AT Commands Reference Guide

For CE910-SL

80462ST10669A Rev 2 – 2015-11-25

Making machines talk.

APPLICABILITY TABLE

PRODUCT
CE910-SL

SW Version
22.00.001

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Contents

1. Introduction

1.1. Scope

This document provides a detailed specification and a comprehensive listing of all AT commands supported by the CE910-SL.

1.2. Audience

Readers of this document should be familiar with Telit modules and the means of controlling them using AT Commands.

1.3. Contact Information, Support

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

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

Alternatively, use:
http://www.telit.com/en/products/technical-support-center/contact.php
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To register for product news and announcements or for product questions contact Telit's Technical Support Center (TTSC).
Our aim is to make this guide as helpful as possible. Keep us informed of your comments and suggestions for improvements.
Telit appreciates feedback from the users of our information.

1.4. Document Organization

This document contains the following chapters:

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

Chapter 2: "Overview" discusses the goal of this document and implementation suggestions.

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

1.5. Text Conventions

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

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

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

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

1.6. Related Documents

- ETSI GSM 07.07 specification and rules
  http://www.3gpp.org/ftp/Specs/archive/07_series/07.07/
- ETSI GSM 07.05 specification and rules
  http://www.3gpp.org/ftp/Specs/archive/07_series/07.05/
- Hayes standard AT command set

2. Overview

2.1. About the document

This document describes all AT commands implemented on the Telit wireless module CE910-SL.

3. AT COMMANDS

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

1. TIA/EIA/707-A.3 AT Command.
2. Partial Hayes standard AT command set.
3. Partially 3GPP 27.005 specific AT Commands for SMS (Short Message Service).
4. Partially ETSI 3GPP 27.007 specific AT Commands for controlling voice and Phonebook.

Moreover, the Telit wireless module family supports Telit proprietary AT commands for specific purposes.
In case of Telit Test AT Commands, the Telit wireless module family should be checked individually and then should be rebooted when completed the operation.
The following is a description of how to use the AT commands with the Telit wireless module family.

3.1. Definitions

The following syntactical definitions apply:

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

<LF> **Linefeed character**, is the character recognized 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 the carriage return character if verbose result codes are used (**V1** option used). Otherwise, if numeric format result codes are used (**V0** option used) it will not appear in the result codes.

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

[...] Optional sub parameter of a command or an optional part of TA information response is enclosed in square brackets. Brackets themselves do not appear in the command line. When the sub parameter is not given in AT commands which have a Read command, new value equals to its previous value. In AT commands which do not store the values of any of their sub parameters, and so do not have a Read command, called *action type*

[1] 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.

commands, action should be taken on the basis of the recommended default setting of the sub parameter.

3.2. AT Command Syntax

The syntax rules followed by the Telit implementation of both Hayes AT commands and GSM/WCDMA 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 command may be "set" (to store a value or values for later use), "read" (to determine the current value or values stored), or "tested" (to determine ranges of values supported). Each of them has a test command (trailing **=?**) to give information about the type of its sub parameters; they also have a Read command (trailing **?**) to check the current values of sub parameters.

- **Action type commands**. This type of command may be "executed" or "tested".
  - "executed" to invoke a particular function of the equipment, which generally involves more than the simple storage of a value for later use
  - "tested" to determine:
    Whether or not the equipment implements the Action Command (in this case issuing the corresponding Test command - trailing **=?** - returns the **OK** result code), and, if sub parameters are associated with the action, the ranges of sub parameters values that are supported.

Action commands do not store the values of any of their possible sub parameters.
In the case of a Telit command, the "read" action may be used for a specific purpose.
Moreover:

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

If all the sub parameters of a parameter type command **+CMD** (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 sub parameters to be retained.

3.2.1. String Type Parameters

A string either enclosed between quotes or not, is considered a valid string type parameter input. According to V25 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.

A small set of commands requires always writing 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 sub parameter
- **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 sub parameter is omitted.
- **+CMD1?<CR>** This is a Read command for checking current sub parameter values
- **+CMD1=?<CR>** This is a test command for checking possible sub parameter values

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

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

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, an error message is received but it is not possible to determine which one of them has failed the execution.

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

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

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

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

NOTE: **The command line buffer accepts a maximum of 80 characters. If this number is exceeded none of the commands will be executed and TA returns ERROR.**

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

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

Numeric Format	Verbose Format
General errors:	
0	phone failure
1	No connection to phone
2	phone-adaptor link reserved
3	operation not allowed
4	operation not supported
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
General purpose error:	
100	unknown
560	cannot open socket
561	remote disconnected or time-out
562	connection failed
563	tx error
564	already listening
601	wrong state
602	Can not activate
606	Bad or no response from server
608	Already connected
613	Data socket yet opened in cmdmode
614	FTP CmdMode data socket closed
615	Service is not available
616	Invalid user id
617	Invalid password
618	File is not found
683	Active call state
684	RR connection Established

*(Values in parentheses are 3GPP TS 24.008 cause codes)

3GPP TS 27.007 CDMA Network Problems

Numeric Format	Meaning
148	Unspecified CDMA error

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
603	Cannot resolve name
605	Cannot connect control socket
607	Not connected

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

This is NOT a command; it is the error response to +Cxxx SMS commands.
Syntax: **+CMS ERROR: <err>**
Parameter: **<err>** - numeric error code. The **<err>** values are reported in the table:

Numeric Format	Meaning
0-1	ME failure
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
320	Memory failure
321	Invalid memory index
322	Memory full
331	No network service
332	Network time-out
340	Invalid transaction ID
500	unknown error

The following values are IS-41D SMS cause codes:

Network Problems

Numeric Format	Meaning
0	Address vacant
1	Address translation failure
2	Network resource shortage
3	Network failure
4	Invalid teleservice id
5	Other network problem
6	Other network problem more first

Terminal Problems

Numeric Format	Meaning
32	No page response
33	Destination busy
34	No Acknowledgement
35	Network failure
36	SMS delivery postponed

37	Destination out of service
38	Destination no longer at this address
39	Other Terminal problem
40	Other terminal problem more first
47	Other terminal problem more last
48	SMS delivery postponed more first
63	SMS delivery postponed more last

Radio Interface Problems

Numeric Format	Meaning
64	Radio if resource shortage
65	Radio if incompatible
66	Other radio if problem
67	Other radio if problem more first
95	Other radio if problem more last

General Problems

Numeric Format	Meaning
96	Unexpected parameter size
97	SMS origination denied
98	SMS termination denied
99	Supplemental service not supported
100	SMS not supported
101	RESERVED 101
102	Missing expected parameter
103	Missing mandatory parameter
104	Unrecognized parameter value
105	Unexpected parameter value
106	User data size error
107	Other general problems
108	Other general problems more first

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 two other 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 are 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, depending on the command type. Commands that do not interact with the network, and involve only internal set up settings or readings typically have quicker response times than commands that require network interaction.

In the table below are listed only the commands whose interaction with the network could lead to long response timings. When not otherwise specified, timing is referred to set command.
For phonebook and SMS writing and reading related commands, timing is referred to commands issued after phonebook sorting is completed.

Command	Estimated maximum time to get response (Seconds)
+CPBR	5 (single reading) 15 (complete reading of a 50 records full phonebook)
+CPBF	10 (string present in a 50 records full phonebook) 5 (string not present)
+CPBW	5
+VTS	5 (transmission of full “1234567890*#ABCD” string with no del ay between tones, default duration)
+CSMS	5
+CMGF	5
+CSMP	5
+CNMI	5
+CMGS	180 / 5 for prompt”>”
+CMSS	180
+CMGW	5 / 5 for prompt”>”
+CMGD	5
+CMGR	5
+CMGL	5
#EMAILD	60
#EMAILACT	150
#SEMAIL	210 (context activation + DNS resolution)

#SKTD	140 (DNS resolution + timeout set with AT#SKTCT)
#SKTOP	290 (context activation + DNS resolution + timeout set with AT# SKTCT)
#QDNS	170
#FTPOPEN	10sec (timeout set with AT#FTPTO, in case no response is receiv ed from server)
#FTPCLOSE	10sec (timeout set with AT#FTPTO, in case no response is receiv ed from server)
#FTPTYPE	10sec (timeout set with AT#FTPTO, in case no response is receiv ed from server)
#FTPDELE	10sec (timeout set with AT#FTPTO, in case no response is receiv ed from server)
#FTPPWD	10sec (timeout set with AT#FTPTO, in case no response is receiv ed from server)
#FTPCWD	10sec (timeout set with AT#FTPTO, in case no response is receiv ed from server)
#FTPLIST	10sec (timeout set with AT#FTPTO, in case no response is receiv ed from server) + time to get listing
#FTPPUT	10sec (timeout set with AT#FTPTO, in case no response is receiv ed from server)
#SGACT	150
#SH	10
#SD	140 (DNS resolution + connection timeout set with AT#SCFG)

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 finished sending all 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 regardless to wait for at least 20ms between the end of the reception of the response and issuing 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 lose some characters if placed in autobauding at high speeds. If this problem is encountered the baud rate should be adjusted with **+IPR** command.

3.3. Storage

3.3.1. Factory Profile and User Profiles

The Telit wireless modules store the values set by several commands in the internal non-volatile memory (NVM), allowing this setting to remain 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** that was historically the one that was saved and restored in early releases of code, and the **extended section** that 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 start up. **&Y** instructs the device to load at start up only the **base section**. **&P** instructs the device to load at start up the full profile: **base + extended sections**.
The **&F** command resets to factory profile values in the base section of profile, while the **&F1** resets to factory profile values in 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**, while others are stored by issuing specific commands (**+CSAS**, **#SLEDSAV**, **#VAUXSAV**, **#SKTSAV**, **#ESAV**); all of these values are read at power-up.

The values set by following commands are stored in the profile base section:

AUTOBAUD :	+IPR
COMMAND ECHO:	E
RESULT MESSAGES:	Q
VERBOSE MESSAGES:	V
EXTENDED MESSAGES:	X
FLOW CONTROL OPTIONS:	&K, +IFC
DSR (C107) OPTIONS:	&S
DTR (C108) OPTIONS:	&D
DCD (C109) OPTIONS :	&C
RI (C125) OPTIONS :	\R
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:

+FCLASS,	+CNMI ,	+ILRR,
+DR,	+CSCS,	+CRC,
+CVHU,	+CREG,	+CLIP,
+CLIR,	+CCWA,	+CPBS,
+CMEE,	+CMGF,	+CSDH,

#ACAL,	#PSMRI,	#ACALEXT,
#ECAM,	#SMOV,	#SKIPESC,
#E2ESC	#CFLO,	#E2SLRI,
#DAC,	#E2SMSRI,	+CALM,
+CRSL,	+CMUT,	+CLVL,
+VTD,	#PCMTXG	#PCMRXG
#DVICFG,	#CAP,	#SRS,
#SRP,	#STM,	#DVI,
#SHFEC,	#HSMICG,	#SHFSD,
#SPKMUT,	#PSEL,	#HFRECG
#HSRECG,	#SHFAGC,	#SHSAGC,
#SHSEC,	#SHSNR,	#SHFNR,
#SHSSD,	#TSVOL	#HFMICG

#TEMPMON (lt is partially stored in NVM, see command description) #NITZ
#NOPT

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 start up:

#SELINT,	#DIALMODE,	#SCFG,
#ICMP	#DNS,	#TCPMAXDAT,
#TCPREASS	#USERID	#PASSW
#TESTMODE	#SHSFTX,	#SHSFRX
#SHFFTX,	#SHFFRX,	#SRXAGC,
#SHSAGCTX,	#SHSAGCRX,	#SHFAGCTX
#SHFAGCRX		

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

+CSMP
Stored by +CSAS[3] command and restored by +CRES[4] command.

#SLED
Stored by #SLEDSAV command.

#VAUX
Stored by #VAUXSAV command.

#PKTSZ, #DSTO, #SKTTO,
#SKTSET #SKTCT
Stored by #SKTSAV command and automatically restored at start up; factory default values are restored by #SKTRST command.

#ESMTP, #EADDR, #EUSER,
#EPASSW
stored by #ESAV command and automatically restored at start up; factory default values are restored by #ERST command.

[3] Both commands +CSAS and +CRES deal with non-volatile memory

3.4. AT Commands Availability Table

The following table lists the AT command set and matches the availability of every single command versus the Telit wireless module family.

COMMAND	CE910-SL	Function
Command Line General Format – Command Line Prefixes		
AT	•	Starting A Command Line
A/	•	Last Command Automatic Repetition Prefix
#/	•	Repeat Last Command
General Configuration Commands		
#NOPT	•	Set Notification Port
#SELINT	•	Select Interface Style
#MSN	•	Manufacturer Serial Number
#HWREV	•	Hardware revision
#DIAGCFG	•	Diagnostic Port Configuration
Hayes AT Commands – Generic Modem Control		
&F	•	Set To Factory-Defined Configuration
Z	•	Soft Reset
+FCLASS	•	Select Active Service Class
&Y	•	Designate A Default Reset Basic Profile
&P	•	Designate A Default Reset Full Profile
&W	•	Store Current Configuration
&Z	•	Store Telephone Number In The Module Internal Phonebook
&N	•	Display Internal Phonebook Stored Numbers
+GMI	•	Manufacturer Identification
+GMM	•	Model Identification
+GMR	•	Revision Identification
+GCAP	•	Capabilities List
+GSN	•	Serial Number
&V	•	Display Current Base Configuration And Profile
&V0	•	Display Current Configuration And Profile
&V1	•	S Registers Display
&V3	•	Extended S Registers Display
&V2	•	Display Last Connection Statistics
\V	•	Single Line Connect Message
+GCI	•	Country Of Installation
%L	•	Line Signal Level

%Q	•	Line Quality
L	•	Speaker Loudness
M	•	Speaker Mode
Hayes AT Commands – DTE-Modem Interface Control		
E	•	Command Echo
Q	•	Quiet Result Codes
V	•	Response Format
X	•	Extended Result Codes
I	•	Identification Information
&C	•	Data Carrier Detect (DCD) Control
&D	•	Data Terminal Ready (DTR) Control
\Q	•	Standard Flow Control
&K	•	Flow Control
&S	•	Data Set Ready (DSR) Control
\R	•	Ring (RI) Control
+IPR	•	Fixed DTE Interface Rate
+IFC	•	DTE-Modem Local Flow Control
+ILRR	•	DTE-Modem Local Rate Reporting
+ICF	•	DTE-Modem Character Framing
Hayes AT Commands – Call Control		
D	•	Dial
T	•	Tone Dial
P	•	Pulse Dial
A	•	Answer
H	•	Disconnect
O	•	Return To On Line Mode
&G	•	Guard Tone
&Q	•	Sync/Async Mode
Hayes AT Commands – Modulation Control		
+MS	•	Modulation Selection
%E	•	Line Quality Monitor And Auto Retrain Or Fallback/Fall forward
Hayes AT Commands – Compression Control		
+DS	•	Data Compression
+DR	•	Data Compression Reporting
Hayes AT Commands – Break Control		
\B	•	Transmit Break To Remote
\K	•	Break Handling

\N	•	Operating Mode
Hayes AT Commands – S Parameters		
S0	•	Number Of Rings To Auto Answer
S1	•	Ring Counter
S2	•	Escape Character
S3	•	Command Line Termination Character
S4	•	Response Formatting Character
S5	•	Command Line Editing Character
S7	•	Connection Completion Time-Out
S10	•	Carrier Off With Firm Time
S12	•	Escape Prompt Delay
S25	•	Delay To DTR Off
S30	•	Disconnect Inactivity Timer
S38	•	Delay Before Forced Hang Up
Hayes AT Commands – Error Control		
+ES	•	Error Control Selection
ETSI GSM 07.07.27.007 – General		
+CGMI	•	Request Manufacturer Identification
+CGMM	•	Request Model Identification
+CGMR	•	Request Revision Identification
+CGSN	•	Request Product Serial Number Identification
+CSCS	•	Select TE Character Set
+CIMI	•	Request International Mobile Subscriber Identity (IMSI)
+CMUX	•	Multiplexing Mode
ETSI GSM 07.07/27.007 – Call Control		
+CHUP	•	Hang Up Call
+CEER	•	Extended Error Report
+CRC	•	Cellular Result Codes
+CVHU	•	Voice Hang Up Control
ETSI GSM 07.07/27.007 – Network Service Handling		
+CNUM	•	Subscriber Number
+COPN	•	Read Operator Names
+CREG	•	Network Registration Report
+CLIP	•	Calling Line Identification Presentation
+CLIR	•	Calling Line Identification Restriction
+CCWA	•	Call Waiting
+CHLD	•	Call Holding Services
+CLCC	•	List Current Calls

ETSI GSM 07.07/27.007 – Mobile Equipment Control		
+CPAS	•	Phone Activity Status
+CFUN	•	Set Phone Functionality
+CSQ	•	Signal Quality
+CPBS	•	Select Phonebook Memory Storage
+CPBR	•	Read Phonebook Entries
+CPBF	•	Find Phonebook Entries
+CPBW	•	Write Phonebook Entry
+CCLK	•	Clock Management
+CALA	•	Alarm Management
+CALM	•	Alert Sound Mode
+CRSL	•	Ringer Sound Level
+CLVL	•	Loudspeaker Volume Level
+CMUT	•	Microphone Mute Control
+CLAC	•	Available AT commands
+CALD	•	Delete Alarm
ETSI GSM 07.07/27.007 – Mobile Equipment Errors		
+CMEE	•	Report Mobile Equipment Error
ETSI GSM 07.077/27.007 – Voice Control		
+VTS	•	DTMF Tones Transmission
+VTD	•	Tone Duration
ETSI GSM 07.077/27.007 – Commands For Battery Charger		
+CBC	•	Battery Charge
ETSI GSM 07.05/27.005 – General Configuration		
+CSMS	•	Select Message Service
+CPMS	•	Preferred Message Storage
+CMGF	•	Message Format
ETSI GSM 07.05/27.005 – Message Configuration		
+CSMP	•	Set Text Mode Parameters
+CSDH	•	Show Text Mode Parameters
+CSAS	•	Save Settings
+CRES	•	Restore Settings
ETSI GSM 07.05/27.005 – Message Receiving And Reading		
+CNMI	•	New Message Indications To Terminal Equipment
+CMGL	•	List Messages
+CMGR	•	Read Message

ETSI GSM 07.05/27.005 – Message Sending And Writing		
+CMGS	•	Send Message
+CMSS	•	Send Message From Storage
+CMGW	•	Write Message To Memory
+CMGD	•	Delete Message
Custom AT Commands – General Configuration		
#CGMI	•	Manufacturer Identification
#CGMM	•	Model Identification
#CGMR	•	Revision Identification
#CGSN	•	Product Serial Number Identification
#CIMI	•	International Mobile Subscriber Identity (IMSI)
#MEID	•	Mobile Equipment Identifier
#SHDN	•	Software Shut Down
#FASTSHDN	•	Fast power down
#Z	•	Extended Reset
#REBOOT	•	Reboot
$RESET	•	Reset
#WAKE	•	Wake From Alarm Mode
#QTEMP	•	Query Temperature Overflow
#TEMPMON	•	Temperature monitor
#GPIO	•	General Purpose Input/Output Pin Control
#SLED	•	STAT_LED GPIO Setting
#SLEDSAV	•	Save STAT_LED GPIO Setting
#E2SMSRI	•	SMS Ring Indicator
#ADC	•	Analog/Digital Converter Input
#DAC	•	Digital/Analog Converter Control
#VAUX	•	Auxiliary Voltage Output Control
#VAUXSAV	•	#VAUX Saving
#V24CFG	•	V24 Output Pins Configuration
#V24	•	V24 Output Pins Control
#CBC	•	Battery and Charger Status
#DIALMODE	•	ATD Dialing Mode
#ACAL	•	Automatic Call
#ACALEXT	•	Extended Automatic Call
#ECAM	•	Extended Call Monitoring
#SMOV	•	SMS Overflow
#CODEC	•	Audio Codec
#NITZ	•	Network Timezone

#SKIPESC	•	Skip Escape Sequence
#E2ESC	•	Escape Sequence Guard Time
#GAUTH	•	PPP Connection Authentication Type
#RTCSTAT	•	RTC Status
#PSMRI	•	Power Saving Mode Ring Indicator
#CFLO	•	Command Mode Flow Control
#GSMAD	•	GSM Antenna Detection
#I2CWR	•	I2C data via GPIO
#I2CRD	•	I2C data from GPIO
#CSQLED	•	Control GPIOs based on Signal Strength
#MONI	•	Cell Monitor
#CPBD	•	Delete All Phonebook Entries
#TESTMODE	•	Enable Test Mode command in not signaling mode
Custom AT Commands – Audio AT commands		
#CAP	•	Change Audio Path
#OAP	•	Open Audio Loop
#SRS	•	Select Ringer Sound
#SRP	•	Select Ringer Path
#STM	•	Signaling Tones Mode
#TONE	•	Tone Playback
#TSVOL	•	Tone Classes Volume
#DVI	•	Digital Voiceband Interface
#DVICFG	•	DVI configuration
#AXE	•	AXE Pin Reading
#SHFEC	•	Handsfree Echo Canceller
#HFMICG	•	Handsfree Microphone Gain
#HSMICG	•	Handset Microphone Gain
#SHFSD	•	Set Headset Sidetone
#SPKMUT	•	Speaker Mute Control
#HFRECG	•	Handsfree Receiver Gain
#HSRECG	•	Handset Receiver Gain
#PRST	•	Audio Profile Factory Configuration
#PSAV	•	Audio Profile Configuration Save
#PSEL	•	Audio Profile Selection
#PSET	•	Audio Profile Setting
#SHFAGC	•	Handsfree Automatic Gain Control
#SHFNR	•	Handsfree Noise Reduction
#SHSAGC	•	Handest Automatic Gain
#SHSEC	•	Handset Echo Canceller

#SHSNR	•	Handset Noise Reduction
#SHSSD	•	Set Handset Sidetone
#PCMTXG	•	PCM Tx Volume
#PCMRXG	•	PCM Rx Volume
#SHFAGCRX	•	Handsfree RX AGC Value tuning
#SHFAGCTX	•	Handsfree TX AGC Value tuning
#SHSAGCRX	•	Handset RX AGC Value tuning
#SHSAGCTX	•	Handset TX AGC Value tuning
#SRXAGC	•	RX AGC enable
#SHSFRX	•	Handset RX filter coefficients values
#SHSFTX	•	Handset TX filter coefficients values
#SHFFRX	•	Handsfree RX filter coefficients values
#SHFFTX	•	Handsfree TX filter coefficients values
#DTMF	•	Embedded DTMF decoder enabling
#SPCM	•	PCM Play and Receive
Custom AT Commands – Multisocket		
#SS	•	Socket Status
#SI	•	Socket Info
#SGACT	•	Context Activation
#SGACTCFGEXT	•	Context Activation and Configuration Extended
#SH	•	Socket Shutdown
#SCFG	•	Socket Configuration
#SCFGEXT	•	Socket Configuration Extended
#SCFGEXT2	•	Socket Configuration Extended2
#CGPADDR	•	Show Address
#SD	•	Socket Dial
#SA	•	Socket Accept
#SO	•	Socket Restore
#SL	•	Socket Listen
#SLUDP	•	Socket Listen UDP
#SRECV	•	Received Data In Command Mode
#SSEND	•	Send Data In Command Mode
#SSENDEXT	•	Send Data In Command Mode Extended
#SLASTCLOSURE	•	Detect the cause of a socket disconnection
Custom AT Commands - FTP		
#FTPTO	•	FTP Time-Out
#FTPOPEN	•	FTP Open
#FTPCLOSE	•	FTP Close
#FTPPUT	•	FTP Put

#FTPGET	•	FTP Get
#FTPTYPE	•	FTP Type
#FTPMSG	•	FTP Read Message
#FTPDELE	•	FTP Delete
#FTPPWD	•	FTP Print Working Directory
#FTPCWD	•	FTP Change Working Directory
#FTPLIST	•	FTP List
Custom AT Commands – Enhanced Easy GPRS® Extension		
#USERID	•	Authentication User ID
#PASSW	•	Authentication Password
#PKTSZ	•	Packet Size
#DSTO	•	Data Sending Time-Out
#SKTTO	•	Socket Inactivity Time-Out
#SKTSET	•	Socket Definition
#SKTOP	•	Socket Open
#QDNS	•	Query DNS
#CACHEDNS	•	DNS Response Caching
#DNS	•	Manual DNS Selection
#SKTCT	•	Socket TCP Connection Time-Out
#SKTSAV	•	Socket Parameters Save
#SKTRST	•	Socket Parameters Reset
#CDMADC	•	CDMA Data Connection
#SKTD	•	Socket Dial
#SKTL	•	Socket Listen
#E2SLRI	•	Socket Listen Ring Indicator
#FRWL	•	Firewall Setup
#GDATAVOL	•	PPP Data Volume
#ICMP	•	ICMP Support
#PING	•	PING Request
#TCPMAXDAT	•	Maximum TCP Payload Size
#TCPREASS	•	TCP reassembly
Custom AT Commands – E-Mail Management		
#ESMTP	•	E-mail SMTP Server
#EADDR	•	E-mail Sender Address
#EUSER	•	E-mail Authentication User Name
#EPASSW	•	E-mail Authentication Password
#SEMAIL	•	E-mail Sending With PPP Context Activation
#EMAILACT	•	E-mail PPP Context Activation

#EMAILD	•	E-mail Sending
#ESAV	•	E-mail Parameters Save
#ERST	•	E-mail Parameters Reset
#EMAILMSG	•	SMTP Read Message
Custom AT Commands – HTTP		
#HTTPCFG	•	Configure HTTP parameters
#HTTPQRY	•	Send HTTP GET, HEAD or DELETE request
#HTTPSND	•	Send HTTP POST or PUT request
#HTTPRCV	•	Receive HTTP server data
Custom AT Commands – Generic Configuration AT Commands		
#CAI	•	Common Air Interface parameters
#MODEM	•	Modem Configuration parameters
#ENG	•	Mobile NAM parameters
#NOTI	•	CDMA Notification
$MDN	•	Mobile Directory Number
$MSID	•	Mobile Station ID
+SERVICE	•	Notification of Service
#RTN	•	Reverse Logistic Support
$CELLPOS	•	Base Station Lat/long Data
Custom AT Commands – Air interface and call processing		
#PREFRC	•	Preferred Radio Configuration
#VOICEPRIV	•	Voice Privacy Setting
#PREFVOC	•	Vocoder Setting Value Reading or Writing
#OTASPEN	•	OTASP Setting
+CFG	•	Configuration String
#CLRMRU	•	Clear MRU Table
#ORDREG	•	Receive Ordered registration message
Custom AT Commands – DATA Session AT Commands		
+CTA	•	Data Inactivity Timer
+PZID	•	Packet Zone ID
$GODORMANT	•	Interrupt Packet Data
#TESTORI	•	Test Origination
+CRM	•	RM Interface Setting
#CSIPCFG	•	CDMA Static IP Configuration
Custom AT Commands – QCT Proprietary AT Commands		
$QCMIP	•	Enable/Disable Mobile IP

$QCMDR	•	Medium Data Rate

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	3GPP TS 27.007

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 executes 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 does not need a fixed IPR.
Reference	V25ter

3.5.1.1.3. *Repeat Last Command - #/*

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

3.5.2. General Configuration Commands

3.5.2.1.1. *Select Interface Style - #SELINT*

#SELINT - Select interface style	
AT#SELINT=<v>	Set command sets the AT command interface style depending on parameter <v>. Parameter: **<v>** - AT command interface 2 - switches the AT command interface style of the product, to CE910-SL
AT#SELINT?	Read command reports the current interface style.
AT#SELINT=?	Test command reports the available range of values for parameter **<v>**.
Note	It is suggested to reboot the module after every **#SELINT** setting.

3.5.2.1.2. *Set Notification Port - #NOPT*

#NOPT - Set notification port	
AT#NOPT=<num>	Set command specifies the port print out Notification (URC) messages Parameter: **<num>** - Notification Port 0 – All Ports; URC messages are sent to all ports. < default value > 1 – Main UART Port only 2 – Telit USB Modem Port only 3 – Multiplxer DLCI1 Port only 4 – Multiplxer DLCI2 Port only 5 – Multiplxer DLCI3 Port only 6 – Multiplxer DLCI4 Port only 7 – Telit USB Diagnostic Port only Note : URC message sent out on this port only if the port is opened for AT interface and enabled as notification(URC) service. Note : If the port is closed and enabled as notification(URC) service, URC message will be discarded. Note : Main UART & Telit USB Modem Ports opened for AT interface at power on time, automatically and other ports opened by the specific behaviour, as below.

#NOPT - Set notification port	
	Multiplexer DLCI 1-4 Ports : Multiplexer(+CMUX) is running Note : The notification output on Telit USB Diagnotic Port is available, only if AT#DIAGCFG setting value is 1.
AT#NOPT?	Read command reports the current notification port.
AT#NOPT=?	Test command reports the available range of values for parameter **<num>**.

3.5.2.1.3. *Manufacturer Serial Number – #MSN*

#MSN - Manufacturer serial Number	
AT#MSN	Returns the device board serial number. Note: the format of the numbers in output is always 7digits, left-filled with 0s
AT#MSN=?	Test command returns **OK** result code.

3.5.2.1.4. *Hardware revision – #HWREV*

#HWREV - Hardware revision	
AT#HWREV	Execution command returns the device Hardware revision identification code without command echo.
AT#HWREV=?	Test command returns the **OK** result code.

3.5.2.1.5. *Diagnostic Port Configuration – #DIAGCFG*

#DIAGCFG - Diagnostic Port Configuration	
AT#DIAGCFG=<mode>	Set command configure the mode of Telit Diagnostic Port Parameter: <**mode**> 0 - Telit Diagnostic Port used as the diagnostic channel (default) 1 - Telit Diagnostic Port used as AT channel Note: If mode-1 enabled, the diagnostic channel changed to UART2. Note: In the mode-1, AT channel doesn't support the control line (DCD/RI/DSR/DTR) behavior Note: If this command performed, successfully, the device will be reset, automatically and new setting applied at the next boot-up. Note: This setting stored in NVM area. Note: When upgrading new firmware, mode-0 MUST be enabled. (F/W available on Telit USB diagnostic port)
AT#DIAGCFG?	Read command reports the current diagnostic port configuration.
AT#DIAGCFG=?	Test command reports the available range of values for parameter **<mode>**.

3.5.3. Hayes Compliant AT Commands

3.5.3.1. Generic Modem Control

3.5.3.1.1. *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 or the extended section is considered (full factory profile). Note: if parameter **<value>** is omitted, the command has the same behaviour as **AT&F0**
Reference	V25ter.

3.5.3.1.2. *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.

3.5.3.1.3. *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>** 0 - data (factory default) 1 - fax class 1 (only for backward compatibility) 2.0- fax class 2.0 (only for backward compatibility) 8 - voice

+FCLASS - Select Active Service Class	
	Note: CE910 doesn't support FAX
AT+FCLASS?	Read command returns the current configuration value of the parameter **<n>**.
AT+FCLASS=?	Test command returns all supported values of the parameters **<n>**.
Reference	3GPP TS 27.007

3.5.3.1.4. *Default Reset Basic Profile Designation - &Y*

&Y - Default Reset Basic Profile Designation	
AT&Y[<n>]	Execution command defines the basic profiles that will be loaded on start up. 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 start up. Note: if parameter is omitted, the command has the same behaviour as **AT&Y0**

3.5.3.1.5. *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 start up. 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 start up. Note: if parameter is omitted, the command has the same behaviour as **AT&P0**
Reference	Telit Specifications

3.5.3.1.6. *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**.

3.5.3.1.7. *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: **<nr>** should be inputted without the double quotation mark (“”). 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*>**.

3.5.3.1.8. *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.

3.5.3.1.9. *Manufacturer Identification - +GMI*

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

3.5.3.1.10. *Model Identification - +GMM*

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

3.5.3.1.11. Revision Identification - +GMR

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

3.5.3.1.12. Capabilities List - +GCAP

+GCAP - Capabilities List	
AT+GCAP	Execution command returns the equipment supported command set list. Where: **+CIS707-A**: IS-707-A (High Speed Packet Data Services) command set **+FCLASS**: Fax command set **+ES**: Error Control Selection command set **+DS**: Data Service common modem command set **+MS**: Mobile Specific command set Note: CE910 doesn't support FAX
Reference	V.25ter

3.5.3.1.13. Serial Number - +GSN

+GSN - Serial Number	
AT+GSN	Execution command returns the device board serial number in 7-digit decimal. Note: The number returned is not the IMSI, it is only the board number
Reference	V.25ter

3.5.3.1.14. 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.

3.5.3.1.15. 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.

3.5.3.1.16. 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:

&V1 - S Registers Display	
	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

3.5.3.1.17. *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

3.5.3.1.18. *Display Last Connection Statistics - &V2*

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

3.5.3.1.19. *Single Line Connect Message - \V*

\V - Single Line Connect Message

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

3.5.3.1.20. *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.
AT+GCI?	Read command reports the currently selected country code.
AT+GCI=?	Test command reports the supported country codes.
Reference	V25ter.

3.5.3.1.21. *Line Signal Level - %L*

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

3.5.3.1.22. *Line Quality - %Q*

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

3.5.3.1.23. *Speaker Loudness - L*

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

3.5.3.1.24. *Speaker Mode - M*

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

3.5.3.2. DTE - Modem Interface Control

3.5.3.2.1. *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

3.5.3.2.2. *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 **ATQ0**
Example	*After issuing ATQ1 or ATQ2* AT+CREG=? **+CREG: (0-2) nothing is appended to the response**
Reference	V25ter

3.5.3.2.3. *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

<table>
<tr><td>V - Response Format</td><td></td></tr>
<tr><td></td><td>
<table>
<tr><td>information responses</td><td><text><CR><LF></td></tr>
<tr><td>result codes</td><td><numeric code><CR></td></tr>
</table>
1 - full headers and trailers and verbose format of result codes (factory default)
<table>
<tr><td>information responses</td><td><CR><LF>
<text><CR><LF></td></tr>
<tr><td>result codes</td><td><CR><LF>
<verbose code><CR><LF></td></tr>
</table>
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</td></tr>
<tr><td>Reference</td><td>V25ter</td></tr>
</table>

3.5.3.2.4. *Extended Result Codes – X*

X - Extended Result Codes	
ATX[<n>]	Set command selects the result code messages subset used by the modem to inform the **DTE** of the result of the commands. Parameter: **<n>** 0 - send only **OK**, **CONNECT**, **RING**, **NO CARRIER**, **ERROR**, **NO ANSWER** results. 1..4 - reports all messages (factory default is 1). Note: If parameter is omitted, the command has the same behaviour of **ATX0** Note: Current value is returned by AT&V Parameter: <n> 0 - EXTENDED MESSAGES : X0=NO 1..4 - EXTENDED MESSAGES : X1=YES
Note	For complete control on **CONNECT** response message see also **+DR** command.
Reference	V25ter

3.5.3.2.5. *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

3.5.3.2.6. *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>**

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

3.5.3.2.7. *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 – device ignores **DTR** transitions (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 – device ignores **DTR** transitions 4 - C108/1 operation is disabled; same behaviour as for <n>=3 5 - C108/1 operation is enabled; same behaviour as for <n>=2 Note: if a connection has been set up issuing either **#SKTD** or **#SKTOP**, then **AT&D1** has the same effect as **AT&D2**. If a connection has been set up issuing AT#SD then AT&D1 and AT&D2 have different effect, as described above. 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: Recommended that AT&D2 is issued prior to dial-up network service from DTE. If DTR event is ignored, DCE could be stuck in dormant state in a situation that DCE is not able to communicate with NW(like No service) and DTE tries to disconnect dial-up service. If voice is activated with data service simultaneously, refer to AT+CVHU command guide. Note: if parameter is omitted, the command has the same behaviour of **AT&D0**
Reference	V25ter

3.5.3.2.8. *Standard Flow Control - \Q*

\Q - Standard Flow Control

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

3.5.3.2.9. *Flow Control – &K*

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

3.5.3.2.10. *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 Data 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 Data traffic channel indication. Note: in power saving mode the **DSR** pin is always tied **Low** & USB_VBUS pin is

&S - Data Set Ready (DSR) Control	
	always tied Low. Note: if parameter is omitted, the command has the same behaviour of **AT&S0** Note: If option 1 or 2 are active, **DSR** will not tie **High** in case of voice channel

3.5.3.2.11. *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**

3.5.3.2.12. *Fixed DTE Interface Rate - +IPR*

+IPR - Fixed DTE Interface Rate	
AT+IPR=<rate>	Set command specifies the **DTE** speed (UART only) at which the device accepts commands during command mode operations; it may be used to fix the **DTE-DCE** interface speed. NOTE: DTE speed of USB port is always 0. DTE speed of USB does not change. Parameter: **<rate>** - 300 600 1200 2400 4800 9600 19200 38400 57600 115200 (default) 230400 460800 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 auto detectable **<rate>** values and the list of fixed-only **<rate>** values in the format: **+IPR**:(list of supported auto detectable **<rate>** values), (list of fixed-only **<rate>** values)
Reference	V25ter

3.5.3.2.13. *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 2 - **C105** (**RTS**) (factory default) **<by_ta>** - flow control option for the data sent by **modem** 0 - flow control None 2 - **C106** (**CTS**) (factory default) The supported flow control list as follows **<by_te>** / **<by_ta>**: 0/0, 2/2 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. Note: If flow control behaviour has been set with **AT&Kn** command with the parameter that is not allowed by **AT+IFC** the read command **AT+IFC?** will return: **+IFC: 0,0**
AT+IFC=?	Test command returns all supported values of the parameters **<by_te>** and **<by_ta>**.
Reference	V25ter

3.5.3.2.14. *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

3.5.3.2.15. *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. 1 - 8 Date, 2 Stop 2 - 8 Data, 1 Parity, 1 Stop 3 - 8 Data, 1 Stop (default) 5 - 7 Data, 1 Parity, 1 Stop **<parity>** - determines how the parity bit is generated and checked, if present; setting this sub parameter is mandatory and has a meaning only if **<format>** subparameter is either 2 or 5 otherwise is not allowed. 0 - Odd 1 - Even
AT+ICF?	Read command returns current settings for sub parameters **<format>** and **<parity>**. If current setting of subparameter **<format>** is neither 2 nor 5, the current setting of subparameter **<parity>** will always be represented as 0.
AT+ICF=?	Test command returns the ranges of values for the parameters **<format>** and **<parity>**
Reference	V25ter
Example	*8N2* AT+ICF=1 OK *8O1* AT+ICF=2,0 OK

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

3.5.3.3. Call Control

3.5.3.3.1. ***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 Note: type of call (**data** or **voice**) depends on last **+FCLASS** setting. Note: the numbers accepted are 0-9 and *#ABCDP,W@!$; Note: for backwards compatibility with landline modems modifiers "P", ",", "W", "!", "@", "$", ";" are accepted.
ATD><str>[;]	Issues a call to phone number which corresponding alphanumeric field is **<str>**; all available memories will be searched for the correct entry. If "**;**" is present a **voice** call is performed. Parameter: **<str>** - alphanumeric field corresponding to phone number; it must be enclosed in quotation marks. Note: parameter **<str>** is case sensitive.

D – Dial	
ATD><n>[;]	Issues a call to phone number in entry location **<n>** of the active phonebook. 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**)
Example	*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
Note	CE910 series doesn't support CSD call. But ATD respective with phonebook without semicolon works as voice call.
Reference	V25ter.

3.5.3.3.2. *Tone Dial – T*

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

3.5.3.3.3. *Pulse Dial – P*

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

3.5.3.3.4. *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

A - Answer	
	immediately by a **<CR>** character.
Reference	V25ter.

3.5.3.3.5. *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.

3.5.3.3.6. *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 is 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.

3.5.3.3.7. *Guard Tone – &G*

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

3.5.3.3.8. *Sync/Async Mode – &Q*

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

3.5.3.4. Modulation Control

3.5.3.4.1. *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
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.

3.5.3.4.2. *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 compatibility with landline modems.

3.5.3.5. Compression Control

3.5.3.5.1. *Data Compression – +DS*

AT+DS=<n>	Set command sets the V42 compression parameter. Command has no effect, supported only for the purpose of cross-technology compatibility within products supporting Telit Unified AT-commands. Parameter: **<n>** 0 – no compression, currently the only supported value. Returns OK. Note. This command has no effect. In 3G CDMA, data compression for CS data and FAX are controlled by the network, not the individual user.
AT+DS?	Returns current data compression setting.
AT+DS=?	Test command returns all supported values of the command.
Reference	V25ter
Example	AT+DS=? +DS: (0) OK AT+DS? +DS: 0 OK AT+DS=0 OK

3.5.3.5.2. *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;(default) 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”)

+DR - Data Compression Reporting	
AT+DR?	Read command returns current value of **<n>**.
AT+DR=?	Test command returns all supported values of the parameter **<n>**
Reference	V25ter

3.5.3.6. Break Control

3.5.3.6.1. *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

3.5.3.6.2. *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

3.5.3.6.3. *Operating Mode - \N*

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

3.5.3.7. 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 sub parameter 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*=<*value*><CR>** selects ***n*** as last selected parameter number and sets the contents of the **S*n***-parameter. If the value of ***n*** is in the range (0, 2, 3, 4, 5, 7, 10, 12, 25, 30, 38), this command establishes **S*n*** as last selected parameter.
2) **AT=<value><CR>** sets the contents of the selected **S-parameter**
3) **AT?** returns the current value of the last S-parameter accessed

Example:
ATS7=10<CR> establishes S7 as last selected parameter and set the contents of S7 to 10
OK
AT=40>CR> sets the content of S7 to 40
OK
AT=15<CR> sets the content of S7 to 15
OK
AT?<CR> *returns the current value of S7*
015
OK

Reference: V25ter and RC56D/RC336D

3.5.3.7.1. *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

3.5.3.7.2. *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 occurs. Note: the form **ATS1** has no effect.
ATS1?	Read command returns the value of this parameter.

3.5.3.7.3. *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

3.5.3.7.4. *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

3.5.3.7.5. *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 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

3.5.3.7.6. *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)

S5 - Command Line Editing Character	
	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

3.5.3.7.7. *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

3.5.3.7.8. *Carrier Off With Firm Time - S10*

S10 –Carrier Off With Firm Time	
ATS10=<time>	Set command has no effect and is included only for backward compatibility with landline modems Parameter: **<time>** - expressed in tenths of a second 1..255 - factory default value is 14.
ATS10?	Read command returns the current value of S10 parameter. Note: the format of the numbers in output is always 3 digits, left-filled with 0s

3.5.3.7.9. *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 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

3.5.3.7.10. *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

3.5.3.7.11. *Disconnect Inactivity Timer - S30*

S30 -Disconnect Inactivity Timer	
ATS30=<tout>	Execution command has no effect and is included only for backward compatibility with landline modems.
ATS30?	Read command returns the current value of **S30 parameter**.

S30 -Disconnect Inactivity Timer	
	Note: the format of the numbers in output is always 3 digits, left-filled with 0s

3.5.3.7.12. *Delay Before Forced Hang Up - S38*

S38 -Delay Before Forced Hang Up	
ATS38=<delay>	Execution command has no effect and is included only for backward compatibility with landline modems.
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

3.5.3.8. Error Control

3.5.3.8.1. *Error Control Selection - +ES*

+ES – Error Control Selection	
AT+ES[=<orig_req>,<orig_fallback>,<ans_fallback>]	Set command sets the manner of operation of the V.42 protocol in the modem. Parameters: **<orig_reg>** - Specifies the initial request mode of operation when originating a call. (Default value is 3) 0 - Direct Mode 1 - Initiate call with Buffer mode only 2 - Initiate V.42 without Detection phase. If V.8 is in use, this is a request to disable V.42 Detection Phase 3 - Initiate V.42 with Detection Phase 4 - Initiate Alternative Protocol **<orig_fallback>** - Specifies the acceptable fallback mode of operation when originating a call. (Default : 0) 0 - Error Control Optional; if error control cannot be established, use Buffered mode with flow control 1 - Errol Control Optional; if error control cannot be established, change data rate to match line <carrier> rate and use Direct mode. 2 - Error Control Required; if error control cannot be established, disconnect. 3 - Error Control (LAPM) Required if LAPM cannot be established, disconnect. 4 - Error Control (Alternate (MNP)) Required if MNP cannot be established, disconnect. **<ans_fallback>** - Specifies the acceptable fallback mode of operation when answering a call. (Default : 2) 0 - Direct Mode 1 - Error Control Disabled, use Buffered mode 2 - Error Control Optional; if error control cannot be established, use Buffered mode with flow control 3 - Errol Control Optional; if error control cannot be established, change data rate to match line <carrier> rate and use Direct mode. 4 - Error Control Required; if error control cannot be established, disconnect.

+ES – Error Control Selection	
	5 - Error Control (LAPM) Required if LAPM cannot be established, disconnect. 6 - Error Control (Alternate (MNP)) Required if MNP cannot be established, disconnect. Note: Execution command (AT+ES<CR>) return the OK result code
AT+ES?	Read command reports current V.42 error control setting value in the format +ES: **<orig_req>,<orig_fallback>,<ans_fallback>**
AT+ES=?	Test command returns all supported values of the **<orig_req>**, **<orig_fallback>**, **<ans_fallback>** parameters.

3.5.4. 3GPP TS 27.007 AT Commands

3.5.4.1. General

3.5.4.1.1. *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	3GPP TS 27.007

3.5.4.1.2. *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	3GPP TS 27.007

3.5.4.1.3. *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	3GPP TS 27.007

3.5.4.1.4. *Request Product Serial Number Identification - +CGSN*

+CGSN - Request Product Serial Number Identification	
AT+CGSN	Execution command returns the device electronic serial number (ESN) or the mobile equipment identifier (MEID) without command echo. Note: The ESN(11-digit decimal) / MEID(18-digit decimal) of modem. For more information about convert a MEID from hex to decimal please see the “MEID Conversion, HEX to DEC” in the Software User Guide.
AT+CGSN=?	Test command returns **OK** result code.
Reference	3GPP TS 27.007

3.5.4.1.5. *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 "IRA" - international reference alphabet (ITU-T T.50)
AT+CSCS?	Read command returns the current value of the active character set.
AT+CSCS=?	Test command returns the supported values for parameter **<chset>**.
Reference	3GPP TS 27.007

3.5.4.1.6. *Request International Mobile Subscriber Identity (IMSI) - +CIMI*

+CIMI - Request International Mobile Subscriber Identify (IMSI)	
AT+CIMI	This command returns the value of the Internal Mobile Subscriber Identity stored in the device.
AT+CIMI=?	Test command returns **OK** result code.
Reference	3GPP TS 27.007

3.5.4.1.7. *Multiplexing Mode - +CMUX*

+CMUX - Multiplexing Mode	
AT+CMUX=<mode>	Set command is used to enable/disable the 3GPP 07.10 multiplexing protocol control channel Parameters: **<mode>** multiplexer transparency mechanism 0 - basic option; it is currently the only supported value. Note: after entering the ***Multiplexed Mode*** an inactive timer of five seconds starts. If no CMUX control channel is established before this inactivity timer expires the engine returns to ***AT Command Mode*** Note: all the CMUX protocol parameter are fixed as defined in GSM07.10 and cannot be changed. **Note**: the maximum frame size is fixed: N1=128
AT+CMUX?	Read command returns the current value . +CMUX: 0
AT+CMUX=?	Test command returns the supported values for parameter `+CMUX: (0)`
Reference	3GPP 27.007, 3GPP 27.010

3.5.4.2. Call Control

3.5.4.2.1. *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

3.5.4.2.2. *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: - the failure in the last unsuccessful call setup (originating or answering) - the last call release - the last unsuccessful CDMA attach or unsuccessful PDP context activation, - the last CDMA detach or PDP context deactivation. Note: if none of this condition has occurred since power up then **"No cause information available"** condition is reported
AT+CEER=?	Test command returns **OK** result code.
Reference	3GPP TS 27.007

3.5.4.2.3. *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

+CRC - Cellular Result Codes	
	<type> - call type: VOICE - normal voice
AT+CRC?	Read command returns current value of the parameter **<mode>**.
AT+CRC=?	Test command returns supported values of the parameter **<mode>**.
Reference	3GPP TS 27.007

3.5.4.2.4. *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 value) .
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>**

3.5.4.3. Network Service Handling

3.5.4.3.1. *Subscriber Number – +CNUM*

+CNUM - Subscriber Number	
AT+CNUM	Execution command returns the MSISDN in the format: **+CNUM: <alpha>,<number>,<type>[<CR><LF>** **+CNUM: <alpha>,<number>,<type>[…]]** where: **<alpha>** - alphanumeric string associated to **<number>**; used character set should be the one selected with **+CSCS**. **<number>** - string containing the phone number in the format **<type>** **<type>** - type of number: 129 - national numbering scheme 145 - international numbering scheme (contains the character "+").
AT+CNUM=?	Test command returns the **OK** result code
Example	AT+CNUM +CNUM: "PHONENUM1","2173848500",129

+CNUM - Subscriber Number	
	+CNUM: "FAXNUM","2173848501",129 +CNUM: "DATANUM","2173848502",129
Reference	3GPP TS 27.007

3.5.4.3.2. *Read Operator Names - +COPN*

+COPN - Read Operator Names	
AT+COPN	Returns the operator's name from the **ME** in the format: **+COPN: <numeric1>,<alpha1>[<CR><LF>** **+COPN: <numeric2>,<alpha2>[…]]** Note: In case of CDMA, the network name (operator) is not sent by network. And each CDMA carrier's list of operators is confidential and not given out. Therefore, the module only supports two result codes:
AT+COPN=?	Test command returns the **OK** result code
Reference	3GPP TS 27.007

3.5.4.3.3. *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) 1 - enable network registration unsolicited result code 2 - enable network registration unsolicited result code with network system 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 - reserved 3 - registration denied 4 - reserved 5 - registered, roaming If **<mode>=2**, network registration result code reports:

+CREG - Network Registration Report	
	+CREG: <stat>[,<SID>] where: **<SID>** - System identification Note: **<SID>** is reported only if **<mode>=2** and the mobile is acquired on some network cell.
AT+CREG?	Read command reports the **<mode>** and **<stat>** parameter values in the format: **+CREG: <mode>,<stat>[,<SID>]** Note: **<SID>** is reported only if **<mode>=2** and the mobile is acquired on some network cell.
AT+CREG=?	Test command returns the range of supported **<mode>**
Reference	3GPP TS 27.007

3.5.4.3.4. *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 UMTS 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**.

+CLIP - Calling Line Identification Presentation	
	<CLI_validity> 0 - CLI Presentation allowed. 1 - CLI Presentation restricted. 2 - CLI is not available.
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 UMTS network 2 - unknown (e.g. no network is present) Note: For compatibility with DE910, the value of <m> is returned
AT+CLIP=?	Test command returns the supported values of parameter **<n>**
Reference	3GPP TS 27.007

3.5.4.3.5. *Calling Line Identification Restriction - +CLIR*

+CLIR - Calling Line Identification Restriction	
AT+CLIR=[<n>]	Execution command has no effect and is included only for backward compatibility with WCDMA products. For compatibility with WCDMA products, Parameter <n> is available only 0, 1 and 2. Execution command returns the OK result code
AT+CLIR?	For compatibility with WCDMA products, Read command returns +CLIR: 0,2
AT+CLIR=?	For compatibility with WCDMA products, Test command returns +CLIR: (0-2)
Reference	3GPP TS 27.007

3.5.4.3.6. *Call Waiting - +CCWA*

+CCWA - Call Waiting	
AT+CCWA=[<n>]	Sets the presentation of an unsolicited result code of the call waiting supplementary service Parameters: **<n>** - Enables/disables the presentation of an unsolicited result code: 0 – disable (factory default) 1 – enable Note: the unsolicited result code enabled by parameter <n> is in the format:

+CCWA - Call Waiting	
	+CCWA: <number>,<type>,"",1,<alpha>,<cli_validity> **<number>** - Phone number of format specified by **<type>** **<type>** - Address in Integer format **<alpha>** - 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
AT+CCWA?	Reports the current value of the parameter **<n>**.
AT+CCWA=?	Reports the supported values for the parameter **<n>**.
Reference	3GPP TS 27.007

3.5.4.3.7. *Call Holding Service - +CHLD*

+CHLD - Call Holding Service	
AT+CHLD=<n>	Controls the network call hold service Parameters: **<n>** 2 – places all active calls (if any exist) on hold and accepts the other (waiting) call. Note: If no call is active then only **OK** message is sent.
AT+CHLD=?	Reports the supported values for the parameter **<n>**.
Reference	3GPP TS 27.007

3.5.4.3.8. *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: **<id*n*>** - call identification number

+CLCC - List Current Calls	
	<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) Note: 1(held), 3(alerting) and 5(waiting) are not supported for CE910-SL **<mode>** - call type 0 - voice 1 - data 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**.
AT+CLCC=?	Test command returns the **OK** result code
Reference	3GPP TS 27.007

3.5.4.4. Mobile Equipment Control

3.5.4.4.1. *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) 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, 3gpp TS 27.007 requires the Test command to be defined.
Example	ATD03282131321; OK AT+CPAS +CPAS: 4 *the called phone has answered to your call* OK ATH OK
Reference	3GPP TS 27.007

3.5.4.4.2. *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: URCs and network behavior (incoming calls or SMS with +CNMI activated) can wake up from CFUN=0 only (there is no way to wake up by TE - RTS no support). Note: issuing **AT+CFUN=4[,0]** actually causes the module to perform a network deregistration. Note: if power saving enabled, it reduces the power consumption during the idle time, thus allowing a longer standby time with a given battery capacity. Note: to place the module in power saving mode, set the **<fun>** parameter at value = 5 and the line **DTR** (RS232) must be set to **OFF**. Once in power saving, the **CTS** line switch to the **OFF** status to signal that the module is really in power saving condition. During the power saving condition, before sending any **AT** command on the serial line, the **DTR** must be 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

+CFUN - Set Phone Functionality	
	Note: If AT+CFUN=2[,0] mode is activating, Current call is disconnected. Note: If AT+CFUN=2[,0] mode is activating, Current activated PDP Context and socket connection is disconnected.
AT+CFUN?	Read command reports the current setting of <**fun**>.
AT+CFUN=?	Test command returns the list of supported values for <**fun**> and <**rst**>.
Reference	3GPP TS 27.007

3.5.4.4.3. *Signal Quality – +CSQ*

+CSQ - Signal Quality	
AT+CSQ	Execution command reports received signal quality indicators in the form: **+CSQ:** <**rssi**>,<**fer**> 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 <**fer**> - frame error rate (in percent) 0 - less than 0.01% 1 - 0.01% to 0.1% 2 - 0.1% to 0.5% 3 - 0.5% to 1.0% 4 - 1.0% to 2.0% 5 - 2.0% to 4.0% 6 - 4.0% to 8.0% 7 - more than 8.0% 99 - not known or not detectable
AT+CSQ=?	Test command returns the supported range of values of the parameters <**rssi**> and <**fer**>.
Reference	3GPP TS 27.007

3.5.4.4.4. *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**> "ME" - EFS phonebook(Factory default) "MC" - device missed (unanswered received) calls list (+CPBF is not applicable

+CPBS - Select Phonebook Memory Storage	
	for this storage) "RC" - ME received calls list (+CPBF is not applicable for this storage) "DC" - MT dialled calls list (+CPBF is not applicable for this storage) "EN" - MT emergency number (+CPBW is not be applicable for this storage)
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>**.
Example	AT+CPBS="ME" *current phonebook storage is NV* AT+CPBR=1 +CPBR: 1,"0105872928",129,"James","example@telit.com" OK
Reference	3GPP TS 27.007

3.5.4.4.5. *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**). If the storage is "ME" then the response format is: **[+CPBR: <index1>,<number>,<type>,<text>,<e_text> [<CR><LF>** **+CPBR: <index2>,<number>,<type>,<text>,<e_text> […]]]** If the storage is “DC” and “RC” then the response format is: **[+CPBR: <index1>,<number>,<type>,<text>,<time>,<duration>[<CR><LF>** **+CPBR: <index2>,<number>,<type>,<text>,<time>,<duration>[…]]]** If the storage is "MC" then the response format is: **[+CPBR: <index1>,<number>,<type>,<text>,<time>[<CR><LF>**

+CPBR - Read Phonebook Entries	
	+CPBR: <index2>,<number>,<type>,<text>,<time>[…]]] 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.** **<e_text >** - Email alphanumeric text; used character set should be the one selected with command **+CSCS** **<time>** - Date and time in clock seconds **<duration>** - Duration of the call 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.
Example	AT+CPBS="ME" OK AT+CPBS? +CPBS: "ME",1,50 OK AT+CPBR=? +CPBR: (1-50),40,20 OK AT+CPBR=1 +CPBR: 1,”01048771234”,129,”James”,”example@telit.com”

+CPBR - Read Phonebook Entries	
	OK
Reference	3GPP TS 27.007

3.5.4.4.6. *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>,<e_text> [<CR><LF>** **+CPBF: <index2>,<number>,<type>,<text>,<e_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.** **<e_text >** - Email alphanumeric text; 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 "DC". 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. Note: Remember to select the PB storage with +CPBS command before issuing PB commands.
AT+CPBF=?	Test command reports the maximum lengths of **<number>** and **<text>** fields, in the format: **+CPBF: [<nlength>],[<tlength>]**

+CPBF - Find Phonebook Entries	
	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.
Example	AT+CPBS="ME" *Selecting phonebook* OK AT+CPBF="J" *Searching for string "J"* +CPBF: 1,"01048771234",129,"James","example@telit.com" +CPBF: 2,"0169998888",129,"Jane","" OK *Searching for everything in phone book, and finding all entries* AT+CPBF="" +CPBF: 1,"01048771234",129,"James","example@telit.com" +CPBF: 2,"0169998888",129,"Jane","" +CPBF: 7,"0115556666",129,"Juliet","" +CPBF: 5,"0181111234",129,"Kevin","" OK
Reference	3GPP TS 27.007

3.5.4.4.7. *Write Phonebook Entry – +CPBW*

+CPBW - Write Phonebook Entry	
AT+CPBW= **[<index>]** **[,<number> [,<type>** **[,<text>** **[,<e_text>]]]]**	Execution command writes phonebook entry in location number **<index>** in the current phonebook memory storage selected with **+CPBS**. Parameters: **<index>** - integer type, value in the range of location numbers of the currently selected phonebook memory storage (see **+CPBS**). **<number>** - string type, phone number in the format **<type>** **<type>** - the type of number 129 - national numbering scheme 145 - international numbering scheme (contains the character "+") **<text>** - the text associated to the number, string type; used character set should be the one selected with command **+CSCS**. **<e_text >** - Email alphanumeric text; 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>** , **<text>** and **<e_text>** are omitted, the phonebook entry in location **<index>** is deleted. Note: if **<index>** is omitted or **<index>**=0, the number **<number>** is stored in the first free phonebook location. Note: if either "DC", "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. Note: Remember to select the PB storage with **+CPBS** command before issuing PB commands.
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>[,<elength>]** where: **<nlength>** - integer type value indicating the maximum length of field **<number>**. **<tlength>** - integer type value indicating the maximum length of field **<text>.** **<elength> -** integer type value indicating the maximum length of field **<email>.**
Reference	3GPP TS 27.007
Example	AT+CPBS="ME" OK

+CPBW - Write Phonebook Entry	
	AT+CPBW=? +CPBW: (1-50),40,(129,145),20,20 OK AT+CPBW=6,"18651896699",129,"John","ex@telit.com" OK
Note	Remember to select the PB storage with **+CPBS** command before issuing PB commands.

3.5.4.4.8. *Clock Management – +CCLK*

+CCLK - Clock Management	
AT+CCLK=<time>	Set command sets the real-time clock of the **ME**. Parameter: **<time>** - current time as quoted string in the format: "yy/MM/dd,hh:mm:ss±zz" yy - year (two last digits are mandatory), range is (00..99) MM - month (two last digits are mandatory), range is (01..12) dd - day (two last digits are mandatory), available ranges are (01..28) (01..29) (01..30) (01..31) hh - hour (two last digits are mandatory), range is (00..23) mm - minute (two last digits are mandatory), range is (00..59) ss - second (two last digits are mandatory), range is (00..59) ±zz - time zone (indicates the difference, expressed in quarter of an hour, between the local time and GMT; two last digits are mandatory), range is -47..+48
AT+CCLK?	Read command returns the current setting of the real-time clock, in the format **<time>**. Note: the three last characters of **<time>**, i.e. the time zone information, are returned by **+CCLK?** only if the **#NITZ** URC *'extended'* format has been enabled (see **#NITZ**).
AT+CCLK=?	Test command returns the **OK** result code.
Example	AT+CCLK="02/09/07,22:30:00+00" OK AT+CCLK? +CCLK: 02/09/07,22:30:25 OK
Reference	3GPP TS 27.007

3.5.4.4.9. *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. 1 - the MODULE simply wakes up fully operative as if the ON/OFF button had been pressed. If the device is already ON at the alarm time, then it does nothing. (Default) 2 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE issues an unsolicited code every 3s: **+CALA: <text>** where **<text>** is the **+CALA** optional parameter previously set. The device keeps on sending the unsolicited code every 3s until a **#WAKE** or **#SHDN** command is received or a 90 seconds timer expires. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s then it shuts down. (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 90 s time-out occurs. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s then it shuts down. 4 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE brings the pin GPIO6 high, provided its **<direction>** has been set to alarm output, and keeps it in this state until a **#WAKE** or **#SHDN** command is received or a 90 seconds timer expires. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s then it shuts down. 5 - the MODULE will make both the actions as for type=2 and **<type>=3**. 6 - the MODULE will make both the actions as for type=2 and **<type>=4**. 7 - the MODULE will make both the actions as for type=3 and **<type>=4**.

+CALA - Alarm Management	
	8 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE sets **High** the **RI** output pin. The **RI** output pin remains **High** until next **#WAKE** issue or until a 90s timer expires. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s. After that it shuts down. **<text>** - unsolicited alarm code text string. It has meaning only if **<type>** is equal to 2 or 5 or 6. **<recurr>** - string type value indicating day of week for the alarm in one of the following formats: "<1..7>[,<1..7>[, …]]" - it sets a recurrent alarm for one or more days in the week; the digits 1 to 7 corresponds to the days in the week (Monday is 1). "0" - it sets a recurrent alarm for all days in the week. **<silent>** - integer type indicating if the alarm is silent or not. 0 - the alarm will not be silent; 1 - the alarm will be silent. Note: a special form of the Set command, +CALA="", deletes an alarm in the ME Note: The "alarm mode" is indicated by hardware pin **CTS** to the **ON** status and **DSR** to the **OFF** status, while the "power saving" status is indicated by a **CTS - OFF** ,**DSR - OFF** and **USB_VBUS – OFF** status. The normal operating status is indicated by **DSR – ON or USB_VBUS – ON status**. 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	3gpp TS 27.007

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

3.5.4.4.11. *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 (factory default) 4 - progressive
AT+CRSL?	Read command reports the current **<level>** setting of the call ringer in the format: **+CRSL: <level>**
AT+CRSL=?	Test command reports **<level>** supported values as compound value. **+CRSL: (0-4)**
Reference	3GPP TS 27.007

3.5.4.4.12. *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=?** 10 - factory default
AT+CLVL?	Read command reports the current **<level>** setting of the loudspeaker volume in the format: **+CLVL: <level>**
AT+CLVL=?	Test command reports **<level>** supported values range in the format: **+CLVL: (0-*max*)**
Reference	3GPP TS 27.007

3.5.4.4.13. *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) 1 - mute on, microphone muted. Note: this command mutes/activates both microphone audio paths, internal mic and external mic.
AT+CMUT?	Read command reports whether the muting of the microphone audio line during a voice call is enabled or not, in the format: **+CMUT: <n>**
AT+CMUT=?	Test command reports the supported values for **<n>** parameter.
Reference	3GPP TS 27.007

3.5.4.4.14. *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>[…]]** where: **<AT cmd*n*>** - defines the AT command including the prefix **AT**
AT+CLAC=?	Test command returns the **OK** result code
Reference	3GPP TS 27.007

3.5.4.4.15. *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

3.5.4.5. Mobile Equipment Errors

3.5.4.5.1. *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.(factory default) 1 - enable **+CME ERROR:<err>** reports, with **<err>** in numeric format 2 - enable **+CME ERROR: <err>** reports, with **<err>** in verbose format
AT+CMEE?	Read command returns the current value of subparameter **<n>**: **+CMEE: <n>**
AT+CMEE=?	Test command returns the range of values for subparameter **<n>**
Note	**+CMEE** has no effect on the final result code **+CMS**
Reference	3GPP TS 27.007

3.5.4.6. Voice Control

3.5.4.6.1. *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), #,*** the string can be a **<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>** - Can be specified only if the length of first parameter is just one ASCII character 0..5 - a single DTMF tone will be transmitted for a duration depending on the network, no matter what the current **+VTD** setting is. Note: this commands operates in voice mode only (see **+FCLASS**).

+VTS - DTMF Tones Transmission	
	Note: <**dtmfstring**>should be inputed without the double quotation mark(“”).
AT+VTS=?	Test command provides the list of supported <**dtmf**>**s** and the list of supported <**duration**>**s** in the format: **(list of supported <dtmf>s)[,(list of supported <duration>s)]**
Reference	3GPP TS 27.007 and TIA IS-101

3.5.4.6.2. *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 – 95ms (factory default) 1 – 150ms 2 – 200ms 3 – 250ms 4 – 300ms 5 – 350ms
AT+VTD?	Read command reports the current Tone Duration, in the format: <**duration**>
AT+VTD=?	Test command provides the list of supported <**duration**>**s** in the format: **(list of supported <duration>s)**
Reference	3GPP TS 27.007 and TIA IS-101

3.5.4.7. Commands For Battery Charger

3.5.4.7.1. *Battery Charge - +CBC*

+CBC - Battery Charge	
AT+CBC	Execution command returns the current Battery Charge status in the format: **+CBC: <bcs>,<bcl>** where: **<bcs>** - battery status 0 - **ME** is powered by the battery 1 - **ME** has a battery connected, and charger pin is being powered 2 - **ME** does not have a battery connected 3 - Recognized power fault, calls inhibited **<bcl>** - battery charge level 0 - battery is exhausted, or **ME** does not have a battery connected 25 - battery charge remained is estimated to be 25% 50 - battery charge remained is estimated to be 50% 75 - battery charge remained is estimated to be 75% 100 - battery is fully charged. Note: There is not charger pin. So, **<bcs>=1** will never appear. Note: without battery/power connected on **VBATT** pins or during a power fault the unit is not working, therefore values **<bcs>=2** and **<bcs>=3** will never appear.
AT+CBC=?	Test command returns parameter values supported as a compound value. **+CBC: (0-3),(0-100)** Note: although **+CBC** is an execution command, 3gpp TS 27.007 requires the Test command to be defined.
Example	AT+CBC +CBC: 0,75 OK
Note	The **ME** does not make differences between being powered by a battery or by a power supply on the **VBATT** pins, so it is not possible to distinguish between these two cases.
Reference	3GPP TS 27.007

3.5.5. Partially 3GPP TS 27.005 AT Commands for SMS and CBS

3.5.5.1. General Configuration

3.5.5.1.1. *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**: For compatibility with WCDMA products, Parameter <**service**> is available only 2. Parameter: <**service**> 0 - The syntax of SMS AT commands is compatible with 3GPP TS 27.005 Phase 2 version 4.7.0 1 - The syntax of SMS AT commands is compatible with 3GPP TS 27.005 Phase 2+ version. 2 - The syntax of SMS AT commands is compatible partially with 3GPP TS 27.005 Phase 2 version 4.7.0. (reflected partially IS-637A, B in CDMA network) (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>**
AT+CSMS=?	Test command reports the supported value of the parameter <**service**>.
Example	AT+CSMS=? +CSMS: (2) OK

+CSMS - Select Message Service	
	AT+CSMS=2 +CSMS: 1,1,0 OK AT+CSMS? +CSMS: 2,1,1,0 OK

3.5.5.1.2. *Preferred Message Storage - +CPMS*

+CPMS - Preferred Message Storage	
AT+CPMS=<memr>[,<memw>]	Set command selects memory storages **<memr>**, **<memw>** to be used for reading, writing, sending and storing SMs. Parameters: **<memr>** - memory from which messages are read and deleted "ME" – SMS memory storage into module (default) **<memw>** - memory to which writing and sending operations are made "ME" – SMS memory storage into module The command returns the memory storage status in the format: **+CPMS: <usedr>,<totalr>,<usedw>,<totalw>** 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
AT+CPMS?	Read command reports the message storage status in the format: **+CPMS: <memr>,<usedr>,<totalr>,<memw>,<usedw>,<totalw>** where **<memr>**, **<memw>** are the selected storage memories for reading, writing and storing respectively.
AT+CPMS=?	Test command reports the supported values for parameters **<memr>**, **<memw>**
Example	AT+CPMS=? +CPMS: ("ME"),("ME") OK at+cpms? +CPMS: "ME",5,99,"ME",5,99

+CPMS - Preferred Message Storage	
	OK AT+CPMS="ME","ME" +CPMS: 5,99,5,99 OK AT+CPMS? +CPMS: "ME",5,99,"ME",5,99 OK

3.5.5.1.3. *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 (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.
Example	AT+CMGF=1 OK

3.5.5.2. Message Configuration

3.5.5.2.1. *Set Text Mode Parameters – +CSMP*

+CSMP - Set Text Mode Parameters	
AT+CSMP= **[<callback_addr>** **[,<tele_id >** **[,<priority>** **[,<enc_type >]]]]**	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: **<callback_addr>** - Callback address. Maximum length is 32 characters Note: Initially, this parameter is null. Some carrier networks discard SMS's without a callback number. So we recommend that customer setup callback number using AT+CSMP command. **<tele_id>** - Teleservice ID 4097 - page

+CSMP - Set Text Mode Parameters	
	4098 - SMS message (factory default) **<priority>** - Priority 0 - Normal (factory default) 1 - Interactive 2 - Urgent 3 - Emergency **<enc_type>** - data coding scheme: 0 - 8-bit Octet 2 - 7-bit ASCII (factory default) 4 - 16-bit Unicode Note: the current settings are stored through **+CSAS**
AT+CSMP?	Read command reports the current setting in the format: **+CSMP: < callback_addr >,<tele_id >,< priority >,< enc_type >**
AT+CSMP=?	Test command returns the **OK** result code.
Example	AT+CSMP=? OK AT+CSMP? +CSMP: "",4098,0,2 OK AT+CSMP="1234567890",4097,1,2 OK AT+CSMP? +CSMP: "1234567890",4097,1,2 OK

3.5.5.2.2. *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 (**<tooa>, <tele_id>, <priority>, <enc_type>, <udh>, <length>**) in **+CMT, +CMGL, +CMGR** result codes for **SMS-DELIVERs** and **SMS-SUBMITs** in text mode. (factory default) 1 - show the values in result codes
AT+CSDH?	Read command reports the current setting in the format:

+CSDH - Show Text Mode Parameters	
	+CSDH: <show>
AT+CSDH=?	Test command reports the supported range of values for parameter **<show>**
Example	AT+CSDH=1 OK AT+CMGL="ALL" +CMGL: 0,"STO UNSENT","","0114933460",,,4097,0,0,0,12 Test message +CMGL: 1,"STO SENT","01085718504","0114933460",,129,4097,0,0,0,4 test +CMGL: 2,"REC READ","0114933460","0114933460",20140708103914,129,4098,0,2,0,12 test message +CMGL: 3,"REC READ","0114933460","0114933460",20140708103932,129,4098,0,2,0,4 test +CMGL: 4,"STO UNSENT","0114933460","0114933460",,129,4098,0,2,0,4 test +CMGL: 5,"REC READ","0114933460","0114933460",20140708104012,129,4098,0,0,0,8 test SMS OK AT+CSDH? +CSDH: 1 OK AT+CSDH=0 OK AT+CMGL="ALL" +CMGL: 0,"STO UNSENT","","0114933460", Test message +CMGL: 1,"STO SENT","01085718504","0114933460", test +CMGL: 2,"REC READ","0114933460","0114933460",20140708103914 test message +CMGL: 3,"REC READ","0114933460","0114933460",20140708103932 test +CMGL: 4,"STO UNSENT","0114933460","0114933460", test +CMGL: 5,"REC READ","0114933460","0114933460",20140708104012 test SMS OK

3.5.5.2.3. *Save Settings - +CSAS*

+CSAS - Save Settings	
AT+CSAS [=<profile>]	Execution command saves settings made by, +**CSMP** command in local non volatile memory Parameter: **<profile>** 0,1 - it saves the settings to NVM. Note: If parameter is omitted the settings are saved to profile 0 in the non volatile memory.
AT+CSAS=?	Test command returns the possible range of values for the parameter **<profile>**.
Example	AT+CSAS=? +CSAS: (0,1) OK AT+CSAS OK AT+CSAS=1 OK AT+CSAS=0 OK

3.5.5.2.4. *Restore Settings – +CRES*

+CRES - Restore Settings	
AT+CRES [=<profile>]	Execution command restores message service settings saved by **+CSAS** command from NVM. Parameter: **<profile>** 0,1 - it restores message service settings from NVM. Note: If parameter is omitted the command restores message service settings from Profile 0 in the non volatile memory.
AT+CRES=?	Test command returns the possible range of values for the parameter **<profile>**.
Example	AT+CRES=? +CRES: (0,1) OK AT+CRES=0 OK AT+CRES=1 OK

3.5.5.3. Message Receiving And Reading

3.5.5.3.1. *New Message Indications To Terminal Equipment - +CNMI*

+CNMI - New Message Indications To Terminal Equipment	
AT+CNMI=[<mt>]	Set command selects the behaviour of the device on how the receiving of new messages from the network is indicated to the **DTE**. Parameter: **<mt>** - The information written in italics will be present depending on +**CSDH** last setting. Unsolicited result codes buffering option 0 - No Indication (factory default) 1 - Indicate like below **+CMTI: <memr>,<index>** **<memr>** - memory storage where the new message is stored "ME" **<index>** - location on the memory where SMS is stored. 2 - Indicate like below (**PDU Mode**) **+CMT: ,<length><CR><LF><pdu>** **<length>** - PDU length **<pdu>** - PDU Message **<pdu>:** **<orig_num><date><tele_id><priority><enc_type><udh><length><data>** where: **<orig_num> : <addr_len><tooa><address>** **<addr_len>** : Octets length of address field(1 Octet : <tooa> and <address>). **<tooa>** : Type of address(1 Octet). **<addres>** : Address digits with representation of semi-octets. **<date>** : Serivce center time stamp (6 Octets : YYMMDDHHMMSS). **<tele_id>** : Teleservice ID (2 Octets). **<priority>** : Priority(1 Octet). **<enc_type>** : Encoding type(1 Octet). **<udh>** : User data header (1 Octet). **<length>** : Refer to below **Note** (1 Octet). **<data>** : User data of message. Note: In **<pdu>:**

+CNMI - New Message Indications To Terminal Equipment	
	<orig_num><date><tele_id><priority><enc_type><udh><length><data>, If user data header**<udh>** is present, If encoding type is 7bit ASCII, **<length>** value is the sum of the number of septets in user data and the number of septets in user data header (including any padding). Otherwise, **<length>** value is the sum of the number of octets in user data and the number of octets in user data header. If user data header**<udh>** is not present, If encoding type is 7bit ASCII, **<length>** value is the number of septets in user data. Otherwise, **<length>** value is the number of octets in user data. (**TEXT Mode**) **+CMT:** **<orig_num>,<callback>,<date>[,<tooa>,<tele_id>,<priority>,<enc_type>,<udh>,<length>]<CR><LF><data>** **<orig_num>** - Origination number. **<callback>** - Callback number. **<date>** - Received date in form as "YYYYMMDDHHMMSS". **<tooa>** - Type of <**orig_num**>. **<tele_id>** - Teleservice ID. 4097 - page 4098 - SMS message 4099 - voice mail notification 262144 - voice mail notification **<priority>** - Priority. 0 - Normal (factory default) 1 - Interactive 2 - Urgent 3 - Emergency **<enc_type>** - Encoding type of message. 0 - 8-bit Octet 2 - 7-bit ASCII (factory default) 4 - 16-bit Unicode **<udh>** - User data header 0 - Not present the user data header 1 - Present the user data header **<length>** - Length of message. **<data>** - Message data. (Indicates the new voice mail count, if <tele_id> is voice mail notification) Note : Regardless of <mt>, a message is saved in SMS memory storage.

+CNMI - New Message Indications To Terminal Equipment	
AT+CNMI?	Read command returns the current parameter settings for **+CNMI** command in the form: **+CNMI: <mt>**
AT+CNMI=?	Test command reports the supported range of values for the **+CNMI** command parameters.
Example	AT+CNMI=? +CNMI: (0-2) OK AT+CNMI=1 OK AT+CNMI? +CNMI: 1 OK +CMTI: "ME",98 AT+CNMI=2 OK AT+CNMI? +CNMI: 2 OK +CMT: "My Number","My Number",20141023165007,129,4098,0,2,0,8 TEST SMS

3.5.5.3.2. *List Messages – +CMGL*

+CMGL - List Messages	
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.

+CMGL - List Messages	
	Each message to be listed is represented in the format: **+CMGL: <index>,<stat>,"",<length><CR><LF><pdu>** Case of received message from base station : **<PDU>:** **<orig_num><date><tele_id><priority><enc_type><udh><length><data>** Case of sending message to base station: **<PDU>:** **<da><callback><tele_id><priority><enc_type><udh><length><data>** where: **<orig_num> : <addr_len><tooa><address>** **<addr_len>** : Octets length of address field(1 Octet : <tooa> and <address>). **<tooa>** : Type of address(1 Octet). **<addres>** : Address digits with representation of semi-octets. **<da> : <addr_len><toda><address>** **<addr_len>** : Octets length of address field(1 Octet : <toda> and <address>). **<toda>** : Type of address(1 Octet). **<addres>** : Address digits with representation of semi-octets. **<callback> : <addr_len><toca><address>** **<addr_len>** : Octets length of address field(1 Octet : <toca> and <address>). **<toca>** : Type of address(1 Octet). **<addres>** : Address digits with representation of semi-octets. **<date>** : Serivce center time stamp (6 Octets : YYMMDDHHMMSS). **<tele_id>** : Teleservice ID (2 Octets). **<priority>** : Priority(1 Octet). **<enc_type>** : Encoding type(1 Octet). **<udh>** : User data header (1 Octet). **<length>** : Refer to below **Note** `(1 Octet)`. **<data>** : User data of message. Note: If user data header**<udh>** is present, If encoding type is 7bit ASCII or GSM 7-bit, **<length>** value is the sum of the number of septets in user data and the number of septets in user data header (including any padding). Otherwise,

+CMGL - List Messages	
	<length> value is the sum of the number of octets in user data and the number of octets in user data header. If user data header**<udh>** is not present, If encoding type is 7bit ASCII or GSM 7-bit, **<length>** value is the number of septets in user data. Otherwise, **<length>** value is the number of octets in user data. where: **<index>** - message position in the memory storage list. **<stat>** - status of the message **<length>** - length of the PDU in bytes **<pdu>** - message in PDU format **(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. Each message to be listed is represented in the format (the information written in italics will be present depending on +CSDH last setting): If there is at least a **Received** message to be listed the representation format is: **+CMGL:** **<index>,<stat>,<orig_num>,<callback>,<date>*[,<tooa>,<tele_id>,<priority>,<enc_type>,<udh>,<length>]*<CR><LF> <data>** If there is at least a **Sent** or an **Unsent** message to be listed the representation format is: **+CMGL:** **<index>,<stat>,<da>,<callback>*[,<toda>,<tele_id>,<priority>,<enc_type>,<udh>,<length>]*<CR><LF><data>** Where **<orig_num>** - Origination number. **<callback>** - Callback number. **<date>** - Received date in form as "YYYYMMDDHHMMSS". **<tooa>** - Type of <**orig_num**>. **<toda>** - Type of <**da**>. **<tele_id>** - Teleservice ID. 4097 - page 4098 - SMS message 4099 - voice mail notification

+CMGL - List Messages	
	262144 - voice mail notification **<priority>** - Priority. 0 - Normal (factory default) 1 - Interactive 2 - Urgent 3 - Emergency **<enc_type>** - Encoding type of message. 0 - 8-bit Octet 2 - 7-bit ASCII (factory default) 4 - 16-bit Unicode **<udh>** - User data header 0 - Not present the user data header 1 - Present the user data header **<length>** - Length of message. **<data>** - Message data. (Indicates the new voice mail count, if <tele_id> is voice mail notification) Note: If a message is present when +CMGL="ALL" is used it will be changed status from **REC UNREAD** to **REC READ**.
AT+CMGL=?	Test command returns a list of supported **<stat>**s
Example	<PDU Mode> Case of received message from base station: AT+CMGL=1 +CMGL: 13,1,"",51 0681104139430614102315582010020202002 4C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C3870E10 OK 06 <addr_len: 6byte> 81 <type_addr: 129> 1041394306 <Origination number: 0114933460> 141023155820 <Date: 14/10/23,15:58:20> 1002 <Teleservice_id: 4098(decimal)> 02 <priority: urgent > 02 <encoding_type: 7-bit ASCII > 00 <udh: Not present user data header > 24 <data_len: 36> C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C3870E10 <user_data: aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa> Else: AT+CMGL=2 +CMGL: 31,2,"",23 07801091346554F307801091346554F310020000000A61616161616161616161

+CMGL - List Messages

OK
07 <addr_len: 7byte>
81 <type_addr:129>
1091346554F3 <Destination_addr: 01194356453>
07 <addr_len: 7byte>
81 <type_addr:129>
1096224658F1 <Callback_Number: 01692264851>
1002 <Teleservice_id: 4098(decimal)>
00 <priority: normal >
00 <encoding_type: 8-bit Octet >
00 <udh: Not present user data header >
0A <data_len: 10>
61616161616161616161 <data: aaaaaaaaaa>

<PDU Mode>
AT+CMGF=0
OK
AT+CMGF?
+CMGF: 0

OK
AT+CMGL=?
(0-4)

OK
AT+CMGL=4
+CMGL: 0,2,"",19
0681104139430606811041394306100200000006313233343536
+CMGL: 1,2,"",22
06811041394306068110413943061002000000093132333435363637 37
+CMGL: 2,2,"",25
0681104139430606811041394306100200000000C3131323233343434343434
+CMGL: 3,2,"",28
0681104139430606811041394306100200000000F6166666173646565656565656565
565

OK
<Text Mode>
AT+CMGF=1
OK
AT+CMGF?
+CMGF: 1

OK
AT+CMGL=?
("REC UNREAD","REC READ","STO UNSENT","STO SENT","ALL")

+CMGL - List Messages	
	OK at+cmgl="ALL" +CMGL: 0,"STO UNSENT","My Number","My Number", 123456 +CMGL: 1,"STO UNSENT","My Number","My Number", 123456677 +CMGL: 2,"STO UNSENT","My Number","My Number", 112234444444 +CMGL: 3,"STO UNSENT","My Number","My Number", affasdeeeeeeeee OK

3.5.5.3.3. *Read Message - +CMGR*

+CMGR - Read Message	
AT+CMGR= <index>	Execution command reports the message with location value **<index>** from **<memr>** message storage (**<memr>** is the message storage for read and delete SMs as last settings of command +CPMS). Parameter: **<index>** - message index. The output depends on the last settings of command **+CMGF** (message format to be used) **(PDU Mode)** If there is at least one message to be listed the representation format is: **+CMGR:<stat>,"",<length><CR><LF><PDU>** Case of received message from base station : **<PDU>:** **<orig_num><date><tele_id><priority><enc_type><udh><length><data>** Case of sending message to base station: **<PDU>:** **<da><callback><tele_id><priority><enc_type><udh><length><data>** where: **<orig_num> : <addr_len><tooa><address>** **<addr_len>** : Octets length of address field(1 Octet : <tooa> and <address>). **<tooa>** : Type of address(1 Octet). **<addres>** : Address digits with representation of semi-octets. **<da> : <addr_len><toda><address>** **<addr_len>** : Octets length of address field(1 Octet : <toda> and <address>). **<toda>** : Type of address(1 Octet). **<addres>** : Address digits with representation of semi-octets. **<callback> : <addr_len><toca><address>** **<addr_len>** : Octets length of address field(1 Octet : <toca> and <address>). **<toca>** : Type of address(1 Octet). **<addres>** : Address digits with representation of semi-octets. **<date>** : Serivce center time stamp (6 Octets : YYMMDDHHMMSS). **<tele_id>** : Teleservice ID (2 Octets).

+CMGR - Read Message	
	<**priority**> : Priority(1 Octet). <**enc_type**> : Encoding type(1 Octet). <**udh**> : User data header (1 Octet). <**length**> : Refer to below **Note** (1 Octet). <**data**> : User data of message. Note: If user data header<**udh**> is present, If encoding type is 7bit ASCII or GSM 7-bit, <**length**> value is the sum of the number of septets in user data and the number of septets in user data header (including any padding). Otherwise, <**length**> value is the sum of the number of octets in user data and the number of octets in user data header. If user data header<**udh**> is not present, If encoding type is 7bit ASCII or GSM 7-bit, <**length**> value is the number of septets in user data. Otherwise, <**length**> value is the number of octets in user data. where <**stat**> - status of the message 0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent <**length**> - length of the PDU in bytes. <**pdu**> - message in PDU format **(Text Mode)** Output format for received messages (the information written in *italics* will be present depending on **+CSDH** last setting)*:* Output format for message delivery confirm: **+CMGR:** **<stat>,<orig_num>,<callback>,<date>*[,<tooa>,<tele_id>,<priority>,<enc_type>,<udh>,<length>*]<CR><LF><data>** If there is either a **Sent** or an **Unsent** message in location <index> the output format is: **+CMGR:** **<stat>,<da>,<callback>*[,<toda>,<tele_id>,<priority>,<enc_type>,<udh>,<length>*]<CR><LF><data>**

+CMGR - Read Message	
	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 **<orig_num>** - Origination number. **<callback>** - Callback number. **<date>** - Received date in form as "YYYYMMDDHHMMSS". **<tooa>** - Type of <**orig_num**>. **<toda>** - Type of <**da**>. **<tele_id>** - Teleservice ID. 4097 - page 4098 - SMS message 4099 - voice mail notification 262144 - voice mail notification **<priority>** - Priority. 0 - Normal (factory default) 1 - Interactive 2 - Urgent 3 - Emergency **<enc_type>** - Encoding type of message. 0 - 8-bit Octet 2 - 7-bit ASCII 4 - 16-bit Unicode **<udh>** - User data header 0 - Not present the user data header 1 - Present the user data header **<length>** - Length of message. **<data>** - Message data. (Indicates the new voice mail count, if <tele_id> is voice mail notification)
AT+CMGR=?	Test command returns the **OK** result code
Example	<PDU Mode> Case of received message from base station: AT+CMGR=29 +CMGR: 1,"",51 0681104139430614102315582010020202002 4C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C3870E10 OK 06 <addr_len: 6byte> 81 <type_addr: 129> 1041394306 <Origination number: 0114933460> 141023155820 <Date: 14/10/23,15:58:20>

+CMGR - Read Message	
	1002 <Teleservice_id: 4098(decimal)> 02 <priority: urgent > 02 <encoding_type: 7-bit ASCII > 00 <udh: Not present user data header > 24 <data_len: 36 > C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C3870E 10 <user_data: aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa> Else: at+cmgr=31 +CMGR: 2,"",23 07801091346554F307801091346554F310020000000A61616161616161616161 OK 07 <addr_len: 7byte> 81 <type_addr:129> 1091346554F3 <Destination_addr: 01194356453> 07 <addr_len: 7byte> 81 <type_addr:129> 1096224658F1 <Callback_Number: 01692264851> 1002 <Teleservice_id: 4098(decimal)> 00 <priority: normal > 00 <encoding_type: 8-bit Octet > 00 <udh: Not present user data header > 0A <data_len: 10> 61616161616161616161 <data: aaaaaaaaaa> <Text Mode> AT+CSDH=1 OK AT+CMGR=1 +CMGR: "REC READ","0114933460","01149334690",20140109180259,129,4098,0,2,0,12 TEST MESSAGE OK AT+CMGR=4 +CMGR: "STO UNSENT","0114933460","0114933460",,129,4098,0,0,0,12 TEST MESSAGE OK

3.5.5.4. Message Sending And Writing

3.5.5.4.1. *Send Message – +CMGS*

+CMGS - Send Message	
(PDU Mode) **AT+CMGS= <length>**	**(PDU Mode)** Execution command sends to the network a message. After command line is terminated with **<CR>**, the device responds sending a four character sequence prompt: **<CR><LF><greater_than><space> (IRA 13, 10, 62, 32)** and waits for the specified number of bytes. Parameter: **<length>** - length of the PDU to be sent in bytes. (excluding the Destination Address octets) 5..183 Note: the echoing of given characters back from the TA is controlled by echo command **E** Note: the **PDU** shall be hexadecimal format (each octet of the **PDU** is given as two IRA character long hexadecimal number) and given in one line. To send the message issue **Ctrl-Z** char (**0x1A** hex). To exit without sending the message issue **ESC** char (**0x1B** hex). If message is successfully sent to the network, then the result is sent in the format: **+CMGS: <mr>** where **<mr>** - message reference number. Note: if message sending fails for some reason, an error code is reported. Note: The limit of user data is 160 characters.
Example – PDU mode	AT+CMGF=0 OK AT+CMGS=36 > 07811091346554F307801096224658F1100200000016626262626262626262626

+CMGS - Send Message	
	26262626262626262626 +CMGS: 4 OK 07 <addr_len: 7byte> 81 <type_addr: 129> 1091346554F3 <Destination_address:01194356453> 07 <addr_len: 7byte> 81 <type_addr: 129> 1096224658F1 <callback_address:01692264851> 1002 <Teleservice_id: 4098(decimal)> 00 <priority: normal > 00 <encoding_type: octet > 00 <udh: Not present user data header > 16 <data_len: 22> 626262626262626262626262626262626262626262626262 <user_data: bbbbbbbbbbbbbbbbbbbbbb> AT+CMGS=32 > 07811091346554F307811091346554F3100202020014C3870E1C3870E1C387162C58B162C58B1620 +CMGS: 3 OK 07 <addr_len: 7byte> 81 <type_addr: 129> 1091346554F3 <destination_address:01194356453> 07 <addr_len: 7byte> 81 <type_addr: 129> 1091346554F3 <callback_address: 01194356453> 1002 <Teleservice_id: 4098(decimal)> 02 <priority: ungent > 02 <encoding_type: 7-bit ASCII > 00 <udh: Not present user data header > 14 <data_len: 20> C3870E1C3870E1C387162C58B162C58B1620 <user_data: aaaaaaaaaabbbbbbbbbb>
(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);

+CMGS - Send Message	
	ASCII characters in the set (0 9), #,*; Maximum length is 32 characters **<toda>** - type of destination address 129 - number in national format 145 - number in international format (contains the "+") 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. Note: if message sending fails for some reason, an error code is reported. Note: The limit of user data is 160 characters. Note: To discard SMS, press the “ESC” key, an “OK” response will be returned.
AT+CMGS=?	Test command returns the **OK** result code.
Note	To avoid malfunctions is suggested to wait for the **+CMGS: <mr>** or **+CMS ERROR: <err>** response before issuing further commands.
Example – TEXT mode	AT+CMGF=1 OK AT+CMGS="9194547830" > Test SMS +CMGS: 1 OK

3.5.5.4.2. *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. 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.**
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.
Example	AT+CMGF=1 OK AT+CMGW="0165872928" > test message... +CMGW: 5 OK AT+CMSS=5 +CMSS: 136 OK

3.5.5.4.3. *Write Message To Memory - +CMGW*

+CMGW - Write Message To Memory	
(PDU Mode)	**(PDU Mode)**

+CMGW - Write Message To Memory	
AT+CMGW= <length> [,<stat>]	Execution command writes in the **<memw>** memory storage a new message. Parameter: **<length>** - length in bytes of the PDU to be written. (excluding the Destination Address octets) 5..183 **<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: The limit of user data is 160 characters.
Example – PDU mode	AT+CMGF=0 OK AT+CMGW=36 > 07811091346554F307811096224658F1100200000016626262626262626262626262626262626262626262 +CMGW: 4 OK 07 <addr_len: 7byte> 81 <type_addr: 129> 1091346554F3 <Destination_address:01194356453> 07 <addr_len: 7byte> 81 <type_addr: 129> 1096224658F1 <callback_address:01692264851> 1002 <Teleservice_id: 4098(decimal)>

+CMGW - Write Message To Memory	
	00 <priority: normal > 00 <encoding_type: octet > 00 <udh: Not present user data header > 16 <data_len: 22> 626262626262626262626262626262626262626262 <user_data: bbbbbbbbbbbbbbbbbbbbbb>
(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); ASCII characters in the set (0 9), #,*; Maximum length is 32 characters **<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)** Note: the echoing of entered characters back from the TA is controlled by echo command **E** To write the message issue **Ctrl-Z** char (**0x1A** hex). To exit without writing the message issue **ESC** char (**0x1B** hex). If message is successfully written in the memory, then the result is sent in the format: **+CMGW: <index>** where: **<index>** - message location index in the memory **<memw>**. If message storing fails for some reason, an error code is reported. Note: To discard SMS, press the “ESC” key, an “OK” response will be returned.

+CMGW - Write Message To Memory	
	Note: The limit of user data is 160 characters.
AT+CMGW=?	Test command returns the **OK** result code.
Example – TEXT mode	AT+CMGW=? OK AT+CMGF=1 OK AT+CMGW > Test message > Ctrl+Z must be used to write message +CMGW: 1 OK AT+CMGW="9194397977" > Test SMS +CMGW: 2 OK AT+CMGW="9194397977",129 > Test SMS +CMGW: 3 OK
Note	To avoid malfunctions is suggested to wait for the **+CMGW: <index>** or **+CMS ERROR: <err>** response before issuing further commands.

3.5.5.4.4. *Delete Message – +CMGD*

+CMGD - Delete Message	
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.

+CMGD - Delete Message	
	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: (0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20),(0-4) OK AT+CMGD=11 *Delete message in 10th record* OK AT+CMGD=1,4 *Delete all messages* OK

3.5.6. Telit Custom AT Commands

3.5.6.1. General Configuration AT Commands

3.5.6.1.1. *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.
Example	AT#CGMI #CGMI: Telit OK

3.5.6.1.2. *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.
Example	AT#CGMM #CGMM: CE910-SL OK

3.5.6.1.3. *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.
Example	AT#CGMR #CGMR: 08.01.005 OK

3.5.6.1.4. *Product Serial Number Identification - #CGSN*

#CGSN - Product Serial Number Identification	
AT#CGSN	Execution command returns the device electronic serial number (ESN) or the mobile equipment identifier (MEID) with command echo. Note: This command returns 11-digit decimal of ESN. But, if MEID was entered to modem, this command returns 18-digit decimal of MEID. For more information about convert a MEID from hex to decimal please see the "MEID Conversion, HEX to DEC" in the Software User Guide.
AT#CGSN=?	Test command returns the **OK** result code.
Example	<ESN module> AT#CGSN #CGSN: 09210437158 OK <MEID module> AT#CGSN #CGSN: 268435456000000001 OK

3.5.6.1.5. *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.
Example	AT#CIMI #CIMI: 450050209516643 OK

3.5.6.1.6. *Mobile Equipment Identifier - #MEID*

#MEID – Set Mobile equipment identifier	
AT#MEID?	Returns the current MEID Note: the MEID is hex values. For more information about convert a MEID from hex to decimal please see the "MEID Conversion, HEX to DEC" in the Software User Guide.
AT#MEID=?	Returns the OK result code.

#MEID – Set Mobile equipment identifier	
Example	AT#MEID? #MEID: A1234512345678 OK

3.5.6.1.7. *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**. Note: The maximum time to shutdown the device, completely is 25 seconds. Note: after the issuing of this command any previous activity is terminated and the device will not respond to any further command.
AT#SHDN=?	Test command returns the OK result code.

3.5.6.1.8. *Fast power down - #FASTSHDN*

#FASTSHDN – Configure fast power down	
AT#FASTSHDN= **[<enable>[,<pin>]]**	Set command configure fast power down Parameter: **<enable>** - enables/disables fast power down. 0 - disables (factory default) 1 - enables on GPIO event **<pin>** - GPIO number is used for event monitoring. Valid range is “any input pin” (see “Hardware User’s Guide”). Default value is 0. If GPIO is set, (default setting is Pull-Up, GPIO is Low active) if GPIO goes to low then module enter power off autonomously without waiting for all EFS transaction is finished. Note: the values are stored in NVM and available on following reboot. Note: This command is available after NVM initialization at the boot-up. Note: When GPIO is used as **#FASTSHDN**, **that is priority is first of the other function. Customer should never be used for other functions.** Note: If the **<enable>** is 0, it does not use the **<pin>**.

#FASTSHDN – Configure fast power down	
AT# FASTSHDN	Execution command immediately perform fast power down, regardless the GPIO status and is not waiting for All EFS transaction will be finished.
AT# FASTSHDN?	Read command returns the #FASTSHDN current setting, in the format: **#FASTSHDN: <enable>,<pin>**
AT#FASTSHDN =?	Test command reports the range for the parameters **<enable>** and **<pin>**.

3.5.6.1.9. *Reset - $RESET*

$RESET – Reset The Modem	
AT$RESET	Immediately resets the modem.
AT$RESET=?	Test command returns the **OK** result code.

3.5.6.1.10. *Reboot - #REBOOT*

#REBOOT - Reboot	
AT#REBOOT	Execution command reboots the module.
AT#REBOOT=?	Test command returns the OK result code.
Example	AT#REBOOT=? OK AT#REBOOT OK

3.5.6.1.11. *Extended 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.

3.5.6.1.12. *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**.

#WAKE - Wake From Alarm 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 hardware pin **CTS** to the **ON** status and **DSR** to the **OFF** status, while the "power saving" status is indicated by a **CTS - OFF** ,**DSR - OFF** and USB_VBUS – OFF status. The normal operating status is indicated by **DSR – ON or USB_VBUS – ON status**. Note: during the **alarm mode** the device will not make any network scan and will not register to any network and therefore is not able to dial or receive any call or SM, the only commands that can be issued to the MODULE in this state are the **#WAKE** and **#SHDN**, every other command must not be issued during this state.
AT#WAKE?	Read command returns the **operating status** of the device in the format: **#WAKE: <status>** where: **<status>** 0 - normal operating mode 1 - alarm mode or normal operating mode with some alarm activity.
AT#WAKE=?	Test command returns **OK** result code.

3.5.6.1.13. *Query Temperature Overflow - #QTEMP*

#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 Note: typical *temperature working range* is (-10°C..+55°C); anyway you are strongly recommended to consult the "Hardware User Guide" to verify the real temperature working range of your module
AT#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

#QTEMP - Query Temperature Overflow	
	proper functioning of the device is not ensured.

3.5.6.1.14. *Temperature Monitor - #TEMPMON*

#TEMPMON - Temperature Monitor	
AT#TEMPMON= **<mod>** **[,<urcmode>** **[,<action>** **[,<hyst_time>** **[,<GPIO>]]]]**	Set command sets the behavior 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 **Setting of the following optional parameters has meaning only if <mod>=0:** **<urcmode>** - URC presentation mode. **(Default 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). If **<action>** is not zero, it is mandatory to set the **<hyst_time>** parameter too. 0 - no action (00) 1 - automatic shut-down when the temperature is beyond the extreme bounds (01) 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. (10) 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. (100) Note: Possible values for the parameter **<action>** are form 0 to 7 (000, 001, 010, 011, 100, 101, 110 and 111) **<hyst_time>** - hysteresis time: all the actions happen only if the extreme or operating bounds are maintained at least for this period. This parameter is needed and required if **<action>** is not zero. 0..255 - time in seconds Note: **<action>** can assume values from 1-7 **<GPIO>** - GPIO number. Valid range is "any output pin" (see "Hardware User's Guide"). This parameter is needed and required only if **<action>=4** is enabled. Note: **if the <GPIO> is specified <action> shall** assume values from 4-7. Note: last **<urcmode>** settings are saved as extended profile parameters. Note: last **<action>**, **<hyst_time>** and **<GPIO>** settings are global parameter s 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	**CDMA Limits** **Extreme Temperature Lower Bound(*)** **-40°C**

	Operating Temperature Lower Bound(*) **-40°C** **Operating Temperature** **Operating Temperature Upper Bound(*)** **+85°C** **Extreme Temperature Upper Bound(*)** **+85°C** (*) Due to temperature measurement uncertainty there is a tolerance of +/-2°C The automatic power off is deferred in case of an Emergency Call

3.5.6.1.15. *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). 3 - pin direction is “Fast power down”, It is only possible to set by #FASTSHDN (see #FASTSHDN) Note: when **<mode>=2** (and **<dir>** is omitted) the command reports the direction and value of pin **GPIO<pin>** in the format: **#GPIO: <dir>,<stat>** where: **<dir>** - current direction setting for the **GPIO<pin>** **<stat>**

#GPIO - General Purpose Input/Output Pin Control	
	• 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: • **GPIO1** - alternate function is "STAT_LED" (see **#SLED**) • **GPIO6** - alternate function is "Alarm Output" (see **+CALA**) 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=4,1,1 OK AT#GPIO=5,0,0 OK AT#GPIO=6,2 #GPIO: 0,1 OK

3.5.6.1.16. *STAT_LED GPIO Setting - #SLED*

#SLED - STAT_LED GPIO Setting	
AT#SLED=<mode>[,<on_duration>[,<off_duration>]]	Set command sets the behaviour of the **STAT_LED** GPIO Parameters: **<mode>** - defines how the **STAT_LED** GPIO is handled 0 - GPIO tied **Low** 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. Note: Set **AT#GPIO=1,0,2** to enable LED on the EVK.
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>**.
Example	AT#SLED=? #SLED: (0-3),(1-100),(1-100) OK AT#SLED? #SLED: 2,10,10 OK AT#SLED=0 OK AT#SLED=0 OK AT#SLED=1 OK AT#SLED=2 OK AT#SLED=3,50,50

#SLED - STAT_LED GPIO Setting	
	OK AT#SLED? #SLED: 3,50,50 OK AT#SLED=3,5,5 OK AT#SLED? #SLED: 3,5,5 OK

3.5.6.1.17. *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.

3.5.6.1.18. *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.
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>**
Example	AT#E2SMSRI=? #E2SMSRI: (0,50-1150)) OK AT#E2SMSRI? #E2SMSRI: 0

#E2SMSRI - SMS Ring Indicator	
	OK AT#E2SMSRI=50 OK AT#E2SMSRI? #E2SMSRI: 50 OK

3.5.6.1.19. *Read Analog/Digital Converter Input - #ADC*

#ADC - Read Analog/Digital Converter Input	
AT#ADC= [<adc>,<mode> [,<dir>]]	Execution command reads pin**<adc>** voltage, converted by ADC, and outputs it in the format: **#ADC: <value>** where: **<value>** - pin**<adc>** voltage, expressed in mV Parameters: **<adc>** - index of pin 1 - available for CE910-SL **<mode>** - required action 2 - query ADC value **<dir>** - direction; its interpretation is currently not implemented 0 - no effect. Note: The command returns the last valid measure.
AT#ADC?	Read command reports all pins voltage, converted by ADC, in the format: **#ADC: <value>[<CR><LF>#ADC: <value>[…]]**
AT#ADC=?	Test command reports the supported range of values of the command parameters **<adc>**, **<mode>** and **<dir>**.

3.5.6.1.20. *Digital/Analog Converter Control - #DAC*

#DAC - Digital/Analog Converter Control	
AT#DAC= [<enable> [,<value>]]	It has no effect and is included only for backward compatibility. Parameters: **<enable>** - enables/disables DAC output. 0 - disables pin; it is in high impedance status (factory default) 1 - enables pin; the corresponding output is driven **<value>** - scale factor of the integrated output voltage; it must be present if **<enable>=1**

#DAC - Digital/Analog Converter Control	
	0..1023 - 10 bit precision Note: **integrated output voltage = MAX_VOLTAGE * value / 1023**
AT#DAC?	Read command reports whether the **DAC_OUT** pin is currently enabled or not, along with the integrated output voltage scale factor, in the format: **#DAC: <enable>,<value>**
AT#DAC=?	Test command reports the range for the parameters **<enable>** and **<value>**.
Example	*Enable the DAC out and set its integrated output to the 50% of the max value:* AT#DAC=1,511 OK *Disable the DAC out:* AT#DAC=0 OK
Note	With this command the DAC frequency is selected internally. D/A converter must not be used during POWERSAVING. **DAC_OUT** line must be integrated (for example with a low band pass filter) in order to obtain an analog voltage. For a more in depth description of the integration filter refer to the hardware user guide.

3.5.6.1.21. *Auxiliary Voltage Output Control - #VAUX*

#VAUX- Auxiliary Voltage Output Control	
AT#VAUX= [<n>,<stat>]	Set command enables/disables the Auxiliary Voltage pins output. Parameters: **<n>** - **VAUX** pin index 1 - there is currently just one **VAUX** pin **<stat>** 0 - output off 1 - output on 2 - query current value of **VAUX** pin Note: when **<stat>=2** and command is successful, it returns: **#VAUX: <value>** where: **<value>** - power output status 0 - output off 1 - output on Note: the current setting is stored through **#VAUXSAV**

#VAUX- Auxiliary Voltage Output Control	
AT#VAUX?	Read command reports whether the Auxiliary Voltage pin output is currently enabled or not, in the format: **#VAUX: <value>**
AT#VAUX=?	Test command reports the supported range of values for parameters **<n>**, **<stat>**.

3.5.6.1.22. *Auxiliary Voltage Output Save - #VAUXSAV*

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

3.5.6.1.23. *V24 Output Pins Configuration - #V24CFG*

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

3.5.6.1.24. *V24 Output Pins Control - #V24*

#V24 - V24 Output Pins Control	
AT#V24=<pin> [,<state>]	Set command sets the AT commands serial port (UART) interface output pins state. Parameters: **<pin>** - AT commands serial port interface hardware pin: 0 - **DCD** (Data Carrier Detect) 1 - **CTS** (Clear To Send) 2 - **RI** (Ring Indicator) 3 - **DSR** (Data Set Ready) 4 - **DTR** (Data Terminal Ready). This is not an output pin: we maintain this value only for backward compatibility, but trying to set its state raises the result code "ERROR" 5 - **RTS** (Request To Send). This is not an output pin: we maintain this value only for backward compatibility, but trying to set its state raises the result code "ERROR" **<state>** - State of AT commands serial port interface output hardware pins (0, 1, 2, 3) when pin is in GPIO mode (see **#V24CFG**): 0 - Low 1 - High Note: if <state> is omitted the command returns 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>[...]]** 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>**.

3.5.6.1.25. *Battery And Charger Status - #CBC*

#CBC- Battery And Charger Status	
AT#CBC	Execution command returns the current Battery and Charger state in the format: **#CBC: <ChargerState>,<BatteryVoltage>** where: **<ChargerState>** - battery charger state 0 - charger not connected 1 - charger connected and charging 2 - charger connected and charge completed **<BatteryVoltage>** - battery voltage in millivolt: it is the real battery voltage only if charger is not connected; if the charger is connected this value depends on the

#CBC- Battery And Charger Status	
	charger voltage. NOTE: ‘1’ and ‘2’ at <ChargerState> is not supported.
AT#CBC=?	Test command returns the **OK** result code.

3.5.6.1.26. *Dialling Mode - #DIALMODE*

#DIALMODE - Dialling Mode	
AT#DIALMODE= [<mode>]	Set command sets dialling 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 after the called party answers or entered traffic state (CDMA models only). Any character typed aborts the call and **OK** result code is received. 2 - (voice call and circuit data call) the following custom result codes are received, monitoring step by step the call status **DIALING** (MO in progress) **RINGING** (remote ring, not supported CDMA models) **CONNECTED** (remote call accepted or traffic state entered on CDMA models) **RELEASED** (after **ATH**) **DISCONNECTED** (remote hang-up) Note: The setting is saved in NVM and available on following reboot. Note: “RINGING” doesn’t work in CDMA models because it is working in receving “call origination progress indication”. But CDMA is not supported “call origination progress indication” Note: Mode of 2 is not working on packet data call. Currently circuit data call is not supporting in CDMA networks. So mode of 2 is not working on data call.
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>**

3.5.6.1.27. *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.

#ACAL - Automatic Call	
AT#ACAL?	Read command reports whether the automatic call function is currently enabled or not, in the format: **#ACAL: <mode>** where **<mode>** 0 - automatic call function disabled 1 - automatic call function from internal phonebook enabled
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.

3.5.6.1.28. *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 internal phonebook. **<index>** - it indicates a position in the currently selected phonebook. (default value is 0) 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.
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=?	Test command returns the range of available values for parameter **<mode>** and **<index>**
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.

3.5.6.1.29. *Extended Call Monitoring - #ECAM*

#ECAM - Extended Call Monitoring	
AT#ECAM=[<onoff>]	This command enables/disables the call monitoring function in the ME. Parameter: **<onoff>** 0 - disables call monitoring function (factory default) 1 - enables call monitoring function; the ME informs about call events, such as incoming call, connected, hang up etc. using the following unsolicited indication: **#ECAM: <ccid>,<ccstatus>,<calltype>,,,[<number>,<type>]** where **<ccid>** - call ID **<ccstatus>** - call status 0 - idle 1 - calling (MO) 2 - connecting (MO) 3 - active 4 - hold 5 - waiting (MT) 6 - alerting (MT) 7 – busy 8 – retrieved 9 – CNAP (Calling Name Presentation) information (MT) Note: **2 - connecting (MO)**, **4 – hold**, **5 - waiting (MT)**, **7 – busy** and **8 – retrieved** are not supported for CE910-SL. **<calltype>** - call type 1 - voice 2 – circuit switched 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>**

3.5.6.1.30. *SMS Overflow - #SMOV*

#SMOV - SMS Overflow

#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: <memo>** **< memo >** "ME" – SMS memory storage into module
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>**.
Example	AT+CPMS? +CPMS: "ME",99,99,"ME",99,99 OK AT+CMGD=1 OK AT#SMOV=1 OK AT+CMGF=1 OK AT+CMGW="1111111111" > aaaaaaaa +CMGW: 1 OK #SMOV: "ME"

3.5.6.1.31. *Audio Codec - #CODEC*

#CODEC - Audio Codec	
AT#CODEC=[<codec>]	Set command sets the audio codec mode. Parameter: **<codec>** 0 - SO3 : EVRC (factory default) 1 - SO32768 : QCELP 2 - SO17 : High Rate Voice Service (13 kbps) IS-733 3 - SO68 : 4GV Narrow Band Service Option (Only for the 4GV support models)

#CODEC - Audio Codec	
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=? #CODEC: (0-2) OK AT#CODEC? #CODEC: 1 OK AT#CODEC=0 OK *For models supporting the 4GV, the supporting service option range will be increase from (0-2) to (0-3) as follows.* AT#CODEC=? #CODEC: (0-3) OK

3.5.6.1.32. Network Timezone - #NITZ

#NITZ - Network Timezone	
AT#NITZ= [<val> [,<mode>]]	Set command enables/disables (a) automatic date/time updating, (b) Full Network Name applying and (c) **#NITZ** URC; moreover it permits to change the **#NITZ** URC format. Date and time information can be sent by the network after receiving the SYNC message. Parameters: **<val>** 0 - disables (a) automatic data/time updating, (b) Full Network Name applying and (c) **#NITZ** URC; moreover it sets the **#NITZ** URC *'basic'* format (see **<datetime>** below) 1..15 - as a sum of: 1 - enables automatic date/time updating 2 - enables Full Network Name applying (Not Supported) 4 - it sets the **#NITZ** URC *'extended'* format (see **<datetime>** below) 8 - it sets the **#NITZ** URC *'extended'* format with Daylight Saving Time (DST) support (see **<datetime>** below) (default: 7) **<mode>** 0 - disables **#NITZ** URC (factory default) 1 - enables **#NITZ** URC; after date and time updating the following unsolicited

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

3.5.6.1.33. *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

#SKIPESC - Skip Escape Sequence	
	not, in the format: **#SKIPESC: <mode>**
AT#SKIPESC=?	Test command reports supported range of values for parameter **<mode>**.

3.5.6.1.34. *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 CDMA to be considered a valid one (and return to on-line command mode). Parameter: **<gt>** 0 - no guard time (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.

3.5.6.1.35. *PPP Connection Authentication Type - #GAUTH*

#GAUTH – PPP Connection Authentication Type	
AT#GAUTH= [<type>]	Set command sets the PPP connection authentication type. Parameter **<type>** 3 – AUTO authentication (PAP and CHAP , factory default)
AT#GAUTH?	Read command reports the current PPP connection authentication type, in the format: **#GAUTH: <type>**
AT#GAUTH=?	Test command returns the range of supported values for parameter **<type>**.

3.5.6.1.36. *RTC Status - #RTCSTAT*

#RTCSTAT - RTC Status	
AT#RTCSTAT= [<status>]	Set command resets the RTC status flag. Parameter:

#RTCSTAT - RTC Status	
	<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>**

3.5.6.1.37. *GSM Antenna Detection - #GSMAD*

#GSMAD - GSM Antenna Detection	
AT#GSMAD= <mod>, [<urcmode> [,<interval> [,<detGPIO> [,<repGPIO>]]]]	Set command sets the behaviour of antenna detection algorithm Parameters: **<mod>** 0 - detection algorithm not active 1 - periodic activation of the antenna detection algorithm; detection is started every **<interval>** period, using **<detGPIO>** for detection; if the algorithm detects a change in the antenna status the module is notified by URC **#GSMAD** (see format below) 2 - instantaneous activation of the antenna detection algorithm; if the algorithm detects a change in the antenna status the module is notified by URC (see format below); this instantaneous activation doesn't affect a periodic activation eventually started before. URC format: **#GSMAD: <presence>** where: **<presence>** 0 - antenna connected. 1 - antenna connector short circuited to ground. 2 - antenna connector short circuited to power. 3 - antenna not detected (open). **<urcmode>** - URC presentation mode. It has meaning only if **<mod>** is 1. 0 - it disables the presentation of the antenna detection URC

	1 - it enables the presentation of the antenna detection URC, whenever the antenna detection algorithm detects a change in the antenna status; the unsolicited message is in the format: **#GSMAD: <presence>** where: **<presence>** is as before **<interval>** - duration in seconds of the interval between two consecutive antenna detection algorithm runs (default is 120). It has meaning only if **<mod>** is 1. 1..3600 - seconds **<detGPIO>** - defines which GPIO shall be used as input by the Antenna Detection algorithm. For the <detGPIO> actual range see Test Command **<repGPIO>** - defines which GPIO shall be used by the Antenna Detection algorithm to report antenna condition. It has meaning only if **<mod>** is 1. For the **<repGPIO>** actual range see Test Command. 0 - no report is made using GPIO Note: last **<urcmode>** settings are saved as extended profile parameters. Note: GPIO is set to LOW when antenna is connected. Set to HIGH otherwise Note: **#GSMAD** parameters, excluding **<urcmode>**, are saved in NVM.
AT#GSMAD=?	Test command reports the supported range of values for parameters **<mod>, <urcmode>, <interval>, <detGPIO>** and **<repGPIO>**.
AT#GSMAD?	Read command returns the current parameter settings for **#GSMAD** command in the format: **#GSMAD: <mod>,<urcmode>,<interval>,<detGPIO>,<repGPIO>**

3.5.6.1.38. *Power Saving Mode Ring Indicator - #PSMRI*

#PSMRI – Power Saving Mode Ring Indicator	
AT#PSMRI=<n>	Set command enables/disables the Ring Indicator pin response to an URC message while modem is in power saving mode. If enabled, a negative going pulse is generated, when URC message for specific event is invoked. The duration of this pulse is determined by the value of **<n>**. Parameter: **<n>** - **RI** enabling 0 - disables **RI** pin response for URC message(factory default) 50-1150 - enables **RI** pin response for URC messages. Note: the behavior for #PSMRI is invoked only when modem is in sleep mode (AT+CFUN=5 and DTR Off on Main UART)
AT#PSMRI?	Read command reports the duration in ms of the pulse generated, in the format: **#PSMRI: <n>**
AT#PSMRI=?	Reports the range of supported values for parameter **<n>**
Note	When RING signal for incoming call/SMS/socket listen is enabled, the behavior for #PSMRI will be ignored.

3.5.6.1.39. *Command Mode Flow Control - #CFLO*

#CFLO – Command Mode Flow Control	
AT#CFLO= <mode>	Set command enables/disables the flow control in command mode. If enabled, current flow control is applied to both command mode and data mode. Parameter: **<mode>** 0 – Disable flow control set in command mode (factory default) 1- Enable flow control set in command mode Note: This behavior is valid only for Main UART port.
AT#CFLO?	Read command reports current setting value , in the format: **#CFLO: <mode>**
AT#CFLO=?	Test command reports the range of supported values for parameter **<mode>**

3.5.6.1.40. *Cell Monitor - #MONI*

#MONI - Cell Monitor	
AT#MONI[= [<number>]]	Set command to select one of three pilot set, Active/Candidate/ Neighbour set, from which extract CDMA-related informations. Parameter: **<number>** <CDMA network>

#MONI - Cell Monitor	
	0 – it is the active set (factory default) 1 – it is the candidate set 2 – it is the neighbour set 3..7 – it is not available Note: Candidate set (number = 1) display in traffic state only. That is CDMA specifications (refer to 2.6.6.1.2 Pilot Sets of C.S0005). If mobile stays in Idle state, pilot set and strength are displayed to 0. a) When number is set to 0 (active set), extracting information format is: **#MONI: A_PN:<PNn>,A_PN_STR:<PNn_str>[<CR><LF>** **#MONI: A_PN:<PNn>,A_PN_STR:<PNn_str>[…]]** b) When number is set to 1 (candidate set), extracting information format is: **#MONI: C_PN:<PNn>,C_PN_STR:<PNn_str>>[<CR><LF>** **#MONI: C_PN:<PNn>,C_PN_STR:<PNn_str>[…]]** c) When number is set to 2 (neighbour set), extracting information format is: **#MONI: N_PN:<PNn>,N_PN_STR:<PNn_str>>[<CR><LF>** **#MONI: N_PN:<PNn>,N_PN_STR:<PNn_str>[…]]** where: **<PNn>** - Value of **n**th (active/candidate/neighbour)pilot sets. **<PNn_Str>** - Pilot strength of **n**th (active/candidate/neighbour)pilot sets.
AT#MONI=?	Test command returns the **OK** result code**.**
Note	Maximum value of parameter **n** is 3. Top 3 PNs of Active/Candidate/Neighbour set are displayed in the signal strength order.
Example	AT#MONI=0 OK AT#MONI A_PN:80,A_PN_STR:-10 OK AT#MONI=? OK

3.5.6.1.41. *I2C data via GPIO – #I2CWR*

#I2CWR – Write to I2C

#I2CWR – Write to I2C	
AT#I2CWR= <sdaPin>,<sclPin>, <deviceId>, <registerId>,<len>	This command is used to Send Data to an I2C peripheral connected to module GPIOs **<sdaPin>**: GPIO number for SDA . Valid range is “any input/output pin” (see “Hardware User’s Guide”.) **<sclPin>**: GPIO number to be used for SCL. Valid range is “any output pin” (see “Hardware User’s Guide”). **<deviceId>**: address of the I2C device, without the LSB used for read\write command, 10 bit addressing supported. Value has to be written in hexadecimal form (without 0x). **<registerId>**: Register to write data to , range 0..255. Value has to be written in hexadecimal form (without 0x). **<len>**: number of data to send. Valid range is 1-254. The module responds to the command with the prompt '>' and awaits for the data to send. To complete the operation send **Ctrl-Z** char (**0x1A** hex); to exit without writing the message send **ESC** char (**0x1B** hex). Data shall be written in Hexadecimal Form. If data are successfully sent, then the response is OK. If data sending fails for some reason, an error code is reported. Example if CheckAck is set and no Ack signal was received on the I2C bus **E.g.** AT#I2CWR=2,3,20,10,14 > 00112233445566778899AABBCCDD<ctrl-z> OK Set GPIO2 as SDA, GPIO3 as SCL; Device I2C address is 0x20; 0x10 is the address of the first register where to write I2C data; 14 data bytes will be written since register 0x10 NOTE: At the end of the execution GPIO will be restored to the original setting (check AT#GPIO Command) NOTE: device address, register address where to read from\ write to, and date bytes have to be written in hexadecimal form without 0x.
AT#I2CWR=?	Test command returns the range of each parameter**.**

3.5.6.1.42. *I2C data from GPIO - #I2CRD*

#I2CRD – Read from I2C	
AT#I2CRD= <sdaPin>,<sclPin>, <deviceId>, <registerId>,<len>	This command is used to Read Data from an I2C peripheral connected to module GPIOs **<sdaPin>**: GPIO number for SDA . Valid range is "any input/output pin" (see "Hardware User's Guide".) **<sclPin>**: GPIO number to be used for SCL. Valid range is "any output pin" (see "Hardware User's Guide"). **<deviceId>**: address of the I2C device, without the LSB used for read\write command, 10 bit addressing supported. Value has to be written in hexadecimal form (without 0x). **<registerId>**: Register to read data from , range 0..255. Value has to be written in hexadecimal form (without 0x). **<len>**: number of data to receive. Valid range is 1-254. Data Read from I2C will be dumped in Hex: **E.g.** AT#I2CRD=2,3,20,10,14 #I2CRD: 00112233445566778899AABBCCDD OK NOTE: If data requested are more than data available in the device, dummy data (normally 0x00 or 0xff) will be dumped. NOTE: At the end of the execution GPIO will be restored to the original setting (check AT#GPIO Command) NOTE: device address, register address where to read from\ write to, and date bytes have to be written in hexadecimal form without 0x.
AT#I2CRD=?	Test command returns the range of each parameter**.**

3.5.6.1.43. *Control GPIOs based on Signal Strength - #CSQLED*

#CSQLED-LED control by Signal strength	
AT#CSQLED= <enable>[,<led1Pin>, <led2Pin>,<led3Pin>]	Set command control LEDs based on Signal strength. Parameter: **<enable>** Control LEDs based on signal strength : 0 : disable (default)

#CSQLED-LED control by Signal strength

1 : enable

<led1Pin>: GPIO number for led1. Valid range is “any output pin” (see “Hardware User’s Guide”).
Default value of led1Pin is 2.

<led2Pin>: GPIO number for led2. Valid range is “any output pin” (see “Hardware User’s Guide”).
Default value of led1Pin is 3.

<led3Pin>: GPIO number for led3. Valid range is “any output pin” (see “Hardware User’s Guide”).
Default value of led1Pin is 4.

Note: This value stored in NVM region.
Note: LED table base on Signal strength.

AT+CSQ response = +CSQ: xx, 99 where xx value is below	LED 1 bar : high = on, low = off	LED 2 bars : high = on, low = off	LED 3 bars : high = on, low = off
0	low	low	low
1	low	low	low
2	low	low	low
3	low	low	low
4	low	low	low
5	low	low	low
6	low	low	low
7	high	low	low
8	high	low	low
9	high	low	low
10	high	low	low
11	high	low	low
12	high	low	low
13	high	low	low
14	high	low	low
15	high	high	low
16	high	high	low
17	high	high	low
18	high	high	low
19	high	high	low
20	high	high	low
21	high	high	low
22	high	high	low
23	high	high	low
24	high	high	high
25	high	high	high
26	high	high	high

#CSQLED-LED control by Signal strength				
	27	high	high	high
	28	high	high	high
	29	high	high	high
	30	high	high	high
	31	high	high	high
AT#CSQLED?	Read command reports the current setting values in the format: #CSQLED: **<enable>,<led1Pin>,<led2Pin>,<led3Pin>**			
AT#CSQLED=?	Test command returns **OK**.			

3.5.6.1.44. *Delete All Phonebook Entries - #CPBD*

#CPBD - Delete All Phonebook Entries	
AT#CPBD	Execution command deletes all phonebook entries in the current phonebook memor y storage selected with **+CPBS**. Note: in case of SM or ME, it takes some time to delete all its entries.
AT#CPBD=?	Test command returns the OK result code.

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

#TESTMODE – Enable Test Mode command in not signalling mode	
AT#TESTMODE= <command>	The command allows setting module in not signalling mode. The functionality has to be first activated by sending **AT#TESTMODE="*TM*"**, which sets the module in Test Mode. Only after this set, AT#TESTMODE can be used with the other allowed commands. To exit from Test Mode and go back to Operative Mode, the command AT#TESTMODE ="*OM*" has to be sent. Parameter: **command :** This string corresponds to a command. To be accepted by AT#TESTMODE, the command has to belong to the following list of command enabled for this use: Commands quoted string type. • "*TM*": forces the module in Test Mode. • "*SETCDMABAND <band>*": sets the BC5 band(450Mhz). band: 0 – Band: BC0(Not support); band: 1 – Band: BC1(Not support); band: 2 – Band: BC5 (Support) • "*CH <CDMA_CH>*": sets the Channel. CDMA_CH – Band

#TESTMODE – Enable Test Mode command in not signalling mode

1 ~ 799	BC0 (Not support)
991 ~ 1023	
1 ~ 1199	BC1 (Not support)
1 ~ 193	BC5 (support)

*BC0 :Cellular, BC1:PCS, BC5:450Mhz

- "*TCH*": starts the non-stop module transmission.
  It enables TX power.

- "TXPDM <TXPDM>": set the value of desired TX power strength.

MODEL	BAND	TXPDM			Power Range
		Low CH	Mid CH	High CH	
CE910-SL	BC5	10~12	10~12	10~12	23~25dbm

*TXPDM range : 1~63

- "*OM*": forces the module in Operative Mode.

- "ESC": exits the current non-stop sequence.
  It must use to stop TX transmission.

.Note
- Bands support varies depending on the product

Note 1: This command should be checked individually
Note 2: In Test Mode, the other AT commands doesn't use.
Note 3: In Test Mode, DTE speed recommend 115200(see +IPR)
Note 4: In Test Mode, the multiplexing protocol control channel
recommend don't enable(see +CMUX)
Note 5: After issuing AT#TESTMODE="TM" or "OM", the module
Have to reboot.
Note 6: The Test Mode Status is stored in NVM.
Note 7: "TM" command just set on the Online or FTM mode status.
Note 8: "TCH" command have to set after the "SETCDMABAND"
Command set.
Note 9: After "TCH"command set, "SETCDMABAND"
Command can't set.
If you want to re-setting the cdmaband, you have to set 'ESC"
Command prior to "SETCDMABAND"command set.
Note 10: Before "CH" command set, you have to set the
"SETCDMABAND" Command.
Note 11: After "TCH" command set, you have to set "TXPDM" command.
Note 12: Using by "TXPDM" command, you can get the desired TX power.
Note 13: We don't recommend like as HW reset button or remove power

#TESTMODE – Enable Test Mode command in not signalling mode	
	Except reboot command..
AT# TESTMODE?	Read command reports the currently selected **<command>** in the format: **#TESTMODE: <TestModeStatus>** Where <TestModeStatus>can assume the following values: -1 if the module is in Test Mode -0 if the module is in Operative Mode
AT# TESTMODE=?	Test command returns the **OK** result code
Example :	AT#TESTMODE=”TM” AT#TESTMODE =”SETCDMABAND 2” AT#TESTMODE =”CH 112” to set ARFCN = 112 on DUT AT#TESTMODE =”TCH” AT#TESTMODE =”TXPDM 11” Verify on instrument side that TX max power level is about 23~25dBm. AT#TESTMODE =”ESC AT#TESTMODE =”OM”

3.5.6.2. Audio AT Commands

3.5.6.2.1. *Change Audio Path - #CAP*

#CAP - Change Audio Path	
AT#CAP=<n>	It has no effect and is included only for backward compatibility. Parameter: **<n>**: (0-2)
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>**.

3.5.6.2.2. *Open Audio Loop - #OAP*

#OAP – Open Audio Loop	
AT#OAP= <mode>	Set command sets Open Audio Path. Parameter: 0 - disables Open Audio Path (factory default) 1 - enables Open Audio Path

	Note: This parameter is not saved in NVM
AT#OAP?	Read command returns the current Open Audio Path, in the format: **#OAP: <mode>**
AT#OAP =?	Test command returns the supported range of values of parameter **<mode>**.

3.5.6.2.3. *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=?**. 10 - factory default **<tout>** - ringing tone playing time-out in seconds. 0 - ringer is stopped (if present) and current ringer sound is set.(factory default) 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* **<status>** - ringing status 0 - selected but not playing 1 - currently playing

#SRS - Select Ringer Sound	
AT#SRS=?	Test command reports the supported values for the parameters **<n>** and **<tout>**

3.5.6.2.4. *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**) (factory default) 1 - sound output towards handsfree 2 - sound output towards handset
AT#SRP?	Read command reports the set value of the parameter <n> in the format: **#SRP: <n>**.
AT#SRP=?	Test command reports the supported values for the parameter **<n>**.
Example	AT#SRP=? #SRP: (0-3) OK AT#SRP=3 OK

3.5.6.2.5. *Signalling Tones Mode – #STM*

#STM - Signalling 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 (factory default) 2 – all tones disabled Note: **AT#STM=0** has the same effect as **AT+CALM=2**; **AT#STM=1** has the same effect as AT+CALM=**0**.
AT#STM?	Read command reports whether the current signaling tones status is enabled or not, in the format: **#STM: <mode>**
AT#STM=?	Test command reports supported range of values for parameter **<mode>**.

3.5.6.2.6. *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 (G-L) - user defined tones Y - free 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>**.

3.5.6.2.7. *Tone Classes Volume - #TSVOL*

#TSVOL – Tone Classes Volume	
AT#TSVOL= <class>, <mode> [,<volume>]	Set command is used to select the volume mode for one or more tone classes. Parameters: **<class>** -sum of integers each representing a class of tones which the command refers to 1 - CDMA tones 2 - ringer tones 4 - reserved 8 - reserved 16 - DTMF tones 64 - user defined tones 128 - Dial tones 255 - all classes **<mode>** - it indicates which volume e're using for the classes of tones represented by **<class>** 0 - we're using default volume 1 - we're using the volume **<volume>**. **<volume>** - volume to be applied to the set of classes of tones represented by **<class>**; it is mandatory if **<mode>** is **1**. 0..*max* - the value of *max* can be read issuing the Test command **AT#TSVOL=?**
AT#TSVOL?	Read command returns for each class of tones the last setting of **<mode>** and, if **<mode>** is not **0**, of **<volume>** too, in the format: **#TSVOL:1,<mode1>[,<volume1>]<CR><LF>** **…** **#TSVOL:128,<mode128>[,<volume128>]**

#TSVOL – Tone Classes Volume	
AT#TSVOL=?	Test command returns the supported range of values of parameters **<class>**, **<mode>** and **<volume>**.
Example	at#tsvol=84,1,5 OK at#tsvol? #TSVOL:1,0 #TSVOL:2,0 #TSVOL:4,1,5 #TSVOL:8,0 #TSVOL:16,1,5 #TSVOL:32,0 #TSVOL:64,1,5 #TSVOL:128,0 OK

3.5.6.2.8. *Embedded DTMF decoder enabling - #DTMF*

#DTMF – Embedded DTMF decoder enabling	**SELINT 2**
AT#DTMF=<mode>	Set command enables/disables the embedded DTMF decoder. Parameters: **<mode>:** 0 – disable DTMF decoder (default) 1 – enables DTMF decoder 2 – enables DTMF decoder without URC notify Note: if **<mode>**=1, the receiving of a DTMF tone is pointed out with an unsolicited message through AT interface in the following format: #DTMFEV: x with x as the DTMF digit Note: the duration of a tone should be not less than 50ms. Note: the value set by command is not saved and a software or hardware reset restores the default value. The value can be stored in NVM using profiles. Note: When DTMF decoder is enabled, PCM playing and recording are automatically disabled (AT#SPCM will return error).
AT#DTMF?	Read command reports the currently selected **<mode>** in the format: **#DTMF: <mode>**

AT#DTMF =?	Test command reports supported range of values for all parameters.

3.5.6.2.9. *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 **<dviport>** 2 - DVI port 2 will be used(factory default) **<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=1,2,1 OK *DVI activated for Digital audio.* *DVI is configured as master providing on DVI Port #2*

3.5.6.2.10. *Digital Voiceband Interface Configuration – #DVICFG*

#DVICFG – DVI CONFIGURATION	
AT#DVICFG=[<clock>[,<decoder pad>[,<decoder format>[,<encoder pad>[,<encoder format>]]]]]	Set command sets the DVI configuration Parameter: **<clock>**: Clock speed for master mode 0 : normal mode 1 : high speed mode(factory default) **<decoder pad>**: PCM padding enable in decoder path 0 : disable 1 : enable(factory default) **<decoder format>**: PCM format in decoder path

#DVICFG – DVI CONFIGURATION	
	0 : u-Law(factory default) 1 : A-Law 2 : linear **<encoder pad>**: PCM padding enable in encoder path 0 : disable 1 : enable(factory default) **<encoder format>**: PCM format in encoder path 0 : u-Law(factory default) 1 : A-Law 2 : linear Note: #DVICFG parameters are saved in the extended profile. Note: Normal mode in <clock> is supported in DVI master
AT#DVICFG?	Read command reports the value of parameter in the format: **#DVICFG: <clock>,<decoder pad>,<decoder format>, <encoder pad>,<encoder format>**
AT#DVICFG=?	Test command returns the supported range of values of parameter **<clock>,<decoder pad>,<decoder format>, <encoder pad>,<encoder format>**.

3.5.6.2.11. *AXE Pin Reading - #AXE*

#AXE - AXE Pin Reading	
AT#AXE	It has no effect and is included only for backward compatibility.
AT#AXE=?	Test command returns the **OK** result code.

3.5.6.2.12. *Handsfree Echo Canceller - #SHFEC*

#SHFEC - Handsfree Echo Canceller	
AT#SHFEC= <mode>	Set command enables/disables the echo canceller function on audio handsfree output. Parameter: **<mode>** 0 - disables echo canceller for handsfree mode (factory default) 1 - enables echo canceller for handsfree mode *Note: This parameter is saved in NVM issuing AT&W command.*
AT#SHFEC?	Read command reports the value of parameter <mode>, in the format: **#SHFEC: <mode>**

#SHFEC - Handsfree Echo Canceller	
AT#SHFEC=?	Test command returns the supported range of values of parameter **<mode>**.

3.5.6.2.13. *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 (factory default : 4) 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>**.

3.5.6.2.14. *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 (factory default : 4) 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>**.

3.5.6.2.15. *Set Headset Sidetone - #SHFSD*

#SHFSD - Set Headset Sidetone	
AT#SHFSD= <mode>	Set command enables/disables the sidetone on handsfree audio output. Parameter: **<mode>** 0 - disables the handsfree sidetone (factory default) 1 - enables the handsfree sidetone *Note: This parameter is saved in NVM issuing AT&W command.*
AT#SHFSD?	Read command reports whether the handsfree sidetone is currently enabled or not, in the format: **#SHFSD: <mode>**

#SHFSD - Set Headset Sidetone	
AT#SHFSD=?	Test command returns the supported range of values of parameter **<mode>**.

3.5.6.2.16. *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.

3.5.6.2.17. *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 (factory default : 0) 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 value of parameter <level>, in the format: **#HFRECG: <level>**
AT#HFRECG =?	Test command returns the supported range of values of parameter **<level>**.

3.5.6.2.18. *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 (factory default : 0) 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>**.

3.5.6.2.19. *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 OK *Current audio profile is reset*

3.5.6.2.20. *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

#PSAV - Audio Profile Configuration Save	
	- 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*

3.5.6.2.21. *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 (factory default) 1..3 - extended profile, modifiable. *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>**.

3.5.6.2.22. *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**(unused)** **<nr_ atten >** - noise reduction max attenuation**(unused)** **<nr_w_0>** - noise reduction weighting factor (band 300-500Hz) **(unused)** **<nr_w_1>** - noise reduction weighting factor (band 500-4000Hz) **(unused)** **<add_atten>** - AGC Additional attenuation**(unused)** **<min_atten>** - AGC minimal attenuation**(unused)**

#PSET - Audio Profile Setting	
	<max_atten> - AGC maximal attenuation**(unused)**
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.

3.5.6.2.23. *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 (factory 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: <mode>**
AT#SHFAGC =?	Test command returns the supported range of values of parameter **<mode>**.

3.5.6.2.24. *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 (factory 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

#SHFNR - Handsfree Noise Reduction	
	<mode>.

3.5.6.2.25. *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 (factory 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>**.

3.5.6.2.26. *Handset Echo Canceller - #SHSEC*

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

3.5.6.2.27. *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>**

#SHSNR - Handset Noise Reduction	
	0 - disables noise reduction for handset mode (factory 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>**.

3.5.6.2.28. *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 (factory default) 1 - enables the handset sidetone *Note: This parameter is saved in NVM issuing AT&W command.*
AT#SHSSD?	Read command reports whether the headset sidetone is currently enabled or not, in the format: **#SHSSD: <mode>**
AT#SHSSD=?	Test command returns the supported range of values of parameter **<mode>**.

3.5.6.2.29. *DVI Microphone Gain - #PCMTXG*

#PCMTXG – DVI Microphone Gain	
AT#PCMTXG= <TX_VOL>	Set command sets the DVI (PCM) Audio TX gain Parameter: **<TX_VOL>** : PCM TX volume in TX path (factory default : 0) TX VOL RANGE : -5000(-50 dB) ~ 1200(+12 dB) Note: meaning of a TX_VOL is 1/100 dB step. Note: meaning of -50 dB is mute
AT#PCMTXG?	Read command returns the current PCM Audio TX value: **#PCMTXG: <TX_VOL>**
AT#PCMTXG=?	Test command returns the supported range of values of parameter **<TX_VOL>**

3.5.6.2.30. *DVI Speaker Volume Level - #PCMRXG*

#PCMRXG – DVI Speaker Volume Level	
AT#PCMRXG= <RX_VOL>	Set command sets the PCM Audio RX value Parameter: **<RX_VOL>** : PCM RX volume in RX path (factory default : 0) RX_VOL RANGE : -5000(-50 dB) ~ 1200(+12 dB) Note: meaning of a RX_VOL is 1/100 dB step. Note: meaning of -50 dB is mute
AT#PCMRXG?	Read command returns the current PCM Audio RX value: **#PCMRXG: <RX VOL>**
AT#PCMRXG=?	Test command returns the supported range of values of parameter **<RX VOL>**

3.5.6.2.31. *Handsfree RX AGC Value tuning - #SHFAGCRX*

#SHFAGCRX – Handsfree RX AGC Value tuning	
AT#SHFAGCRX=<agc_static_gain>,<agc_aig>,<agc_exp_thres>,<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>	Set command sets the handsfree RX AGC value tuning Parameter: **<agc_static_gain>** precompressor static gain. This is the gain applied to the input samples when static gain is enabled. Meaningful Range is 0x2000 to 0xFFFF. Value(agc_static_gain) = 8192 ∗ 10^(X/20) : X range is 0 to 18 dB. **<agc_aig>** pre-compressor gain selection flag. Write 0xFFFF to enable adaptive gain (static gain disabled). Write 0x0000 to enable static gain (adaptive gain disabled). Meaningful value is just 0x0000 or 0xFFFF. **<agc_exp_thres>** expansion threshold. This is the energy threshold of the input under which expansion is applied. This parameter must be less than agc_compr_thres. Meaningful range is 0x0 to 0x2580. Write 0 to disable the expander. Value(agc_exp_thres) = 128 ∗ (X+75) : X range is -75 to 0 dBm0mu **<agc_exp_slope>** expansion slope. This is the slope of the expander gain when expansion is applied. Meaningful range is 0xFF01 to 0xFFF6. Value(agc_exp_slope) = 256 * X : X range is -0.04 to -0.996. **<agc_compr_thres>** compression threshold. This is the energy threshold of the input above which compression is applied. Meaningful range is 0x0 to 0x2580. This parameter must be greater than agc_exp_thres. Value(agc_compr_thres) = 128 ∗ (X+75) : X range is -75 to 0 dBm0mu **<agc_compr_slope>** compression slope. This is the slope of the compressor gain when compression is applied. Meaningful range is 0x8000 to 0xFFFF. Value(agc_compr_sloop) = 65536 * X : X range is 0.50001 to 0.99999 Note: these values are automatically saved in NVM.
AT#SHFAGCRX?	Read command returns the current values **#SHFAGCRX:** **<agc_static_gain>,<agc_aig>,<agc_exp_thres>,<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>**
AT#SHFAGCRX =?	Test command returns the supported range of values of parameter **<agc_static_gain>,<agc_aig>,<agc_exp_thres>,<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>**

3.5.6.2.32. *Handsfree TX AGC Value tuning - #SHFAGCTX*

#SHFAGCTX – Handsfree TX AGC Value tuning	
AT#SHFAGCTX=<agc_static_gain>,<agc_aig>,<agc_exp_thres>,<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>	Set command sets the handsfree TX AGC value tuning Parameter: **<agc_static_gain>** precompressor static gain. This is the gain applied to the input samples when static gain is enabled. Meaningful Range is 0x2000 to 0xFFFF. Value(agc_static_gain) = 8192 ∗ 10^(X/20) : X range is 0 to 18 dB. **<agc_aig>** pre-compressor gain selection flag. Write 0xFFFF to enable adaptive gain (static gain disabled). Write 0x0000 to enable static gain (adaptive gain disabled). Meaningful value is just 0x0000 or 0xFFFF. **<agc_exp_thres>** expansion threshold. This is the energy threshold of the input under which expansion is applied. This parameter must be less than agc_compr_thres. Meaningful range is 0x0 to 0x2580. Write 0 to disable the expander. Value(agc_exp_thres) = 128 ∗ (X+75) : X range is -75 to 0 dBm0mu **<agc_exp_slope>** expansion slope. This is the slope of the expander gain when expansion is applied. Meaningful range is 0xFF01 to 0xFFF6. Value(agc_exp_slope) = 256 * X : X range is -0.04 to -0.996. **<agc_compr_thres>** compression threshold. This is the energy threshold of the input above which compression is applied. Meaningful range is 0x0 to 0x2580. This parameter must be greater than agc_exp_thres. Value(agc_compr_thres) = 128 ∗ (X+75) : X range is -75 to 0 dBm0mu **<agc_compr_slope>** compression slope. This is the slope of the compressor gain when compression is applied. Meaningful range is 0x8000 to 0xFFFF. Value(agc_compr_sloop) = 65536 * X : X range is 0.50001 to 0.99999 Note: these values are automatically saved in NVM.
AT#SHFAGCTX?	Read command returns the current values **#SHFAGCTX: <agc_static_gain>,<agc_aig>,<agc_exp_thres>,<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>**
AT#SHFAGCTX =?	Test command returns the supported range of values of parameter **<agc_static_gain>,<agc_aig>,<agc_exp_thres>,<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>**

3.5.6.2.33. *Handset RX AGC Value tuning - #SHSAGCRX*

#SHSAGCRX – Handset RX AGC Value tuning	
AT#SHSAGCRX=<agc_static_gain>,<agc_aig>,<agc_exp_thres>,<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>	Set command sets the handset RX AGC value tuning Parameter: **<agc_static_gain>** precompressor static gain. This is the gain applied to the input samples when static gain is enabled. Meaningful Range is 0x2000 to 0xFFFF. Value(agc_static_gain) = 8192 ∗ 10^(X/20) : X range is 0 to 18 dB. **<agc_aig>** pre-compressor gain selection flag. Write 0xFFFF to enable adaptive gain (static gain disabled). Write 0x0000 to enable static gain (adaptive gain disabled). Meaningful value is just 0x0000 or 0xFFFF. **<agc_exp_thres>** expansion threshold. This is the energy threshold of the input under which expansion is applied. This parameter must be less than agc_compr_thres. Meaningful range is 0x0 to 0x2580. Write 0 to disable the expander. Value(agc_exp_thres) = 128 ∗ (X+75) : X range is -75 to 0 dBm0mu **<agc_exp_slope>** expansion slope. This is the slope of the expander gain when expansion is applied. Meaningful range is 0xFF01 to 0xFFF6. Value(agc_exp_slope) = 256 * X : X range is -0.04 to -0.996. **<agc_compr_thres>** compression threshold. This is the energy threshold of the input above which compression is applied. Meaningful range is 0x0 to 0x2580. This parameter must be greater than agc_exp_thres. Value(agc_compr_thres) = 128 ∗ (X+75) : X range is -75 to 0 dBm0mu **<agc_compr_slope>** compression slope. This is the slope of the compressor gain when compression is applied. Meaningful range is 0x8000 to 0xFFFF. Value(agc_compr_sloop) = 65536 * X : X range is 0.50001 to 0.99999 Note: these values are automatically saved in NVM.
AT#SHSAGCRX?	Read command returns the current handset RX AGC values **#SHSAGCTX: <agc_static_gain>,<agc_aig>,<agc_exp_thres>,<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>**
AT#SHSAGCRX =?	Test command returns the supported range of values of parameter **<agc_static_gain>,<agc_aig>,<agc_exp_thres>,<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>**

3.5.6.2.34. *Handset TX AGC Value tuning - #SHSAGCTX*

#SHSAGCTX – Handset TX AGC Value tuning	
AT#SHSAGCTX= <agc_static_gain>,<agc_aig>, <agc_exp_thres>,<agc_exp_slope>, <agc_compr_thres>, <agc_compr_slope>	Set command sets the handset TX AGC value tuning Parameter: **<agc_static_gain>** precompressor static gain. This is the gain applied to the input samples when static gain is enabled. Meaningful Range is 0x2000 to 0xFFFF. Value(agc_static_gain) = 8192 ∗ 10^(X/20) : X range is 0 to 18 dB. **<agc_aig>** pre-compressor gain selection flag. Write 0xFFFF to enable adaptive gain (static gain disabled). Write 0x0000 to enable static gain (adaptive gain disabled). Meaningful value is just 0x0000 or 0xFFFF. **<agc_exp_thres>** expansion threshold. This is the energy threshold of the input under which expansion is applied. This parameter must be less than agc_compr_thres. Meaningful range is 0x0 to 0x2580. Write 0 to disable the expander. Value(agc_exp_thres) = 128 ∗ (X+75) : X range is -75 to 0 dBm0mu **<agc_exp_slope>** expansion slope. This is the slope of the expander gain when expansion is applied. Meaningful range is 0xFF01 to 0xFFF6. Value(agc_exp_slope) = 256 * X : X range is -0.04 to -0.996. **<agc_compr_thres>** compression threshold. This is the energy threshold of the input above which compression is applied. Meaningful range is 0x0 to 0x2580. This parameter must be greater than agc_exp_thres. Value(agc_compr_thres) = 128 ∗ (X+75) : X range is -75 to 0 dBm0mu **<agc_compr_slope>** compression slope. This is the slope of the compressor gain when compression is applied. Meaningful range is 0x8000 to 0xFFFF. Value(agc_compr_sloop) = 65536 * X : X range is 0.50001 to 0.99999 Note: these values are automatically saved in NVM.
AT#SHSAGCTX?	Read command returns the current handset TX AGC values **#SHSAGCTX: <agc_static_gain>,<agc_aig>,<agc_exp_thres>, <agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>**
AT#SHSAGCTX =?	Test command returns the supported range of values of parameter **<agc_static_gain>,<agc_aig>,<agc_exp_thres>,<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>**

3.5.6.2.35. *RX AGC enable - #SRXAGC*

#SRXAGC – RX AGC Enable	
AT#SRXAGC= <mode>	Set command sets the RX AGC enabling Parameter: **<mode>** 0 - disables rx agc (factory default) 1 - enables rx agc Note: RX AGC enabling makes RX level decreasing Note: these values are automatically saved in NVM.
AT#SRXAGC?	Read command returns the current RX AGC values: **#SRXAGC: <mode>**
AT#SRXAGC=?	Test command returns the supported range of values of parameter **<mode>**.

3.5.6.2.36. *Handset RX filter coefficients values - #SHSFRX*

#SHSFRX - Handset RX filter coefficients values	
AT#SHSFRX= <tap0>,<tap1>,<tap2> ,<tap3>,<tap4>,<tap5>,<tap6>	It has no effect and is included only for backward compatibility. Parameter: **<tap0>** **<tap1>** **<tap2>** **<tap3>** **<tap4>** **<tap5>** **<tap6>** Note: these values are automatically saved in NVM.
AT#SHSFRX?	Read command returns the current values: **#SHSFRX: <tap0>,<tap1>,<tap2>,<tap3>,<tap4>,<tap5>,<tap6>**
AT#SHSFRX=?	Test command returns the supported range of values of parameter **<tap0>,<tap1>,<tap2>,<tap3>,<tap4>,<tap5>,<tap6>**.

3.5.6.2.37. *Handset TX filter coefficients values - #SHSFTX*

#SHSFTX - Handset TX filter coefficients values	
AT#SHSFTX= <tap0>,<tap1>, <tap2>,<tap3>, <tap4>,<tap5>,	Set command sets the handset TX filter coefficients values Parameter: **<tap0>**: Filter Tap, h[0] and h[12]

#SHSFTX - Handset TX filter coefficients values	
<tap6>	**<tap1>**: Filter Tap, h[1] and h[11] **<tap2>**: Filter Tap, h[2] and h[10] **<tap3>**: Filter Tap, h[3] and h[9] **<tap4>**: Filter Tap, h[4] and h[8] **<tap5>**: Filter Tap, h[5] and h[7] **<tap6>**: Filter Tap, h[6] Note: these values are automatically saved in NVM.
AT#SHSFTX?	Read command returns the current handset TX filter coefficients values: **#SHSFTX: <tap0>,<tap1>,<tap2>,<tap3>,<tap4>,<tap5>,<tap6>**
AT#SHSFTX=?	Test command returns the supported range of values of parameter **<tap0>,<tap1>,<tap2>,<tap3>,<tap4>,<tap5>,<tap6>**.

3.5.6.2.38. *Handsfree RX filter coefficients values - #SHFFRX*

#SHFFRX - Handsfree RX filter coefficients values	
AT#SHFFRX= <tap0>,<tap1>, <tap2>,<tap3>, <tap4>,<tap5>, <tap6>	It has no effect and is included only for backward compatibility. Parameter: **<tap0>** **<tap1>** **<tap2>** **<tap3>** **<tap4>** **<tap5>** **<tap6>** Note: these values are automatically saved in NVM.
AT#SHFFRX?	Read command returns the current values: **#SHFFRX: <tap0>,<tap1>,<tap2>,<tap3>,<tap4>,<tap5>,<tap6>**
AT#SHFFRX=?	Test command returns the supported range of values of parameter **<tap0>,<tap1>,<tap2>,<tap3>,<tap4>,<tap5>,<tap6>**.

3.5.6.2.39. *Handsfree TX filter coefficients values - #SHFFTX*

#SHFFTX - Handsfree TX filter coefficients values	
AT#SHFFTX= <tap0>,<tap1>, <tap2>,<tap3>, <tap4>,<tap5>, <tap6>	Set command sets the handsfree TX filter coefficients values Parameter: **<tap0>**: Filter Tap, h[0] and h[12] **<tap1>**: Filter Tap, h[1] and h[11]

#SHFFTX - Handsfree TX filter coefficients values	
	<tap2>: Filter Tap, h[2] and h[10] **<tap3>**: Filter Tap, h[3] and h[9] **<tap4>**: Filter Tap, h[4] and h[8] **<tap5>**: Filter Tap, h[5] and h[7] **<tap6>**: Filter Tap, h[6] Note: these values are automatically saved in NVM.
AT#SHFFTX?	Read command returns the current handsfree TX filter coefficients values: **#SHFFTX: <tap0>,<tap1>,<tap2>,<tap3>,<tap4>,<tap5>,<tap6>**
AT#SHFFTX=?	Test command returns the supported range of values of parameter **<tap0>,<tap1>,<tap2>,<tap3>,<tap4>,<tap5>,<tap6>**.

3.5.6.2.40. *PCM Play and Receive - #SPCM*

#SPCM - PCM Play and Receive	
AT#SPCM= <mode>[,dir,[format]]	Execution command allows user either to send speech sample coming from microphone and/or downlink audio channel to serial port, or to reproduce a PCM coming from serial port to speaker and/or uplink audio channel; both modes are also available during speech calls. Parameters: **<mode>:** action to be execute; 1 - reproduce PCM stream from serial to selected path. 2 - send speech from selected path to serial. **<dir>:** Select the audio path. 0 - send/receive to/from analog front end 1 - send/receive to/from audio channel 2 - reserved **< format >:** PCM bits format 0 - 8 bit 1 - 16 bit Note: 0 in <format> has no effect and is included only for backward compatibility and it works with Linear DVI configuration Note: Execution command switches module in online mode. Module moves back to command mode either after entering the escape sequence +++ or as a consequence of a **DTR transition**. **Note: it is mandatory to set +IPR at least to 230400.** The following table summarizes the status of audio path during a speech call for different configurations and with sidetone disabled:

#SPCM - PCM Play and Receive	
	<table><tr><th></th><th>mode = 1</th><th>mode = 2</th></tr><tr><td>dir = 0</td><td>Uplink off / Downlink on PCM stream on speaker</td><td>Uplink off / Downlink off PCM stream from microphone</td></tr><tr><td>dir = 1</td><td>Uplink on / Downlink off PCM stream on Uplink</td><td>Uplink off / Downlink on PCM stream from Downlink</td></tr></table> Sidetone is active for default.
AT#SPCM=?	Test command returns the supported range of values for parameters **<mode>, <dir>** and **<format>**. **#SPCM: <mode>,<dir>,<format>**
Example	AT#SPCM=1,0,0 CONNECT +++ NO CARRIER Note: after the CONNECT, 8Khz 8bit PCM stream has to be sent to serial port AT#SPCM=2,0,0 CONNECT +++ NO CARRIER Note: after the CONNECT, 8Khz 8bit PCM stream can be read from serial port

3.5.6.3. Multisocket AT Commands

3.5.6.3.1. *Socket Status - #SS*

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

#SS - Socket Status	
	where: **<connId>** - socket connection identifier, as before **<state>** - actual state of the socket: 0 - Socket Closed. 1 - Socket with an active data transfer connection. 2 - Socket suspended. 3 - Socket suspended with pending data. 4 - Socket listening. 5 - Socket with an incoming connection. Waiting for the user accept or shutdown command. **<locIP>** - IP address associated by the context activation to the socket. **<locPort>** - two meanings: - the listening port if we put the socket in listen mode. - the local port for the connection if we use the socket to connect to a remote machine. **<remIP>** - when we are connected to a remote machine this is the remote IP address. **<remPort>** - it is the port we are connected to on the remote machine. Note: issuing **#SS<CR>** causes getting information about status of all the sockets; the response format is: **#SS: <connId1>,<state1>,<locIP1>,<locPort1>,<remIP1>,<remPort1>** **<CR><LF>** … **#SS: <connId6>,<state6>,<locIP6>,<locPort6>,<remIP6>,<remPort6>**
AT#SS=?	Test command reports the range for parameter **<connId>**.
Example	AT#SS #SS: 1,3,91.80.90.162,61119,88.37.127.146,10510 #SS: 2,4,91.80.90.162,1000 #SS: 3,0 #SS: 4,0 #SS: 5,3,91.80.73.70,61120,88.37.127.146,10509 #SS: 6,0 OK Socket 1: opened from local IP 91.80.90.162/local port 61119 to remote IP 88.37.127.146/remote port 10510 is suspended with pending data Socket 2: listening on local IP 91.80.90.162/local port 1000 Socket 5: opened from local IP 91.80.73.70/local port 61120 to remote IP 88.37.127.146/remote port 10509 is suspended with pending data

#SS - Socket Status	
	AT#SS=2 #SS: 2,4,91.80.90.162,1000 OK We have information only about socket number 2

3.5.6.3.2. *Socket Info - #SI*

#SI - Socket Info	
AT#SI[=<connId>]	Execution command is used to get information about socket data traffic. Parameters: **<connId>** - socket connection identifier 1..6 The response format is: **#SI: <connId>,<sent>,<received>,<buff_in>,<ack_waiting>** where: **<connId>** - socket connection identifier, as before **<sent>** - total amount (in bytes) of sent data since the last time the socket connection identified by **<connId>** has been opened **<received>** - total amount (in bytes) of received data since the last time the socket connection identified by **<connId>** has been opened **<buff_in>** - total amount (in bytes) of data just arrived through the socket connection identified by **<connId>** and currently buffered, not yet read **<ack_waiting>** - total amount (in bytes) of sent and not yet acknowledged data since the last time the socket connection identified by **<connId>** has been opened Note: not yet acknowledged data are available only for TCP connections; the value **<ack_waiting>** is always 0 for UDP connections. Note: issuing **#SI<CR>** causes getting information about data traffic of all the sockets; the response format is: **#SI: <connId1>,<sent1>,<received1>,<buff_in1>,<ack_waiting1>** **<CR><LF>** **…** **#SI: <connId6>,<sent6>,<received6>,<buff_in6>,<ack_waiting6>**
AT#SI=?	Test command reports the range for parameter **<connId>**.
Example	AT#SI #SI: 1,123,400,10,50

#SI - Socket Info	
	#SI: 2,0,100,0,0 #SI: 3,589,100,10,100 #SI: 4,0,0,0,0 #SI: 5,0,0,0,0 #SI: 6,0,98,60,0 OK *Sockets 1,2,3,6 are opened with some data traffic.* *For example socket 1 has 123 bytes sent, 400 bytes received,* *10 byte waiting to be read and 50 bytes waiting to be* *acknowledged from the remote side.* AT#SI=1 #SI: 1,123,400,10,50 OK *We have information only about socket number 1*

3.5.6.3.3. *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 - numeric parameter which specifies a particular PDP context definition **<stat>** 0 - deactivate the context 1 - activate the context **<userId>** - string type, used only if the context requires it **<pwd>** - string type, used only if the context requires it Note: In the process of CDMA PDP context activation, only one context ID(1) is supported. Note : <userId> and <pwd> are optional parameters beecause authentication information is automatically populated in a device based on the their specification and updated by a network through OTA or carrier's specific method. **For more detail information, refer to #USERID and #PASSW command usage.**
AT#SGACT?	Returns the state of the contexts, in the format: **#SGACT: <cid>,<Stat>** where: **<cid>** - as **<cid>** before **<stat>** - context status 0 - context deactivated 1 - context activated
AT#SGACT=?	Reports the range for the parameters **<cid>** and **<stat>**

3.5.6.3.4. *Context Activation and Configuration Extended - #SGACTCFGEXT*

#SGACTCFGEXT – Context Activation and Configuration	
AT#SGACTCFGEXT= <cid>, <abortAttemptEnable>, [,<unused> [,<unused> [,<unused>]]]	Execution command is used to enable new features related to context activation. Parameters: <**cid**> - PDP context identifier 1 – numeric parameter which specifies a particular PDP context definition <**abortAttemptEnable**> 0 – old behavior: no abort possible while attempting context activation 1 – abort during context activation attempt is possible by sending a byte on the serial port. It takes effect on successive CDMA context activation attempt through #SGACT command in the following manner. While waiting for AT#SGACT=<cid>,1 response (up to 150s), it is possible to abort attempt by sending a byte and get back AT interface control (NO CARRIER indication). Note: values are automatically saved in NVM.
AT#SGACTCFGEXT?	Read command reports the state of all the six contexts, in the format: **#SGACTCFGEXT: <cid>,<abortAttemptEnable>,,0,0,0<CR><LF>**
AT#SGACTCFGEXT=?	Test command returns the range of supported values for parameters

3.5.6.3.5. *Socket Shutdown - #SH*

#SH - Socket Shutdown	
AT#SH=<connId>	This command is used to close a socket. 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) and incoming connection mode. Trying to close an active socket connection produces an error and to close a closed socket or a listening socket produces **OK** response without any action.
AT#SH=?	Test command reports the range for parameter **<connId>**.

3.5.6.3.6. *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 - 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 time); if there's no data exchange within this timeout period the connection is closed 0 - no timeout 1..65535 - timeout value in seconds (default 90 s.) **<connTo>** - connection timeout; if we can't establish a connection to the remote within this timeout period, an error is raised. 10..1200 - timeout value in hundreds of milliseconds (default 600) **<txTo>** - data sending timeout; data are sent even if they're less than max packet size , after this period. 0 - no timeout 1..255 - timeout value in hundreds of milliseconds (default 50) Note: these values are automatically saved in NVM.
AT#SCFG?	Read command returns the current socket configuration parameters values for all the six sockets, in the format: **#SCFG: <connId1>,<cid1>,<pktsz1>,<maxTo1>,<connTo1>,<txTo1>** **<CR><LF>** **. . .** **#SCFG: <connId6>,<cid6>,<pktsz6>,<maxTo6>,<connTo6>,<txTo6>** **<CR><LF>**
AT#SCFG=?	Test command returns the range of supported values for all the subparameters.
Example	AT#SCFG=? #SCFG: (1-6),(1),(0-1500),(0-65535),(10-1200),(0-255) OK AT#SCFG? #SCFG: 1,1,300,90,600,50 #SCFG: 2,1,300,90,600,50 #SCFG: 3,1,300,90,600,50 #SCFG: 4,1,300,90,600,50 #SCFG: 5,1,300,90,600,50

#SCFG - Socket Configuration	
	#SCFG: 6,1,300,90,600,50 OK AT#SCFG=6,1,500,100,700,60 OK AT#SCFG? #SCFG: 1,1,300,90,600,50 #SCFG: 2,1,300,90,600,50 #SCFG: 3,1,300,90,600,50 #SCFG: 4,1,300,90,600,50 #SCFG: 5,1,300,90,600,50 #SCFG: 6,1,500,100,700,60 OK

3.5.6.3.7. *Socket Configuration Extended - #SCFGEXT*

#SCFGEXT - Socket Configuration Extended	
AT#SCFGEXT= **<connId>,** **<srMode>,** **<dataMode>,** **<keepalive>** **[,<ListenAutoRsp>** **[,<sendDataMode>]]**	Set command sets the socket configuration extended parameters. Parameters: **<connId>** - socket connection identifier 1..6 **<srMode>** - **SRing** URC mode 0 - normal mode (default): **SRING : <connId>** where: **<connId>** - socket connection identifier, as before 1 - data amount mode: **SRING : <connId>,<recData>** where: **<connId>** - as before **<recData>** - amount of data received on the socket connection 2 - data view mode: **SRING : <connId>,<recData>,<data>** where: **<connId>** - **<recData>** - as before **<data>** - received data; the presentation format depens on the subparameter **<dataMode>** value 3 – Data view with UDP datagram informations: **SRING : <sourceIP>,<sourcePort><connId>,<recData>,** **<dataLeft>,<data>** same as before with <sourceIP>,<sourcePort> and <dataLeft> that means the

#SCFGEXT - Socket Configuration Extended	
	number of bytes left in the UDP datagram **<dataMode>** - "data view mode" presentation format 0 - data represented as text (default) 1 - data represented as sequence of hexadecimal numbers (from 00 to FF) **<keepalive> - TCP keepalive** timer timeout 0 - **TCP keepalive** timer is deactivated (default) 1..240 - **TCP keepalive** timer timeout in minutes **<ListenAutoRsp>** - Set the listen auto-response mode, that affects the commands AT#SL and AT#SLUDP 0 - Deactivated (default) 1 – Activated **<sendDataMode> -** data mode for sending data in command mode(AT#SSEND) 0 - data represented as text (default) 1 - data represented as sequence of hexadecimal numbers (from 00 to FF) Each octet of the data is given as two IRA character long hexadecimal number Note: <**keepalive**> has effect only on TCP connections. Note: these values are automatically saved in NVM Note: for the behaviour of AT#SL and AT#SLUDP in case of auto-response mode or in case of no auto-response mode, see the description of the two commands.
AT#SCFGEXT?	Read command returns the current socket extended configuration parameters values for all the six sockets, in the format: **#SCFGEXT: <connId1>,<srMode1>,<dataMode1>,<keepalive1>,<unused_A1>,<unused_B1><CR><LF>** **...** **#SCFGEXT: <connId6>,<srMode6>,<dataMode6>,<keepalive6><unused_A6>,<unused_B6>**
AT#SCFGEXT=?	Test command returns the range of supported values for all the subparameters
Example	Socket 1 set with data view sring, text data mode and a keepalive time of 30 minutes. Socket 3 set with data amount sring, hex data mode and no keepalive. AT#SCFGEXT? #SCFGEXT: 1,2,0,30,0,0 #SCFGEXT: 2,0,0,0,0,0 #SCFGEXT: 3,1,1,0,0,0 #SCFGEXT: 4,0,0,0,0,0 #SCFGEXT: 5,0,0,0,0,0 #SCFGEXT: 6,0,0,0,0,0

#SCFGEXT - Socket Configuration Extended	
	OK

3.5.6.3.8. *Socket Configuration Extended 2 - #SCFGEXT2*

#SCFGEXT2 - Socket Configuration Extended	
AT#SCFGEXT2=<connId>[,<bufferStart>[,<abortConnAttempt>[, unused_B>[,<unused_C>[,<noCarrierMode>]]]]]	Set command sets the socket configuration extended parameters for features not included in #SCFGEXT command. Parameters: **<connId>** - socket connection identifier 1..6 **<bufferStart>** - Set the sending timeout method based on new data received from the serial port. (<txTo> timeout value is set by #SCFG command) Restart of transmission timer will be done when new data are received from the serial port. 0 – old behaviour for transmission timer (#SCFG command 6th parameter old behaviour, start only first time if new data are received from the serial port) 1 – new behaviour for transmission timer : Restart when new data received from serial port Note : is necessary to avoid overlapping of the two methods. Enabling new method, the old method for transmission timer (#SCFG) is automatically disabled to avoid overlapping. Note : check if new data have been received from serial port is done with a granularity that is directly related to #SCFG <txTo> setting with a maximum period of 1 sec. <**abortConnAttempt**> - Enable connection attempt(#SD / #SKTD) abort before CONNECT (online mode) or OK (command mode) 0 – Not possible to intterupt connection attempt 1 – It is possible to interrupt the connection attempt (<connTo> set by #SCFG or DNS resoultion running if required) And give back control to AT interface by reception of a character. As soon as the control has been given to the AT interface, the ERROR message will be received on the interface itself. **<noCarrierMode>** - permits to choose **NO CARRIER** indication format when the socket is closed as follows

#SCFGEXT2 - Socket Configuration Extended	
	0 – **NO CARRIER** (default) Indication is sent as usual, without additional information 1 – **NO CARRIER:<connId>** Indication of current **<connId>** socket connection identifier is added 2 – **NO CARRIER:<connId>,<cause>** Indication of current **<connId>** socket connection identifier and closure **<cause>** are added For possible **<cause>** values, see also **#SLASTCLOSURE** Note: like **#SLASTCLOSURE**, in case of subsequent consecutive closure causes are received, the original disconnection cause is indicated. Note: in the case of command mode connection and remote closure with subsequent inactivity timeout closure without retrieval of all available data(#SRECV or SRING mode 2), it is indicated cause 1 for both possible FIN and RST from remote. Note : values are automatically saved in NVM.
AT#SCFGEXT2?	Read command returns the current socket extended configuration parameters values for all the six sockets, in the format: **#SCFGEXT2: <connId1>,<bufferStart1>,<abortConnAttempt>,0,0,0** **<CR><LF>** **...** **#SCFGEXT2: <connId1>,<bufferStart1>,<abortConnAttempt>,0,0,0**
AT#SCFGEXT2=?	Test command returns the range of supported values for all the subparameters
Example	AT#SCFGEXT2=1,1 OK AT#SCFGEXT2=2,1 OK AT#SCFGEXT2? #SCFGEXT2: 1,1,0,0,0,0 #SCFGEXT2: 2,1,0,0,0,0 #SCFGEXT2: 3,0,0,0,0,0 #SCFGEXT2: 4,0,0,0,0,0

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

3.5.6.3.9. *Show Address - #CGPADDR*

#CGPADDR – Show Address	
AT#CGPADDR=<cid>	Execution command returns the IP address for the current activated CDMA PDP context **<cid>** - context identifier Note : Only one context ID(1) is supported.
AT#CGPADDR=?	Returns <cid> when modem gets the IP address, otherwise returns only OK result
Example	AT#SGACT=1,1 +IP: xxx.yyy.zzz.www OK AT#CGPADDR=? #CGPADDR: (1) OK AT#CGPADDR=1 #CGPADDR: 1,”xxx.yyy.zzz.www”

#CGPADDR – Show Address	
	OK

3.5.6.3.10. *Socket Dial - #SD*

#SD - Socket Dial	
AT#SD=<connId>,<txProt>,<rPort>,<IPaddr>[,<closureType>[,<lPort>[,<connMode>]]]	Execution command opens a remote connection via socket. Parameters: **<connId>** - socket connection identifier 1..6 **<txProt>** - transmission protocol 0 - TCP 1 - UDP **<rPort>** - remote host port to contact 1..65535 **<IPaddr>** - address of the remote host, string type. This parameter can be either: - any valid IP address in the format: "xxx.xxx.xxx.xxx" - any host name to be solved with a DNS query **<closureType>** - socket closure behaviour for TCP 0 - local host closes immediately when remote host has closed (default) 255 - local host closes after an escape sequence (+++) and #SH **<lPort>** - UDP connections local port 1..65535 **<connMode>** - Connection mode 0 - online mode connection (default) 1 - command mode connection Note: **<closureType>** parameter is valid for TCP connections only and has no effect (if used) for UDP connections. If the socket connection is opened in CMD mode, <closureType> 255 does not take effect. Note: **<lPort>** parameter is valid for UDP connections only and has no effect (if used) for TCP connections. Note: if we set **<connMode>** to **online mode connection** and the command is successful we enter in **online data mode** and we see the intermediate result code **CONNECT**. After the **CONNECT** we can suspend the direct interface to the socket connection (nb the socket stays open) using the escape sequence (+++): the module moves back to **command mode** and we receive the final result code **OK** after the suspension. After such a suspension, it's possible to resume it in every moment (unless the socket inactivity timer timeouts, see **#SCFG**) by using the **#SO** command with the corresponding **<connId>**.

#SD - Socket Dial	
	Note: if we set **<connMode>** to **command mode connection** and the command is successful, the socket is opened and we remain in **command mode** and we see the result code **OK**. Note: if there are input data arrived through a connected socket and not yet read because the module entered **command mode** before reading them (after an escape sequence or after **#SD** has been issued with **<connMode>** set to **command mode connection)**, these data are buffered and we receive the **SRING** URC (**SRING** presentation format depends on the last **#SCFGEXT** setting); it's possible to read these data afterwards issuing **#SRECV**. Under the same hypotheses it's possible to send data while in **command mode** issuing **#SSEND**
AT#SD=?	Test command reports the range of values for all the parameters.
Example	*Open socket 1 in online mode* AT#SD=1,0,80,"www.google.com",0,0,0 CONNECT … *Open socket 1 in command mode* AT#SD=1,0,80,"www.google.com",0,0,1 OK

3.5.6.3.11. *Socket Accept - #SA*

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

3.5.6.3.12. *Socket Restore - #SO*

#SO - Socket Restore

#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.

3.5.6.3.13. *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 1..65535 **<lingerT>** - linger time 0 - immediate closure after remote closure 255 - local host closes only after an escape sequence (+++) and #SH Note : If the socket connection is opened in CMD mode, <closureType> 255 does not take effect. 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>** Note: the command **#SCFGEXT** doesn't influence the presentation format of the URC **SRING** 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** Note: when closing the listening socket <listenPort> is a Don't Care parameter.

#SL - Socket Listen	
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	AT#SL=? #SL: (1-6),(0,1),(1-65535),(0,255) OK Next command opens a socket listening on port 3500 AT#SL=1,1,3500 OK

3.5.6.3.14. *UDP SocketListen - #SLUDP*

#SLUDP – UDP Socket Listen	
AT#SLUDP= **<connId>,** **<listenState>,** **<listenPort>**	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 1..65535 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 it is possible to use **#SA** to accept the connection or **#SH** to refuse it. If the socket is closed by the network the following URC is received: **#SLUDP: ABORTED** Note: when closing the listening socket <listenPort> is a Don't Care parameter.
AT#SLUDP?	Read command returns all the actual listening sockets.
AT#SLUDP=?	Test command returns the range of supported values for all the subparameters.
Example	AT#SLUDP=? #SLUDP: (1-6),(0,1),(1-65535)

#SLUDP – UDP Socket Listen	
	OK Next command opens a socket listening on port 860 AT#SLUDP=1,1,860 OK SRING: 1 AT#SA=1 OK CONNECT Test

3.5.6.3.15. Receive Data In Command Mode - #SRECV

#SRECV – Received Data in Command Mode	
AT#SRECV= <connId>, <maxByte> [,<UDPInfo>]	Execution command permits the user to read data arrived through a connected socket, but buffered and not yet read because the module entered **command mode** before reading them; the module is notified of these data by a **SRING** URC, whose presentation format depends on the last **#SCFGEXT** setting. Parameters: **<connId>** - socket connection identifier 1..6 **<maxByte>** - max number of bytes to read 1..1500 **<UDPInfo>** 0 – UDP information disabled (default) 1 – UDP information enabled: data are read just until the end of the UDP datagram and the response carries information about the remote IP address and port and about the remaining bytes in the datagram. AT#SRECV=<connId>,<maxBytes>,1 #SRECV: <sourceIP>,<sourcePort><connId>,<recData>, <dataLeft> data Note: issuing **#SRECV** when there's no buffered data raises an error.
AT#SRECV=?	Test command returns the range of supported values for parameters **< connId >, < maxByte >** and **<UDPInfo>**
Example	*SRING URC (<srMode> be 0, <dataMode> be 0) telling data have just come through connected socket identified by <connId>=1 and are now buffered*

#SRECV – Received Data in Command Mode	
	SRING: 1 *Read in text format the buffered data* AT#SRECV=1,15 #SRECV: 1,15 stringa di test OK Or: *if the received datagram, received from <IPaddr and <IPport> is of 60 bytes* AT#SRECV=1,15,1 #SRECV: <IPaddr>,<IPport>,1,15 stringa di test OK *SRING URC (<srMode> be 1, <dataMode> be 1) telling 15 bytes data have just come through connected socket identified by <connId>=2 and are now buffered* SRING: 2,15 *Read in hexadecimal format the buffered data* AT#SRECV=2,15 #SRECV: 2,15 737472696e67612064692074657374 OK Or: *if the received datagram, received from <IPaddr and <IPport> is of 60 bytes* AT#SRECV=2,15 #SRECV: <IPaddr>,<IPport>,2,15 737472696e67612064692074657374 OK *SRING URC (<srMode> be 2, <dataMode> be 0) displaying (in text format) 15 bytes data that have just come through connected socket identified by <connId>=3; it's no necessary to issue #SRECV to read the data; no data remain in the buffer after this URC* SRING: 3,15, stringa di test

3.5.6.3.16. *Send Data In Command Mode - #SSEND*

#SSEND – Send Data in Command Mode	
AT#SSEND=<connId>	Execution command permits, while the module is in **command mode,** to send data through a connected socket. Parameters: **<connId>** - socket connection identifier 1..6 The device responds to the command with the prompt '>' and waits for the data to send. To complete the operation send **Ctrl-Z** char (**0x1A** hex); to exit without writing the message send **ESC** char (**0x1B** hex). If data are successfully sent, then the response is **OK**. If data sending fails for some reason, an error code is reported Note: The maximum number of bytes to send is 1500 bytes. Trial to send data more than 1500 return ERROR Note: it's possible to use **#SSEND** only if the connection was opened by **#SD**, else the ME is raising an error Note: a byte corresponding to BS char(0x08) is treated with its corresponding meaning; therefore previous byte will be cancelled(and BS char itself will not be sent)
AT#SSEND=?	Test command returns the range of supported values for parameter **<connId>**
Example	*Send data through socket number 2* AT#SSEND=2 >Test<CTRL-Z> OK

3.5.6.3.17. *Send Data In Command Mode extended - #SSENDEXT*

#SSENDEXT – Send Data in Command Mode extended	
AT#SSENDEXT=<connId>,<bytestosend>	Execution command permits, while the module is in **command mode,** to send data through a connected socket Parameters: **<connId>** - socket connection identifier 1..6 **<bytestosend>** - number of bytes to be sent Please refer to test command for range The device responds to the command with the prompt '> ' <greater_than><space> and waits for the data to send. When <bytestosend> bytes have been sent, operation is automatically completed. If data are successfully sent, then the response is OK.

#SSENDEXT – Send Data in Command Mode extended	
	If data sending fails for some reason, an error code is reported. Note: it's possible to use **#SSENDEXT** only if the connection was opened by **#SD**, else the ME is raising an error Note: all special characters are sent like a generic byte.(For instance: Back Space key don't behave like a BS, i.e. previous character is not deleted, sent a generic byte(0x08) through the socket instead. ESC key don't work like an escape sequence, sent a generic byte(0x1B) through the socket instead.)
AT#SSENDEXT=?	Test command returns the range of supported values for parameters **<connId>** and **<bytestosend>**

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

3.5.6.3.18. *Detect the cause of a socket disconnection - #SLASTCLOSURE*

#SLASTCLOSURE – Detect the cause of a socket disconnection	
AT#SLASTCLOSURE= [<connId>]	Execution command reports socket disconnection cause Parameters: **<connId>** - socket connection identifier 1..6 The response format is: **#SLASTCLOSURE: <connId>,<cause>** where: **<connId>** - socket connection identifier, as before **<cause>** - socket disconnection cause: 0 – not available(socket has not yet been closed)

#SLASTCLOSURE – Detect the cause of a socket disconnection	
	1.- remote host TCP connection close due to FIN/END: normal remote disconnection decided by the remote application 2 -.remote host TCP connection close due to RST, all others cases in which the socket is aborted without indication from peer (for instance because peer doesn't send ack after maximum number of retransmissions/peer is no more alive). All these cases include all the "FATAL" errors after recv or send on the TCP socket(named as different from EWOULDBLOCK) 3.- socket inactivity timeout 4.- network deactivation(PDP context deactivation from network) Note: any time socket is re-opened, last disconnection cause is reset. Command report 0(not available). Note: user closure cause(**#SH**) is not considered and if a user closure is performed after remote disconnection, remote disconnection cause remains saved and is not overwritten. Note: if more consecutive closure causes are received, the original disconnection cause is saved. (For instance: if a TCP FIN is received from remote and later a TCP RST because we continue to send data, FIN cause is saved and not overwritten) Note: also in case of **<closureType>**(**#SD**) set to 255, if the socket has not yet been closed by user after the escape sequence, **#SLASTCLOSURE** indicates remote disconnection cause if it has been received. Note: in case of UDP, cause 2 indicates abnormal(local) disconnection. Cause 3 and 4 are still possible. (Cause 1 is obviously never possible) Note: in case of command mode connection and remote closure with subsequent inactivity timeout closure without retrieval of all available data(#SRECV or SRING mode 2), it is indicated cause 1 for both possible FIN and RST from remote.
AT#SLASTCLOSURE=?	Test command reports the supported range for parameter **<connId>**

3.5.6.4. Single Socket AT Commands

3.5.6.4.1. *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 specific value based on carrier's specification). Note : This set command is only for an authentication information of Simple IP system. Note : If a wireless service provider supports only Simple IP data network system, you need to set this information as per carrier specification. Note : If a wireless service provider supports only Mobile IP data network system, you don't need to set this information for data connection. Note : If a wireless service provider supports Mobile IP preferred network system, you need to set this information in preparation for fallack to Simple IP. In case of using Mobile IP system, a specific profile is used and its information should be set as per carrier specification.
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

3.5.6.4.2. *Authentication Password – #PASSW*

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

#PASSW - Authentication Password	
	specific value based on carrier's specification). Note : This set command is only for an authentication information of Simple IP system. Note : If a wireless service provider supports only Simple IP data network system, you need to set this information for data connection. Note : If a wireless service provider supports only Mobile IP data network system, you don't need to set this information for data connection. Note : If a wireless service provider supports Mobile IP preferred network system, you need to set this information in preparation for fallack to Simple IP. In case of using Mobile IP system, a specific profile is used and its information should be set as per carrier specification.
AT#PASSW=?	Test command returns the maximum allowed length of the string parameter <**pwd**>.
Example	AT#PASSW="myPassword" OK

3.5.6.4.3. *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

#PKTSZ - Packet Size	
	OK *->value automatically chosen by device*

3.5.6.4.4. *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) 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

3.5.6.4.5. *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 CDMA 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. Note: In case CDMA context activated by #SKTOP, both the socket connection and CDMA context closed.
AT#SKTTO?	Read command reports the current socket inactivity time-out value.

#SKTTO - Socket Inactivity Time-Out	
AT#SKTTO=?	Test command returns the allowed values for parameter **<tout>**.
Example	AT#SKTTO=30 OK *->(30 sec. time-out)* AT#SKTTO? #SKTTO: 30 OK

3.5.6.4.6. *Socket Definition – #SKTSET*

#SKTSET - Socket Definition	
AT#SKTSET= [<socket type>, <remote port>, <remote addr>, [<closure type>], [<local port>]]	Set command sets the socket parameters values. Parameters: **<socket type>** - socket protocol type 0 - TCP (factory default) 1 - UDP **<remote port>** - remote host port to be opened 1..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 1..65535 - port number (factory default is 0) 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 authentication parameters are set **(#USERID**, **#PASSW**) - the CDMA 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>,**

#SKTSET - Socket Definition	
	<closure type>,<local port>
AT#SKTSET=?	Test command returns the allowed values for the parameters.
Example	AT#SKTSET=0,1024,"www.telit.net" OK
Note	Issuing command #QDNS will overwrite <remote addr> setting.

3.5.6.4.7. *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 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 *..CDMA 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.

3.5.6.4.8. *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 CDMA 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

#QDNS - Query DNS	
	the CDMA network is present.

3.5.6.4.9. *DNS Response Caching - #CACHEDNS*

#CACHEDNS - DNS Response Caching	
AT#CACHEDNS=[<mode>]	Set command enables caching a mapping of domain names to IP addresses, as does a resolver library. Parameter: **<mode>** 0 - caching disabled; it cleans the cache too 1 - caching enabled Note: the validity period of each cached entry (i.e. how long a DNS response remains valid) is determined by a value called the **Time To Live** (**TTL**), set by the administrator of the DNS server handing out the response. Note: it is recommended to clean the cache, if command **+CCLK** has been issued while the DNS Response Caching was enabled
AT#CACHEDNS?	Read command reports whether the DNS Response Caching is currently enabled or not, in the format: **#CACHEDNS: <mode>**
AT#CACHEDNS=?	Test command returns the currently cached mapping along with the range of available values for parameter **<mode>**, in the format: **#CACHEDNS: [<hostn*1*>,<IPaddr*1*>,[…,[<hostn*n*>,<IPaddr*n*>,]]](0,1)** where: **<hostn*n*>** - hostname, string type **<IPaddr*n*>** - IP address, string type, in the format **"xxx.xxx.xxx.xxx"**

3.5.6.4.10. *Manual DNS Selection - #DNS*

#DNS – Manual DNS Selection	
AT#DNS=<cid>, <primary>, <secondary>	Set command allows to manually set primary and secondary DNS servers Parameters: **<cid>** - context identifier 1 - numeric parameter which specifies a particular PDP context definition **<primary>** - **manual primary DNS server**, string type, in the format **"xxx.xxx.xxx.xxx"** used for the specified cid; we're using this value instead of the **primary DNS server** come from the network (default is "0.0.0.0") **<secondary>** - **manual secondary DNS server**, string type, in the format **"xxx.xxx.xxx.xxx"** used for the specified cid; we're using this value instead of the **secondary DNS server** come from the network (default is "0.0.0.0").

#DNS – Manual DNS Selection	
	Note: if **<primary> is "0.0.0.0"** and **<secondary> is not "0.0.0.0"**, then issuing **AT#DNS=…** raises an error. Note: if **<primary> is "0.0.0.0"** we're using the **primary DNS server** come from the network as consequence of a context activation. Note: if **<primary> is not "0.0.0.0"** and **<secondary> is "0.0.0.0"**, then we're using only the **manual primary DNS server.** Note: the context identified by **<cid>** has to be previously defined, elsewhere issuing **AT#DNS=…** raises an error. Note: the context identified by **<cid>** has to be not activated yet, elsewhere issuing **AT#DNS=…** raises an error.
AT#DNS?	Read command returns the manual DNS servers settings in the format: **#DNS: <cid>,<primary>,<secondary>**
AT#DNS=?	Test command reports the supported range of values for the **<cid>** parameter.only, in the format: **#DNS: (1)**

3.5.6.4.11. *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 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 activating the CDMA 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.*

3.5.6.4.12. *Socket Parameters Save - #SKTSAV*

#SKTSAV - Socket Parameters Save	
AT#SKTSAV	Execution command saves the actual socket parameters in the NVM of the device.

#SKTSAV - Socket Parameters Save	
	The socket parameters to store are: - User ID - Password - Packet Size - Socket Inactivity Time-Out - Data Sending Time-Out - Socket Type (UDP/TCP) - Remote Port - Remote Address - TCP Connection Time-Out Note : User ID and Password will not be affected by this command execution.
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.

3.5.6.4.13. *Socket Parameters Reset - #SKTRST*

#SKTRST - Socket Parameters Reset	
AT#SKTRST	Execution command resets the actual socket parameters in the NVM of the device to the default ones. The socket parameters to reset are: - User ID - Password - Packet Size - Socket Inactivity Time-Out - Data Sending Time-Out - Socket Type - Remote Port - Remote Address - TCP Connection Time-Out Note : User ID and Password will not be affected by this command execution. It means that they are not set to the default values, just keeping the previous value.
AT#SKTRST=?	Test command returns the **OK** result code.
Example	AT#SKTRST OK *socket parameters have been reset*

3.5.6.4.14. *CDMA Data Connection - #CDMADC*

#CDMADC – CDMA Data Connection	
AT#CDMADC= **[<mode>]**	Execution command deactivates/activates CDMA data connection(CDMA PDP context), eventually proceeding with the authentication with the parameters given with #PASSW and #USERID. Parameter: **<mode>** - CDMA PDP context activation mode 0 – CDMA PDP context deactivation request 1 – CDMA PDP context activation request In the case that the CDMA PDP 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#CDMADC?	Read command reports the current status of the CDMA PDP context, in the format: **#CDMADC: <status>** where: **<status>** 0 - CDMA PDP context deactivated 1 - CDMA PDP context activated 2 - CDMA PDP context activation pending.
AT#CDMADC=?	Test command returns the allowed values for parameter **<mode>**.
Example	AT#CDMADC=1 +IP: 129.137.1.1 OK *Now CDMA PDP Context has been activated and our IP is 129.137.1.1* AT#CDMADC=0 OK *Now CDMA PDP context has been deactivated, IP is lost.*

3.5.6.4.15. *Socket Dial - #SKTD*

#SKTD - Socket Dial	
AT#SKTD= **[<socket type>,** **<remote port>,** **<remote addr>,** **[<closure type>],**	Set command opens the socket towards the peer specified in the parameters. Parameters: **<socket type>** - socket protocol type 0 - TCP (factory default)

#SKTD - Socket Dial	
[<local port>]]	1 - UDP **<remote port>** - remote host port to be opened 1..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 1..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 authentication parameters are set **(**#USERID, #PASSW) the CDMA coverage is enough to permit a connection - the CDMA data connection has been activated with AT#SGACT or AT#CDMADC
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 CDMA context status, leaving it **ON** or **OFF** according to the #CDMADC setting, therefore when the connection made with **#SKTD** is closed

#SKTD - Socket Dial	
	the context (and hence the local IP address) is maintained.

3.5.6.4.16. *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 1..65535 - port number **<closure type>** - socket closure behaviour for TCP 0 - local host closes immediately when remote host has closed (default) 255 - local host closes after an escape sequence (+++) Command returns the **OK** result code if successful. Note: the command to be successful requests that: - the authentication parameters are set (#USERID, #PASSW) - the CDMA coverage is enough to permit a connection - the CDMA data connection has been activated with AT#SGACT or AT#CDMADC 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 AT#SGACT or AT#CDMADC 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**

#SKTL - Socket Listen	
	Note: when closing the listening socket <listenPort> is a Don't Care parameter.
AT#SKTL?	Read command returns the current socket listening **status** and the last settings of parameters **<socket type>**,**<input port>** and **<closure type>**, in the format: **#SKTL: <status>,<socket type>**,**<input port>,<closure type>** Where **<status>** - socket listening status 0 - socket not listening 1 - socket listening
AT#SKTL=?	Test command returns the allowed values for parameters **<mode>**, **<socket type>**, **<input port>** and **<closure type>**.
Example	*Activate CDMA* AT#CDMADC=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 *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 CDMA context status, leaving it **ON** or **OFF** according to the **#CDMADC** setting, therefore when the connection

#SKTL - Socket Listen	
	made with **#SKTL** is closed the context (and hence the local IP address) is maintained.

3.5.6.4.17. *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>.**

3.5.6.4.18. *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 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:

#FRWL - Firewall Setup	
	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.

3.5.6.4.19. *Data Volume - #GDATAVOL*

#GDATAVOL - Data Volume	
AT#GDATAVOL= [<mode>]	Execution command reports, for the active PDP context, the amount of data the last data session received and transmitted, or it will report the total amount of data received and transmitted during the data session, since last reset. Parameter: **<mode>** 0 - it resets the data counter for the all the available PDP context(1). 1 - it reports the last data session data counter for the set PDP context ,in the format: #GDATAVOL: <cid>,<tot>,<sent>,<received> where: <cid> - PDP context identifier <tot> - number of bytes either received or transmitted in the last data session <sent> - number of bytes transmitted in the last data

#GDATAVOL - Data Volume	
	<received> - number of bytes received in the last data session 2 - it reports the total data counter, since last reset, for the set PDP context, in the format: #GDATAVOL: <cid>,<tot>,<sent>,<received> where: <cid> - PDP context identifier <tot> - number of bytes either received or transmitted, in every data session since last reset <sent> - number of bytes transmitted, in every data session since last reset <receivedn> - number of bytes received, in every data session since last reset Note: last data session counters are not saved in NVM so they are lost at power off. Note: total data session counters are saved on NVM.
AT#GDATAVOL=?	Test command returns the range of supported values for parameter <mode>.
Note	Internal use only

3.5.6.4.20. *ICMP Ping Support - #ICMP*

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

3.5.6.4.21. *Ping Request - #PING*

#PING – Ping Request	
AT#PING=<IPaddr>[,<retryNum>[,<len>[,<timeout>[,<ttl>]]]]	Set command sends a Ping Echo Request messages and to receive the corresponding Echo Reply. Once the single Echo Reply is received a string like that this is displayed:

#PING – Ping Request	
	#PING:<replyId>,<IpAddress>,<replyTime><ttl> **<replyId>** - Echo Reply number **<IpAddress>** - IP address of the remote host **<replyTime>** - Time, in 100ms units, required to receive the response **<ttl>** - Time to live of the Echo Reply message. Parameter: **<IPaddr>** - Address of the remote host. This parameter can be either: - any valid IP address in the format: "xxx.xxx.xxx.xxx" - any host name to be solved with a DNS query **<retryNum>** - Number of Ping Echo Request to be sent: 1-64 (default 4) **<len>** - Length of Ping Echo Request message 32-1460 (default 32) **<timeout>** - The timeout, in 100 ms units, waiting a single Echo Reply: 1-600 (default 50) **<ttl>** - Time to live: 1-255 (default 128)
AT#PING=?	Test command reports the supported range of values for the **#PING** command parameters
Example	AT#PING=www.telit.com #PING: 01,"81.201.117.177",6,50 #PING: 02,"81.201.117.177",5,50 #PING: 03,"81.201.117.177",6,50 #PING: 04,"81.201.117.177",5,50 OK
Note	When the Echo Request timeout expires (no reply received on time) the response will contain **<replyTime>** set to 600 and **<ttl>** set to 255. To receive the corresponding Echo Reply is not required to enable separately AT#ICMP Before sending PING request the CDMA context must have been activated by AT#SGACT or AT#CDMADC When in dormant state, the modem retruns ERROR as the response of AT#PING at the first time so you need to re-execute it until the traffic is open.

3.5.6.4.22. *Maximum TCP Payload Size - #TCPMAXDAT*

#TCPMAXDAT – Maximum TCP Payload Size	
AT#TCPMAXDAT=<size>	Set command allows to set the maximum TCP payload size in TCP header options. Parameter: **<size>** - maximum TCP payload size accepted in one single TCP/IP datagram; it is sent in TCP header options in SYN packet. 0 - the maximum TCP payload size is automatically handled by module (default). 496..1420 - maximum TCP payload size
AT#TCPMAXDAT?	Read command reports the current maximum TCP payload size, in the format: **#TCPMAXDAT: <size>**
AT#TCPMAXDAT=?	Test command reports the supported range of values for parameter **<size>**

3.5.6.4.23. *TCP Reassembly - #TCPREASS*

#TCPREASS – TCP Reassembly	
AT#TCPREASS=<n>	Set command enables/disables the **TCP reassembly feature**, in order to handle fragmented TCP packets. Parameter: **<n>** 1 - enable TCP reassembly feature(default)
AT#TCPREASS?	Read command returns whether the TCP reassembly feature is enabled or not, in the format: **#TCPREASS: <n>**
AT#TCPREASS=?	Test command returns the supported range of values for parameter **<n>**.

3.5.6.5. FTP AT Commands

3.5.6.5.1. *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:

#FTPTO - FTP Time-Out	
	<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>**

3.5.6.5.2. *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 : In FTP Open case, the solution dependency limits the maximum time out to 1200 (120 seconds). The FTPTO value that exceeds 1200 is considered as 1200. Note: Before opening FTP connection the CDMA must been activated with AT#SGACT or AT#CDMADC
AT#FTPOPEN=?	Test command returns the **OK** result code.

3.5.6.5.3. *FTP Close – #FTPCLOSE*

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

3.5.6.5.4. *FTP Put – #FTPPUT*

#FTPPUT - FTP Put	
AT#FTPPUT= [<filename>]	Execution command, issued during an FTP connection, opens a data connection and starts sending **<filename>** file to the FTP server. If the data connection succeeds, a **CONNECT** indication is sent, otherwise a **NO CARRIER** indication is sent. Parameter: **<filename>** - string type, name of the file.

#FTPPUT - FTP Put	
	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.

3.5.6.5.5. *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.

3.5.6.5.6. *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: (0,1)**

3.5.6.5.7. *FTP Read Message - #FTPMSG*

#FTPMSG - FTP Read Message

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

3.5.6.5.8. *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.

3.5.6.5.9. *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.

3.5.6.5.10. *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.

3.5.6.5.11. *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.

#FTPLIST - FTP List	
	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.

3.5.6.6. E-mail Management AT Commands

3.5.6.6.1. *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.

3.5.6.6.2. *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:

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

3.5.6.6.3. *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 CDMA authentication (see #USERID).

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

#EPASSW - E-mail Authentication Password	
AT#EPASSW=	Set command sets the password string to be used during the authentication step of

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

3.5.6.6.5. *E-mail Sending With CDMA Context Activation - #SEMAIL*

#SEMAIL - E-mail Sending With CDMA Context Activation	
AT#SEMAIL= [<da>[,<subj>[, <att>]]]	Execution command sends an e-mail message. If not previously activated by #EMAILACT, activates a CDMA context. The CDMA context activated by #SEMAIL 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(attaching image is not supported) 0 - don't attach any image 1 - attach the last snapshot taken 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: Maximum length for message body is 1024 bytes. Trying to send more data

#SEMAIL - E-mail Sending With CDMA Context Activation	
	will cause the surplus to be discarded and lost.
AT#SEMAIL=?	Test command returns the **OK** result code.
Example	AT#SEMAIL="me@myaddress.com","subject of the mail",0 >message body… this is the text of the mail message… CTRL-Z *..wait..* OK *Message has been sent.*
Note	This command is for backward compatibility. It's suggested to use the couple #EMAILACT and #EMAILD instead of it.

3.5.6.6.6. *E-mail CDMA Context Activation - #EMAILACT*

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

3.5.6.6.7. *E-mail Sending - #EMAILD*

#EMAILD - E-mail Sending	
AT#EMAILD=	Execution command sends an e-mail message if CDMA context has already been

#EMAILD - E-mail Sending	
[<da>[, <subj>[,<att>]]]	activated with **AT#SGACT=1,1** or **AT#EMAILACT=1** Parameters: **<da>** - destination address, string type. **<subj>** - subject of the message, string type **<att>** - attached image flag(attaching image is not supported) 0 - don't attach any image 1 - attach the last snapshot taken 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: Maximum length for message body is 1024 bytes. Trying to send more data will cause the surplus to be discarded and lost.
AT#EMAILD=?	Test command returns the **OK** result code.
Example	AT#EMAILD=”me@myaddress.com”,”subject of the mail”,0 >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 CDMA 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.

3.5.6.6.8. *E-mail Parameters Save – #ESAV*

#ESAV - E-mail Parameters Save	
AT#ESAV	Execution command saves the actual e-mail parameters in the NVM of the device. The values stored are: - E-mail User Name

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

3.5.6.6.9. *E-mail Parameters Reset - #ERST*

#ERST - E-mail Parameters Reset	
AT#ERST	Execution command resets the actual e-mail parameters in the NVM of the device to the default ones. The values 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.

3.5.6.6.10. *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.

3.5.6.7. HTTP AT Commands

3.5.6.7.1. *Configure HTTP parameters - #HTTPCFG*

#HTTPCFG – configure HTTP parameters	
AT#HTTPCFG=<prof_id>[,<server_address>[,<server_port>[,<auth_type>[,<username>[,<password>[,<ssl_enabled>[,<timeout> [,<cid>[,<pkt_size>][,<UNUSED_1>[,<UNUSED_2>]]]]]]]]]	This command sets the parameters needed to the HTTP connection Parameters: **<prof_id>** - Numeric parameter indicating the profile identifier. Range: 0-2 **<server_address>** - String parameter indicating the IP address of the HTTP server. 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 Default: “” for first and second profile; "m2mlocate.telit.com" for third profile.

#HTTPCFG – configure HTTP parameters	
	<server_port> - Numeric parameter indicating the TCP remote port of the HTTP server to connect to. Default: 80 for first and second profile; 9978 for third profile. Range 1...65535. **<auth_type> -** Numeric parameter indicating the HTTP authentication type. 0 – no authentication (default) 1 – basic authentication <**username**> - String parameter indicating authentication user identification string for HTTP. <**password**> - String parameter indicating authentication password for HTTP. **<ssl_enabled> -** Numeric parameter indicating if the SSL encryption is enabled. 0 – SSL encryption disabled (default) 1 – SSL encryption enabled (not yet implemented and not available for setting) <**timeout**>: Numeric parameter indicating the time interval in seconds to wait for receiving data from HTTP server. Range: (1- 65535). Default: 120. <**cid**> - Numeric parameter indicating the PDP Context Identifier. Range: (1). Default: 1 <**pkt_size**> - send(#HTTPSND) or recv(#HTTPRCV) size for data sending or receiving. 0 – select automatically default value(300). 1..1500 – send or recv size in bytes. Note: a special form of the Set command, **#HTTPCFG=<prof_id>**, causes the values for profile number **<prof_id>** to reset to default values. Note: if the SSL encryption is enabled, the **<cid>** parameter has to be set to 1. Note: only one profile can use the SSL encryption. Note: values are automatically saved in NVM.
AT#HTTPCFG?	Read command returns the current settings for each defined profile in the format: **#HTTPCFG**: **<prof_id>,<server_address>,<server_port>,<auth_type>,<username>,<password>,<ssl_enabled>,<timeout>,<cid>,<pkt_size>,0,0<CR><LF>[<CR><LF>#HTTPCFG:** **<prof_id>,<server_address>,<server_port>,<auth_type>,<username>,<password>,<ssl_enabled>,<timeout>,<cid>,<pkt_size>,0,0]<CR><LF>[…]]**

#HTTPCFG – configure HTTP parameters	
AT#HTTPCFG=?	Test command returns the supported range of parameters **<prof_id>, <server_port>, <auth_type>, <ssl_enabled>, <timeout>**, **<cid>** and **<pkt_size>** and the maximum length of **<server_address>, <username>** and **<password>** parameters in the format: **#HTTPCFG: (list of supported <prof_id>s),<s_length>,(list of supported <server_port>s), (list of supported <auth_type>s),<u_length>,<p_length>,(list of supported <ssl_enabled>s),(list of supported <timeout>s),(list of supported <cid>s) ,(list of supported <pkt_size>s) ,(<UNUSED_1>),(<UNUSED_2>)** where: **<s_length>** - integer type value indicating the maximum length of parameter **<server_address>**. **<u_length>** - integer type value indicating the maximum length of parameter **<username>**. **<p_length>** - integer type value indicating the maximum length of parameter **<password>**

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

#HTTPQRY – send HTTP GET, HEAD or DELETE request	
AT#HTTPQRY=<prof_id>,<command>,<resource>[,<extra_header_line>]	Execution command performs a GET, HEAD or DELETE request to HTTP server. Parameters: **<prof_id>** - Numeric parameter indicating the profile identifier. Range: 0-2 **<command>**: Numeric parameter indicating the command requested to HTTP server: 0 – GET 1 – HEAD 2 – DELETE **<resource>**: String parameter indicating the HTTP resource (uri), object of the request **<extra_header_line>**: String parameter indicating optional HTTP header line If sending ends successfully, the response is OK; otherwise an error code is reported. Note: the HTTP request header sent with #HTTPQRY always contains the "Connection: close" line, and it can not be removed. When the HTTP server answer is received, then the following URC is put on the

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

3.5.6.7.3. *Send HTTP POST or PUT request - #HTTPSND*

#HTTPSND – send HTTP POST or PUT request	
AT#HTTPSND=<prof_id>,<command>,<resource>,<data_len>[,<post_param>[,<extra_header_line>]]	Execution command performs a POST or PUT request to HTTP server and starts sending data to the server. The device shall prompt a three character sequence <**greater_than**><**greater_than**><**greater_than**> **(IRA 62, 62, 62)** after command line is terminated with <CR>; after that the data can be entered from TE, sized <**data_len**> bytes. Parameters: <**prof_id**> - Numeric parameter indicating the profile identifier. Range: 0-2 <**command**>: Numeric parameter indicating the command requested to HTTP

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

#HTTPSND – send HTTP POST or PUT request	
	#HTTPSND: (list of supported <prof_id>s),(list of supported <command>s), <r_length>, (list of supported <data_len>s),<p_length>,<m_length> where: **<r_length>** - integer type value indicating the maximum length of parameter **<resource>**. **<p_length>** - integer type value indicating the maximum length of parameter **<post_param>**. **<m_length>** - integer type value indicating the maximum length of parameter **<extra_header_line>**
Example	*Post 100 byte without "Content-type" header* **AT#HTTPSND=0,0,"/",100** >>> *Post 100 byte with "application/x-www-form-urlencoded"* **AT#HTTPSND=0,0,"/",100,0** >>> *Post 100 byte with "multipart/form-data" and extension* **AT#HTTPSND=0,0,"/",100,"3:boundary=----FormBoundary"** >>>

3.5.6.7.4. *Receive HTTP server data - #HTTPRCV*

#HTTPRCV – receive HTTP server data	
AT#HTTPRCV=<prof_id>,[<maxByte>]	Execution command permits the user to read data from HTTP server in response to a previous HTTP module request. The module is notified of these data by the **#HTTPRING** URC. The device shall prompt a three character sequence **<less_than><less_than><less_than>** **(IRA 60, 60, 60)** followed by the data. If reading ends successfully, the response is OK; otherwise an error code is reported. Parameters: **<prof_id>** - Numeric parameter indicating the profile identifier. Range: 0-2 <maxByte> - Max number of bytes to read at a time Range:0,64-1500 (default is 0 which means infinite size) Note: If unspecified for <maxByte>, server data will be transferred until it completes with once AT#HTTPRCV execution. Note: If the data are not present or the **#HTTPRING <http_status_code>**

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

3.5.7. Telit CDMA Custom AT Commands

3.5.7.1. General Configuration AT Commands

3.5.7.1.1. *Common Air Interface parameters - #CAI*

#CAI – Common Air Interface parameters	
AT#CAI?	Read command returns the current common air interface parameters of the module. **#CAI: <sid>,<nid>,<bsid>,<packetid>,<channel>,<pilot_pn>,<mb_prev>,<bs_prev>,<in_use_prev>,<rssi>,<ecio>,<tx_adj>,<rx_state>,<rx_rate>,<tx_rate>,<service_opt>,<slot_index>,<fer>,<voice_priv>,<band>** Parameter: **<sid>** - Integer value of current system ID **<nid>** - Integer value of current network ID **<bsid>** - Integer value of current base station ID **<packetid>** - Integer value of current packet zone ID **<channel>** - Integer value of current channel number **<pilot_pn>** - Integer value of current pilot PN number **<mb_prev>** - Integer value of current mobile station protocol revision 3 - IS95A 4 - IS95B 6 - IS2000 7 - IS2000 Rel A **<bs_prev>** - Integer value of current base station protocol revision Refer to the described above **<mb_prev>** **<in_use_prev>** - Integer value of current in use protocol revision Refer to the described above **<mb_prev>** **<rssi>** - Integer value of current RSSI **<ecio>** - Integer value of current ECIO

#CAI – Common Air Interface parameters	
	<tx_adj> - Integer value of current TX gain **<rx_state>** - Integer value of current Rx state 0 - CDMA state 1 - Process Sync Channel data 2 - Process Paging Channel data 3 - Process Traffic Channel initialization 4 - Process Traffic Channel data 5 - Exit state **<rx_rate>** - Integer value of current Rx rate **<tx_rate>** - Integer value of current Tx rate **<service_opt>** - Integer value of current service option **<slot_index>** - Integer value of current slot cycle index **<fer>** - Integer value of current frame error rate **<voice_priv>** - Integer value of current voice privacy mode 0 - disable 1 - enable **<band>** - Integer value of current band
AT#CAI=?	Test command returns the OK result code.
Example	AT#CAI? #CAI: 4376,30,522,30,350,330,6,6,6,-85,-5,0,2,0,0,0,2,0,0,1 OK AT#CAI=? OK

3.5.7.1.2. *Modem Configure parameters - #MODEM*

#MODEM – Modem Configure parameters	
AT#MODEM [=<index>]?	Read command returns the modem configuration paramters of the module. Parameter: **<index>** 0 .. 13 - To get specific modem configiuration parameter value of the module **#MODEM: <mdn>,<msin>,<vbatt>,<temp>,<systemtime>,<calltime>,<totalcalltime>,<modemstatus>,<fwver>,<model>,<namname>,<lock>,<prlver>,<deepsleep>** Where: **<mdn>** - Mobile directory number **<msin>** - Mobile Subscriber Identifier Number **<vbatt>** - Current Battery Voltage Level **<temp>** - Current Temperature **<systemtime>** - Current System Time (received from the network)

#MODEM – Modem Configure parameters	
	<calltime> - Latest Call Time **<totalcalltime>** - Total Call Time **<modemstatus>** - Current Modem Status 0: IDLE State 1: Origination State 2: Alerting State 3: Conversation State 4: Call End State 5: Dormant Mode State **<fwver>** - Firmware Version, solution Patch release version **<model>** - Model Name **<namname>** - Current Nam Name Note: Not all service providers use NAM name, some providers use a string to display service provider's name. If service provider does not use this, then "UNKNOWN" will be displayed. **<lock>** - Current Lock Status 0: Not Locked 1: Registration Lock **<prlver>** - Current PRL Version **<deepsleep>** - Current Deep Sleep Status - 0: Wake Up - 1: Deep Sleep
AT#MODEM=?	Test command returns the **OK** result code
Example	AT#MODEM? #MODEM: 9194547049,9194547049,3.9,0,20080923152338TUE,000000,00000000103,0,SCAUTHZ31340118,CE910-SL,UNKNOWN ,0,10030,0 OK AT#MODEM=0? #MODEM: 1234567890 OK AT#MODEM=9? #MODEM: CE910-SL OK

3.5.7.1.3. *Mobile NAM parameters - #ENG*

#ENG – Mobile NAM parameters	
AT#ENG=	Set command sets to mobile NAM parameters according to **<index>** parameter.

#ENG – Mobile NAM parameters	
<index>:<value>[, <index>:<value>...]	Parameter: **<index>** - integer type; Index of mobile NAM parameter. 0 – Mobile Protocol Revision 1 – Mobile Country Code 2 – Mobile Network Code 3 – Access Overload Control 4 – MOB_TERM_HOME registration flag 5 – MOB_TERM_FOR_SID registration flag 6 – MOB_TERM_FOR_NID registration flag 7 – Station Class Mark 8 – Slot Cycle Index 9 – Mobile Directory Number 10 – Mobile Subscriber Identifier Number 11 – CDMA Preferred Serving System(A/B) 12 – Digital/Analog Mode Preference 13 – CDMA Primary Channel(A) 14 – CDMA Primary Channel(B) 15 – CDMA Secondary Channel(A) 16 – CDMA Secondary Channel(B) 17 – SID-NID pair 18 – The Preferred Forward & Reverse RC value 19 – Slot Mode
AT#ENG [=<index>[, <index>...]]?	Read command returns the current mobile NAM parameters in format: **#ENG: <mobprev>,<mcc>,<mnc>,<accolc>,<homereg>,<termforsid>,<termfornid>,<scm>,<sci>,<mdn>,<msin>,<prefserv>,<prefmode>,<primch_a>, <primch_b>,<scch_a>,<scch_b>,(<sid>,<nid>[,<sid>,<nid>…]),(<prefrc>,<prerrc>),<slotmode>** Where: **<mobprev>** – Mobile Protocol Revision (read-only) **<mcc>** – Mobile Country Code **<mnc>** – Mobile Network Code **<accolc>** – Access Overload Control **<homereg>** – MOB_TERM_HOME registration flag **<termforsid>** – MOB_TERM_FOR_SID registration flag **<termfornid>** – MOB_TERM_FOR_NID registration flag **<scm>** – Station Class Mark **<sci>** – Slot Cycle Index **<mdn>** – Mobile Directory Number **<msin>** – Mobile Subscriber Identifier Number **<prefserv>** – CDMA Preferred Serving System(A/B) **<prefmode>** – Digital/Analog Mode Preference **<primch_a>** – CDMA Primary Channel(A)

#ENG – Mobile NAM parameters	
	<primch_b> – CDMA Primary Channel(B) **<scch_a>** – CDMA Secondary Channel(A) **<scch_b>** – CDMA Secondary Channel(B) **<sid>,<nid>** – SID-NID pair **<prefrc>,<prerrc>** – The Preferred Forward & Reverse RC value **<slotmode>** – Slot Mode
AT#ENG=?	Test command returns the **OK** result code
Example	AT#ENG? #ENG: 6,310,00,9,1,1,1,42,2,1234567890,9135069409,5,4,283,384,691,777,(4139,65535),(0,0),0 OK AT#ENG=9? #ENG: 1234567890 OK AT#ENG=1:400,2:06 OK AT#ENG=1,2? #ENG: 400,06 OK

3.5.7.1.4. *CDMA Notification - #NOTI*

#NOTI – CDMA Notification	
AT#NOTI= <index>,<onoff>	Set command sets to enable or disable related CDMA notification. Parameter: **<index>** - CDMA notification selection 0 – All notification messages (1~18) 1 – "#CNIP" the output when the module receives a Calling Number Identification Presentation from the network. 2 – "#CNAP" the output when the module receives a Calling Naming Presentation from the network. 3 – "#DISREC" the output when the module receives a Display Record from the network. 4 – "#LOCK" the output when the module receives a LOCK from the network during registering state. 5 – "#UNLOCK"

#NOTI – CDMA Notification	
	the output when the module receive a UNLOCK from the network during locked state. 6 – "#SMSFULL" the output when SMS are FULL. 7 – "#ENTERDEEP" the output when the module enters Power save mode. 8 – "#EXITDEEP" the output when the module exits Power save mode. 9 – "#ENTERDRM" the output when the module enters Dormant state. 10 – "#EXITDRM" the output when the module exits Dormant state into Activate state. 11 – "#DREL" the output when the module releases Data call. 12 – "#ROAM" the RI (roaming indicator) output matching with PRL when system is changed. 13 – "#ERR_CODE" the output when MIP ERROR is occurred. 14 – "#ROAMGUARD" the output when the module moves between Domestic area and International area regarding data roaming. 15 – "#N11" the output when N11 digits dialed by user 16 – "#SERVICE" the output when the service state of module changed. Service State Messages "#SERVICE: 0" – No Service State "#SERVICE: 2" – Normal Service State "#SERVICE: 4" – Power save or Deep sleep state 17 – "#EMERGENCY CALL" the output when the module tries to make an emergency call. 18 – "#SERVICE_HDR" (Reserved) the output when the HDR service state of module changed. Service State Messages "#SERVICE_HDR: 0" – No Service State "#SERVICE_HDR: 2" – Normal Service State "#SERVICE_HDR: 4" – Power save or Deep sleep state. <**onoff**> - Device configuration message status 0 – disable (default) 1 – enable
AT#NOTI?	Read command returns the current status flag of <**onoff**>. **#NOTI: <onoff (for index 1)>,<onoff (for index 2)>, … ,<onoff (for index 18)>**

#NOTI – CDMA Notification	
AT#NOTI=?	Test command reports the range of the parameter **<index>,<onoff>**
Example	AT#NOTI=? #NOTI: (0-18),(0,1) OK AT#NOTI? #NOTI: 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 OK AT#NOTI=0,1 OK AT#NOTI? #NOTI: 1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1 OK AT#NOTI=7,0 OK AT#NOTI? #NOTI: 1,1,1,1,1,1,0,1,1,1,1,1,1,1,1,1,1,1 OK

3.5.7.1.5. *Mobile Diretory Number – $MDN*

$MDN– Change Operational Mode of Modem	
AT$MDN=<mdn>	This command manipulates the Mobile Directory Number of the module. Parameter: **<mdn>** - The mobile directory number expressed as a 10 digit decimal phone-number.
AT$MDN?	Read command returns the mobile directory number with command echo. **$MDN: <mdn>**
AT$MDN=?	Test command returns the **OK** result code
Example	AT$MDN=? OK AT$MDN? $MDN: 1234567890

3.5.7.1.6. *Mobile Station ID – $MSID*

$MSID– Change Operational Mode of Modem	
AT$MSID=<msid>	This command manipulates the Mobile Station ID of the module. Parameter: **<msid>** - The Mobile Station ID expressed as a 10 digit decimal phone-number

$MSID– Change Operational Mode of Modem	
AT$MSID?	Read command returns the Mobile Station ID with command echo. **$MSID: <msid>**
AT$MSID=?	Test command returns the **OK** result code
Example	AT$MSID=? OK AT$MSID? $MSID: 0000000000

3.5.7.1.7. *Notification of Service - +SERVICE*

+SERVICE – Notification of Service	
AT+SERVICE?	Read command returns the Mobile Station ID with command echo. **+SERVICE: <serv>** Parameter: <serv> 0 – No Service 1 – 1xRTT Service 2 – EVDO Release 0 (Not Support) 3 – EVDO Release A (Not Support) 4 – GPRS(Not Support)
AT+SERVICE=?	Test command returns the **OK** result code

3.5.7.1.8. *Reverse Logistic Support - #RTN*

#RTN – Reverse Logistic Support	
AT#RTN=<n>	The execute command will reset the selected parameter back to its factory value. Parameter: **<n>** - Parameter for reset. 0 – MDN 1 – MSID 2 – Last Call Time 3 – Total Call Time 4 – MIP Porfile – This deletes only MIP profile 1
AT#RTN=?	Test command returns the **OK** result code

3.5.7.1.9. *Base Station Lat/long Data - $CELLPOS*

$CELLPOS –Get a latitude and longitude of Base Station

$CELLPOS –Get a latitude and longitude of Base Station	
AT$CELLPOS	Gets a Latitude and Longitude Data of Base Station in CDMA network $CELLPOS: **<latitude>,<longitude >** Parameter: NONE
AT$CELLPOS?	Read command returns the currently used values, in the format: $CELLPOS: **<latitude>,<longitude >**
AT$CELLPOS=?	Test command returns the OK result code
Example	AT$CELLPOS $CELLPOS: 37.5197,126.9311 OK AT$CELLPOS? $CELLPOS: 37.5197,126.9311 OK AT$CELLPOS=? OK AT$CELLPOS= ERROR

3.5.7.2. Air interface and call processing

3.5.7.2.1. *Preferred Radio Configuration - #PREFRC*

#PREFRC – Preferred Radio Configuration	
AT#PREFRC= <for_rc>,<rev_rc>	Set command sets the preferred radio configuration. Parameter: **<for_rc>** - integer forward radio configuration **<rev_rc>** - integer reverse radio configuration Note: This command is used to set the preferred RC for the forward and reverse channel. If you want to get the cached pref RC from NV, set parameter value to (1,2,3,4,5), otherwise both “for_rc and “rev_rc” must be set to ‘0’.
AT#PREFRC?	Read command returns the radio configurations in format: **#PREFRC: <for_rc>,<rev_rc>**
AT#PREFRC=?	Test command reports the range of **<for_rc>,<rev_rc>** parameters: **AT#PREFRC: (0-5),(0-5)**

3.5.7.2.2. *Voice Privacy Setting - #VOICEPRIV*

#VOICEPRIV – Voice Privacy Setting	
AT#VOICEPRIV= <v_privacy>	Set command sets voice privacy mode according to < **v_privacy** > parameter. Parameter: < **v_privacy** > - Value of the voice privacy setting value 0 – OFF 1 – ON (factory default)
AT#VOICEPRIV?	Read command returns the current voice privacy setting value: **#VOICEPRIV: <v_ privacy>**
AT#VOICEPRIV=?	Test command reports the range of < **v_privacy** > parameters: **#VOICEPRIV: (0,1)**
Example	AT#VOICEPRIV=? #VOICEPRIV: (0,1) OK AT#VOICEPRIV? #VOICEPRIV: 0 OK AT#VOICEPRIV=1 OK AT#VOICEPRIV? #VOICEPRIV: 1 OK

3.5.7.2.3. *Vocoder Setting Value Reading or Writing - #PREFVOC*

#PREFVOC – Vocoder Setting Value Reading or Writing	
AT#PREFVOC= [<evrc>,<so1>, <so2>,<so3>]	Set command sets vocoder setting value. Parameter: **<evrc>** - The mode of EVRC 0 – disable EVRC (factory default value) 1 – enable EVRC (factory default value for Sprint and US cellular only) **<so1>** - page voice service option in home network 3 – for EVRC (factory default value) 32768 – for QCELP **<so2>** - originate voice service option in home network 3 – for EVRC (factory default value)

#PREFVOC – Vocoder Setting Value Reading or Writing	
	32768 – for QCELP **<so3>** - originate voice service option in roam network 3 – for EVRC (factory default value) 32768 – for QCELP Note: If <evrc> is set to 0, voice service option will be discard. Note: For models supporting the 4GV, the supporting service option will be changed as follows. <so1>,<so2>,<so3> 3 - EVRC 32768 - QCELP 68 - 4GV NB 70 - 4GV WB
AT#PREFVOC?	Read command returns the vocoder setting values in format: **#PREFVOC: <evrc>,<so1>,<so2>,<so3>**
AT#PREFVOC=?	Test command reports the range of the parameters
Example	AT#PREFVOC? #PREFVOC: 0,3,3,3 OK AT#PREFVOC=1,3,3,3 OK AT#PREFVOC? #PREFVOC: 1,3,3,3 OK AT#PREFVOC=0,32768,32768,32768 OK AT#PREFVOC? #PREFVOC: 0,32768,32768,32768 OK

3.5.7.2.4. *OTASP Setting - #OTASPEN*

#OTASPEN – OTASP Setting	
AT#OTASPEN= **< mode >**	Set command enables or disables the OTASP function. Parameter: **<mode>** 0 - disables OTASP 1 - enables OTASP

	Note: The Unsolicited indication message is displayed as following. #OTASP: <n> where: <n> : 0 : Origination for OTASP 1 : Start OTASP/OTAPA commit 2 : End OTASP/OTAPA commit(success) 5 : Failed
AT#OTASPEN?	Read command returns the OTASP setting in format: **#OTASPEN: < mode >**
AT#OTASPEN=?	Test command returns the values for the **< mode >** parameter.

3.5.7.2.5. *Configuration String - +CFG*

+CFG – Configuration String	
AT+CFG= <string>	Set command sets a module configuration string. The string will be stored by the module and sent to the base station prior to dialing. Each transmission of an AT+CFG command from Host replaces the contents of the previous string. Parameter: **<string> -** Configuration string may be up to 248 character.
AT+CFG?	Read command returns the configuration string in format: **+CFG: <string>**
AT+CFG=?	Test command returns the **OK** result code.
Example	AT+CFG=? OK AT+CFG? +CFG: "" OK AT+CFG="data" OK AT+CFG? +CFG: "data" OK

3.5.7.2.6. *Clear MRU Table - #CLRMRU*

#CLRMRU – Clear MRU Table

#CLRMRU – Clear MRU Table	
AT#CLRMRU	This command is used to clear the Most Recently Used(MRU)table.
Example	AT#CLRMRU OK

3.5.7.2.7. *Receive Ordered Registration message from network*

#ORDREG- Receive Ordered Registration message from network	
AT#ORDREG = <Clr_Mode>	Set command clear the last ordered registration status. Parameter: <Clr_Mode> 0 – clear flag of order registration message received from network Note: If receive the ordered registration message from network, display URC as follow: **#ORDREG: 1**
AT#ORDREG?	Read command returns the last ordered registration status. format: **#ORDREG: <mode>** **< mode >** 0 – Not receive ordered registration message 1 – Receive ordered registration message
AT#ORDREG =?	Test command returns the **OK** result code

3.5.7.3. DATA Session AT commands

3.5.7.3.1. *Data Inactivity Timer – +CTA*

+CTA – Data Inactivity Timer	
AT+CTA= <n>	Set command sets Um packet data inactivity timer Parameter: **<n>** - Um packet data inactivity timer: 0 - Traffic Channel not released during inactivity periods. 1-255 - Release the Traffic Channel after <value> 1-second intervals have elapsed since last sending or receiving RLP data frames on the Um interface.
AT+CTA?	Read command returns the data inactivity timer in format: **+CTA: <n>**
AT+CTA=?	Test command reports the range of the **<n>** parameter.
Example	AT+CTA=? +CTA: (0-255)

+CTA – Data Inactivity Timer	
	OK AT+CTA? +CTA: 60 OK AT+CTA=30 OK AT+CTA? +CTA: 30 OK

3.5.7.3.2. *Packet Zone ID - +PZID*

+PZID – Packet Zone ID	
AT+PZID?	Displays the current <**packet_zone_id**> in the Extended System Parameters Message or the In-Traffic System Parameters Message.
AT+PZID=?	Returns the **OK** result code.
Example	AT+PZID=? OK AT+PZID? +PZID: 30 OK

3.5.7.3.3. *Interrupt Packet Data - $GODORMANT*

$GODORMANT – Interrupt Packet Data	
AT$GODORMANT	Returns the OK result code. Executed immediately, not time critical. Although running this AT-Command, The device would emerge from DORMANT state then become ACTIVE state as long as the device has any packets to send or receive Note : The device should be in Packet Data Active Session to get result “OK”, In case of QNC call, Result must be “ERROR” since QNC doesn’t support DORMANT.
AT$GODORMANT=?	Returns the **OK** result code.
Example	AT$GODORMANT OK

3.5.7.3.4. *Test Origination - #TESTORI*

#TESTORI – Test Origination	
AT#TESTORI= <svc_opt>[,<num>]	Set command originates a (loopback) test call according to **<idx >** parameter. Parameter: **< svc_opt >** Service option for test call: 0 – Rate Set 1 Loopback Service Option(Service Option: 0x02) 1 – Rate Set 2 Loopback Service Option(Service Option: 0x09) 2 – Loopback service Option 55(Service Option: 0x37) 3 – Markov Service Option(Service Option: 0x8002) 4 – Markov Service Option (13K) (Service Option: 0x801C) 5 – Rate Set 2 Markov Service Option(Service Option: 0x801F) 6 – Rate Set 1 Markov Service Option(Service Option: 0x801E) 7 – Markov Service Option 54(Service Option: 0x36) 8 – Service option for Simple TDSO(Service Option: 0x8008) 9 – Service option for FULL TDSO(Service Option: 0x20) **< num >** Destination number for test calls
Example	AT#TESTORI=0 OK AT#TESTORI=0 ,12345678 OK

3.5.7.3.5. *RM Interface Setting - +CRM*

+CRM – RM Interface Setting	
AT+CRM= <value>	Set command changes the RM interface protocol. Note: When the AT$QCMIP value is changed to "1" or "2", this modifies the value of AT+CRM to 2. When AT+CRM has a value of "2", it enables network mode operation. Changing the value of AT$QCMIP to "0" will reset the AT+CRM to its original value. Parameter: **<value>** - RM Interface protocol: 0 – Circuit Data 1 – Packet Data (Relay layer packet data) 2 – Packet Data (Network layer packet data)
AT+CRM?	Read command returns the RM interface setting in format: **+CRM: <value>**
AT+CRM=?	Test command reports the range of the **<value>** parameter.
Example	AT+CRM=? +CRM: (0-2)

	OK AT+CRM? +CRM: 2 OK AT+CRM=0 ERROR AT$QCMIP? $QCMIP: 2 OK AT$QCMIP=0 OK AT+CRM=0 OK AT+CRM? +CRM: 0 OK AT$QCMIP=2 OK AT+CRM? +CRM: 2 OK

3.5.7.3.6. *CDMA Static IP Configuration - #CSIPCFG*

#CSIPCFG – CDMA Static IP Configuration	
AT#CSIPCFG= <IPaddress>	Set command configures static IP address of DUT. It is stored at NVM and remains even after power-recycling. DUT requests the configured IP address as its own address at the step of PPP negotiation. If NW accepts the requested IP address, DUT could be configured with the IP address. On the other hand, NW could assigns new IP address and then DUT is configured with the new IP address as dynamic IP assignment Parameter: **<IPaddress>** - IP address that is requested by DUT in the middle of PPP negotiation; String type, it can be any valid IP address in the format: xxx.xxx.xxx.xxx Note: if <IPaddress> = “0.0.0.0” (factory default), IP address is assigned dynamically by NW Note: This Static IP address is only applicable to using interanl data stack. In cas of

	external stack(Dial-up networking), static IP address should be configured by host side
AT#CSIPCFG?	Read command returns the configured static IP adresss in the format: **#CSIPCFG: <IPaddress>**
AT#CSIPCFG=?	Returns the **OK** result code.
Example	AT#CSIPCFG=10.10.10.10 OK AT#CSIPCFG? #CSIPCFG: "10.10.10.10" OK

3.5.8. Qualcomm Proprietary AT Commands

3.5.8.1. Enable/Disable Mobile IP - $QCMIP

$QCMIP – Enable/Disable mobile IP	
AT$QCMIP= <n>	This command enables/disables mobile IP. Parameter: **<n>** 0 : Mobile IP disable, simple IP only(default). 1 : Mobile IP preferred. In the initial MIP registration, if the network does not support Mobile IP, then the mobile automatically reverts to Simple IP (force a PPP Renegotiation by sending a LCP C-Req). However, if a Mobile IP session is registered, and then the mobile enters a network that does not support Mobile IP, the mobile will drop the session and inform the upper layers of the failure (for example, by dropping DCD to a laptop). 2 : Mobile IP only. The mobile will make data calls only when Mobile IP is supported in the network. During a MIP session, if the mobile hands off to a network that does not support MIP, then the mobile will drop the session and inform the upper layers of the failure (for example, by dropping DCD to a laptop). This value is stored in NV.
AT$QCMIP?	Read command returns the current status in format: $QCMIP: <n>
AT$QCMIP=?	Returns the range of parameters. $QCMIP: (0-2)
Example	AT$QCMIP=? $QCMIP: (0-2)

$QCMIP – Enable/Disable mobile IP	
	OK AT$QCMIP? $QCMIP: 0 OK AT$QCMIP=2 OK AT$QCMIP? $QCMIP: 2 OK AT$QCMIP=1 OK AT$QCMIP? $QCMIP: 1 OK

3.5.8.2. Medium Data Rate – $QCMDR

$QCMDR – the medium data rate setting	
AT$QCMDR= <value>	This command changes the medium data rate settings. Parameter: **<value>** - Set medium data rate 0 : MDR service only 1 : MDR service if available 2 : LSPD only 3 : SO 33, if available Note: When the AT$QCMIP=1 or 2, AT$QCMDR is always fixed to '3' and not changeable to other values. It is necessary to change $QCMIP=0 first to change $QCMDR to 0~3 and it also means not using Mobile IP but Simple IP only.
AT$QCMDR?	Returns the current setting of Medium Data Rate: $QCMDR: <value>
AT$QCMDR=?	Returns the range of parameters. $QCMDR: (0-3)
Example	AT$QCMDR=? $QCMDR: (0-3) OK AT$QCMDR? $QCMDR: 3

$QCMDR – the medium data rate setting	
	OK AT$QCMDR=3 OK

3.6. AT parser abort

The following AT Command list can be aborted, while executing the AT Command
ATD
ATA
+CLCC
+COPN
+CLIP
+CLIR

NOTE: If DTE transmits any character before receiving the response to the issued AT Command, this make current AT Command to be aborted.

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
GPRS	General Packet Radio Service
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
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
SCA	Service Center Address
SMS	Short Message Service
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

5. Document History

Revision	Date	Changes
0	2014-11-26	Initial version
1	2015-04-07	New: #FASTSHDN Updated: +CNMI,+CMGR,+CMGL, #MODEM, +IPR, #GSMAD, #GPIO, #QTEMP
2	2015-11-25	Official #1 SW for CE910-SL New: #HTTPCFG , +CALM, +CRSL, +CLVL, +CMUT, #CAP, #OAP, #SRS, #SRP, #AXE, #HFMICG, #HSMICG, #PCMTXG, #PCMRXG, #HFRECG, #HSRECG, #SHSSD, #SHFSD, #SPKMUT, #STM, #TONE, #TSVOL, #PRST, #PSAV, #PSEL, #PSET, #SHFFRX, #SHFFTX, #SHSFRX, #SHSFTX, #SHFEC, #SHSEC, #SHFAGC, #SHSAGC, #SHFAGCRX, #SHFAGCTX, #SHSAGCRX, #SHSAGCTX, #SRXAGC, #SHFNR, #SHSNR, #DTMF, #DVI, #DVICFG, #SPCM, #TESTMODE, #CSIPCFG Updated : #FASTSHDN, +CPBW, +CPBR, #GPIO, #CODEC, #TSVOL, ATX, #CGMM