AT Commands Reference Guide

For LE910-SKG

80437ST10619A Rev.1 – 2014-09-16

Making machines talk.

APPLICABILITY TABLE

PRODUCT
LE910-SKG

SW Version
17.00.543

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

Notice

While reasonable efforts have been made to assure the accuracy of this document, Telit assumes no liability resulting from any inaccuracies or omissions in this document, or from use of the information obtained herein. The information in this document has been carefully checked and is believed to be entirely reliable. However, no responsibility is assumed for inaccuracies or omissions. Telit reserves the right to make changes to any products described herein and reserves the right to revise this document and to make changes from time to time in content hereof with no obligation to notify any person of revisions or changes. Telit does not assume any liability arising out of the application or use of any product, software, or circuit described herein; neither does it convey license under its patent rights or the rights of others.

It is possible that this publication may contain references to, or information about Telit products (machines and programs), programming, or services that are not announced in your country. Such references or information must not be construed to mean that Telit intends to announce such Telit products, programming, or services in your country.

Copyrights

This instruction manual and the Telit products described in this instruction manual may be, include or describe copyrighted Telit material, such as computer programs stored in semiconductor memories or other media. Laws in the Italy and other countries preserve for Telit and its licensors certain exclusive rights for copyrighted material, including the exclusive right to copy, reproduce in any form, distribute and make derivative works of the copyrighted material. Accordingly, any copyrighted material of Telit and its licensors contained herein or in the Telit products described in this instruction manual may not be copied, reproduced, distributed, merged or modified in any manner without the express written permission of Telit. Furthermore, the purchase of Telit products shall not be deemed to grant either directly or by implication, estoppel, or otherwise, any license under the copyrights, patents or patent applications of Telit, as arises by operation of law in the sale of a product.

Computer Software Copyrights

The Telit and 3rd Party supplied Software (SW) products described in this instruction manual may include copyrighted Telit and other 3rd Party supplied computer programs stored in semiconductor memories or other media. Laws in the Italy and other countries preserve for Telit and other 3rd Party supplied SW certain exclusive rights for copyrighted computer programs, including the exclusive right to copy or reproduce in any form the copyrighted computer program. Accordingly, any copyrighted Telit or other 3rd Party supplied SW computer programs contained in the Telit products described in this instruction manual may not be copied (reverse engineered) or reproduced in any manner without the express written permission of Telit or the 3rd Party SW supplier. Furthermore, the purchase of Telit products shall not be deemed to grant either directly or by implication, estoppel, or otherwise, any license under the copyrights, patents or patent applications of Telit or other 3rd Party supplied SW, except for the normal non-exclusive, royalty free license to use that arises by operation of law in the sale of a product.

Usage and Disclosure Restrictions

License Agreements

The software described in this document is the property of Telit and its licensors. It is furnished by express license agreement only and may be used only in accordance with the terms of such an agreement.

Copyrighted Materials

Software and documentation are copyrighted materials. Making unauthorized copies is prohibited by law. No part of the software or documentation may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language or computer language, in any form or by any means, without prior written permission of Telit

High Risk Materials

Components, units, or third-party products used in the product described herein are NOT fault-tolerant and are NOT designed, manufactured, or intended for use as on-line control equipment in the following hazardous environments requiring fail-safe controls: the operation of Nuclear Facilities, Aircraft Navigation or Aircraft Communication Systems, Air Traffic Control, Life Support, or Weapons Systems (High Risk Activities"). Telit and its supplier(s) specifically disclaim any expressed or implied warranty of fitness for such High Risk Activities.

Trademarks

TELIT and the Stylized T Logo are registered in Trademark Office. All other product or service names are the property of their respective owners.

Contents

1. Introduction 10
1.1. Scope 10
1.2. Audience 10
1.3. Contact Information, Support 10
1.4. Document Organization 10
1.5. Text Conventions 11
1.6. Related Documents 11
2. Overview 12
2.1. About the document 12
3. AT COMMANDS 13
3.1. Definitions 13
3.2. AT Command Syntax 14
3.2.1. String Type Parameters 14
3.2.2. Command Lines 15
3.2.2.1. ME Error Result Code - +CME ERROR: <err> 17
3.2.2.2. Message Service Failure Result Code - +CMS ERROR: <err> 19
3.2.3. Information Responses and Result Codes 20
3.2.4. Command Response Time-Out 21
3.2.5. Command Issuing Timing 23
3.3. Storage 24
3.3.1. Factory Profile and User Profiles 24
4. AT Commands Availability Table 27
5. AT Commands References 38
5.1. Command Line General Format 38
5.1.1. Command Line Prefixes 38
5.1.1.1. Starting A Command Line - AT 38
5.1.1.2. Last Command Automatic Repetition - A/ 38
5.1.1.3. Repeat Last Command - #/ 39
5.1.2. General Configuration Commands 39
5.1.2.1. Select Interface Style - #SELINT 39
5.1.2.2. Set Notification Port - #NOPT 39
5.1.3. Hayes Compliant AT Commands 39
5.1.3.1. Generic Modem Control 39
5.1.3.1.1. Set To Factory-Defined Configuration - &F 39
5.1.3.1.2. Soft Reset - Z 40
5.1.3.1.3. Default Reset Basic Profile Designation - &Y 40
5.1.3.1.4. Default Reset Full Profile Designation - &P 40
5.1.3.1.5. Store Current Configuration - &W 41
5.1.3.1.6. Store Telephone Number In The Module Internal Phonebook - &Z 41
5.1.3.1.7. Display Internal Phonebook Stored Numbers - &N 41
5.1.3.1.8. Manufacturer Identification - +GMI 42

5.1.3.1.9. Model Identification - +GMM 42
5.1.3.1.10. Revision Identification - +GMR 42
5.1.3.1.11. Capabilities List - +GCAP 42
5.1.3.1.12. Serial Number - +GSN 42
5.1.3.1.13. Display Current Base Configuration And Profile - &V 42
5.1.3.1.14. Display Current Configuration And Profile - &V0 42
5.1.3.1.15. S Registers Display - &V1 43
5.1.3.1.16. Extended S Registers Display - &V3 43
5.1.3.1.17. Display Last Connection Statistics - &V2 43
5.1.3.1.18. Single Line Connect Message - \V 43
5.1.3.1.19. Country Of Installation - +GCI 44
5.1.3.1.20. Line Signal Level - %L 44
5.1.3.1.21. Line Quality - %Q 44
5.1.3.1.22. Speaker Loudness - L 44
5.1.3.1.23. Speaker Mode - M 44
5.1.3.2. DTE - Modem Interface Control 44
5.1.3.2.1. Command Echo - E 44
5.1.3.2.2. Quiet Result Codes – Q 45
5.1.3.2.3. Response Format - V 45
5.1.3.2.4. Extended Result Codes – X 46
5.1.3.2.5. Identification Information - I 46
5.1.3.2.6. Data Carrier Detect (DCD) Control - &C 47
5.1.3.2.7. Data Terminal Ready (DTR) Control - &D 47
5.1.3.2.8. Flow Control - &K 48
5.1.3.2.9. Data Set Ready (DSR) Control - &S 48
5.1.3.2.10. Ring (RI) Control - \R 48
5.1.3.2.11. Fixed DTE Interface Rate - +IPR 49
5.1.3.2.12. DTE-Modem Local Flow Control - +IFC 50
5.1.3.2.13. DTE-Modem Character Framing - +ICF 51
5.1.3.3. Call Control 51
5.1.3.3.1. Dial – D 51
5.1.3.3.2. Tone Dial - T 53
5.1.3.3.3. Pulse Dial - P 54
5.1.3.3.4. Answer – A 54
5.1.3.3.5. Disconnect - H 54
5.1.3.3.6. Return To On Line Mode – O 54
5.1.3.3.7. Guard Tone - &G 54
5.1.3.3.8. Sync/Async Mode - &Q 55
5.1.3.4. Modulation Control 55
5.1.3.4.1. Line Quality Monitor And Auto Retrain Or Fallback/Fallforward - %E 55
5.1.3.5. Compression Control 55
5.1.3.5.1. Data Compression - +DS 55
5.1.3.5.2. Data Compression Reporting - +DR 55
5.1.3.6. S Parameters 56
5.1.3.6.1. Number Of Rings To Auto Anwser - S0 56
5.1.3.6.2. Ring Counter - S1 56
5.1.3.6.3. Command Line Termination Character - S3 57
5.1.3.6.4. Response Formatting Character - S4 57
5.1.3.6.5. Command Line Editing Character - S5 57
5.1.3.6.6. Connection Completion Time-Out - S7 58
5.1.3.6.7. Carrier Off With Firm Time - S10 58
5.1.3.6.8. Delay To DTR Off - S25 58
5.1.3.6.9. Delay Before Forced Hang Up – S38 59

5.1.4. 3GPP TS 27.007 AT Commands 60
5.1.4.1. General 60
5.1.4.1.1. Request Manufacturer Identification - +CGMI 60
5.1.4.1.2. Request Model Identification - +CGMM 60
5.1.4.1.3. Request Revision Identification - +CGMR 60
5.1.4.1.4. Request Product Serial Number Identification - +CGSN 60
5.1.4.1.5. Select TE Character Set - +CSCS 60
5.1.4.1.6. Request International Mobile Subscriber Identity (IMSI) - +CIMI 61
5.1.4.2. Call Control 62
5.1.4.2.1. Service Reporting Control - +CR 62
5.1.4.3. Network Service Handling 62
5.1.4.3.1. Subscriber Number - +CNUM 62
5.1.4.3.2. Read Operator Names - +COPN 63
5.1.4.3.3. Network Registration Report - +CREG 63
5.1.4.3.4. Operator Selection - +COPS 65
5.1.4.3.5. Facility Lock/Unlock - +CLCK 66
5.1.4.3.6. Change Facility Password - +CPWD 68
5.1.4.3.7. Advice Of Charge - +CAOC 69
5.1.4.3.8. Preferred Operator List - +CPOL 69
5.1.4.3.9. Selection of preferred PLMN list – +CPLS 70
5.1.4.4. Mobile Equipment Control 70
5.1.4.4.1. Set Phone Functionality - +CFUN 70
5.1.4.4.2. Enter PIN - +CPIN 72
5.1.4.4.3. Indicator Control - +CIND 73
5.1.4.4.4. Mobile Equipment Event Reporting - +CMER 75
5.1.4.4.5. Select Phonebook Memory Storage - +CPBS 75
5.1.4.4.6. Read Phonebook Entries - +CPBR 77
5.1.4.4.7. Find Phonebook Entries - +CPBF 79
5.1.4.4.8. Write Phonebook Entry - +CPBW 81
5.1.4.4.9. Read Group Entries - #CPBGR 83
5.1.4.4.10. Write Group Entry - #CPBGW 84
5.1.4.4.11. Clock Management - +CCLK 84
5.1.4.4.12. Alarm Management - +CALA 85
5.1.4.4.13. Delete Alarm - +CALD 87
5.1.4.4.14. Postpone alarm - +CAPD 87
5.1.4.4.15. Setting date format - +CSDF 87
5.1.4.4.16. Setting time format - +CSTF 88
5.1.4.4.17. Time Zone reporting - +CTZR 88
5.1.4.4.18. Automatic Time Zone update - +CTZU 89
5.1.4.4.19. Restricted SIM Access - +CRSM 90
5.1.4.4.20. Generic SIM Acess - +CSIM 91
5.1.4.4.21. UICC Application Discovery - +CUAD 92
5.1.4.4.22. Set voice mail number - +CSVM 92
5.1.4.4.23. Accumulated Call Meter - +CACM 93
5.1.4.4.24. Accumulated Call Meter Maximum - +CAMM 93
5.1.4.4.25. Price per Unit and Currency Table - +CPUC 94
5.1.4.4.26. Available AT Commands - +CLAC 94
5.1.4.4.27. Open Logical Channel - +CCHO 94
5.1.4.4.28. Close Logical Channel - +CCHC 95
5.1.4.4.29. Generic UICC Logical Channel Access - +CGLA 95
5.1.4.4.30. Remaining PIN retries - +CPINR 96
5.1.4.5. Mobile Equipment Errors 97
5.1.4.5.1. Report Mobile Equipment Error - +CMEE 97

5.1.4.6. Commands For EPS 97
5.1.4.6.1. EPS Attach Or Detach - +CGATT 97
5.1.4.6.2. EPS Event Reporting - +CGEREP 98
5.1.4.6.3. EPS Network Registration Status - +CEREG 99
5.1.4.6.4. Define PDP Context - +CGDCONT 100
5.1.4.6.5. Define Secondary PDP Context - +CGDSCONT 101
5.1.4.6.6. Traffic Flow Template - +CGTFT 102
5.1.4.6.7. Define EPS Quality of Service - +CGEQOS 105
5.1.4.6.8. PDP Context Read Dynamic Parameters - +CGCONTRDP 106
5.1.4.6.9. Secondary PDP Context Read Dynamic Parameters - +CGSCONTRDP 107
5.1.4.6.10. Traffic Flow Template Read Dynamic Parameters - +CGTFTRDP 108
5.1.4.6.11. EPS Quality of Service Read Dynamic Parametes - +CGEQOSRDP 109
5.1.4.6.12. Printing IP Address Format - +CGPIAF 110
5.1.4.6.13. PDP Context Activate Or Deactivate - +CGACT 111
5.1.4.6.14. Show PDP Address - +CGPADDR 112
5.1.4.6.15. Modify PDP context - +CGCMOD 113
5.1.4.7. Commands For Battery Charger 113
5.1.4.7.1. Battery Charge - +CBC 113
5.1.5. 3GPP TS 27.005 AT Commands for SMS and CBS 114
5.1.5.1. General Configuration 114
5.1.5.1.1. Select Message Service - +CSMS 114
5.1.5.1.2. Preferred Message Storage - +CPMS 115
5.1.5.1.3. Message Format - +CMGF 116
5.1.5.2. Message Configuration 117
5.1.5.2.1. Service Center Address - +CSCA 117
5.1.5.2.2. Set Text Mode Parameters - +CSMP 117
5.1.5.2.3. Show Text Mode Parameters - +CSDH 120
5.1.5.2.4. Select Cell Broadcast Message Types - +CSCB 120
5.1.5.2.5. Save Settings - +CSAS 121
5.1.5.2.6. Restore Settings - +CRES 121
5.1.5.2.7. More Message to Send - +CMMS 122
5.1.5.3. Message Receiving And Reading 122
5.1.5.3.1. New Message Indications To Terminal Equipment - +CNMI 122
5.1.5.3.2. New Message Acknowledgement to ME/TA - +CNMA 126
5.1.5.3.3. List Messages - +CMGL 127
5.1.5.3.4. Read Message - +CMGR 130
5.1.5.4. Message Sending And Writing 132
5.1.5.4.1. Send Message - +CMGS 132
5.1.5.4.2. Send Message From Storage - +CMSS 135
5.1.5.4.3. Write Message To Memory - +CMGW 136
5.1.5.4.4. Delete Message - +CMGD 138
5.1.5.4.5. Select service for MO SMS services - +CGSMS 140
5.1.6. Telit Custom AT Commands 140
5.1.6.1. General Configuration AT Commands 140
5.1.6.1.1. Manufacturer Identification - #CGMI 140
5.1.6.1.2. Model Identification - #CGMM 140
5.1.6.1.3. Revision Identification - #CGMR 141
5.1.6.1.4. Product Serial Number Identification - #CGSN 141
5.1.6.1.5. International Mobile Subscriber Identity (IMSI) - #CIMI 141
5.1.6.1.6. Read ICCID (Integrated Circuit Card Identification) - #CCID 141
5.1.6.1.7. Display PIN Counter - #PCT 142
5.1.6.1.8. Software Shut Down - #SHDN 142
5.1.6.1.9. Reboot - #REBOOT 142

5.1.6.1.10. Extended Reset - #Z 143
5.1.6.1.11. Periodic Reset - #ENHRST 143
5.1.6.1.12. Wake From Alarm Mode - #WAKE 144
5.1.6.1.13. Temperature Monitor - #TEMPMON 145
5.1.6.1.14. General Purpose Input/Output Pin Control - #GPIO 147
5.1.6.1.15. Alarm Pin - #ALARMPIN 149
5.1.6.1.16. STAT_LED GPIO Setting - #SLED 149
5.1.6.1.17. Save STAT_LED GPIO Setting - #SLEDSAV 150
5.1.6.1.18. SMS Ring Indicator - #E2SMSRI 150
5.1.6.1.19. Read Analog/Digital Converter Input - #ADC 151
5.1.6.1.20. Auxiliary Voltage Output Control - #VAUX 151
5.1.6.1.21. Auxiliary Voltage Output Save - #VAUXSAV 152
5.1.6.1.22. V24 Output Pins Configuration - #V24CFG 152
5.1.6.1.23. V24 Output Pins Control - #V24 153
5.1.6.1.24. Battery And Charger Status - #CBC 153
5.1.6.1.25. Cell Monitor - #MONI 154
5.1.6.1.26. Serving Cell Information - #SERVINFO 155
5.1.6.1.27. Read Current Network Status in E-UTRAN - #RFSTS 156
5.1.6.1.28. Query SIM Status - #QSS 158
5.1.6.1.29. Delete All Phonebook Entries - #CPBD 159
5.1.6.1.30. SMS Overflow - #SMOV 159
5.1.6.1.31. Mailbox Numbers - #MBN 159
5.1.6.1.32. Message Waiting Indication - #MWI 161
5.1.6.1.33. SIM Presence Status - #SIMPR 162
5.1.6.1.34. Network Timezone - #NITZ 162
5.1.6.1.35. Clock management - #CCLK 164
5.1.6.1.36. Select Band - #BND 165
5.1.6.1.37. Automatic Band Selection - #AUTOBND 165
5.1.6.1.38. PPP-GPRS Connection Authentication Type - #GAUTH 165
5.1.6.1.39. Subscriber number - #SNUM 166
5.1.6.1.40. SIM Detection Mode-#SIMDET 166
5.1.6.1.41. Show Address - #CGPADDR 167
5.1.6.1.42. I2C data via GPIO - #I2CWR 167
5.1.6.1.43. I2C data from GPIO - #I2CRD 168
5.1.6.1.44. Power Saving Mode Ring Indicator - #PSMRI 169
5.1.6.1.45. Command Mode Flow Control - #CFLO 170
5.1.6.1.46. Report concatenated SMS indexes - #CMGLCONCINDEX 170
5.1.6.1.47. Select language - #LANG 171
5.1.6.1.48. RTC Status - #RTCSTAT 171
5.1.6.1.49. Network Scan Timer - #NWSCANTMR 171
5.1.6.1.50. Hardware Identification - #HWREV 172
5.1.6.1.51. Dormant Control Command - #CDORM 172

1. Introduction

1.1. Scope

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

1.2. Audience

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

1.3. Contact Information, Support

For general contact, technical support, to report documentation errors and to order manuals, contact Telit'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
For detailed information about where you can buy the Telit modules or for recommendations on accessories and components visit:
http://www.telit.com
To register for product news and announcements or for product questions contact Telit'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 a scope for this document, target audience, contact and support information, and text conventions.

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

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

1.5. Text Conventions

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

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

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

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

1.6. Related Documents

- 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 is to describe all AT commands implemented on the Telit wireless module LE910-SKG.

3. AT COMMANDS

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

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

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

3.1. Definitions

The following syntactical definitions apply:

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

<LF> **Linefeed character**, is the character 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 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 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 have not a Read command, which are called *action type* commands, action should be done on the basis of the recommended default setting of the sub parameter.

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

3.2. AT Command Syntax

The syntax rules followed by Telit implementation of either 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 commands may be "set" (to store a value or values for later use), "read" (to determine the current value or values stored), or "tested" (to determine ranges of values supported). Each of them has a test command (trailing **=?**) to give information about the type of its 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 correspondent 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 don't store the values of any of their possible sub parameters.
In case of Telit command, "read" action may be used for the 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 to be a valid string type parameter input. According to V25.ter space characters are ignored on the command line and may be used freely for formatting purposes, unless they are embedded in numeric or quoted string constants; therefore a string containing a space character has to be enclosed between quotes to be considered a valid string type parameter (e.g. typing **AT+COPS=1,0,"A1"** is the same as typing **AT+COPS=1,0,A1**; typing **AT+COPS=1,0,"A BB"** is different from typing **AT+COPS=1,0,A BB**).

A 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>

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

If command **V1** is enabled (verbose responses codes) and all commands in a command line has been performed successfully, result code **<CR><LF>OK<CR><LF>** is sent from the TA to the TE, if 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.

If command **V0** is enabled (numeric responses codes), and all commands in a command line has been performed successfully, result code **0<CR>** is sent from the TA to the TE, if sub-parameter values of a command are not accepted by the TA or command itself is invalid, or

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

command cannot be performed for some reason, result code **4<CR>** and no subsequent commands in the command line are processed.

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

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

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

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

Numeric Format	Verbose Format
General errors:	
0	phone failure
1	No connection to phone
2	phone-adaptor link reserved
3	operation not allowed
4	operation not supported
5	PH-SIM PIN required
10	SIM not inserted
11	SIM PIN required
12	SIM PUK required
13	SIM failure
14	SIM busy
15	SIM wrong
16	incorrect password
17	SIM PIN2 required
18	SIM PUK2 required
20	memory full
21	invalid index
22	not found
23	memory failure
24	text string too long
25	invalid characters in text string
26	dial string too long
27	invalid characters in dial string
30	no network service
31	network time-out
32	network not allowed - emergency calls only
40	network personalization PIN required
41	network personalization PUK required
42	network subset personalization PIN required
43	network subset personalization PUK required
44	service provider personalization PIN required
45	service provider personalization PUK required
46	corporate personalization PIN required
47	corporate personalization PUK required
General purpose error:	
100	unknown
770	SIM invalid
EPS related errors to a failure to perform an Attach:	
103	Illegal MS (#3)*
106	Illegal ME (#6)*
107	EPS service not allowed (#7)*
111	PLMN not allowed (#11)*
112	Tracking area not allowed (#12)*

Numeric Format	Verbose Format
113	Roaming not allowed in this tracking area (#13)*
EPS related errors to a failure to Activate a Context and others:	
132	service option not supported (#32)*
133	requested service option not subscribed (#33)*
134	service option temporarily out of order (#34)*
148	unspecified EPS error
149	PDP authentication failure
150	invalid mobile class
Easy GPRS® related errors	
550	generic undocumented error
551	wrong state
552	wrong mode
553	context already activated
554	stack already active
555	activation failed
556	context not opened
557	cannot setup socket
558	cannot resolve DN
559	timeout in opening socket
560	cannot open socket
561	remote disconnected or time-out
562	connection failed
563	tx error
564	already listening
Network survey errors	
657	Network survey error (No Carrier)*
658	Network survey error (Busy)*
659	Network survey error (Wrong request)*
660	Network survey error (Aborted)*
Supplementary service related error	
257	network rejected request
258	retry operation
259	invalid deflected to number
260	deflected to own number
261	unknown subscriber
262	service not available
263	unknown class specified
264	unknown network message
AT+COPS test command related error	
680	LU processing
681	Network search aborted
682	PTM mode

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

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

This is NOT a command; it is the error response to +Cxxx 3gpp TS 27.005 commands
Syntax: **+CMS ERROR: <err>**
Parameter: **<err>** - numeric error code. The **<err>** values are reported in the table:

Numeric Format	Meaning
0...127	3gpp TS 24.011 Annex E-2 values
128...255	3gpp TS 23.040 sub clause 9.2.3.22 values
300	ME failure
301	SMS service of ME reserved
302	operation not allowed
303	operation not supported
304	invalid PDU mode parameter
305	invalid text mode parameter
310	SIM not inserted
311	SIM PIN required
312	PH-SIM PIN required
313	SIM failure
314	SIM busy
315	SIM wrong
316	SIM PUK required
317	SIM PIN2 required
318	SIM PUK2 required
320	memory failure
321	invalid memory index
322	memory full
330	SMSC address unknown
331	no network service
332	network time-out
340	no +CNMA acknowledgement expected
500	unknown error

3.2.3. Information Responses and Result Codes

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

- Information response to **+CMD1?**

  <CR><LF>+CMD1:2,1,10<CR><LF>

- Information response to **+CMD1=?**

  <CR><LF>+CMD1(0-2),(0,1),(0-15)<CR><LF>

- Final result code **<CR><LF>OK<CR><LF>**

Moreover, there are other two types of result codes:

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

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

Result Codes	
Numeric form	Verbose form
0	OK
1	CONNECT
2	RING
3	NO CARRIER
4	ERROR
6	NO DIALTONE
7	BUSY
8	NO ANSWER

3.2.4. Command Response Time-Out

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

In the table below are listed only the commands whose interaction with the SIM or 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.
For DTMF sending and dialing commands timing is referred to module registered on network ("AT+CREG?" answer is "+CREG: 0,1" or "+CREG: 0,5").

Command	Estimated maximum time to get response (Seconds)
+COPS	160 (test command)
+CLCK	15 (SS operation) 5 (FDN enabling/disabling)
+CPWD	15 (SS operation) 5 (PIN modification)
+CPIN	30
+CPBS	5 (FDN enabling/disabling)
+CPBR	5 (single reading) 15 (complete reading of a 500 records full phonebook)
+CPBF	10 (string present in a 500 records full phonebook) 5 (string not present)
+CPBW	5
+CACM	5
+CAMM	5

+CPUC	180
+CSCA	5 (read and set commands)
+CSAS	5
+CRES	5
+CMGS	120 after CTRL-Z; 1 to get '>' prompt
+CMSS	120 after CTRL-Z; 1 to get '>' prompt
+CMGW	5 after CTRL-Z; 1 to get '>' prompt
+CMGD	5 (single SMS cancellation) 25 (cancellation of 50 SMS)
+CNMA	120 after CTRL-Z; 1 to get '>' prompt
+CMGR	5
+CMGL	100
+CGACT	150
+CGATT	140
D	Timeout set with ATS7 (data call)
A	Timeout set with ATS7 (data call)
H	60
+COPN	10
#MBN	10
#TONE	5 (if no duration specified)
#EMAILD	60
#STSR	30
#GPRS	150
#SKTD	140 (DNS resolution + timeout set with AT#SKTCT)
#QDNS	170
#FTPOPEN	120 (timeout set with AT#FTPTO, in case no response is receive d from server)
#FTPCLOSE	500 (timeout set with AT#FTPTO, in case no response is receive d from server)
#FTPTYPE	500 (timeout set with AT#FTPTO, in case no response is receive d from server)
#FTPDELE	500 (timeout set with AT#FTPTO, in case no response is receive d from server)
#FTPPWD	500 (timeout set with AT#FTPTO, in case no response is receive d from server)

#FTPCWD	500 (timeout set with AT#FTPTO, in case no response is received from server)
#FTPLIST	500 (timeout set with AT#FTPTO, in case no response is received from server) + time to get listing
#FTPPUT	500 (timeout set with AT#FTPTO, in case no response is received from server)
#FTPFSIZE	500 (timeout set with AT#FTPTO, in case no response is received from server)
#FTPAPP	500 (timeout set with AT#FTPTO, in case no response is received 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 terminated all the sending of its response result code (whatever it may be).
This applies especially to applications that "sense" the **OK** text and therefore may send the next command before the complete code **<CR><LF>OK<CR><LF>** is sent by the module.
It is advisable anyway to wait for at least 20ms between the end of the reception of the response and the issue of the next AT command.
If the response codes are disabled and therefore the module does not report any response to the command, then at least the 20ms pause time shall be respected.
During command mode, due to hardware limitations, under severe CPU load the serial port can lose some characters if placed in autobauding at high speeds. Therefore, if you encounter this problem fix the baud rate with **+IPR** command.

3.3. Storage

3.3.1. Factory Profile and User Profiles

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

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

The values set by other commands are stored in NVM outside the profile: some of them are stored always, without issuing any **&W**, some other are stored issuing specific commands (**+CSAS**, **#SLEDSAV**, **#VAUXSAV**, **#SKTSAV**, **#ESAV**); all of these values are read at power-up.

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

GSM DATA MODE :	+CBST
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
POWER SAVING:	+CFUN
DEFAULT PROFILE:	&Y0
S REGISTERS:	S0;S1;S3;S4;S5;S7;S10;S25;S38
CHARACTER FORMAT:	+ICF

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

+DR,	+CSCS,	+CREG,
+CR,	#NWEN,	+CAOC
+CIND,	+CMER,	+CPBS,
+CMEE,	+CEREG,	
+CMGF,	+CSDH,	+CNMI,

#QSS,	#PSMRI ,	#SMOV,
#MWI,	#NITZ,	
#STIA,	#CFLO,	
#SIMDET,	#SIMPR,	#NOPT,
+CGEREP,	#E2SMSRI,	#E2SLRI,
#TEMPMON (lt is partially stored in NVM, see command description) ,		
+CTZU,	+CTZR,	+CAPD,
+CSDF,	+CSTF,	+CSVM,

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,	+COPS[3],	
+CGDCONT,	+CGSMS	
#BND,	#AUTOBND,	#SCFG
#DNS,	#ICMP,	#SCFGEXT,
#SCFGEXT2,	#SGACTCFG[3],	#SGACTCFGEXT,
#SMSATRUN,	#SMSATRUNCFG,	#TCPATRUNCFG,
#TCPATRUNFRWL,	#TCPATRUNAUTH,	#TCPATRUNL,
#TCPATRUND,	#ENAEVMONI,	#ENAEVMONICFG,
#EVMONI,		

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

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

+CSCA, +CSMP, +CSCB
Stored by +CSAS[4] command and restored by +CRES[4] command.

#SLED
Stored by #SLEDSAV command.

#VAUX
Stored by #VAUXSAV command.

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

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

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

4. AT Commands Availability Table

The following table lists the AT commands set and matches the availability of every single command versus the LE910KR family.

COMMAND	LE910-SKG	LE910-STG	LE910-SUG	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				
#SELINT	•			Select Interface Style
#NOPT	•			Set Notification Port
Hayes AT Commands – Generic Modem Control				
&F	•			Set To Factory-Defined Configuration
Z	•			Soft Reset
&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
&K	•			Flow Control
&S	•			Data Set Ready (DSR) Control
\R	•			Ring (RI) Control
+IPR	•			Fixed DTE Interface Rate
+IFC	•			DTE-Modem Local Flow Control
+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				
%E	•			Line Quality Monitor And Auto Retrain Or Fallback/Fallforward
Hayes AT Commands – Compression Control				
+DS	•			Data Compression

+DR	•			Data Compression Reporting
Hayes AT Commands – S Parameters				
S0	•			Number of Rings To Auto Answer
S1	•			Ring Counter
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
S25	•			Delay To DTR Off
S38	•			Delay Before Forced Hang Up
3GPP TS 27.007 AT Commands – 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)
3GPP TS 27.007 AT Commands – Call Control				
+CR	•			Service Reporting Control
3GPP TS 27.007 AT Commands – Network Service Handling				
+CNUM	•			Subscriber Number
+COPN	•			Read Operator Names
+CREG	•			Network Registration Report
+COPS	•			Operator Selection
+CLCK	•			Facility Lock/Unlock
+CPWD	•			Change Facility Password
+CAOC	•			Advice Of Charge
+CPOL	•			Preferred Operator List
+CPLS	•			Selection of Preferred PLMN List
3GPP TS 27.007 AT Commands – Mobile Equipment Control				
+CFUN	•			Set Phone Functionality
+CPIN	•			Enter PIN

+CIND	•			Indicator Control
+CMER	•			Mobile Equipment Event Reporting
+CPBS	•			Select Phonebook Memory Storage
+CPBR	•			Read Phonebook Entries
+CPBF	•			Find Phonebook Entries
+CPBW	•			Write Phonebook Entry
+CCLK	•			Clock Management
+CALA	•			Alarm Management
+CALD	•			Delete Alarm
+CAPD	•			Postpone alarm
+CSDF	•			Time Zone reporting
+CSTF	•			Setting time format
+CTZR	•			Automatic Time Zone update
+CTZU	•			Setting time format
+CRSM	•			Restricted SIM Access
+CSIM	•			Generic SIM Access
+CUAD	•			UICC Application Discovery
+CSVM	•			Set voice mail number
+CACM	•			Accumulated Call Meter
+CAMM	•			Accumulated Call Meter Maximum
+CPUC	•			Price Per Unit And Currency Table
+CLAC	•			Available AT commands
+CCHO	•			Open Logical Channel
+CCHC	•			Close Logical Channel
+CGLA	•			Generic UICC Logical Channel Access
+CPINR	•			Remaining PIN retries
3GPP TS 27.007 AT Commands – Mobile Equipment Errors				
+CMEE	•			Report Mobile Equipment Error
3GPP TS 27.007 AT Commands – Commands For EPS				
+CGATT	•			EPS Attach Or Detach
+CGEREP	•			EPS Event Reporting
+CEREG	•			EPS Network Registration Status
+CGDCONT	•			Define PDP Context

+CGDSCONT	•			Define Secondary PDP Context
+CGTFT	•			Traffic Flow Template
+CGEQOS	•			Define EPS Quality of Service
+CGCONTRDP	•			PDP Context Read Dynamic Parameters
+CGSCONTRDP	•			Secondary PDP Context Read Dynamic Parameters
+CGTFTRDP	•			Traffic Flow Template Read Dynamic Parameters
+CGEQOSRDP	•			EPS Quality of Service Read Dynamic Parameters
+CGPIAF	•			Printing IP Address Format
+CGACT	•			PDP Context Activate Or Deactivate
+CGPADDR	•			Show PDP Address
+CGCMOD	•			Modify PDP State
3GPP TS 27.007 AT Commands – Commands For Battery Charger				
+CBC	•			Battery Charge
3GPP TS 27.005 AT Commands – Message Configuration				
+CSMS	•			Select Message Service
+CPMS	•			Preferred Message Storage
+CMGF	•			Message Format
3GPP TS 27.005 AT Commands – Message Configuration				
+CSCA	•			Service Center Address
+CSMP	•			Set Text Mode Parameters
+CSDH	•			Show Text Mode Parameters
+CSCB	•			Select Cell Broadcast Message Types
+CSAS	•			Save Settings
+CRES	•			Restore Settings
+CMMS	•			More Messages to Send
3GPP TS 27.005 AT Commands – Message Receiving And Reading				
+CNMI	•			New Message Indications To Terminal Equipment
+CNMA	•			New Message Acknowledgment to ME/TA
+CMGL	•			List Messages
+CMGR	•			Read Message
3GPP TS 27.005 AT Commands – Message Sending And Writing				
+CMGS	•			Send Message
+CMSS	•			Send Message From Storage

+CMGW	•			Write Message To Memory
+CMGD	•			Delete Message
+CGSMS	•			Select Service for MO SMS messages
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)
#CCID	•			Read ICCID (Integrated Circuit Card Identification)
#PCT	•			Display PIN Counter
#SHDN	•			Software Shut Down
#REBOOT	•			Reboot
#Z	•			Extended Reset
#ENHRST	•			Periodic Reset
#WAKE	•			Wake From Alarm Mode
#TEMPMON	•			Temperature monitor
#GPIO	•			General Purpose Input/Output Pin Control
#ALARMPIN	•			Alarm Pin
#SLED	•			STAT_LED GPIO Setting
#SLEDSAV	•			Save STAT_LED GPIO Setting
#E2SMSRI	•			SMS Ring Indicator
#ADC	•			Analog/Digital Converter Input
#VAUX	•			Auxiliary Voltage Output Control
#VAUXSAV	•			#VAUX Saving
#V24CFG	•			V24 Output Pins Configuration
#V24	•			V24 Output Pins Control
#CBC	•			Battery and Charger Status
#MONI	•			Cell Monitor
#SERVINFO	•			Serving Cell Information
#RFSTS	•			Radio Satus of E-UTRAN Network
#QSS	•			Query SIM Status
#CPBD	•			Delete All Phonebook Entries

#SMOV	•			SMS Overflow
#MBN	•			Mailbox Numbers
#MWI	•			Message Waiting Indicator
#SIMPR	•			SIM Presence Status
#NITZ	•			Network Timezone
#CCLK	•			Clock management
#BND	•			Select Band
#AUTOBND	•			Automatic Band Selection
#GAUTH	•			PPP-GPRS Connection Authentication Type
#SNUM	•			Subscriber Number
#SIMDET	•			SIM Dection Mode
#CGPADDR	•			Show Address
#I2CWR	•			I2C data via GPIO
#I2CRD	•			I2C data from GPIO
#PSMRI	•			Power Saving Mode Ring Indicator
#CFLO	•			Command Mode Flow Control
#CMGLCONCINDEX	•			Report concatenated SMS indexes
#LANG	•			Select Language
#RTCSTAT	•			RTC Status
#NWSCANTMR	•			Network Selection Timer
#HWREV	•			Hardware Identification
#CDORM	•			Dormant Control Command
#CPBGR	•			Read Group Entries
#CPBGW	•			Write Group Entries
#LTEDS	•			Read current network status in E-UTRAN
#LTEBW	•			Configure E-UTRAN Bandwidth
#DOMAIN	•			Set Preferred Service Domain
Custom AT Commands – Multisocket AT commands				
#SS	•			Socket Status
#SI	•			Socket Info
#ST	•			Socket Type
#SGACT	•			Context Activation
#SH	•			Socket Shutdown

#SCFG	•			Socket Configuration
#SCFGEXT	•			Socket Configuration Extended
#SCFGEXT2	•			Socket Configuration Extended 2
#SD	•			Socket Dial
#SO	•			Socket Restore
#SL	•			Socket Listen
#SLUDP	•			UDP Socket Listen
#SA	•			Socket Accept
#SLASTCLOSURE	•			Detect the cause of a socket disconnection
#SRECV	•			Received Data In Command Mode
#SSEND	•			Send Data In Command Mode
#SSENDEXT	•			Send Data In Command mode extended
#SSENDUDP	•			Send UDP data to a specific remote host
#SSENDUDPEXT	•			Send UDP data to a specific remote host extended
#SGACTAUTH	•			Easy GPRS Authentication Type
#SGACTCFG	•			Context Activation and Configuration
#SGACTCFGEXT	•			Context Activation and Configuration Extended
Custom AT Commands – FTP AT commands				
#FTPTO	•			FTP Time-Out
#FTPOPEN	•			FTP Open
#FTPCLOSE	•			FTP Close
#FTPCFG	•			FTP Config
#FTPPUT	•			FTP Put
#FTPGET	•			FTP Get
#FTPGETPKT	•			FTPGET in command mode
#FTPTYPE	•			FTP Type
#FTPMSG	•			FTP Read Message
#FTPDELE	•			FTP Delete
#FTPPWD	•			FTP Print Working Directory
#FTPCWD	•			FTP Change Working Directory
#FTPLIST	•			FTP List
#FTPSIZE	•			Get file size
#FTPAPP	•			FTP Append

#FTPREST	•			Set restart position
#FTPRECV	•			Receive Data in command mode
#FTPAPPEXT	•			FTP Append Extended
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
#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
#GPRS	•			EPS Context Activation
#SKTD	•			Socket Dial
#SKTL	•			Socket Listen
#E2SLRI	•			Socket Listen Ring Indicator
#FRWL	•			Firewall Setup
#GDATAVOL	•			EPS Data Volume
#ICMP	•			ICMP Support
#PING	•			Ping Request
#NWDNS	•			DNS from Network
Custom AT Commands – SMS				
#SMSMOVE	•			Move Short Message To Other Memory
#SMSMODE	•			SMS Commands Operation Mode
Custom AT Commands – E-Mail Mangement				
#ESMTP	•			E-mail SMTP Server
#EADDR	•			E-mail Sender Address
#EUSER	•			E-mail Authentication User Name
#EPASSW	•			E-mail Authentication Password

#EMAILD	•			E-mail Sending
#ESAV	•			E-mail Parameters Save
#ERST	•			E-mailParameters Reset
#EMAILMSG	•			SMTP Read Message
#SMTPCL	•			Send mail with attachment
Custom AT Commands – HTTP AT commands				
#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 - SIM Toolkit				
#STIA	•			SIM Toolkit Interface Activation
#STGI	•			SIM Toolkit Get Information
#STSR	•			SIM Toolkit Send Response
Custom AT Commands - Emergency call and eCall Management				
#NWEN	•			Network Emergency Number Update
Custom AT Commands – AT Run Commands				
#SMSATRUN	•			Enable SMS AT Run service
#SMSATRUNCFG	•			Set SMS AT Run Parameters
#SMSATWL	•			SMS AT Run White List
#TCPATRUNCFG	•			Set TCP AT Run Service Parameters
#TCPATRUNL	•			Enables TCP AT Run Service in listen (server) mode
#TCPATRUNFRWL	•			TCP AT Run Firewall List
#TCPATRUNAUTH	•			TCP AT Run Authentication Parameters List
#TCPATRUND	•			Enable TCP AT Run Service in dial (client) mode
#TCPATRUNCLOSE	•			Closing TCP Run AT Socket
#TCPATCMDSEQ	•			TCP AT Run Command Sequence
#TCPATCONSER	•			TCP Run AT Service to a Serial Port
#ATRUNDELAY	•			Run AT command execution
Custom AT Commands – Event Monitor Commands				
#ENAEVMONI	•			Enable EvMoni Service
#ENAEVMONICFG	•			Set EvMoni Service Parameters
#EVMONI	•			Event Monitoring

#CMGS	•			Send Message
#CMGW	•			Write Message To Memory
Custom AT Commands – SKT Specific				
#GMMPSMSEN	•			GMMP SMS Enable
#GMMPTCPOPEN	•			GMMP TCP Connection
#GMMPTCPCLOSE	•			GMMP TCP Close
#GMMPSEND	•			Send GMMP Data
#GMMPRECV	•			Receive GMMP Data
#CPBU	•			Read Phonebook Information for USIM

5. AT Commands References

5.1. Command Line General Format

5.1.1. Command Line Prefixes

5.1.1.1. Starting A Command Line - AT

AT - Starting A Command Line	
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

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

5.1.1.3. Repeat Last Command - #/

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

5.1.2. General Configuration Commands

5.1.2.1. 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 style 2 - switches the AT command interface style of the product, to LE910KR family
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.

5.1.2.2. Set Notification Port - #NOPT

#NOPT - Set notification port	
AT#NOPT=<num>	Set command specify the port output notification data (URC messages) Parameter: **<num>** - Notification Port 0 – All Ports; URC messages are sent to all ports. < default value > 1 – UART Main Port only 2 – Telit LTE USB Modem1 Port only 3 – Telit LTE USB Modem2 Port only
AT#NOPT?	Read command reports the current notification port.
AT#NOPT=?	Test command reports the available range of values for parameter **<num>**.

5.1.3. Hayes Compliant AT Commands

5.1.3.1. Generic Modem Control

5.1.3.1.1. Set To Factory-Defined Configuration - &F

&F - Set To Factory-Defined Configuration	
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.

&F - Set To Factory-Defined Configuration	
	Parameter: **<value>**: 0 - just the factory profile base section parameters are considered. 1 - either the factory profile base section and the extended section are considered (full factory profile). Note: if parameter **<value>** is omitted, the command has the same behaviour as **AT&F0**
Reference	V25ter.

5.1.3.1.2. 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.

5.1.3.1.3. Default Reset Basic Profile Designation – &Y

&Y - Default Reset Basic Profile Designation	
AT&Y[<n>]	Execution command defines the basic profiles which will be loaded on startup. Parameter: **<n>** 0..1 - profile (default is 0): the wireless module is able to store 2 complete configurations (see **&W**). Note: differently from command **Z<n>**, which loads just once the desired profile, the one chosen through command **&Y** will be loaded on every start up. Note: if parameter is omitted, the command has the same behaviour as **AT&Y0**

5.1.3.1.4. 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>**

&P - Default Reset Full Profile Designation	
	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

5.1.3.1.5. 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**.

5.1.3.1.6. Store Telephone Number In The Module Internal Phonebook – &Z

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

5.1.3.1.7. 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.

5.1.3.1.8. Manufacturer Identification – +GMI

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

5.1.3.1.9. Model Identification – +GMM

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

5.1.3.1.10. Revision Identification – +GMR

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

5.1.3.1.11. Capabilities List – +GCAP

+GCAP - Capabilities List	
AT+GCAP	Execution command returns the equipment supported command set list. Where: **+CGSM**: 3GPP TS command set **+DS**: Data Service common modem command set
Reference	V.25ter

5.1.3.1.12. Serial Number – +GSN

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

5.1.3.1.13. 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.

5.1.3.1.14. 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.

5.1.3.1.15. S Registers Display – &V1

&V1 - S Registers Display	
AT&V1	Execution command returns the value of the **S** registers in decimal and hexadecimal value in the format: **REG DEC HEX** **<reg0> <dec> <hex>** **<reg1> <dec> <hex>** ... where **<reg*n*>** - **S** register number 000..005 007 012 025 038 **<dec>** - current value in decimal notation **<hex>** - current value in hexadecimal notation

5.1.3.1.16. 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

5.1.3.1.17. Display Last Connection Statistics – &V2

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

5.1.3.1.18. Single Line Connect Message – \V

\V - Single Line Connect Message

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

5.1.3.1.19. Country Of Installation - +GCI

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

5.1.3.1.20. Line Signal Level - %L

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

5.1.3.1.21. Line Quality - %Q

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

5.1.3.1.22. Speaker Loudness - L

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

5.1.3.1.23. Speaker Mode - M

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

5.1.3.2. DTE - Modem Interface Control

5.1.3.2.1. Command Echo - E

E - Command Echo

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

5.1.3.2.2. 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+CGACT=? **+CGACT: (0-1) nothing is appended to the response**
Reference	V25ter

5.1.3.2.3. 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 information responses: **<text><CR><LF>** result codes: **<numeric code><CR>**

V - Response Format	
	1 - full headers and trailers and verbose format of result codes (factory default) information responses: **<CR><LF><text><CR><LF>** result codes: **<CR><LF><verbose code><CR><LF>** Note: the **<text>** portion of information responses is not affected by this setting. Note: if parameter is omitted, the command has the same behaviour of ATV0
Reference	V25ter

5.1.3.2.4. 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. Busy tones reporting is disabled. 1..4 - reports all messages (factory default is 1). Note: If parameter is omitted, the command has the same behaviour of **ATX0** Note: 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

5.1.3.2.5. 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

I - Identification Information	
	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

5.1.3.2.6. 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>** 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** Note: **AT&C** has to be removed from the list of AT command whose parameters are stored in NVM.
Reference	V25ter

5.1.3.2.7. 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 - **DTR** transitions are ignored. (factory default) 1 - when the MODULE is connected, the **High** to **Low** transition of **DTR** pin sets the device in command mode, the current connection is NOT closed. 2 - when the MODULE is connected , the **High** to **Low** transition of **DTR** pin sets the device in command mode and the current connection is closed. 3 – device ignores **DTR** transitions. 4 - **C108/1** operation is disabled. 5 - **C108/1** operation is enabled; same behaviour as for <**n**>=**2.** Note: if a connection has been set up issuing **#SKTD** , then **AT&D1** has the same effect as **AT&D2**. If a connection has been set up issuing AT#SD then AT&D1 and AT&D2 have different effect, as described above.

&D - Data Terminal Ready (DTR) Control	
	Note: if **AT&D2** has been issued and the **DTR** has been tied **Low**, autoanswering is inhibited and it is possible to answer only issuing command **ATA**. Note: if parameter is omitted, the command has the same behaviour of **AT&D0**
Reference	V25ter

5.1.3.2.8. 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.

5.1.3.2.9. 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 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 traffic channel indication. Note: in power saving mode the **DSR** pin is always tied **Low** & USB_VBUS pin is always tied Low. **Note:** If parameter is omitted, the command has the same behaviour of **AT&S0.**

5.1.3.2.10. Ring (RI) Control - \R

\R - Ring (RI) Control	
AT\R[<n>]	Set command controls the **RING** output pin behaviour.

\R - Ring (RI) Control	
	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**

5.1.3.2.11. 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 921600 2900000 3200000 3686400 4000000 If **<rate>** is specified and not 0, **DTE-DCE** speed is fixed at that speed, hence no speed auto-detection (autobauding) is enabled.
AT+IPR?	Read command returns the current value of **+IPR** parameter.
AT+IPR=?	Test command returns the list of supported autodetectable **<rate>** values and the list of fixed-only **<rate>** values in the format: **+IPR**:(list of supported autodetectable **<rate>** values), (list of fixed-only **<rate>**

+IPR - Fixed DTE Interface Rate	
	values)
Reference	V25ter

5.1.3.2.12. 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

5.1.3.2.13. 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. The LE910KR family supports only the 8 Data, 1 Stop setting. 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. 3 - 8 Data, 1 Stop (default) **<parity>** - determines how the parity bit is generated and checked, if present; setting this sub parameter has no meaning. 0 - Odd (not supported) 1 - Even (not supported)
AT+ICF?	Read command returns current settings for sub parameters **<format>** and **<parity>**. The current setting of subparameter **<parity>** will always represented as 0
AT+ICF=?	Test command returns the ranges of values for the parameters **<format>** and **<parity>**
Reference	V25ter
Example	AT+ICF = 3 - 8N1 (default) AT+ICF=? +ICF: (3)

5.1.3.3. Call Control

5.1.3.3.1. 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 *,#,"A", "B", "C", "+". Note: for backwards compatibility with landline modems modifiers "T", "P","R", ",", "W", "!", "@" are accepted but have no effect. Note: LE910KR doesn't support voice call. LE910KR also doesn't support **+FCLASS.**

D – Dial	
ATD><str>[;]	Issues a call to phone number which corresponding alphanumeric field is **<str>**; all available memories will be searched for the correct entry. If "**;**" is present a **voice** call is performed. Parameter: **<str>** - alphanumeric field corresponding to phone number; it must be enclosed in quotation marks. Note: parameter **<str>** is case sensitive. Note: used character set should be the one selected with **+CSCS**.
ATD><mem><n>[;]	Issues a call to phone number in phonebook memory storage **<mem>**, entry location **<n>** (available memories may be queried with **AT+CPBS=?**). If "**;**" is present a **voice** call is performed. Parameters: **<mem>** - phonebook memory storage; "SM" - SIM/UICC phonebook "FD" - SIM/USIM fixed dialing phonebook "LD" - SIM/UICC last dialing phonebook "MC" – missed calls list "RC" - Received calls list "DC" - MT dialled calls list "ME" - MT phonebook "EN" - SIM/USIM (or MT) emergency number (+CPBW is not be applicable for t his storage) "ON" - SIM (or MT) own numbers (MSI storage may be available through +CNU M also). "MB" - mailbox numbers stored on SIM, if this service is provided by the SIM (se e **#MBN**). **<n>** - entry location; it should be in the range of locations available in the memory used.
ATD><n>[;]	Issues a call to phone number in entry location **<n>** of the active phonebook memory storage (see **+CPBS**). If "**;**" is present a **voice** call is performed. Parameter: **<n>** - active phonebook memory storage entry location; it should be in the range of locations available in the active phonebook memory storage.
ATDL	Issues a call to the last number dialed.
ATDS=<nr>[;]	Issues a call to the number stored in the MODULE internal phonebook position number **<nr>**. **If ";" is present a voice** call is performed. Parameter:

D – Dial	
	<nr> - internal phonebook position to be called (See commands **&N** and **&Z**) Note: LE910KR doesn't support voice call.
ATD<number>I[;] **ATD<number>i[;]**	Issues a call overwriting the CLIR supplementary service subscription default value for this call If "**;**" is present a **voice** call is performed. **I** - invocation, restrict CLI presentation **i** - suppression, allow CLI presentation Note: LE910KR doesn't support voice call.
ATD<number>G[;] **ATD<number>g[;]**	Issues a call checking the CUG supplementary service information for the current call. Refer to **+CCUG** command. If "**;**" is present a **voice** call is performed. Note: LE910KR doesn't support voice call. LE910KR also doesn't support **+CCUG.**
ATD*<gprs_sc> **[*<addr>][*[<L2P>]** **[*[<cid>]]]#**	This command is specific of EPS functionality and causes the **MT** to perform whatever actions are necessary to establish communication between the **TE** and the external PDN. Parameters: **<gprs_sc>** - EPS Service Code, a digit string (value 99) which identifies a request to use the EPS **<addr>** - string that identifies the called party in the address space applicable to the PDP. **<L2P>** - a string which indicates the layer 2 protocol to be used . For communications software that does not support arbitrary characters in the dial string, the following numeric equivalents shall be used: 1 - PPP **<cid>** - a digit which specifies a particular **PDP** context definition (see **+CGDCONT** command).
Example	*To dial a number in SIM phonebook entry 6:* ATD>SM6 OK *To have a voice call to the 6-th entry of active phonebook:* ATD>6; OK *To call the entry with alphanumeric field "Name":* ATD>"Name"; OK
Reference	V25ter.

5.1.3.3.2. Tone Dial - T

T - Tone Dial	
ATT	Set command has no effect is included only for backward compatibility with

T - Tone Dial	
	landline modems.
Reference	V25ter.

5.1.3.3.3. Pulse Dial - P

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

5.1.3.3.4. 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 immediately by a **<CR>** character.
Reference	V25ter.

5.1.3.3.5. 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. Note: LE910KR doesn't support voice call.
Reference	V25ter.

5.1.3.3.6. 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's no active connection, it returns **NO CARRIER**. Note: After issuing this command, if the device is in conversation, to send other commands to the device you must return to command mode by issuing the escape sequence (see **register S2**) or tying low **DTR** pin if **&D1** option is active.
Reference	V25ter.

5.1.3.3.7. Guard Tone - &G

&G – Guard Tone	
AT&G	Set command has no effect is included only for backward compatibility with

&G – Guard Tone	
	landline modems.

5.1.3.3.8. Sync/Async Mode - &Q

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

5.1.3.4. Modulation Control

5.1.3.4.1. 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.

5.1.3.5. Compression Control

5.1.3.5.1. Data Compression - +DS

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

5.1.3.5.2. Data Compression Reporting - +DR

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

+DR - Data Compression Reporting	
Reference	V25ter

5.1.3.6. S Parameters

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

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

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

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

Reference: V25ter and RC56D/RC336D

5.1.3.6.1. Number Of Rings To Auto Anwser - 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. Note: LE910KR doesn't support voice call.
ATS0?	Read command returns the current value of **S0 parameter**.
Reference	V25ter

5.1.3.6.2. Ring Counter - S1

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

5.1.3.6.3. 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 or 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

5.1.3.6.4. 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

5.1.3.6.5. Command Line Editing Character - S5

S5 - Command Line Editing Character

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

5.1.3.6.6. 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

5.1.3.6.7. Carrier Off With Firm Time - S10

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

5.1.3.6.8. 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

5.1.3.6.9. Delay Before Forced Hang Up – S38

S38 – Delay Before Forced Hang Up	
ATS38=<delay>	Set command has no effect and it included only for backward compatibility Parameter: **<delay>** - expressed in seconds 0..255 - factory default value is 0.
ATS25?	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

5.1.4. 3GPP TS 27.007 AT Commands

5.1.4.1. General

5.1.4.1.1. Request Manufacturer Identification – +CGMI

+CGMI - Request Manufacturer Identification	
AT+CGMI	Execution command returns the device manufacturer identification code without command echo.
AT+CGMI=?	Test command returns **OK** result code.
Reference	3GPP TS 27.007

5.1.4.1.2. Request Model Identification – +CGMM

+CGMM - Request Model Identification	
AT+CGMM	Execution command returns the device model identification code without command echo.
AT+CGMM=?	Test command returns **OK** result code.
Reference	3GPP TS 27.007

5.1.4.1.3. Request Revision Identification – +CGMR

+CGMR - Request Revision Identification	
AT+CGMR	Execution command returns device software revision number without command echo.
AT+CGMR=?	Test command returns **OK** result code.
Reference	3GPP TS 27.007

5.1.4.1.4. Request Product Serial Number Identification – +CGSN

+CGSN - Request Product Serial Number Identification	
AT+CGSN	Execution command returns the product serial number, identified as the IMEI of the mobile, without command echo.
AT+CGSN=?	Test command returns **OK** result code.
Reference	3GPP TS 27.007

5.1.4.1.5. Select TE Character Set – +CSCS

+CSCS - Select TE Character Set	
AT+CSCS= **[<chset>]**	Set command sets the current character set used by the device. Parameter: **<chset>** - character set "GSM" - GSM default alphabet (3GPP TS 03.38/23.008) "IRA" - international reference alphabet (ITU-T T.50) "8859-1" - ISO 8859 Latin 1 character set "PCCP437" - PC character set Code Page 437 "UCS2" - 16-bit universal multiple-octet coded character set (ISO/IEC10646)

+CSCS - Select TE Character Set	
AT+CSCS?	Read command returns the current value of the active character set.
AT+CSCS=?	Test command returns the supported values for parameter <**chset**>.
Reference	3GPP TS 27.007

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

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

5.1.4.2. Call Control

5.1.4.2.1. Service Reporting Control – +CR

+CR - Service Reporting Control	
AT+CR=[<mode>]	Set command controls whether or not intermediate result code **+CR** is returned from **TA** to **TE**. Parameter: **<mode>** 0 - disables **+CR** reporting (factory default) 1 - enables **+CR** reporting: the intermediate result code is transmitted at the point during connect negotiation at which the **TA** has determined which speed and quality of service will be used, before any error control or data compression reports are transmitted, and before the intermediate result code **CONNECT** is transmitted. Its format is: **+CR: <serv>** where: **<serv>** ASYNC - asynchronous transparent SYNC - synchronous transparent REL ASYNC - asynchronous non-transparent REL SYNC - synchronous non-transparent. Note: this command replaces V.25ter [14] command Modulation Reporting Control (**+MR**), which is not appropriate for use with a modem terminal.
AT+CR?	Read command returns whether or not intermediate result code **+CR** is enabled, in the format: **+CR: <mode>**
AT+CR=?	Test command returns the supported range of values of parameter **<mode>**.
Reference	3GPP TS 27.007

5.1.4.3. Network Service Handling

5.1.4.3.1. Subscriber Number – +CNUM

+CNUM - Subscriber Number	
AT+CNUM	Execution command returns the MSISDN (if the phone number of the device has been stored in the SIM card) in the format: **+CNUM: <alpha>,<number>,<type>[<CR><LF>** **+CNUM: <alpha>,<number>,<type>[…]]**

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

5.1.4.3.2. Read Operator Names – +COPN

+COPN - Read Operator Names	
AT+COPN	Execution command returns the list of operator names from the **ME** in the format: **+COPN: <numeric1>,<alpha1>[<CR><LF>** **+COPN: <numeric2>,<alpha2>[…]]** where: <**numeric*n***> - string type, operator in numeric format (see **+COPS**) <**alpha*n***> - string type, operator in long alphanumeric format (see **+COPS**) Note: each operator code <**numeric*n***> that has an alphanumeric equivalent <**alpha*n***> in the ME memory is returned
AT+COPN=?	Test command returns the **OK** result code
Reference	3GPP TS 27.007

5.1.4.3.3. 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 Cell identification data If <**mode**>=**1**, network registration result code reports: **+CREG: <stat>**

+CREG - Network Registration Report	
	where **<stat>** 0 - not registered, ME is not currently searching a new operator to register to 1 - registered, home network 2 - not registered, but ME is currently searching a new operator to register to 3 - registration denied 4 -unknown 5 - registered, roaming If **<mode>=2**, network registration result code reports: **+CREG: <stat>[,<Lac>,<Ci>[,<AcT>]]** where: **<Lac>** - Location Area Code for the currently registered on cell **<Ci>** - Cell Id for the currently registered on cell **<AcT>** - access technology of the registered network: 0 GSM (not applicable) 2 UTRAN (not applicable) 7 E-UTRAN Note: **<Lac>**, **<Ci>** and **<AcT>** are reported only if **<mode>=2** and the mobile is registered on some network cell.
AT+CREG?	Read command reports the **<mode>** and **<stat>** parameter values in the format: **+CREG: <mode>,<stat>[,<Lac>,<Ci>[,<AcT>]]** Note: **<Lac>**, **<Ci>** and **<AcT>** are reported only if **<mode>=2** and the mobile is registered on some network cell.
AT+CREG=?	Test command returns the range of supported **<mode>**
Example	AT OK at+creg? +CREG: 0,2 OK *(the MODULE is in network searching state)* at+creg? +CREG: 0,2 OK at+creg? +CREG: 0,2 OK at+creg? +CREG: 0,2 OK

+CREG - Network Registration Report	
	at+creg? +CREG: 0,1 OK *(the MODULE is registered)* at+creg? +CREG: 0,1 OK
Reference	3GPP TS 27.007

5.1.4.3.4. Operator Selection - +COPS

+COPS - Operator Selection	
AT+COPS= **[<mode>** **[,<format>** **[,<oper>>[,< AcT>]]]]**	Set command forces an attempt to select and register the network operator. **<mode>** parameter defines whether the operator selection is done automatically or it is forced by this command to operator **<oper>**. The operator **<oper>** shall be given in format **<format>**. Parameters: **<mode>** 0 - automatic choice (the parameter **<oper>** will be ignored) (factory default) 1 - manual choice (**<oper>** field shall be present) 2 - deregister from the network; the MODULE is kept unregistered until a **+COPS** with **<mode>=0, 1** or **4** is issued 3 - set only **<format>** parameter (the parameter **<oper>** will be ignored) 4 - manual/automatic (**<oper>** field shall be present); if manual selection fails, automatic mode (**<mode>=0**) is entered **<format>** 0 - alphanumeric long form (max length 16 digits) 1 - short format alphanumeric <oper> 2 - numeric 5 digits [country code (3) + network code (2)] **<oper>**: network operator in format defined by **<format>** parameter. Note: **<mode>** parameter setting is stored in NVM and available at next reboot, if it is not **3** (i.e.: set only **<format>** parameter). Note: if **<mode>=1 or 4**, the selected network is stored in NVM too and is available at next reboot (this will happen even with a new SIM inserted) Note: **<format>** parameter setting is never stored in NVM Note: < **AcT** > parameter setting is never stored in NVM Note: LE910KR supports LTE only.

+COPS - Operator Selection	
	Note : LE910KR doesn't support <mode>=1 and 4 because LTE only doesn't support manual. <**AcT**> access technology selected: 7 E-UTRAN
AT+COPS?	Read command returns current value of <**mode**>,<**format**>,<**oper**> and <**AcT**> in format <**format**>; if no operator is selected, <**format**>, <**oper**> and <**AcT**> are omitted **+COPS: <mode>[,<format>,<oper>,< AcT>]**
AT+COPS=?	Test command returns a list of quintuplets, each representing an operator present in the network. The quintuplets in the list are separated by commas: **+COPS: [list of supported (<stat> ,<oper (in <format>=0)>,, <oper (in <format>=2)>,< AcT>)s][,,(list of supported <mode>s), (list of supported<format>s)]** where: <**stat**> - operator availability 0 - unknown 1 - available 2 - current 3 - forbidden <**AcT**> access technology selected: 0 GSM 2 UTRAN 7 E-UTRAN Note: since with this command a network scan is done, this command may require some seconds before the output is given.
Example	AT+COPS? +COPS: 0,0,"Test PLMN 1-1",0 OK at+cops=? +COPS: (2,"","","45008",2),(1,"Test PLMN 1-1","Test1-1","00101",0),(3,"","","45005",2),,(0-4),(0,2) OK
Reference	3GPP TS 27.007

5.1.4.3.5. Facility Lock/Unlock – +CLCK

+CLCK - Facility Lock/Unlock	
AT+CLCK=<fac>,<mode>	Execution command is used to lock or unlock a **ME** or a network facility.

+CLCK - Facility Lock/Unlock	
[,<passwd> **[,<class>]]**	Parameters: **<fac>** - facility "SC" - SIM (PIN request) (device asks SIM password at power-up and when this lock command issued) "FD" - SIM fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as **<passwd>**) "PN" - network Personalisation "PU" - network subset Personalisation "PP" - service Provider Personalization (refer 3GPP TS 22.022 [33]) "PC" - Corporate Personalization (refer 3GPP TS 22.022 [33]) "PF" - lock Phone to the very First inserted SIM/UICC card (also referred in the present document as PH-FSIM) (MT asks password when other than the first SIM/UICC card is inserted) **<mode>** - defines the operation to be done on the facility 0 - unlock facility 1 - lock facility 2 - query status **<passwd>** - shall be the same as password specified for the facility from the **DTE** user interface or with command Change Password **+CPWD** **<class>** - sum of integers each representing a class of information (default is 7) 1 - voice (telephony) 2 - data (refers to all bearer services) 4 - fax (facsimile services) 8 - short message service 16 - data circuit sync 32 - data circuit async 64 - dedicated packet access 128 - dedicated PAD access Note: when **<mode>=2** and command successful, it returns: **+CLCK: <status>[,<class1>[<CR><LF>+CLCK: <status>,<class2>[…]]** where **<status>** - the current status of the facility 0 - not active 1 - active **<class*n*>** - class of information of the facility Note: The value 4 (facsimile services) of <class> has no effect because FAX does not support. This value is included only for backward compatibility.
AT+CLCK=?	Test command reports all the facilities supported by the device.
Reference	3GPP TS 27.007
Example	*Querying such a facility returns an output on three rows, the first for voice, the second for data, the third for fax:*

+CLCK - Facility Lock/Unlock	
	AT+CLCK =”AO”,2 +CLCK: <status>,1 +CLCK: <status>,2 +CLCK: <status>,4

5.1.4.3.6. Change Facility Password – +CPWD

+CPWD - Change Facility Password	
AT+CPWD=<fac>, <oldpwd>, <newpwd>	Execution command changes the password for the facility lock function defined by command Facility Lock **+CLCK**. Parameters: **<fac>** - facility "AB" - All Barring services (applicable only for **<mode>=0**) "AC" - All inComing barring services (applicable only for **<mode>=0**) "AG" - All outGoing barring services (applicable only for **<mode>=0**) "AI" - BAIC (Barr All Incoming Calls) "AO" - BAOC (Barr All Outgoing Calls) "IR" - BIC-Roam (Barr Incoming Calls When Roaming outside the home country) "OI" - BOIC (Barr Outgoing International Calls) "OX" - BOIC-exHC (Barr Outgoing International Calls except to Home Country) "SC" - SIM (PIN request) "P2" - SIM PIN2 "PN" - network Personalisation "PU" - network subset Personalisation "PP" - service Provider Personalization (refer 3GPP TS 22.022 [33]) "PC" - Corporate Personalization (refer 3GPP TS 22.022 [33]) "PF" - lock Phone to the very First inserted SIM/UICC card (also referred in the present document as PH-FSIM) (MT asks password when other than the first SIM/UICC card is inserted) **<oldpwd>** - string type, it shall be the same as password specified for the facility from the ME user interface or with command **+CPWD**. **<newpwd>** - string type, it is the new password Note: parameter **<oldpwd>** is the old password while **<newpwd>** is the new one.
AT+CPWD=?	Test command returns a list of pairs **(<fac>,<pwdlength>)** which presents the available facilities and the maximum length of their password (**<pwdlength>**)
Example	AT+CPWD=? +CPWD: ("AB",4), ("AC",4), ("AG",4), ("AI",4), ("AO",4), ("IR",4), ("OI",4), ("OX",4), ("SC",8), ("PN",8) , ("PU",8), ("PP",8) , ("PC",8) , ("PF",8) OK

+CPWD - Change Facility Password	
Reference	3GPP TS 27.007

5.1.4.3.7. Advice Of Charge – +CAOC

+CAOC - Advice Of Charge	
AT+CAOC=<mode>	Set command refers to the Advice of Charge supplementary services that enable subscriber to get information about the cost of calls; the command also includes the possibility to enable an unsolicited event reporting of the Current Call Meter (CCM) information. Parameter: **<mode>** 0 - query CCM value 1 - disables unsolicited CCM reporting 2 - enables unsolicited CCM reporting Note: the unsolicited result code enabled by parameter **<mode>** is in the format: **+CCCM: <ccm>** where: **<ccm>** - current call meter in home units, string type: three bytes of the CCM value in hexadecimal format (e.g. "00001E" indicates decimal value 30) Note: the unsolicited result code **+CCCM** is sent when the CCM value changes, but not more than every 10 seconds.
AT+CAOC?	Read command reports the value of parameter **<mode>** in the format: **+CAOC: <mode>**
AT+CAOC=?	Test command reports the supported values for **<mode>** parameter.
Reference	3GPP TS 27.007
Note	**+CAOC** command returns an estimate of the cost of the current call only, produced by the MS and based on the information provided by either AoCI or AOCC supplementary services; it is not stored in the SIM.

5.1.4.3.8. Preferred Operator List – +CPOL

+CPOL - Preferred Operator List	
AT+CPOL=[<index>][,<format>[,<oper>[,<GSM_AcT>,<GSM_Compact_AcT>,<UTRAN_AcT>,<E-UTRAN_AcT>]]	Execution command writes an entry in the SIM list of preferred operators. Parameters: **<index>** - integer type; the order number of operator in the SIM preferred operator list 1..*n* **<format>** 2 - numeric <**oper**> - string type **<GSM_AcT>** - GSM access technology

+CPOL - Preferred Operator List	
	0 – access technology not selected 1 – access technology selected **<GSM_Compact_AcT>** - GSM compact access technology 0 – access technology not selected 1 – access technology selected **<UTRAN_AcT>** - UTRAN acess technology 0 – access technology not selected 1 – access technology selected **<E-UTRAN_AcT>** - E-UTRAN acess technology 0 – access technology not selected 1 – access technology selected Note: if **<index>** is given but **<oper>** is left out, entry is deleted. If **<oper>** is given but **<index>** is left out, **<oper>** is put in the next free location. If only **<format>** is given, the format of the **<oper>** in the read command is changed. Currently, **<GSM_AcT>, <GSM_Compact_AcT>** and **<UTRAN_AcT>** are not supported but set value is acceptable.
AT+CPOL?	Read command returns all used entries from the SIM list of preferred operators.
AT+CPOL=?	Test command returns the whole **<index>** range supported by the SIM and the range for the parameter **<format>**
Reference	3GPP TS 27.007

5.1.4.3.9. Selection of preferred PLMN list – +CPLS

+CPLS - Selection of preferred PLMN list +CPLS	
AT+CPLS=<list>	Set command select one PLMN selector with Access Technology list in the SIM card or active application in the UICC, that is used by +CPOL command. Parameter: **<list>**: 0 - User controlled PLMN selector with Access Technology EFPLMNwAcT, if not found in the SIM/UICC then PLMN preferred list EFPLMNsel (this file is only available in SIM) (Default) 1- Operator controlled PLMN selector with Access Technology EFOPLMNwAcT 2 - HPLMN selector with Access Technology EFHPLMNwAcT
AT+CPLS?	Read command returns the selected PLMN selector list from the SIM/USIM +CPLS: <list>
AT+CPLS =?	Test command returns the whole index range supported lists by the SIM./USIM
Reference	3GPP TS 27.007

5.1.4.4. Mobile Equipment Control

5.1.4.4.1. 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 (Not support) 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 : **AT+CFUN=2** is not supported. Note: issuing **AT+CFUN=4[,0]** actually causes the module to perform either a network deregistration and a SIM deactivation. Note: if power saving enabled, it reduces the power consumption during the idle time, thus allowing a longer standby time with a given battery capacity. Note: to place the module in power saving mode, set the **<fun>** parameter at value = 5 and the line **DTR** (RS232) must be set to **OFF**. Once in power saving, the **CTS** line switch to the **OFF** status to signal that the module is really in power saving condition. During the power saving condition, before sending any **AT** command on the serial line, the **DTR** must be 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 Note: LE910-KR doesn’t support voice call.
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

5.1.4.4.2. Enter PIN – +CPIN

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

+CPIN - Enter PIN	
	PH-CORP PUK - ME is waiting corporate personalization unblocking password to be given Note: Pin pending status at startup depends on PIN facility setting, to change or query the default power up setting use the command **AT+CLCK=SC,<mode>,<pin>**
AT+CPIN=?	Test command returns **OK** result code.
Example	AT+CMEE=1 OK AT+CPIN? +CME ERROR: 10 *error: you have to insert the SIM* AT+CPIN? +CPIN: READY *you inserted the SIM and device is not waiting for PIN to be given* OK
Reference	3GPP TS 27.007

5.1.4.4.3. Indicator Control - +CIND

+CIND - Indicator Control	
AT+CIND= [<state> [,<state>[,…]]]	Set command is used to control the registration state of ME indicators, in order to automatically send the **+CIEV** URC, whenever the value of the associated indicator changes. The supported indicators (**<descr>**) and their order appear from test command **AT+CIND=?** Parameter: **<state>** - registration state 0 - the indicator is deregistered; there's no unsolicited result code (**+CIEV** URC) automatically sent by the ME to the application, whenever the value of the associated indicator changes; the value can be directly queried with **+CIND?** 1 - the indicator is registered: an unsolicited result code (**+CIEV** URC) is automatically sent by the ME to the application, whenever the value of the associated indicator changes; it is still possible to query the value through **+CIND?** (default)
AT+CIND?	Read command returns the current value of ME indicators, in the format: **+CIND: <ind>[,<ind>[,…]]** Note: the order of the values **<ind>s** is the same as that in which the associated indicators appear from test command **AT+CIND=?**
AT+CIND=?	Test command returns pairs, where string value **<descr>** is a description (max. 16 chars) of the indicator and compound value is the supported values for the indicator, in the format: **+CIND: ((<descr>, (list of supported <ind>s))[,(<descr>, (list of supported <ind>s))[,…]])**

+CIND - Indicator Control	
	where: **<descr>** - indicator names as follows (along with their **<ind>** ranges) "battchg" - battery charge level **<ind>** - battery charge level indicator range 0..5 99 - not measurable "signal" - signal quality **<ind>** - signal quality indicator range 0..7 99 - not measurable "service" - service availability **<ind>** - service availability indicator range 0 - not registered to any network 1 - registered "sounder" - sounder activity **<ind>** - sounder activity indicator range 0 - there's no any sound activity 1 - there's some sound activity "message" - message received **<ind>** - message received indicator range 0 - there is no unread short message at memory locations 1 - unread short message at memory locations "call" - call in progress **<ind>** - call in progress indicator range 0 - there's no calls in progress 1 - at least a call has been established "roam" - roaming **<ind>** - roaming indicator range 0 - registered to home network or not registered 1 - registered to other network "smsfull" - a short message memory storage in the MT has become full (1), or memory locations are available (0) **<ind>** - short message memory storage indicator range 0 - memory locations are available 1 - a short message memory storage in the MT has become full. "rssi" - received signal (field) strength **<ind>** - received signal strength level indicator range 0 - signal strength ≤ (-112) dBm 1..4 - signal strength in 15 dBm steps 5 - signal strength ≥ (-51) dBm 99 - not measurable
Example	*Next command causes all the indicators to be registered* AT+CIND=1,1,1,1,1,1,1,1,1 *Next command causes all the indicators to be de-registered* AT+CIND=0,0,0,0,0,0,0,0,0 *Next command to query the current value of all indicators* AT+CIND?

+CIND - Indicator Control	
	CIND: 4,0,1,0,0,0,0,0,2 OK
Note	See command **+CMER**
Reference	3GPP TS 27.007

5.1.4.4.4. Mobile Equipment Event Reporting – +CMER

+CMER - Mobile Equipment Event Reporting	
AT+CMER= **[<mode>** **[,<keyp>** **[,<disp>** **[,<ind>** **[,<bfr>]]]]]**	Set command enables/disables sending of unsolicited result codes from TA to TE in the case of indicator state changes (n.b.: sending of URCs in the case of key pressings or display changes are currently not implemented). Parameters: **<mode>** - controls the processing of unsolicited result codes 0 - discard **+CIEV** Unsolicited Result Codes. 1 - discard **+CIEV** Unsolicited Result Codes when TA-TE link is reserved (e.g. on-line data mode); otherwise forward them directly to the TE. 2 - buffer **+CIEV** Unsolicited Result Codes in the TA when TA-TE link is reserved (e.g. on-line data mode) and flush them to the TE after reservation; otherwise forward them directly to the TE. 3 - forward **+CIEV** Unsolicited Result Codes directly to the TE; when TA is in on-line data mode each **+CIEV** is stored in a buffer; onche the ME goes into command mode (after +++ was entered), all URCs stored in the buffer will be output. **<keyp>** - keypad event reporting 0 - no keypad event reporting **<disp>** - display event reporting 0 - no display event reporting **<ind>** - indicator event reporting 0 - no indicator event reporting 2 - indicator event reporting **<bfr>** - TA buffer clearing 0 - TA buffer of unsolicited result codes is cleared when <mode> 1..3 is entered 1 - TA buffer of unsolicited result codes is flushed to the TE when <mode> 1...3 is entered (OK response shall be given before flushing the codes)
AT+CMER?	Read command returns the current setting of parameters, in the format: **+CMER: <mode>,<keyp>,<disp>,<ind>,<bfr>**
AT+CMER=?	Test command returns the range of supported values for parameters **<mode>, <keyp>, <disp>, <ind>, <bfr>**, in the format: **+CMER: (list of supported <mode>s),(list of supported <keyp>s), (list of supported <disp>s),(list of supported <ind>s),(list of supported <bfr>s)**
Reference	3GPP TS 27.007

5.1.4.4.5. Select Phonebook Memory Storage – +CPBS

+CPBS - Select Phonebook Memory Storage	
AT+CPBS= <storage>	Set command selects phonebook memory storage **<storage>**, which will be used by other phonebook commands. Parameter: **<storage>** "SM" - SIM phonebook "FD" - SIM fixed dialling-phonebook (only phase 2/2+ SIM) "LD" - SIM last-dialling-phonebook (+CPBF/+CPBW is not applicable for this storage) "MC" - device missed (unanswered received) calls list (+CPBF is not applicable for this storage) "RC" - ME received calls list (+CPBF is not applicable for this storage). "MB" - mailbox numbers stored on SIM; it is possible to select this storage only if the mailbox service is provided by the SIM (see #MBN). "DC" - MT dialled calls list "ME" - MT phonebook "EN" - SIM/USIM (or MT) emergency number (+CPBW is not be applicable for this storage) "ON" - SIM (or MT) own numbers (MSI torage may be available through +CNUM also). "SD" - SIM Service Dialling Numbers (SDN) phonebook (+CPBW is not applicable for this storage). <password>: string type value representing the PIN2-code required when selecting PIN2-code locked <storage> above "FD Note: If **"SM"** is the currently selected phonebook, selecting**"FD"** phonebook with "**AT+CPBS="FD"**"" command simply selects the FDN as the phonebook upon which all subsequent **+CPBW, +CPBF** and **+CPBR** commands act; the command does not deactivate "SM" phonebook, and does not activate FDN Note: if **<password>** parameter is given, PIN2 will be verified, even if it is not required, i.e. it has already been inserted and verified during current session
AT+CPBS?	Read command returns the actual values of the parameter **<storage>**, the number of occupied records **<used>** and the maximum index number **<total>**, in the format: **+CPBS: <storage>,<used>,<total>** Note: For **<storage>="MC"**: if there are more than one missed calls from the same number the read command will return only the last call.
AT+CPBS=?	Test command returns the supported range of values for the parameters **<storage>**.
Example	AT+CPBS="SM" *current phonebook storage is SIM* AT+CPBR=1 +CPBR: 1,"0105872928",129,"James" OK
Reference	3GPP TS 27.007

5.1.4.4.6. Read Phonebook Entries – +CPBR

+CPBR - Read Phonebook Entries	
AT+CPBR= **<index1>** **[,<index2>]**	Execution command returns phonebook entries in location number range **<index1>**..**<index2>** from the current phonebook memory storage selected with **+CPBS**. If **<index2>** is omitted, only location **<index1>** is returned. Parameters: **<index1>** - integer type, value in the range of location numbers of the currently selected phonebook memory storage (see **+CPBS**). **<index2>** - integer type, value in the range of location numbers of the currently selected phonebook memory storage (see **+CPBS**). The response format is: **[+CPBR:** **<index1>**,**<number>**,**<type>**,**<text>**[,<hidden>][,<group>][,<adnumber>][,<adtype>][,<secondtext>][,<email>]] **[<CR><LF>** **+CPBR:** **<index2>**,**<number>**,**<type>**,**<text>**[,<hidden>][,<group>][,<adnumber>][,<adtype>][,<secondtext>][,<email>]] **[…]]]** where: **<index*n*>** - the location number of the phonebook entry **<number>** - string type phone number of format **<type>** **<type>** - type of phone number octet in integer format 129 - national numbering scheme 145 - international numbering scheme (contains the character "+") **<text>** - the alphanumeric text associated to the number; used character set should be the one selected with command **+CSCS.** <group>: group name or index. "SM" - string type field of maximum length <glength> indicating a group the entry may belong to; character set as specified by command Select TE Character Set +CSCS "ME" - integer type, group name index <adnumber>: additional number ; string type phone number of format <adtype> <adtype>: type of address octet in integer format <secondtext>: string type field of maximum length <slength> indicating a second text field associated with the number; character set as specified by command Select TE Character Set +CSCS <email>: string type field of maximum length <elength> indicating an email address; character set as specified by command Select TE Character Set +CSCS <hidden>: indicates if the entry is hidden or not 0: phonebook entry not hidden 1: phonebook entry hidden

+CPBR - Read Phonebook Entries	
	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>** , **<text>,** <group>, <secondtext> and <email> fields fields, in the format: **+CPBR: (<minIndex>** - **<maxIndex>**),**<nlength>**,**<tlength>**,<glength>,<slength>,<elength> 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 <glength>: integer type value indicating the maximum length of field <group> <slength>: integer type value indicating the maximum length of field <secondtext> <elength>: integer type value indicating the maximum length of field <email> Note: the value of **<nlength>** could vary, depending on the availability of Extension service, in the following situations: 1. if "SM" memory storage has been selected (see **+CPBS**) and the **SIM** supports the **Extension1** service 2. if "FD" memory storage has been selected (see **+CPBS**) and the **SIM** supports the **Extension2** service 3. if "MB" memory storage has been selected (see **+CPBS**) and the **SIM** supports the **Extension6** service
Note	Remember to select the PB storage with **+CPBS** command before issuing PB commands.
Example	AT+CPBS="ME" OK AT+CPBS? +CPBS: "ME",1,100 OK AT+CPBR=? +CPBR: (1-100),40,255 OK AT+CPBR=1 +CPBR: 1,"01048771234",129,"James"

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

5.1.4.4.7. 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>**[,<hidden>][,<group>][,<adnumber>][,<adtype>][,<secondtext>][,<email>**]<CR><LF>** **+CPBF:** **<index2>,<number>,<type>,<text>**[,<hidden>][,<group>][,<adnumber>][,<adtype>][,<secondtext>][,<email>]**[…]]]** where: **<index*n*>** - the location number of the phonebook entry **<number>** - string type phone number of format **<type>** **<type>** - type of phone number octet in integer format 129 - national numbering scheme 145 - international numbering scheme (contains the character "+") **<text>** - the alphanumeric text associated to the number; used character set should be the one selected with command **+CSCS.** <group>: group name or index. "SM" - string type field of maximum length <glength> indicating a group the entry may belong to; character set as specified by command Select TE Character Set +CSCS "ME" - integer type, group name index <adnumber>: additional number ; string type phone number of format <adtype> <adtype>: type of address octet in integer format <secondtext>: string type field of maximum length <slength> indicating a second text field associated with the number; character set as specified by command Select TE Character Set +CSCS <email>: string type field of maximum length <elength> indicating an email address; character set as specified by command Select TE Character Set +CSCS <hidden>: indicates if the entry is hidden or not

+CPBF - Find Phonebook Entries	
	0: phonebook entry not hidden 1: phonebook entry hidden Note: **+CPBF** is not applicable if the current selected storage (see **+CPBS**) is either "MC", either "RC" or "LD". Note: if **<findtext>=""** the command returns all the phonebook records. Note: if no PB records satisfy the search criteria then an **ERROR** message is reported.
AT+CPBF=?	Test command reports the maximum lengths of **<number>** and **<text>** fields, in the format: **+CPBF:** **<nlength>,<tlength>**,<glength>,<slength>,<elength> where: **<nlength>** - maximum length of field **<number>**, integer type **<tlength>** - maximum length of field **<text>**, integer type <glength>: integer type value indicating the maximum length of field <group> <slength>: integer type value indicating the maximum length of field <secondtext> <elength>: integer type value indicating the maximum length of field <email> Note: the value of **<nlength>** could vary, depending on the availability of Extension service, in the following situations: 1. if "SM" memory storage has been selected (see **+CPBS**) and the **SIM** supports the **Extension1** service 2. if "FD" memory storage has been selected (see **+CPBS**) and the **SIM** supports the **Extension2** service 1. if "MB" memory storage has been selected (see **+CPBS**) and the **SIM** supports the **Extension6** service
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" +CPBF: 2,"0169998888",129,"Jane" OK *Searching for everything in phone book, and finding all entries* AT+CPBF="" +CPBF: 1,"01048771234",129,"James"

+CPBF - Find Phonebook Entries	
	+CPBF: 2,"0169998888",129,"Jane" +CPBF: 7,"0115556666",129,"Juliet" +CPBF: 5,"0181111234",129,"Kevin" OK
Reference	3GPP TS 27.007

5.1.4.4.8. Write Phonebook Entry – +CPBW

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

+CPBW - Write Phonebook Entry	
	Note: if **<index>** is omitted or **<index>**=0, the number **<number>** is stored in the first free phonebook location. (example at+cpbw=0,"+390404192701",129,"Text" and at+cpbw=,"+390404192701",129,"Text") Note: if either "LD", "MC" or "RC" memory storage has been selected (see **+CPBS**) it is possible just to delete the phonebook entry in location **<index>**, therefore parameters **<number>**, **<type>** and **<text>** must be omitted. Note: before defining <group> string, it is recommended to check, with **#CPBGR** command, the predefined group names, that could be already stored in USIM in Grouping information Alpha String (GAS) file. If all records in such file are already occupied, **+CPBW** command will return **ERROR** when trying to use a new group name that is not in the predefined GAS names. To define a new custom group string, it is necessary to overwrite with it one of the old predefined strings, using **#CPBGW** command.
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>**>,<glength>,<slength>,<elength> where: **<nlength>** - integer type value indicating the maximum length of field **<number>**. **<tlength>** - integer type value indicating the maximum length of field **<text>** <glength>: integer type value indicating the maximum length of field <group> <slength>: integer type value indicating the maximum length of field <secondtext> <elength>: integer type value indicating the maximum length of field <email> Note: the value of **<nlength>** could vary, depending on the availability of Extension service, in the following situations: 1. if "SM" memory storage has been selected (see **+CPBS**) and the **SIM** supports the **Extension1** service 2. if "FD" memory storage has been selected (see **+CPBS**) and the **SIM** supports the **Extension2** service 3. if "MB" memory storage has been selected (see **+CPBS**) and the **SIM** supports the **Extension6** service
Reference	3GPP TS 27.007
Example	AT+CPBS="ME" OK

+CPBW - Write Phonebook Entry	
	AT+CPBW=? +CPBW: (1-500),40,(129,145),20,1,20,40 OK AT+CPBW=1,"01048771234",129,"John",1,"18651896699",129,"sec_name","john @email.com" OK AT+CPBS="SM" OK AT+CPBW=? +CPBW: (1-250),40,(129,145),17,16,17,25 OK AT+CPBW=1,"01048771234",129,"John","Group1","18651896699",129,"sec_nam e","john@email.com" OK
Note	Remember to select the PB storage with **+CPBS** command before issuing PB commands.

5.1.4.4.9. Read Group Entries - #CPBGR

#CPBGR- Read Group Entries	
AT#CPBGR= <index1> [,<index2>]	Execution command returns Grouping information Alpha String (GAS) USIM file entries in location number range **<index1>**...**<index2>**. If **<index2>** is omitted, only location **<index1>** is returned. These strings are the names used for groups an ADN entry could belong to. Parameters: **<index1>** - integer type, value in the range of location numbers of GAS. **<index2>** - integer type, value in the range of location numbers of GAS. The response format is: **[#CPBGR: <index1>,<text>[<CR><LF>** **#CPBGR: <index2>,<text>[…]]]** where: **<index*n*>** - the location number of the GAS entry **<text>** - the alphanumeric text associated to the entry
AT#CPBGR=?	Test command returns the supported range of values for parameters **<index*n*>** and the maximum length of **<text>** field, in the format: **#CPBGR: (<minIndex> - <maxIndex>),<tlength>** where: **<minIndex>** - the minimum **<index>** number, integer type **<maxIndex>**- the maximum **<index>** number, integer type

#CPBGR- Read Group Entries	
	<tlength> - maximum **<text>** field length, integer type

5.1.4.4.10. Write Group Entry - #CPBGW

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

5.1.4.4.11. 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 - seconds (two last digits are mandatory), range is (00..59) ±zz - time zone (indicates the difference, expressed in quarter of an hour, between the local time and GMT; two last digits are mandatory), range is -47..+48
AT+CCLK?	Read command returns the current setting of the real-time clock, in the format **<time>**.

+CCLK - Clock Management	
	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

5.1.4.4.12. Alarm Management – +CALA

+CALA - Alarm Management	
AT+CALA=<time>[,<n>[,<type>[,<text>[,<recurr>[,<silent>]]]]]	Set command stores in the internal Real Time Clock an alarm time with respective settings. It is possible to set up a recurrent alarm for one or more days in the week. Currently just one alarm can be set. When the RTC time reaches the alarm time then the alarm starts, the behaviour of the MODULE depends upon the setting **<type>** and if the device was already ON at the moment when the alarm time had come. Parameters: **<time>** - current alarm time as quoted string in the same format as defined for **+CCLK** command (i.e. "yy/MM/dd,hh:mm:ss±zz"), unless the **<recurr>** parameter is used: in this case **<time>** must not contain a date (i.e. "hh:mm:ss±zz") **<n>** - index of the alarm 0 - The only value supported is 0. **<type>** - alarm behaviour type 0 - reserved for other equipment use. 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,

+CALA - Alarm Management	
	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 alarmpin high, provided its **<direction>** has been set to alarm output, and keeps it in this state until a **#WAKE** or **#SHDN** command is received or a 90 seconds timer expires. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s then it shuts down. 5 - the MODULE will make both the actions as for type=2 and **<type>=3**. 6 - the MODULE will make both the actions as for type=2 and **<type>=4**. 7 - the MODULE will make both the actions as for type=3 and **<type>=4**. 8 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE sets **High** the **RI** output pin. The **RI** output pin remains **High** until next **#WAKE** issue or until a 90s timer expires. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s. After that it shuts down. **<text>** - unsolicited alarm code text string. It has meaning only if **<type>** is equal to 2 or 5 or 6. **<recurr>** - string type value indicating day of week for the alarm in one of the following formats: "<1..7>[,<1..7>[, …]]" - it sets a recurrent alarm for one or more days in the week; the digits 1 to 7 corresponds to the days in the week (Monday is 1). "0" - it sets a recurrent alarm for all days in the week. **<silent>** - integer type indicating if the alarm is silent or not. 0 - the alarm will not be silent; 1 - the alarm will be silent. 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. Note: default alarmpin is GPIO 6, the alarmpin can be configured with **#ALARMPIN** command. Note: LE910KR doesn't support playing the alarm tone.
AT+CALA?	Read command returns the list of current active alarm settings in the ME, in the format:

+CALA - Alarm Management	
	[+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

5.1.4.4.13. 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

5.1.4.4.14. Postpone alarm – +CAPD

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

5.1.4.4.15. Setting date format – +CSDF

+CSDF – setting date format	
AT+CSDF=[<mode> [,<auxmode>]]	This command sets the date format of the date information presented to the user, which is specified by use of the **<mode>** parameter. The **<mode>** affects the date format on the phone display and doesn't affect the date format of the AT command serial interface, so it not used. The command also sets the date format of the TE-TA interface, which is specified by use of the **<auxmode>** parameter (i.e., the <auxmode> affects the **<time>** of AT+CCLK and AT+CALA). If the parameters are omitted then this sets the default value of **<mode>**. Parameters: **<mode>:** 1 DD-MM-YYYY (default)

+CSDF – setting date format	
	2 DD-MM-YY 3 MM/DD/YY 4 DD/MM/YY 5 DD.MM.YY 6 YYMMDD 7 YY-MM-DD **<auxmode>**: 1 yy/MM/dd (default) 2 yyyy/MM/dd Note: The **<time>** format of +CCLK and +CALA is "yy/MM/dd,hh:mm:ss+zz" when **<auxmode>**=1 and it is "yyyy/MM/dd,hh:mm:ss+zz" when **<auxmode>**=2.
AT+CSDF?	Read command reports the currently selected <mode> and <auxmode> in the format: **+CSDF: <mode>,<auxmode>**
AT+CSDF=?	Test command reports the supported range of values for parameters **<mode>** and **<auxmode>**

5.1.4.4.16. Setting time format - +CSTF

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

5.1.4.4.17. Time Zone reporting - +CTZR

+CTZR – Time Zone reporting	
AT+CTZR=<onoff>	This command enables and disables the time zone change event reporting. If the reporting is enabled the MT returns the unsolicited result code +CTZV:<tz> whenever the time zone is changed. Parameters:

+CTZR – Time Zone reporting	
	<onoff>: 0 Disable time zone change event reporting (default) 1 Enable time zone change event reporting
AT+CTZR?	Read command reports the currently selected **<onoff>** in the format: **+CTZR: <onoff>**
AT+CTZR=?	Test command reports the supported range of values for parmeter **<onoff>**

5.1.4.4.18. Automatic Time Zone update – +CTZU

+CTZU – Automatic Time Zone update	
AT+CTZU=<onoff>	This command enable and disables automatic time zone update via NITZ. Parameters: **<onoff>:** 0 Disable automatic time zone update via NITZ (default) 1 Enable automatic time zone update via NITZ Note: despite of the name, the command AT+CTZU=1 enables automatic update of the date and time set by AT+CCLK command (not only time zone). This happens when a Network Identity and Time Zone (NITZ) message is sent by the network. This command is the ETSI standard equivalent of Telit custom command AT#NITZ=1. If command AT+CTZU=1, or AT#NITZ=1 (or both) has been issued, NITZ message will cause a date and time update.
AT+CTZU?	Read command reports the currently selected **<onoff>** in the format: **+CTZU: <onoff>**
AT+CTZU=?	Test command reports the supported range of values for parmeter **<onoff>**

5.1.4.4.19. Restricted SIM Access – +CRSM

+CRSM - Restricted SIM Access	
AT+CRSM= <command> [,<fileid> [,<P1>,<P2>,<P3> [,<data>[,<pathid>]]]]	Execution command transmits to the **ME** the SIM **<command>** and its required parameters. **ME** handles internally all **SIM-ME** interface locking and file selection routines. As response to the command, **ME** sends the actual SIM information parameters and response data. Parameters: **<command>** - command passed on by the **ME** to the SIM 176 - READ BINARY 178 - READ RECORD 192 - GET RESPONSE 214 - UPDATE BINARY 220 - UPDATE RECORD 242 - STATUS **<fileid>** - identifier of an elementary data file on SIM. Mandatory for every command except STATUS. **<P1>**,**<P2>**,**<P3>** - parameter passed on by the ME to the SIM; they are mandatory for every command except GET RESPONSE and STATUS 0..255 **<data>** - information to be read/written to the SIM (hexadecimal character format). **< pathid>** - string type; contains the path of an elementary file on the SIM/UICC in hexadecimal format. The <pathid> shall only be used in the mode "select by path from MF" (e.g. "7F205F70"). The response of the command is in the format: **+CRSM: <sw1>,<sw2>[,<response>]** where: **<sw1>**,**<sw2>** - information from the SIM about the execution of the actual command either on successful or on failed execution. **<response>** - on a successful completion of the command previously issued it gives the requested data (hexadecimal character format). It's not returned after a successful UPDATE BINARY or UPDATE RECORD command. Note: this command requires PIN authentication. However commands READ BINARY and READ RECORD can be issued before PIN authentication and if the SIM is blocked (after three failed PIN authentication attempts) to access the contents of the Elementary Files. Note: use only decimal numbers for parameters **<command>**, **<fileid>**, **<P1>**, **<P2>** and **<P3>**.

+CRSM - Restricted SIM Access	
AT+CRSM=?	Test command returns the **OK** result code
Example	*Read binary, ICCID(2FE2)* *AT+CRSM=176,12258,0,0,10* *+CRSM: 144,0,98285070200110768 6F4* *OK* *Read record, ADN(6F3A)* *AT+CRSM=178,28474,1,4,40* *+CRSM: 144,0,42434A554EFFFFFFFFFFFFFFFFFFFFFF0681105678 9282FFFFFFFFFFFFF* *OK* *Update Binary, KcGPRS(6F52)* *AT+CRSM=214,28539,0,0,8,C69018C7958C87* *+CRSM: 144,0* *OK* *Update Record, ADN(6F3A)* *AT+CRSM=220,28474,9,4,30,657469FFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFF* *+CRSM: 144,0* *OK* *Status, FPLMN(6F7B)* *AT+CRSM=242,28539* *+CRSM: 144,0,623C820238218410A0000000871002FFFFFFFF8904 0300FFA5118001318103010A3282011E8304000030E08A01058B032F0609C6099 001C0830101830181* *OK* *Get Response, MSISDN(6F40)* *AT+CRSM=192,28480,4,0,4,,7F106F40* *+CRSM:* *144,0,621E8205422100260283026F40A5039201008A01058B036F06058002004C 8800* *OK*
Reference	3GPP TS 27.007, 3GPP TS 11.11/51.011

5.1.4.4.20. Generic SIM Acess - +CSIM

+CSIM – Generic SIM Access	
AT+CSIM=<length>,	This command allows a direct control of the SIM by a distant application on the TE

+CSIM – Generic SIM Access	
<command>	Set command transmits to the MT the <command> it then shall send as it is to the SIM The <response> is Returned in the same manner to the TE Parameters: <**length**> integer type; length of the characters that are sent to TE in <command> <**command**> command passed on by MT to SIM in hex format code (e.g. "A0A4.....") Response syntax: **+CSIM**: <**length**>,<**response**> Where: <**length**> integer type; length of the characters that are sent to TE in <response> <**response**> response to the command passed on by the SIM to the MT
AT+CSIM=?	Test command returns the OK result code.
Reference	3GPP TS 27.007, 3GPP TS 11.11/31.102/51.011

5.1.4.4.21. UICC Application Discovery – +CUAD

+CUAD – UICC Application Discovery	
AT+CUAD	This command asks the MT to discover what applications are available for selection on the UICC. The ME shall access and read the EFDIR file in the UICC and return the values that are stored in ist records. Response syntax: **+CUAD**: <**response**> Where: <**response**> string type in hexadecimal character format. The response is the content of the EFDIR
AT+CUAD=?	Test command returns the OK result code.
Reference	3GPP TS 27.007, 3GPP TS 11.11/31.102/51.011

5.1.4.4.22. Set voice mail number – +CSVM

+CSVM – Set Voice Mail Number	
AT+CSVM=<mode>[,<number>[,<type>]]	The number to the voice mail server is set with this command. The parameters **<number>** and **<type>** can be left out if the parameter **<mode>** is set to 0. Parameters: **<mode>** 0 – disable the voice mail number 1 – enable the voice mail number (factory default) **<number>** - string type phone number of format specified by **<type>** **<type>** - type of address octet in integer format

+CSVM – Set Voice Mail Number	
	129 - unknown type of number and ISDN/Telephony numbering plan 145 - international type of number and ISDN/Telephony numbering plan (contains the character "+")
AT+CSVM?	Read command returns the currently selected voice mail number and the status (i.e. enabled/disabled) in the format **+CSVM:<mode>,<number>,<type>**
AT+CSVM=?	Test command reports the range for the parameters **<mode>** and **<type>**.

5.1.4.4.23. Accumulated Call Meter – +CACM

+CACM - Accumulated Call Meter	
AT+CACM= [<pwd>]	Set command resets the Advice of Charge related Accumulated Call Meter stored in SIM (ACM): it contains the total number of home units for both the current and preceding calls. Parameter: **<pwd>** - to access this command PIN2; if PIN2 has been already input once after startup, it is required no more
AT+CACM?	Read command reports the current value of the SIM ACM in the format: **+CACM: <acm>** where: **<acm>** - accumulated call meter in home units, string type: three bytes of the ACM value in hexadecimal format (e.g. "00001E" indicates decimal value 30) Note: the value **<acm>** is in home units; price per unit and currency are defined with command **+CPUC**
AT+CACM=?	Test command returns the **OK** result code
Reference	3GPP TS 27.007

5.1.4.4.24. Accumulated Call Meter Maximum – +CAMM

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

+CAMM - Accumulated Call Meter Maximum	
	Note: **<acmmax>** = 0 value disables the feature.
AT+CAMM?	Read command reports the ACMmax value stored in SIM in the format: **+CAMM : <acmm>** where: **<acmm>** - ACMmax value in home units, string type: three bytes of the ACMmax value in hexadecimal format (e.g. "00001E" indicates decimal value 30)
AT+CAMM=?	Test command returns the **OK** result code
Reference	3GPP TS 27.007

5.1.4.4.25. Price per Unit and Currency Table – +CPUC

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

5.1.4.4.26. 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

5.1.4.4.27. Open Logical Channel – +CCHO

+CCHO – Open Logical Channel	
AT+CCHO=<dfname >	Execution of the command causes the MT to return <sessionid> to allow the TE to identify a channel that is being allocated by the UICC, which is attached to ME. Parameter **<dfname>**: all selectable applications in the UICC are referenced by a DF name coded on 1 to 16 bytes. **+CCHO: <sessionid>** where: <sessionid > : A session ID to be used in order to target a specific application. It is to be used when sending commands with +CGLA commands.
AT+CCHO=?	Test command returns the **OK** result code
Reference	3GPP TS 27.007

5.1.4.4.28. Close Logical Channel - +CCHC

+CCHC – Close Logical Channel	
AT+CCHC=< sessionid>	This command asks the ME to close a communication session with the UICC. The ME shall close the previously opened logical channel. The TE will no longer be able to send commands on this logical channel. The UICC will close the logical channel when receiving this command. Parameter **< sessionid >**: A session ID to be used in order to target a specific application.
AT+CCHC=?	Test command returns the **OK** result code
Reference	3GPP TS 27.007

5.1.4.4.29. Generic UICC Logical Channel Access - +CGLA

+CGLA – Generic UICC Logical Channel Access	
AT+CGLA=<sessionid>,<length>,<command>	This command allows a direct control of the UICC by a distant application on the TE. Set command transmits to the MT the <command> it then shall send as it is to the UICC The <response> is Returned in the same manner to the TE Parameters: <**sessionid**> integer type; this is the identifier of the session to be used in order to send the APDU commands to the UICC. It is manadatory in order to send commands to the UICC when targeting applications on the UICC using a logical channel other than the default channel (channel "0"). <**length**> integer type; length of the characters that are sent to TE in <command> <**command**> command passed on by MT to SIM in hex format code (e.g. "A0A4.....") Response syntax:

+CGLA – Generic UICC Logical Channel Access	
	+CGLA: <**length**>,<**response**> Where: <**length**> integer type; length of the characters that are sent to TE in <response> <**response**> response to the command passed on by the UICC to the MT
AT+CGLA=?	Test command returns the OK result code.
Reference	3GPP TS 27.007, 3GPP TS 11.11/31.102/51.011

5.1.4.4.30. Remaining PIN retries - +CPINR

+CPINR-Remaining PIN retries	
AT+CPINR[=<sel_code>]	Execution command cause the ME to return the number of remaining PIN retries for the ME passwords. Parameter: **<sel_code>** - String type. These values are strings and shall be indicated within double quotes. It is optional to support wildcard match by '*', meaning match any (sub-)string.(parameter is listed under the description of command +CPIN, <code> parameter, except 'READY', 'PH-SIM PIN') The response format is: +CPINR: <code>,<retries>[,<default_retries>][<CR><LF> +CPINR: <code>,<retries>[,<default_retries>][…]] where: **<code>** - string type. Type of PIN. **<retries>** - integer type. Number of remaining retries per PIN. **<default_retries>** - integer type. Number of default/initial retries per PIN.
AT+CPINR=?	Test command returns the OK result code.
Example	AT+CPINR="SIM*" +CPINR: SIM PIN,3,3 +CPINR: SIM PUK,10,10 +CPINR: SIM PIN2,3,3 +CPINR: SIM PUK2,10,10 OK AT+CPINR="*SIM*" +CPINR: SIM PIN,3,3 +CPINR: SIM PUK,10,10 +CPINR: SIM PIN2,3,3 +CPINR: SIM PUK2,10,10 +CPINR: PH-FSIM PIN,10,10 +CPINR: PH-FSIM PUK,32,32 OK
Reference	3GPP TS 27.007

5.1.4.5. Mobile Equipment Errors

5.1.4.5.1. 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. 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
Reference	3GPP TS 27.007 and TIA IS-101

5.1.4.6. Commands For EPS

5.1.4.6.1. EPS Attach Or Detach - +CGATT

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

+CGATT - EPS Attach Or Detach	
	+CGATT: (0,1) OK AT+CGATT=1 OK
Reference	3GPP TS 27.007

5.1.4.6.2. EPS Event Reporting – +CGEREP

+CGEREP - EPS Event Reporting	
AT+CGEREP=[<mode>[,<bfr>]]	Set command enables or disables sending of unsolicited result codes **+CGEV: XXX** (see below) from **TA** to **TE** in the case of certain events occurring in the **TA** or the network. Parameters: **<mode>** - controls the processing of **URCs** specified with this command 0 - Buffer unsolicited result codes in the **TA**. If **TA** result code buffer is full, the oldest one can be discarded. No codes are forwarded to the **TE**. 1 - Discard unsolicited result codes when **TA-TE** link is reserved (e.g. in on-line data mode); otherwise forward them directly to the **TE**. 2 - Buffer unsolicited result codes in the **TA** when **TA-TE** link is reserved (e.g. in on-line data mode) and flush them to the **TE** when **TA-TE** link becomes available; otherwise forward them directly to the **TE**. **<bfr>** - controls the effect on buffered codes when **<mode> 1** or **2** is entered: 0 - **TA** buffer of unsolicited result codes defined within this command is cleared when **<mode>=1** or **2** is entered. 1 - **TA** buffer of unsolicited result codes defined within this command is flushed to the **TE** when **<mode>=1** or **2** is entered (**OK** response shall be given before flushing the codes) **Unsolicited Result Codes** The following unsolicited result codes and the corresponding events are defined: **+CGEV: REJECT <PDP_type>, <PDP_addr>** A network request for PDP context activation occurred when the **TA** was unable to report it to the **TE** with a +**CRING** unsolicited result code and was automatically rejected **+CGEV: NW REACT <PDP_type>, <PDP_addr>, [<cid>]** The network has requested a context reactivation. The <cid> that was used to reactivate the context is provided if known to **TA** **+CGEV: NW DEACT <PDP_type>, <PDP_addr>, [<cid>]** The network has forced a context deactivation. The <cid> that was used to activate the context is provided if known to **TA**

+CGEREP - EPS Event Reporting	
	+CGEV: ME DEACT <PDP_type>, <PDP_addr>, [<cid>] The mobile equipment has forced a context deactivation. The <cid> that was used to activate the context is provided if known to **TA** **+CGEV: NW DETACH** The network has forced a EPS detach. This implies that all active contexts have been deactivated. These are not reported separately **+CGEV: ME DETACH** The mobile equipment has forced a EPS detach. This implies that all active contexts have been deactivated. These are not reported separately **+CGEV: ME CLASS <class>** The mobile equipment has forced a change of MS class. The highest available class is reported
AT+CGEREP?	Read command returns the current <mode> and <bfr> settings, in the format: **+CGEREP: <mode>,<bfr>**
AT+CGEREP=?	Test command reports the supported range of values for the **+CGEREP** command parameters.
Reference	3GPP TS 27.007

5.1.4.6.3. EPS Network Registration Status - +CEREG

+CEREG - EPS Network Registration Status	
AT+CEREG=[<n>]	Set command controls the presentation of an unsolicited result code. **+CEREG: (see format below)**. Parameter: **<n>** - result code presentation mode 0 - disable network registration unsolicited result code 1 - enable network registration unsolicited result code; if there is a change in the terminal EPS network registration status, it is issued the unsolicited result code: **+CEREG: <stat>** where: **<stat>** - registration status 0 - not registered, terminal is not currently searching a new operator to register to 1 - registered, home network 2 - not registered, but terminal is currently searching a new operator to register to 3 - registration denied

+CEREG - EPS Network Registration Status	
	4 - unknown 5 - registered, roaming 2 - enable network registration and location information unsolicited result code; if there is a change of the network cell, it is issued the unsolicited result code: **+CEREG: <stat>[,<tac>,<ci>[,<AcT>]]** where: **<stat>** - registration status (see above for values) **<tac>** - two byte tracking area code in hexadecimal format (e.g. "00C3" equals 195 in decimal) **<ci>** - four byte E-UTRAN cell ID in hexadecimal format. **<AcT>**: access technology of the registered network: 0 GSM (not applicable) 2 UTRAN (not applicable) 7 E-UTRAN Note: **<tac>, <Ci>** and **<AcT>** are reported only if **<mode>=2** and the mobile is registered on some network cell.
AT+CEREG?	Read command returns the status of result code presentation mode **<n>** and the integer **<stat>** which shows whether the network has currently indicated the registration of the terminal in the format: **+CEREG: <n>,<stat>[,<tac>,<ci>[,<AcT>]]** Note: **<tac>, <Ci>** and **<AcT>** are reported only if **<mode>=2** and the mobile is registered on some network cell.
AT+CEREG=?	Test command returns supported values for parameter **<n>**
Reference	3GPP TS 27.007

5.1.4.6.4. Define PDP Context – +CGDCONT

+CGDCONT - Define PDP Context	
AT+CGDCONT= **[<cid>** **[,<PDP_type>** **[,<APN>** **[,<PDP_addr>** **[,<d_comp>** **[,<h_comp>** **[,<pd1>** **[,…[,pdN]]]]]]]]**	Set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, **<cid>** Parameters: **<cid>** - (PDP Context Identifier) numeric parameter which specifies a particular PDP context definition. 1..*max* - where the value of *max* is returned by the Test command **<PDP_type>** - (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol "IP" - Internet Protocol "PPP" - Point to Point Protocol **<APN>** - (Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested. **<PDP_addr>** - a string parameter that identifies the terminal in the address space

+CGDCONT - Define PDP Context	
	applicable to the PDP. The allocated address may be read using the **+CGPADDR** command. **<d_comp>** - numeric parameter that controls PDP data compression 0 - off (default if value is omitted) 1 – on 2 - V.42bis **<h_comp>** - numeric parameter that controls PDP header compression 0 - off (default if value is omitted) 1 – on 2 - RFC1144 (applicable for SNDCP only) 3- RFC2507 4- RFC3095 (applicable for PDCP only) **<pd1>**, …, **<pdN>** - zero to N string parameters whose meanings are specific to the **<PDP_type>** Note: a special form of the Set command, **+CGDCONT=<cid>**, causes the values for context number **<cid>** to become undefined.
AT+CGDCONT?	Read command returns the current settings for each defined context in the format: **+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>, <h_comp>[,<pd1>[,…[,pdN]]][<CR><LF>+CGDCONT: <cid>, <PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp> [,<pd1>[,…[,pdN]]][…]]**
AT+CGDCONT=?	Test command returns values supported as a compound value
Example	AT+CGDCONT=1,”IP”,*”APN”*,”10.10.10.10”,0,0 OK AT+CGDCONT? +CGDCONT: 1,”IP”,“*APN”*,”10.10.10.10”,0,0 OK AT+CGDCONT=? +CGDCONT: (1-16),"IP",,,(0-2),(0-4) +CGDCONT: (1-16),"PPP",,,(0-2),(0-4) OK
Reference	3GPP TS 27.007

5.1.4.6.5. Define Secondary PDP Context - +CGDSCONT

+CGDSCONT - Define Secondary PDP Context	
AT+CGDSCONT= [<cid> ,<p_cid> [,<d_comp> [,<h_comp>]]]	Possible response(s): OK ERROR Description: The set command specifies the PDP context parameter values for a Secondary PDP context identified by the (local) context Identification parameter, <cid>. The number of PDP contexts that may be in a defined state at the same time is

+CGDSCONT - Define Secondary PDP Context	
	given by the range returned by the test command. In EPS the command is used to define traffic flows. A special form of the set command, +CGDSCONT= <cid> causes the values for context number <cid> to become undefined. The read command returns the current settings for each defined context. **Defined values:** **<cid>**: a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value = 1) is returned by the test form of the command. **<p_cid>**: a numeric parameter which specifies a particular PDP context definition which has been specified by use of the +CGDCONT command. The parameter is local to the TE-MT interface. The list of permitted values is returned by the test form of the command. **<d_comp>**: a numeric parameter that controls PDP data compression (applicable for SNDCP only) (refer 3GPP TS 44.065 [61]) 0 - off (default if value is omitted) 1 - on (manufacturer preferred compression) 2 - V.42bis 3 - V.44 Other values are reserved. **<h_comp>**: a numeric parameter that controls PDP header compression (refer 3GPP TS 44.065 [61] and 3GPP TS 25.323 [62]) 0 - off (default if value is omitted) 1 - on (manufacturer preferred compression) 2 - RFC1144 (applicable for SNDCP only) 3 - RFC2507 4 - RFC3095 (applicable for PDCP only) Other values are reserved.
AT+CGDSCONT?	**AT+CGDSCONT**: <cid>, <p_cid>, <d_comp>,<h_comp>[<CR><LF>+CGDSCONT: <cid>, <p_cid>,<d_comp>, <h_comp> [...]]
AT+CGDSCONT =?	**AT+CGDSCONT**: (range of supported <cid>s), (list of <cid>s for active primary contexts), (list of supported <d_comp>s), (list of supported <h_comp>s)
Reference	3GPP TS 27.007;

5.1.4.6.6. Traffic Flow Template - +CGTFT

+CGTFT – Traffic Flow Template	
AT+CGTFT= **[<cid>,** **<packet filter**	Possible Response(s): OK ERROR

+CGTFT – Traffic Flow Template	
identifier>, <evaluation precedence index>[,<source address and subnet mask> [,<protocol number (ipv4) / next header (ipv6)> [,<destination port range> [,<source port range> [,<ipsec security parameter index (spi)> [,<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask> [,<flow label (ipv6)> [,<direction>]]]]]]]]]	This command allows the TE to specify a Packet Filter (PF) for a Traffic Flow Template (TFT) that is used in the GGSN in UMTS/GPRS and Packet GW in EPS for routing of packets onto different QoS flows towards the TE. The concept further described in the 3GPP TS 23.060 [47]. A TFT consists of one to 16 Packet Filters, each identified by a unique <packet filter identifier>. A Packet Filter also has an <evaluation precedence index> that is unique within all TFTs associated with all PDP contexts that are associated with the same PDP address. The set command specifies a Packet Filter that is added to the TFT stored in the MT and used for the context identified by the (local) context identification parameter, <cid>. The specified TFT will be stored in the GGSN in UMTS/GPRS and Packet GW in EPS only at activation or MS-initiated modification of the related context. Since this is the same parameter that is used in the +CGDCONT and +CGDSCONT commands, the +CGTFT command is effectively an extension to these commands. The Packet Filters consist of a number of parameters, each of which may be set to a separate value. A special form of the set command, +CGTFT= <cid> causes all of the Packet Filters in the TFT for context number <cid> to become undefined. At any time there may exist only one PDP context with no associated TFT amongst all PDP contexts associated to one PDP address. At an attempt to delete a TFT, which would violate this rule, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command. **Defined values** **<cid>**: a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands). The following parameters are defined in 3GPP TS 23.060 [47]: **<packet filter identifier>**: a numeric parameter, value range from 1 to 16. **<evaluation precedence index>**: a numeric parameter. The value range is from 0 to 255. **<source address and subnet mask>**: string type. The string is given as dot-separated numeric (0-255)parameters on the form: "a1.a2.a3.a4.m1.m2.m3.m4", for IPv4 or "a1.a2.a3.a4.a5.a6.a7.a8.a9.a10.a11.a12.a13.a14.a15.a16.m1.m2.m3.m4.m5.m6.m7.m8.m9.m10.m11.m12.m13.m14.m15.m16", for IPv6. **<protocol number (ipv4) / next header (ipv6)>**: a numeric parameter, value range from 0 to 255.

+CGTFT – Traffic Flow Template	
	<destination port range>: string type. The string is given as dot-separated numeric (0-65535) parameters in the form "f.t". **<source port range>**:string type. The string is given as dot-separated numeric (0-65535) parameters in the form "f.t". **<ipsec security parameter index (spi)>**: numeric value in hexadecimal format. The value range is from 00000000 to FFFFFFFF. **<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>**: string type. The string is given as dot-separated numeric (0-255) parameters in the form "t.m". **<flow label (ipv6)>**: numeric value in hexadecimal format. The value range is from 00000 to FFFFF. Valid for IPv6 only. **<direction>**: a numeric parameter which specifies the transmission direction in which the packet filter shall be applied. 0 - Pre-Release 7 TFT filter (see 3GPP TS 24.008 [8], table 10.5.162) 1 - Uplink 2 - Downlink 3 - Birectional (Up & Downlink) (default if omitted) Some of the above listed attributes may coexist in a Packet Filter while others mutually exclude each other, the possible combinations are shown in 3GPP TS 23.060 [47].
AT+CGTFT?	The read command returns the current settings for all Packet Filters for each defined context. **AT+CGTFT**: <cid>, <packet filter identifier>, <evaluation precedence index>, <source address and subnet mask>, <protocol number (ipv4) / next header (ipv6)>, <destination port range>, <source port range>, <ipsec security parameter index (spi)>, <type of service (tos) (ipv4) and mask /traffic class (ipv6) and mask>, <flow label (ipv6)>, <direction> [<CR><LF>+CGTFT: <cid>, <packet filter identifier>, <evaluation precedence index>, <source address and subnet mask>, <protocol number (ipv4) / next header (ipv6)>, <destination port range>, <source port range>, <ipsec security parameter index (spi)>, <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>, <flow label (ipv6)>,<direction>[…]]
AT+CGTFT =?	The test command returns values supported as a compound value. If the MT supports several PDP types, the parameter value ranges for each PDP type returned on a separate line. TFTs shall be used for PDP-type IP and PPP only. For PDP-type PPP a TFT is applicable only when IP traffic is carried over PPP. If PPP carries header-compressed IP packets, then a TFT cannot be used.

+CGTFT – Traffic Flow Template	
	AT+CGTFT: <PDP_type>, (list of supported <packet filter identifier>s), (list of supported <evaluation precedence index>s), (list of supported <source address and subnet mask>s), (list of supported <protocol number (ipv4) / next header (ipv6)>s), (list of supported <destination port range>s), (list of supported <source port range>s), (list of supported <ipsec security parameter index (spi)>s), (list of supported <type of service (tos) (ipv4) and mask / traffic class(ipv6) and mask>s), (list of supported <flow label (ipv6)>s), (list of supported <direction>s) [<CR><LF> **AT+CGTFT**: <PDP_type>, (list of supported <packet filter identifier>s), (list of supported <evaluation precedence index>s), (list of supported <source address and subnet mask>s),(list of supported <protocol number (ipv4) / next header (ipv6)>s), (list of supported <destination port range>s), (list of supported <source port range>s), (list of supported <ipsec security parameter index (spi)>s),(list of supported <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>s), (list of supported <flow label (ipv6)>s), (list of supported <direction>s)[…]]
Reference	3GPP TS 23.060

5.1.4.6.7. Define EPS Quality of Service - +CGEQOS

+CGEQOS – Define EPS Quality of Service	
AT+CGEQOS= [<cid> [,<QCI> [,<DL_GBR>, <UL_GBR> [,<DL_MBR>,<UL_ MBR]]]]	**Possible Response(s):** +CME ERROR: <err> The set command allows the TE to specify the EPS Quality of Service parameters <cid>, <QCI>, [<DL_GBR> and <UL_GBR>] and [<DL_MBR> and <UL_MBR>] for a PDP context or Traffic Flows. When in UMTS/GPRS the MT applies a mapping function to UTMS/GPRS Quality of Service. Refer subclause 9.2 for <err> values. A special form of the set command, +CGEQOS= <cid> causes the values for context number <cid> to become undefined. **<cid>** a numeric parameter which specifies a particular EPS Traffic Flows definition in EPS and a PDP Context definition in UMTS/GPRS. **<QCI>** a numeric parameter specifies a class of EPS QoS. (see 3GPP TS 23.203 [85]) 0 - QCI is selected by network [1 4] - value range for guranteed bit rate Traffic Flows [5 9] - value range for non-guarenteed bit rate Traffic Flows **<DL_GBR>** a numeric parameter that indicates DL GBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83]) **<UL_GBR>** a numeric parameter that indicates UL GBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI. (see 3GPP TS

+CGEQOS – Define EPS Quality of Service	
	24.301 [83]) **<DL_MBR>** a numeric parameter, indicates DL MBR in case of GBR QCI. The value is in kbit/s. This parameter omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83]) **<UL_MBR>** a numeric parameter, indicates UL MBR in case of GBR QCI. The value is in kbit/s. This parameter omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83])
AT+CGEQOS?	The read command returns the current settings for each defined QoS. **+CGEQOS**:<cid>,<QCI>,[<DL_GBR>,<UL_GBR>],[<DL_MBR>,<UL_MBR>][<CR>>LF>+CGEQOS: <cid>, <QCI>,[<DL_GBR>,<UL_GBR>],[<DL_MBR>,<UL_MBR>][…]]
AT+CGEQOS =?	The test command returns the ranges of the supported parameters. **+CGEQOS**: (range of supported <cid>s) ,(list of supported <QCI>s) ,(list of supported <DL_GBR>s), (list of supported <UL_GBR>s), (list of supported <DL_MBR>s) ,(list of supported <UL_MBR>s)
Reference	3GPP TS 27.007; 3GPP TS 03.60/23.060

5.1.4.6.8. PDP Context Read Dynamic Parameters - +CGCONTRDP

+CGCONTRDP – PDP Context Read Dynamic Parameters	
AT+CGCONTRDP=[<p_cid>]	Possible response(s): **+CGCONTRDP**: <p_cid>,<bearer_id>,<apn>[,<ip_addr>,<subnet_mask>[,<gw_addr>[,<DNS_prim_addr>[,<DNS_sec_addr>[,<P-CSCF_prim_addr>[,<P-CSCF_sec_addr>]]]]]][<CR><LF>**+CGCONTRDP**: <p_cid>,<bearer_id>,<apn>[,<ip_addr>,<subnet_mask>[,<gw_addr>[,<DNS_prim_addr>[,<DNS_sec_addr>[,<PCSCF_prim_addr>[,<PCSCF_sec_addr>]]]]]][…]] **Description:** The execution command returns the relevant information: <bearer_id>, <apn>, <ip_addr>, <subnet_mask>,<gw_addr>, <DNS_prim_addr>, <DNS_sec_addr>, <P-CSCF_prim_addr> and <P-CSCF_sec_addr> for a non-secondary PDP Context established by the network with the primary context identifier <p_cid>. If the context cant be found an ERROR response is returned. If the parameter <p_cid> omitted, the relevant information for all established PDP contexts returned. NOTE: The dynamic part of the PDP context will only exist if established by the network. The test command returns a list of <p_cid>s associated with active contexts. **Defined values:**

+CGCONTRDP – PDP Context Read Dynamic Parameters	
	<p_cid> - a numeric parameter specifies a particular non secondary PDP context definition. The parameter is local to the TE-MT interface and used in other PDP context-related commands. **<bearer_id>** - a numeric parameter identifies the bearer, EPS Bearer in EPS and NSAPI in UMTS/GPRS. **<APN>** - a string parameter which is a logical name that was used to select the GGSN or the external packet data network. **<ip_addr>** - a string parameter shows the IP Address of the MT. The string is given as dot-separated numeric (0-255) parameters in the form: "a1.a2.a3.a4" for IPv4 or "a1.a2.a3.a4.a5.a6.a7.a8" for IPv6. If the MT has dual stack capabilities the string shows first the dot separated IPv4 Address followed by the dot separated IPv6 Global Prefix Address. The IPv4 address and the IPv6 address parameters are separated by one space: "a1.a2.a3.a4 a1:a2:a3:a4:a5:a6:a7:a8" **<subnet_mask>** - a string parameter shows the subnet mask for the IP Address of the MT. The string is given as dot-separated numeric (0-255) parameters. If the MT has dual stack capabilities the string shows the dot separated IPV4 subnet mask followed by the dot separated IPV6 subnet mask. The subnet masks are separates by space. **<gw_addr>** - a string parameter shows the Gateway Address of the MT. The string is given as dot-separated numeric (0-255) parameters. If the MT has dual stack capabilities the parameter shows first the dot separated IPV4 Gateway address followed by the dot separated IPV6 Gateway Address. The gateway addresses are separated by one space. **<DNS_prim_addr>** - a string parameter which shows the IP Address of the primary DNS Server. If the MT has dual stack capabilities the parameter shows first the dot separated IPV4 Address, followed by the dot separated IPV6 Address of DNS Server. **<DNS_sec_addr>** - a string parameter which shows the IP address of the secondary DNS Server. If the MT has dual stack capabilities the parameter shows first the dot separated IPV4 Address, followed by the dot separated IPV6 Address of DNS Server. **<P_CSCF_prim_addr>** - a string parameter which shows the IP Address of the primary P-CSCF Server. If the MT has dual stack capabilities the parameter shows first the dot separated IPV4 Address, followed by the dot separated IPV6 primary Address of P-CSCF Server. **<P_CSCF_sec_addr>** - a string parameter which shows the IP Address of the secondary P-CSCF Server. If the MT has dual stack capabilities the parameter shows first the dot separated IPV4 Address, followed by the dot separated IPV6 Address of P-CSCF Server.
AT+CGCONTRDP=?	**+CGCONTRDP**: (list of <p_cid>s associated with active contexts)
Reference	3GPP TS 27.007; 3GPP TS 03.60/23.060

5.1.4.6.9. Secondary PDP Context Read Dynamic Parameters – +CGSCONTRDP

+CGSCONTRDP – Secondary PDP Context Read Dynamic Parameters	
AT+CGSCONTRDP	Possible response(s):

+CGSCONTRDP – Secondary PDP Context Read Dynamic Parameters	
= **[<cid>]**	**+CGSCONTRDP**:<cid>,<p_cid>,<bearer_id>[<CR><LF> **+CGSCONTRDP**: <cid>, <p_cid>,<bearer_id>[…]] The execution command returns <p_cid> and <bearer_id> for a given <cid>. If the context cannot be found an ERROR response returned.If the parameter <cid> is omitted, the <cid>, <p_cid> and <bearer_id> are returned for all established PDP contexts. In EPS, the Traffic Flow parameters are returned. NOTE: Parameters for network initiated PDP contexts are returned as well. The dynamic part of the PDP context will only exist if established by the network. **Defined values:** **<cid>** a numeric parameter which specifies a particular PDP context or Traffic Flows definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. **<p_cid>** a numeric parameter which specifies a particular PDP context definition or default EPS context Identifier which has been specified by use of the +CGDCONT command. The parameter is local to the TE-MT interface. **<bearer_id>** a numeric parameter which identifies the bearer, EPS Bearer in EPS and NSAPI in UMTS/GPRS.
AT+CGSCONTRDP =?	**+CGSCONTRDP**: (list of <cid>s associated with active contexts) The test command returns a list of <cid>s associated with active contexts.
Reference	3GPP TS 27.007; 3GPP TS 03.60/23.060

5.1.4.6.10. Traffic Flow Template Read Dynamic Parameters – +CGTFTRDP

+CGTFTRDP- Traffic Flow Template Read Dynamic Parameters	
AT+CGTFTRDP= [<cid>]	Possible Response(s): **+CGTFTRDP**: <cid>, <packet filter identifier>, <evaluation precedence index>, <source address and subnet mask>, <protocol number (ipv4) / next header(ipv6)>,<destination port range>, <source port range>, <ipsec security parameter index (spi)>, <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>, <flow label ipv6)>, <direction>, <NW packet filter Identifier>[<CR><LF> **+CGTFTRDP**: <cid>, <packet filter identifier>, <evaluation precedence index>, <source address and subnet mask>, <protocol number (ipv4) / next header (ipv6)>, <destination port range>, <source port range>, <ipsec security parameter index (spi)>, <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>, <flow label (ipv6)>, <direction>,<NW packet filter Identifier>[…]] The execution command returns the relevant information about Traffic Flow Template of <cid> together with the additional network assigned values when established by the network. If the context cant be found, an ERROR response is returned. If the parameter <cid> omitted, the Traffic Flow Templates for all established PDP contexts returned. Parameters of both network and MT/TA initiated PDP contexts returned.

+CGTFTRDP- Traffic Flow Template Read Dynamic Parameters	
	<cid>: a numeric parameter which specifies a particular PDP context definition or Traffic Flows definition (see +CGDCONT and +CGDSCONT commands). The following parameters are defined in 3GPP TS 23.060 [47]. **<packet filter identifier>**: a numeric parameter. The value range is from 1 to 16. **<evaluation precedence index>**: a numeric parameter. The value range is from 0 to 255. **<source address and subnet mask>**: string type. The string is given as dot-separated numeric (0-255) parameters on the form: "a1.a2.a3.a4.m1.m2.m3.m4" for IPv4 or "a1.a2.a3.a4.a5.a6.a7.a8.a9.a10.a11.a12.a13.a14.a15.a16.m1.m2.m3.m4.m5.m6.m7.m8.m9.m10.m11.m12.m13.m14.m15.m16" for IPv6. **<protocol number (ipv4) / next header (ipv6)>**: a numeric parameter, value range from 0 to 255. **<destination port range>**: string type. The string is given as dot-separated numeric (0-65535) parameters in the form "f.t". **<source port range>**:string type. The string is given as dot-separated numeric (0-65535) parameters on the form "f.t". **<ipsec security parameter index (spi)>**: numeric value in hexadecimal format. The value range is from 00000000 to FFFFFFFF. **<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>**: string type. The string is given as dot-separated numeric (0-255) parameters in the form "t.m". **<flow label (ipv6)>**: numeric value in hexadecimal format. The value range is from 00000 to FFFFF. Valid for IPv6 only. **<direction>** a numeric parameter which specifies the transmission direction in which the Packet Filter shall be applied. 0 Pre Release 7 TFT Filter (see 3GPP TS 24.008 [8], table 10.5.162) 1 - Uplink 2 - Downlink 3 - Bidirectional (Used for Uplink and Downlink) **<NW packet filter Identifier>** a numeric parameter. The value range is from 1 to 16. In EPS the value is assigned by the network when established NOTE: Some of the above listed attributes can coexist in a Packet Filter while others mutually exclude each other. The possible combinations listed on 3GPP TS 23.060 [47].
AT+CGTFTRDP=?	**+CGTFTRDP**: (list of <cid>s associated with active contexts) The test command returns a list of <cid>s associated with active contexts.
Reference	3GPP TS 27.007; 3GPP TS 03.60/23.060

5.1.4.6.11. EPS Quality of Service Read Dynamic Parametes – +CGEQOSRDP

+CGEQOSRDP – EPS Quality of Service Read Dynamic Parameters	
AT+CGEQOSRDP=[<cid>]	Possible Response(s): **+CGEQOSRDP**:<cid>,<QCI>,[<DL_GBR>,<UL_GBR>],[<DL_MBR>,<UL_MBR>][<CR>>LF>

+CGEQOSRDP – EPS Quality of Service Read Dynamic Parameters	
	+CGEQOSRDP:<cid>,<QCI>,[<DL_GBR>,<UL_GBR>],[<DL_MBR>,<UL_MBR>][…]] **Description:** The execution command returns the Quality of Service parameters <QCI>, [<DL_GBR> and <UL_GBR>] and [<DL_MBR> and <UL_MBR>] of the established PDP Context associated to the provided context identifier <cid>. If the context cannot be founded an ERROR response is returned. If the parameter <cid> is omitted, the Quality of Service parameters for all established PDP contexts are returned. **Defined values:** **<cid>** a numeric parameter which specifies a particular Traffic Flows definition in EPS and a PDP Context definition in UMTS/GPRS. **<QCI>** a numeric parameter that specifies a class of EPS QoS. (see 3GPP TS 23.203 [85]) 0 - QCI is selected by network [1 4] - value range for guranteed bit rate Traffic Flows [5 9] - value range for non-guarenteed bit rate Traffic Flows. **<DL_GBR>**:a numeric parameter, which indicates DL GBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83]) **<UL_GBR>** a numeric parameter indicates UL GBR in case of GBR QCI. The value is in kbit/s. This parameter omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83]) **<DL_MBR>** a numeric parameter indicates DL MBR in case of GBR QCI. The value is in kbit/s. This parameter omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83]) **<UL_MBR>**: a numeric parameter indicates UL MBR in case of GBR QCI. The value is in kbit/s. This parameter omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83])
AT+CGEQOSRDP=?	**+CGEQOSRDP**: (list of <cid>s associated with active contexts) The test command returns a list of <cid>s associated with active contexts. Parameters of both network and MT/TA initiated PDP contexts returned.
Reference	3GPP TS 27.007; 3GPP TS 03.60/23.060

5.1.4.6.12. Printing IP Address Format – +CGPIAF

+CGPIAF – Printing IP Address Format	
AT+CGPIAF=[<IPv6_AddressFormat>[,<IPv6_SubnetNotation>[,<IPv6_leadingZeros>	Set command decides what the format to print IPv6 address parameter. **Parameters:** **<IPv6_AddressFormat>** - decides the IPv6 address format. Relevant for all AT command parameters, that can hold an IPv6 address. 0 - Use IPv4-like dot-notation. IP addresses, and subnetwork mask if applicable, are dot-separated.

+CGPIAF – Printing IP Address Format	
[,<IPv6_compressZeros>]]]]	1 - Use IPv6-like colon-notation. IP address, and subnetwork mask if applicable and when given explicitly, are separated by a space. **<IPv6_SubnetNotation>** - decides the subnet-notation for <remote address and subnet mask> Setting does not apply if IPv6 address format **<IPv6_AddressFormat> = 0.** 0 - Both IP address and subnet mask are stated explicitly, separated by a space. 1 - The printout format applies /(forward slash) subnet-prefix Classless Inter-Domain Routing (CIDR) notation. **<IPv6_LeadingZeros>** - decides whether leading zeros are omitted or not. Setting does not apply for IPv6 address format **<IPv6_AddressFormat> = 0**. 0 - Leading zeros are omitted. 1 - Leading zeros are included. **<IPv6_CompressZeros>** - decides whether 1-n instances of 16-bit- zero-values are replaced by only "::". This applies only once. Setting does not apply for IPv6 address format <IPv6_AddressFormat> = 0. 0 - No zero compression. 1 - Use zero compression.
AT+CGPIAF?	Read command returns the current parameter setting.
AT+CGPIAF=?	Test command returns values supported as compound parameter setting.
Example	AT+CGPIAF=0,0,0,0 OK AT#SGACT=1,1 #SGACT: 252.1.171.171.205.205.239.224.0.0.0.0.0.0.0.1 OK at+CGPIAF=1,0,0,0 OK AT#SGACT=1,1 #SGACT: FC01:ABAB:CDCD:EFE0:0:0:0:1 OK
Reference	3GPP TS 27.007

5.1.4.6.13. PDP Context Activate Or Deactivate – +CGACT

+CGACT - PDP Context Activate Or Deactivate	
AT+CGACT=[<state>[,<cid>[,<cid>[,…]]]]	Execution command is used to activate the specified PDP context, followed by binding RM interface to the PS network. Also, it is used to deactivate the PDP context and unbind RM interface from PS network. Parameters: **<state>** - indicates the state of PDP context activation 0 - deactivated 1 - activated **<cid>** - a numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command)

+CGACT - PDP Context Activate Or Deactivate	
	Note: if no **<cid>**s are specified, the activation/deactivation form of the command activates/deactivates all defined contexts. Default PDP context(cid 1) is automatically activated by piggybacking on LTE attach procedure for Always-on IP connectivity. If an attempt is made to disconnect last PDP conection(cid), MT is just unbinding RM interface to the the last PDP context.
AT+CGACT?	Read command returns the current activation state for all the defined PDP contexts in the format: **+CGACT: <cid>,<state>[<CR><LF>+CGACT: <cid>,<state>[…]]**
AT+CGACT=?	Test command reports information on the supported PDP context activation states parameters in the format: **+CGACT: (0,1)**
Example	AT+CGACT=1,1 OK AT+CGACT? +CGACT: 1,1 OK
Reference	3GPP TS 27.007

5.1.4.6.14. Show PDP Address - +CGPADDR

+CGPADDR - Show PDP Address	
AT+CGPADDR=[<cid>[,<cid>[,…]]]	Execution command returns a list of PDP addresses for the specified context identifiers in the format: **+CGPADDR: <cid>,<PDP_addr>[<CR><LF>+CGPADDR: <cid>, <PDP_addr>[…]]** Parameters: **<cid>** - a numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command). If no **<cid>** is specified, the addresses for all defined contexts are returned. **<PDP_addr>** - a string that identifies the terminal in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the **+CGDCONT** command when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to by **<cid>**; **<PDP_addr>** is omitted if none is available
AT+CGPADDR=?	Test command returns a list of defined **<cid>**s.
Example	AT#SGACT=1,1 +IP: xxx.yyy.zzz.www OK

+CGPADDR - Show PDP Address	
	AT+CGPADDR=1 +CGPADDR: 1,"xxx.yyy.zzz.www" OK AT+CGPADDR=? +CGPADDR: (1) OK
Reference	3GPP TS 27.007

5.1.4.6.15. Modify PDP context - +CGCMOD

+CGCMOD – 3G Quality Of Service Profile (Negotiated)	
AT+CGCMOD=[<cid1>[,<cid2>[,…,<cidN>]]]	The execution command is used to modify the specified PDP context(s) with respect to QoS profiles. If no <**cid*i***> is specified the command modifies all active contexts. Parameters: <**cid*i***>: a numeric parameter which specifies a particular PDP context
AT+ CGCMOD =?	Test command returns a list of <cid>s associated with active contexts.

5.1.4.7. Commands For Battery Charger

5.1.4.7.1. 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.

+ CBC - Battery Charge	
	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

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

5.1.5.1. General Configuration

5.1.5.1.1. Select Message Service – +CSMS

+CSMS - Select Message Service	
AT+CSMS= <service>	Set command selects messaging service **<service>**. It returns the types of messages supported by the **ME**: Parameter: **<service>** 0 - The syntax of SMS AT commands is compatible with 3GPP TS 27.005 Phase 2 version 4.7.0 (factory default) 1 - The syntax of SMS AT commands is compatible with 3GPP TS 27.005 Phase 2+ version. 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

+CSMS - Select Message Service	
	0 - type not supported 1 - type supported
AT+CSMS?	Read command reports current service setting along with supported message types in the format: **+CSMS: <service>,<mt>,<mo>,<bm>** where: **<service>** - messaging service (see above) **<mt>** - mobile terminated messages support (see above) **<mo>** - mobile originated messages support (see above) **<bm>** - broadcast type messages support (see above)
AT+CSMS=?	Test command reports the supported value of the parameter **<service>**.
Example	AT+CSMS=1 +CSMS: 1,1,1 OK AT+CSMS? +CSMS: 1,1,1,1 OK
Reference	3GPP TS 27.005; 3GPP TS 03.40/23.040; 3GPP TS 03.41/23.041

5.1.5.1.2. Preferred Message Storage – +CPMS

+CPMS - Preferred Message Storage	
AT+CPMS= <memr>[,<memw> [,<mems>]]	Set command selects memory storages **<memr>**, **<memw>** and **<mems>** to be used for reading, writing, sending and storing SMs. Parameters: **<memr>** - memory from which messages are read and deleted "ME" – SMS memory storage in Flash "SM" – SIM SMS memory storage (default) "SR" – Status Report message storage (in SIM EF-SMSR file exists, otherwise in the RAM volatile memory) Note: "SR" non volatile memory is cleared when another SIM card is inserted. It is kept, even after a reset, while the same SIM card is inserted. **<memw>** - memory to which writing and sending operations are made "SM" – SIM SMS memory storage (default) "ME" – SMS memory storage in Flash **<mems>** - memory to which received SMs are preferred to be stored "SM" – SIM SMS memory storage (default) "ME" – SMS memory storage in Flash The command returns the memory storage status in the format:

+CPMS - Preferred Message Storage	
	+CPMS: <usedr>,<totalr>,<usedw>,<totalw>,<useds>,<totals> where: **<usedr>** - number of SMs stored into **<memr>** **<totalr>** - max number of SMs that **<memr>** can contain **<usedw>** - number of SMs stored into **<memw>** **<totalw>** max number of SMs that **<memw>** can contain **<useds>** - number of SMs stored into **<mems>** **<totals>** - max number of SMS that **<mems>** can contain
AT+CPMS?	Read command reports the message storage status in the format: **+CPMS: <memr>,<usedr>,<totalr>,<memw>,<usedw>,<totalw>,** **<mems>,<useds>,<totals>** where **<memr>**, **<memw>** and **<mems>** are the selected storage memories for reading, writing and storing respectively.
AT+CPMS=?	Test command reports the supported values for parameters **<memr>**, **<memw>** and **<mems>**
Example	AT+CPMS? +CPMS: "ME",27, 50,"ME",27, 50,"SR",1,20 OK AT+CPMS="SM","ME","SM" +CPMS: 1,20,27, 50,1,20 OK AT+CPMS? +CPMS: "SM",1,20,"ME",27, 50,"SM",1,20 OK *(You have 1 out of 255 SMS SIM positions occupied)*
Reference	3GPP TS 27.005

5.1.5.1.3. 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, as defined in 3GPP TS 3.40/23.040 and 3GPP TS 3.41/23.041 (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.

+CMGF - Message Format	
Example	AT+CMGF=1 OK
Reference	3GPP TS 27.005

5.1.5.2. Message Configuration

5.1.5.2.1. Service Center Address - +CSCA

+CSCA -Service Center Address	
AT+CSCA= <number> [,<type>]	Set command sets the Service Center Address to be used for mobile originated SMS transmissions. Parameter: **<number>** - SC phone number in the format defined by **<type>** **<type>** - the type of number 129 - national numbering scheme 145 - international numbering scheme (contains the character "+") Note: to use the SM service, is mandatory to set a Service Center Address at which service requests will be directed. Note: in Text mode, this setting is used by send and write commands; in PDU mode, setting is used by the same commands, but only when the length of the SMSC address coded into the **<pdu>** parameter equals zero. Note: the current settings are stored through **+CSAS**
AT+CSCA?	Read command reports the current value of the SCA in the format: **+CSCA: <number>,<type>** Note: if SCA is not present the device reports an error message.
AT+CSCA=?	Test command returns the **OK** result code.
Example	AT+CSCA="821029190903",145 OK AT+CSCA? +CSCA: "+821029190903",145 OK
Reference	3GPP TS 27.005

5.1.5.2.2. Set Text Mode Parameters - +CSMP

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

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

+CSMP - Set Text Mode Parameters	
	bit[6]: Single Shot SM; [0] - the SC is not required to make up to one delivery attempt [1] - the SC is required to make up to one delivery attempt **bit[5]bit[4]bit[3]**: reserved [000] **bit[2]bit[1]bit[0]**: Validity Period Format [000] - No Validity Period specified [001] - Validity Period specified as for the relative format. The following octet contains the VP value as described before; all the other octets are 0's. [010] - Validity Period is relative in integer representation. The following octet contains the VP value in the range 0 to 255, representing 0 to 255 seconds; all the other octets are 0's. [011] - Validity Period is relative in semi-octet representation. The following 3 octets contain the relative time in Hours, Minutes and Seconds, giving the length of the validity period counted from when the SMS-SUBMIT is received by the SC; all the other octets are 0's. **<pid>** - 3GPP TS 23.040 TP-Protocol-Identifier in integer format (default 0). **<dcs>** - depending on the command or result code: 3GPP TS 23.038 SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme Note: the current settings are stored through **+CSAS** Note: we're storing through **+CSAS** the **<vp>** value too, but only as integer type, i.e. only in its *relative format* Note: **<vp>**, **<pid>** and **<dcs>** default values are loaded from first SIM *SMS Parameters* profile, if present. If it is not present, then the default values are those above indicated.
AT+CSMP?	Read command reports the current setting in the format: **+CSMP: < fo>,<vp>,<pid>,<dcs>** Note: if the Validity Period Format (**<fo>**'s **bit[4]bit[3]**) is [00] (i.e. *Not Present*), **<vp>** is represented just as a quoted empty string (**""**).
AT+CSMP=?	Test command returns the **OK** result code.
Example	*Set the parameters for an outgoing message with 24 hours of validity period and default properties:* AT+CSMP=17,167,0,0 OK *Set the parameters for an outgoing message with validity period in enhanced format: the **<vp>** string actually codes 24 hours of validity period.* AT+CSMP=9,"01A80000000000" OK

+CSMP - Set Text Mode Parameters	
	*Set the parameters for an outgoing message with validity period in enhanced format: the <**vp**> string actually codes 60 seconds of validity period.* AT+CSMP=9,“023C0000000000“ OK *Set the parameters for an outgoing message with validity period in enhanced format: the <**vp**> string actually codes 29 hours 85 minutes 30 seconds of validity period.* AT+CSMP=9,“03925803000000“ OK
Reference	3GPP TS 27.005; 3GPP TS 03.40/23.040; 3GPP TS 03.38/23.038

5.1.5.2.3. Show Text Mode Parameters – +CSDH

+CSDH - Show Text Mode Parameters	
AT+CSDH= **[<show>]**	Set command controls whether detailed header information is shown in text mode (**AT+CMGF=1**) result codes. Parameter: **<show>** 0 - do not show header values defined in commands **+CSCA** and **+CSMP** (**<sca>**, **<tosca>**, **<fo>**, **<vp>**, **<pid>** and **<dcs>**) nor **<length>**, **<toda>** or **<tooa>** in **+CMT**, **+CMGL**, **+CMGR** result codes for SMS-DELIVERs and SMS-SUBMITs in text mode. For SMS-COMMANDs in **+CMGR** result code do not show **<pid>**, **<mn>**, **<da>**, **<toda>**, **<length>** or **<cdata>** 1 - show the values in result codes
AT+CSDH?	Read command reports the current setting in the format: **+CSDH: <show>**
AT+CSDH=?	Test command reports the supported range of values for parameter **<show>**
Reference	3GPP TS 27.005

5.1.5.2.4. Select Cell Broadcast Message Types – +CSCB

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

+CSCB -Select Cell Broadcast Message Types	
	<dcss> - Data Coding Schemes, string type: all different possible combinations of CBM data coding schemes; default is empty string (“”). Note: the current settings are stored through **+CSAS**
AT+CSCB?	Read command reports the current value of parameters **<mode>**, **<mids>** and **<dcss>**.
AT+CSCB=?	Test command returns the range of values for parameter **<mode>**.
Example	AT+CSCB? +CSCB: 1,"",""" OK *(all CBMs are accepted, none is rejected)* AT+CSCB=0,"0,1,300-315,450","0-3" OK
Reference	3GPP TS 27.005, 3GPP TS 03.41/23.041, 3GPP TS 03.38/23.038.

5.1.5.2.5. Save Settings – +CSAS

+CSAS - Save Settings	
AT+CSAS [=<profile>]	Execution command saves settings which have been made by the **+CSCA**, **+CSMP** and **+CSCB** commands in local non volatile memory. Parameter: **<profile>** 0 - it saves the settings to NVM (factory default). 1..n - SIM profile number; the value of n depends on the SIM and its max is 3. Note: certain settings may not be supported by the SIM and therefore they are always saved to NVM, regardless the value of **<profile>**. Note: If parameter is omitted the settings are saved in the non volatile memory.
AT+CSAS=?	Test command returns the possible range of values for the parameter **<profile>**.
Reference	3GPP TS 27.005

5.1.5.2.6. Restore Settings – +CRES

+CRES - Restore Settings	
AT+CRES [=<profile>]	Execution command restores message service settings saved by **+CSAS** command from either NVM or SIM. Parameter: **<profile>** 0 - it restores message service settings from NVM. 1..n - it restores message service settings from SIM. The value of n depends on the SIM and its max is 3. Note: certain settings may not be supported by the SIM and therefore they are always restored from NVM, regardless the value of **<profile>**.

+CRES - Restore Settings	
	Note: If parameter is omitted the command restores message service settings from NVM.
AT+CRES=?	Test command returns the possible range of values for the parameter **<profile>**.
Reference	3GPP TS 27.005

5.1.5.2.7. More Message to Send - +CMMS

+CMMS – More Message to Send	
AT+CMMS=[<n>]	Set command controls the continuity of SMS relay protocol link. Multiple messages can be sent much faster as link is kept open. Parameter: <n> 0 – Disable (factory default) 1 - Keep link opened while messages are sent. If the delay between two messages exceeds 3 seconds, the link is closed and the parameter <n> is automatically res et to 0: the feature is disabled. 2 - Keep link opened while messages are sent. If the delay between two messages exceeds 3 seconds, the link is closed but the parameter <n> remains set to 2: the feature is still enabled.
AT+CMMS?	Read command reports the current value of the parameter <n>.
AT+CMMS=?	Test command reports the supported value of <n> parameter.
Reference	3GPP TS 27.005

5.1.5.3. Message Receiving And Reading

5.1.5.3.1. New Message Indications To Terminal Equipment - +CNMI

+CNMI - New Message Indications To Terminal Equipment	
AT+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]]	Set command selects the behaviour of the device on how the receiving of new messages from the network is indicated to the **DTE**. Parameter: **<mode>** - unsolicited result codes buffering option 0 - Buffer unsolicited result codes in the **TA**. If **TA** result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications. 1 - Discard indication and reject new received message unsolicited result codes when **TA-TE** link is reserved, otherwise forward them directly to the **TE**. 2 - Buffer unsolicited result codes in the TA in case the **DTE** is busy and flush them to the TE after reservation. Otherwise forward them directly to the TE. 3 - Forward unsolicited result codes directly to the TE. The hardware Ring line Indicator for 1 second is enabled when a new message is received while the module is in EPS on-line data mode.

+CNMI - New Message Indications To Terminal Equipment	
	<mt> - result code indication reporting for SMS-DELIVER 0 - No SMS-DELIVER indications are routed to the TE and message is stored. 1 - If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using the following unsolicited result code: **+CMTI: <memr>,<index>** where: **<memr>** - memory storage where the new message is stored "SM" "ME" **<index>** - location on the memory where SMS is stored. 2 - SMS-DELIVERs (except class 2 messages and messages in the message waiting indication group) are routed directly to the TE using the following unsolicited result code: **(PDU Mode)** **+CMT: <alpha>,<length><CR><LF><pdu>** where: **<alpha>** - alphanumeric representation of originator/destination number corresponding to the entry found in MT phonebook; used character set should be the one selected with command +CSCS. **<length>** - PDU length **<pdu>** - PDU message **(TEXT Mode)** **+CMT:<oa>,<alpha>,<scts>*[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]*<CR><LF><data>** (the information written in italics will be present depending on **+CSDH** last setting) where: **<oa>** - originating address, string type converted in the currently selected character set (see +CSCS) **<alpha>** - alphanumeric representation of **<oa>**; used character set should be the one selected with command +CSCS. **<scts>** - arrival time of the message to the SC ***<tooa>***, ***<tosca>*** - type of number **<oa>** or ***<sca>***: 129 - number in national format 145 - number in international format (contains the "+") ***<fo>*** - first octet of 3GPP TS 03.40/23.040 ***<pid>*** - Protocol Identifier ***<dcs>*** - Data Coding Scheme **<sca>** - Service Centre address, string type, converted in the currently selected character set (see +CSCS) ***<length>*** - text length **<data>** - TP-User-Data • If **<dcs>** indicates that GSM03.38/23.038 default alphabet is used and **<fo>** indicates that GSM03.40/23.040 TP-User-Data-Header-Indication is not set (bit 6 of **<fo>** is 0), each character of GSM/WCDMA alphabet will be converted into current TE character set (see +CSCS)

+CNMI - New Message Indications To Terminal Equipment	

- If **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used or **<fo>** indicates that GSM03.40/23.040 TP-User-Data-Header-Indication is set (bit 6 of **<fo>** is 1), each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41)

Class 2 messages and messages in the message waiting indication group (stored message) result in indication as defined in **<mt>=1**.

3 - Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in **<mt>=2**. Messages of other data coding schemes result in indication as defined in **<mt>=1**.

<bm> - broadcast reporting option

0 - Cell Broadcast Messages are not sent to the **DTE**

2 - New Cell Broadcast Messages are sent to the **DTE** with the unsolicited result code:

(PDU Mode)

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

where:

<length> - PDU length

<PDU> - message PDU

(TEXT Mode)

+CBM:<sn>,<mid>,<dcs>,<pag>,<pags><CR><LF><data>

where:

<sn> - message serial number

<mid> - message ID

<dcs> - Data Coding Scheme

<pag> - page number

<pags> - total number of pages of the message

<data> - CBM Content of Message

- If **<dcs>** indicates that GSM03.38/23.038 default alphabet is used , each character of GSM/WCDMA alphabet will be converted into current TE character set (see +CSCS)
- If **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41)

<ds> - SMS-STATUS-REPORTs reporting option

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

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

(PDU Mode)

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

where:

<length> - PDU length

<PDU> - message PDU

+CNMI - New Message Indications To Terminal Equipment	
	(TEXT Mode) **+CDS: <fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st>** where: **<fo>** - first octet of the message PDU **<mr>** - message reference number **<ra>** - recipient address, string type, represented in the currently selected character set (see +CSCS) **<tora>** - type of number **<ra>** **<scts>** - arrival time of the message to the SC **<dt>** - sending time of the message **<st>** - message status as coded in the PDU 2 - if a status report is stored, then the following unsolicited result code is sent: **+CDSI: <memr>,<index>** where: **<memr>** - memory storage where the new message is stored "SR" **<index>** - location on the memory where SMS is stored **<bfr>** - buffered result codes handling method: 0 - **TA** buffer of unsolicited result codes defined within this command is flushed to the **TE** when **<mode>=1..3** is entered (**OK** response shall be given before flushing the codes) 1 - **TA** buffer of unsolicited result codes defined within this command is cleared when **<mode>=1..3** is entered.
AT+CNMI?	Read command returns the current parameter settings for **+CNMI** command in the form: **+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>**
AT+CNMI=?	Test command reports the supported range of values for the **+CNMI** command parameters.
Reference	3GPP TS 27.005
Example	AT+CMGF=1 OK AT+CNMI=1,2,0,1,0 OK *Received message from network* +CMT: "+821020955219",,"07/07/26,20:09:07+36" TEST MESSAGE
Note	**DTR** signal is ignored, hence the indication is sent even if the **DTE** is inactive (**DTR** signal is **Low**). In this case the unsolicited result code may be lost so if MODULE remains active while **DTE** is not, at **DTE** startup is suggested to check whether new messages have reached the device meanwhile with command **AT+CMGL=0** that lists the new messages received.

5.1.5.3.2. New Message Acknowledgement to ME/TA - +CNMA

+CNMA – New Message Acknowledgement	
(PDU Mode) **AT+CNMA [=<n> [,<length> [<CR> PUD is given<ctrl-Z/ESC]]]**	*Execution command confirms correct reception of a new message (SMS-DELIVER or SMS-STATUS-REPORT) which is routed directly to the TE.* Acknowledge with +CNMA is possible only if the +CSMS parameter is set to 1(+CSMS=1) when a +CMT or +CDS indication is show. If no acknowledgement is given within the network timeout, an RP-ERROR is sent to the network, the <mt> and <ds> parameters of the +CNMI command are then reset to zero (do not show new message indication). Either positive (RP-ACK) or negative (RP-ERROR) acknowledgement to the network is possible. Parameter: <n> - Type of acknowledgement in PDU mode 0 : send RP-ACK without PDU (same as TEXT mode) 1 : send RP-ACK with optional PDU message. 2 : send RP-ERROR with optional PDU message. <length> : Length of the PDU message. Note : Refer to 3GPP TS 23.040 Recommendation for other PDU negative acknowledgement codes.
(Text Mode) **AT+CNMA**	Only positive acknowledgement to network (RP-ACK) is possible.
(PDU Mode) **AT+CNMA=?**	Test command returns the possible range of values for the parameter <n>
Example	**(PDU Mode)** *SMS AT commands compatible with 3GPP TS 27.005 Phase 2+ version .* AT+CSMS=1 +CSMS: 1,1,1 OK *Set PDU mode.* AT+CMGF=0 OK AT+CNMI=2,2,0,0,0 OK *Message is received from network.* +CMT: "",70 06816000585426000480980600F170110370537284…

+CNMA – New Message Acknowledgement	
	Send positive acknowledgement to the network. AT+CNMA=0 OK *Message is received from network.* +CMT: "",70 06816000585426000480980600F170110370537284… *Send negative acknowledgement(Unspecified error) to the network.* AT+CNMA=2,3<CR> > 00FF00 <Ctrl-Z> OK **(Text Mode)** *SMS AT commands compatible with 3GPP TS 27.005 Phase 2+ version .* AT+CSMS=1 +CSMS: 1,1,1 OK *Set Text mode.* AT+CMGF=1 OK AT+CNMI=2,2,0,0,0 OK *Message is received from network.* +CMT: "+821020955219",,"07/07/26,20:09:07+36" TEST MESSAGE *Send positive acknowledgement to the network.* AT+CNMA OK
Reference	3GPP TS 27.005

5.1.5.3.3. List Messages - +CMGL

+CMGL - List Messages	
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)

+CMGL - List Messages	
	(PDU Mode) Parameter: **<stat>** 0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent 4 - all messages. Each message to be listed is represented in the format: **+CMGL: <index>,<stat>,<alpha>,<length><CR><LF><pdu>** where: **<index>** - message position in the memory storage list. **<stat>** - status of the message **<alpha>** - string type alphanumeric representation of **<da>** or **<oa>**, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS. **<length>** - length of the PDU in bytes **<pdu>** - message in PDU format according to 3GPP TS 3.40/23.040 **(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): **+CMGL: <index>,<stat>,<oa/da>,<alpha>,<scts>*[,<tooa/toda>,<length>]*<CR><LF> <data>** where **<index>** - message position in the storage **<stat>** - message status **<oa/da>** - originator/destination address, string type , represented in the currently selected character set (see +CSCS) **<alpha>** - string type alphanumeric representation of **<da>** or **<oa>**, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS. **<scts>** - TP-Service Centre Time Stamp in Time String Format

+CMGL - List Messages	
	<***tooa/toda***> - type of number <**oa/da**> 129 - number in national format 145 - number in international format (contains the "+") <***length***> - text length <**data**> - TP-User-Data • If <**dcs**> indicates that GSM03.38/23.038 default alphabet is used , each character of GSM/WCDMA alphabet will be converted into current TE character set (see +CSCS) • If <**dcs**> indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41) Each message delivery confirm is represented in the format**:** **+CMGL: <index>,<stat>,<fo>,<mr>,,,<scts>,<dt>,<st>** where <**index**> - message position in the storage <**stat**> - message status <**fo**> - first octet of the message PDU <**mr**> - message reference number <**scts**> - arrival time of the message to the SC <**dt**> - sending time of the message <**st**> - message status as coded in the PDU Note: If parameter is omitted the command returns the list of sms with "**REC UNREAD**" status.
AT+CMGL=?	Test command returns a list of supported <**stat**>s
Example	AT+CMGF=1 *Set Text mode* OK AT+CMGL +CMGL: 1,"REC UNREAD","+821020955219",,"07/07/26,20:05:11+36" SMS Test message +CMGL: 2,"REC UNREAD","+821020955219",,"07/07/26,20:05:58+36" SMS Test message... +CMGL: 3,"REC UNREAD","+821020955219",,"07/07/26,20:06:37+36" SMS Test Message.. +CMGL: 4,"REC UNREAD","+821020955219",,"07/07/26,20:07:43+36" TEST MESSAGE.. +CMGL: 5,"REC UNREAD","+821020955219",,"07/07/26,20:09:07+36" TEST MESSAGE OK AT+CMGF=0 *Set PDU mode* OK AT+CMGL=2 +CMGL: 0,2,,24

+CMGL - List Messages	
	07912801929190301164 0A811056789282000 0A70CF4F29C0E6A97E7F3F0B90C +CMGL: 1,2,,21 07912801929190301164 0A811051652970000 0A709027A794E77B95C2E +CMGL: 26,2,,17 08812801009901025911640A811056789282001 4A704C7D1B1DB OK
Reference	3GPP TS 27.005

5.1.5.3.4. 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)** The output has the following format: **+CMGR: <stat>,<alpha>,<length><CR><LF><pdu>** where **<stat>** - status of the message 0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent **<alpha>** - string type alphanumeric representation of **<da>** or **<oa>**, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS. **<length>** - length of the PDU in bytes. **<pdu>** - message in PDU format according to 3GPP TS 3.40/23.040. The status of the message and entire message data unit **<pdu>** is returned. **(Text Mode)** Output format for received messages (the information written in *italics* will be present depending on **+CSDH** last setting)*:* ***+CMGR: <stat>,<oa>,<alpha>,<scts>[,<tooa>,<fo>,<pid>, <dcs>,<sca>,<tosca>,<length>]<CR><LF><data>***

+CMGR - Read Message	
	Output format for sent messages: **+CMGR: <stat>,<da>,<alpha>*[,<toda>,<fo>,<pid>,<dcs>,[<vp>],* *<sca>,<tosca>,<length>]*<CR><LF><data> Output format for message delivery confirm: **+CMGR: <stat>,<fo>,<mr>,,,<scts>,<dt>,<st>** where: **<stat>** - status of the message "REC UNREAD" - new received message unread "REC READ" - received message read "STO UNSENT" - message stored not yet sent "STO SENT" - message stored already sent ***<fo>*** - first octet of the message PDU ***<mr>*** - message reference number ***<scts>*** - arrival time of the message to the SC ***<dt>*** - sending time of the message ***<st>*** - message status as coded in the PDU ***<pid>*** - Protocol Identifier ***<dcs>*** - Data Coding Scheme ***<vp>*** - depending on SMS-SUBMIT **<fo>** setting: Refer to 3GPP TS 03.40/23.040 TP-Validity-Period a) Not Present if **<fo>** tells that the Validity Period Format is **Not Present** b) Integer type if **<fo>** tells that the Validity Period Format is **Relative** (default 167) c) Quoted time-string type if **<fo>** tells that the Validity Period Format is **Absolute** d) Quoted hexadecimal representation of 7 octets if **<fo>** tells that the Validity Period Format is **Enhanced**. ***<oa>*** - Originator address, string type represented in the currently selected character set (see +CSCS) ***<da>*** - Destination address, string type represented in the currently selected character set (see +CSCS) ***<alpha>*** - string type alphanumeric representation of **<da>** or **<oa>**, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS. ***<sca>*** - Service Centre number ***<tooa>***,***<toda >***,***<tosca>*** - type of number **<oa>**,**<da>**,***<sca>*** 129 - number in national format 145 - number in international format (contains the "+") ***<length>*** - text length **<data>** - TP-User_data • If **<dcs>** indicates that GSM03.38/23.038 default alphabet is used , each character of GSM/WCDMA alphabet will be converted into current TE character set (see +CSCS) • If **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number

+CMGR - Read Message	
	(e.g. octet 0x2A will be converted as two characters 0x32 0x41) Note: in both cases if status of the message is 'received unread', status in the storage changes to 'received read'.
AT+CMGR=?	Test command returns the **OK** result code
Example	AT+CMGF=0 AT+CMGR=1 +CMGR: 2,,21 07912801929190301164 0A8110516529700000A709027A794E77B95C2E OK AT+CMGF=1 OK AT+CMGR=3 +CMGR: "REC READ","+821020955219",,"07/07/19,10:06:34+36" test message/..... OK
Reference	3GPP TS 27.005

5.1.5.4. Message Sending And Writing

5.1.5.4.1. Send Message – +CMGS

+CMGS - Send Message	
(PDU Mode) **AT+CMGS= <length>**	**(PDU Mode)** Execution command sends to the network a message. Parameter: **<length>** - length of the PDU to be sent in bytes (excluding the SMSC address octets). 7..164 After command line is terminated with **<CR>**, the device responds sending a four character sequence prompt: **<CR><LF><greater_than><space> (IRA 13, 10, 62, 32)** and waits for the specified number of bytes. Note: the **DCD** signal shall be in **ON** state while PDU is given. Note: the echoing of given characters back from the TA is controlled by echo command **E**

+CMGS - Send Message	
	Note: the **PDU** shall be hexadecimal format (each octet of the **PDU** is given as two IRA character long hexadecimal number) and given in one line. Note: when the length octet of the SMSC address (given in the **PDU**) equals zero, the SMSC address set with command +CSCA is used; in this case the SMSC Type-of-Address octet shall not be present in the **PDU**. To send the message issue **Ctrl-Z** char (**0x1A** hex). To exit without sending the message issue **ESC** char (**0x1B** hex). If message is successfully sent to the network, then the result is sent in the format: Note : Optionally (when +CSMS <service> value is 1 and network supports) <scts> is returned: **+CMGS: <mr>[, <scts>]** where **<mr>** - message reference number. <scts> - TP-Service Centre Time Stamp in Time String Format. Note: if message sending fails for some reason, an error code is reported. Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.
(Text Mode) **AT+CMGS=<da>[,<toda>]**	**(Text Mode)** Execution command sends to the network a message. Parameters: **<da>** - destination address, string type represented in the currently selected character set (see +CSCS). **<toda>** - type of destination address 129 - number in national format 145 - number in international format (contains the "+") After command line is terminated with **<CR>**, the device responds sending a four character sequence prompt: **<CR><LF><greater_than><space> (IRA 13, 10, 62, 32)** After this prompt text can be entered; the entered text should be formatted as follows: - if current **<dcs>** (see +CSMP) indicates that GSM03.38/23.038 default alphabet is used and current **<fo>** (see +CSMP) indicates that 3GPP TS 03.40/23.040 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM/WCDMA alphabet, according to 3GPP TS 27.005, Annex A;

+CMGS - Send Message	
	backspace can be used to delete last character and **carriage returns** can be used. - if current **<dcs>** (see +CSMP) indicates that 8-bit or UCS2 data coding scheme is used or current **<fo>** (see +CSMP) indicates that 3GPP TS 03.40/23.040 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the **'asterisk'** will be entered as **2A** (**IRA50** and **IRA65**) and this will be converted to an octet with integer value **0x2A**) Note: the **DCD** signal shall be in **ON** state while text is entered. Note: the echoing of entered characters back from the TA is controlled by echo command **E** To send the message issue **Ctrl-Z** char (**0x1A** hex). To exit without sending the message issue **ESC** char (**0x1B** hex). If message is successfully sent to the network, then the result is sent in the format: Note : Optionally (when +CSMS <service> value is 1 and network supports) <scts> is returned: **+CMGS: <mr>[, <scts>]** where **<mr>** - message reference number. <scts> - TP-Service Centre Time Stamp in Time String Format. Note: if message sending fails for some reason, an error code is reported. Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued. Note: it is possible to send a concatenation of at most 10 SMs; the maximum number of chars depends on the **<dcs>**: 1530 chars if 3GPP TS 03.38/23.038 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used
AT+CMGS=?	Test command resturns the **OK** result code.
Note	To avoid malfunctions is suggested to wait for the **+CMGS: <mr>** or **+CMS ERROR: <err>** response before issuing further commands.
Example	*Set PDU mode* AT+CMGF=0 AT+CMGS=18 > 08812801009901025911550781102090551 2F90000A704F4F29C0E +CMGS: 124 OK *Set text mode*

+CMGS - Send Message	
	AT+CMGF=1 AT+CSMP=17,167,0,0 AT+CMGS=”01090255219”,129 >TEST MESSAGE +CMGS:125 OK
Reference	3GPP TS 27.005

5.1.5.4.2. 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: (Note : Optionally (when +CSMS <service> value is 1 and network supports) <scts> is returned) **+CMSS: <mr>[, <scts>]** where: **<mr>** - message reference number. <scts> - TP-Service Centre Time Stamp in Time String Format. If message sending fails for some reason, an error code is reported: **+CMS ERROR:<err>** Note: to store a message in the **<memw>** storage see command **+CMGW.** Note: care must be taken to ensure that during the command execution, which may take several seconds, no other **SIM** interacting commands are issued.
AT+CMSS=?	Test command resturns the **OK** result code.
Note	To avoid malfunctions is suggested to wait for the **+CMSS: <mr>** or **+CMS ERROR: <err>** response before issuing further commands.
Example	AT+CMGF=1 OK AT+CMGW="0165872928" > test message...

+CMSS - Send Message From Storage	
	+CMGW: 28 AT+CMSS=28 +CMSS: 136 OK
Reference	3GPP TS 27.005

5.1.5.4.3. Write Message To Memory – +CMGW

+CMGW - Write Message To Memory	
(PDU Mode) **AT+CMGW=** **<length>** **[,<stat>]**	**(PDU Mode)** Execution command writes in the **<memw>** memory storage a new message. Parameter: **<length>** - length in bytes of the PDU to be written. 7..164 **<stat>** - message status. 0 - new message 1 - read message 2 - stored message not yet sent (default) 3 - stored message already sent The device responds to the command with the prompt '>' and waits for the specified number of bytes. To write the message issue **Ctrl-Z** char (**0x1A** hex). To exit without writing the message issue **ESC** char (**0x1B** hex). If message is successfully written in the memory, then the result is sent in the format: **+CMGW: <index>** where: **<index>** - message location index in the memory **<memw>**. If message storing fails for some reason, an error code is reported. Note: care must be taken to ensure that during the command execution, no other SIM interacting commands are issued.
(Text Mode) **AT+CMGW[=<da>** **[,<toda>** **[,<stat>]]]**	**(Text Mode)** Execution command writes in the **<memw>** memory storage a new message. Parameters: **<da>** - destination address, string type represented in the currently selected character set (see +CSCS). **<toda>** - type of destination address.

+CMGW - Write Message To Memory	
	129 - number in national format 145 - number in international format (contains the "+") **<stat>** - message status. "REC UNREAD" - new received message unread "REC READ" - received message read "STO UNSENT" - message stored not yet sent (default) "STO SENT" - message stored already sent After command line is terminated with **<CR>**, the device responds sending a four character sequence prompt: **<CR><LF><greater_than><space> (IRA 13, 10, 62, 32)** After this prompt text can be entered; the entered text should be formatted as follows: - if current **<dcs>** (see +CSMP) indicates that GSM03.38/23.038 default alphabet is used and current **<fo>** (see +CSMP) indicates that 3GPP TS 03.40/23.040 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM/WCDMA alphabet, according to 3GPP TS 27.005, Annex A; **backspace** can be used to delete last character and **carriage returns** can be used. - if current **<dcs>** (see +CSMP) indicates that 8-bit or UCS2 data coding scheme is used or current **<fo>** (see +CSMP) indicates that 3GPP TS 03.40/23.040 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the **'asterisk'** will be entered as **2A** (**IRA50** and **IRA65**) and this will be converted to an octet with integer value **0x2A**) Note: the **DCD** signal shall be in ON state while text is entered. Note: the echoing of entered characters back from the TA is controlled by echo command **E** To write the message issue **Ctrl-Z** char (**0x1A** hex). To exit without writing the message issue **ESC** char (**0x1B** hex). If message is successfully written in the memory, then the result is sent in the format: **+CMGW: <index>** where: **<index>** - message location index in the memory **<memw>**. If message storing fails for some reason, an error code is reported. Note: care must be taken to ensure that during the command execution, no other

+CMGW - Write Message To Memory	
	SIM interacting commands are issued. Note: it is possible to save a concatenation of at most 10 SMs; the maximum number of chars depends on the **<dcs>**: 1530 chars if 3GPP TS 03.38/23.038 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used
AT+CMGW=?	Test command returns the **OK** result code.
Reference	3GPP TS 27.005
Example	AT+CMGF=0 *set PDU mode* OK AT+CMGW=18 > 08812801009901025911550781102090551 2F90000A704F4F29C0E +CMGW: 29 OK AT+CMGF=1 *set text mode* OK AT+CSMP=17,167,0,0 OK AT+CSCA=”821029190903”,145 OK AT+CMGW="0165872928" > test message... +CMGW: 28
Note	To avoid malfunctions is suggested to wait for the **+CMGW: <index>** or **+CMS ERROR: <err>** response before issuing further commands.

5.1.5.4.4. Delete Message – +CMGD

+CMGD - Delete Message	
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: (0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50),(0-4) OK AT+CMGD=11 *Delete message in 10th record* OK AT+CMGD=1,4 *Delete all messages* OK
Reference	3GPP TS 27.005

5.1.5.4.5. Select service for MO SMS services - +CGSMS

+CGSMS – Select service for MO SMS messages	
AT+CGSMS= [<service>]	The set command is used to specify the service or service preference that the MT wi ll use to send MO SMS messages. Parameters: **<service>** -a numeric parameter which indicates the service or service preference to be used. 0 – Packet Domain 1 - Circuit switched (factory default) 2 – Packet Domain preferred (use circuit switched if GRPS is not available) 3 - Circuit switched preferred (use Packet Domain if circuit switched not available) (factory default for SKT) Note: If SMS transfer via Packet Domain fails, <service> parameter are automatical ly reset to Circuit switched. Note: If the modem is LTE only model, it isn't affected by this AT command setting. This AT command is valid in the GSM/GPRS/UMTS network.
AT+CGSMS?	Read command reports the currently selected service or service preference : **+CGSMS: <service>**
AT+CGSMS=?	Test command reports the supported range of values for parameter **<service>**
Reference	3GPP TS 27.007

5.1.6. Telit Custom AT Commands

5.1.6.1. General Configuration AT Commands

5.1.6.1.1. 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

5.1.6.1.2. Model Identification - #CGMM

#CGMM - Model Identification

#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: LE910-SKG OK

5.1.6.1.3. 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: 17.00.540 OK

5.1.6.1.4. Product Serial Number Identification – #CGSN

#CGSN - Product Serial Number Identification	
AT#CGSN	Execution command returns the product serial number, identified as the IMEI of the mobile, with command echo.
AT#CGSN=?	Test command returns the **OK** result code.
Example	AT#CGSN #CGSN: 358677008900540 OK

5.1.6.1.5. 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

5.1.6.1.6. Read ICCID (Integrated Circuit Card Identification) – #CCID

#CCID - Read ICCID	
AT#CCID	Execution command reads on SIM the ICCID (card identification number that provides a unique identification number for the SIM)
AT#CCID=?	Test command returns the **OK** result code.
Example	AT#CCID #CCID: 89820507021001676 84F

#CCID - Read ICCID	
	OK

5.1.6.1.7. Display PIN Counter – #PCT

#PCT - Display PIN Counter	
AT#PCT	Execution command reports the PIN/PUK or PIN2/PUK2 input remaining attempts, depending on **+CPIN** requested password in the format: **#PCT: <n>** where: **<n>** - remaining attempts 0 - the SIM is blocked. 1..3 - if the device is waiting either SIM PIN or SIM PIN2 to be given. 1..10 - if the device is waiting either SIM PUK or SIM PUK2 to be given.
AT#PCT=?	Test command returns the OK result code.
Example	AT+CPIN? +CPIN: SIM PIN OK AT#PCT *Check PIN remained counter* #PCT: 3 OK AT+CPIN=1111 *Input incorrect PIN number* +CME ERROR: incorrect password AT#PCT #PCT: 2

5.1.6.1.8. 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.
AT#SHDN=?	Test command returns the OK result code.

5.1.6.1.9. Reboot – #REBOOT

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

#REBOOT - Reboot	
Example	AT#REBOOT=? OK AT#REBOOT OK

5.1.6.1.10. 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.

5.1.6.1.11. Periodic Reset - #ENHRST

#ENHRST – Periodic ReseT	
AT#ENHRST=<mod>[,<delay>]	Set command enables/disables the unit reset after <**delay**> minutes. Parameters: <**mod**> 0 – disables the unit reset (factory default) 1 – enables the unit reset only for one time 2 – enables the periodic unit reset <**delay**> - time interval after that the unit reboots; numeric value in minutes Note: the settings are saved automatically in NVM only if old or new mod is 2. Any change from 0 to 1 or from 1 to 0 is not stored in NVM Note: the particular case AT#ENHRST=1,0 causes the immediate module reboot. In this case if AT#ENHRST=1,0 follows an AT command that stores some parameters in NVM, it is recommended to insert a delay of at least 5 seconds before to issue AT#ENHRST=1,0, to permit the complete NVM storing. Note: maximum <**delay**> value is 2184 mins
AT#ENHRST?	Read command reports the current parameter settings for # EHNRST command in the format: # **EHNRST**: < **mod** >[,<**delay**>,<**remainTime**>] <**remainTime**> - time remaining before next reset
AT#ENHRST=?	Test command reports supported range of values for parameters <**mod**> and

#ENHRST – Periodic ReseT	
	<**delay**>.
Examples	AT#ENHRST=1,60 .... Module reboots after 60 minutes … AT#ENHRST=1,0

5.1.6.1.12. 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**. 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 the OK result code.

5.1.6.1.13. 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 Note: The maximum time to shutdown the device, completely is 25 seconds a fter hysteresis time
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	**GSM Limits** **Extreme Temperature Lower Bound(*) -30°C**

Operating Temperature Lower Bound(*)	**-20°C**
Operating Temperature	
Operating Temperature Upper Bound(*)	**+78°C**
Extreme Temperature Upper Bound(*)	**+90°C**

WCDMA Limits

Extreme Temperature Lower Bound(*)	**-30°C**
Operating Temperature Lower Bound(*)	**-20°C**
Operating Temperature	
Operating Temperature Upper Bound(*)	**+90°C**
Extreme Temperature Upper Bound(*)	**+100° 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

5.1.6.1.14. General Purpose Input/Output Pin Control – #GPIO

#GPIO - General Purpose Input/Output Pin Control	
AT#GPIO=[<pin>, <mode>[,<dir>[,<save]]]	Execution command sets the value of the general purpose output pin **GPIO<pin>** according to **<dir>** and **<mode>** parameter. Not all 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, 3, 4, 5, 6** - ALTERNATE FUNCTION 1 - no meaning if **<dir>=0** - INPUT - output pin set to 1 (**High**) if **<dir>=1** - OUTPUT - no meaning if **<dir>=2, 3, 4, 5, 6** - 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 3 - if **<dir>=0** – INPUT, enable Pull-Up 4 - if **<dir>=0** – INPUT, enable Pull-Down **<dir>** - GPIO pin direction 0 - pin direction is INPUT 1 - pin direction is OUTPUT 2,3,4,5,6 - pin direction is Alternate Function ALT1, ALT2, ALT3, ALT4, ALT5

#GPIO - General Purpose Input/Output Pin Control	
	respectively (see Note). **<save>** - GPIO pin save configuration 0 – pin configuration is not saved 1 – pin configuration is saved Note: when <save> is omitted the configuration is stored only if user set or reset ALTx function on <dir> parameter. Note: if values of **<dir>** is set in output and save omitted then it is set automatically in input on next power cycle. 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>** • 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: "ALT1" value is valid only for following pins: **GPIO1**: alternate function is "Stat Led"; Note: while using the pins in the alternate function, the GPIO read/write access to that pin is not accessible and shall be avoided. Note: Alarm Pin can be also configured through **#ALARMPIN** command
AT#GPIO?	Read command reports the read direction and value of all **GPIO** pins, in the format: **#GPIO: <dir>,<stat>[<CR><LF>#GPIO: <dir>,<stat>[…]]** where: **<dir>** - as seen before **<stat>** - as seen before
AT#GPIO=?	Test command reports the supported range of values of the command parameters **<pin>**, **<mode>, <dir>**, **<save>**
Example	AT#GPIO=3,0,1 OK AT#GPIO=3,2 #GPIO: 1,0

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

5.1.6.1.15. Alarm Pin - #ALARMPIN

#ALARMPIN – Alarm Pin	
AT#ALARMPIN= <pin>	Set command sets the GPIO pin for the ALARM pin Parameters: **<pin>** defines which GPIO shall be used as ALARM pin. For the **< pin >** actual range check the "Hardware User Guide". Default value is 0, which means no ALARM pin set. Note: the setting is saved in NVM Note: ALARM pin function of a GPIO corresponds to ALT2 function of the GPIO. So it can be also set through AT#GPIO command, ALT2 function.
AT#ALARMPIN?	Read command returns the current parameter settings for #ALARMPIN command in the format: #ALARMPIN: **<pin>**
AT#ALARMPIN=?	Test command reports the supported range of values for parameter <pin>.

5.1.6.1.16. 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) with the following timings: • not registered : always on • registered in idle: blinking 1s on and 2s off • registered in idle with powersaving : blinking time depends on network condition in order to minimize power consumption 3 - GPIO is turned on and off alternatively, with period defined by the sum **<on_duration> + <off_duration>** 4 - GPIO handled by Module Software with the following timings: • not registered : blinking 0,5s on and 0,5s off

#SLED - STAT_LED GPIO Setting	
	• registered in idle: blinking 300ms on and 2,7s off • registered in idle with powersaving : blinking time depends on network condition in order to minimize power consumption <**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: to have STAT_LED operative, the first time enter AT#GPIO=1,0,2 setting the GPIO1 as alternate function.
AT#SLED?	Read command returns the **STAT_LED** GPIO current setting, in the 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>**.

5.1.6.1.17. 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.

5.1.6.1.18. 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. Note: if **+CNMI=3,1** command is issued and the module is in a EPS connection, a 100 ms break signal is sent and a 1 sec. pulse is generated on **RI** pin, no matter if the **RI** pin response is either enabled or not.

#E2SMSRI - SMS Ring Indicator	
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=50 OK

5.1.6.1.19. 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 LE910KR family **<mode>** - required action 2 - query ADC value **<dir>** - direction; its interpretation is currently not implemented 0 - no effect. Note: The command returns the last valid measure.
AT#ADC?	Read command reports all pins voltage, converted by ADC, in the format: **#ADC: <value><CR><LF>#ADC: <value>**
AT#ADC=?	Test command reports the supported range of values of the command parameters **<adc>**, **<mode>** and **<dir>**.

5.1.6.1.20. 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

#VAUX- Auxiliary Voltage Output Control	
	<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**
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>**.

5.1.6.1.21. 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.

5.1.6.1.22. 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 ouptput pin: we maintain this value only for backward compatibility, but trying to set its state raise the result code "**ERROR**" (not yet implemented) 5 – **RTS** (Ready To Send). This is not an ouptput pin: we maintain this value only for backward compatibility, but trying to set its state raise 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

#V24CFG - V24 Output Pins Configuration	
	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>**.

5.1.6.1.23. 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) 5 - **RTS** (Request To Send) **<state>** - State of AT commands serial port interface output hardware pins (0, 1, 2, 3) when pin is in GPIO mode (see **#V24CFG**): 0 - Low 1 - High Note: if **<state>** is omitted the command returns state of the pin.
AT#V24?	Read command returns actual state for all the pins in the format: **#V24: <pin1>,<state1>[<CR><LF>** **#V24: <pin2>,<state2>[...]]** where **<pin*n*>** - AT command serial port interface HW pin **<state*n*>** - AT commands serial port interface hardware pin state
AT#V24=?	Test command reports supported range of values for parameters **<pin>** and **<state>**.

5.1.6.1.24. 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>**

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

5.1.6.1.25. Cell Monitor – #MONI

#MONI - Cell Monitor	
AT#MONI[= [<number>]]	Set command sets one cell out of seven, in a neighbour of the serving cell including it, from which extract E-UTRAN-related information. Parameter: **<number>** **<E-UTRAN>** **0** – it is the serving cell **1** – it is the intra-frequency cells **2** – it is the inter-frequency cells **3** – it is the WCDMA neighbour cells **4** – it is the GSM neighbour cells **3..7** – it is not available
AT#MONI	Read command reports the following E-UTRAN-related information for selected cell and dedicated channel (if exists). a) When extracting data for the serving cell and the network name is known the format is: **(E-UTRAN)** **#MONI: <netmame> RSRP:<rsrp> RSRQ:<rsrq> TAC:<tac> Id:<id>** **EARFCN:<earfcn> PWR:<dBm> DRX:<drx>** b) When the network name is unknown, the format is: **(E-UTRAN)** **#MONI: Cc:<cc> Nc:<nc> RSRP:<rsrp> RSRQ:<rsrq> TAC:<tac> Id:<id>** **EARFCN:<earfcn> PWR:<dBm> DRX:<drx>** c) When extracting data for an adjacent cell, the format is: **(E-UTRAN)** **(E-UTRAN intra-frequency and inter-frequency cells)** **#MONI: RSRP:<rsrp> RSRQ:<rsrq> Id:<id> EARFCN:<earfcn>**

#MONI - Cell Monitor	
	PWR:<dBm> **where:** **<netname>** - name of network operator **<cc>** - country code **<nc>** - network operator code **<n>** - progressive number of adjacent cell **<rsrp>** - Reference Signal Received Power **<rsrq>** - Reference Signal Received Quality **<tac>** - Tracking Area Code **<id>** - cell identifier **<earfcn>** - E-UTRAN Assigned Radio Channel **<dBm>** - received signal strength in dBm **<drx>** - Discontinuous reception cycle length
AT#MONI=?	Test command reports the maximum number of cells, in a neighbour of the serving cell excluding it, from which we can extract E-UTRAN-related informations, along with the ordinal number of the current selected cell, in the format: **#MONI: (<MaxCellNo>,<CellSet>)** where: **<MaxCellNo>** - maximum number of cells, in a neighbour of the serving cell and excluding it, from which we can extract E-UTRAN-related informations. This value is always **6**. **<CellSet>** - the last setting done with command **#MONI**.

5.1.6.1.26. Serving Cell Information – #SERVINFO

#SERVINFO - Serving Cell Information	
AT#SERVINFO	Execution command reports informations about serving cell, in the format: **(E-UTRAN)** **#SERVINFO:<EARFCN>,<dBM>,[<NetNameAsc>],<NetCode>,<PhysicalCellId>, <TAC>,<DRX>,<SD>,<RSRP>** where: **<dBM>** - received signal strength in dBm **<NetNameAsc>** - operator name, quoted string type **<NetCode>** - country code and operator code, hexadecimal representation **<PhysicalCellId>** - Physical Cell ID **<TAC>** - Tracking Area Code **<DRX>** - Discontinuous reception cycle length **<SD>** - Service Domain 0 – No Service 1 – CS Only 2 – PS Only 3 – CS & PS

#SERVINFO - Serving Cell Information	
	<RSRP> - Reference Signal Received Power
AT#SERVINFO=?	Test command returns the OK result code.

5.1.6.1.27. Read Current Network Status in E-UTRAN - #RFSTS

#RFSTS – Read Current Network Status in E-UTRAN

AT#RFSTS Read current status in the format

(E-UTRAN)
#RFSTS:
<PLMN>,<EARFCN>,<RSRP>,<RSSI>,<RSRQ>,<TAC>,[<TXPWR>],<DRX>,<MM>,<RRC>
<IMSI>,[<NetNameAsc>],<SD>,<ABND>[CR,LF] [CR,LF]

Parameter	Example	description
PLMN	"262 25"	Country code and operator code(MCC, MNC)
EARFCN	6400	E-UTRAN Assigned Radio Channel
RSRP	-99	Reference Signal Received Power
RSSI	-76	Received Signal Strength Indication
RSRQ	-7	Reference Signal Received Quality
TAC	40A5	Tracking Area Code
TXPWR	0	Tx Power (In traffic only)
DRX	64	Discontinuous reception cycle Length(cycle length : display using ms)
MM	19	Mobility Management
RRC	0	Radio Resource Control
CID	0000007	Cell ID
IMSI	“262011242110776”	International Mobile Station ID
NetNameAsc	" Telekom.de "	Operation Name, Quoted string type or “” if network name is unknown
SD	3	Service Domain (0: No Service, 1: CS only, 2: PS only, 3: CS+PS)
ABND	20	Active Band (1..63) 3GPP TS 36.101

Note: MM - Mobility Management States are:
0 - NULL
3 - LOCATION_UPDATE_INITIATED
5 - WAIT_FOR_OUTGOING_MM_CONNECTION
6 - CONNECTION_ACTIVE
7 - IMSI_DETACH_INITIATED
8 - PROCESS_CM_SERVICE_PROMPT
9 - WAIT_FOR_NETWORK_COMMAND
10 - LOCATION_UPDATE_REJECTED

#RFSTS – Read Current Network Status in E-UTRAN	
	13 - WAIT_FOR_RR_CONNECTION_LU 14 - WAIT_FOR_RR_CONNECTION_MM 15 - WAIT_FOR_RR_CONNECTION_IMSI_DETACH 17 - REESTABLISHMENT_INITIATED 18 - WAIT_FOR_RR_ACTIVE 19 - IDLE 20 - WAIT_FOR_ADDITIONAL_OUTGOING_MM_CONNECTION 21 - WAIT_FOR_RR_CONNECTION_REESTABLISHMENT 22 - WAIT_FOR_REESTABLISH_DECISION 23 - LOCATION_UPDATING_PENDING 25 - CONNECTION_RELEASE_NOT_ALLOWED **Note:** RR/RRC - Radio Resource Control States are: 0 - INACTIVE 1 - GOING_ACTIVE 2 - GOING_INACTIVE 3 - CELL_SELECTION 4 - PLMN_LIST_SEARCH 5 - IDLE 6 - CELL_RESELECTION 7 - CONNECTION_PENDING 8 - CELL_REESTABLISH 9 - DATA_TRANSFER 10 - NO_CHANNELS 11 - CONNECTION_RELEASE 12 - EARLY_CAMPED_WAIT_FOR_SI 13 - W2G_INTERRAT_HANDOVER_PROGRESS 14 - W2G_INTERRAT_RESELECTION_PROGRESS 15 - W2G_INTERRAT_CC_ORDER_PROGRESS 16 - G2W_INTERRAT_RESELECTION_PROGRESS 17 - WAIT_FOR_EARLY_PSCAN 18 - GRR 19 - G2W_INTERRAT_HANDOVER_PROGRESS 21 - W2G_SERVICE_REDIRECTION_IN_PROGRESS 22 - RESET 29 - FEMTO 30 - X2G_RESEL 31 - X2G_RESEL_ABORTED 32 - X2G_REDIR 33 - G2X_REDIR 34 - X2G_CGI 35 - X2G_CCO_FAILED 36 - X2G_CCO_ABORTED 37 - X2G_CCO_FAILED_ABORTED

#RFSTS – Read Current Network Status in E-UTRAN	
	38 - RR_STATE_MAX
AT#RFSTS=?	Test command returns the OK result code.

5.1.6.1.28. Query SIM Status - #QSS

#QSS - Query SIM Status	
AT#QSS= **[<mode>]**	Set command enables/disables the Query SIM Status unsolicited indication in the ME. Parameter: **<mode>** - type of notification 0 - disabled (factory default); it's possible only to query the current SIM status through Read command **AT#QSS?** 1 - enabled; the ME informs at every SIM status change through the following unsolicited indication: **#QSS: <status>** where: **<status>** - current SIM status 0 - SIM NOT INSERTED 1 - SIM INSERTED 2 - enabled; the ME informs at every SIM status change through the following unsolicited indication: **#QSS: <status>** where: **<status>** - current SIM status 0 - SIM NOT INSERTED 1 - SIM INSERTED 2 - SIM INSERTED and PIN UNLOCKED 3 - SIM INSERTED and READY (SMS and Phonebook access are possible). Note: the command reports the SIM status change after the <mode> has been set to 2. We suggest to set <mode>=2 and save the value in the user profile, then power off the module. The proper SIM status will be available at the next power on.
AT#QSS?	Read command reports whether the unsolicited indication **#QSS** is currently enabled or not, along with the SIM status, in the format: **#QSS: <mode>,<status>** (**<mode>** and **<status>** are described above)
AT#QSS=?	Test command returns the supported range of values for parameter **<mode>**.
Example	AT#QSS? #QSS:0,1

#QSS - Query SIM Status	
	OK

5.1.6.1.29. 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.

5.1.6.1.30. SMS Overflow - #SMOV

#SMOV - SMS Overflow	
AT#SMOV= [<mode>]	Set command enables/disables the SMS overflow signalling function. Parameter: **<mode>** 0 - disables SMS overflow signaling function (factory default) 1 - enables SMS overflow signalling function; when the maximum storage capacity has reached, the following network initiated notification is send: **#SMOV: <memo>**
AT#SMOV?	Read command reports whether the SMS overflow signalling function is currently enabled or not, in the format: **#SMOV: <mode>**
AT#SMOV=?	Test command returns the supported range of values of parameter **<mode>**.
Example	AT#SMOV? #SMOV: 0 OK

5.1.6.1.31. Mailbox Numbers - #MBN

#MBN - Mailbox Numbers	
AT#MBN	Execution command returns the mailbox numbers stored on SIM, if this service is provided by the SIM. The response format is: **[#MBN: <index>,<number>,<type>[,<text>][,mboxtype][<CR><LF>** **#MBN: <index>,<number>,<type>[,<text>][,mboxtype][…]]]** where: **<index>** - record number **<number>** - string type mailbox number in the format **<type>**

#MBN - Mailbox Numbers	
	<type> - type of mailbox number octet in integer format 129 - national numbering scheme 145 - international numbering scheme (contains the character "+") **<text>** - the alphanumeric text associated to the number; used character set should be the one selected with command **+CSCS** **<mboxtype>** - the message waiting group type of the mailbox, if available: "VOICE" - voice "FAX" - fax "EMAIL" - electronic mail "OTHER" - other Note: if all queried locations are empty (but available), no information text lines will be returned.
AT#MBN=?	Test command returns the **OK** result code.

5.1.6.1.32. Message Waiting Indication – #MWI

#MWI - Message Waiting Indication	
AT#MWI=<enable>	Set command enables/disables the presentation of the **message waiting indicator** URC. Parameter: **<enable>** 0 - disable the presentation of the **#MWI** URC 1 - enable the presentation of the **#MWI** URC each time a new message waiting indicator is received from the network and, at startup, the presentation of the status of the **message waiting indicators**, as they are currently stored on SIM.**(Factory default)** The URC format is: **#MWI: <status>,<indicator>[,<count>]** where: **<status>** 0 - clear: it has been deleted one of the messages related to the indicator **<indicator>**. 1 - set: there's a new waiting message related to the indicator **<indicator>** **<indicator>** 1 - either Line 1 (CPHS context) or Voice (3GPP context) 2 - Line 2 (CPHS context only) 3 - Fax 4 - E-mail 5 - Other **<count>** - message counter: network information reporting the number of pending messages related to the message waiting indicator **<indicator>**. The presentation at startup of the **message waiting indicators** status, as they are currently stored on SIM, is as follows: **#MWI: <status>[,<indicator>[,<count>][<CR><LF>** **#MWI: <status>,<indicator>[,<count>][...]]]** where: **<status>** 0 - no waiting message indicator is currently set: if this the case no other information is reported 1 - there are waiting messages related to the message waiting indicator **<indicator>**. **<indicator>** 1 - either Line 1 (CPHS context) or Voice (3GPP context) 2 - Line 2 (CPHS context) 3 - Fax

#MWI - Message Waiting Indication	
	4 - E-mail 5 - Other **<count>** - message counter: number of pending messages related to the message waiting indicator **<indicator>** as it is stored on SIM.
AT#MWI?	Read command reports wheter the presentation of the **message waiting indicator** URC is currently enabled or not, and the current status of the **message waiting indicators** as they are currently stored on SIM. The format is: **#MWI: <enable>,<status>[,<indicator>[,<count>][<CR><LF>** **#MWI: <enable>,<status>,<indicator>[,<count>][...]]]**
AT#MWI=?	Test command returns the range of available values for parameter **<enable>**.

5.1.6.1.33. SIM Presence Status – #SIMPR

#SIMPR – SIM Presence Status	
AT#SIMPR=[<mode>]	Set command enables/disables the Query SIM Presence Status unsolicited indication in the ME. Parameter: **<mode>** - type of notification 0 - disabled (factory default); it's possible only to query the current SIM status through Read command **AT#SIMPR?** 1 - enabled; the ME informs at every (local and remote) SIM status change through the following unsolicited indication: **#SIMPR: <SIM>,<status>** where: **<SIM>** - local or remote SIM 0 – local SIM 1 – remote SIM (Not Supported) **<status>** - current SIM status 0 - SIM NOT INSERTED 1 - SIM INSERTED
AT# SIMPR?	Read command reports whether the unsolicited indication **#SIMPR** is currently enabled or not, along with the local SIM status, in the format: **#SIMPR: <mode>,0,<status>[<CR><LF>** **#SIMPR: <mode>,1,<status>]** (**<mode>**, **<SIM>** and **<status>** are described above)
AT# SIMPR =?	Test command returns the supported range of values for parameter **<mode>**.
Example	AT#SIMPR? #SIMPR: 0,0,1 #SIMPR: 0,1,1 OK

5.1.6.1.34. 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 LTE registration 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 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) (factory default is 7) **<mode>** 0 - disables **#NITZ** URC (factory default) 1 - enables **#NITZ** URC; after date and time updating the following unsolicited indication is sent: **#NITZ: <datetime>** where: **<datetime>** - string whose format depends on subparameter **<val>** **"yy/MM/dd,hh:mm:ss"** - *'basic'* format, if **<val>** is in (0..3) **"yy/MM/dd,hh:mm:ss±zz"** - *'extended'* format, if **<val>** is in (4..7) **"yy/MM/dd,hh:mm:ss±zz,d"** - *'extended'* format with DST support, if **<val>** is in (8..15) where: **yy** - year **MM** - month (in digits) **dd** - day **hh** - hour **mm** - minute **ss** - second **zz** - time zone (indicates the difference, expressed in quarter of an hour, between the local time and GMT; two last digits are mandatory, range is -47..+48) **d** – number of hours added to the local TZ because of Daylight Saving Time (summertime) adjustment: range is 0-2. 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

#NITZ - Network Timezone	
	Network Name applying, (c) **#NITZ** URC (as well as its format) are currently enabled or not, in the format: **#NITZ: <val>,<mode>**
AT#NITZ=?	Test command returns supported values of parameters **<val>** and **<mode>**.

5.1.6.1.35. 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,d**" **yy** - year (two last digits are mandatory), range is 00..99 **MM** - month (two last digits are mandatory), range is 01..12 **dd** - day (two last digits are mandatory) The range for dd(day) depends either on the month and on the year it refers to. Available ranges are: (01..28) (01..29) (01..30) (01..31) Trying to enter an out of range value will raise an error **hh** - hour (two last digits are mandatory), range is 00..23 **mm** - minute (two last digits are mandatory), range is 00..59 **ss** - seconds (two last digits are mandatory), range is 00..59 **±zz** - time zone (indicates the difference, expressed in quarter of an hour, between the local time and GMT; two last digits are mandatory), range is -47..+48 **d** – number of hours added to the local TZ because of Daylight Saving Time(summertime) adjustment; range is 0-2
AT#CCLK?	Read command returns the current setting of the real-time clock, in the format **<time>.** Note: if the time is set by the network but the DST information is missing, or the time is set by +CCLK command, then the <time> format is: **"yy/MM/dd,hh:mm:ss±zz"**
AT#CCLK=?	Test command returns the **OK** result code.
Example	AT#CCLK="02/09/07,22:30:00+04,1" OK AT#CCLK? #CCLK: 02/09/07,22:30:25+04,1 OK

5.1.6.1.36. Select Band – #BND

#BND - Select Band	
AT#BND= [<E-UTRAN band>]	Set command selects the E-UTRAN current band. Parameter <E-UTRAN band> For SKT model all combinations of next bands can be used: - 4 : E-UTRAN BAND 3 - 10 : E-UTRAN BAND 5 - 14 : All SKT E-UTRAN bands (factory default) Note: This setting maintained even after power off.
AT#BND?	Read command returns the current selected band in the format: **#BND: <E-UTRAN band>**
AT#BND=?	Test command returns the supported range of values of parameters **<E-UTRAN band>** .

5.1.6.1.37. Automatic Band Selection – #AUTOBND

#AUTOBND - Automatic Band Selection	
AT#AUTOBND= [<value>]	Set command returns the **OK** result code. Parameter: **<value>**: 0 – 2 : dummy values (It has no effect and is included only for backward compatibility) Factory default value is 2. Note: The function of #BND command included #AUTOBND command. If you are needed the #AUTOBND function, you can be done using the command #BND.
AT#AUTOBND?	Read command returns the **OK** result code.
AT#AUTOBND=?	Test command returns the range of supported values for parameter **<value>**.

5.1.6.1.38. PPP-GPRS Connection Authentication Type – #GAUTH

#GAUTH - PPP-GPRS Connection Authentication Type	
AT#GAUTH= [<type>]	Set command sets the authentication type used in PDP Context Activation during PPP-EPS connections Parameter **<type>** 0 – no authentication 1 – PAP authentication(factory default)

#GAUTH - PPP-GPRS Connection Authentication Type	
	2 – CHAP authentication Note : if the settings on the server side(the host application) of the PPP are not compatible with the AT#GAUTH setting, then the PDP Context Activation will use no authentication.
AT#GAUTH?	Read command reports the current PPP-EPS connection authentication type, in the format: **#GAUTH: <type>**
AT#GAUTH=?	Test command returns the range of supported values for parameter **<type>**.

5.1.6.1.39. Subscriber number - #SNUM

#SNUM – Subscriber Number	
AT#SNUM=<index>, <number>[,<alpha>]	Set command writes the MSISDN information related to the subscriber (own number) in the EFmsisdn SIM file. Parameter: **<index>** - record number The number of record in the EFmsisdn depends on the SIM. If only <**index**> value is given, then delete the EFmsisdn record in location <**index**> is deleted. **<number>** - string containing the phone number **<alpha>** - alphanumeric string associated to <**number**>. Default value is empty string(“”), otherwise the used character set should bo the one selected with +**CSCS**. The string could be written between quotes, the number of characters depends on the SIM. If empty string is given(“”), the corresponding <**alpha**> will be an empty string.
AT# SNUM =?	Test command returns **OK** result code.

5.1.6.1.40. SIM Detection Mode-#SIMDET

#SIMDET - SIM Detection Mode	
AT#SIMDET= <mode>	Set command specifies the SIM Detection mode Parameter: **<mode>** - SIM Detection mode 0 - ignore SIMIN pin and simulate the status ‘SIM Not Inserted’ 1 - ignore SIMIN pin and simulate the status ‘SIM Inserted’ 2 - automatic SIM detection through SIMIN Pin (default)
AT#SIMDET?	Read command returns the currently selected Sim Detection Mode in the format: **#SIMDET: <mode>,<simin>**

	where: **<mode>** - SIM Detection mode, as before **<simin>** - SIMIN pin real status 0 - SIM not inserted 1 - SIM inserted
AT#SIMDET=?	Test command reports the supported range of values for parameter **<mode>**

5.1.6.1.41. Show Address - #CGPADDR

#CGPADDR - Show PDP Address	
AT#CGPADDR=[<cid>[,<cid>[,…]]]	Execution command returns a list of PDP addresses for the specified context identifiers in the format: **#CGPADDR: <cid>,<PDP_addr>[<CR><LF>#CGPADDR: <cid>, <PDP_addr>[…]]** Parameters: **<cid>** - Context identifier 1..5 - A numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command). If no **<cid>** is specified, the addresses for all defined contexts are returned. **<PDP_addr>** - a string that identifies the terminal in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the **+CGDCONT** command when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to by **<cid>**; **<PDP_addr>** is omitted if none is available
AT#CGPADDR=?	Test command returns a list of defined **<cid>**s.
Example	AT#SGACT=1,1 +IP: xxx.yyy.zzz.www OK AT#CGPADDR=1 #CGPADDR: 1,”xxx.yyy.zzz.www” OK AT#CGPADDR=? #CGPADDR: (1) OK
Reference	3GPP TS 27.007

5.1.6.1.42. I2C data via GPIO - #I2CWR

#I2CWR – Write to I2C	
AT#I2CWR=<sdaPin>, <sclPin>, <deviceId>,	This command is used to Send Data to an I2C peripheral connected to module GPIOs

#I2CWR – Write to I2C	
<registerId>, <len>	**<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=2,3,30,10,14 > 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**.**

5.1.6.1.43. I2C data from GPIO – #I2CRD

#I2CRD – Read from I2C	
AT#I2CRD=	This command is used to Read Data from an I2C peripheral connected to module

#I2CRD – Read from I2C	
<sdaPin>, <sclPin>, <deviceId>, <registerId>, <len>	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=2,3,30,10,14 #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**.**

5.1.6.1.44. 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.

#PSMRI – Power Saving Mode Ring Indicator	
	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.

5.1.6.1.45. 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>**

5.1.6.1.46. Report concatenated SMS indexes - #CMGLCONCINDEX

#CMGLCONCINDEX – Report concatenated SMS indexes	
AT#CMGLCONCINDEX	The command will report a line for each concatenated SMS containing: **#CMGLCONCINDEX: N,i,j,k,...** where N is the number of segments that form the whole concatenated SMS i,j,k are the SMS indexes of each SMS segment , 0 if segment has not been received If no concatenated SMS is present on the SIM, only **OK** result code will be returned.
AT#CMGLCONCINDEX=?	Test command returns **OK** result code.
Example	at#cmglconcindex #CMGLCONCINDEX: 3,0,2,3 #CMGLCONCINDEX: 5,4,5,6,0,8

#CMGLCONCINDEX – Report concatenated SMS indexes	
	OK

5.1.6.1.47. Select language - #LANG

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

5.1.6.1.48. RTC Status - #RTCSTAT

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

5.1.6.1.49. Network Scan Timer - #NWSCANTMR

#NWSCANTMR - Network Scan Timer	
AT#NWSCANTMR=[<tmr>]	Set command sets the Network Scan Timer that is used by the module to schedule the next network search when it is without network coverage (no signal). Parameter: **<tmr>** - timer value in units of seconds 5 3600 - time in seconds (default 5 secs.)

#NWSCANTMR - Network Scan Timer	
AT#NWSCANTMR	Execution command reports time, in seconds, when the next scan activity will be executed. The format is: **#NWSCANTMREXP: <time>** Note: if **<time>** is zero it means that the timer is not running
AT#NWSCANTMR?	Read command reports the current parameter setting for **#NWSCANTMR** command in the format: **#NWSCANTMR: <tmr>**
AT#NWSCANTMR=?	Test command reports the supported range of values for parameter **<tmr>**
Note	How much time it takes to execute the network scan depends either on how much bands have been selected and on network configuration (mean value is 5 seconds)

5.1.6.1.50. Hardware Identification - #HWREV

#HWREV – Hardware revision	
AT#HWREV	Execution command returns the device Hardware revision identification code withou command echo.
AT#HWREV=?	Test command returns the **OK** result code.

5.1.6.1.51. Dormant Control Command - #CDORM

#CDORM – Dormant Control Command	
AT#CDORM= **<action>** **[,<cal_id>]**	Set command used to: 1. Enable/Disable the indication of dormant mode. 2. Fast dormancy 3. Exit from dormancy. When the indication is enabled, an unsolicited report with the current status(dormant or active) per packet call will be sent to the DTE. Then, an update report sent to the DTE each time a change detected on status. **Parameters:** **<action>** - 0 - Disable the dormant status unsolicited result code. 1 - Enable the dormant status unsolicited result code **#CDORM: <call_id>,<dormant_status>** **Where:** **<dormant_status>** - 0 call is in dormant mode 1 call is in active mode 2 - Go to dormant (fast dormancy) 3 - Exit dormant for **<call_id>** or first found call id if no **<call_id>** mentioned. **<call_id>** - Integer type, call identification number. Range from 0 to 18. (only for Exit dormancy action)
AT#CDORM?	The read command returns the current settings and status.

#CDORM – Dormant Control Command	
	#CDORM:<unsolicited_status>[,<call_id>, <dormant_status>][<CR><LF> **#CDORM**:<unsolicited_status>,<call_id>, <dormant_status>[…]] OK **Where: <unsolicited_status>** 0 - Disabled unsolicited indication (default) 1 Enabled unsolicited indication
AT#CDORM=?	The test command returns the possible ranges of <action> and <call_id>

5.1.6.1.52. Network Emergency Number Update – #NWEN

#NWEN - Network Emergency Number Update	
AT#NWEN=[<en>]	Set command enables/disables URC of emergency number update. Parameters: **<en>** 0 - disables URC of emergency number update (factory default) 1 - enables URC of emergency number update **#NWEN: <type>** where: <type> 1 – number list update from internal ME 2 – number list update from SIM 3 – number list update from network Note: **<en>** is saved in NVM.
AT#NWEN?	Read command reports whether URC of network emergency number update is currently enabled or not: **#NWEN: <en>**
AT#NWEN=?	Test command returns supported values of parameter **<en>**

5.1.6.1.53. Read Current network status in E-UTRAN – #LTEDS

#LTEDS – Read current network status in E-UTRAN	
AT#LTEDS	Execution command reports informations about E-UTRAN network status **#LTEDS:** <EARFCN(DL/UL)>,<BAND>,<BW>,<PLMN>,<TAC>,<CELL(Physical Cell ID)>,<ESMCAUSE>,<DRX>,<RSRP>,<RSRQ>,<RSSI>,<L2W>,<RI>,<CQI>,<STATUS>,<SUBSTATUS>,<RRC>,<SVC>,<SINR>,<TXPWR>,<TMSI>,<IP>,<AVGRSRP>,<ANTBAR> [CR,LF] [CR,LF]

Parameter	E-UTRAN Example	description
EARFCN(DL/	2500/20500	E-UTRAN Absolute Radio Frequency

#LTEDS – Read current network status in E-UTRAN

UL)		Channel Number
BAND	5	Band Class
BW	20 MHz	Band Width
PLMN	450 05	Public Land Mobile Network
TAC	12544	Tracking Area Code
CELL(Physical Cell ID)	16333 (77)	CELL ID (Physical Cell ID)
ESMCAUSE	0	ESM Cause
DRX	1280ms	Discontinuous Reception
RSRP	-95	Reference Signal Received Power
RSRQ	-7	Received Signal Received Quality
RSSI	-82	Received Signal Strength Indicator
L2W	"-"	Cell reselection from E-UTRAN to WCDMA
RI	1	Rank Indicator
CQI	10	Channel Quality Indicator
STATUS	2/3	Service Status/EMM Status
SUBSTATUS	0	Sub State of EMM-DEREGISTERED, EMM-REGISTERED and EMM-REGISTERED-INITIATED
RRC	2	Radio Resource Control
SVC	3	Service Domain
SINR	4	Signal to noise ratio
TXPWR	11	Tx Power
TMSI	192243228250	Temporary Mobile Subscriber Identity
IP	10.16.217.135	Public IP Address
AVGRSRP	-92	Average of RSRP
ANTBAR	4	Antenna Bar Number

Note: Cell ID(Physical Cell ID) : eNB ID-Cell ID(Physical Cell ID)

Note : Service Status
0 : "No_SRV"
1 : "LIMITED"
2 : "SRV"
3 : "LIMITED_REGION"
4 : "PWR_SAVE"

Note : EMM Status
0 : "NULL"
1 : "DEREGISTERD"
2 : "REG_INIT"
3 : "REGISTRED"

#LTEDS – Read current network status in E-UTRAN	

	4 : "TAU_INIT"
	5 : "SVC_REQ_INIT"
	6 : "DEREGINIT"
	7 : "INVALID"
	
	Note : Sub Status
	-This parameter depend on the EMM Status is “DEREGISTERD”.
	0 : "NO_IMSI"
	//EMM_DEREGISTERED_NO_IMSI,
	1 : "PLMN_SRCH"
	//EMM_DEREGISTERED_PLMN_SEARCH,
	2 : "ATT_NEED"
	//EMM_DEREGISTERED_ATTACH_NEEDED,
	3 : "NO_CELL"
	//EMM_DEREGISTERED_NO_CELL_AVAILABLE,
	4 : "ACC2ATT"
	//EMM_DEREGISTERED_ATTEMPTING_TO_ATTACH,
	5 : "NORMAL"
	//EMM_DEREGISTERED_NORMAL_SERVICE,
	6 : "LTD_SVC"
	//EMM_DEREGISTERED_LIMITED_SERVICE
	7 : "PDN_CONN_REQ"
	//EMM_DEGEGISTERED_WAITING_PDN_CONN_REQ
	
	-This parameter depend on the EMM Status is “REGISTERED”.
	0 : "NORMAL"
	//EMM_REGISTERED_NORMAL_SERVICE
	1 : "UDT_NEED"
	//EMM_REGISTERED_UPDATE_NEEDED
	2 : "ACC2UPD"
	//EMM_REGISTERED_ATTEMPTING_TO_UPDATE
	3 : "NO_CELL"
	//EMM_REGISTERED_NO_CELL_AVAILABLE
	4 : "PLMN_SRCH"
	//EMM_REGISTERED_PLMN_SEARCH
	5 : "LTD_SVC"
	//EMM_REGISTERED_LIMITED_SERVICE
	6 : "ACC2UPDMM"
	//EMM_REGISTERED_ATTEMPTING_TO_UPDATE_MM
	7 : "IMSI_DET"
	//EMM_REGISTERED_IMSI_DETACH_INITIATED
	8 : "WAIT4ESM_ISR"
	//EMM_REGISTERED_WAITING_FOR_ESM_ISR_STATUS
	
	-This parameter depend on the EMM Status is “REG_INIT”.
	0 : "WAIT4NW_REP"
	//EMM_WATING_FOR_NW_RESPONSE

#LTEDS – Read current network status in E-UTRAN	
	1 : "WAIT4ESM_REP" //EMM_WAITING_FOR_ESM_RESPONSE Note : RRC 0 : IDLE_STATE 1 : WAITING_FOR_RRC_CONFIRMATION_STATE 2 : CONNECTED_STATE 3 : RELEASING_RRC_CONNECTION_STATE Note : SVC 0 : NO_SVC 1 : CS_ONLY 2 : PS_ONLY 3 : CS_PS
AT#LTEDS=?	Test command returns the OK result code.
Reference	- 9.9.3.9 ESM cause of TS24.301 - 5.1.3.2.2 EMM state of TS24.301 - 5.1.3.2.3, 5.1.3.2.4 EMM state EMM-DEREGISTERED & EMM-REGISTERED sub state of TS24.301

5.1.6.1.54. E-UTRAN Bandwidth Setting - #LTEBW

#LTEBW – E-UTRAN bandwidth setting.	
AT#LTEBW =[<E-UTRAN_BND> ,<BW>]	This command can operate bandwidth setting. Parameters: < **E-UTRAN_BND**> - E-UTRAN BAND set.(3,5) **<BW>** - BandWidth set - Sum of integers each representing a specific E-UTRAN bandwidth: (default value 63(band 3), 15(band 5)) 1 - 1.4MHz bandwidth support 2 - 3MHz bandwidth support 4 - 5MHz bandwidth support 8 - 10MHz bandwidth support 16 - 15MHz bandwidth support 32 - 20MHz bandwidth support - BAND 3 support BW =1.4, 3, 5, 10, 15, 20MHz - BAND 5 support BW = 1.4, 3, 5, 10MHz
AT#LTEBW?	Read command returns the current parameter settings for #LTEBW command for all bands in the format: **#LTEBW: <BAND>,<BW>**

	#LTEBW: <BAND>,<BW>
AT#LTEBW=?	Test command reports the supported range of parameters values. **#LTEBW: (3, 1-63)** **#LTEBW: (5, 1-15)**

5.1.6.1.55. Set Preferred Service Domain - #DOMAIN

#DOMAIN – Set preferred service domain	
AT#DOMAIN= <service_domain>	Execution command sets service_domain_pref value. Parameters: **< service_domain >** 1 – PS Only 2 – CS/PS (factory default) Note: After execution, module must be reset. Otherwise, a module doesn't work by changed value.
AT#DOMAIN?	Read command reports service_domain_pref value. **# DOMAIN : < service_domain >**
AT#DOMAIN=?	Test command returns supported values of parameters **< service_domain >**

5.1.6.1. Multisocket AT Commands

5.1.6.1.1. Socket Status - #SS

#SS - Socket Status	
AT#SS[=<connId>]	Execution command reports the current status of the socket: **Parameters:** **<connId> - socket connection identifier** **1..6** **The response format is:** **#SS: <connId>,<state>,<locIP>,<locPort>,<remIP>,<remPort>** where: **<connId>** - socket connection identifier, as before **<state>** - actual state of the socket: 0 - Socket Closed. 1 - Socket with an active data transfer connection. 2 - Socket suspended. 3 - Socket suspended with pending data. 4 - Socket listening. 5 - Socket with an incoming connection. Waiting for the user accept or shutdown

#SS - Socket Status	
	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 returns the **OK** result code.

5.1.6.1.2. 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>**

#SI - Socket Info	
	<CR><LF> **…** **#SI: <connId6>,<sent6>,<received6>,<buff_in6>,<ack_waiting6>**
AT#SI=?	Test command reports the range for parameter **<connId>**.
Example	AT#SI #SI: 1,123,400,10,50 #SI: 2,0,100,0,0 #SI: 3,589,100,10,100 #SI: 4,0,0,0,0 #SI: 5,0,0,0,0 #SI: 6,0,98,60,0 OK *Sockets 1,2,3,6 are opened with some data traffic.* *For example socket 1 has 123 bytes sent, 400 bytes received,* *10 byte waiting to be read and 50 bytes waiting to be* *acknowledged from the remote side.* AT#SI=1 #SI: 1,123,400,10,50 OK *We have information only about socket number 1*

5.1.6.1.3. Socket Type- #ST

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

#ST – Socket Type	
	the response format is: **#ST: <connId1>,<type1>,<direction1>** **<CR><LF>** **…** **#ST: <connId6>,<type6>,<direction6>**
AT#ST=?	Test command reports the range for parameter **<connId>**.
Example	*Single socket:* AT#ST=3 #ST:3,2,1 OK *Socket 3 is an UDP dialer.* *All sockets:* AT#ST #ST: 1,0,0 #ST: 2,0,0 #ST: 3,2,1 #ST: 4,2,2 #ST: 5,1,1 #ST: 6,1,2 OK *Socket 1 is closed.* *Socket 2 is closed.* *Socket 3 is an UDP dialer.* *Socket 4 is an UDP listener.* *Socket 5 is a TCP dialer.* *Socket 6 is a TCP listener.*

5.1.6.1.4. Context Activation – #SGACT

#SGACT - Context Activation	
AT#SGACT=<cid>,<stat>[,<userId>,<pwd>]	Execution command is used to activate the specified PDP context, followed by binding data application to the PS network. Also, it is used to deactivate the PDP context and unbind data application from PS network. Parameters: **<cid>** - PDP context identifier 1..5 - numeric parameter which specifies a particular PDP context definition (see +CGDCONT command) **<stat>** 0 - deactivate the context 1 - activate the context

#SGACT - Context Activation	
	<userId> - string type, used only if the context requires it **<pwd>** - string type, used only if the context requires it Note: context activation/deactivation returns ERROR if there is not any socket associated to it (see AT#SCFG). Note: In LTE network, default PDP context(cid 1) is automatically activated by piggybacking on LTE attach procedure for Always-on IP connectivity. If an attempt is made to disconnect last PDP conection(cid), MT is just unbinding application to the the last PDP context.
AT#SGACT?	Returns the state of all the five contexts activated or deactivated by the execution command, in the format: **#SGACT: <cid1>,<Stat1><CR><LF>** **…** **#SGACT: <cid5>,<Stat5>** where: **<cid*n*>** - as **<cid>** before **<stat*n*>** - context status 0 - context deactivated 1 - context activated
AT#SGACT=?	Reports the range for the parameters **<cid>** and **<stat>**

5.1.6.1.5. 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 produce a error and to close a closed socket or a listening socket produce **OK** response without any action.
AT#SH=?	Test command returns the **OK** result code.

5.1.6.1.6. 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

#SCFG - Socket Configuration	
	1..5 - numeric parameter which specifies a particular PDP context definition. (see +CGDCONT command) **<pktSz>** - packet size to be used by the TCP/UDP/IP stack for data sending. 0 - automatically chosen by the device(300). 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) 256 – set timeout value in 10 milliseconds 257 – set timeout value in 20 milliseconds 258 – set timeout value in 30 milliseconds 259 – set timeout value in 40 milliseconds 260 – set timeout value in 50 milliseconds 261 – set timeout value in 60 milliseconds 262 – set timeout value in 70 milliseconds 263 – set timeout value in 80 milliseconds 264 – set timeout value in 90 milliseconds Note: these values are automatically saved in NVM.
AT#SCFG?	Read command returns the current socket configuration parameters values for all the six sockets, in the format: **#SCFG: <connId1>,<cid1>,<pktsz1>,<maxTo1>,<connTo1>,<txTo1>** **<CR><LF>** **. . .** **#SCFG: <connId6>,<cid6>,<pktsz6>,<maxTo6>,<connTo6>,<txTo6>** **<CR><LF>**
AT#SCFG=?	Test command returns the range of supported values for all the subparameters.
Example	at#scfg? #SCFG: 1,1,300,90,600,50 #SCFG: 2,2,300,90,600,50 #SCFG: 3,2,250,90,600,50 #SCFG: 4,1,300,90,600,50 #SCFG: 5,1,300,90,600,50 #SCFG: 6,1,300,90,600,50 OK

#SCFG - Socket Configuration	

5.1.6.1.7. 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 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)

#SCFGEXT - Socket Configuration Extended	
	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>,** **< ListenAutoRsp1>,0<CR><LF>** **...** **#SCFGEXT: <connId6>,<srMode6>,<dataMode6>,<keepalive6>** **< ListenAutoRsp6>,0**
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 OK

5.1.6.1.8. 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

#SCFGEXT2 - Socket Configuration Extended	
	(#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. Note : values are automatically saved in NVM. **<noCarrierMode>** - permits to choose **NO CARRIER** indication format when the socket is closed as follows 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

#SCFGEXT2 - Socket Configuration Extended	
	available data(#SRECV or SRING mode 2), it is indicated cause 1 for both possible FIN and RST from remote.
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: 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.*

#SCFGEXT2 - Socket Configuration Extended	

5.1.6.1.9. Socket Dial - #SD

#SD - Socket Dial	
AT#SD=<connId>,<txProt>,<rPort>,<IPaddr>[,<closureType>[,<lPort>[,<connMode>[,<txTime>]]]]	Execution command opens a remote connection via socket. Parameters: **<connId>** - socket connection identifier 1..6 **<txProt>** - transmission protocol 0 - TCP 1 - UDP **<rPort>** - remote host port to contact 1..65535 **<IPaddr>** - address of the remote host, string type. This parameter can be either: - any valid IP address in the format: "xxx.xxx.xxx.xxx" - any host name to be solved with a DNS query **<closureType>** - socket closure behaviour for TCP 0 - local host closes immediately when remote host has closed (default) 255 - local host closes after an escape sequence (+++) **<lPort>** - UDP connections local port 1..65535 (factory default is 0) **<connMode>** - Connection mode 0 - online mode connection (default) 1 - command mode connection **<txTime>** - Adjusting a time interval for series of UDP data packets will be uploaded. 0 – Time interval is not requested (default) 1..1000 – Time interval in milliseconds. 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.** Note: **<txTime>** parameter is valid for UDP connections only and has no effect (if used) for TCP connections. For slow servers it is recommended to adjust the time interval for uploading series of data packets in order to do not lose data. The following data packet will be sent after the previous data packet's time interval has been expired.
AT#SD=?	Test command reports the range of values for all the parameters.
Example	*Open socket 1 in online mode* AT#SD=1,0,80,"www.google.com",0,0,0 CONNECT … *Open socket 1 in command mode* AT#SD=1,0,80,"www.google.com",0,0,1 OK

5.1.6.1.10. Socket Restore – #SO

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

5.1.6.1.11. Socket Listen – #SL

#SL - Socket Listen	
AT#SL=<connId>, <listenState>, <listenPort> [,<closure type>]	This command opens/closes a socket listening for an incoming connection on a specified port. Parameters: **<connId>** - socket connection identifier 1..6

#SL - Socket Listen	
	<listenState> - 0 - closes socket listening 1 - starts socket listening **<listenPort>** - local listening port 1..65535 **<closure type>** - socket closure behavior for TCP when remote host has closed 0 – local host closes immediately(factory default) 255 – local host closes after an escape sequence (+++) or immediately in case of an abortive disconnect from remote 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**
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 for TCP on port 3500. AT#SL=1,1,3500 OK

5.1.6.1.12. 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

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

5.1.6.1.13. 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

#SA - Socket Accept	
AT#SA=?	Test command reports the range of values for all the parameters.

5.1.6.1.14. 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) 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.

#SLASTCLOSURE – Detect the cause of a socket disconnection	
	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>**

5.1.6.1.15. 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.

#SRECV – Received Data in Command Mode	
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* 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

5.1.6.1.16. Send Data In Command Mode - #SSEND

#SSEND – Send Data in Command Mode

#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 1024; trying to send more data will cause the surplus to be discarded and lost. Note: it's possible to use **#SSEND** only if the connection was opened by **#SD**, else the ME is raising an error **Note: a byte corresponding to BS char(0x08) is treated with its corresponding meaning; therefore previous byte will be cancelled(and BS char itself will not be sent)**
AT#SSEND=?	Test command returns the **OK** result code.
Example	*Send data through socket number 2* AT#SSEND=2 >Test<CTRL-Z> OK

5.1.6.1.17. 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 including all possible octets(from 0x00 to 0xFF). Parameters: **<connId>** - socket connection identifier 1..6 **<bytestosend>** - number of bytes to be sent Please refer to test command for range The device responds to the command with the prompt '> ' <greater_than><space> and waits for the data to send. When <bytestosend> bytes have been sent, operation is automatically completed. If data are successfully sent, then the response is OK. If data sending fails for some reason, an error code is reported. Note: it's possible to use **#SSENDEXT** only if the connection was opened by **#SD**, else the ME is raising an error **Note: all special characters are sent like a generic byte.** **(For instance: 0x08 is simply sent through the socket and don't behave like a**

#SSENDEXT – Send Data in Command Mode extended	
	BS, i.e. previous character is not deleted)
AT#SSENDEXT=?	Test command returns the range of supported values for parameters **<connId>** and **<bytestosend>**

Example	*Open the socket in command mode:*
	AT#SD=1,0,<port>,"IP address",0,0,1
	OK
	
	Give the command 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.

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

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

#SSENDUDP – send UDP data to a specific remote host	
Example	*Starts listening on <LocPort>(previous setting of firewall through #FRWL has to be done)* AT#SLUDP=1,1,<LocPort> OK SRING: 1 // *UDP data from a remote host available* AT#SA=1,1 OK SRING: 1 AT#SI=1 #SI: 1,0,0,23,0 *// 23 bytes to read* OK AT#SRECV=1,23 #SRECV:1,23 message from first host OK AT#SS=1 #SS: 1,2,<LocIP>,<LocPort>,<RemIP1>,<RemPort1> OK AT#SSENDUDP=1,<RemIP1>,<RemPort1> >response to first host OK SRING: 1 // *UDP data from a remote host available* AT#SI=1 #SI: 1,22,23,24,0 *// 24 bytes to read* OK AT#SRECV=1,24 #SRECV:1,24 message from second host OK AT#SS=1 #SS: 1,2,<LocIP>,<LocPort>,<RemIP2>,<RemPort2> OK *Remote host has changed, we want to send*

#SSENDUDP – send UDP data to a specific remote host	
	a reponse: **AT#SSENDUDP=1,<RemIP2>,<RemPort2>** **>response to second host** **OK**

5.1.6.1.19. Send UDP data to a specific remote host extended – #SSENDUDPEXT

#SSENDUDPEXT – send UDP data to a specific remote host extended	
AT#SSENDUDPEXT=<connId>,<bytestosend>,<remoteIP>,<remotePort>	This command permits, while the module is in command mode, to send data over UDP to a specific remote host including all possible octets(from 0x00 to 0xFF) As indicated about **#SSENDUDP**: UDP socket has to be previously opened through **#SLUDP** / **#SA**, then we are able to send data to different remote hosts Like **#SSENDEXT**, the device responds with the prompt '> ' and waits for the data to send, operation is automatically completed when **<bytestosend>** have been sent. Parameters: **<connId>** - socket connection identifier 1..6 **<bytestosend>** - number of bytes to be sent 1-1500 **<remoteIP>** - IP address of the remote host in dotted decimal notation, string type: "xxx.xxx.xxx.xxx" **<remotePort>** - remote host port 1..65535
AT#SSENDUDPEXT=?	Test command reports the supported range of values for parameters **<connId>**,**<bytestosend>**,**<remoteIP>** and **<remotePort>**

5.1.6.1.20. Easy GPRS Authentication Type – #SGACTAUTH

#SGACTAUTH – Easy GPRS Authentication Type	
AT#SGACTAUTH=<type>	Set command sets the authentication type for EPS This command has effect on the authentication mode used on AT#SGACT or AT#GPRS commands. Parameter <type> 0 - no authentication 1 - PAP authentication (factory default) 2 - CHAP authentication

#SGACTAUTH – Easy GPRS Authentication Type	
	Note: the parameter is not saved in NVM
AT#SGACTAUTH?	Read command reports the current EPS authentication type, in the format: **#SGACTAUTH: <type>**
AT#SGACTAUTH=?	Test command returns the range of supported values for parameter **<type>.**

5.1.6.1.21. Context activation and configuration - #SGACTCFG

#SGACTCFG – Context Activation and Configuration	
AT#SGACTCFG= <cid>, <retry>, [,<delay> [,<urcmode>]]	Execution command is used to enable or disable the automatic activation/reactivation of the context for the specified PDP context, to set the maximum number of attempts and to set the delay between an attempt and the next one. The context is activated automatically after every **EPS Attach** or after a **NW PDP CONTEXT deactivation** if al least one IPEasy socket is configured to this context (see AT#SCFG). Parameters: <**cid**> - PDP context identifier. 1..5 – numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command) <**retry**> - numeric parameter which specifies the maximum number of context activation attempts in case of activation failure. The value belongs to the following range: 0 – 15 0 – disable the automatic activation/reactivation of the context (default) <**delay**> - numeric parameter which specifies the delay in seconds between an attempt and the next one. The value belongs to the following range: 180 – 3600 <**urcmode**> - URC presentation mode 0 – disable unsolicited result code (default) 1 – enable unsolicited result code, after an automatic activation/reactivation, of the local IP address obtained from the network. The unsolicited message is in the format: **#SGACT: <ip_address>** Reporting the local IP address obtained from the network. Note: the URC presentation mode <**urcmode**> is related to the current AT instance only. Last <**urcmode**> setting is saved for every instance as extended profile parameter, thus it is possible to restore it even if the multiplexer control channel is released and set up, back and forth. Note: <**retry**> and <**delay**> setting aer global parameter saved in NVM.

#SGACTCFG – Context Activation and Configuration	
	Note: if the automatic activation is enabled on a context, then it is not allowed to modify by the command AT#SCFG the association between the context itself and the socket connection identifier all the other parameters of command AT#SCFG are modifiable while the socket is not connected.
AT#SGACTCFG?	Read command reports the state of all the six contexts, in the format: **#SGACTCFG: <cid1>,<retry1>,<delay1>,<urcmode><CR><LF>** **…** **#SGACTCFG: <cid6>,<retry6>,<delay6>,<urcmode>** where: <**cid*n***> - as <**cid**> before <**retry*n***> - as <**retry**> before <**delay*n***> - as <**delay**> before <**urcmode**> - as <**urcmode**> before
AT#SGACTCFG=?	Test command returns the range of supported values for parameters <**cid**>,<**retry**>,<**delay**> and <**urcmode**>

5.1.6.1.22. 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..5 – numeric parameter which specifies a particular PDP context definition. (see **+CGDCONT** command) <**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 EPS 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: If we receive delayed CTXT ACTIVATION ACCEPT after abort, network will be automatically informed of our aborted attempt through relative protocol messages (SM STATUS) and will also close on its side. Ohterwise, if no ACCEPT is received after abort, network will be informed later of our PDP state through other protocol messages (routing area update for instance).

#SGACTCFGEXT – Context Activation and Configuration	
	Note: values are automatically saved in NVM.
AT#SGACTCFGEXT?	Read command reports the state of all the six contexts, in the format: **#SGACTCFGEXT: <cid1>,<abortAttemptEnable1>,,0,0,0<CR><LF>** **…** **#SGACTCFGEXT: <cid6>,<abortAttemptEnable6>,,0,0,0** where: <**cid*n***> - as <**cid**> before <**abortAttemptEnable*n***> - as <**abortAttemptEnable**> before
AT#SGACTCFGEXT=?	Test command returns the range of supported values for parameters

5.1.6.2. FTP AT Commands

5.1.6.2.1. FTP Time-Out - #FTPTO

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

5.1.6.2.2. 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

#FTPOPEN - FTP Open	
	1200 (120 seconds). The FTPTO value that exceed 1200 is considered as 1200. Note: Before opening FTP connection the EPS must been activated with **AT#GPRS=1** or **AT# SGACT**
AT#FTPOPEN=?	Test command returns the **OK** result code.

5.1.6.2.3. FTP Close - #FTPCLOSE

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

5.1.6.2.4. FTP Config - #FTPCFG

#FTPCFG – FTP Config	
AT#FTPCFG= <tout>, <IPPignoring> [,<FTPSEn>]	**<tout>** - time-out in 100 ms units 100..5000 – hundreds of ms (factory default is 100) Set command set the time-out used when opening either the FTP control channel or the FTP traffic channel. s Note: The parameter is not saved in NVM. Note: if parameter **<tout>** is omitted the behavior of Set command is the same as Read command. **<IPPignoring>** 0: No IP Private ignoring. During a FTP passive mode connection client uses the IP address received from server, even if it is a private IPV4 address. 1: IP Private ignoring enabled. During a FTP passive mode connection if the server sends a private IPV4 address the client doesn't consider this and connects with server using the IP address used in AT#FTPOPEN. **<FTPSEn>** 0: – Disable FTPS security: all FTP commands will perform plain FTP connections.
AT#FTPCFG?	Read command reports the currently selected parameters in the format: **AT#FTPCFG=<tout>,<IPPignoring>,<FTPSEn>**
AT#FTPCFG=?	Test command reports the sypported range of values for parameter(s) **<tout>,<IPPignoring>,<FTPSEn>**

5.1.6.2.5. FTP Put - #FTPPUT

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

#FTPPUT - FTP Put	
	Note: if we set **<connMode>** to 1, the data connection is opened and we remain in command mode and we see the result code **OK** (instead of **CONNECT**) Parameter: **<filename>** - string type, name of the file (maximum length 200 characters) **<connMode>** 0 – online mode 1 – command mode Note: use the escape sequence **+++** to close the data connection. Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet.
AT#FTPPUT=?	Test command reports the maximum length of <**filename**> and the supported range of values of <**connMode**>. The format is: **#FTPPUT:<length>,(list of supported <connMode>s)** where: **<length>** - integer type value indicating the maximum length of <**filename**>

5.1.6.2.6. 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.

5.1.6.2.7. FTPGET in command mode - #FTPGETPKT

#FTPGETPKT - FTP Get in command mode	
AT#FTPGETPKT=<filename>[,<viewMode>]	Execution command issued during an FTP connection, opens a data connection and starts getting a file from the FTP server while remaining in **command mode**. The data port is opened and we remain in **command mode** and we see the result code **OK**. Retrieval from FTP server of "remotefile" is started, but data are only buffered in the module.

#FTPGETPKT - FTP Get in command mode	
	It's possible to read data afterwards issuing **#FTPRECV** command. Parameter: **<filename>** - file name, string type. (maximum length: 200 characters). <viewMode> - permit to choose view mode (text format or Hexadecimal) 0 – text format (default) 1 – hexadecimal format Note: The command causes an **ERROR** result code to be returned in case no FTP connection has been opened yet. Note: Command closure should always be handled by application. In order to avoid download stall situations a timeout should be implemented by the application.
AT#FTPGETPKT?	Read command reports current download state for <filename> with <viewMode> chosen, in the format: **#FTPGETPKT**: <**remotefile**>,<**viewMode**>,<**eof**> <**eof**> 0 – file currently being transferred 1 – complete file has been transferred to FTP client
AT#FTPGETPKT=?	Test command returns the **OK** result code.

5.1.6.2.8. 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)**

5.1.6.2.9. FTP Read Message – #FTPMSG

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

5.1.6.2.10. 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.

5.1.6.2.11. 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.

5.1.6.2.12. 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.

5.1.6.2.13. FTP List – #FTPLIST

#FTPLIST - FTP List	
AT#FTPLIST[=[<name>]]	Execution command, issued during an FTP connection, opens a data connection and starts getting from the server the list of contents of the specified directory or the properties of the specified file. Parameter: **<name>** - string type, it's the name of the directory or file. Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. Note: issuing **AT#FTPLIST<CR>** opens a data connection and starts getting from the server the list of contents of the working directory.

#FTPLIST - FTP List	
AT#FTPLIST=?	Test command returns the **OK** result code.

5.1.6.2.14. Get file size - #FTPFSIZE

#FTPFSIZE – Get file size from FTP server	
AT#FTPFSIZE=<filename>	Execution command, issued during an FTP connection, permits to get file size of <**filename**> file. Note: **#FTPTYPE=0** command has to be issued before **#FTPFSIZE** command, to set file transfer type to binary mode.
AT#FTPFSIZE=?	Test command returns the **OK** result code.

5.1.6.2.15. FTP Append - #FTPAPP

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

5.1.6.2.16. Set restart position - #FTPREST

#FTPREST – Set restart position for FTP GET	
AT#FTPREST=<restartposition>	Set command sets the restart position for successive **#FTPGET** (or **#FTPGETPKT**) command.

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

5.1.6.2.17. Receive Data in Command Mode - #FTPRECV

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

#FTPRECV – Receive Data In Command Mode	
	#FTPRECV:<available>
Example	AT#FTPRECV? #FTPRECV: 3000 OK *Read required part of the buffered data:* AT#FTPRECV=400 #FTPRECV:400 Text row number 1 * 11111111111111111111111 * Text row number 2 * 22222222222222222222222 * Text row number 3 * 33333333333333333333333 * Text row number 4 * 44444444444444444444444 * Text row number 5 * 55555555555555555555555 * Text row number 6 * 66666666666666666666666 * Text row number 7 * 77777777777777777777777 * Text row number 8 * 88888888888888888888 OK AT#FTPRECV=200 #FTPRECV:200 88888 * Text row number 9 * 99999999999999999999999 * Text row number 10 * AAAAAAAAAAAAAAAAAAAAAAAAAA* Text row number 11 * BBBBBBBBBBBBBBBBBBBBBBBBBB * Text row number 12 * CCCCCCCCCCCCCCC OK *Note: to check when you have received complete file it's possible to use* ***AT#FTPGETPKT*** *read command:* AT#FTPGETPKT? #FTPGETPKT:sample.txt,0,1 OK *(you will get <**eof**> set to 1)*

5.1.6.2.18. FTP Append Extended – #FTPAPPEXT

#FTPAPPEXT - FTP Append Extended	
AT#FTPAPPEXT=<bytestosend>[,<eof>]	This command permits to send data on a FTP data port while the module is in command mode. FTP data port has to be previously opened through **#FTPPUT** (or **#FTPAPP**) with

#FTPAPPEXT - FTP Append Extended	
	<**connMode**> parameter set to **command mode** connection. Parameters: <**bytestosend**> - number of bytes to be sent 1..1500 <**eof**> - data port closure 0 – normal sending of data chunk 1 – close data port after sending data chunk The device responds to the command with the prompt <**greater_than**><**space**> and waits for the data to send. When <**bytestosend**> bytes have been sent, operation is automatically completed. If (all or part of the) data are successfully sent, then the response is: #FTPAPPEXT:<sentbytes> OK Where <**sentbytes**> are the number of sent bytes. Note: <**sentbytes**> could be less than <**bytestosend**> If data sending fails for some reason, an error code is reported.
AT#FTPAPPEXT=?	Test command reports the supported range of values for parameters <**bytestosend**> and <**eof**>
Example	AT#FTPOPEN=”IP”,username,password OK AT#FTPPUT=<filename>,1 *(the new param 1 means that we open the connection in command mode)* OK *Here data socket will stay opened, but interface will be available (command mode)* AT#FTPAPPEXT=Size >… *write here the binary data. As soon Size byte are written, data are sent and OK is returned* #FTPAPPEXT:<SentBytes> OK …….. *Last #FTPAPPEXT will close the data socket, because second (optional) parameter has this meaning:* AT#FTPAPPEXT=Size,1 >… *write here the binary data. As soon Size byte are written, data are sent and OK*

#FTPAPPEXT - FTP Append Extended	
	is returned #FTPAPPEXT:<SentBytes> OK *If the user has to reopen the data port to send another (or append to the same) file, he can restart with the FTPPUT (or FTPAPP).* *Then FTPAPPEXT, … to send the data chunks on the reopened data port.* *Note: if while sending the chunks the data port is closed from remote, user will be aware of it because #FTPAPPEXT will indicatd ERROR and cause (available if previously issued the command AT+CMEE=2) will indicate that socket has been closed.* *Also in this case obviously, data port will have to be reopened with FTPPUT and so on...(same sequence)*

5.1.6.3. Enhanced Easy GPRS® Extension AT Commands

5.1.6.3.1. Authentication User ID - #USERID

#USERID - Authentication User ID	
AT#USERID=[<user>]	Set command sets the user identification string to be used during the authentication step. Parameter: **<user>** - string type, it's the authentication User Id; the max length for this value is the output of Test command, **AT#USERID=?** (factory default is the empty string "").
AT#USERID?	Read command reports the current user identification string, in the format: **#USERID: <user>**
AT#USERID=?	Test command returns the maximum allowed length of the string parameter **<user>**. The allowed maximum length is 127.
Example	AT#USERID="myName" OK AT#USERID? #USERID: "myName" OK

5.1.6.3.2. 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	
	empty string “”).
AT#PASSW=?	Test command returns the maximum allowed length of the string parameter **<pwd>**. The allowed maximum length is 127.
Example	AT#PASSW="myPassword" OK

5.1.6.3.3. 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 OK *->value automatically chosen by device*

5.1.6.3.4. 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.

#DSTO -Data Sending Time-Out	
	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

5.1.6.3.5. 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 EPS context. Parameter: **<tout>** - socket inactivity time-out in seconds units 0 - no time-out. 1..65535 - time-out in sec. units (factory default is 90). Note: this time-out applies when no data is exchanged in the socket for a long time and therefore the socket connection has to be automatically closed and the EPS context deactivated.
AT#SKTTO?	Read command reports the current socket inactivity time-out value.
AT#SKTTO=?	Test command returns the allowed values for parameter **<tout>**.
Example	AT#SKTTO=30 OK *->(30 sec. time-out)* AT#SKTTO? #SKTTO: 30 OK

5.1.6.3.6. 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

#SKTSET - Socket Definition	
	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 EPS context 1 is correctly set with **+CGDCONT** - the authentication parameters are set **(#USERID**, **#PASSW**) - the EPS coverage is enough to permit a connection.
AT#SKTSET?	Read command reports the socket parameters values, in the format: **AT#SKTSET: <socket type>,<remote port>,<remote addr>,** **<closure type>,<local port>**
AT#SKTSET=?	Test command returns the allowed values for the parameters.
Example	AT#SKTSET=0,1024,"www.telit.net" OK
Note	Issuing command #QDNS will overwrite <remote addr> setting.

5.1.6.3.7. 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 EPS context if it was not previously activated. In this case the context is deactivated after the DNS query.

#QDNS - Query DNS	
	Note: **<IP address>** is in the format: **xxx.xxx.xxx.xxx**
AT#QDNS=?	Test command returns the **OK** result code.
Note	This command requires that the authentication parameters are correctly set and that the EPS network is present.

5.1.6.3.8. 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"**

5.1.6.3.9. Manual DNS Selection – #DNS

#DNS – Manual DNS Selection	
AT#DNS=[<cid>, <primary>, <secondary>]	Set command allows to manually set primary and secondary DNS servers for a PDP context defined by **+CGDCONT** Parameters: **<cid>** - context identifier 1..5 - numeric parameter which specifies a particular PDP context definition. (see **+CGDCONT** command) **<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

#DNS – Manual DNS Selection	
	this value instead of the **secondary DNS server** come from the network (default is "0.0.0.0"). Note: if **<primary> is "0.0.0.0"** and **<secondary> is not "0.0.0.0"**, then issuing **AT#DNS=…** raises an error. Note: if **<primary> is "0.0.0.0"** we're using the **primary DNS server** come from the network as consequence of a context activation. Note: if **<primary> is not "0.0.0.0"** and **<secondary> is "0.0.0.0"**, then we're using only the **manual primary DNS server.** Note: the context identified by **<cid>** has to be previously defined, elsewhere issuing **AT#DNS=…** raises an error. Note: the context identified by **<cid>** has to be not activated yet, elsewhere issuing **AT#DNS=…** raises an error.
AT#DNS?	Read command returns the manual DNS servers set either for every defined PDP context and for the single GSM context (only if defined), in the format: **[#DNS: <cid>,<primary>,<secondary>[<CR><LF>** **#DNS: <cid>,<primary>,<secondary>]]**
AT#DNS=?	Test command reports the supported range of values for the **<cid>** parameter.only, in the format: **#DNS: (1,5),,**

5.1.6.3.10. 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 activate the EPS 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.*

5.1.6.3.11. Socket Parameters Save - #SKTSAV

#SKTSAV - Socket Parameters Save

#SKTSAV - Socket Parameters Save	
AT#SKTSAV	Execution command saves the actual socket parameters in the NVM of the device. The socket parameters to store are: - User ID - Password - Packet Size - Socket Inactivity Time-Out - Data Sending Time-Out - Socket Type (UDP/TCP) - Remote Port - Remote Address - TCP Connection Time-Out
AT#SKTSAV=?	Test command returns the **OK** result code.
Example	AT#SKTSAV OK *socket parameters have been saved in NVM*
Note	If some parameters have not been previously specified then a default value will be stored.

5.1.6.3.12. 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
AT#SKTRST=?	Test command returns the **OK** result code.
Example	AT#SKTRST OK *socket parameters have been reset*

5.1.6.3.13. GPRS Context Activation - #GPRS

#GPRS - GPRS Context Activation	
AT#GPRS= **[<mode>]**	Execution command deactivates/activates the EPS context, eventually proceeding with the authentication with the parameters given with #PASSW and #USERID. Parameter: **<mode>** - EPS context activation mode 0 - EPS context deactivation request 1 - EPS context activation request In the case that the EPS 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. Note: if the cid 1was activated by +CGACT, Activation request/ Deactivation request by #GPRS returns error.
AT#GPRS?	Read command reports the current status of the EPS context, in the format: **#GPRS: <status>** where: **<status>** 0 - EPS context deactivated

#GPRS - GPRS Context Activation	
	1 - EPS context activated 2 - EPS context activation pending.
AT#GPRS=?	Test command returns the allowed values for parameter **<mode>**.
Example	AT#GPRS=1 +IP: 129.137.1.1 OK *Now EPS Context has been activated and our IP is 129.137.1.1* AT#GPRS=0 OK *Now EPS context has been deactivated, IP is lost.*

5.1.6.3.14. Socket Dial – #SKTD

#SKTD - Socket Dial	
AT#SKTD= [<socket type>, <remote port>, <remote addr>, [<closure type>], [<local port>]]	Set command opens the socket towards the peer specified in the parameters. Parameters: **<socket type>** - socket protocol type 0 - TCP (factory default) 1 - UDP **<remote port>** - remote host port to be opened 1..65535 - port number (factory default is 0) **<remote addr>** - address of the remote host, string type. This parameter can be either: - any valid IP address in the format: xxx.xxx.xxx.xxx - any host name to be solved with a DNS query in the format: **<host name>** (factory default is the empty string “”) **<closure type>** - socket closure behaviour for TCP 0 - local host closes immediately when remote host has closed (default) 255 - local host closes after an escape sequence (+++) **<local port>** - local host port to be used on UDP socket 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 **#SKTD** command, then an error message will be issued. Note: the command to be successful requests that: - the EPS context 1 is correctly set with +CGDCONT - the authentication parameters are set **(**#USERID, #PASSW) the EPS coverage is enough to permit a connection

#SKTD - Socket Dial	
	- the EPS has been activated with **AT#GPRS=1** Note: If all parameters are omitted then the behaviour of Set command is the same as Read command.
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

5.1.6.3.15. 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(default) 1 - UDP **<input port>** - local host input port to be listened 1..65535 - port number **<closure type>** - socket closure behaviour for TCP 0 - local host closes immediately when remote host has closed (default) 255 - local host closes after an escape sequence (+++) Command returns the **OK** result code if successful. Note: the command to be successful requests that: - the EPS context 1 is correctly set with +CGDCONT - the authentication parameters are set (#USERID, #PASSW) - the EPS coverage is enough to permit a connection - the EPS has been activated with **AT#GPRS=1** When a connection request comes on the input port, if the sender is not filtered by the internal firewall (see command #FRWL), an unsolicited code is reported:

#SKTL - Socket Listen	
	+CONN FROM: <remote addr> Where: **<remote addr>** - host address of the remote machine that contacted the device. When the connection is established the **CONNECT** indication is given and the modem goes into data transfer mode. On connection close or when context is closed with **#GPRS=0** the socket is closed and no listen is anymore active. If the context is closed by the network while in listening, the socket is closed, no listen is anymore active and an unsolicited code is reported: **#SKTL: ABORTED** Note: when closing the listening socket <input port> is a don't care parameter
AT#SKTL?	Read command returns the current socket listening **status** and the last settings of parameters **<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 EPS* AT#GPRS=1 +IP: ###.###.###.### OK *Start listening* AT#SKTL=1,0,1024 OK or AT#SKTL=1,0,1024,255 OK *Receive connection requests* +CONN FROM: 192.164.2.1 CONNECT *exchange data with the remote host*

#SKTL - Socket Listen	
	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 EPS context status, leaving it **ON** or **OFF** according to the **#GPRS** setting, therefore when the connection made with **#SKTL** is closed the context (and hence the local IP address) is maintained.

5.1.6.3.16. 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>.**

5.1.6.3.17. 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.

#FRWL - Firewall Setup	
	Note: the firewall applies for incoming (listening) connections only. Firewall general policy is **DROP**, therefore all packets that are not included into an **ACCEPT** chain rule will be silently discarded. When a packet comes from the IP address **incoming_IP**, the firewall chain rules will be scanned for matching with the following criteria: **incoming_IP & <net_mask> = <ip_addr> & <net_mask>** If criteria is matched, then the packet is accepted and the rule scan is finished; if criteria is not matched for any chain the packet is silently dropped.
AT#FRWL?	Read command reports the list of all **ACCEPT** chain rules registered in the Firewall settings in the format: **#FRWL: <ip_addr>,<net_mask>** **#FRWL: <ip_addr>,<net_mask>** **….** **OK**
AT#FRWL=?	Test command returns the allowed values for parameter **<action>.**
Example	*Let assume we want to accept connections only from our devices which are on the IP addresses ranging from* *197.158.1.1 to 197.158.255.255* *We need to add the following chain to the firewall:* AT#FRWL=1,"197.158.1.1","255.255.0.0" OK
Note	For outgoing connections made with #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 #FRWL: "000.000.000.000","000.000.000.000".

5.1.6.3.18. GPRS Data Volume – #GDATAVOL

#GDATAVOL - GPRS Data Volume	
AT#GDATAVOL=[<mode>]	Execution command reports, for every active PDP context, the amount of data the last EPS session received and transmitted, or it will report the total amount of data received and transmitted during all past EPS sessions, since last reset. Parameter: **<mode>** 0 - it resets the EPS data counter for the all the available PDP contexts (1-16) 1 - it reports the last EPS session data counter for the all the set PDP contexts (i.e. all the PDP contexts with APN parameter set using +CGDCONT), in the

#GDATAVOL - GPRS Data Volume	
	format: **#GDATAVOL: <cid*n*>,<tot*n*>,<sent*n*>,<received*n*>[<CR><LF>** **#GDATAVOL: <cid*m*>,<tot*m*>,<sent*m*>,<received*m*>[…]]** where: **<cid*n*>** - PDP context identifier 1..5 - numeric parameter which specifies a particular PDP context definition. (see **+CGDCONT** command) **<tot*n*>** - number of bytes either received or transmitted in the last EPS session for **<cid*n*>** PDP context; **<sent*n*>** - number of bytes transmitted in the last EPS session for **<cid*n*>** PDP context; **<received*n*>** - number of bytes received in the last EPS session for **<cid*n*>** PDP context; 2 - it reports the total EPS data counter, since last reset, for the all the set PDP contexts (i.e. all the PDP context with APN parameter set using **+CGDCONT**), in the format: **#GDATAVOL: <cid*n*>,<tot*n*>,<sent*n*>,<received*n*>[<CR><LF>** **#GDATAVOL: <cid*m*>,<tot*m*>,<sent*m*>,<received*m*>[…]]** where: **<cid*n*>** - PDP context identifier 1..5 - numeric parameter which specifies a particular PDP context definition. (see **+CGDCONT** command) **<tot*n*>** - number of bytes either received or transmitted, in every EPS session since last reset, for **<cid*n*>** PDP context; **<sent*n*>** - number of bytes transmitted, in every EPS session since last reset, for **<cid*n*>** PDP context; **<received*n*>** - number of bytes received, in every EPS session since last reset, for **<cid*n*>** PDP context; Note: last EPS session counters are not saved in NVM so they are loosen at power off. Note: total EPS session counters are saved on NVM.
AT#GDATAVOL=?	Test command returns the range of supported values for parameter **<mode>.**
Note	

5.1.6.3.19. 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

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

5.1.6.3.20. 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:<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 – Ping Request	
	#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 PDP context must have been activated by AT#SGACT or AT#GPRS

5.1.6.3.21. DNS from Network – #NWDNS

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

#NWDNS – DNS from Network	
AT#NWDNS=?	Test command returns a list of defined <**cid**>s.

5.1.6.4. SMS AT Commands

5.1.6.4.1. Move Short Message To Other Memory - #SMSMOVE

#SMSMOVE – Move Short Message To Other Memory	
AT#SMSMOVE=<index>	Execution command moves selected Short Message from current memory to destination memory. Parameter: **<index>** - message index in the memory selected by **+CPMS** command. It can have values form 1 to N, where N depends on the available space (see **+CPMS**) Note: if the destination memory is full, an error is returned.
AT#SMSMOVE?	Read command reports the message storage status of the current memory and the destination memory in the format: **#SMSMOVE:** **<curr_mem>,<used_curr_mem>,<total_curr_mem>,<dest_mem>,<used_dest_mem>,<total_dest_mem>** Where: - **<curr_mem>** is the current memory, selected by **+CPMS** command. It can assume the values **"SM"** or **"ME"** - **<used_curr_mem>** is the number of SMs stored in the current memory - **<total_curr_mem>** is the max number of SMs that the current memory can contain - **<dest_mem>** is the destination memory. It can assume the values **"SM"** or **"ME"** - **<used_dest_mem>** is the number of SMs stored in the destination memory - **<total_dest**
AT#SMSMOVE=?	Test command reports the supported values for parameter **<index>**
Example	*AT+CPMS="ME"* *+CPMS: 3,100,0,20,0,20* *OK* *AT#SMSMOVE?* *#SMSMOVE: "ME",3,100,"SM",0,50* *OK* *//the current memory is ME where 3 SMs are stored; the destination memory is SIM that is empty* *AT+CMGL=ALL* *+CMGL: 1,"STO UNSENT","32XXXXXXXX","",* *test 1* *+CMGL: 2,"STO UNSENT","32XXXXXXXX","",* *test 2* *+CMGL: 3,"STO UNSENT","32XXXXXXXX","",* *test 3*

#SMSMOVE – Move Short Message To Other Memory	
	OK *//list the SMs to discover the memory index* *AT#SMSMOVE=1* *OK* *//move the SM in the first position of ME to SIM* *AT#SMSMOVE?* *#SMSMOVE: "ME",2,100,"SM",1,50* *OK* *//now we have 2 SMs in ME and 1 in SIM*

5.1.6.4.2. SMS Commands Operation Mode - #SMSMODE

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

5.1.6.5. E-mail Management AT Commands

5.1.6.5.1. E-mail SMTP Server - #ESMTP

#ESMTP - E-mail SMTP Server	
AT#ESMTP= [<smtp>]	Set command sets the SMTP server address, used for E-mail sending. SMTP server can be specified as IP address or as nick name. Parameter: **<smtp>** - SMTP server address, string type. This parameter can be either: - any valid IP address in the format: xxx.xxx.xxx.xxx - any host name to be solved with a DNS query in the format: **<host name>** (factory default is the empty string "") Note: the max length for **<smtp>** is the output of Test command.
AT#ESMTP?	Read Command reports the current SMTP server address, in the format: **#ESMTP: <smtp>**
AT#ESMTP=?	Test command returns the max length for the parameter **<smtp>.**
Example	AT#ESMTP="smtp.mydomain.com" OK

#ESMTP - E-mail SMTP Server	
Note	The SMTP server used shall be inside the APN space (the smtp server provided by the network operator) or it must allow the Relay, otherwise it will refuse to send the e-mail.

5.1.6.5.2. E-mail Sender Address – #EADDR

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

5.1.6.5.3. E-mail Authentication User Name – #EUSER

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

#EUSER - E-mail Authentication User Name	
	OK
Note	It is a different user field than the one used for EPS authentication (see #USERID).

5.1.6.5.4. E-mail Authentication Password - #EPASSW

#EPASSW - E-mail Authentication Password	
AT#EPASSW=[<e-pwd>]	Set command sets the password string to be used during the authentication step of the SMTP. Parameter: **<e-pwd>** - e-mail authentication password, string type. - any string value up to max length reported in the Test command. (factory default is the empty string “”) Note: if no authentication is required then the **<e-pwd>** parameter shall be empty "".
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 EPS authentication (see #PASSW).

5.1.6.5.5. E-mail Sending - #EMAILD

#EMAILD - E-mail Sending	
AT#EMAILD=[<da>[,<subj>]]	Execution command sends an e-mail message if EPS context has already been activated with **AT#SGACT=1,1** or **AT#GPRS=1**. Parameters: **<da>** - destination address, string type. (maximum length 100 characters) **<subj>** - subject of the message, string type. (maximum length 100 characters) The device responds to the command with the prompt '>' and awaits for the message body text. To complete the operation send **Ctrl-Z** char (**0x1A** hex); to exit without writing the message send **ESC** char (**0x1B** hex). If e-mail message is successfully sent, then the response is **OK**. If message sending fails for some reason, an error code is reported Note: 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.
AT#EMAILD=?	Test command returns the **OK** result code.
Example	AT#EMAILD=”me@myaddress.com”,”subject of the mail” >message body… this is the text of the mail message… CTRL-Z

#EMAILD - E-mail Sending	
	..wait.. OK *Message has been sent.*

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

5.1.6.5.7. 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.

5.1.6.5.8. 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.

5.1.6.5.9. Send Mail with Attachment - #SMTPCL

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

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

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

5.1.6.6. HTTP AT Commands

5.1.6.6.1. Configure HTTP parameters - #HTTPCFG

#HTTPCFG – configure HTTP parameters	
AT#HTTPCFG=<prof_id>[,<server_address>[,<server_port>[,<auth_type>[,<username>[,<password>[,<ssl_enabled>[,<timeout> [,<cid>]]]]]]]	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. **<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.

#HTTPCFG – configure HTTP parameters	
	<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: (1-5). Default: 1 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><CR><LF>[<CR><LF>#HTTPCFG:** **<prof_id>,<server_address>,<server_port>,<auth_type>,<username>,<password>,<ssl_enabled>,<timeout>,<cid>]<CR><LF>[…]]**
AT#HTTPCFG =?	Test command returns the supported range of parameters **<prof_id>, <server_port>, <auth_type>, <ssl_enabled>, <timeout>** and **<cid>** 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)** 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>**

5.1.6.6.2. 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 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**

#HTTPQRY – send HTTP GET, HEAD or DELETE request	
	<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>**.

5.1.6.6.3. 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 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.

#HTTPSND – send HTTP POST or PUT request	
	Note: the HTTP request header sent with #HTTPSND always contains the "Connection: close" line, and it can not be removed. When the HTTP server answer is received, then the following URC is put on the serial port: **#HTTPRING: <prof_id>,<http_status_code>,<content_type>,<data_size>** Where: **<prof_id>** is defined as above **<http_status_code>** is the numeric status code, as received from the server (see RFC 2616) **<content_type>** is a string reporting the "Content-Type" header line, as received from the server (see RFC 2616) **<data_size>** is the byte amount of data received from the server. If the server doesn't report the "Content-Length:" header line, the parameter value is 0. Note: if there are no data from server or the server doesn't answer within the time interval specified in **<timeout>** parameter of **#HTTPCFG** command, then the URC **#HTTPRING <http_status_code>** parameter has value 0.
AT#HTTPSND=?	Test command returns the supported range of parameters **<prof_id>, <command>** and **<data_len>** and the maximum length of **<resource>, <post_param>** and **<extra_header_line>** parameters in the format: **# HTTPSND: (list of supported <prof_id>s),(list of supported <command>s), <r_length>, (list of supported <data_len>s),<p_length>,<m_length>** where: **<r_length>** - integer type value indicating the maximum length of 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"** >>>

5.1.6.6.4. 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:0,300-1500 (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>** 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>)**

5.1.6.7. SIM Toolkit AT Commands

5.1.6.7.1. SIM Tookit Interface Activation - #STIA

#STIA - SIM Tookit Interface Activation	
AT#STIA= [<mode> [,<timeout>]]	Set command is used to activate the SAT sending of unsolicited indications when a **proactive command** is received from SIM. Parameters: **<mode>** 0 - disable SAT (no **<timeout>** required, if given will be ignored) 1 - enable SAT without unsolicited indication **#STN** 2 - enable SAT and extended unsolicited indication **#STN** (see #STGI) 3 - enable SAT and reduced unsolicited indication **#STN** (see #STGI) 17 - enable SAT and extended unsolicited indication #**STN** and 3GPP TS 23.038 alphabet used

#STIA - SIM Tookit Interface Activation	
	18 - enable SAT and extended unsolicited indication #**STN** (see #STGI) . only GSM default alphaber is supported 19 - enable SAT and reduced unsolicited indication #**STN** (see #STGI). only GSM default alphabet is supported 33 - enable SAT without unsolicited indication #**STN** and UCS2 alphabet used 34 - enable SAT with extended unsolicited indication #**STN** (see #STGI). only UCS2 character set is supported 35 - enable SAT with reduced unsolicited indication #**STN** (see #STGI). only UCS2 character set is supported **<timeout>** - time-out for user responses 1..2 - time-out in minutes (default 2). Any ongoing (but unanswered) **proactive command** will be aborted automatically after **<timeout>** minutes. In this case, the terminal response is either "ME currently unable to process command", or if applicable, "No response from user". In addition an unsolicited indication will be sent to the external application: **#STN: <cmdTerminateValue>** where: **<cmdTerminateValue>** is defined as **<cmdType>** + **terminate offset**; the terminate offset equals 100. Note: every time the SIM application issues a **proactive command** that requires user interaction an unsolicited code will be sent, if enabled with **#STIA** command, as follows: • if **<mode>** parameter of **#STIA** command has been set to 3 (reduced unsolicited indication) an unsolicited indication will be sent, indicating the type of **proactive command** issued by the SIM: **#STN: <cmdType>** • if **<mode>** parameter of **#STIA** command has been set to 2 (extended unsolicited indication) the format of the unsolicited indication depends on the specific command: *if* ***<cmdType>=1*** *(REFRESH)* an unsolicited notification will be sent to the user: **#STN: <cmdType>,<refresh type>** where: **<refresh type>** 0 - SIM Initialization and Full File Change Notification; 1 - File Change Notification;

#STIA - SIM Tookit Interface Activation

2 - SIM Initialization and File Change Notification;
3 - SIM Initialization;
4 - SIM Reset

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

if ***<cmdType>=17*** *(SEND SS)*
if ***<cmdType>=19*** *(SEND SHORT MESSAGE)*
if ***<cmdType>=20*** *(SEND DTMF)*
if ***<cmdType>=32*** *(PLAY TONE) (*not supported)

an unsolicited notification will be sent if allowed by SIM (see 3GPP TS 31.114):

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

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

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

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

#STN: 119

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

an unsolicited notification will be sent if allowed by SIM (see 3GPP TS 31.114):

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

where:
<cmdDetails> - unsigned Integer used as a bit field.
0..255 - used as a bit field:
bit 1:
0 - normal priority
1 - high priority
bits 2 to 7: reserved for future use
bit 8:

#STIA - SIM Tookit Interface Activation

0 - clear message after a delay
1 - wait for user to clear message
<text> - (optional) text to be displayed to user

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

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

an unsolicited notification will be sent to the user:

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

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

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

All other commands:

the unsolicited indication will report just the proactive command type:

#STN: <cmdType>

Note: if the **call control** or **SMS control facility in the SIM** is activated, when the customer application makes an outgoing call, or sends an SS or USSD, or an SMS, the following **#STN** unsolicited indication could be sent, according to 3GPP TS 31.114, to indicate whether the outgoing call has been accepted, rejected or modified by the SIM, or if the SMS service centre address or destination has been changed:

#STN: <cmdTerminateValue>,<Result>[,<TextInfo>[,<Number>[,<MODestAddr>]]]

where
<cmdTerminateValue>

#STIA - SIM Tookit Interface Activation	
	150 - SMS control response 160 - call/SS/USSD response **<Result>** 0 - Call/SMS not allowed 1 - Call/SMS allowed 2 - Call/SMS allowed with modification **<Number>** - Called number, Service Center Address or SS String in ASCII format. **<MODestAddr>** - MO destination address in ASCII format. **<TextInfo>** - alpha identifier provided by the SIM in ASCII format. Note: when the SIM Application enters its main menu again (i.e. not at startup) an unsolicited result code **#STN: 254** is sent. The TA does not need to respond directly, i.e. **AT#STSR** is not required. It is possible to restart the SAT session from the main menu again with the command **AT#STGI=37**. Note: The settings are saved on user profile and available on following reboot. SIM Toolkit activation/deactivation is only performed at power on.
AT#STIA?	Read command can be used to get information about the SAT interface in the format: **#STIA: <state>,<mode>,<timeout>,<SatProfile>** where: **<state>** - the device is in one of the following state: 0 - SIM has not started its application yet 1 - SIM has started its application (SAT main menu ready) **<mode>** - SAT and unsolicited indications enabling status (see above) **<timeout>** - time-out for user responses (see above) **<SatProfile>** - SAT Terminal Profile according to 3GPP TS 31.114, i. e. the list of SIM Application Toolkit facilities that are supported by the ME. The profile cannot be changed by the TA. Note: In SAT applications usually an SMS message is sent to the network provider containing service requests, e.g. to send the latest news. The provider returns a message with the requested information. Before activating SAT it is recommended to set the SMS text mode with command **AT+CMGF=1** and to enable unsolicited indications for incoming SMS messages with command +CNMI.

#STIA - SIM Tookit Interface Activation	
AT#STIA=?	Test command returns the range of available values for the parameters **<mode>** and **<timeout>**.
Note	Just one instance at a time, the one which first issued **AT#STIA=*n*** (with ***n*** different from zero), is allowed to issue SAT commands, and this is valid till the same instance issues **AT#STIA=0**. After power cycle another instance can enable SAT.
Note	A typical SAT session on AT interface starts after an **#STN: 37** unsolicited code is received, if enabled(see above). At that point usually an **AT#STGI=37** command is issued (see **#STGI)** and after the SAT main menu has been displayed on TE an **AT#STSR=37,0,x** command is issued to select an item in the menu (see **#STSR)**

5.1.6.7.2. SIM Tookit Get Information – #STGI

#STGI - SIM Tookit Get Information	
AT#STGI= [<cmdType>]	**#STGI** set command is used to request the parameters of a **proactive command** from the ME. Parameter: **<cmdType>** - **proactive command** ID according to 3GPP TS 102.223 (decimal); these are only those command types that use the AT interface; SAT commands which are not using the AT interface (not MMI related SAT commands, e.g. PROVIDE LOCAL INFORMATION) are executed without sending any indication to the user 1 - REFRESH 5 - SET UP EVENT LIST 16 - SET UP CALL 17 - SEND SS 18 - SEND USSD 19 - SEND SHORT MESSAGE 20 - SEND DTMF 32 - PLAY TONE (not supported) 33 - DISPLAY TEXT 34 - GET INKEY 35 - GET INPUT 36 - SELECT ITEM 37 - SET UP MENU 40 - SET UP IDLE MODE TEXT Requested command parameters are sent using an **#STGI** indication: **#STGI: <parameters>** where **<parameters>** depends upon the ongoing **proactive command** as follows: *if **<cmdType>=1** (REFRESH)*

#STGI - SIM Tookit Get Information	
	#STGI: <cmdType>,<refresh type> where: **<refresh type>** 0 - SIM Initialization and Full File Change Notification; 1 - File Change Notification; 2 - SIM Initialization and File Change Notification; 3 - SIM Initialization; 4 - SIM Reset *if* ***<cmdType>=5*** *(SET UP EVENT LIST)* **#STGI: <cmdType>,<event list mask>** where: **<event list mask>** - hexadecimal number representing the list of events to monitor (see 3GPP TS 31.111): - '00' = MT call - '01' = Call connected - '02' = Call disconnected - '03' = Location status - '04' = User activity - '05' = Idle screen available - '06' = Card reader status (if class "a" is supported) - '07' = Language selection - '08' = Browser Termination (if class "c" is supported) - '09' = Data available (if class "e" is supported) - '0A' = Channel status (if class "e" is supported) The hexadecimal number is actually a bit mask, where each bit, when set, indicates that the corresponding event has to be monitored (e.g.,) *if* ***<cmdType>=16*** *(SET UP CALL)* **#STGI: <cmdType>,<cmdDetails>,[<confirmationText>], <calledNumber>** where: **<cmdDetails>** - unsigned integer, used as an enumeration 0 - Set up call, but only if not currently busy on another call 1 - Set up call, but only if not currently busy on another call, with redial 2 - Set up call, putting all other calls (if any) on hold 3 - Set up call, putting all other calls (if any) on hold, with redial 4 - Set up call, disconnecting all other calls (if any) 5 - Set up call, disconnecting all other calls (if any), with redial **<confirmationText>** - string for user confirmation stage **<calledNumber>** - string containing called number

#STGI - SIM Tookit Get Information	
	if ***<cmdType>=17*** *(SEND SS)* *if* ***<cmdType>=18*** *(SEND USSD)* *if* ***<cmdType>=19*** *(SEND SHORT MESSAGE)* *if* ***<cmdType>=20*** *(SEND DTMF)* *if* ***<cmdType>=32*** *(PLAY TONE) (not supported)* *if* ***<cmdType>=40*** *(SET UP IDLE MODE TEXT)* **#STGI: <cmdType>[,<text>]** where: **<text>** - text to be displayed to user *if* ***<cmdType>=33*** *(DISPLAY TEXT)* **#STGI: <cmdType>,<cmdDetails>[,<text>]** where: **<cmdDetails>** - unsigned Integer used as a bit field. 0..255 - used as a bit field: **bit 1**: 0 - normal priority 1 - high priority **bits 2 to 7**: reserved for future use **bit 8**: 0 - clear message after a delay 1 - wait for user to clear message **<text>** - text to be displayed to user *if* ***<cmdType>=34*** *(GET INKEY)* **#STGI: <cmdType>,<cmdDetails>,<text>** where: **<cmdDetails>** - unsigned Integer used as a bit field. 0..255 - used as a bit field: **bit 1**: 0 - Digits only (0-9, *, # and +) 1 - Alphabet set; **bit 2**: 0 - SMS default alphabet (GSM character set) 1 - UCS2 alphabet **bit 3**: 0 - Character sets defined by bit 1 and bit 2 are enabled 1 - Character sets defined by bit 1 and bit 2 are disabled and the "Yes/No" response is requested

#STGI - SIM Tookit Get Information

bits 4 to 7:
0
bit 8:
0 - No help information available
1 - Help information available

<text> - String as prompt for text.

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

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

where:
<commandDetails> - unsigned Integer used as a bit field.
0..255 - used as a bit field:
bit 1:
0 - Digits only (0-9, *, #, and +)
1 - Alphabet set
bit 2:
0 - SMS default alphabet (GSM character set)
1 - UCS2 alphabet
bit 3:
0 - ME may echo user input on the display
1 - User input shall not be revealed in any way. Hidden entry mode (see 3GPP TS 31.114) is only available when using digit input. In hidden entry mode only characters (‘0’-‘9’, ‘*’ and ‘#‘) are allowed.
bit 4:
0 - User input to be in unpacked format
1 - User input to be in SMS packed format
bits 5 to 7:
0
bit 8:
0 - No help information available
1 - Help information available

<text> - string as prompt for text
<responseMin> - minimum length of user input
0..255
<responseMax> - maximum length of user input
0..255
<defaultText> - string supplied as default response text

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

The first line of output is:

#STGI - SIM Tookit Get Information	
	#STGI: <cmdType>,<commandDetails>,<numOfItems>[,<titleText>] **<CR><LF>** One line follows for every item, repeated for **<numOfItems>**: **#STGI: <cmdType>,<itemId>,<itemText>[,<nextActionId>]** where: **<commandDetails>** - unsigned Integer used as a bitfield 0..255 - used as a bit field: **bit 1**: 0 - Presentation type is not specified 1 - Presentation type is specified in bit 2 **bit 2**: 0 - Presentation as a choice of data values if bit 1 = '1' 1 - Presentation as a choice of navigation options if bit 1 is '1' **bit 3**: 0 - No selection preference 1 - Selection using soft key preferred **bits 4 to 7**: 0 **bit 8**: 0 - No help information available 1 - Help information available **<numOfItems>** - number of items in the list **<titleText>** - string giving menu title **<itemId>** - item identifier 1..**<numOfItems>** **<itemText>** - title of item **<nextActionId>** - the next proactive command type to be issued upon execution of the menu item. 0 - no next action information available. *if* ***<cmdType>=37*** *(SET UP MENU)* The first line of output is: **#STGI: <cmdType>,<commandDetails>,<numOfItems>,<titleText>** **<CR><LF>** One line follows for every item, repeated for **<numOfItems>**: **#STGI: <cmdType>,<itemId>,<itemText>[,<nextActionId>]** where: **<commandDetails>** - unsigned Integer used as a bitfield

#STGI - SIM Tookit Get Information	
	0..255 - used as a bit field: **bit 1**: 0 - no selection preference 1 - selection using soft key preferred **bit 2 to 7**: 0 **bit 8**: 0 - no help information available 1 - help information available **<numOfItems>** - number of items in the list **<titleText>** - string giving menu title **<itemId>** - item identifier 1..**<numOfItems>** **<itemText>** - title of item **<nextActionId>** - the next proactive command type to be issued upon execution of the menu item. 0 - no next action information available. Note: upon receiving the **#STGI** response, the TA must send **#STSR** command (see below) to confirm the execution of the proactive command and provide any required user response, e.g. selected menu item.
AT#STGI?	The read command can be used to request the currently ongoing **proactive command** and the SAT state in the format **#STGI: <state>,cmdType>** where: **<state>** - SAT interface state (see **#STIA)** **<cmdType>** - ongoing proactive command An error message will be returned if there is no pending command.
AT#STGI=?	Test command returns the range for the parameters **<state>** and **<cmdType>**.
Note	The unsolicited notification sent to the user: **#STN: 37** is an indication that the main menu of the SIM Application has been sent to the TA. It will be stored by the TA so that it can be displayed later at any time by issuing an **AT#STGI=37** command. A typical SAT session on AT interface starts after an **#STN: 37** unsolicited code is received, if enabled. At that point usually an **AT#STGI=37** command is issued, and after the SAT main menu has been displayed on TE an **AT#STSR=37,0,x** command is issued to select an item in the menu (see below). The session usually ends with a SIM action like sending an SMS, or starting a call. After this, to restart the session from the beginning going back to SAT main menu it is usually required an **AT#STSR=37,16** command.

#STGI - SIM Tookit Get Information	
	The unsolicited notification sent to the user: **#STN:237** is an indication that the main menu of the SIM Application has been removed from the TA, and it is no longer available. In this case **AT#STGI=37** command response will be always **ERROR**.

5.1.6.7.3. SIM Tookit Send Response – #STSR

#STSR - SIM Tookit Send Response	
AT#STSR= **[<cmdType>,** **<userResponse>** **[,<data>]]**	The write command is used to provide to SIM user response to a command and any required user information, e.g. a selected menu item. Parameters: **<cmdType>** - integer type; **proactive command** ID according to 3GPP TS 31.114 (see **#STGI)** **<userResponse>** - action performed by the user 0 - command performed successfully (call accepted in case of call setup) 16 - proactive SIM session terminated by user 17 - backward move in the proactive SIM session requested by the user 18 - no response from user 19 - help information required by the user 20 - USSD/SS Transaction terminated by user 32 - TA currently unable to process command 34 - user has denied SIM call setup request 35 - user cleared down SIM call before connection or network release **<data>** - data entered by user, depending on **<cmdType>**, only required if **<Result>** is 0: ***Get Inkey*** **<data>** contains the key pressed by the user; used character set should be the one selected with **+CSCS** Note: if, as a user response, a binary choice (Yes/No) is requested by the SIM application using bit 3 of the **<commandDetails>** parameter the valid content of the **<inputString>** is: a) “IRA”, ”8859-1”, ”PCCP437” charsets: “Y” or “y” (positive answer) and “N” or “n” (negative answer) b) UCS2 alphabet “0079” or “0059” (positive answer) and “006E” or “004E” (negative answer) ***Get Input*** **<data>** - contains the string of characters entered by the user (see above) ***Select Item*** **<data>** - contains the item identifier selected by the user

#STSR - SIM Tookit Send Response	
	Note: Use of icons is not supported. All icon related actions will respond with no icon available.
AT#STSR?	The read command can be used to request the currently ongoing **proactive command** and the SAT state in the format **#STSR: <state>,<cmdType>** where: **<state>** - SAT interface state (see **#STIA)** **<cmdType>** - ongoing proactive command An error message will be returned if there is no pending command.
AT#STSR=?	Test command returns the range for the parameters **<state>** and **<cmdType>**.

5.1.6.8. AT Run Commands

5.1.6.8.1. Enable SMS Run AT Service - #SMSATRUN

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

5.1.6.8.2. Set SMS Run AT Service parameters - #SMSATRUNCFG

#SMSATRUNCFG – Set SMS AT Run Parameters	
AT#SMSATRUNCFG= <instance> [,<urcmod> [,<timeout>]]	Set command configures the SMS AT RUN service. Parameter: **<instance>:** AT instance that will be used by the service to run the AT Command. Range 1- 3, default 3. Note: In Qualcomm platform, <**instance**> parameter is not supported and SMS Run AT service has its independent channel. This parameter is dummy for unified policy. **<urcmod>:** 0 – disable unsolicited message 1 - enable an unsolicited message when an AT command is requested via SMS (default). When unsolicited is enabled, the AT Command requested via SMS is indicated to TE with unsolicited result code: #SMSATRUN: <Text> e.g.: #SMSATRUN: AT+CGMR;+CGSN;+GSN;+CCLK Unsolicited is dumped on the instance that requested the service activation. **<timeout>:** It defines in minutes the maximum time for a command execution. If timeout expires the module will be rebooted. Range 1 – 60, default 5. Note 1: the current settings are stored in NVM. Note 2: SMS Run AT service and EvMoni service share the same channel. For the unified policy, when the #SMSATRUNCFG sets the <**instance**> parameter, the change is reflected also in the <**instance**> parameter of the #ENAEVMONICFG command, and viceversa. Note 3: the set command returns ERROR if the command AT#ENAEVMONI? returns 1 as <mod> parameter or the command AT#SMSATRUN? returns 1 as <mod> parameter
AT#SMSATRUNCFG?	Read command returns the current settings of parameters in the format: **#SMSATRUNCFG:<instance>,<urcmod>,<timeout>**
AT#SMSATRUNCFG=?	Test command returns the supported values for the SMSATRUNCFG parameters

5.1.6.8.3. SMS AT Run White List - #SMSATWL

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

5.1.6.8.4. Set TCP Run AT Service Parameters - #TCPATRUNCFG

#TCPATRUNCFG – Set TCP AT Run Service Parameters	
AT#TCPATRUNCFG= **<connId>** **,<instance>** **,<tcpPort>** **,<tcpHostPort>**	Set command configures the TCP AT RUN service. Parameters: **<connId>** Socket connection identifier. Default 1.

#TCPATRUNCFG – Set TCP AT Run Service Parameters	
,<tcpHost> **[,<urcmod>** **[,<timeout>** **[,<authMode>** **[,<retryCnt>** **[,<retryDelay>]]]]]**	Range 1..6. This parameter is mandatory. **<instance >** AT instance that will be used by the service to run the AT Command. Default 2. Range 1 – 3. This parameter is mandatory. Note: In Qualcomm platform, <**instance**> parameter is not supported and TCP Run AT service has its independent channel. This parameter is dummy for unified policy. <**tcpPort**> TCP listen port for the connection to the service in server mode. Default 1024. Range 1..65535. This parameter is mandatory. <**tcpHostPort**> TCP remote port of the Host to connect to, in client mode. Default 1024. Range 1..65535. This parameter is mandatory. <**tcpHost**> IP address of the Host, string type. This parameter can be either: - Any valid IP address in the format: “xxx.xxx.xxx.xxx” - Any host name to be solved with a DNS query This paramteter is mandatory. Default “”. <**urcmod**> 0 – disable unsolicited messages 1 – enale an unsolicitied message when the TCP socket is connected or disconnect (default). When unsolicited is enabled, an asynchronous TCP Socket connection is indicated to TE with unsolicited result code: **#TCPATRUN: <iphostaddress>** When unsolicited is enabled, the TCP socket disconnection is indicated to TE with unsolicited result code: **#TCPATRUN: <DISCONNECT>** Unsolicited is dumped on the instance that requested the service activation. **<timeout>** Define in minutes the maximum time for a command execution. If timeout expires the module will be rebooted. The default value is 5 minutes. Range 1…5. **<autoMode>**

#TCPATRUNCFG – Set TCP AT Run Service Parameters	
	Determines the authentication procedure in server mode: 0 – when connection is up, username and password (in this order and each of them followed by a Carriage Return) have to be sent to the module before the first AT command. (default) 1 – when connection is up, the user receives a request for username and, if username is correct, a request for password. Then a message of "Login successful" will close authentication phase. Note: if username and/or password are not allowed (see **AT#TCPATRUNAUTH**) the connection will close immediately. **<retryCnt>** in client mode, at boot or after a socket disconnection, this parameter represents the number of attempts that are made in order to re-connect to the Host. Default: 0. Range 0…5. **<retryDelay>** in client mode, delay between one attempt and the other. In minutes. Default: 2. Range 1…3600. Note: the current settings are stored in NVM. Note: to start automatically the service when the module is powered-on, the automatic PDP context activation has to be set (see **AT#SGACTCFG** command). Note : the set command returns ERROR if the command **AT#TCPATRUNL**? returns 1 as <**mod**> parameter or the command **AT#TCPATRUND**? returns 1 as <**mod**> parameter
AT#TCPATRUNCFG?	Read command returns the current settings of parameters in the format: **#TCPATRUNCFG: <connId>,<instance>,<tcpPort>,<tcpHostPort>,<tcpHost>,<urcmod>,<timeout>,<authMode>,<retryCnt>,<retryDelay>**
AT#TCPATRUNCFG=?	Test command returns the supported values for the TCPATRUNCFG parameters.

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

#TCPATRUNL – Enables TCP AT Run Service in listen (server) mode	
AT#TCPATRUNL= <mod>	Set command enables/disables the TCP AT RUN service in server mode. When this service is enabled, the module tries to put itself in TCP listen state. Parameter: **<mod >** 0 – Service Disabled 1 – Service Enabled

#TCPATRUNL – Enables TCP AT Run Service in listen (server) mode	
	Note: the current settings are stored in NVM. Note: to start automatically the service when the module is powered-on, the automatic PDP context activation has to be set (see **AT#SGACTCFG** command).
AT#TCPATRUNL?	Read command returns the current settings of <mode> and the value of <stat> in the format: **#TCPATRUNL: <mod>,<stat>** where: **<stat>** - connection status 0 – not in listen 1 – in listen or active
AT#TCPATRUNL=?	Test command returns the supported values for the **TCPATRUNL** parameters

5.1.6.8.6. TCP AT Run Firewall List - #TCPATRUNFRWL

#TCPATRUNFRWL – TCP AT Run Firewall List	
AT#TCPATRUNFRWL= **<action>,** **<ip_addr>,** **<net_mask>**	Set command controls the internal firewall settings for the TCPATRUN connection. Parameters: **<action>** Command action 0 – remove selected chain 1 – add an **ACCEPT** chain 2 – remove all chains (**DROP** everything); <**ip_addr**> and <**net_mask**> has no meaning in this case. <**ip_addr**> Remote address tp be added into the **ACCEPT** chain; string type, it can be any valid IP address in the format: xxx.xxx.xxx.xxx <**net_mask**> Mask to be applied on the <ip_addr>; String type, it can be any valid IP address mask in the format: xxx.xxx.xxx.xxx Command returns **OK** result code if successful. Firewall general policy is **DROP**, therefore all packets that are not included into an **ACCEPT** chain rule will be silently discarded. When a packet comes from the IP address **incoming_IP**, the firewall chain rules will be scanned for matching with the following criteria: **incoming_IP & <net_mask> = <ip_addr> & <net_mask>**

#TCPATRUNFRWL – TCP AT Run Firewall List	
	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. Note: A maximum of 5 firewall can be present at same time in the List. Note: the firewall list is saved in NVM
AT#TCPATRUNFRWL?	Read command reports the list of all ACCEPT chain rules registered in the firewall setting in the format: **#TCPATRUNFRWL: <ip_addr>,<net_mask>** **#TCPATRUNFRWL: <ip_addr>,<net_mask>** **…** **OK**
AT#TCPATRUNFRWL=?	Test command returns the allowed values for parameter <**action**>.

5.1.6.8.7. TCP AT Run Authentication Parameters List - #TCPATRUNAUTH

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

#TCPATRUNAUTH – TCP AT Run Authentication Parameters List	
	#TCPATRUNAUTH: <userid>,<passw> **…** **OK**
AT#TCPATRUNAUTH=?	Test command returns the allowed values for parameter <**action**>.

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

#TCPATRUND – Enable TCP AT Run Service in dial (client) mode	
AT#TCPATRUND=<mod>	Set command enables/disables the TCP AT RUN service in client mode. When this service is enabled, the module tries to open a connection to the Host (the Host is specified in **AT#TCPATRUNCFG**). Parameter: **< mod >** 0: Service Disabled 1: Service Enabled Note: The current setting are stored in NVM Note: To start automatically the service when the module is powered-on, the automatic PDP context activation has to be set (see **AT#SGACTCFG** command). Note: If the connection closes or at boot, if service is enabled and context is active, the module will try to reconnect for the number of attempts specified in AT#TCPATRUNCFG also the delay between one attempt and the other will be the one specified in **AT#TCPATRUNCFG**.
AT#TCPATRUND?	Read command returns the current settings of <**mode**> and the value of <**stat**> in the format: **# TCPATRUND: <mod>,<stat>** where: **<stat>** - connection status 0 – not connected 1 – connected or connecting at socket level 2 – not connected but still trying to connect, attempting every delay time (specified in **AT#TCPATRUNCFG**)
AT#TCPATRUND =?	Test command returns the supported values for the **TCPATRUND** parameters

5.1.6.8.9. Closing TCP Run AT Socket - #TCPATRUNCLOSE

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

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

5.1.6.8.10. TCP AT Run Command Sequence - #TCPATCMDSEQ

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

5.1.6.8.11. TCP Run AT Service to a serial port - #TCPATCONSER

#TCPATCONSER – Connects the TCP Run AT service to a serial port	
AT#TCPATCONSER= <port>, <rate>	Set command sets the TCP Run AT in transparent mode, in order to have direct access to the hardware port specified. Data will be transferred directly, without being elaborated, between the TCP Run AT service and the hardware port specified. If the CMUX protocol is running the command will return ERROR. Parameters: **< port >** 0 – UART Main Port 1 – Telit LTE USB Modem1 Port 2 – Telit LTE USB Modem2 Port Not all of these ports will be available at the same time. The port available will be displayed by the test command. <**rate**> Baud rate for data transfer. Allowed values are 300,1200,2400,4800,9600,19200,38400,57600,115200. Note: The command has to be issued from the TCP ATRUN instance Note: After this command has been issued, if no error has occurred, then a "**CONNECT**" will be returned by the module to advise that the TCP ATRUN instance is **in online mode** and connected to the port specified.

#TCPATCONSER – Connects the TCP Run AT service to a serial port	
	Note: To exit from **online mode** and close the connection, the escape sequence (+++) has to be sent on the TCP ATRUN instance. The escape sequence needs to be sent in one single packet. The use of Telnet for Windows sending every single byte in a TCP packet is not appropriate to perform this connection.
AT#TCPATCONSER=?	Test command returns the supported values for the **TCPATCONSER** parameters

5.1.6.8.12. Run AT Command Execution Delay - #ATRUNDELAY

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

5.1.6.9. Event Monitor Commands

5.1.6.9.1. Enable EvMoni Service - #ENAEVMONI

#ENAEVMONI – Enable EvMoni Service	
AT#ENAEVMONI= <mod>	Set command enables/disables the EvMoni service. Parameter: **<mod>** 0 – Service Disabled (default) 1 – Service Enabled

#ENAEVMONI – Enable EvMoni Service	
	Note: The current settings are stored in NVM.
AT#ENAEVMONI?	Read command returns the current settings of <mode> and the value of <stat> in the format: **#ENAEVMONI: <mod>,<stat>** where: **<stat>** - service status 0 – not active (default) 1 – active
AT#ENAEVMONI=?	Test command returns the supported values for the **ENAEVMONI** parameters

5.1.6.9.2. EvMoni Service parameter – #ENAEVMONICFG

#ENAEVMONICFG – Set EvMoni Service Parameters	
AT#ENAEVMONICFG= <instance> [,<urcmod> [,<timeout>]]	Set command configures the EvMoni service. Parameters: <**instance**> AT instance that will be used by the service to run the AT Command. Range 1-3. (Default: 3) Note: In Qualcomm platform, <**instance**> parameter is not supported and EvMoni service share the same channel with SMS Run AT service. This parameter is dummy for unified policy. **<urcmod>** 0 – disable unsolicited message 1 – enable an unsolicited message when an AT command is executed after an event is occurred (default) When unsolicited is enabled, the AT Command is indicated to TE with unsolicited result code: **#EVMONI: <TEXT>** e.g.: **#EVMONI: AT+CGMRI+CGSN;+GSN;+CCLK** Unsolicited is dumped on the instance that requested the service activation. <**timeout**> It defines in minutes the maximum time for a command execution. If timeout Expires the module will be rebooted. (Default: 5) Note: The current settings are stored in NVM.

#ENAEVMONICFG – Set EvMoni Service Parameters	
	Note: EvMoni service and SMS Run AT service share the same channel. For the unified policy, when the **#ENAEVMONICFG** sets the <**instance**> parameter, the change is reflected also in the <**instance**> parameter of the **#SMSATRUNCFG** command, and viceversa. Note: The set command returns ERROR if the command **AT#ENAEVMONI?** Retirms 1 as <**mod**> parameter or the command **AT#SMSATRUN?** Returns 1 as <**mod**> parameter.
AT#ENAEVMONICFG?	Read command returns the current settings of parameters in the format: **#ENAEVMONICFG: <instance>,<urcmode>,<timeout>**
AT#ENAEVMONICFG=?	Test command returns the supported values for the **ENAEVMONICFG** parameters

5.1.6.9.3. Event Monitoring - #EVMONI

#EVMONI – Set the single Event Monitoring	
AT#EVMONI= **<label>** **,<mode>** **[,<paramType>** **,<param>]**	Set command enables/disables the single event monitoring, configures the related parameter and associates the AT command **<label>** String parameter (that has to be enclosed between double quotes) indicating the event under monitoring. It can assume the following values: • VBATT - battery voltage monitoring • DTR - DTR monitoring • ROAM - roaming monitoring • CONTDEACT - context deactivation monitoring • STARTUP – module start-up monitoring • REGISTERED – network registration monitoring • GPIO1 – monitoring on a selected GPIO in the GPIO range • GPIO2 – monitoring on a selected GPIO in the GPIO range • GPIO3 – monitoring on a selected GPIO in the GPIO range • GPIO4 – monitoring on a selected GPIO in the GPIO range • GPIO5 – monitoring on a selected GPIO in the GPIO range • ADCH1 – ADC High Voltage monitoring • ADCL1 – ADC Low Voltage monitoring • SMSIN – monitoring on incoming SMS **<mode>** 0 – disable the single event monitoring (default) 1 – enable the single event monitoring **< paramType >** Numeric parameter indicating the type of parameter contained in **<param>**. The 0 value indicates that **<param>** contains the AT command string to execute when the related event has occurred. Other values depend from the type of event.

#EVMONI – Set the single Event Monitoring	
	<param> It can be a numeric or string value depending on the value of **<paramType>** and on the type of event. If **<paramType>** is 0, then **<param>** is a string containing the AT command: • It has to be enclosed between double quotes • It has to start with the 2 chars AT (or at) • If the string contains the character ”, then it has to be replaced with the 3 characters \22 • the max string length is 96 characters • if it is an empty string, then the AT command is erased • If **<label>** is VBATT, **<paramType>** can assume values in the range 0 - 2. o if **<paramType>** = 1, **<param>** indicates the battery voltage threshold in the range 0 – 500, where one unit corresponds to 10 mV (therefore 500 corresponds to 5 V). (Default: 0) o if **<paramType>** = 2, **<param>** indicates the time interval in seconds after that the voltage battery under the value specified with **<paramType>** = 1 causes the event. The range is 0 – 255. (Default: 0) • If **<label>** is DTR, **<paramType>** can assume values in the range 0 - 2. o if **<paramType>** = 1, **<param>** indicates the status high or low under monitoring. The values are 0 (low) and 1 (high). (Default: 0) o if **<paramType>** = 2, **<param>** indicates the time interval in seconds after that the DTR in the status specified with **<paramType>** = 1 causes the event. The range is 0 – 255. (Default: 0) • If **<label>** is ROAM, **<paramType>** can assume only the value 0. The event under monitoring is the roaming state. • If **<label>** is CONTDEACT, **<paramType>** can assume only the value 0. The event under monitoring is the context deactivation. • If **<label>** is STARTUP, **<paramType>** can assume only the value 0. The event under monitoring is the module start-up. • If **<label>** is REGISTERED, **<paramType>** can assume only the value 0. The event under monitoring is the network registration (to home network or in roaming) after the start-up and the SMS ordening. • If **<label>** is GPIOX, **<paramType>** can assume values in the range 0 - 3. o if **<paramType>** = 1, **<param>** indicates the GPIO pin number; supported range is from 1 to a value that depends on the hardware. (Default: 1) o if **<paramType>** = 2, **<param>** indicates the status high or low under monitoring. The values are 0 (low) and 1 (high) . (Default: 0) o if **<paramType>** = 3, **<param>** indicates the time interval in

#EVMONI – Set the single Event Monitoring	
	seconds after that the selected GPIO pin in the status specified with <**paramType**> = 1 causes the event. The range is 0 – 255. (Default: 0) • If <**label**> is ADCH1, <**paramType**> can assume values in the range 0 - 3. o if <**paramType**> = 1, <**param**> indicates the ADC pin number; supported range is from 1 to a value that depends on the hardware. (Default: 1) o if <**paramType**> = 2, <**param**> indicates the ADC High voltage threshold in the range 0 – 2000 mV. (Default: 0) o if <**paramType**> = 3, <**param**> indicates the time interval in seconds after that the selected ADC pin above the value specified with <**paramType**> = 1 causes the event. The range is 0 – 255. (Default: 0) • If <**label**> is ADCL1, <**paramType**> can assume values in the range 0 - 3. o if <**paramType**> = 1, <**param**> indicates the ADC pin number; supported range is from 1 to a value that depends on the hardware. (Default: 1) o if <**paramType**> = 2, <**param**> indicates the ADC Low voltage threshold in the range 0 – 2000 mV. (Default: 0) o if <**paramType**> = 3, <**param**> indicates the time interval in seconds after that the selected ADC pin under the value specified with <**paramType**> = 1 causes the event. The range is 0 – 255. (Default: 0) • If <**label**> is SMSIN, <**paramType**> can assume values in the range 0 - 1. o if <**paramType**> = 1, <**param**> indicates the text that must be received in incoming SMS to trigger AT command execution rings after that the event occurs; the maximum number of characters in the SMS text string is 15
AT#EVMONI?	Read command returns the current settings for each event in the format: **#EVMONI:** **<label>,<mode>,<param0>[,<param1>[,<param2>[,<param3>]]]** Where **<param0>,<param1>,<param2>** and **<param3>** are defined as before for <param> depending on <label> value
AT#EVMONI=?	Test command returns values supported as a compound value

5.1.6.9.4. Send Message - #CMGS

#CMGS - Send Message	
(PDU Mode) **AT#CMGS=** **<length>,<pdu>**	**(PDU Mode)** Execution command sends to the network a message. Parameter: **<length>** - length of the PDU to be sent in bytes (excluding the SMSC address

#CMGS - Send Message	
	octets). 7..164 <**pdu**> - PDU in hexadecimal format (each octet of the PDU is given as two IRA character long hexadecimal number) and given in one line. Note: when the length octet of the SMSC address (given in the <**pdu**>) equals zero, the SMSC address set with command **+CSCA** is used; in this case the SMSC Type-of-Address octet shall not be present in the <**pdu**>. If message is successfully sent to the network, then the result is sent in the format: **#CMGS: <mr>** where <**mr**> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format. Note: if message sending fails for some reason, an error code is reported.
(Text Mode) **AT#CMGS=<da>** **,<text>**	**(Text Mode)** Execution command sends to the network a message. Parameters: <**da**> - destination address, string type represented in the currently selected character set (see **+CSCS**). <**text**> - text to send The entered text should be enclosed between double quotes and formatted as follows: - if current <**dcs**> (see **+CSMP**) indicates that GSM03.38 default alphabet is used and current <**fo**> (see **+CSMP**) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM alphabet, according to GSM 27.005, Annex A. - if current <**dcs**> (see **+CSMP**) indicates that 8-bit or UCS2 data coding scheme is used or current <**fo**> (see **+CSMP**) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the **'asterisk'** will be entered as **2A** (**IRA50** and **IRA65**) and this will be converted to an octet with integer value **0x2A**) If message is successfully sent to the network, then the result is sent in the format: **#CMGS: <mr>**

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

5.1.6.9.5. Write Message To Memory - #CMGW

#CMGW - Write Message To Memory	
(PDU Mode) **AT#CMGW= <length>,<pdu>**	**(PDU Mode)** Execution command writes in the <**memw**> memory storage a new message. Parameter: <**length**> - length in bytes of the PDU to be written. 7..164 <**pdu**> - PDU in hexadecimal format (each octet of the PDU is given as two IRA character long hexadecimal number) and given in one line. If message is successfully written in the memory, then the result is sent in the format: **#CMGW: <index>** where: <**index**> - message location index in the memory <**memw**>. If message storing fails for some reason, an error code is reported.
(Text Mode) **AT#CMGW=<da> ,<text>**	**(Text Mode)** Execution command writes in the <**memw**> memory storage a new message. Parameters: <**da**> - destination address, string type represented in the currently selected character set (see **+CSCS**). <**text**> - text to write The entered text should be enclosed between double quotes and formatted as follows: - if current <**dcs**> (see **+CSMP**) indicates that GSM03.38 default alphabet is used and current <**fo**> (see **+CSMP**) indicates that 3GPP TS 23.040 TP-

#CMGW - Write Message To Memory	
	User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM alphabet, according to GSM 27.005, Annex A. - if current **<dcs>** (see **+CSMP**) indicates that 8-bit or UCS2 data coding scheme is used or current **<fo>** (see **+CSMP**) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the **'asterisk'** will be entered as **2A** (**IRA50** and **IRA65**) and this will be converted to an octet with integer value **0x2A**) If message is successfully written in the memory, then the result is sent in the format: **#CMGW: <index>** where: **<index>** - message location index in the memory **<memw>**. If message storing fails for some reason, an error code is reported.
AT#CMGW=?	Test command returns the **OK** result code.
Reference	GSM 27.005
Note	To avoid malfunctions is suggested to wait for the #**CMGW: <index>** or **+CMS ERROR: <err>** response before issuing further commands.

5.1.6.10. SKT Specific AT Commands

5.1.6.10.1. GMMP SMS Enable – #GMMPSMSEN

#GMMPSMSEN – GMMP SMS Enable	
AT#GMMPSMSEN=<mode>	This command will support for SKT GMMP (Global M2M Protocol) service for SMS. Set command selects the behaviour of the device on how the receiving of GMMP Control message into SMS from the network is indicated to the DTE. <mode> - GMMP SMS mode 0: disable 1: enable (default) Result code indication for GMMP SMS : #GMMPSMSIND: <dcs>, <data> <dcs> - data coding scheme 1: ASCII 2: UCS2 <data> - gmm control data
AT#GMMPSMSEN?	Read command reports the current GMMP SMS mode.
AT#GMMPSMSEN =?	Test command returns the range of supported values for parameter <mode>.

#GMMPSMSEN – GMMP SMS Enable	

Example	AT#GMMPSMSEN=?
	#GMMPSMSEN: (0,1)
	
	OK
	AT#GMMPSMSEN?
	#GMMPSMSEN: 1
	
	OK
	
	// Receive GMMP Control message with 8bit data coding scheme from server
	#GMMPSMSIND: 1,HmdFTwEAAAAAAAAAAAAAAAAAAAAA==
	
	// Receive GMMP Control message with UCS2 data coding scheme from server
	#GMMPSMSIND:
	2,0048006D00650055007A00770045004100410041004100410041004100410041004100410
	041004100410041004100410041004100410041004100410041003D003D
	
	AT#GMMPSMSEN=0
	OK
	
	// Receive GMMP Control message into SMS from server
	+CMTI: "ME",1

5.1.6.10.2. GMMP TCP Connection – #GMMPTCPOPEN

#GMMPTCPOPEN – GMMP TCP Connection	
AT#GMMPTCPOPEN=<connId>, <IPaddr>,<rPort>	Execution command opens GMMP TCP socket. Parameters: **<connId>** - socket connection identifier 1..6 **<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 **<rPort>** - remote host port to contact 1..65535 Note: the following socket configurations should be set prior to connecting GMMP TCP. - AT#SCFG=1,1,1500,90,600,20 - AT#SCFGEXT=1,1,0,0,0,0 Note: if there are input data arrived through a connected socket and not yet read because the module entered **command mode** before reading them 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 **#GMMPRECV**. Under the same hypotheses it’s possible to

#GMMPTCPOPEN – GMMP TCP Connection	
	send data issuing **#GMMPSEND**
AT#GMMPTCPOPEN=?	Test command reports the range of values for all the parameters.
Example	*Open TCP connection for GMMP* AT#GMMPTCPOPEN=1,"111.111.111.111",5001 OK

5.1.6.10.3. GMMP TCP Disconnection - #GMMPTCPCLOSE

#GMMPTCPCLOSE – GMMP TCP Disconnection	
AT#GMMPTCPCLOSE=<connId>	Execution command close GMMP TCP socket. Parameters: **<connId>** - socket connection identifier 1..6
AT#GMMPTCPCLOSE=?	Test command reports the range of values for the parameter.

5.1.6.10.4. Send GMMP Data - #GMMPSEND

#GMMPSEND – Send GMMP Data	
AT#GMMPSEND=<connId>,<bytestosend>	Execution command permits to send data through a GMMP connected socket including all possible octets(from 0x00 to 0xFF). Parameters: **<connId>** - socket connection identifier 1..6 **<bytestosend>** - number of bytes to be sent Please refer to test command for range The device responds to the command with the prompt '> ' <greater_than><space> and waits for the data to send. When <bytestosend> bytes have been sent, operation is automatically completed. If data are successfully sent, then the response is OK. If data sending fails for some reason, an error code is reported. **Note: all special characters are sent like a generic byte. (For instance: 0x08 is simply sent through the socket and don't behave like a BS, i.e. previous character is not deleted)**
AT#GMMPSEND=?	Test command reports the range of values for the parameter.
Example	*Send data through socket number 1* AT#GMMPSEND=1,15 >Test Test Test! OK

5.1.6.10.5. Receive GMMP Data – #GMMPRECV

#GMMPRECV – Receive GMMP Data	
AT#GMMPRECV=<connId>	Execution command permits the user to read data arrived through a connected socket. the module is notified of arriving data by a **SRING** URC Parameters: **<connId>** - socket connection identifier 1..6 Note: issuing **#GMMPRECV** when there's no buffered data raises an error.
AT#GMMPRECV=?	Test command returns the range of supported values for parameters **<connId>**
Example	**SRING URC** SRING: 1,dataLen *Read in text format the buffered data* AT#GMMPRECV=1 #GMMPRECV: 1,15 stringa di test OK

5.1.6.10.6. Read Phonebook Information for USIM – #CPBU

#CPBU - Read Phonebook Information for USIM	
AT#CPBU	Execution command reports phonebook USIM info in the form: **#CPBU: (<minIndex> - <maxIndex>),<nlength>,<tlength>[,<elength>,<alength>,<slength>,<glength> ,(<minIndex*n*> - <maxIndex*n*>),<femail*n*>,<fanr*n*>,<fsne*n*>,<fgrp*n*>…….]** where: **<minIndex>** - the minimum **<index>** number, integer type **<maxIndex>**- the maximum **<index>** number, integer type **<nlength>** - maximum **<number>** field length, integer type **<tlength>** - maximum **<name>** field length, integer type Note: The following fields is supported SM PB only. (see +CPBS) **<elength>** - maximum **<email>** field length, integer type **<alength>** - maximum **<anr>** field length, integer type **<slength>** - maximum **<sne>** field length, integer type **<glength>** - maximum **<grp>** field length, integer type **<minIndex*n*>** - the minimum **<index>** number of **adn***n*, integer type **<maxIndex*n*>**- the maximum **<index>** number of **adn***n*, integer type **< femail*n* >** - free record number of **email***n*, integer type **< fanr*n* >** - free record number of **anr***n*, integer type **< fsne*n* >** - free record number of **sne***n*, integer type **< fgrp*n* >** - free record number of **grp***n*, integer type

#CPBU - Read Phonebook Information for USIM	
AT#CPBU?	Read command reports phonebook USIM info in the form: **#CPBU:** **<index*0*>,(<temail>,<uemail>),(<tanr>,<uanr>),(<tsne>,<usne>),(<tgrp>,<ugrp>)** **#CPBU:** **<index*n*>,(<temail>,<uemail>),(<tanr>,<uanr>),(<tsne>,<usne>),(<tgrp>,<ugrp>)** where: **<index*n*>** - the index of **adn***n*, integer type **<temail>**- total record number of **email***n*, integer type **<uemail>** - used record number of **email***n*, integer type **<tanr>** - total record number of **anr***n*, integer type **<uanr>** - used record number of **anr***n*, integer type **<tsne>** - total record number of **sne***n*, integer type **<usne>** - used record number of **sne***n*, integer type **<tgrp>** - total record number of **grp***n*, integer type **<ugrp>** - used record number of **grp***n*, integer type Note: The read command is allowed in status that selected SM PB. (see +CPBS).
Note	Remember to select the PB storage with **+CPBS** command before issuing PB commands.
Example	AT+CPBS="SM" OK AT#CPBU #CPBU: (1-500),40,16,38,40,0,24,(1-254),80,254,0,254,(255-500),20,246,0,246 OK AT#CPBU? #CPBU: 0,(80,0),(254,0),(0,0),(254,0) #CPBU: 1,(20,0),(246,0),(0,0),(246,0) OK AT+CPBS="LD" OK AT#CPBU #CPBU: (1-20),40,14 OK

5.2. AT parser abort

The following AT Command list can be aborted, while executing the AT Command
ATD
ATA
+CLCK
+COPN
+CPOL
+COPS(Accept only test command)
NOTE: If DTE transmit any character before receiving the response to the issued AT Command, this make current AT Command to be aborted.

6. List of acronyms

ARFCN	Absolute Radio Frequency Channel Number
AT	Attention command
BA	BCCH Allocation
BCCH	Broadcast Control Channel
CA	Cell Allocation
CBM	Cell Broadcast Message
CBS	Cell Broadcast Service
CCM	Current Call Meter
CLIR	Calling Line Identification Restriction
CTS	Clear To Send
CUG	Closed User Group
DCD	Data Carrier Detect
DCE	Data Communication Equipment
DCS	Digital Cellular System
DNS	Domain Name System Server
DSR	Data Set Ready
DTE	Data Terminal Equipment
DTMF	Dual Tone Multi Fraquency
DTR	Data Terminal Ready
GPRS	Global 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
SAP	SIM Access Profile
SCA	Service Center Address
SMS	Short Message Service

SMSC	Short Message Service Center
SMTP	Simple Mail Transport Protocol
TA	Terminal Adapter
TCP	Transmission Control Protocol
TE	Terminal Equipment
UDP	User Datagram Protocol
USSD	Unstructured Supplementary Service Data
UTC	Coordinated Universal Time
VDOP	Vertical dilution of precision
VTG	Course over ground and ground speed

7. Document History

Revision	Date	Changes
1	2014-09-16	Initial release