PWR:<dBm> dBm TA: <timadv>** b) When the network name is unknown, the format is: **#MONI: Cc:<cc> Nc:<nc> BSIC:<bsic> RxQual:<qual> LAC:<lac> Id:<id> ARFCN:<arfcn> PWR:<dBm> dBm TA: <timadv>** c)When extracting data for an adjacent cell, the format is: **#MONI: Adj Cell<n> [LAC:<lac> Id:<id>] ARFCN:<arfcn> PWR:<dBm> dBm** 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 Note: TA: **<timadv>** is reported only for the serving cell.

#MONI - Cell Monitor	
	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 P LMN<CR><LF>** 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*
AT#MONI=?	Test command reports the maximum number of cells, in a neighbour of the serving cell excluding it, from which we can extract GSM-related informations, along with the ordinal number of the current selected cell, in the format: **#MONI: (<MaxCellNo>,<CellSet>)** where: **<MaxCellNo>** - maximum number of cells, in a neighbour 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

#MONI - Cell Monitor	
	the neighbour of the serving cell at#moni=7 OK *Execution command reports the requested information in table-like format* 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.

3.5.5.1.33 Serving Cell Information - #SERVINFO

#SERVINFO - Serving Cell Information	
AT#SERVINFO	Execution command reports information about serving cell, in the format: **#SERVINFO: <B-ARFCN>,<dBM>,<NetNameAsc>,<NetCode>, ,<BSIC>,<LAC>,<TA>,<GPRS>[,[<PB-ARFCN>],[<NOM>], <RAC>,[PAT]]** 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>** - PBCCH ARFCN of the serving cell; it'll be printed only if PBCCH is supported by the cell, otherwise the label **"hopping"** will be printed **<NOM>** - Network Operation Mode .."I"

#SERVINFO - Serving Cell Information	
	"II" .."III" **<RAC>** - Routing Area Colour Code **<PAT>** - Priority Access Threshold ..0 ..3..6

3.5.5.1.34 ATD Dialing Mode - #DIALMODE

#DIALMODE - Dialing Mode	
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 **NO CARRIER** 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: 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>**

3.5.5.1.35 Automatic Call - #ACAL

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

#ACAL - Automatic Call	
AT#ACAL?	Read command reports whether the automatic call function is currently enabled or not, in the format: **#ACAL: <mode>**
AT#ACAL=?	Test command returns the supported range of values for parameter **<mode>**.
Note	See **&Z** to write and **&N** to read the number on module internal phonebook.

3.5.5.1.36 Extended Automatic Call - #ACALEXT

#ACALEXT - Extended Automatic Call	
AT#ACALEXT= <mode>,<index>	Set command enables/disables the extended automatic call function. Parameters: **<mode>** 0 - disables the automatic call function (factory default) 1 - enables the automatic call function from "ME" phonebook. 2 - enables the automatic call function from "SM" phonebook. **<index>** - it indicates a position in the currently selected phonebook. If the extended automatic call function is enabled and **&D2** has been issued, the transition **OFF/ON** of **DTR** causes an automatic call to the number stored in position **<index>** in the selected phonebook. Note: type of call depends on the last issue of command **+FCLASS**.
AT#ACALEXT?	Read command reports either whether the automatic call function is currently enabled or not, and the last **<index>** setting in the format: **#ACALEXT: <mode>,<index>**
AT#ACALEXT=?	The range of available positions in a phonebook depends on the selected phonebook. This is the reason why the test command returns three ranges of values: the first for parameter **<mode>,** the second for parameter **<index>** when "ME" is the chosen phonebook, the third for parameter **<index>** when "SM" is the chosen phonebook.
Note	Issuing **#ACALEXT** causes the **#ACAL <mode>** to be changed. Issuing **AT#ACAL=1** causes the **#ACALEXT <index>** to be set to default. It is recommended to NOT use contemporaneously either **#ACALEXT** and **#ACAL**
Note	See **&Z** to write and **&N** to read the number on module internal phonebook.

3.5.5.1.37 Extended Call Monitoring - #ECAM

#ECAM - Extended Call Monitoring	
AT#ECAM= [<onoff>]	This command enables/disables the call monitoring function in the ME.

#ECAM - Extended Call Monitoring	
	Parameter: **<onoff>** 0 - disables call monitoring function (factory default) 1 - enables call monitoring function; the ME informs about call events, such as incoming call, connected, hang up etc. using the following unsolicited indication: **#ECAM: <ccid>,<ccstatus>,<calltype>,,,[<number>,<type>]** where **<ccid>** - call ID **<ccstatus>** - call status 0 - idle 1 - calling (MO) 2 - connecting (MO) 3 - active 4 - hold 5 - waiting (MT) 6 - alerting (MT) 7 - busy **<calltype>** - call type 1 - voice 2 - data **<number>** - called number (valid only for **<ccstatus>=1**) **<type>** - type of **<number>** 129 - national number 145 - international number Note: the unsolicited indication is sent along with usual codes (**OK**, **NO CARRIER**, **BUSY**...).
AT#ECAM?	Read command reports whether the extended call monitoring function is currently enabled or not, in the format: **#ECAM: <onoff>**
AT#ECAM=?	Test command returns the list of supported values for **<onoff>**

3.5.5.1.38 SMS Overflow - #SMOV

#SMOV - SMS Overflow	
AT#SMOV=[<mode>]	Set command enables/disables the SMS overflow signalling function. Parameter: **<mode>** 0 - disables SMS overflow signaling function (factory default) 1 - enables SMS overflow signalling function; when the maximum storage capacity has reached, the following network initiated notification is send:

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

3.5.5.1.39 Mailbox Numbers - #MBN

#MBN - Mailbox Numbers	
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.

3.5.5.1.40 Message Waiting Indication - #MWI

#MWI - Message Waiting Indication	
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

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

#MWI - Message Waiting Indication	
	message waiting indicators as they are currently stored on SIM. The format is: **#MWI: <enable>,<status>[,<indicator>[,<count>][<CR><LF>** **#MWI: <enable>,<status>,<indicator>[,<count>][...]]]**
AT#MWI=?	Test command returns the range of available values for parameter **<enable>**.

3.5.5.1.41 Audio Codec - #CODEC

#CODEC - Audio Codec	
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) and FR (1)*

3.5.5.1.42 Handsfree Echo Canceller - #SHFEC

#SHFEC - Handsfree Echo Canceller	
AT#SHFEC=[<mode>]	Set command enables/disables the echo canceller function on audio handsfree output.

#SHFEC - Handsfree Echo Canceller	
	Parameter: **<mode>** 0 - disables echo canceller for handsfree mode (factory default) 1 - enables echo canceller for handsfree mode Note: This setting returns to default after power off.
AT#SHFEC?	Read command reports whether the echo canceller function on audio handsfree output is currently enabled or not, in the format: **#SHFEC: <mode>**
AT#SHFEC=?	Test command returns the supported range of values of parameter **<mode>**.

3.5.5.1.43 Handsfree Microphone Gain - #HFMICG

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

3.5.5.1.44 Handset Microphone Gain - #HSMICG

#HSMICG - Handset Microphone Gain	
AT#HSMICG=[<level>]	Set command sets the handset microphone input gain Parameter: **<level>**: handset microphone input gain 0..7 - handset microphone gain (+6dB/step)
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>**.

3.5.5.1.45 Set Headset Sidetone - #SHFSD

#SHFSD - Set Headset Sidetone	
AT#SHFSD=[<mode>]	Set command enables/disables the sidetone on headset audio output. Parameter: **<mode>** 0 - disables the headset sidetone (factory default) 1 - enables the headset sidetone. Note: This setting returns to default after power off.
AT#SHFSD?	Read command reports whether the headset sidetone is currently enabled or not, in the format: **#SHFSD: <mode>**
AT#SHFSD=?	Test command returns the supported range of values of parameter **<mode>**.

3.5.5.1.46 Speaker Mute Control - #SPKMUT

#SPKMUT - Speaker Mute Control	
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.
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.

3.5.5.1.47 Handsfree Receiver Gain - #HFRECG

#HFRECG - Handsfree Receiver Gain	
AT#HFRECG=<level>	Set command sets the handsfree analogue output gain Parameter: **<level>**: handsfree analogue output gain 0..6 - handsfree analogue output (-3dB/step)

	Note: This parameter is saved in NVM issuing AT&W command.
AT#HFRECG?	Read command returns the current handsfree analog output gain, in the format: **#HFRECG: <level>**
AT#HFRECG =?	Test command returns the supported range of values of parameter **<level>**.

3.5.5.1.48 Handset Receiver Gain - #HSRECG

#HSRECG - Handset Receiver Gain	
AT#HSRECG= <level>	Set command sets the handset analogue output gain Parameter: **<level>**: handset analogue output gain 0..6 - handset analogue output (-3dB/step) *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>**.

3.5.5.1.49 Audio Profile Factory Configuration - #PRST

#PRST - Audio Profile Factory Configuration	
AT#PRST	Execution command resets the actual audio parameters in the NVM of the device to the default set. It is not allowed if active audio profile is 0. The audio parameters to reset are: - microphone line gain - earpiece line gain - side tone gain - LMS adaptation speed (step size) - LMS filter length (number of coefficients) - speaker to micro signal power relation - noise reduction max attenuation - noise reduction weighting factor (band 300-500Hz) - noise reduction weighting factor (band 500-4000Hz) - AGC Additional attenuation - AGC minimal attenuation - AGC maximal attenuation
AT#PRST=?	Test command returns the **OK** result code.
Example	AT#PRST

#PRST - Audio Profile Factory Configuration	
	OK *Current audio profile is reset*

3.5.5.1.1 Audio Profile Configuration Save - #PSAV

#PSAV - Audio Profile Configuration Save	
AT#PSAV	Execution command saves the actual audio parameters in the NVM of the device. It is not allowed if active audio profile is 0. The audio parameters to store are: - microphone line gain - earpiece line gain - side tone gain - LMS adaptation speed - LMS filter length (number of coefficients) - speaker to micro signal power relation - noise reduction max attenuation - noise reduction weighting factor (band 300-500Hz) - noise reduction weighting factor (band 500-4000Hz) - AGC Additional attenuation - AGC minimal attenuation - AGC maximal attenuation
AT#PSAV=?	Test command returns the **OK** result code.
Example	AT#PSAV OK *Current audio profile is saved in NVM*

3.5.5.1.2 Audio Profile Selection - #PSEL

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

3.5.5.1.3 Audio Profile Setting - #PSET

#PSET - Audio Profile Setting	
AT#PSET= <scal _in> [,<scal _out> [,<side_tone_atten> [,<adaption_speed> [,<filter_length> [,<rxtxrelation> [,<nr_atten> [,<nr_w_0> [,<nr_w_1> [,<add_atten> [,<min_atten> [,<max_atten>]]]]]]]]]]]]]]	Set command sets parameters for the active audio profile. It is not allowed if active audio profile is 0. Parameters: **<scal_in>** - microphone line digital gain **<scal_out>** - earpiece line digital gain **<side_tone_atten>** - side tone attenuation **<adaption_speed>** - LMS adaptation speed **<filter_length>** - LMS filter length (number of coefficients) **<rxtxrelation>** - speaker to micro signal power relation **<nr_ atten >** - noise reduction max attenuation **<nr_w_0>** - noise reduction weighting factor (band 300-500Hz) **<nr_w_1>** - noise reduction weighting factor (band 500-4000Hz) **<add_atten>** - AGC Additional attenuation **<min_atten>** - AGC minimal attenuation **<max_atten>** - AGC maximal attenuation
AT#PSET?	Read command returns the parameters for the active profile in the format: **#PSET:<scal_in>,<scal_out>,<side_tone_atten>,<adaption_speed>,<filter_length>,<rxtxrelation>,<nr_atten>,<nr_w_0>,<nr_w_1>,<add_atten>,<min_atten>,<max_atten>** It is not allowed if active audio profile is 0.
AT#PSET=?	Test command returns the supported range of values for the audio parameters.

3.5.5.1.4 Handsfree Automatic Gain Control - #SHFAGC

#SHFAGC - Handsfree Automatic Gain Control	
AT# SHFAGC = <mode>	Set command enables/disables the automatic gain control function on audio handsfree input. Parameter: **<mode>** 0 - disables automatic gain control for handsfree mode (default) 1 - enables automatic gain control for handsfree mode *Note: This parameter is saved in NVM issuing AT&W command*.
AT# SHFAGC?	Read command reports whether the automatic gain control function on audio handsfree input is currently enabled or not, in the format:

#SHFAGC - Handsfree Automatic Gain Control	
	#SHFAGC: <mode>
AT# SHFAGC =?	Test command returns the supported range of values of parameter **<mode>**.

3.5.5.1.5 Handsfree Noise Reduction - #SHFNR

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

3.5.5.1.6 Handset Automatic Gain Control - #SHSAGC

#SHSAGC - Handset Automatic Gain Control	
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 *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>**.

3.5.5.1.7 Handset Echo Canceller - #SHSEC

#SHSEC - Handset Echo Canceller	
AT#SHSEC =	Set command enables/disables the echo canceller function on audio

#SHSEC - Handset Echo Canceller	
<mode>	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>**.

3.5.5.1.8 Handset Noise Reduction - #SHSNR

#SHSNR - Handset Noise Reduction	
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>**.

3.5.5.1.9 Set Handset Sidetone - #SHSSD

#SHSSD - Set Handset Sidetone	
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*.

#SHSSD - Set Handset Sidetone	
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>**.

3.5.5.1.10 Repeat Last Command - #/

#/ - Repeat Last Command	
AT#/	Execute command is used to execute again the last received command.

3.5.5.1.11 Network Timezone - #NITZ

#NITZ - Network Timezone	
AT#NITZ= **[<val>** **[,<mode>]]**	Set command enables/disables automatic date/time updating and Network Timezone unsolicited indication. Date and time information can be sent by the network after GSM registration or after GPRS attach. Parameters: **<val>** 0 - disables automatic set (factory default) 1 - enables automatic set **<mode>** 0 - disables unsolicited message (factory default) 1 - enables unsolicited message; after date and time updating the following unsolicited indication is sent: **#NITZ: "yy/MM/dd,hh:mm:ss"** where: **yy** - year **MM** - month (in digits) **dd** - day **hh** - hour **mm** - minute **ss** - second
AT#NITZ?	Read command reports whether automatic date/time updating is currently enabled or not, and whether Network Timezone unsolicited indication is enabled or not, in the format: **#NITZ: <val>,<mode>**
AT#NITZ=?	Test command returns supported values of parameters **<val>** and **<mode>**.

3.5.5.1.12 Skip Escape Sequence - #SKIPESC

#SKIPESC - Skip Escape Sequence	
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.
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>**.

3.5.5.1.13 Escape Sequence Guard Time - #E2ESC

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

3.5.5.1.14 PPP-GPRS Connection Authentication Type - #GAUTH

#GAUTH - PPP-GPRS Connection Authentication Type

#GAUTH - PPP-GPRS Connection Authentication Type	
AT#GAUTH[=<type>]	Set command sets the PPP-GPRS connection authentication type. Parameter **<type>** 0 - no authentication 1 - PAP authentication (factory default) 2 - CHAP authentication 3 – Automatic (PAP and CHAP) Note: for GSM connection **<type>** is fixed to PAP. Note: if parameter **<type>** is omitted the behaviour of Set command is the same as Read command.
AT#GAUTH?	Read command reports the current PPP-GPRS connection authentication type, in the format: **#GAUTH: <type>**
AT#GAUTH=?	Test command returns the range of supported values for parameter **<type>**.

3.5.5.1.1 PPP-GPRS Parameters Configuration - #GPPPCFG

#GPPPCFG - PPP-GPRS Parameters Configuration	
AT#GPPPCFG=<Host IP address> [,<LCP timeout>,[PPP mode]]	Set command sets the following PPP-GPRS parameters: Host IP Address and LCP timeout value. Parameters: **<Host IP Address> -** Host IP Address that is assigned to the PPP server side (the host application). String type, it can be any valid IP address in the format: xxx.xxx.xxx.xxx. If the value is 0.0.0.0 (default), the Host IP Address assigned to the host application is the previous remote IP Address obtained by the Network. **<LCP timeout> -** LCP response timeout value in 100ms units 10..600 hundreds of ms (factory default is 25) **<PPP mode> -** PPP mode 0 (passive mode - default) : the module waits the first message coming from the remote application (e.g. LCP Conf Req) before to start the LCP negotiation 1 (active mode) : the module starts autonomously the LCP negotiation immediately after the CONNECT message
AT# GPPPCFG?	Read command reports the current PPP-GPRS connection parameters in the format:

#GPPPCFG - PPP-GPRS Parameters Configuration	
	#GPPPCFG: <Host IP address>,<LCP timeout>,<PPP mode>
AT# GPPPCFG =?	Test command returns the range of supported values for parameter **<LCP timeout>** and **<PPP mode>**

3.5.5.1.2 RTC Status - #RTCSTAT

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

3.5.5.2 Multisocket AT Commands

3.5.5.2.1 Socket Status - #SS

#SS - Socket Status	
AT#SS	Execution command reports the current status of the sockets in the format: **#SS: <connId>,<state>,<locIP>,<locPort>,<remIP>,<remPort>** **[<CR><LF><connId>,<state>,<locIP>,<locPort>,<remIP>,<remPort>** **[...]]** where: **<connId>** - socket connection identifier 1..6 **<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.

#SS - Socket Status	
	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.
AT#SS=?	Test command returns the **OK** result code.

3.5.5.2.2 Context Activation - #SGACT

#SGACT - Context Activation	
AT#SGACT=<cid>, <stat>[,<userId>, <pwd>]	Execution command is used to activate or deactivate the specified PDP context. Parameters: **<cid>** - PDP context identifier 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
AT#SGACT?	Returns the state of all the five contexts, in the format: **#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=?	Reports the range for the parameters **<cid>** and **<stat>**

3.5.5.2.3 Socket Shutdown - #SH

#SH - Socket Shutdown	
AT#SH=<connId>	This command is used to close a socket.

#SH - Socket Shutdown	
	Parameter: **<connId>** - socket connection identifier 1..6 Note: a socket connection can be closed only when it is in suspended mode (with pending data too). Trying to close an active socket connection will produce an error.
AT#SH=?	Test command returns the **OK** result code.

3.5.5.2.4 Socket Configuration - #SCFG

#SCFG - Socket Configuration	
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 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 - automatically chosen by the device. 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 *n* - 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. 0 - no timeout *n* - timeout value in hundreds of milliseconds (default 600) **<txTo>** - data sending timeout; after this period data are sent also if they're less than max packet size. 0 - no timeout *n* - timeout value in hundreds of milliseconds (default 600) 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>**

#SCFG - Socket Configuration	
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

3.5.5.2.5 Socket Dial - #SD

#SD - Socket Dial	
AT#SD=<connId>, <txProt>,<rPort>, <IPaddr>[,<lingerT> [,<lPort>]]	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 0..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 **<lingerT>** - linger time 0 - immediate closure after remote closure 255 - local host closes only after an escape sequence (+++) **<lPort>** - UDP connections local port 0..65535 Note: **<lingerT>** parameter is valid for TCP connections only; for UDP shall be left unused. Note: **<lPort>** parameter is valid for UDP connections only; for TCP shall be left unused. Note: if 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 socket using the escape sequence (**+++**): the module moves back to **command mode** and we receive the final result code **OK** after the suspension and, if there are data pending on the socket, an unsolicited

#SD - Socket Dial	
	result code: **+SRING: <connId>** Afterwards we can continue the normal AT session. The suspended connection can be resumed in every moment (unless we wait until a timeout disconnection) by using the **#SO** command with the corresponding **<connId>**.
AT#SD=?	Test command reports the range of values for all the parameters.

3.5.5.2.6 Socket Accept - #SA

#SA - Socket Accept	
AT#SA=<connId>	Execution command accepts an incoming socket connection after an URC **+SRING: <connId>**. Parameter: **<connId>** - socket connection identifier 1..6
AT#SA=?	Test command reports the range of values for **<connId>** parameter.

3.5.5.2.7 Socket Restore - #SO

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

3.5.5.2.8 Socket Listen - #SL

#SL - Socket Listen	
AT#SL=<connId>, <listenState>, <listenPort> [,<lingerT>]	This command opens/closes a socket listening for an incoming 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 0..65535

#SL - Socket Listen	
	<lingerT> - linger time 0 - immediate closure after remote closure 255 - local host closes only after an escape sequence (**+++**) Note: if successful, commands returns a final result code **OK**. Then, when there's an incoming connection on the local port and 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 socket is closed by the network the following URC is received: **#SL: ABORTED**
AT#SL?	Read command returns all the actual listening sockets.
AT#SL=?	Test command returns the range of supported values for all the subparameters.
Example	*Next command opens a socket listening on port 3500* AT#SL=1,1,3500 OK

3.5.5.3 FTP AT Commands

3.5.5.3.1 FTP Time-Out - #FTPTO

#FTPTO - FTP Time-Out	
AT#FTPTO=[<tout>]	Set command sets the time-out used when opening either the FTP control channel or the FTP traffic channel. Parameter: **<tout>** - time-out in 100 ms units 100..5000 - hundreds of ms (factory default is 100) Note: The parameter is not saved in NVM.
AT#FTPTO?	Read command returns the current FTP operations time-out, in the format: **#FTPTO: <tout>**
AT#FTPTO=?	Test command returns the range of supported values for parameter **<tout>**

3.5.5.3.2 FTP Open - #FTPOPEN

#FTPOPEN - FTP Open	
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 FTP connection the GPRS must been activated with **AT#GPRS=1**
AT#FTPOPEN=?	Test command returns the **OK** result code.

3.5.5.3.3 FTP Close - #FTPCLOSE

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

3.5.5.3.4 FTP Put - #FTPPUT

#FTPPUT - FTP Put	
AT#FTPPUT=	Execution command, issued during an FTP connection, opens a data

#FTPPUT - FTP Put	
[<filename>]	connection and starts sending **<filename>** file to the FTP server. If the data connection succeeds, a **CONNECT** indication is sent, otherwise a **NO CARRIER** indication is sent. Parameter: **<filename>** - string type, name of the file. Note: use the escape sequence **+++** to close the data connection. Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet.
AT#FTPPUT=?	Test command returns the **OK** result code.

3.5.5.3.5 FTP Get - #FTPGET

#FTPGET - FTP Get	
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, otherwise a **NO CARRIER** 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 if no FTP connection has been opened yet.
AT#FTPGET=?	Test command returns the OK result code.

3.5.5.3.6 FTP Type - #FTPTYPE

#FTPTYPE - FTP Type	
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 - FTP Type	
	#FTPTYPE: (0,1)

3.5.5.3.7 FTP Read Message - #FTPMSG

#FTPMSG - FTP Read Message	
AT#FTPMSG	Execution command returns the last response from the server.
AT#FTPMSG=?	Test command returns the **OK** result code.

3.5.5.3.8 FTP Delete - #FTPDELE

#FTPDELE - FTP Delete	
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.
AT#FTPDELE=?	Test command returns the **OK** result code.

3.5.5.3.9 FTP Print Working Directory - #FTPPWD

#FTPPWD - FTP Print Working Directory	
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.

3.5.5.3.10 FTP Change Working Directory - #FTPCWD

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

3.5.5.3.11 FTP List - #FTPLIST

#FTPLIST - FTP List	
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.

3.5.5.4 Enhanced Easy GPRS® Extension AT Commands

3.5.5.4.1 Authentication User ID - #USERID

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

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

3.5.5.4.2 Authentication Password - #PASSW

#PASSW - Authentication Password	
AT#PASSW= [<pwd>]	Set command sets the user password string to be used during the authentication step.

#PASSW - Authentication Password	
	Parameter: **<pwd>** - string type, it's the authentication password; the max length for this value is the output of Test command, **AT#PASSW=?** (factory default is the empty string “”).
AT#PASSW=?	Test command returns the maximum allowed length of the string parameter **<pwd>**.
Example	AT#PASSW="myPassword" OK

3.5.5.4.3 Packet Size - #PKTSZ

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

3.5.5.4.4 Data Sending Time-Out - #DSTO

#DSTO -Data Sending Time-Out	
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)

#DSTO -Data Sending Time-Out	
	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.
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

3.5.5.4.5 Socket Inactivity Time-Out - #SKTTO

#SKTTO - Socket Inactivity Time-Out	
AT#SKTTO= [<tout>]	Set command sets the maximum time with no data exchanging on the socket that the module awaits before closing the socket and deactivating the GPRS context. 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 and the GPRS context deactivated.
AT#SKTTO?	Read command reports the current socket inactivity time-out value.
AT#SKTTO=?	Test command returns the allowed values for parameter **<tout>**.
Example	AT#SKTTO=30 *->(30 sec. time-out)* OK AT#SKTTO? #SKTTO: 30 OK

3.5.5.4.6 Socket Definition - #SKTSET

#SKTSET - Socket Definition	
AT#SKTSET=	Set command sets the socket parameters values.

#SKTSET - Socket Definition	
[<socket type>, <remote port>, <remote addr>, [<closure type>], [<local port>]]	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 (**+++**) **<local port>** - local host port to be used on UDP socket 0..65535 - port number Note: **<closure type>** parameter is valid only for TCP socket type, for UDP sockets shall be left unused. Note: **<local port>** parameter is valid only for UDP socket type, for TCP sockets shall be left unused. Note: The resolution of the host name is done when opening the socket, therefore if an invalid host name is given to the **#SKTSET** command, then an error message will be issued. Note: the DNS Query to be successful requests that: - the GPRS context 1 is correctly set with **+CGDCONT** - the authentication parameters are set **(#USERID**, **#PASSW**) - the GPRS coverage is enough to permit a connection.
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`

3.5.5.4.7 Socket Open - #SKTOP

#SKTOP - Socket Open	
AT#SKTOP	Execution command activates the context number 1, proceeds with the authentication with the user ID and password previously set by **#USERID**

#SKTOP - Socket Open	
	and **#PASSW** commands, and opens a socket connection with the host specified in the **#SKTSET** command. Eventually, before opening the socket connection, it issues automatically a DNS query to solve the IP address of the host name. If the connection succeeds a **CONNECT** indication is sent, otherwise a **NO CARRIER** indication is sent.
AT#SKTOP=?	Test command returns the **OK** result code.
Example	AT#SKTOP *..GPRS context activation, authentication and socket open..* CONNECT
Note	This command is obsolete. It's suggested to use the couple **#SGACT** and **#SO** instead of it.

3.5.5.4.8 Query DNS - #QDNS

#QDNS - Query DNS	
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: **#QDNS:"<host name>",<IP address>** Note: the command has to activate the GPRS context if it was not previously activated. In this case the context is deactivated after the DNS query. Note: **<IP address>** is in the format: **xxx.xxx.xxx.xxx**
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.

3.5.5.4.9 Socket TCP Connection Time-Out - #SKTCT

#SKTCT - Socket TCP Connection Time-Out	
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

#SKTCT - Socket TCP Connection Time-Out	
	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.
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.*

3.5.5.4.10 Socket Parameters Save - #SKTSAV

#SKTSAV - Socket Parameters Save	
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
AT#SKTSAV=?	Test command returns the **OK** result code.
Example	AT#SKTSAV OK *socket parameters have been saved in NVM*
Note	If some parameters have not been previously specified then a default value will be stored.

3.5.5.4.11 Socket Parameters Reset - #SKTRST

#SKTRST - Socket Parameters Reset	
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

#SKTRST - Socket Parameters Reset	
	- 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*

3.5.5.4.12 GPRS Context Activation - #GPRS

#GPRS - GPRS Context Activation	
AT#GPRS= [<mode>]	Execution command deactivates/activates the GPRS context, eventually proceeding with the authentication with the parameters given with **#PASSW** and **#USERID**. Parameter: **<mode>** - GPRS context activation mode 0 - GPRS context deactivation request 1 - GPRS context activation request In the case that the GPRS context has been activated, the result code **OK** is preceded by the intermediate result code: **+IP: <ip_address_obtained>** reporting the local IP address obtained from the network.
AT#GPRS?	Read command reports the current status of the GPRS context, in the format: **#GPRS: <status>** where: **<status>** 0 - GPRS context deactivated 1 - GPRS context activated 2 - GPRS context activation pending.
AT#GPRS=?	Test command returns the allowed values for parameter **<mode>**.
Example	AT#GPRS=1 +IP: 129.137.1.1 OK *Now GPRS Context has been activated and our IP is 129.137.1.1*

#GPRS - GPRS Context Activation	
	AT#GPRS=0 OK *Now GPRS context has been deactivated, IP is lost.*

3.5.5.4.13 Socket Dial - #SKTD

#SKTD - Socket Dial	
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 0..65535 - port number (factory default is 0) **<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 (**+++**) **<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: If all parameters are omitted then the behaviour of Set command is the same as Read command.

#SKTD - Socket Dial	
AT#SKTD?	Read command reports the socket dial parameters values, in the format: **AT#SKTD: <socket type>,<remote port>,<remote addr>, <closure type>,<local port>**
AT#SKTD=?	Test command returns the allowed values for the parameters.
Example	AT#SKTD=0,1024,"123.255.020.001",255 CONNECT AT#SKTD=1,1024,"123.255.020.001", ,1025 CONNECT *In this way my local port 1025 is opened to the remote port 1024* AT#SKTD=0,1024,"www.telit.net", 255 CONNECT
Note	The main difference between this command and **#SKTOP** is that this command does not interact with the GPRS context status, leaving it **ON** or **OFF** according to the **#GPRS** setting, therefore when the connection made with **#SKTD** is closed the context (and hence the local IP address) is maintained.

3.5.5.4.14 Socket Listen - #SKTL

#SKTL - Socket Listen	
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 **<input port>** - local host input port to be listened 0..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**

#SKTL - Socket Listen	
	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 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**
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>,<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 listening* AT#SKTL=1,0,1024 OK or AT#SKTL=1,0,1024,255 OK *Receive connection requests* +CONN FROM: 192.164.2.1 CONNECT

#SKTL - Socket Listen	
	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
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.

3.5.5.4.15 Socket Listen Ring Indicator - #E2SLRI

#E2SLRI - Socket Listen Ring Indicator	
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>.**

3.5.5.4.16 Firewall Setup - #FRWL

#FRWL - Firewall Setup	
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

#FRWL - Firewall Setup	
	type, it can be any valid IP address in the format: xxx.xxx.xxx.xxx **<net_mask>** - mask to be applied on the **<ip_addr>**; string type, it can be any valid IP address mask in the format: xxx.xxx.xxx.xxx Command returns **OK** result code if successful. Note: the firewall applies for incoming (listening) connections only. Firewall general policy is **DROP**, therefore all packets that are not included into an **ACCEPT** chain rule will be silently discarded. 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 **#SKTOP** and **#SKTD** the remote host is dynamically inserted into the **ACCEPT** chain for all the connection duration. Therefore the **#FRWL** command shall be used only for defining the **#SKTL** behaviour, deciding which hosts are allowed to connect to the local device. Rules are not saved in NVM, at startup the rules list will be empty.

3.5.5.4.17 GPRS Data Volume - #GDATAVOL

#GDATAVOL - GPRS Data Volume	
AT#GDATAVOL=	Execution command reports, for every active PDP context, the amount of

#GDATAVOL - GPRS Data Volume	
[<mode>]	data the last GPRS session received and transmitted, or it will report the total amount of data received and transmitted during all past GPRS sessions, since last reset. Parameter: **<mode>** 0 - it resets the GPRS data counter for the all the available PDP contexts (1-5) 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**), 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 1..5 - numeric parameter which specifies a particular PDP context definition **<tot*n*>** - number of bytes either received or transmitted in the last GPRS session for **<cid*n*>** PDP context; **<sent*n*>** - number of bytes transmitted in the last GPRS session for **<cid*n*>** PDP context; **<received*n*>** - number of bytes received in the last GPRS 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**), 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 1..5 - numeric parameter which specifies a particular PDP context definition **<tot*n*>** - number of bytes either received or transmitted, in every GPRS session since last reset, for **<cid*n*>** PDP context; **<sent*n*>** - number of bytes transmitted, in every GPRS session since last reset, for **<cid*n*>** PDP context; **<received*n*>** - number of bytes received, in every GPRS session since last reset, for **<cid*n*>** PDP context; Note: last GPRS session counters are not saved in NVM so they are loosen at power off. Note: total GPRS session counters are saved on NVM.

#GDATAVOL - GPRS Data Volume	
AT#GDATAVOL=?	Test command returns the range of supported values for parameter **<mode>.**

3.5.5.5 E-mail Management AT Commands

3.5.5.5.1 E-mail SMTP Server - #ESMTP

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

3.5.5.5.2 E-mail Sender Address - #EADDR

#EADDR - E-mail Sender Address	
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"`

#EADDR - E-mail Sender Address	
	OK AT#EADDR? #EADDR: "me@email.box.com" OK

3.5.5.5.3 E-mail Authentication User Name - #EUSER

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

3.5.5.5.4 E-mail Authentication Password - #EPASSW

#EPASSW - E-mail Authentication Password	
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 **""**.

#EPASSW - E-mail Authentication Password	
AT#EPASSW=?	Test command returns the maximum allowed length of the string parameter **<e-pwd>**.
Example	AT#EPASSW="myPassword" OK
Note	It is a different password field than the one used for GPRS authentication (see **#PASSW**).

3.5.5.5.5 E-mail Sending With GPRS Context Activation - #SEMAIL

#SEMAIL - E-mail Sending With GPRS Context Activation	
AT#SEMAIL= [<da>,<subj>, <att> [,<filename>]]	Execution command activates a GPRS context, if not previously activated by **#EMAILACT**, and sends an e-mail message. The GPRS context is deactivated when the e-mail is sent. Parameters: **<da>** - destination address, string type. **<subj>** - subject of the message, string type. **<att>** - attached image flag 0 - don't attach any image 1 - attach the last snapshot taken **<filename>** - image name (default is “snapshot.jpg”) 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: 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: if GPRS context was previously activated by **#GPRS** it’s not possible to successfully send the e-mail message and the response is the result code **activation failed**. Note: sending an e-mail with an image attachment can take quite a long time since it can be over 50Kb to send and can take more than 1 minute.
AT#SEMAIL=?	Test command returns the **OK** result code.
Example	AT#SEMAIL="me@myaddress.com","subject of the mail",1 >message body… this is the text of the mail message… CTRL-Z

#SEMAIL - E-mail Sending With GPRS Context Activation	
	..wait.. OK *Message has been sent.*

3.5.5.5.6 E-mail GPRS Context Activation - #EMAILACT

#EMAILACT - E-mail GPRS Context Ativation	
AT#EMAILACT=[<mode>]	Execution command deactivates/activates the GPRS context, eventually proceeding with the authentication with the parameters given with **#PASSW** and **#USERID**. Parameter: **<mode>** - GPRS context activation mode 0 - GPRS context deactivation request 1 - GPRS context activation request
AT#EMAILACT?	Read command reports the current status of the GPRS context for the e-mail, in the format: **#EMAILACT: <status>** where: **<status>** 0 - GPRS context deactivated 1 - GPRS context activated
AT#EMAILACT=?	Test command returns the allowed values for parameter **<mode>**.
Example	AT#EMAILACT=1 OK *Now GPRS Context has been activated* AT# EMAILACT=0 OK *Now GPRS context has been deactivated.*

3.5.5.5.7 E-mail Sending - #EMAILD

#EMAILD - E-mail Sending	
AT#EMAILD=[<da>,<subj>,<att>[,<filename>]]	Execution command sends an e-mail message if GPRS context has already been activated with **AT#EMAILACT=1**. Parameters: **<da>** - destination address, string type. **<subj>** - subject of the message, string type

#EMAILD - E-mail Sending	
	<att> - attached image flag 0 - don't attach any image 1 - attach the last snapshot taken **<filename>** - image name (default is “snapshot.jpg”) 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: 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: sending an e-mail with an image attachment can take quite a long time since it can be over 50Kb to send and can take more than 1 minute.
AT#EMAILD=?	Test command returns the **OK** result code.

Example	`AT#EMAILD=”me@myaddress.com”,”subject of the mail”,1`
	`>message body… this is the text of the mail message…`
	`CTRL-Z`
	
	`..wait..`
	`OK`
	`Message has been sent.`

Note	The only difference between this command and the **#SEMAIL** is that this command does not interact with the GPRS context status, leaving it **ON** or **OFF** according to the **#EMAILACT** setting, thus, when the connection made with **#EMAILD** is closed, the context status is maintained.

3.5.5.5.8 E-mail Parameters Save - #ESAV

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

#ESAV - E-mail Parameters Save	
	will be taken.

3.5.5.5.9 E-mail Parameters Reset - #ERST

#ERST - E-mail Parameters Reset	
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.

3.5.5.5.10 SMTP Read Message - #EMAILMSG

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

3.5.5.6 Easy Scan® Extension AT Commands

Note: it is strongly suggested to issue all the Easy Scan® Extension AT commands with **NO SIM** inserted, to avoid a potential conflict with normal module operations, such as “incoming call”, “periodic location update, “periodic routing area update” and so on.

3.5.5.6.1 Network Survey - #CSURV

#CSURV - Network Survey	
AT#CSURV[= [<s>,<e>]]	Execution command allows to perform a quick survey through band channels, starting from channel **<s>** to channel **<e>**. Issuing **AT#CSURV<CR>**, a full band scan is performed. Parameters: **<s>** - starting channel **<e>** - ending channel After issuing the command the device responds with the string:

#CSURV - Network Survey

Network survey started…

and, after a while, a list of informations, one for each received carrier, is reported, each of them in the format:

(For BCCH-Carrier)

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

where:

<arfcn> - C0 carrier assigned radio channel (BCCH - Broadcast Control Channel)

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

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

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

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

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

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

<cellId> - cell identifier; if **#CSURVF** last setting is 0, **<cellId>** is a decimal number, else it is a 4-digits hexadecimal number

<cellStatus> - string type; it is the cell status

..CELL_SUITABLE - C0 is a suitable cell.

CELL_LOW_PRIORITY - the cell is low priority based on the received system information.

CELL_FORBIDDEN - the cell is forbidden.

CELL_BARRED - the cell is barred based on the received system information.

CELL_LOW_LEVEL - the cell **<rxLev>** is low.

CELL_OTHER - none of the above e.g. exclusion timer running, no BCCH available…etc.

<numArfcn> - number of valid channels in the Cell Channel Description

<arfcn*n*> - arfcn of a valid channel in the Cell Channel Description (*n* is in the range **1..<numArfcn>**)

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

<arfcn*n*> - decimal number; it is the arfcn of a valid channel in the Cell Channel Description (*n* is in the range **1..<numArfcn>**)

<numChannels> - decimal number; it is the number of valid channels in

#CSURV - Network Survey	
	the BCCH Allocation list; the output of this information for non-serving cells depends on last **#CSURVEXT** setting: 1. if **#CSURVEXT=0** this information is displayed only for serving cell 2. if **#CSURVEXT=1** or **2** this information is displayed also for every valid scanned BCCH carrier. **<ba*n*>** - decimal number; it is the arfcn of a valid channel in the BA list (***n*** is in the range **1..<numChannels>**); the output of this information for non-serving cells depends on last **#CSURVEXT** setting: 1. if **#CSURVEXT=0** this information is displayed only for serving cell 2. if **#CSURVEXT=1** or **2** this information is displayed also for every valid scanned BCCH carrier. *(The following informations will be printed only if GPRS is supported in the cell)* **<pbcch>** - packet broadcast control channel 0 - pbcch not activated on the cell 1 - pbcch activated on the cell **<nom>** - network operation mode 1 2 3 **<rac>** - routing area code 0..255 - **<spgc>** - SPLIT_PG_CYCLE support ..0 - SPLIT_PG_CYCLE is not supported on CCCH on this cell ..1 - SPLIT_PG_CYCLE is supported on CCCH on this cell **<pat>** - priority access threshold 0 - 3..6 - **<nco>** - network control order 0..2 - **<t3168>** - timer 3168 **<t3192>** - timer 3192 **<drxmax>** - discontinuous reception max time (in seconds) **<ctrlAck>** - packed control ack **<bsCVmax> -** blocked sequenc countdown max value **<alpha> -** alpha parameter for power control **<pcMeasCh> -** type of channel which shall be used for downlink measurements for power control 0 - BCCH 1 - PDCH **(For non BCCH-Carrier)** **arfcn: <arfcn> rxLev: <rxLev>**

#CSURV - Network Survey	
	where: **<arfcn>** - decimal number; it is the RF channel **<rxLev>** - decimal number; it is the receiption level (in dBm) Lastly, the **#CSURV** output ends in two ways, depending on the last **#CSURVF** setting: if **#CSURVF=0** or **#CSURVF=1** The output ends with the string: **Network survey ended** if **#CSURVF=2** the output ends with the string: **Network survey ended (Carrier: <NoARFCN> BCCh: <NoBCCh>)** where **<NoARFCN>** - number of scanned frequencies **<NoBCCH>** - number of found BCCh

Example	AT#CSURV
	
	`Network survey started…`
	
	`arfcn: 48 bsic: 24 rxLev: -52 ber: 0.00 mcc: 610 mnc: 1 lac: 33281 cellId: 3648 cellStatus: CELL_SUITABLE numArfcn: 2 arfcn: 30 48 numChannels: 5 array: 14 19 22 48 82`
	
	`arfcn: 14 rxLev: 8`
	
	`Network survey ended`
	
	OK

Note	The command is executed within max. 2 minute.

3.5.5.6.2 Network Survey (Numeric Format) - #CSURVC

#CSURVC - Network Survey (Numeric Format)	
AT#CSURVC[=[<s>,<e>]]	Execution command allows to perform a quick survey through band channels, starting from channel **<s>** to channel **<e>**. Issuing **AT#CSURVC<CR>**, a full band scan is performed.

#CSURVC - Network Survey (Numeric Format)	
	Parameters: **<s>** - starting channel **<e>** - ending channel After issuing the command the device responds with the string: **Network survey started…** and, after a while, a list of informations, one for each received carrier, is reported, each of them in the format: **(For BCCH-Carrier)** **<arfcn>,<bsic>,<rxLev>,<ber>,<mcc>,<mnc>,<lac>,<cellId>,** **<cellStatus>,<numArfcn>[,<arfcn1> ..[<arfcn64>]]** **[,<numChannels>[,<ba1> ..[<ba32>]] [<pbcch> [<nom> <rac> <spgc>** **<pat> <nco> <t3168> <t3192> <drxmax> <ctrlAck> <bsCVmax>** **<alpha> <pcMeasCh>]]]** **<CR><LF><CR><LF><CR><LF>** where: **<arfcn>** - C0 carrier assigned radio channel (BCCH - Broadcast Control Channel) **<bsic>** - base station identification code; if **#CSURVF** last setting is 0, **<bsic>** is a decimal number, else it is a 2-digits octal number **<rxLev>** - decimal number; it is the receiption level (in dBm) **<ber>** - decimal number; it is the bit error rate (in %) **<mcc>** - hexadecimal 3-digits number; it is the mobile country code **<mnc>** - hexadecimal 2-digits number; it is the mobile network code **<lac>** - location area code; if **#CSURVF** last setting is 0, **<lac>** is a decimal number, else it is a 4-digits hexadecimal number **<cellId>** - cell identifier; if **#CSURVF** last setting is 0, **<cellId>** is a decimal number, else it is a 4-digits hexadecimal number **<cellStatus>** - string type; it is the cell status ..0 - C0 is a suitable cell (CELL_SUITABLE). 1 - the cell is low priority based on the received system information (CELL_LOW_PRIORITY). 2 - the cell is forbidden (CELL_FORBIDDEN). 3 - the cell is barred based on the received system information (CELL_BARRED). 4 - the cell **<rxLev>** is low (CELL_LOW_LEVEL). 5 - none of the above e.g. exclusion timer running, no BCCH available…etc.. (CELL_OTHER). **<numArfcn>** - decimal number; it is the number of valid channels in the Cell Channel Description **<arfcn*n*>** - decimal number; it is the arfcn of a valid channel in the Cell Channel Description (*n* is in the range **1..<numArfcn>**) **<numChannels>** - decimal number; it is the number of valid channels in

#CSURVC - Network Survey (Numeric Format)	
	the BCCH Allocation list; the output of this information for non-serving cells depends on last **#CSURVEXT** setting: 1. if **#CSURVEXT=0** this information is displayed only for serving cell 2. if **#CSURVEXT=1 or 2** this information is displayed also for every valid scanned BCCH carrier. **<ba*n*>** - decimal number; it is the arfcn of a valid channel in the BA list (***n*** is in the range **1..<numChannels>**); the output of this information for non-serving cells depends on last **#CSURVEXT** setting: 1. if **#CSURVEXT=0** this information is displayed only for serving cell 2. if **#CSURVEXT=1 or 2** this information is displayed also for every valid scanned BCCH carrier. *(The following informations will be printed only if GPRS is supported in the cell)* **<pbcch>** - packet broadcast control channel 0 - pbcch not activated on the cell 1 - pbcch activated on the cell **<nom>** - network operation mode 1 2 3 **<rac>** - routing area code 0..255 - **<spgc>** - SPLIT_PG_CYCLE support ..0 - SPLIT_PG_CYCLE is not supported on CCCH on this cell ..1 - SPLIT_PG_CYCLE is supported on CCCH on this cell **<pat>** - priority access threshold 0 - 3..6 - **<nco>** - network control order 0..2 - **<t3168>** - timer 3168 **<t3192>** - timer 3192 **<drxmax>** - discontinuous reception max time (in seconds) **<ctrlAck>** - packed control ack **<bsCVmax> -** blocked sequenc countdown max value **<alpha> -** alpha parameter for power control **<pcMeasCh> -** type of channel which shall be used for downlink measurements for power control 0 - BCCH 1 - PDCH **(For non BCCH-Carrier)** **<arfcn>,<rxLev>**

#CSURVC - Network Survey (Numeric Format)	
	where: **<arfcn>** - decimal number; it is the RF channel **<rxLev>** - decimal number; it is the receiption level (in dBm) The last information from **#CSURVC** depends on the last **#CSURVF** setting: **#CSURVF=0** or **#CSURVF=1** The output ends with the string: **Network survey ended** **#CSURVF=2** the output ends with the string: **Network survey ended (Carrier: <NoARFCN> BCCh: <NoBCCh>)** where **<NoARFCN>** - number of scanned frequencies **<NoBCCH>** - number of found BCCh
Example	AT#CSURVC Network survey started… 48,24,-52,0.00,610,1,33281,3648,0,2,30 48,5,14 19 22 48 82 14,8 Network survey ended OK
Note	The command is executed within max. 2 minute. The information provided by **#CSURVC** is the same as that provided by **#CSURV**. The difference is that the output of **#CSURVC** is in numeric format only.

3.5.5.6.3 Network Survey Of User Defined Channels - #CSURVU

#CSURVU - Network Survey Of User Defined Channels	
AT#CSURVU=[<ch1>[,<ch2>[,… [,<ch10>]]]]	Execution command allows to perform a quick survey through the given channels. The result format is like command **#CSURV**. Parameters: **<ch*n*>** - channel number (arfcn)

#CSURVU - Network Survey Of User Defined Channels	
	Note: the **<ch*n*>** must be in a increasing order.
Example	AT#CSURVU=59,110 Network survey started… arfcn: 59 bsic: 16 rxLev: -76 ber: 0.00 mcc: 546 mnc: 1 lac: 54717 cellId: 21093 cellStatus: CELL_SUITABLE numArfcn 2 arfcn: 36 59 arfcn: 110 rxLev: -107 Network survey ended OK
Note	The command is executed within max. 2 minute.

3.5.5.6.4 Network Survey Of User Defined Channels (Numeric Format) - #CSURVUC

#CSURVUC - Network Survey Of User Defined Channels (Numeric Format)	
AT#CSURVUC=[<ch1>[,<ch2>[,… [,<ch10>]]]]	Execution command allows to perform a quick survey through the given channels. The result format is like command **#CSURVC**. Parameters: **<ch*n*>** - channel number (arfcn) Note: the **<ch*n*>** must be in a increasing order.
Example	AT#CSURVUC=59,110 Network survey started… 59,16,-76,0.00,546,1,54717,21093,0,2,36 59 110,-107 Network survey ended OK
Note	The command is executed within max. 2 minute. The information provided by **#CSURVUC** is the same as that provided by

#CSURVUC - Network Survey Of User Defined Channels (Numeric Format)	
	#CSURVU. The difference is that the output of **#CSURVUC** is in numeric format only.

3.5.5.6.5 BCCH Network Survey - #CSURVB

#CSURVB - BCCH Network Survey	
AT#CSURVB=[<n>]	Execution command performs a quick network survey through **M** (maximum number of available frequencies depending on last selected band) channels. The survey stops as soon as **<n>** BCCH carriers are found. The result format is like command **#CSURV**. Parameter: **<n>** - number of desired BCCH carriers 1..M
AT#CSURVB=?	Test command reports the range of values for parameter **<n>** in the format: **(1-M)** where **M** is the maximum number of available frequencies depending on last selected band.

3.5.5.6.6 BCCH Network Survey (Numeric Format) - #CSURVBC

#CSURVBC - BCCH Network Survey (Numeric Format)	
AT#CSURVBC=[<n>]	Execution command performs a quick network survey through **M** (maximum number of available frequencies depending on last selected band) channels. The survey stops as soon as **<n>** BCCH carriers are found. The result is given in numeric format and is like command **#CSURVC**. Parameter: **<n>** - number of desired BCCH carriers 1..M
AT#CSURVBC=?	Test command reports the range of values for parameter **<n>** in the format: **(1-M)** where **M** is the maximum number of available frequencies depending on last selected band.

3.5.5.6.7 Network Survey Format - #CSURVF

#CSURVF - Network Survey Format	
AT#CSURVF=	Set command controls the format of the numbers output by all the Easy

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

3.5.5.6.8 <CR><LF> Removing On Easy Scan® Commands Family - #CSURVNLF

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

3.5.5.6.9 Extended Network Survey - #CSURVEXT

#CSURVEXT - Extended Network Survey	
AT#CSURVEXT [=<value>]	Set command enables/disables extended network survey. Parameter: **<value>** 0 - disables extended network survey (factory default) 1 - enables extended network survey; all the network survey execution commands (**#CSURV, #CSURVC, #CSURVU, #CSURVUC, #CSURVB, #CSURVBC**) display the BAList for every valid scanned

#CSURVEXT - Extended Network Survey	
	BCCh carrier 2 - enables extended network survey; all the network survey execution commands (**#CSURV, #CSURVC, #CSURVU, #CSURVUC, #CSURVB, #CSURVBC**) display the BAList for every valid scanned BCCh carrier and, if GPRS is supported in the cell, they report some GPRS informations carried by the System Information 13 of the BCCh Note: if parameter is omitted the behaviour of Set command is the same as Read command.
AT#CSURVEXT?	Read command reports whether extended network survey is currently enabled or not, in the format: **<value>**
AT#CSURVEXT=?	Test command reports the range of values for parameter **<value>.**

3.5.5.6.10 PLMN Network Survey - #CSURVP

#CSURVP - PLMN Network Survey	
AT#CSURVP=<plmn>	Execution command performs a quick network survey through channels. The survey stops as soon as a BCCH carriers belonging to the selected PLMN is found. The result format is like command **#CSURV**. Parameter: **<plmn>** - the desidered PLMN in numeric format
AT#CSURVP=?	Test command returns OK

3.5.5.6.11 PLMN Network Survey (Numeric Format) - #CSURVPC

#CSURVPC - PLMN Network Survey (Numeric Format)	
AT#CSURVPC= <plmn>	Execution command performs a quick network survey through channels. The survey stops as soon as a BCCH carriers belonging to the selected PLMN is found. The result is given in numeric format and is like command **#CSURVC**. Parameter: **<plmn>** - the desidered PLMN in numeric format
AT#CSURVPC=?	Test command returns OK

3.5.5.7 SIM Toolkit AT Commands

3.5.5.7.1 SIM Tookit Interface Activation - #STIA

#STIA - SIM Tookit Interface Activation	
AT#STIA= [<mode> [,<timeout>]]	Set command is used to activate the SAT sending of unsolicited indications when a **proactive command** is received from SIM. Parameters: **<mode>** 0 - disable SAT (no **<timeout>** required, if given will be ignored) 1 - enable SAT without unsolicited indication **#STN** 2 - enable SAT and extended unsolicited indication **#STN** (see **#STGI**) 3 - enable SAT and reduced unsolicited indication **#STN** (see **#STGI**) **<timeout>** - time-out for user responses 1..255 - time-out in minutes (default 10). Any ongoing (but unanswered) **proactive command** will be aborted automatically after **<timeout>** minutes. In this case, the terminal response is either “ME currently unable to process command”, or if applicable, “No response from user”. In addition an unsolicited indication will be sent to the external application: **#STN: <cmdTerminateValue>** where: **<cmdTerminateValue>** is defined as **<cmdType> + terminate offset**; the terminate offset equals 100. Note: every time the SIM application issues a **proactive command** that requires user interaction an unsolicited code will be sent, if enabled with **#STIA** command, as follows: • if **<mode>** parameter of **#STIA** command has been set to 3 (reduced unsolicited indication) an unsolicited indication will be sent, indicating the type of **proactive command** issued by the SIM: **#STN: <cmdType>** • if **<mode>** parameter of **#STIA** command has been set to 2 (extended unsolicited indication) the format of the unsolicited indication depends on the specific command: *if **<cmdType>=1** (REFRESH)* an unsolicited notification will be sent to the user: **#STN: <cmdType>,<refresh type>**

#STIA - SIM Tookit Interface Activation

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

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

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

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

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

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

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

In case of SEND SHORT MESSAGE (**<cmdType>**=19) command if sending to network fails an unsolicited notification will be sent

#STN: 119

if ***<cmdType>=33*** *(DISPLAY TEXT)*

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

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

where:
<cmdDetails> - unsigned Integer used as a bit field.

#STIA - SIM Tookit Interface Activation

0..255 - used as a bit field:
bit 1:
0 - normal priority
1 - high priority
bits 2 to 7: reserved for future use
bit 8:
0 - clear message after a delay
1 - wait for user to clear message
<text> - (optional) text to be displayed to user

In this case:
1. if **<cmdDetails>/bit8** is **0** neither **#STGI** nor **#STSR** commands are required:
   - **AT#STGI** is accepted anyway.
   - **AT#STSR=<cmdType>,0** will answer **OK** but do nothing.
2. If **<cmdDetails>/bit8** is 1 **#STSR** command is required

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

an unsolicited notification will be sent to the user:

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

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

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

All other commands:

the unsolicited indication will report just the proactive command type:

#STN: <cmdType>

Note: if the **call control** or **SMS control facility in the SIM** is activated, when the customer application makes an outgoing call, or sends an SS or USSD, or an SMS, the following **#STN** unsolicited indication could be sent, according to GSM 11.14, to indicate whether the outgoing call has been accepted, rejected or modified by the SIM, or if the SMS service centre address or destination has been changed:

#STIA - SIM Tookit Interface Activation	
	#STN: <cmdTerminateValue>,<Result>[,<TextInfo>[,<Number>[,<MODestAddr>]]] where **<cmdTerminateValue>** 150 - SMS control response 160 - call/SS/USSD response **<Result>** 0 - Call/SMS not allowed 1 - Call/SMS allowed 2 - Call/SMS allowed with modification **<Number>** - Called number, Service Center Address or SS String in ASCII format. **<MODestAddr>** - MO destination address in ASCII format. **<TextInfo>** - alpha identifier provided by the SIM in ASCII format. Note: when the SIM Application enters its main menu again (i.e. not at startup) an unsolicited result code **#STN: 254** is sent. The TA does not need to respond directly, i.e. **AT#STSR** is not required. It is possible to restart the SAT session from the main menu again with the command **AT#STGI=37**. Note: The settings are saved on user profile and available on following reboot. SIM Toolkit activation/deactivation is only performed at power on.
AT#STIA?	Read command can be used to get information about the SAT interface in the format: **#STIA: <state>,<mode>,<timeout>,<SatProfile>** where: **<state>** - the device is in one of the following state: 0 - SIM has not started its application yet 1 - SIM has started its application (SAT main menu ready) **<mode>** - SAT and unsolicited indications enabling status (see above) **<timeout>** - time-out for user responses (see above) **<SatProfile>** - SAT Terminal Profile according to GSM 11.14, i. e. the list of SIM Application Toolkit facilities that are supported by the ME. The profile cannot be changed by the TA. Note: In SAT applications usually an SMS message is sent to the network

#STIA - SIM Tookit Interface Activation	
	provider containing service requests, e.g. to send the latest news. The provider returns a message with the requested information. Before activating SAT it is recommended to set the SMS text mode with command **AT+CMGF=1** and to enable unsolicited indications for incoming SMS messages with command **+CNMI**.
AT#STIA=?	Test command returns the range of available values for the parameters **<mode>** and **<timeout>**.
Note	Just one instance at a time, the one which first issued **AT#STIA=*n*** (with ***n*** different from zero), is allowed to issue SAT commands, and this is valid till the same instance issues **AT#STIA=0**. After power cycle another instance can enable SAT.
Note	A typical SAT session on AT interface starts after an **#STN: 37** unsolicited code is received, if enabled(see above). At that point usually an **AT#STGI=37** command is issued (see **#STGI**), and after the SAT main menu has been displayed on TE an **AT#STSR=37,0,x** command is issued to select an item in the menu (see **#STSR**).

3.5.5.7.2 SIM Tookit Get Information - #STGI

#STGI - SIM Tookit Get Information	
AT#STGI=[<cmdType>]	**#STGI** set command is used to request the parameters of a **proactive command** from the ME. Parameter: **<cmdType>** - **proactive command** ID according to GSM 11.14 (decimal); these are only those command types that use the AT interface; SAT commands which are not using the AT interface (not MMI related SAT commands, e.g. PROVIDE LOCAL INFORMATION) are executed without sending any indication to the user 1 - REFRESH 16 - SET UP CALL 17 - SEND SS 18 - SEND USSD 19 - SEND SHORT MESSAGE 20 - SEND DTMF 32 - PLAY TONE 33 - DISPLAY TEXT 34 - GET INKEY 35 - GET INPUT 36 - SELECT ITEM 37 - SET UP MENU Requested command parameters are sent using an **#STGI** indication:

#STGI - SIM Tookit Get Information	
	#STGI: <parameters> where **<parameters>** depends upon the ongoing **proactive command** as follows: *if* ***<cmdType>=1*** *(REFRESH)* **#STGI: <cmdType>,<refresh type>** where: **<refresh type>** 0 - SIM Initialization and Full File Change Notification; 1 - File Change Notification; 2 - SIM Initialization and File Change Notification; 3 - SIM Initialization; 4 - SIM Reset *if* ***<cmdType>=16*** *(SET UP CALL)* **#STGI: <cmdType>,<commandDetails>,[<confirmationText>], <calledNumber>** where: **<commandDetails>** - unsigned integer, used as an enumeration 0 Set up call, but only if not currently busy on another call 1 Set up call, but only if not currently busy on another call, with redial 2 Set up call, putting all other calls (if any) on hold 3 Set up call, putting all other calls (if any) on hold, with redial 4 Set up call, disconnecting all other calls (if any) 5 Set up call, disconnecting all other calls (if any), with redial **<confirmationText>** - string for user confirmation stage **<calledNumber>** - string containing called number *if* ***<cmdType>=17*** *(SEND SS)* *if* ***<cmdType>=18*** *(SEND USSD)* *if* ***<cmdType>=19*** *(SEND SHORT MESSAGE)* *if* ***<cmdType>=20*** *(SEND DTMF)* *if* ***<cmdType>=32*** *(PLAY TONE)* **#STGI: <cmdType>[,<text>]** where: **<text>** - text to be displayed to user *if* ***<cmdType>=33*** *(DISPLAY TEXT)*

#STGI - SIM Tookit Get Information

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

where:
<cmdDetails> - unsigned Integer used as a bit field.
0..255 - used as a bit field:
bit 1:
0 - normal priority
1 - high priority
bits 2 to 7: reserved for future use
bit 8:
0 - clear message after a delay
1 - wait for user to clear message
<text> - text to be displayed to user

if ***<cmdType>=34*** *(GET INKEY)*

#STGI: <cmdType>,<commandDetails>,<text>

where:
<commandDetails> - unsigned Integer used as a bit field.
0..255 - used as a bit field:
bit 1:
0 - Digits only (0-9, *, # and +)
1 - Alphabet set;
bit 2:
0 - SMS default alphabet (GSM character set)
1 - UCS2 alphabet
bit 3:
0 - Character sets defined by bit 1 and bit 2 are enabled
1 - Character sets defined by bit 1 and bit 2 are disabled and the "Yes/No" response is requested
bits 4 to 7:
0
bit 8:
0 - No help information available
1 - Help information available
<text> - String as prompt for text.

if ***<cmdType>=35*** *(GET INPUT)*

#STGI: <cmdType>,<commandDetails>,<text>,<responseMin>, <responseMax>[,<defaultText>]

where:

#STGI - SIM Tookit Get Information	
	<commandDetails> - unsigned Integer used as a bit field. 0..255 - used as a bit field: **bit 1**: 0 - Digits only (0-9, *, #, and +) 1 - Alphabet set **bit 2**: 0 - SMS default alphabet (GSM character set) 1 - UCS2 alphabet **bit 3**: 0 - ME may echo user input on the display 1 - User input shall not be revealed in any way. Hidden entry mode (see GSM 11.14) is only available when using digit input. In hidden entry mode only characters ('0'-'9', '*' and '#') are allowed. **bit 4**: 0 - User input to be in unpacked format 1 - User input to be in SMS packed format **bits 5 to 7**: 0 **bit 8**: 0 - No help information available 1 - Help information available **<text>** - string as prompt for text **<responseMin>** - minimum length of user input 0..255 **<responseMax>** - maximum length of user input 0..255 **<defaultText>** - string supplied as default response text *if **<cmdType>=36** (SELECT ITEM)* The first line of output is: **#STGI: <cmdType>,<commandDetails>,<numOfItems>[,<titleText>]** **<CR><LF>** One line follows for every item, repeated for **<numOfItems>**: **#STGI: <cmdType>,<itemId>,<itemText>[,<nextActionId>]** where: **<commandDetails>** - unsigned Integer used as a bitfield 0..255 - used as a bit field: **bit 1**: 0 - Presentation type is not specified 1 - Presentation type is specified in bit 2 **bit 2**:

#STGI - SIM Tookit Get Information

0 - Presentation as a choice of data values if bit 1 = '1'
1 - Presentation as a choice of navigation options if bit 1 is '1'

bit 3:
0 - No selection preference
1 - Selection using soft key preferred

bits 4 to 7:
0

bit 8:
0 - No help information available
1 - Help information available

<numOfItems> - number of items in the list
<titleText> - string giving menu title
<itemId> - item identifier
1..**<numOfItems>**
<itemText> - title of item
<nextActionId> - the next proactive command type to be issued upon execution of the menu item.
0 - no next action information available.

if ***<cmdType>=37*** *(SET UP MENU)*

The first line of output is:

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

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

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

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

bit 1:
0 - no selection preference
1 - selection using soft key preferred

bit 2 to 7:
0

bit 8:
0 - no help information available
1 - help information available

<numOfItems> - number of items in the list
<titleText> - string giving menu title
<itemId> - item identifier
1..**<numOfItems>**
<itemText> - title of item

#STGI - SIM Tookit Get Information	
	<nextActionId> - the next proactive command type to be issued upon execution of the menu item. 0 - no next action information available. Note: upon receiving the **#STGI** response, the TA must send **#STSR** command (see below) to confirm the execution of the proactive command and provide any required user response, e.g. selected menu item.
AT#STGI?	The read command can be used to request the currently ongoing **proactive command** and the SAT state in the format **#STGI: <state>,cmdType>** where: **<state>** - SAT interface state (see **#STIA**) **<cmdType>** - ongoing proactive command An error message will be returned if there is no pending command.
AT#STGI=?	Test command returns the range for the parameters **<state>** and **<cmdType>**.
Note	The unsolicited notification sent to the user: **#STN: 37** is an indication that the main menu of the SIM Application has been sent to the TA. It will be stored by the TA so that it can be displayed later at any time by issuing an **AT#STGI=37** command. A typical SAT session on AT interface starts after an **#STN: 37** unsolicited code is received, if enabled. At that point usually an **AT#STGI=37** command is issued, and after the SAT main menu has been displayed on TE an **AT#STSR=37,0,x** command is issued to select an item in the menu (see below). The session usually ends with a SIM action like sending an SMS, or starting a call. After this, to restart the session from the beginning going back to SAT main menu it is usually required an **AT#STSR=37,16** command. The unsolicited notification sent to the user: **#STN:237** is an indication that the main menu of the SIM Application has been removed from the TA, and it is no longer available. In this case **AT#STGI=37** command response will be always **ERROR**.

3.5.5.7.3 SIM Tookit Send Response - #STSR

#STSR - SIM Tookit Send Response	
AT#STSR= **[<cmdType>,** **<userResponse>** **[,<data>]]**	The write command is used to provide to SIM user response to a command and any required user information, e.g. a selected menu item. Parameters: **<cmdType>** - integer type; **proactive command** ID according to GSM 11.14 (see **#STGI**) **<userResponse>** - action performed by the user 0 - command performed successfully (call accepted in case of call setup) 16 - proactive SIM session terminated by user 17 - backward move in the proactive SIM session requested by the user 18 - no response from user 19 - help information required by the user 20 - USSD/SS Transaction terminated by user 32 - TA currently unable to process command 34 - user has denied SIM call setup request 35 - user cleared down SIM call before connection or network release **<data>** - data entered by user, depending on **<cmdType>**, only required if **<Result>** is 0: ***Get Inkey*** **<data>** contains the key pressed by the user; used character set should be the one selected with **+CSCS**. Note: if, as a user response, a binary choice (Yes/No) is requested by the SIM application using bit 3 of the **<commandDetails>** parameter the valid content of the **<inputString>** is: a) “IRA”, ”8859-1”, ”PCCP437” charsets: “Y” or “y” (positive answer) and “N” or “n” (negative answer) b) UCS2 alphabet “0079” or “0059” (positive answer) and “006E” or “004E” (negative answer) ***Get Input*** **<data>** - contains the string of characters entered by the user (see above) ***Select Item*** **<data>** - contains the item identifier selected by the user Note: Use of icons is not supported. All icon related actions will respond with no icon available.
AT#STSR?	The read command can be used to request the currently ongoing **proactive command** and the SAT state in the format **#STSRI: <state>,<cmdType>** where: **<state>** - SAT interface state (see **#STIA**) **<cmdType>** - ongoing proactive command

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

3.5.5.8 Jammed Detect & Report AT Commands

3.5.5.8.1 Jammed Detect & Report - #JDR

#JDR - Jammed Detect & Report	
AT#JDR= [<mode> [,<MNPL>, <DCMN>]]	Set command allows to control the Jammed Detect & Report feature. The MODULE can detect if a communication Jammer is active in its range and give indication to the user of this condition either on the serial line with an unsolicited code or on a dedicated GPIO by rising it. The MODULE can also report to the network the Jammed status condition, even if normal communications are inhibited by the Jammer, by using a unique message. Parameters: **<mode>** - behaviour mode of the Jammed Detect & Report 0 - disables Jammed Detect & Report (factory default) 1 - enables the Jammed Detect; the Jammed condition is reported on pin GPIO2/JDR GPIO2/JDR **Low** - Normal Operating Condition GPIO2/JDR **High** - Jammed Condition. 2 - enables the Jammed Detect; the Jammed condition is reported with a single unsolicited result code on serial line, in the format: **#JDR: <status>** where: **<status>** JAMMED - Jammed condition detected OPERATIVE - Normal Operating condition restored. This code will be shown only after a jammed condition has occurred. 3 - enables the Jammed Detect; the MODULE will make both the actions as for **<mode>=1** and **<mode>=2**. 4 - enables the Jammed Detect; the Jammed condition is reported with an unsolicited code every 3s on serial line, in the format: **#JDR: <status>** where:

#JDR - Jammed Detect & Report	
	<status> JAMMED - Jammed condition detected OPERATIVE - Normal Operating condition restored. This code will be shown only after a jammed condition has occurred. 5 - enables the Jammed Detect; the MODULE will make both the actions as for **<mode>=1** and **<mode>=4**. **<MNPL>** - Maximum Noise Power Level 0..127 **<DCMN>** - Disturbed Channel Minimum Number 0..254
AT#JDR?	Read command reports the current behaviour mode, Maximum Noise Power Level and Disturbed Channel Minimum Number, in the format: **#JDR: <mode>,<MNPL>,<DCMN>**
AT#JDR=?	Test command reports the supported range of values for the parameters **<mode>**,**<MNPL>** and **<DCMN>**
Example	AT#JDR=2 OK *…jammer enters in the range…* #JDR: JAMMED *…jammer exits the range…* #JDR: OPERATIVE
Note	It is suggested not to change the default setting for Maximum Noise Power Level and Disturbed Channel Minimum Number. If the device is installed in a particular environment where the default values are not satisfactory the two parameters **<MNPL>** and **<DCMN>** permit to adapt the detection to all conditions.

3.5.5.9 SAP AT Commands Set

3.5.5.9.1 Remote SIM Enable - #RSEN

#RSEN – Remote SIM Enable	
AT#RSEN=<mode>, [<sapformat>], [<role>], [<muxch>], [<beacon>]	Set command is used to enable/disable the Remote SIM feature. The command returns **ERROR** if requested on a non multiplexed interface Parameter: **<mode>** 0 - disable 1 - enable **<sapformat>** 0 - X-SAP (unsupported) 1 - binary SAP (default) **<role>** 0 - remote SIM Client (default) 1 - remote SIM Server (unsupported) **<muxch>** - MUX Channel Number; mandatory if **<mode>=1** and **<sapformat>=1** 1..3 **<beacon>** - retransmition timer of SAP Connection Request 0 - only one transmition (default) 1..100 - timer interval in seconds. NOTES: If the module has a SIM inserted, when it receives the enable Command: - de-register from the actual network - de-initialize the current SIM. NOTE for **<sapformat>=1** (binary SAP): while RSEN is activate SAP connection status is signalled with following URC: **#RSEN: <conn>** where **<conn>** - connection status 0 - disconnected 1 - connected
AT#RSEN?	Read command returns the connection status of Remote SIM feature
AT#RSEN=?	Test command returns all supported values of Remote SIM Enable command

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
DNS	Domain Name System Server
DSR	Data Set Ready
DTE	Data Terminal Equipment
DTMF	Dual Tone Multi Fraquency
DTR	Data Terminal Ready
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	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

5 Document Change Log

Revision	Date	SW Release	Changes
Rev. 0	April 2009		Initial release
Rev. 1	May 2009		Revised several specific AT command