

LE910 AT Commands Reference Guide

80421ST10585A Rev.3 – 2014-10-02



APPLICABILITY TABLE

PRODUCT
LE910-EUG
LE910-NAG
LE910-NVG
LE910-SVG

SW Version
17.00.5x3

Note: the features described by the present document are provided by the products equipped with the software versions equal or greater than the version shown in the table.



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Contents

- 1. INTRODUCTION.....14**
 - 1.1. SCOPE 14
 - 1.2. AUDIENCE..... 14
 - 1.3. CONTACT INFORMATION, SUPPORT..... 14
 - 1.4. DOCUMENT ORGANIZATION 15
 - 1.5. TEXT CONVENTIONS 15
 - 1.6. RELATED DOCUMENTS 15
 - 1.7. DOCUMENT HISTORY 16
- 2. OVERVIEW18**
 - 2.1. ABOUT THE DOCUMENT 18
- 3. AT COMMANDS.....19**
 - 3.1. DEFINITIONS 19
 - 3.2. AT COMMAND SYNTAX..... 20
 - 3.2.1. *String Type Parameters*..... 21
 - 3.2.2. *Command Lines*..... 21
 - 3.2.3. *ME Error Result Code - +CME ERROR: <err>* 23
 - 3.2.4. *Message Service Failure Result Code - +CMS ERROR: <err>* 25
 - 3.2.5. *Information Responses And Result Codes* 26
 - 3.2.6. *Command Response Time-Out* 27
 - 3.2.7. *Command Issue Timing* 28
 - 3.3. STORAGE 29
 - 3.3.1. *Factory Profile And User Profiles*..... 29
- 4. AT COMMANDS REFERENCES.....31**
 - 4.1. COMMAND LINE GENERAL FORMAT 31
 - 4.1.1. *Command Line Prefixes* 31
 - 4.1.1.1. Starting A Command Line - AT 31
 - 4.1.1.2. Last Command Automatic Repetition - A/ 31
 - 4.1.2. *General Configuration Commands*..... 32
 - 4.1.2.1. Select Interface Style - #SELINT 32
 - 4.1.2.2. Set Notification Port - #NOPT 32
 - 4.2. HAYES COMPLIANT AT COMMANDS 34
 - 4.2.1. *Generic Modem Control*..... 34
 - 4.2.1.1. Set To Factory-Defined Configuration - &F 34
 - 4.2.1.2. Soft Reset - Z 34
 - 4.2.1.3. Select Active Service Class - +FCLASS 35
 - 4.2.1.4. Default Reset Full Profile Designation - &P 35
 - 4.2.1.5. Store Current Configuration - &W 35
 - 4.2.1.6. Store Telephone Number - &Z 36
 - 4.2.1.7. Display Stored Numbers - &N 36
 - 4.2.1.8. Manufacturer Identification - +GMI 36
 - 4.2.1.9. Model Identification - +GMM 36
 - 4.2.1.10. Revision Identification - +GMR 37
 - 4.2.1.11. Capabilities List - +GCAP 37
 - 4.2.1.12. Serial Number - +GSN 37
 - 4.2.1.13. Display Configuration And Profile - &V 38
 - 4.2.1.14. Display Configuration And Profile - &V0 38
 - 4.2.1.15. S Registers Display - &V1 39



4.2.1.16.	Extended S Registers Display - &V3.....	39
4.2.1.17.	Display Last Connection Statistics - &V2.....	40
4.2.1.18.	Single Line Connect Message - \V.....	40
4.2.1.19.	Country Of Installation - +GCI.....	40
4.2.1.20.	Line Signal Level - %L.....	40
4.2.1.21.	Line Quality - %Q.....	40
4.2.1.22.	Speaker Loudness - L.....	41
4.2.1.23.	Speaker Mode - M.....	41
4.2.2.	<i>DTE - Modem Interface Control</i>	42
4.2.2.1.	Command Echo - E.....	42
4.2.2.2.	Quiet Result Codes - Q.....	42
4.2.2.3.	Response Format - V.....	43
4.2.2.4.	Extended Result Codes - X.....	44
4.2.2.5.	Identification Information - I.....	44
4.2.2.6.	Data Carrier Detect (DCD) Control - &C.....	45
4.2.2.7.	Data Terminal Ready (DTR) Control - &D.....	45
4.2.2.8.	Standard Flow Control - \Q.....	46
4.2.2.9.	Flow Control - &K.....	46
4.2.2.10.	Data Set Ready (DSR) Control - &S.....	47
4.2.2.11.	Ring (RI) Control - \R.....	47
4.2.2.12.	Fixed DTE Interface Rate - +IPR.....	48
4.2.2.13.	DTE-Modem Local Flow Control - +IFC.....	49
4.2.2.14.	DTE-Modem Character Framing - +ICF.....	50
4.2.2.15.	DTE-Modem Local Rate Reporting - +ILRR.....	50
4.2.2.16.	Select Flow Control Specified By Type - +FLO.....	51
4.2.3.	<i>Call Control</i>	52
4.2.3.1.	Dial - D.....	52
4.2.3.2.	Tone Dial - T.....	54
4.2.3.3.	Pulse Dial - P.....	54
4.2.3.4.	Answer - A.....	54
4.2.3.5.	Disconnect - H.....	55
4.2.3.6.	Return To On Line Mode - O.....	55
4.2.3.7.	Guard Tone - &G.....	55
4.2.3.8.	Sync/Async Mode - &Q.....	55
4.2.4.	<i>Modulation Control</i>	56
4.2.4.1.	Line Quality And Auto Retrain - %E.....	56
4.2.5.	<i>Compression Control</i>	56
4.2.5.1.	Data Compression - +DS.....	56
4.2.5.2.	Data Compression Reporting - +DR.....	57
4.2.6.	<i>Break Control</i>	58
4.2.6.1.	Transmit Break To Remote - \B.....	58
4.2.6.2.	Break Handling - \K.....	58
4.2.6.3.	Operating Mode - \N.....	58
4.2.7.	<i>S Parameters</i>	59
4.2.7.1.	Number Of Rings To Auto Answer - S0.....	59
4.2.7.2.	Ring Counter - S1.....	60
4.2.7.3.	Escape Character - S2.....	60
4.2.7.4.	Command Line Termination Character - S3.....	60
4.2.7.5.	Response Formatting Character - S4.....	61
4.2.7.6.	Command Line Editing Character - S5.....	61
4.2.7.7.	Connection Completion Time-Out - S7.....	61
4.2.7.8.	Carrier Off With Firm Time - S10.....	62
4.2.7.9.	Escape Prompt Delay - S12.....	62
4.2.7.10.	Delay To DTR Off - S25.....	63
4.2.7.11.	Disconnect Inactivity Timer - S30.....	63
4.2.7.12.	Delay Before Forced Hang Up - S38.....	63
4.2.8.	<i>3GPP TS 27.007 AT Commands</i>	64



4.2.8.1.	General	64
4.2.8.1.1.	Request Manufacturer Identification - +CGMI	64
4.2.8.1.2.	Request Model Identification - +CGMM	64
4.2.8.1.3.	Request Revision Identification - +CGMR.....	64
4.2.8.1.4.	Request Product Serial Number Identification - +CGSN	65
4.2.8.1.5.	Select TE Character Set - +CSCS	66
4.2.8.1.6.	International Mobile Subscriber Identity (IMSI) - +CIMI	67
4.2.8.1.1.	Read ICCID (Integrated Circuit Card Identification) - +ICCID	67
4.2.8.1.1.	Serial and Software Version Number - +IMEISV	67
4.2.8.1.2.	PCCA STD-101 Select Wireless Network - +WS46	68
4.2.8.1.3.	Network Selection Menu Availability - +PACSP	68
4.2.8.2.	Call Control	69
4.2.8.2.1.	Call Mode - +CMOD.....	69
4.2.8.2.2.	Hang Up Call - +CHUP.....	69
4.2.8.2.3.	Select type of address - +CSTA.....	70
4.2.8.2.4.	Select Bearer Service Type - +CBST	70
4.2.8.2.5.	Radio Link Protocol - +CRLP	72
4.2.8.2.6.	Service Reporting Control - +CR	73
4.2.8.2.7.	Extended Error Report - +CEER	74
4.2.8.2.8.	Cellular Result Codes - +CRC.....	74
4.2.8.2.9.	HSCSD non-transparent call configuration - +CHSN	75
4.2.8.2.10.	Single Numbering Scheme - +CSNS.....	76
4.2.8.2.11.	Voice Hung Up Control - +CVHU	76
4.2.8.2.12.	Setting Time Format - +CSTF	77
4.2.8.2.13.	Setting Date Format - +CSDF	78
4.2.8.3.	Network Service Handling.....	79
4.2.8.3.1.	Subscriber Number - +CNUM.....	79
4.2.8.3.2.	Read Operator Names - +COPN.....	79
4.2.8.3.3.	Network Registration Report - +CREG	80
4.2.8.3.4.	Operator Selection - +COPS.....	82
4.2.8.3.5.	Facility Lock/Unlock - +CLCK.....	84
4.2.8.3.6.	Change Facility Password - +CPWD.....	85
4.2.8.3.7.	Calling Line Identification Presentation - +CLIP	86
4.2.8.3.8.	Calling Line Identification Restriction - +CLIR	87
4.2.8.3.9.	Connected line identification presentation - +COLP	89
4.2.8.3.10.	Called line identification presentation +CDIP	90
4.2.8.3.11.	Call Forwarding Number And Conditions - +CCFC	91
4.2.8.3.12.	Call Forwarding Flags - #CFF	92
4.2.8.3.13.	Call Waiting - +CCWA	93
4.2.8.3.14.	Call Holding Services - +CHLD.....	95
4.2.8.3.15.	Call deflection - +CTFR.....	96
4.2.8.3.16.	Unstructured Supplementary Service Data - +CUSD	97
4.2.8.3.17.	Advice Of Charge - +CAOC	98
4.2.8.3.18.	List Current Calls - +CLCC.....	99
4.2.8.3.19.	SS Notification - +CSSN.....	100
4.2.8.3.20.	Non-Access-Stratum compliancy - #NASC.....	101
4.2.8.3.21.	Closed User Group - +CCUG.....	102
4.2.8.3.22.	Preferred Operator List - +CPOL	103
4.2.8.3.23.	Selection of preferred PLMN list - +CPLS.....	104
4.2.8.4.	Mobile Equipment Control	105
4.2.8.4.1.	Phone Activity Status - +CPAS.....	105
4.2.8.4.2.	Set Phone functionality - +CFUN.....	106
4.2.8.4.3.	Enter PIN - +CPIN	107
4.2.8.4.4.	Signal Quality - +CSQ.....	109
4.2.8.4.5.	Indicator Control - +CIND	110
4.2.8.4.6.	Mobile Equipment Event Reporting - +CMER	112
4.2.8.4.7.	Select Phonebook Memory Storage - +CPBS.....	113
4.2.8.4.8.	Read Phonebook Entries - +CPBR	114



4.2.8.4.9.	Find Phonebook Entries - +CPBF	116
4.2.8.4.10.	Write Phonebook Entry - +CPBW	117
4.2.8.4.11.	Clock Management - +CCLK	118
4.2.8.4.12.	Time Zone reporting - +CTZR	119
4.2.8.4.13.	Automatic Time Zone update - +CTZU	119
4.2.8.4.14.	Restricted SIM Access - +CRSM	120
4.2.8.4.15.	Generic SIM access - +CSIM	121
4.2.8.4.16.	Alert Sound - +CALM	122
4.2.8.4.17.	Ringer Sound Level - +CRSL	123
4.2.8.4.18.	Loudspeaker Volume Level - +CLVL	123
4.2.8.4.19.	Microphone Mute Control - +CMUT	124
4.2.8.4.20.	Accumulated Call Meter - +CACM	124
4.2.8.4.21.	Accumulated Call Meter Maximum - +CAMM	125
4.2.8.4.22.	Price per Unit and Currency Table - +CPUC	125
4.2.8.4.23.	Call meter maximum event - +CCWE	126
4.2.8.4.24.	Set voice mail number - +CSVM	127
4.2.8.4.25.	Available AT Commands - +CLAC	127
4.2.8.5.	Mobile Equipment Errors	128
4.2.8.5.1.	Report Mobile Equipment Error - +CMEE	128
4.2.8.6.	Voice Control	129
4.2.8.6.1.	DTMF Tones Transmission - +VTS	129
4.2.8.6.2.	Tone Duration - +VTD	129
4.2.8.6.3.	Embedded DTMF decoder enabling - #DTMF	129
4.2.8.7.	Commands For GPRS	131
4.2.8.7.1.	GPRS Mobile Station Class - +CGCLASS	131
4.2.8.7.2.	GPRS Attach Or Detach - +CGATT	131
4.2.8.7.3.	GPRS Event Reporting - +CGEREP	132
4.2.8.7.4.	GPRS Network Registration Status - +CGREG	133
4.2.8.7.5.	Printing IP Address Format - +CGPIAF	135
4.2.8.7.6.	Define PDP Context - +CGDCONT	136
4.2.8.7.7.	Define Secondary PDP Context - +CGDSCONT	137
4.2.8.7.8.	Traffic Flow Template - +CGTFT	138
4.2.8.7.9.	3G Quality Of Service Profile (Minimum Acceptable) - +CGEQMIN	142
4.2.8.7.10.	Quality of Service Profile (Minimum Acceptable) - +CGQMIN	146
4.2.8.7.11.	Quality Of Service Profile - +CGQREQ	147
4.2.8.7.12.	3G Quality Of Service Profile (Requested) - +CGEQREQ	148
4.2.8.7.13.	PDP Context activate or deactivate - +CGACT	151
4.2.8.7.14.	3G Quality Of Service Profile (Negotiated) - +CGEQNEG	152
4.2.8.7.15.	Show PDP Address - +CGPADDR	155
4.2.8.7.16.	Modify PDP context - +CGCMOD	156
4.2.8.7.17.	Set Mode of Operator for EPS - +CEMODE	157
4.2.8.7.18.	Enter Data State - +CGDATA	158
4.2.8.7.19.	Commands for Battery Charger	159
4.2.8.7.19.1.	Battery Charge - +CBC	159
4.2.8.7.19.2.	Battery and charger status - #CBC	160
4.2.9.	3GPP TS 27.005 AT Commands for SMS and CBS	161
4.2.9.1.	General Configuration	161
4.2.9.1.1.	Select Message Service - +CSMS	161
4.2.9.1.2.	Preferred Message Storage - +CPMS	162
4.2.9.1.3.	Message Format - +CMGF	163
4.2.9.2.	Message Configuration	164
4.2.9.2.1.	Service Center Address - +CSCA	164
4.2.9.2.2.	Set Text Mode Parameters - +CSMP	165
4.2.9.2.3.	Show Text Mode Parameters - +CSDH	166
4.2.9.2.4.	Select Cell Broadcast - +CSCB	166
4.2.9.2.5.	Select service for MO SMS messages - +CGSMS	168
4.2.9.2.6.	EPS – Network Registrarion Status - +CEREG	169
4.2.9.2.7.	Primary Notification Event Reporting + CPNER	171



4.2.9.2.8.	Save Settings - +CSAS.....	172
4.2.9.2.9.	Restore Settings - +CRES.....	173
4.2.9.3.	Message Receiving And Reading.....	174
4.2.9.3.1.	New Message Indications - +CNMI.....	174
4.2.9.3.2.	New message acknowledgement - +CNMA.....	179
4.2.9.3.3.	More message to send - +CMMS.....	181
4.2.9.3.4.	List Messages - +CMGL.....	182
4.2.9.3.5.	Read Message - +CMGR.....	184
4.2.9.3.6.	PDP Context Read Dynamic Parameters - +CGCONTRDP.....	187
4.2.9.3.7.	Secondary PDP Context Read Dynamic Parameters - +CGSCONTRDP.....	189
4.2.9.3.8.	Traffic Flow Template Read Dynamic Parameters - +CGTFTRDP.....	190
4.2.9.3.9.	Define EPS Quality of Service - +CGEQOS.....	192
4.2.9.3.10.	EPS Quality Of Service Read Dynamic Parameters - +CGEQOSRDP.....	193
4.2.9.4.	Message Sending And Writing.....	194
4.2.9.4.1.	Send Message - +CMGS.....	194
4.2.9.4.2.	Send Message From Storage - +CMSS.....	196
4.2.9.4.3.	Write Message To Memory - +CMGW.....	197
4.2.9.4.4.	Delete Message - +CMGD.....	200
4.2.9.4.5.	Send SMS command - +CMGC.....	201
4.2.10.	Custom AT Commands.....	205
4.2.10.1.	Configuration AT Commands.....	205
4.2.10.1.1.	Hardware Identification - #HWREV.....	205
4.2.10.1.2.	Manufacturer Identification - #CGMI.....	205
4.2.10.1.3.	Model Identification - #CGMM.....	205
4.2.10.1.4.	Revision Identification - #CGMR.....	205
4.2.10.1.5.	Product Serial Number Identification - #CGSN.....	206
4.2.10.1.6.	International Mobile Subscriber Identity (IMSI) - #CIMI.....	207
4.2.10.1.7.	Read ICCID (Integrated Circuit Card Identification) - #CCID.....	207
4.2.10.1.1.	Serial and Software Version Number - #IMEISV.....	207
4.2.10.1.2.	Service Provider Name - #SPN.....	208
4.2.10.1.3.	Change Audio Path - #CAP.....	208
4.2.10.1.4.	Handsfree Microphone Gain - #HFMICG.....	208
4.2.10.1.5.	Handset Microphone Gain - #HSMICG.....	209
4.2.10.1.6.	Handsfree Receiver Gain - #HFRECG.....	209
4.2.10.1.7.	Handset Receiver Gain - #HSRECG.....	210
4.2.10.1.8.	Ringer Sound Level - +CRSL.....	210
4.2.10.1.9.	Speaker Mute Control - #SPKMUT.....	211
4.2.10.1.10.	Audio Codec - #CODEC.....	212
4.2.10.1.11.	Audio Codec - #CODECINFO.....	213
4.2.10.1.12.	Select Ringer Path - #SRP.....	215
4.2.10.1.13.	Select Ringer Sound - #SRS.....	216
4.2.10.1.14.	Audio Profile Factory Configuration - #PRST.....	217
4.2.10.1.15.	Audio Profile Configuration save - #PSAV.....	218
4.2.10.1.16.	Audio Profile Selection - #PSEL.....	218
4.2.10.1.17.	Audio Profile Setting - #PSET.....	219
4.2.10.1.18.	Set Handsfree Sidetone - #SHFSD.....	220
4.2.10.1.19.	Tone Classes Volume - #TSVOL.....	220
4.2.10.1.20.	Set Headset Sidetone - #SHFSD.....	222
4.2.10.1.21.	Handsfree Echo Canceller - #SHFEC.....	222
4.2.10.1.22.	Handset Echo Canceller - #SHSEC.....	223
4.2.10.1.23.	Handsfree Noise Reduction - #SHFNR.....	223
4.2.10.1.24.	Handset Noise Reduction - #SHSNR.....	223
4.2.10.1.25.	Extended Error Report for Network Reject Cause - #CEERNET.....	224
4.2.10.1.26.	Audio DSP Configuration - #ADSPC.....	226
4.2.10.1.27.	Singnalling Tones Mode - #STM.....	227
4.2.10.1.28.	Teletype Writer - #TTY.....	227
4.2.10.1.29.	Write to I2C - #I2CWR.....	228
4.2.10.1.30.	Display PIN Counter - #PCT.....	229



LE910 AT Commands Reference Guide

80421ST10585A Rev. 3 – 2014-10-02

4.2.10.1.31.	Software ShutDown - #SHDN.....	230
4.2.10.1.32.	Module's Reboot - #REBOOT.....	230
4.2.10.1.33.	Periodic Reset - #ENHRST.....	231
4.2.10.1.34.	General Purpose Input/Output Pin Control - #GPIO.....	232
4.2.10.1.35.	STAT_LED GPIO Setting - #SLED.....	235
4.2.10.1.36.	Save STAT_LED GPIO Setting - #SLEDSAV.....	236
4.2.10.1.37.	Digital Voiceband Interface - #DVI.....	237
4.2.10.1.1.	Digital Voiceband Interface Configuration - #DVICFG.....	238
4.2.10.1.2.	SMS Ring Indicator - #E2SMSRI.....	239
4.2.10.1.3.	Read Analog/Digital Converter Input - #ADC.....	240
4.2.10.1.4.	Auxiliary Voltage Output Control - #VAUX.....	241
4.2.10.1.5.	Auxiliary Voltage Output Save - #VAUXSAV.....	241
4.2.10.1.6.	Battery and Charger Status - #CBC.....	242
4.2.10.1.7.	GPRS Auto-Attach Property - #AUTOATT.....	242
4.2.10.1.8.	Multislot Class Control - #MSCLASS.....	243
4.2.10.1.9.	Cell Monitor - #MONI.....	244
4.2.10.1.10.	HSDPA Channel Quality Indication - #CQI.....	246
4.2.10.1.11.	Packet Service Network Type - #PSNT.....	247
4.2.10.1.12.	Read Current Network Status in 3G Network - #RFSTS.....	249
4.2.10.1.13.	Temperature Monitor- #TEMPMON.....	253
4.2.10.1.14.	Set RING CFG Parameters - #WKIO.....	255
4.2.10.1.15.	Query Temperature Overflow - #QTEMP.....	255
4.2.10.1.16.	Temperature Monitor CONFIGURATION - #TEMPCFG.....	257
4.2.10.1.17.	Wake from Alarm Mode - #WAKE.....	261
4.2.10.1.18.	Serving Cell Information - #SERVINFO.....	262
4.2.10.1.19.	Query SIM Status - #QSS.....	263
4.2.10.1.20.	Dialling Mode - #DIALMODE.....	264
4.2.10.1.21.	Automatic Call - #ACAL.....	265
4.2.10.1.22.	Extended Automatic Call - #ACALEXT.....	266
4.2.10.1.23.	Extended Call Monitoring - #ECAM.....	267
4.2.10.1.24.	SMS Overflow - #SMOV.....	268
4.2.10.1.25.	Sms Un- Change Status - #SMSUCS.....	268
4.2.10.1.26.	Mailbox Numbers - #MBN.....	269
4.2.10.1.27.	Message Waiting Indication - #MWI.....	270
4.2.10.1.28.	Repeat Last Command - #/.....	271
4.2.10.1.29.	Network Timezone - #NITZ.....	271
4.2.10.1.30.	Clock Management - #CCLK.....	272
4.2.10.1.31.	Clock Mode - #CCLKMODE.....	273
4.2.10.1.32.	Alarm Management - +CALA.....	274
4.2.10.1.33.	Delete Alarm - +CALD.....	276
4.2.10.1.34.	Select Band - #BND.....	277
4.2.10.1.35.	Automatic Band Selection - #AUTOBND.....	278
4.2.10.1.36.	Skip Escape Sequence - #SKIPESC.....	278
4.2.10.1.37.	Subscriber number - #SNUM.....	279
4.2.10.1.38.	Escape Sequence Guard Time - #E2ESC.....	279
4.2.10.1.39.	PPP-GPRS Connection Authentication Type - #GAUTH.....	280
4.2.10.1.40.	SIM Detection Mode-#SIMDET.....	280
4.2.10.1.41.	Power Saving Mode Ring Indicator - #PSMRI.....	281
4.2.10.1.42.	Command Mode Flow Control - #CFLO.....	281
4.2.10.1.43.	Report concatenated SMS indexes - #CMGLCONCINDEX.....	282
4.2.10.1.44.	Extended Reset - #z.....	283
4.2.10.1.45.	Enhanced Network Selection - #ENS.....	283
4.2.10.1.46.	Enable RX Diversity and set DARP - #RXDIV.....	284
4.2.10.1.47.	GSM Antenna Detection - #GSMAD.....	285
4.2.10.1.48.	Set Encryption Algorithm - #ENCALG.....	287
4.2.10.2.	Multisocket AT Commands.....	289
4.2.10.2.1.	Socket Status - #SS.....	289
4.2.10.2.2.	Socket Info - #SI.....	290



4.2.10.2.3.	Socket Type - #ST	291
4.2.10.2.4.	Context Activation - #SGACT	292
4.2.10.2.5.	Socket Shutdown - #SH	292
4.2.10.2.6.	Socket Configuration - #SCFG	294
4.2.10.2.7.	Socket Configuration Extended - #SCFGEXT	295
4.2.10.2.8.	Socket Dial - #SD	298
4.2.10.2.9.	Socket Accept - #SA	299
4.2.10.2.10.	Socket Restore - #SO	300
4.2.10.2.11.	Socket Listen - #SL	301
4.2.10.2.12.	Socket Listen UDP - #SLUDP	302
4.2.10.2.13.	Receive Data in Command Mode - #SRECV	303
4.2.10.2.14.	Send Data In Command Mode - #SEND	305
4.2.10.2.15.	Send data in Command Mode extended - #SENDEXT	305
4.2.10.2.16.	Context Activation and Configuration - #SGACTCFG	306
4.2.10.2.17.	Context activation configuration extended - #SGACTCFGEXT	308
4.2.10.1.	SSL Commands	309
4.2.10.1.1.	Enable a SSL socket - #SSLEN	309
4.2.10.1.2.	Opens a socket SSL to a remote server - #SSLD	310
4.2.10.1.3.	Send data through a SSL socket - #SSLSEND	311
4.2.10.1.4.	Read data from a SSL socket - #SSLRECV	312
4.2.10.1.5.	Report the status of a SSL socket - #SSLS	313
4.2.10.1.6.	Close a SSL socket - #SSLH	313
4.2.10.1.7.	Restore a SSL socket after a +++ - #SSLO	314
4.2.10.1.8.	Configure security parameters of a SSL socket - #SSLSECCFG	315
4.2.10.1.9.	Configure general parameters of a SSL socket - #SSLCFG	316
4.2.10.1.10.	Manage the security data - #SSLSECDATA	317
4.2.10.2.	FTP AT Commands	319
4.2.10.2.1.	FTP Time - Out - #FTPTO	319
4.2.10.2.1.	FTP Open - #FTPOPEN	319
4.2.10.2.1.	FTP Close - #FTPTO	320
4.2.10.2.1.	FTP Config - #FTPCFG	320
4.2.10.2.1.	FTP Put - #FTPPUT	321
4.2.10.2.1.	FTP Get - #FTPCFG	321
4.2.10.2.1.	FTP Get in command mode - #FTPGETPKT	322
4.2.10.2.1.	FTP Type - #FTPTYPE	323
4.2.10.2.1.	FTP Delete - #FTPDELE	323
4.2.10.2.1.	FTP Print Working Directory - #FTPPWD	323
4.2.10.2.1.	FTP Change Working Directory - #FTPCWD	324
4.2.10.2.1.	FTP List - #FTPLIST	324
4.2.10.2.1.	Get file size from FTP - #FTPFSIZE	324
4.2.10.2.1.	FTP Append - #FTPAPP	325
4.2.10.2.1.	Set restart position for FTP GET - #FTPREST	326
4.2.10.2.1.	Receive Data In Command Mode - #FTPRECV	327
4.2.10.2.1.	FTP Append Extended - #FTPAPPEXT	329
4.2.10.2.1.	FTP Read Message - #FTPMSG	330
4.2.10.3.	Enhanced IP Easy Extension AT Commands	331
4.2.10.3.1.	IP Easy Authentication Type - #SGACTAUTH	331
4.2.10.3.2.	Authentication User ID - #USERID	331
4.2.10.3.3.	Authentication Password - #PASSW	332
4.2.10.3.4.	Packet Size - #PKTSZ	332
4.2.10.3.5.	Data Sending Time-Out - #DSTO	333
4.2.10.3.6.	Socket Inactivity Time-Out - #SKTTO	334
4.2.10.3.7.	Socket Definition - #SKTSET	334
4.2.10.3.8.	Socket Open - #SKTOP	336
4.2.10.3.9.	Query DNS - #QDNS	336
4.2.10.3.10.	DNS Response Caching - #CACHEDNS	337
4.2.10.3.11.	Manual DNS Selection - #DNS	338
4.2.10.3.12.	Socket TCP Connection Time-Out - #SKTCT	339



LE910 AT Commands Reference Guide

80421ST10585A Rev. 3 – 2014-10-02

4.2.10.3.13.	Socket Parameters Save - #SKTSAV	340
4.2.10.3.14.	Socket Parameters Reset - #SKTRST	340
4.2.10.3.15.	GPRS Context Activation - #GPRS	341
4.2.10.3.16.	Socket Dial - #SKTD	342
4.2.10.3.17.	Socket Listen Ring - #E2SLRI	343
4.2.10.3.18.	Socket Listen - #SKTL	344
4.2.10.3.19.	Firewall Setup - #FRWL	346
4.2.10.3.20.	GPRS Data Volume - #GDATAVOL	347
4.2.10.3.21.	ICMP Ping Support - #ICMP	348
4.2.10.3.22.	Maximum TCP Payload Size - #TCPMAXDAT	348
4.2.10.3.23.	TCP Reassembly - #TCPREASS	349
4.2.10.4.	Easy Scan® Extension AT Commands	350
4.2.10.4.1.	Network survey - #CSURV	350
4.2.10.4.2.	Network Survey (Numeric Format) - #CSURVC	354
4.2.10.4.3.	Network Survey of User Defined Channels - #CSURVU	357
4.2.10.4.4.	Network Survey of User Defined Channels (Numeric Format) - #CSURVUC	357
4.2.10.4.5.	BCCH Network Survey - #CSURVB	358
4.2.10.4.6.	BCCH Network Survey (Numeric Format) - #CSURVBC	358
4.2.10.4.7.	Network Survey Format - #CSURVF	359
4.2.10.4.8.	<CR><LF> Removing On Easy Scan® Commands Family - #CSURVNLF	359
4.2.10.4.9.	PLMN Network Survey - #CSURVP	360
4.2.10.4.10.	PLMN Network Survey (Numeric Format) - #CSURVPC	360
4.2.10.4.11.	Manual Closed Subscriber Group Search- #MCSGS	361
4.2.10.5.	SIM Toolkit AT Commands	362
4.2.10.5.1.	SIM Toolkit Interface Activation - #STIA	362
4.2.10.5.2.	SIM Toolkit Information - #STGI	367
4.2.10.5.3.	SIM Toolkit Send Response - #STSR	373
4.2.10.6.	SAP AT Commands Set	374
4.2.10.6.1.	Remote SIM Enable - #RSEN	374
4.2.10.7.	E-mail Management AT Commands	375
4.2.10.7.1.	E-mail SMTP Server - #ESMTP	375
4.2.10.7.2.	E-mail sender address - #EADDR	375
4.2.10.7.3.	E-mail Authentication User Name - #EUSER	376
4.2.10.7.4.	E-mail Authentication Password - #EPASSW	377
4.2.10.7.5.	E-mail Sending With GPRS Context Activation - #SEMAIL	378
4.2.10.7.6.	E-mail GPRS Context Activation - #EMAILACT	379
4.2.10.7.7.	E-mail Sending - #EMAILD	380
4.2.10.7.8.	E-mail Parameters save - #ESAV	381
4.2.10.7.9.	E-mail Parameters Reset - #ERST	381
4.2.10.7.10.	SMTP Read Message - #EMAILMSG	381
4.2.10.8.	Remote AT	382
4.2.10.8.1.	Enable SMS AT Run service - #SMSATRUN	382
4.2.10.8.2.	Set SMS AT Run Parameters - #SMSATRUNCFG	382
4.2.10.8.3.	SMS AT Run White List - AT#SMSATWL	383
4.2.10.9.	GPS AT Commands Set	384
4.2.10.9.1.	GPS Power Management - \$GPSP	384
4.2.10.9.2.	GPS Module Reset - \$GPRS	385
4.2.10.9.3.	Get Acquired Position - \$GPSACP	386
4.2.10.9.4.	Unsolicited NMEA Data Configuration - \$GPSNMUN	388
4.2.10.9.5.	Save GPS Parameters Configuration - \$GPSSAV	389
4.2.10.9.6.	Restore to Default GPS Parameters - \$GPSRST	389
4.2.10.9.7.	Set the GNSS (or GLONASS) Capability - \$GPSGLO	390
4.2.10.9.8.	GPS Start Location Service Request - \$GPSSLR	390
4.2.10.9.9.	Unsolicited NMEA Extended Data Configuration - \$GPSNMUNEX	391
4.2.10.9.10.	Execute enabling/disabling User Plane MSA mode - \$GPSUPLANE	392
4.2.10.9.11.	Executes GPS Get Position for SUPL UP in UMTS network - \$LOCMODE	392
4.2.10.10.	Emergency Call and ECall Management	394
4.2.10.10.1.	mode activation - #MSDPUSH	394



LE910 AT Commands Reference Guide

80421ST10585A Rev. 3 – 2014-10-02

4.2.10.10.2.	Sending MSD data to IVS - #MSDSEND	394
4.2.10.10.3.	Initiate eCall - +CECALL	395
4.2.10.11.	Additional AT Commands	396
4.2.10.11.1.	Dormant Control Command - #CDORM.....	396
4.2.10.11.2.	Network Emergency Number Update - #NWEN.....	397
4.2.10.11.3.	Delete All Phonebook Entries - #CPBD.....	397
4.2.10.11.4.	Enhanced call tone disable - #ECTD	398
4.2.10.11.5.	SIM Presence Status - #SIMPR	398
4.2.10.11.6.	New Operator Names - #PLMNMODE.....	399
4.2.10.11.7.	Network Scan Timer - #NWSCANter.....	399
4.2.10.12.	AT Run Commands	401
4.2.10.12.1.	Enable SMS AT Run service - #SMSATRUn	401
4.2.10.12.2.	Set SMS AT Run Parameters - #SMSATRUnCFG	402
4.2.10.12.3.	SMS AT Run White List - #SMSATWl.....	403
4.2.10.12.4.	Set TCP AT Run Service Parameters - #TCPATRUnCFG.....	404
4.2.10.12.5.	Enables TCP AT Run Service in listen (server) mode -#TCPATRUnl	406
4.2.10.12.6.	TCP AT Run Firewall List - #TCPATRUnFRWl	407
4.2.10.12.7.	TCP AT Run Authentication Parameters List - #TCPATRUnAUTH.....	407
4.2.10.12.8.	Enables TCP Run AT Service in dial (client) mode - #TCPATRUnD	409
4.2.10.12.9.	Closes TCP Run AT Socket - #TCPATRUnClOSe	410
4.2.10.12.10.	For TCP Run AT Service, allows the user to give AT commands in sequence - #TCPATCmDSeQ.....	410
4.2.10.12.11.	Connects the TCP Run AT service to a serial port - #TCPATCOnSER	410
4.2.10.12.12.	Set the delay on Run AT command execution - #ATRUnDeLay.....	411
5.	LIST OF ACRONYMS	412



1. Introduction

1.1. Scope

This document aims to provide a detailed specification and a comprehensive listing as a **Reference** for the whole set of AT commands.

1.2. Audience

Readers of this document should be familiar with Telit modules and how to control them by means of AT Commands.

1.3. Contact Information, Support

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

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

Alternatively, use:

<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 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” AT Commands Basic Definitions

Chapter 4: “AT Commands Availability Table” Differences between the products variants

Chapter 5: “AT Commands References” The core of this specification

1.5. Text Conventions



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



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



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

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

1.6. Related Documents

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



1.7. Document history

Revision	Date	SW release	Changes
ISSUE #0	2013-09-19	-	Preliminary release
ISSUE #1	2013-11-07	17.00.xx1	<p>Updated commands: #ADSPC, \$12, \$GPSNMUN, +CGSMS, #SSEND, #NASC, +CPBR, #NSC, #ECTD, #DVI, #GPIO</p> <p>New commands: #STM, #ECTD, #TTY, #STIA, #STGI, #STSR</p>
ISSUE #2	2014-07-08	17.00.5x3	<p>Updated command: +CCUG, #TCPATCONSER, +CFUN, +CGEQNEG, #SD, +CALA, #PSNT, +CPNER, #QTEMP, #TEMPCFG, #TEMPMON, #GPIO, +CALA, #SRECV, #GAUTH, #CAP, HFRECG, #CBC, #SLED, #PSNT, +IPR, #AUTOBND, #GSMAD, #SHSEC, #SHFNR, #SHFEC, #HSMICG, +CPBS, &K, +FLO, +IFC, #MSCCLASS, #SRECV, #SL, #SLUDP, #SKTL, #SCFGEXT, #SCFG, +CSAS, +CRES, #WKIO, +IPR, +CSCS, #PLMNMODE, +CMEE, #GPIO, #TEMPMON, \$GPSAT, #DNS, #SSEND, #SRECV, #SD, #SH, ATE, #STGI, +CMER, #GPSNMUNEX, #ICMP, #FRWL, #MCSGS, +VTS, +CGEQMIN, +CGCLASS, #CQI, #ENHRST</p> <p>New commands: +CPNER, +CEREG, +CSTF, +CSDF, #ENCALG, +PACSP, #E2SLRI, #CQI, #NWSANTMR, +CALM, +CALA, +CALD, #WAKE, #RSEN, #SMSATRUNCFG, #SMSATWL, #SMSATRUNCFG, #SMSATWL, #TCPATRUNCFG, #TCPATRUNL, #TCPATRUNFRWL, #TCPATRUNAATH, #TCPATRUND, #TCPATRUNCLOSE, #TCPATCMDSEQ, #TCPATCONSER, #ATRUNDelay, #DTMF, #ST, #SGACTCFG, #SGACTCFGEXT, #HWREV, #CSURV, #CSURVC, #CSURVU, #CSURVUC, #CSURVB, #CSURVBC, #CSURVF, #CSURVNLf, #CSURVP, #CSURVPC, \$GPSNMUNEX, #ENS, #CFF, #SRS, #CCLKMODE, #MCSGS, #CEERNET, #RXDIV, #TSVOL, #PRST, #PSAV, #PSEL, #PSET, #ENHRST, #CMGLCONCINDEX, AT#I2CRD AT#I2CWR, #ESMTP, #EADDR, #EUSER, #EPASSW,</p>



			#EMAILACT, #EMAILD, #ESAV, #ERST, #EMAILMSG, #SSLSECDATA, #SSLCFG, #SSLSECCFG, #SSLO, #SSLH, #SSLS, #SSLRECV, #SSLSEND, #SSLD, #SSLEN, \$GPSSLSR
ISSUE #3	2014-10-02	17.00.5x3	<p>Updated command: +GSN, #CGSN, +CGSN, #MSDSEND, #MSDPUSH, #CSURVF, #CSURVUC, #CSURVU, #CSURVC, #CSURV, +CHSN, +CRLP, +CBST, +CGEQMIN, +CCFC, #RXDIV, +CGCMOD, #CDORM, #CCLK, #SGACT, #CQI, #SSLSEND, #GPRS, #DNS, #SLED, #CEERNET, #TEMPCFG</p> <p>New Commands: +CCID, #IMEISV, +IMEISV, #DVICFG, #FTPAPPEXT, #FTPRECV, #FTPREST, #FTPAPP, #FTPSIZE, #FTPLIST, #FTPCWD, #FTPPWD, #FTPDELE, #FTPMSG, #FTPTYPE, #FTPGETPKT, #FTPGET, #FTPPUT, #FTPCFG, #FTPCLOSE, #FTPOPEN, #FTPTO</p>



2. Overview

2.1. About the document

This document describes all AT commands implemented in the Telit wireless module LE910



3. AT COMMANDS

The Telit wireless module family can be controlled via the serial interface using the standard AT commands¹. The Telit wireless module family is compliant with:

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

Moreover Telit wireless module family supports also Telit proprietary AT commands for special purposes.

The following is a description of how to use the AT commands with the Telit wireless module family.

3.1. Definitions

The following syntactical definitions apply:

- <CR> **Carriage return character**, is the command line and result code terminator character, which value, in decimal ASCII between 0 and 255, is specified within parameter **S3**. The default value is 13.
- <LF> **Linefeed character**, is the character recognised as line feed character. Its value, in decimal ASCII between 0 and 255, is specified within parameter **S4**. The default value is 10. The line feed character is output after carriage return character if verbose result codes are used (**V1** option used) otherwise, if numeric format result codes are used (**V0** option used) it will not appear in the result codes.
- <...> Name enclosed in angle brackets is a syntactical element. They do not appear in the command line.
- [...] Optional subparameter of a command or an optional part of TA information response is enclosed in square brackets. Brackets themselves do not appear in the command line. When subparameter is not given in AT commands which have a Read command, new value equals to its previous value. In AT commands which do not store the values of any of their subparameters, and so have not a Read command, which are called *action type* commands, action should be done on the basis of the recommended default setting of the subparameter.

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



3.2. AT Command Syntax

The syntax rules followed by Telit implementation of either Hayes AT commands, GSM/WCDMA/LTE commands are very similar to those of standard basic and extended AT commands

There are two types of extended command:

- **Parameter type commands.** This type of commands may be “set” (to store a value or values for later use), “read” (to determine the current value or values stored), or “tested” (to determine ranges of values supported). Each of them has a test command (trailing =?) to give information about the type of its subparameters; they also have a Read command (trailing ?) to check the current values of subparameters.
- **Action type commands.** This type of command may be “executed” or “tested”.
 - “executed“ to invoke a particular function of the equipment, which generally involves more than the simple storage of a value for later use
 - “tested” to determine:

if subparameters are associated with the action, the ranges of subparameters values that are supported; if the command has no subparameters, issuing the correspondent Test command (trailing =?) raises the result code “**ERROR**”.

Note: issuing the Read command (trailing ?) causes the command to be executed.

whether or not the equipment implements the Action Command (in this case issuing the correspondent Test command - trailing =? - returns the **OK** result code), and, if subparameters are associated with the action, the ranges of subparameters values that are supported.

Action commands don’t store the values of any of their possible subparameters.

Moreover:

- The response to the Test Command (trailing =?) may be changed in the future by Telit to allow the description of new values/functionalities.
- If all the subparameters of a parameter type command +**CMD** are optional, issuing **AT+CMD=<CR>** causes the **OK** result code to be returned and the previous values of the omitted subparameters to be retained.



3.2.1. String Type Parameters

A string is either enclosed between quotes or not considered 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/**” or **AT#/** or **at#/**.

The **termination character** may be selected by a user option (parameter S3), the default being **<CR>**.

The basic structures of the command line are:

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

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

1.1.1.1. **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**

1.1.1.2.



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

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

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

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



Numeric Format	Verbose Format
113	Roaming not allowed in this location area (#13)*
GPRS related errors to a failure to Activate a Context and others	
132	service option not supported (#32)*
133	requested service option not subscribed (#33)*
134	service option temporarily out of order (#34)*
148	unspecified GPRS error
149	PDP authentication failure
150	invalid mobile class
IP Easy related errors	
550	generic undocumented error
551	wrong state
552	wrong mode
553	context already activated
554	stack already active
555	activation failed
556	context not opened
557	cannot setup socket
558	cannot resolve DN
559	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
AT+WS46 test command related error	
683	Active call state
684	RR connection Established

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



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

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

Syntax: +CMS ERROR: <err>

Parameter: <err> - numeric error code.

The <err> values are reported in the table:

Numeric Format	Meaning
0...127	GSM 04.11 Annex E-2 values
128...255	3GPP TS 23.040 sub clause 9.2.3.22 values
300	ME failure
301	SMS service of ME reserved
302	operation not allowed
303	operation not supported
304	invalid PDU mode parameter
305	invalid text mode parameter
310	SIM not inserted
311	SIM PIN required
312	PH-SIM PIN required
313	SIM failure
314	SIM busy
315	SIM wrong
316	SIM PUK required
317	SIM PIN2 required
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
567	ip version type incompatible
568	ipv6 not enabled



3.2.5. 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 codes* that inform about progress of TA operation (e.g. connection establishment **CONNECT**)
- *Result codes* 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

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



3.2.6. Command Response Time-Out

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

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	125 (test command)
+CLCK	15 (SS operation) 5 (FDN enabling/disabling)
+CPWD	15 (SS operation) 5 (PIN modification)
+CLIP	15 (read command)
+CLIR	15 (read command)
+CCFC	15
+CCWA	15
+CHLD	30
+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
+CAMP	5
+CPUC	180
+VTS	20 (transmission of full “1234567890*#ABCD” string with no delay between tones, default duration)
+CSCA	5 (read and set commands)
+CSAS	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	120 (voice call) Timeout set with ATS7 (data call)
A	60 (voice call) Timeout set with ATS7 (data call)
H	30
+CHUP	60
+COPN	10
+CRSM	180
+FRH	Timeout set with ATS7
+FTH	Timeout set with ATS7
+FRM	Timeout set with ATS7
+FTM	Timeout set with ATS7
+FRS	Timeout set with the command itself
+FTS	Timeout set with the command itself
+WS46	10
#MBN	10
#MSCLASS	15
#GPRS	150
#SKTD	140 (DNS resolution + timeout set with AT#SKTCT)
#SKTOP	290 (context activation + DNS resolution + timeout set with AT#SKTCT)
#QDNS	170
#SGACT	150
#SH	10
#SD	140 (DNS resolution + connection timeout set with AT#SCFG)

3.2.7. Command Issue Timing

The chain of “Command -> Response” must 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 in any case advisable to wait 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 use a fixed baud rate with **+IPR** command.



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

+FCLASS	+DR	+CSCS
+CR	+CRLP	+CRC
+CVHU	+CREG	+CLIP
+CLIR	+CCWA	+CUSD
+CAOC	+CSSN	+CIND
+CMER	+CPBS	+CMEE
+CGREG	+CMGF	+CSDH
+CNMI	+CRSL	+VTD
+CGEREP		
#QSS	#ACAL	#ACALEXT
#ECAM	#SMOV	#MWI
#NITZ	#SKIPESC	#E2SC
#CFLO	#SIMDET	#E2MSRI

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

#SELINT	+COPS ³	+CGCLASS
+CGDCONT	+CGQMIN	+CGQREQ
+CGEQMIN	+CGEQREQ	+WS46
+CGSMS		
#DIALMODE	#BND	#SCFG
#AUTOATT	#DNS	#TCPMAXDAT
#TCPREASS		

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

+CSCA	+CSMP	+CSCB
-------	-------	-------

stored by +CSAS⁴ command and restored by +CRES 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

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

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



4. AT Commands References

4.1. Command Line General Format

4.1.1. Command Line Prefixes

4.1.1.1. Starting A Command Line - AT

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

4.1.1.2. Last Command Automatic Repetition - A/

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



4.1.2. General Configuration Commands

4.1.2.1. Select Interface Style - #SELINT

#SELINT - Select Interface Style		SELINT 2
AT#SELINT=[<v>]	Set command sets the AT command interface style depending on parameter <v>. Parameter: <v> - AT command interface style 2 - switches the AT command interface style of the product to LE910 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 recommended to perform a reboot of the module after every #SELINT setting.	

4.1.2.2. Set Notification Port - #NOPT

#NOPT - Set notification port		SELINT 2																																																												
AT#NOPT=<num>	Set command sets the port output notification data (Indication data) LE910 Family has the following 5 ports: <ul style="list-style-type: none"> • Telit USB Modem Port 1 • Telit USB Diagnostic Interface Port • Telit USB Modem Port 2 • UART Data Port Notification data will be sent to the specific port is set by #NOPT. The capabilities of each port is shown in the table below: <table border="1"> <thead> <tr> <th></th> <th>GND (C102)</th> <th>TD (C103)</th> <th>RD (C104)</th> <th>RTS (C105)</th> <th>CTS (C106)</th> <th>DSR (C107)</th> <th>DTR (C108)</th> <th>RI (C125)</th> <th>DCD (C125)</th> </tr> </thead> <tbody> <tr> <td>USB Modem</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> <tr> <td>USB Diagnostic</td> <td>●</td> <td>●</td> <td>●</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>USB Auxiliary</td> <td>●</td> <td>●</td> <td>●</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>UART DATA</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> <tr> <td>UART TRACE</td> <td>●</td> <td>●</td> <td>●</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> USB Diagnostic and UART TRACE are reserved for Telit Service. USB Modem, USB Auxiliary and UART DATA are dedicated for M2M Interface. Parameter:			GND (C102)	TD (C103)	RD (C104)	RTS (C105)	CTS (C106)	DSR (C107)	DTR (C108)	RI (C125)	DCD (C125)	USB Modem	●	●	●	●	●	●	●	●	●	USB Diagnostic	●	●	●							USB Auxiliary	●	●	●							UART DATA	●	●	●	●	●	●	●	●	●	UART TRACE	●	●	●						
	GND (C102)	TD (C103)	RD (C104)	RTS (C105)	CTS (C106)	DSR (C107)	DTR (C108)	RI (C125)	DCD (C125)																																																					
USB Modem	●	●	●	●	●	●	●	●	●																																																					
USB Diagnostic	●	●	●																																																											
USB Auxiliary	●	●	●																																																											
UART DATA	●	●	●	●	●	●	●	●	●																																																					
UART TRACE	●	●	●																																																											



#NOPT - Set notification port	SELINT 2
	<p><num> - Notification Port 0 – All Ports (Telit USB Modem ports 1 and 2,UART Data)</p> <p>Notification data are sent to all ports. (default value)</p> <p>1 – UART Data Port only 2 – Telit USB Modem Port 1only 3 – Telit USB Modem Port 2 only</p>
AT#NOPT?	Read command reports the current notification port.
AT#NOPT=?	Test command reports the available range of values for parameter <num>.



4.2. Hayes Compliant AT Commands

4.2.1. Generic Modem Control

4.2.1.1. Set To Factory-Defined Configuration - &F

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

4.2.1.2. Soft Reset - Z

Z - Soft Reset		SELINT 2
ATZ[<n>]	<p>Execution command that loads the base section of the specified user profile and the extended section of the default factory profile.</p> <p>Parameter: <n> 0..1 - user profile number</p> <p>Note: any call in progress will be terminated.</p> <p>Note: if parameter <n> is omitted, the command has the same behaviour as ATZ0.</p>	
Reference	V25ter.	



4.2.1.3. Select Active Service Class - +FCLASS

+FCLASS - Select Active Service Class		SELINT 2
AT+FCLASS=<n>	Set command that sets the wireless module into specified connection mode (data, voice), hence all the calls done afterwards will be data or voice. Parameter: <n> 0 - data 1 - fax class 1 8 - Voice	
AT+FCLASS?	Read command returns the current configuration value of the parameter <n>.	
AT+FCLASS=?	Test command returns all supported values of the parameters <n>.	
Reference	3GPP TS 27.007	

4.2.1.4. Default Reset Full Profile Designation - &P

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

4.2.1.5. Store Current Configuration - &W

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



4.2.1.6. Store Telephone Number - &Z

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

4.2.1.7. Display Stored Numbers - &N

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

4.2.1.8. Manufacturer Identification - +GMI

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

4.2.1.9. Model Identification - +GMM

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



4.2.1.10. Revision Identification - +GMR

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

4.2.1.11. Capabilities List - +GCAP

+GCAP - Capabilities List		SELINT 2
AT+GCAP	Execution command that returns the equipment supported command set list. Where: +CGSM: GSM ETSI command set +FCLASS: Fax command set +DS: Data Service common modem command set +MS: Mobile Specific command set	
Reference	V.25ter	

4.2.1.12. Serial Number - +GSN

+GSN - Serial Number		SELINT 2
AT+GSN	Execution command returns the device board serial number. Note: The number returned is not the IMSI, it is only the board number	
AT+GSN[=<sn>]	Set command causes the TA to return IMEI (International Mobile station Equipment Identity number) and related information to identify the MT that the TE connected to. Parameter: <sn> - indicating the serial number type that has been requested. 0 - returns <sn> 1 - returns the IMEI (International Mobile station Equipment Identity) 2 - returns the IMEISV (International Mobile station Equipment Identity and Software Version number) 3 - returns the SVN (Software Version Number) where: <sn> - Indicate the product “serial number”, identified as the IMEI of the mobile, without command echo. <imei> - string type in decimal format indicating the IMEI. . IMEI is composed of Type Allocation Code (TAC) (8 digits), Serial Number (SNR) (6 digits) and the Check Digit (CD) (1 digit). Character set used in <imei> is as specified by command Select TE Character Set +CSCS. <imeisv> - string type in decimal format indicating the IMEISV. The 16 digits of IMEISV are composed of Type Allocation Code (TAC) (8 digits), Serial Number (SNR) (6 digits) and the software version (SVN) (2 digits). Character set used in <imeisv> is as specified by command Select TE Character Set +CSCS.	



+GSN - Serial Number		SELINT 2
	<svn> - string type in decimal format indicating the current SVN which is a part of IMEISV. Character set used in <svn> is as specified by command Select TE Character Set +CSCS.	
Reference	V.25ter	

4.2.1.13. Display Configuration And Profile - &V

&V - Display Current Base Configuration And Profile		SELINT 2
AT&V	Execution command returns some of the base configuration parameters settings.	

4.2.1.14. Display Configuration And Profile - &V0

&V0 - Display Current Configuration And Profile		SELINT 2
AT&V0	Execution command returns all the configuration parameters settings. Note: this command is the same as &V , it is included only for backwards compatibility.	



4.2.1.15. S Registers Display - &V1

&V1 - S Registers Display		SELINT 2												
AT&V1	<p>Execution command returns the value of the S registers in decimal and hexadecimal value in the format:</p> <table style="margin-left: 40px;"> <thead> <tr> <th style="text-align: left;">REG</th> <th style="text-align: left;">DEC</th> <th style="text-align: left;">HEX</th> </tr> </thead> <tbody> <tr> <td><reg0></td> <td><dec></td> <td><hex></td> </tr> <tr> <td><reg1></td> <td><dec></td> <td><hex></td> </tr> <tr> <td colspan="3" style="text-align: center;">...</td> </tr> </tbody> </table> <p>where <reg<i>n</i>> - S register number 000..005 007 012 025 038 <dec> - current value in decimal notation <hex> - current value in hexadecimal notation</p>		REG	DEC	HEX	<reg0>	<dec>	<hex>	<reg1>	<dec>	<hex>	...		
REG	DEC	HEX												
<reg0>	<dec>	<hex>												
<reg1>	<dec>	<hex>												
...														

4.2.1.16. Extended S Registers Display - &V3

&V3 - Extended S Registers Display		SELINT 2												
AT&V3	<p>Execution command returns the value of the S registers in decimal and hexadecimal value in the format:</p> <table style="margin-left: 40px;"> <thead> <tr> <th style="text-align: left;">REG</th> <th style="text-align: left;">DEC</th> <th style="text-align: left;">HEX</th> </tr> </thead> <tbody> <tr> <td><reg0></td> <td><dec></td> <td><hex></td> </tr> <tr> <td><reg1></td> <td><dec></td> <td><hex></td> </tr> <tr> <td colspan="3" style="text-align: center;">...</td> </tr> </tbody> </table> <p>where <reg<i>n</i>> - S register number 000..005 007 012 025 030 038 <dec> - current value in decimal notation <hex> - current value in hexadecimal notation</p>		REG	DEC	HEX	<reg0>	<dec>	<hex>	<reg1>	<dec>	<hex>	...		
REG	DEC	HEX												
<reg0>	<dec>	<hex>												
<reg1>	<dec>	<hex>												
...														



4.2.1.17. Display Last Connection Statistics - &V2

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

4.2.1.18. Single Line Connect Message - \V

\V - Single Line Connect Message		SELINT 2
ATV<n>	Execution command set single line connect message. Parameter: <n> 0 - off 1 - on	

4.2.1.19. Country Of Installation - +GCI

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

4.2.1.20. Line Signal Level - %L

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

4.2.1.21. Line Quality - %Q

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



4.2.2. DTE - Modem Interface Control

4.2.2.1. Command Echo - E

E - Command Echo		SELINT 2
ATE[<n>]	<p>Set command that enables/disables the command echo.</p> <p>Parameter: <n></p> <ul style="list-style-type: none"> 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. <p>Note: if parameter is omitted, the command has the same behaviour of ATE0</p>	
Reference	V25ter	

4.2.2.2. Quiet Result Codes - Q

Q - Quiet Result Codes		SELINT 2
ATQ[<n>]	<p>Set command enables or disables the result codes.</p> <p>Parameter: <n></p> <ul style="list-style-type: none"> 0 - enables result codes (factory default) 1 - disables result codes 2 - disables result codes (only for backward compatibility) <p>Note: After issuing either ATQ1 or ATQ2 every information text transmitted in response to commands is not affected</p> <p>Note: if parameter is omitted, the command has the same behaviour of ATQ0</p>	
Example	<p><i>After issuing ATQ1 or ATQ2</i></p> <p>AT+CGACT=?</p> <p>+CGACT: (0-1) nothing is appended to the response</p>	
Reference	V25ter	



4.2.2.3. Response Format - V

V - Response Format	SELINT 2								
<p>ATV[<n>]</p> <p>Set command that 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 [Information Responses And Result Codes chapter] for the table of result codes).</p> <p>Parameter:</p> <p><n></p> <p>0 - limited headers and trailers and numeric format of result codes</p> <table border="1"> <tr> <td>information responses</td> <td><text><CR><LF></td> </tr> <tr> <td>result codes</td> <td><numeric code><CR></td> </tr> </table> <p>1 - full headers and trailers and verbose format of result codes (factory default)</p> <table border="1"> <tr> <td>information responses</td> <td><CR><LF> <text><CR><LF></td> </tr> <tr> <td>result codes</td> <td><CR><LF> <verbose code><CR><LF></td> </tr> </table> <p>Note: the <text> portion of information responses is not affected by this setting.</p> <p>Note: if parameter is omitted, the command has the same behaviour of ATV0</p>	information responses	<text><CR><LF>	result codes	<numeric code><CR>	information responses	<CR><LF> <text><CR><LF>	result codes	<CR><LF> <verbose code><CR><LF>	
information responses	<text><CR><LF>								
result codes	<numeric code><CR>								
information responses	<CR><LF> <text><CR><LF>								
result codes	<CR><LF> <verbose code><CR><LF>								
Reference	V25ter								



4.2.2.4. Extended Result Codes - X

X - Extended Result Codes		SELINT 2
ATX[<n>]	<p>Set command selects the result code messages subset used by the modem to inform the DTE of the result of the commands.</p> <p>Parameter: <n> - (factory default is 1) 0 - on entering dial-mode CONNECT result code is given; OK, CONNECT, RING, NO CARRIER, ERROR, NO ANSWER result codes are enabled . Dial tone and busy detection (NO DIALTONE and BUSY result codes) are disabled. 1..4 – Reports all messages (factory default =1)</p> <p>Note: If parameter is omitted, the command has the same behaviour of ATX0</p> <p>Note: Current value is returned by AT&V Parameter: <n> 0 - EXTENDED MESSAGES : X0=NO 1..4 - EXTENDED MESSAGES : X1=YES</p>	
Note	For complete control on CONNECT response message see also + DR command.	
Reference	V25ter	

4.2.2.5. Identification Information - I

I - Identification Information		SELINT 2
ATI[<n>]	<p>Execution command returns one or more lines of information text followed by a result code.</p> <p>Parameter: <n> 0 - numerical identifier 1 - module checksum 2 - checksum check result 3 - manufacturer 4 - product name 5 - DOB version</p> <p>Note: if parameter is omitted, the command has the same behaviour of ATI0</p>	
Reference	V25ter	



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

&C - Data Carrier Detect (DCD) Control		SELINT 2
AT&C[<n>]	Set command controls the RS232 DCD output behaviour. Parameter: <n> 0 - DCD remains high always. 1 - DCD follows the Carrier detect status: if carrier is detected DCD is high, otherwise DCD is low . (factory default) 2 - DCD off while disconnecting Note: if parameter is omitted, the command has the same behaviour of AT&C0	
Reference	V25ter	

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

&D - Data Terminal Ready (DTR) Control		SELINT 2
AT&D[<n>]	Set command that controls the Module behaviour for RS232 DTR transitions. Parameter: <n> 0 - DTR transitions are ignored (factory default); 1 - when the MODULE is connected, the High to Low transition of DTR pin sets the device in command mode, the current connection is NOT closed 2 - when the MODULE is connected , the High to Low transition of DTR pin sets the device in command mode and the current connection is closed; 3 - C108/1 operation enabled. 4 - C108/1 operation disabled. Note: if a connection has been set up issuing either #SKTD or #SKTOP , then AT&D1 has the same effect as AT&D2 . Note: if AT&D2 has been issued and the DTR has been tied Low , autoanswering is inhibited and it is possible to answer only by issuing command ATA . Note: if parameter is omitted, the command has the same behaviour of AT&D0	
Reference	V25ter	



4.2.2.8. Standard Flow Control - \Q

\Q – Standard Flow Control		SELINT 2
AT\Q[<n>]	<p>Set command controls the RS232 flow control behaviour.</p> <p>Parameter: <n></p> <ul style="list-style-type: none"> 0 - no flow control 1 - software bi-directional with filtering (XON/XOFF) 2 - hardware mono-directional flow control (only CTS active) 3 - hardware bi-directional flow control (both RTS/CTS active) (factory default) <p>Note: if parameter is omitted, the command has the same behaviour as AT\Q0</p> <p>Note: Hardware flow control (AT\Q3) is not active in command mode.</p> <p>Note: \Q's settings are functionally a subset of &K's ones.</p>	
Reference	V25ter	

4.2.2.9. Flow Control - &K

&K - Flow Control		SELINT 2
AT&K[<n>]	<p>Set command controls the RS232 flow control behaviour.</p> <p>Parameter: <n></p> <ul style="list-style-type: none"> 0 - no flow control 3 - hardware bi-directional flow control (both RTS/CTS active) (factory default) <p>Note: if parameter is omitted, the command has the same behaviour as AT&K0.</p> <p>Note: &K has no Read Command. To verify the current setting of &K, simply check the settings of the active profile issuing AT&V.</p> <p>Note: Hardware flow control (AT&K3) is not active in command mode.</p>	



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

&S - Data Set Ready (DSR) Control	SELINT 2
AT&S[<n>]	<p>Set command that controls the RS232 DSR pin behaviour.</p> <p>Parameter: <n></p> <ul style="list-style-type: none"> 0 - always High 1 - follows the GSM traffic channel indication. 2 - High when connected 3 - High when device is ready to receive commands (factory default). <p>Note: if option 1 is selected then DSR is tied High when the device receives from the network the GSM traffic channel indication.</p> <p>Note: in power saving mode the DSR pin & USB_VBUS pins are always tied Low.</p> <p>Note: if parameter is omitted, the command has the same behaviour as AT&S0</p> <p>Note: If option 1 or 2 are active, DSR will not be tied High in case of GSM voice connection.</p>

4.2.2.11. Ring (RI) Control - \R

\R - Ring (RI) Control	SELINT 2
AT\R[<n>]	<p>Set command controls the RING output pin behaviour.</p> <p>Parameter: <n></p> <ul style="list-style-type: none"> 0 - RING on during ringing and further connection 1 - RING on during ringing (factory default) 2 - RING follows the ring signal <p>Note: to check the ring option status use the &V command.</p> <p>Note: if parameter is omitted, the command has the same behaviour of AT\R0</p>



4.2.2.12. Fixed DTE Interface Rate - +IPR

+IPR - Fixed DTE Interface Rate		SELINT 2
AT+IPR=<rate>	<p>Set command that specifies the DTE speed at which the device accepts commands during command mode operations. The Command could be used to fix the DTE-DCE interface speed.</p> <p>Note : DTE speed of USB does not change.</p> <p>Parameter: <rate> 300 600 1200 2400 4800 9600 19200 38400 57600 115200 (default) 230400 460800 921600 2900000 3200000 3686400 4000000</p> <p>If <rate> specified DTE-DCE speed fixed to that speed, hence no speed auto-detection (autobauding) enabled.</p>	
AT+IPR?	Read command returns the current value of +IPR parameter.	
AT+IPR=?	<p>Test command returns the list of supported autodetectable <rate> values and the list of fixed-only <rate> values in the format:</p> <p>+IPR:(list of supported autodetectable <rate> values), (list of fixed-only <rate> values)</p>	
Reference	V25ter	



4.2.2.13. DTE-Modem Local Flow Control - +IFC

+IFC - DTE-Modem Local Flow Control		SELINT 2
AT+IFC=<by_te>, <by_ta>	<p>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>)</p> <p>Parameters: <by_te> - flow control option for the data received by DTE. 0 - flow control None 2 - C105 (RTS) (factory default)</p> <p><by_ta> - flow control option for the data sent by modem 0 - flow control None 2 - C106 (CTS) (factory default)</p> <p>Note: only possible commands are AT+IFC=0,0 and AT+IFC=2,2.</p>	
AT+IFC?	Read command returns active flow control settings.	
AT+IFC=?	Test command returns all supported values of the parameters <by_te> and <by_ta>.	
Reference	V25ter	



4.2.2.14. DTE-Modem Character Framing - +ICF

+ICF - DTE-Modem Character Framing		SELINT 2
AT+ICF=<format> [<parity>]	Set command defines the asynchronous character framing to be used when autobauding is disabled. The LE910 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 subparameter has no meaning. 0 - Odd (not supported) 1 - Even (not supported)	
AT+ICF?	Read command returns current settings for subparameters <format> and <parity> . The current setting of subparameter <parity> will always be represented as 0.	
AT+ICF=?	Test command returns the ranges of values for the parameters <format> and <parity>	
Reference	V25ter	
Example	AT+ICF = 3 - 8N1 (default) AT+ICF=? +ICF: (3)	

4.2.2.15. DTE-Modem Local Rate Reporting - +ILRR

+ILRR - DTE-Modem Local Rate Reporting		SELINT 2
AT+ILRR=<n>	Set command that controls whether or not the +ILRR: <rate> information text is transmitted from the modem (module) to the DTE . Parameter: <n> 0 - local port speed rate reporting disabled (factory default) 1 - local port speed rate reporting enabled Note: this information if enabled is sent upon connection.	
AT+ILRR?	Read command returns active setting of <n> .	
AT+ILRR=?	Test command returns all supported values of the parameter <n>	
Reference	V25ter	



4.2.2.16. Select Flow Control Specified By Type - +FLO

+FLO - Select Flow Control Specified By Type		SELINT 2
AT+FLO= <type>	Set command selects the flow control behaviour of the serial port in both directions: from DTE to DTA and from DTA to DTE. Parameter: <type> - flow control option for the data on the serial port 0 - flow control None 2 - flow control Hardware (CTS-RTS) – (factory default) Note: This command is a shortcut of the +IFC command. Note: +FLO's settings are functionally a subset of &K's ones.	
AT+FLO?	Read command returns the current value of parameter <type>	
AT+FLO=?	Test command returns all supported values of the parameter <type>. Note: test command result is without command echo	
Reference	ITU T.31 and TIA/EIA-578-A specifications	



4.2.3. Call Control

4.2.3.1. Dial - D

D – Dial	SELINT 2
<p>ATD<number>[;]</p>	<p>Execution command that 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.</p> <p>Parameter: <number> - phone number to be dialed</p> <p>Note: type of call (data or voice) depends on last +FCLASS setting. Note: the characters 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.</p>
<p>ATD<<str>[;]</p>	<p>Issues a call to phone number whose corresponding alphanumeric field is <str>; all available memories will be searched for the correct entry. If “;” is present a voice call is performed.</p> <p>Parameter: <str> - alphanumeric field corresponding to phone number; it must be enclosed in quotation marks.</p> <p>Note: parameter <str> is case sensitive. Note: used character set should be the one selected with +CSCS.</p>
<p>ATD<<mem><n>[;]</p>	<p>Issues a call to phone number in phonebook memory storage <mem>, entry location <n> (available memories may be queried with AT+CPBS=?).</p> <p>If “;” is present a voice call is performed.</p> <p>Parameters: <mem> - phonebook memory storage; “SM” - SIM/UICC phonebook “FD” - SIM/USIM fixed dialing phonebook “LD” - SIM/UICC last dialled 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 this storage) “ON” - SIM (or MT) own numbers (MSI storage may be available through +CNUM also).</p>



D – Dial	SELINT 2
	<p>“MB” - mailbox numbers stored on SIM, if this service is provided by the SIM (see #MBN).</p> <p><n> - entry location should be in the range of locations available in the memory used.</p>
<p>ATD<n>[;]</p>	<p>Issues a call to phone number in entry location <n> of the active phonebook memory storage (see +CPBS).</p> <p>If “;” is present a voice call is performed.</p> <p>Parameter:</p> <p><n> - active phonebook memory storage entry location; it should be in the range of locations available in the active phonebook memory storage.</p>
<p>ATDL</p>	<p>Issues a call to the last number dialed.</p>
<p>ATDS=<nr>[;]</p>	<p>Issues a call to the number stored in the MODULE internal phonebook position number <nr>.</p> <p>If “;” is present, a voice call is performed.</p> <p>Parameter:</p> <p><nr> - internal phonebook position to be called (See commands &N and &Z)</p>
<p>ATD<number>I[;] ATD<number>i[;]</p>	<p>Issues a call suppressing the CLIR supplementary service subscription default value for this call</p> <p>If “;” is present a voice call is performed.</p> <p>I - invocation, restrict CLI presentation i - suppression, allow CLI presentation</p>
<p>ATD<number>G[;] ATD<number>g[;]</p>	<p>Issues a call checking the CUG supplementary service information for the current call. Refer to +CCUG command.</p> <p>If “;” is present a voice call is performed.</p>
<p>ATD* <gprs_sc> [*<addr>][* <L2P>] [*<cid>]]]]#</p>	<p>This command is specific to GPRS functionality and causes the MT to perform whatever actions are necessary to establish communication between the TE and the external PDN.</p> <p>Parameters:</p> <p><gprs_sc> - GPRS Service Code, a digit string (value 99) which identifies a request to use the GPRS</p> <p><addr> - string that identifies the called party in the address space applicable to the PDP.</p> <p><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:</p> <p>1 - PPP</p> <p><cid> - a digit which specifies a particular PDP context definition (see +CGDCONT command).</p>
<p>Example</p>	<p>To dial a number in SIM phonebook entry 6: ATD>SM6 OK</p>



D – Dial		SELINT 2
	<p>To have a voice call to the 6-th entry of active phonebook: ATD>6; OK</p> <p>To call the entry with alphanumeric field “Name”: ATD>”Name”; OK</p>	
Reference	V25ter.	

4.2.3.2. Tone Dial - T

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

4.2.3.3. Pulse Dial - P

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

4.2.3.4. Answer - A

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



4.2.3.5. Disconnect - H

H – Disconnect		SELINT 2
ATH	<p>Execution command that is used to close the current conversation (voice, data or fax).</p> <p>Note: this command 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.</p>	
Reference	V25ter.	

4.2.3.6. Return To On Line Mode - O

O - Return To On Line Mode		SELINT 2
ATO	<p>Execution command that is used to return to on-line mode from command mode. If there is no active connection, it returns NO CARRIER.</p> <p>Note: After issuing this command, and 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.</p>	
Reference	V25ter.	

4.2.3.7. Guard Tone - &G

&G – Guard Tone		SELINT 2
AT&G	The set command has no effect and is included only for backward compatibility with landline modems.	

4.2.3.8. Sync/Async Mode - &Q

&Q - Sync/Async Mode		SELINT 2
AT&Q	The set command has no effect and is included only for backward compatibility with landline modems.	



4.2.4. Modulation Control

4.2.4.1. Line Quality And Auto Retrain - %E

%E - Line Quality Monitor And Auto Retrain Or Fallback/Fallforward		SELINT 2
AT%E<n>	Execution command has no effect and is included only for backward compatibility with landline modems.	

4.2.5. Compression Control

4.2.5.1. Data Compression - +DS

+DS - Data Compression		SELINT 2
AT+DS=[<dir>[,<neg>[,<P1>[,<P2>]]]]	<p>Set command sets the V42 compression parameter.</p> <p>Parameter:</p> <p><dir> : desired direction of operations 0 - no compression (factory default) 1 - Transmit only. 2 - Receive only. 3 - Both directions, accept any direction)Default(. <neg> : whether the DCE should continue to operate if the desired result is not obtained. 0 Do not disconnect if V.42 bis is not negotiated by the remote DCE as specified in <dir>. <P1> : maximum number of dictionary entries 512-2048 (Factory default is 2048) <P2> : the maximum string length 6 – the only supported value</p>	
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	



4.2.5.2. Data Compression Reporting - +DR

+DR - Data Compression Reporting		SELINT 2
AT+DR=<n>	<p>Set command enables/disables the data compression reporting upon connection.</p> <p>Parameter: <n> 0 - data compression reporting disabled; 1 - data compression reporting enabled upon connection.</p> <p>Note: if enabled, the following intermediate result code is transmitted before the final result code: +DR: <compression></p>	
AT+DR?	Read command returns current value of <n>.	
AT+DR=?	Test command returns all supported values of the parameter <n>	
Reference	V25ter	



4.2.7. S Parameters

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

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

Reference: V25ter



NOTE:

A special way to select and set an **S-Parameter** is the following:

- 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.

Reference: V25ter and RC56D/RC336D

4.2.7.1. Number Of Rings To Auto Answer - S0

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



4.2.7.2. Ring Counter - S1

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

4.2.7.3. Escape Character – S2

S2 - Escape Character		SELINT 2
ATS2=[<char>]	<p>Set command sets the ASCII character to be used as escape character.</p> <p>Parameter: <char> - escape character decimal ASCII 0..255 - factory default value is 43 (+).</p> <p>Note: the escape sequence consists of three escape characters preceded and followed by <i>n</i> ms of idle (see S12 to set <i>n</i>).</p>	
ATS2?	<p>Read command returns the current value of S2 parameter.</p> <p>Note: the format of the numbers in output is always 3 digits, left-filled with 0s</p>	

4.2.7.4. Command Line Termination Character - S3

S3 - Command Line Termination Character		SELINT 2
ATS3=[<char>]	<p>Set command sets the value of the character either recognized by the device as command line terminator and generated by the device as part of the header, trailer, and terminator for result codes and information text, along with S4 parameter.</p> <p>Parameter: <char> - command line termination character (decimal ASCII) 0..127 - factory default value is 13 (ASCII <CR>)</p> <p>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)</p>	
ATS3?	<p>Read command returns the current value of S3 parameter.</p> <p>Note: the format of the numbers in output is always 3 digits, left-filled with 0s</p>	
Reference	V25ter	



4.2.7.5. Response Formatting Character - S4

S4 - Response Formatting Character		SELINT 2
ATS4=[<char>]	<p>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.</p> <p>Parameter: <char> - response formatting character (decimal ASCII) 0..127 - factory default value is 10 (ASCII <LF>)</p> <p>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.</p>	
ATS4?	<p>Read command returns the current value of S4 parameter.</p> <p>Note: the format of the numbers in output is always 3 digits, left-filled with 0s</p>	
Reference	V25ter	

4.2.7.6. Command Line Editing Character - S5

S5 - Command Line Editing Character		SELINT 2
ATS5=[<char>]	<p>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.</p> <p>Parameter: <char> - command line editing character (decimal ASCII) 0..127 - factory default value is 8 (ASCII BS)</p>	
ATS5?	<p>Read command returns the current value of S5 parameter.</p> <p>Note: the format of the numbers in output is always 3 digits, left-filled with 0s</p>	
Reference	V25ter	

4.2.7.7. Connection Completion Time-Out - S7

S7 - Connection Completion Time-Out		SELINT 2
ATS7=[<tout>]	<p>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 (dialing), and establishment of a connection with the remote device.</p> <p>Parameter: <tout> - number of seconds 1..255 - factory default value is 60</p>	
ATS7?	<p>Read command returns the current value of S7 parameter.</p> <p>Note: the format of the numbers in output is always 3 digits, left-filled with 0s</p>	
Reference	V25ter	



4.2.7.8. Carrier Off With Firm Time - S10

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

4.2.7.9. Escape Prompt Delay - S12

S12 - Escape Prompt Delay	
ATS12=[<time>]	<p>Set command sets:</p> <ol style="list-style-type: none"> 1) the minimum period, before receipt of the first character of the three escape character sequence, during which no other character may be detected in order to accept it as valid first character; 2) the maximum period allowed between receipt of first or second character of the three escape character sequence and receipt of the next; 3) the minimum period, after receipt of the last character of the three escapes character sequence, during which no other character may be detected in order to accept the escape sequence as a valid one. <p>Parameter: <time> expressed in fiftieths of a second (0.02s) 20 - 255(0.4 – 5 [s]) - factory default value is 50.</p> <p>Note: the minimum period S12 has to pass after CONNECT result code too, before a received character is accepted as valid first character of the three escape character sequence.</p> <p>Note: if the Escape Sequence Guard Time set to a value different from zero, it overrides the one set with S12.</p>
ATS12?	<p>Read command returns the current value of S12 parameter.</p> <p>Note: the format of the numbers in output is always 3 digits, left-filled with 0s</p>



4.2.7.10. Delay To DTR Off - S25

S25 -Delay To DTR Off		SELINT 2
ATS25=[<time>]	Set command defines the amount of time, in hundredths of second, that the device will ignore the DTR before 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	

4.2.7.11. Disconnect Inactivity Timer – S30

S30 -Disconnect Inactivity Timer		SELINT 2
ATS30=[<tout>]	Set command defines the inactivity time-out in minutes. The device disconnects if no characters are exchanged for a time period of at least <tout> minutes. Parameter: <tout> - expressed in minutes 0 - disabled, disconnection due to inactivity is disabled (factory default). 1..127 - inactivity time-out value	
ATS30?	Read command returns the current value of S30 parameter . Note: the format of the numbers in output is always 3 digits, left-filled with 0s	

4.2.7.12. Delay Before Forced Hang Up – S38

S38 -Delay Before Forced Hang Up		SELINT 2
ATS38=[<delay>]	Set command sets the delay, in seconds, between the device's receipt of H command (or ON-to-OFF transition of DTR) and the disconnect operation. Parameter: <delay> - acknowledge timer in units of seconds 0..254 - the device will wait <delay> seconds for the remote device to acknowledge all data in the device buffer before disconnecting (factory default value is 20). 255 - the device doesn't time-out and continues to attempt to deliver data in the buffer until the connection is lost or the data is delivered. Note: <delay> parameter can be used to ensure that data in device buffer is sent before device disconnects.	
ATS38?	Read command returns the current value of S38 parameter . Note: the format of the numbers in output is always 3 digits, left-filled with 0s	



4.2.8. 3GPP TS 27.007 AT Commands

4.2.8.1. General

4.2.8.1.1. Request Manufacturer Identification - +CGMI

+CGMI - Request Manufacturer Identification		SELINT 2
AT+CGMI	Execution command returns the device manufacturer identification code without command echo.	
AT+CGMI=?	Test command returns OK result code.	
Reference	3GPP TS 27.007	

4.2.8.1.2. Request Model Identification - +CGMM

+CGMM - Request Model Identification		SELINT 2
AT+CGMM	Execution command returns the device model identification code without command echo.	
AT+CGMM=?	Test command returns OK result code.	
Reference	3GPP TS 27.007	

4.2.8.1.3. Request Revision Identification - +CGMR

+CGMR - Request Revision Identification		SELINT 2
AT+CGMR	Execution command returns device software revision number without command echo.	
AT+CGMR=?	Test command returns OK result code.	
Reference	3GPP TS 27.007	



4.2.8.1.4. Request Product Serial Number Identification - +CGSN

+CGSN - Request Product Serial Number Identification		SELINT 2
AT+CGSN	Execution command returns the product serial number, identified as the IMEI of the mobile, without command echo.	
AT+CGSN[=<sn>]	<p>Set command causes the TA to return IMEI (International Mobile station Equipment Identity number) and related information to identify the MT that the TE connected.</p> <p>Parameter:</p> <p><sn> - indicating the serial number type that has been requested.</p> <ul style="list-style-type: none"> 0 - returns <sn> 1 - returns the IMEI (International Mobile station Equipment Identity) 2 - returns the IMEISV (International Mobile station Equipment Identity and Software Version number) 3 returns the SVN (Software Version Number) <p>where:</p> <p><sn> - Indicate the product “serial number”, identified as the IMEI of the mobile, without command echo.</p> <p><imei> - string type in decimal format indicating the IMEI. . IMEI is composed of Type Allocation Code (TAC) (8 digits), Serial Number (SNR) (6 digits) and the Check Digit (CD) (1 digit). Character set used in <imei> is as specified by command Select TE Character Set +CSCS.</p> <p><imeisv> - string type in decimal format indicating the IMEISV. The 16 digits of IMEISV are composed of Type Allocation Code (TAC) (8 digits), Serial Number (SNR) (6 digits) and the software version (SVN) (2 digits). Character set used in <imeisv> is as specified by command Select TE Character Set +CSCS.</p> <p><svn> - string type in decimal format indicating the current SVN which is a part of IMEISV. Character set used in <svn> is as specified by command Select TE Character Set +CSCS.</p>	
AT+CGSN=?	Test command returns OK result code.	
Reference	3GPP TS 27.007	



4.2.8.1.5. Select TE Character Set - +CSCS

+CSCS - Select TE Character Set		SELINT 2
AT+CSCS= [<chset>]	Set command sets the current character set used by the device. Parameter: <chset> - character set "GSM" - "GSM" - GSM default alphabet (3GPP TS 03.38/23.008). "IRA" - international Reference alphabet (ITU-T T.50) Quoted string (For example, "AB" equals two 8-bit characters with decimal values 65, 66). "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). HEX representation (For example,00410042 equals two 16-bit characters with decimal values 65,66).	
AT+CSCS?	Read command returns the current value of the active character set.	
AT+CSCS=?	Test command returns the supported values for parameter <chset>.	
Example:	AT+CSCS=? +CSCS: ("GSM","IRA","8859-1","PCCP437","UCS2") OK AT+CSCS? +CSCS: "IRA" OK AT+CPBW=1,"8475763000",129,"Lin Zhao" OK AT+CSCS="UCS2" OK AT+CPBR=1 +CPBR: 1,"8475763000",129,004C006E006E0020005A00680061006F OK AT+CSCS="IRA" OK AT+CPBR=1 +CPBR: 1,"8475763000",129,"Lin Zhao"	



+CSCS - Select TE Character Set		SELINT 2
	OK	
Reference	3GPP TS 27.007	

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

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

4.2.8.1.1. Read ICCID (Integrated Circuit Card Identification) - +ICCID

+ICCID - Read ICCID		SELINT 2
AT+ICCID	Execution command reads on SIM the ICCID (card identification number that provides a unique identification number for the SIM)	
AT+ICCID=?	Test command returns the OK result code.	
Example	AT+ICCID +ICCID: 8982050702100167684F OK	

4.2.8.1.1. Serial and Software Version Number - +IMEISV

+IMEISV - Serial and Software Version Number		SELINT 2
AT+IMEISV	Execution command returns returns the IMEISV (International Mobile station Equipment Identity and Software Version number).	
Example	At+imeisv +IMEISV: 3540660590080701	



4.2.8.1.2. PCCA STD-101 Select Wireless Network - +WS46

+WS46 - PCCA STD-101 Select Wireless Network		SELINT 2
AT+WS46=[<n>]	Set command selects the cellular network (Wireless Data Service, WDS) to operate with the TA (WDS-Side Stack Selection). Parameter: <n> - integer type, it is the WDS-Side Stack to be used by the TA . 12 GSM Digital Cellular Systems (GERAN only) 22 UTRAN only 25 3GPP Systems (GERAN and UTRAN and E-UTRAN) (factory default) 28 E-UTRAN only 29 GERAN and UTRAN 30 GERAN and E-UTRAN 31 UTRAN and E-UTRAN Note: The values in <n> for Query are mutually exclusive. If one value (e.g. "25") is returned, other values shall not be returned. Note: <n> parameter setting is stored in NVM and available at next reboot.	
AT+WS46?	Read command reports the currently selected cellular network, in the format: + WS46: <n>	
AT+WS46=?	Test command reports the range for the parameter <n>.	
Reference	3GPP TS 27.007	

4.2.8.1.3. Network Selection Menu Availability - +PACSP

+PACSP – Network Selection Menu Availability	
AT+PACSP?	Read command returns the current value of the <mode> parameter in the format: AT+PACSP<mode> where: <mode> - PLMN mode bit (in CSP file on the SIM) 0 - restriction of menu option for manual PLMN selection. 1 - no restriction of menu option for Manual PLMN selection
AT+PACSP=?	Test command returns the OK result code



4.2.8.2. Call Control

4.2.8.2.1. Call Mode - +CMOD

+CMOD – Call Mode		SELINT 2
+CMOD= [<mode>]	<p>Set command selects the call mode of further dialling commands (D) or for next answering command (A). Mode can be either single or alternating (in the present document, terms "alternating mode" and "alternating call" refer to all GSM/UMTS bearer and teleservices that incorporate more than one basic service (voice, data, fax) within one call).</p> <p>When single mode is selected the call originating and hangup procedures are similar to procedures specified in ITU-T Recommendations V.250 [14], T.31 [11] and T.32 [12].</p> <p>NOTE: +CMOD shall be set to zero after a successfully completed alternating mode call. It shall be set to zero also after a failed answering. The power-up, factory (&F) and user resets (Z) shall also set the value to zero.</p> <p>This reduces the possibility that alternating mode calls are originated or answered accidentally.</p> <p>Defined values <mode>: 0 - single mode (default mode)</p>	
+CMOD?	<p>+CMOD: <mode></p> <p>Test command returns values supported as a compound value.</p>	
+CMOD=?	<p>+CMOD: (list of supported <mode>s)</p>	

4.2.8.2.2. Hang Up Call - +CHUP

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



4.2.8.2.3. Select type of address - +CSTA

+CSTA - Select type of address	
AT+CSTA=[<type>]	Set command selects the type of number for further dialling commands (D) according to GSM/UMTS specifications. Parameter: <type>: type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7). default 145 when dialling string includes international access code character "+", otherwise 129
AT+CSTA?	Read command returns selected <type>
AT+CSTA=?	Test command returns supported <type>s
Reference	3GPP TS 27.007

4.2.8.2.4. Select Bearer Service Type - +CBST

+CBST - Select Bearer Service Type	SELINT 2
AT+CBST= [<speed> [,<name> [,<ce>]]]	Set command sets the bearer service <name> with data rate <speed>, and the connection element <ce> used when data calls are originated. This setting is also used during mobile terminated data call setup, in case of single numbering scheme calls (refer +CSNS). Parameters: <speed> - data rate 0 - autobauding (autobaud) 7 - 9600 bps (V.32) 12 - 9600 bps (V.34) 14 - 14400 bps (V.34) 16 - 28800 bps (V.34) 17 - 33600 bps (V.34) 39 - 9600 bps (V.120) 43 - 14400 bps (V.120) 48 - 28800 bps (V.120) 51 - 56000 bps (V.120) 71 - 9600 bps (V.110 or X.31 flag stuffing) 75 - 14400 bps (V110 or X.31 flag stuffing) 80 - 14400 bps (V110 or X.31 flag stuffing) 81 - 38400 bps (V110 or X.31 flag stuffing) 83 - 56000 bps (V110 or X.31 flag stuffing) 84 - 64000 bps (X.31 flag stuffing) 116 - 64000 bps (bit transparent) 134 - 64000 bps (multimedia) <name> - bearer service name 0 - data circuit asynchronous(UDI or 3.1 kHz modem) 1 - data circuit synchronous(UDI or 3.1 kHz modem) 4 - data circuit asynchronous(RDI)



+CBST - Select Bearer Service Type	SELINT 2
	<p><ce> - connection element 0 - transparent 1 - non transparent (default)</p> <p>The bearer service on LE910 family supports the following combinations:</p> <p><GSM network> AT+CBST= 0,0,1 (Autobaud 9.6k, non transparent) AT+CBST= 7,0,1 (V.32 9.6k, non transparent) AT+CBST=12,0,1 (V.34 9.6k, non transparent)) AT+CBST=14,0,1 (V.34 14.4k, non transparent) AT+CBST=39,0,1 (V.120 9.6k, non transparent) AT+CBST=43,0,1 (V.120 14.4k, non transparent) AT+CBST=71,0,1 (V.110 9.6k, non transparent) AT+CBST=75,0,1 (V.110 14.4k, non transparent) AT+CBST= 7,0,0 (V32 9.6k, transparent) AT+CBST=12,0,0 (V34 9.6k, transparent) AT+CBST=14,0,0 (V34 14.4k, transparent)</p> <p><WCDMA network> AT+CBST= 0,0,1 (Autobaud 57.6k, non transparent) AT+CBST=14,0,1 (V.34 14.4k, non transparent) AT+CBST=16,0,1 (V.34 28.8k, non transparent) AT+CBST=17,0,1 (V.34 33.6k, non transparent) AT+CBST=43,0,1 (V.120 14.4k, non transparent) AT+CBST=48,0,1 (V.120 28.8k, non transparent) AT+CBST=51,0,1 (V.120 56k, non transparent) AT+CBST=75,0,1 (V.110 14.4k, non transparent) AT+CBST=80,0,1 (V.110 28.8k, non transparent) AT+CBST=81,0,1 (V.110 38.4k, non transparent) AT+CBST=83,0,1 (X.31FS 56k, non transparent) AT+CBST=83,4,1 (X.31FS 56k RDI, non transparent) AT+CBST=84,0,1 (X.31FS 64k, non transparent) AT+CBST=116,1,0 (Bit transparent 64 kbps, transparent)</p>
AT+CBST?	Read command returns current value of the parameters <speed>, <name> and <ce>
AT+CBST=?	Test command returns the supported range of values for the parameters.
Reference	3GPP TS 27.007



4.2.8.2.5. Radio Link Protocol - +CRLP

+CRLP - Radio Link Protocol	SELINT 2
AT+CRLP= [<iws>[,<mws>[,<T1> [,<N2> [,<ver>]]]]]	Set command sets Radio Link Protocol (RLP) parameters used when non-transparent data calls originated. Parameters: <iws> - IWF window Dimension 1..61 - factory default value is 61 (ver 0/1) 1..488 - factory default value is 240 (ver 2) <mws> - MS window Dimension 1..61 - default value is 61 (ver 0/1) 1..488 - factory default value is 240 (ver 2) <T1> - acknowledge timer (10 ms units). 39..255 - default value is 48 (ver 0 or 1) 42..255 – deafault value is 52 (ver 2) <N2> - retransmission attempts 1..255 - default value is 6 (ver 0/1/2) <ver> - protocol version 0..2
AT+CRLP?	Read command returns current settings for each supported RLP version <ver>. +CRLP: <iws>,<mws>,<T1>,<N2> +CRLP: <iws>,<mws>,<T1>,<N2>,<ver> OK
AT+CRLP=?	Test command returns the range of setting value for each supported RLP version <ver>.
Reference	3GPP TS 27.007
Note	Versions 0 and 1 share the same parameter set. Read and Test commands shall return only one line for this set (where <ver> is not present)



4.2.8.2.6. Service Reporting Control - +CR

+CR - Service Reporting Control	SELINT 2
AT+CR=[<mode>]	<p>Set command controls whether or not intermediate result code +CR is returned from TA to TE.</p> <p>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.</p> <p>Note: After power off/on in LE910 the value returns to "0".</p> <p>Its format is: +CR: <serv></p> <p>where: <serv> ASYNC - asynchronous transparent SYNC - synchronous transparent REL ASYNC - asynchronous non-transparent REL SYNC - synchronous non-transparent.</p> <p>Note: this command replaces V.25ter [14] command Modulation Reporting Control (+MR), which is not appropriate for use with a modem terminal.</p>
AT+CR?	<p>Read command returns whether or not intermediate result code +CR is enabled, in the format:</p> <p>+CR: <mode></p>
AT+CR=?	<p>Test command returns the supported range of values of parameter <mode>.</p>
Reference	3GPP TS 27.007



4.2.8.2.7. Extended Error Report - +CEER

+CEER - Extended Error Report		SELINT 2
AT+CEER	<p>Execution command returns one or more lines of information text <report> offering the TA user an extended error report, in the format:</p> <p>+CEER: <report></p> <p>This report regards some error condition that may occur:</p> <ul style="list-style-type: none"> - the failure in the last unsuccessful call setup (originating or answering) - the last call release - the last unsuccessful GPRS attach or unsuccessful PDP context activation, - the last GPRS detach or PDP context deactivation. <p>Note: if none of these conditions have occurred since power up then “Normal, unspecified” condition is reported</p>	
AT+CEER=?	Test command returns OK result code.	
Reference	3GPP TS 27.007, GSM 04.08	

4.2.8.2.8. Cellular Result Codes - +CRC

+CRC - Cellular Result Codes		SELINT 2
AT+CRC= [<mode>]	<p>Set command controls whether or not the extended format of incoming call indication is used.</p> <p>Parameter: <mode></p> <ul style="list-style-type: none"> 0 - disables extended format reporting (factory default) 1 - enables extended format reporting: <p>When enabled, an incoming call is indicated to the TE with unsolicited result code</p> <p>+CRING: <type></p> <p>instead of the normal RING. where <type> - call type:</p> <ul style="list-style-type: none"> ASYNC - asynchronous transparent data SYNC - synchronous transparent data REL ASYNC - asynchronous non-transparent data REL SYNC - synchronous non-transparent data FAX - facsimile (TS 62) VOICE - normal voice (TS 11) 	
AT+CRC?	Read command returns current value of the parameter <mode> .	
AT+CRC=?	Test command returns supported values of the parameter <mode> .	
Reference	3GPP TS 27.007	



4.2.8.2.9. HSCSD non-transparent call configuration - +CHSN

+CHSN parameter command syntax	
AT+CHSN =[<wAiur> [,<wRx> [,<topRx> [,<codings >]]]]	<p>Set command controls parameters for originating non-transparent HSCSD calls. Values may also be used during mobile terminated data call setup. In GERAN, changing <topRx> or <codings> value during a call does not affect the current call. In GERAN, changing of <wAiur> or <wRx> affects the current call only if <topRx> was non-zero when call was established.</p> <p>Defined values</p> <p><wAiur>: integer type; wanted air interface user rate. Default value 0 indicates that TA shall calculate a proper value from currently selected fixed network user rate (<speed> subparameter from +CBST command), <codings>, and <wRx> (or <maxRx> from +CHSD command if <wRx>=0). Other values: 1 - 9600 bps 2 - 14400 bps 4 - 28800 bps 7 - 57600 bps</p> <p><wRx>: integer type; wanted amount of receive timeslots. Default value 0 indicates that TA shall calculate a proper value from currently selected <wAiur> and <codings>. This parameter is not applicable to UTRAN or EUTRAN UEs.</p> <p><topRx>: integer type; top value for <wRx> that user is going to request during the next established nontransparent HSCSD call. Default value 0 indicates that user is not going to change <wAiur>/<wRx> during the next call. This parameter is not applicable to UTRAN or E-UTRAN UEs.</p> <p><codings>: a sum of integers each representing a channel coding that is accepted for non-transparent HSCSD calls. Default value 0 indicates that all supported codings are accepted (refer +CHSD command for other values). This parameter is not applicable to UTRAN or E-UTRAN UEs.</p>
AT+CHSN ?	+CHSN: <wAiur>,<wRx>,<topRx>,<codings>
AT+CHSN= ?	+CHSN: (list of supported <wAiur>s), (list of supported <wRx>s),(list of supported <topRx>),(list of supported <codings>s)



4.2.8.2.10. Single Numbering Scheme - +CSNS

+CSNS - Single Numbering Scheme	
AT+CSNS= [<mode>]	<p>Set command selects the bearer to be used when mobile terminated single numbering scheme call is established. Parameter values set with +CBST command shall be used when <mode> equals to a data service.</p> <p>Parameter: <mode> 0 - voice (factory default) 2 - fax (TS 62) 4 - data</p> <p>Note: if +CBST parameter is set to a value that is not applicable to single numbering calls, ME/TA shall map the value to the closest valid one. E.g. if user has set <speed>=71, <name>=0 and <ce>=1 (non-transparent asynchronous 9600 bps V.110 ISDN connection) for mobile originated calls, ME/TA shall map the values into non-transparent asynchronous 9600 bps V.32 modem connection when single numbering scheme call is answered.</p>
AT+CSNS?	Read command returns current value of the parameter <mode>.
AT+CSNS=?	Test command returns supported values of parameter <mode>.
Reference	3GPP TS 27.007

4.2.8.2.11. Voice Hung Up Control - +CVHU

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



4.2.8.2.12. Setting Time Format - +CSTF

+CSTF - Setting Time Format		SELINT 2
AT+CSTF=[<mode>]	<p>Set command sets the time format of the time information presented to the user. Refer subclause 9.2 for possible <err> values</p> <p>Possible Response(s):</p> <p>+CME ERROR: <err></p> <p>Defined values</p> <p><mode>: integer type. The default value is manufacturer specific.</p> <ul style="list-style-type: none"> 1 HH:MM (24 hour clock) 2 HH:MM a.m./p.m. 3-7 Manufacturer specific 	
AT+CSTF?	<p>Read command reads the current setting.</p> <p>Possible Response(s):</p> <p>+CSTF: <mode></p> <p>+CME ERROR: <err></p>	
AT+CSTF=?	<p>Test command reads the supported <mode>s as a compound value.</p> <p>+CSTF: (list of supported <mode>s)</p> <p>+CME ERROR: <err></p>	
Reference	3GPP TS 27.007	



4.2.8.2.13. Setting Date Format - +CSDF

+CSDF - Setting Date Format		SELINT 2
AT+CSDF=[[<mode>],[<auxmode>]]	<p>This command sets the date format via MMI 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. The command also sets the date format of the TE-TA interface, which is specified by use of the <auxmode> parameter (e.g. the <auxmode> affects the <time> of +CCLK and +CALA).</p> <p>If the parameter is omitted ("+CSDF=", "+CSDF=<mode>", "+CSDF=,<auxmode>"), then this sets the default value.</p> <p>Refer subclause 9.2 for possible <err> values.</p> <p>Possible Response(s): +CME ERROR: <err></p> <p>Defined values: <mode>: integer type Note 1: It is a manufacturer specific which modes are supported. 1 - DD-MMM-YYYY Note 2: Presentation of MMM is language dependent. 2 - DD-MM-YY 3 - MM/DD/YY 4 - DD/MM/YY 5 - DD.MM.YY 6 - YYMMDD 7 - YY-MM-DD 8-255 Manufacturer specific <auxmode>: integer type 1 - yy/MM/dd 2 - yyyy/MM/dd all other values are reserved by the present document Note 3: The <time> format of +CCLK and +CALA "yy/mm/dd,hh:mm:ss±zz" when <auxmode>=1 and it is "yyyy/mm/dd,hh:mm:ss±zz" when <auxmode>=2. If the MT does not support time zone information then the three last characters may be omitted (see +CCLK command).</p>	
AT+CSDF?	<p>Read command reads the current setting.</p> <p>Possible Response(s): +CSDF: <mode>[,<auxmode>]</p> <p>+CME ERROR: <err></p>	
AT+CSDF=?	<p>Test command reads the supported <mode>s as a compound value.</p> <p>+CSDF: (list of supported <mode>s) [,(list of supported <auxmode>s)]</p>	
Reference	3GPP TS 27.007	



4.2.8.3. Network Service Handling

4.2.8.3.1. Subscriber Number - +CNUM

+CNUM - Subscriber Number		SELINT 2
AT+CNUM	<p>Execution command returns the MSISDN (if the phone number of the device has been stored in the SIM card) in the format:</p> <p>+CNUM: <alpha>,<number>,<type>[<CR><LF> +CNUM: <alpha>,<number>,<type>[...]]</p> <p>where:</p> <p><alpha> - alphanumeric string associated to <number>; used character set should be the one selected with +CSCS.</p> <p><number> - string containing the phone number in the format <type></p> <p><type> - type of number: 129 - national numbering scheme 145 - international numbering scheme (contains the character "+").</p>	
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	

4.2.8.3.2. Read Operator Names - +COPN

+COPN - Read Operator Names		SELINT 2
AT+COPN	<p>Execution command returns the list of operator names from the ME in the format:</p> <p>+COPN: <numeric1>,<alpha1>[<CR><LF> +COPN: <numeric2>,<alpha2>[...]]</p> <p>where:</p> <p><numericn> - string type, operator in numeric format (see +COPS)</p> <p><alphann> - string type, operator in long alphanumeric format (see +COPS)</p> <p>Note: each operator code <numericn> that has an alphanumeric equivalent <alphann> in the ME memory is returned</p>	
AT+COPN=?	Test command returns the OK result code	
Reference	3GPP TS 27.007	



4.2.8.3.3. Network Registration Report - +CREG

+CREG - Network Registration Report	SELINT 2
<p>AT+CREG= [<mode>]</p>	<p>Set command enables/disables network registration reports depending on the parameter <mode>.</p> <p>Parameter: <mode></p> <ul style="list-style-type: none"> 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 <p>If <mode>=1, network registration result code reports:</p> <p>+CREG: <stat></p> <p>where <stat></p> <ul style="list-style-type: none"> 0 - not registered, ME is not currently searching for a new operator to register to 1 - registered, home network 2 - not registered, but ME is currently searching for a new operator to register to 3 - registration denied 4 -unknown 5 - registered, roaming <p>If <mode>=2, network registration result code reports:</p> <p>+CREG: <stat>[,<Lac>,<Ci>[,<AcT>]]</p> <p>where:</p> <p><lac>: string type; two byte location area code (when <AcT> indicates value 0 to 6), or tracking area code (when <AcT> indicates value 7). In hexadecimal format.</p> <p><ci> : string type; four byte GERAN/UTRAN/E-UTRAN cell ID in hexadecimal format.</p> <p><AcT>: integer type, access technology of the serving cell</p> <ul style="list-style-type: none"> 0 GSM 2 UTRAN 3 GSM w/EGPRS 4 UTRAN w/HSDPA 5 UTRAN w/HSUPA 6 UTRAN w/HSPA (HSDPA and HSUPA)



+CREG - Network Registration Report		SELINT 2
	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>, and <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	<p>AT OK at+creg? +CREG: 0,2</p> <p>OK (the MODULE is in network searching state) at+creg? +CREG: 0,2</p> <p>OK at+creg? +CREG: 0,2</p> <p>OK at+creg? +CREG: 0,1</p> <p>OK (the MODULE is registered) at+creg? +CREG: 0,1</p> <p>OK</p>	
Reference	3GPP TS 27.007	



4.2.8.3.4. Operator Selection - +COPS

+COPS - Operator Selection	SELINT 2
<p>AT+COPS= [<mode>],[<format>],[<oper>],[<AcT>]]]]</p>	<p>Set command forces an attempt to select and register the GSM\UMTS network operator. <Mode> parameter defines whether the operator selection is automatic or forced by this command to operator <oper>. The operator <oper> given in format <format>.</p> <p>Parameters:</p> <p><mode></p> <ul style="list-style-type: none"> 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 <p><format></p> <ul style="list-style-type: none"> 0 - alphanumeric long form (max length 16 digits) 1 - short format alphanumeric <oper> 2 numeric <oper> <p><Oper>: string type <format> indicates if the format is alphanumeric or numeric. long alphanumeric format can be upto 16 characters long and short format up to 8 characters (refer GSM MoU SE.13 [9]). Numeric format is the GSM Location Area Identification number (refer 3GPP TS 24.008 [8] subclause 10.5.1.3) which consists of a three BCD digit country code coded as in ITU-T E.212 Annex A [10], plus a two BCD digit network code, which is administration specific.</p> <p>Returned <oper> shall not be in BCD format, but in IRA characters converted from BCD. Hence, the number has the structure: (country code digit 3) (country code digit 2) (country code digit 1) (network code digit 3) (network code digit 2) (network code digit 1).</p> <p>Note: <mode> parameter setting is stored in NVM and available at next reboot, if it is not 3 (i.e.: set only <format> parameter).</p> <p>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)</p> <p>Note: <format> parameter setting is never stored in NVM</p> <p><stat>:</p> <ul style="list-style-type: none"> 0 unknown 1 available 2 current



+COPS - Operator Selection	SELINT 2
	<p>3 forbidden</p> <p><AcT>: access technology selected 0 GSM 1 GSM Compact 2 UTRAN 3 GSM w/EGPRS (see NOTE 1) 4 UTRAN w/HSDPA (see NOTE 2) 5 UTRAN w/HSUPA (see NOTE 2) 6 UTRAN w/HSDPA and HSUPA (see NOTE 2) 7 E-UTRAN</p> <p>Note 1: 3GPP TS 44.060 [71] specifies the System Information messages which give the information about whether the serving cell supports EGPRS. Note 2: 3GPP TS 25.331 [74] specifies the System Information blocks which give the information about whether the serving cell supports HSDPA or HSUPA.</p>
AT+COPS?	<p>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</p> <p>+COPS: <mode>[, <format>, <oper>,< AcT>]</p>
AT+COPS=?	<p>Test command returns a list of quintuplets, each representing an operator present in the network. The quintuplets in the list are separated by commas:</p> <p>+COPS: [list of supported (<stat>,long alphanumeric <oper>,short alphanumeric <oper>,numeric <oper>,< AcT>)] [,,(list of supported <mode>s),(list of supported <format>)]</p> <p>where: <stat> - operator availability 0 - unknown 1 - available 2 - current 3 - forbidden</p> <p><AcT> access technology selected: 0 - GSM 1 - GSM Compact 2 - UTRAN</p> <p>Note: once the command done with network scan, this command may require some seconds before the output is given.</p>
Reference	3GPP TS 27.007



4.2.8.3.5. Facility Lock/Unlock - +CLCK

+CLCK - Facility Lock/Unlock	SELINT 2
<p>AT+CLCK= <fac>,<mode> [,<passwd> [,<class>]]</p>	<p>Execution command is used to lock or unlock a ME or a network facility.</p> <p>Parameters:</p> <p><fac> - facility</p> <p>"SC" - SIM (PIN request) (device requests SIM password at power-up and when this lock command issued)</p> <p>"AO"- BAO (Barr All Outgoing Calls)</p> <p>"OI" - BOIC (Barr Outgoing International Calls)</p> <p>"OX" - BOIC-exHC (Barr Outgoing International Calls except to Home Country)</p> <p>"AI" - BAIC (Barr All Incoming Calls)</p> <p>"IR" - BIC-Roam (Barr Incoming Calls when Roaming outside the home country)</p> <p>"AB" - All Barring services (applicable only for <mode>=0)</p> <p>"AG" - All outgoing barring services (applicable only for <mode>=0)</p> <p>"AC" - All incoming barring services (applicable only for <mode>=0)</p> <p>"FD" - SIM fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>)</p> <p>"PN" - network Personalisation</p> <p>"PU" - network subset Personalisation</p> <p>"PP" - service Provider Personalization (refer 3GPP TS 22.022 [33])</p> <p>"PC" - Corporate Personalization (refer 3GPP TS 22.022 [33])</p> <p>"PF" - lock Phone to the very First inserted SIM/UICC card (also referred in the present document as PH-FSIM) (MT requests password when other than the first SIM/UICC card is inserted)</p> <p><mode> - defines the operation to be done on the facility</p> <p>0 - unlock facility</p> <p>1 - lock facility</p> <p>2 - query status</p> <p><passwd> - shall be the same as password specified for the facility from the DTE user interface or with command Change Password +CPWD</p> <p><class> - sum of integers each representing a class of information (default is 7)</p> <p>1 - voice (telephony)</p> <p>2 - data (refers to all bearer services)</p> <p>4 - fax (facsimile services)</p> <p>8 - short message service</p> <p>16 - data circuit sync</p> <p>32 - data circuit async</p> <p>64 - dedicated packet access</p> <p>128 - dedicated PAD access</p> <p>Note: when <mode>=2 and command successful, it returns: +CLCK: <status>[,<class1>[<CR><LF>+CLCK: <status>,<class2> [...]]</p>



+CLCK - Facility Lock/Unlock		SELINT 2
	<p>Where: <status> - the current status of the facility 0 - not active 1 - active <classn> - class of information of the facility</p>	
AT+CLCK=?	Test command reports all the facilities supported by the device.	
Reference	3GPP TS 27.007	
Example	<p><i>Querying such a facility returns an output on three rows, the first for voice, the second for data, the third for fax:</i></p> <pre>AT+CLCK = "AO",2 +CLCK: <status>,1 +CLCK: <status>,2 +CLCK: <status>,4</pre>	

4.2.8.3.6. Change Facility Password - +CPWD

+CPWD - Change Facility Password		SELINT 2
AT+CPWD=<fac>, <oldpwd>, <newpwd>	<p>Execution command changes the password for the facility lock function defined by command Facility Lock +CLCK.</p> <p>Parameters: <fac> - facility "SC" - SIM (PIN request) "AB" - All barring services "P2" - SIM PIN2 "AC" - All incoming barring services "AG" - All outgoing barring services "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)</p> <p><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</p> <p>Note: parameter <oldpwd> is the old password while <newpwd> is the new one.</p>	



+CPWD - Change Facility Password		SELINT 2
AT+CPWD=?	Test command returns a list of pairs (<fac>,<pwdlength>) which presents the available facilities and the maximum length of their password (<pwdlength>)	
Example	at+cpwd=? +CPWD: ("SC",8),("AB",4),("P2",8),("PS",8) OK	
Reference	3GPP TS 27.007	

4.2.8.3.7. Calling Line Identification Presentation - +CLIP

+CLIP - Calling Line Identification Presentation		SELINT 2
AT+CLIP=[<n>]	<p>Set command enables/disables the presentation of the CLI (Calling Line Identity) at the TE. This command refers to the GSM supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to get the CLI of the calling party when receiving a mobile terminated call.</p> <p>Parameters:</p> <p><n></p> <ul style="list-style-type: none"> 0 - disables CLI indication (factory default) 1 - enables CLI indication <p>If enabled the device reports after each RING the response:</p> <p>+CLIP: <number>,<type>,"",128,<alpha>,<CLI_validity></p> <p>where:</p> <ul style="list-style-type: none"> <number> - string type phone number of format specified by <type> <type> - type of address octet in integer format <ul style="list-style-type: none"> 128 - both the type of number and the numbering plan are unknown 129 - unknown type of number and ISDN/Telephony numbering plan 145 - international type of number and ISDN/Telephony numbering plan (contains the character "+") <alpha> - string type; alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command Select TE character set +CSCS. <CLI_validity> <ul style="list-style-type: none"> 0 - CLI valid 1 - CLI has been withheld by the originator. 2 - CLI is not available due to interworking problems or limitation or originating network. 	



+CLIP - Calling Line Identification Presentation		SELINT 2
	<p>Note: in the +CLIP: response the subaddress information and the subaddress type information are not currently supported. The subaddress is always "" after the 2nd comma and the subaddress type is always 128 after the 3rd comma</p>	
AT+CLIP?	<p>Read command returns the presentation status of the CLI in the format:</p> <p>+CLIP: <n>,<m> where: <n> 0 - CLI presentation disabled 1 - CLI presentation enabled <m> - status of the CLIP service on the network 0 - CLIP not provisioned 1 - CLIP provisioned 2 - unknown (e.g. no network is present)</p> <p>Note: This command issues a status request to the network, hence it may take a few seconds to give the answer due to the time needed to exchange data.</p>	
AT+CLIP=?	Test command returns the supported values of parameter <n>	
Reference	3GPP TS 27.007	
Note	The command changes only the report behaviour of the device. It does not change CLI supplementary service setting on the network.	

4.2.8.3.8. Calling Line Identification Restriction - +CLIR

+CLIR - Calling Line Identification Restriction		SELINT 2
AT+CLIR=[<n>]	<p>Set command overrides the CLIR subscription set in the network. The value becomes the default setting for all following outgoing calls. This adjustment can be revoke by using the opposite command. This command refers to CLIR-service (3GPP TS 02.81/21.081) that allows a calling subscriber to enable or disable the presentation of the CLI to the called party when originating a call.</p> <p>Parameter: <n> - facility status on the Mobile 0 - CLIR facility according to CLIR service network status 1 - CLIR facility active (CLI not sent) 2 - CLIR facility not active (CLI sent)</p>	
AT+CLIR?	<p>Read command gives the default adjustment for all outgoing calls (<n>) and also triggers an interrogation of the provision status of the CLIR service (<m>), where <n> - facility status on the Mobile 0 - CLIR facility according to CLIR service network status 1 - CLIR facility active (CLI not sent) 2 - CLIR facility not active (CLI sent) <m> - facility status on the Network 0 - CLIR service not provisioned</p>	



+CLIR - Calling Line Identification Restriction		SELINT 2
	1 - CLIR service provisioned permanently 2 - unknown (e.g. no network present, etc.) 3 - CLI temporary mode presentation restricted 4 - CLI temporary mode presentation allowed	
AT+CLIR=?	Test command reports the supported values of parameter <n>.	
Reference	3GPP TS 27.007	
Note	This command sets the default behaviour of the device for outgoing calls.	



4.2.8.3.9. Connected line identification presentation - +COLP

+COLP – Connected Line Identification Presentation	SELINT 2
<p>AT+COLP=[<n>]</p>	<p>This command refers to the GSM/UMTS supplementary service COLP (Connected Line Identification Presentation) that enables a calling subscriber to get the connected line identity (COL) of the called party after setting up a mobile originated call. The command enables or disables the presentation of the COL at the TE. It has no effect on the execution of the supplementary service COLR in the network.</p> <p>Parameters: <n> 0 - disables COL indication (factory default) 1 - enables COL indication</p> <p>When enabled (and called subscriber allows),</p> <p>+COLP: <number>,<type>[,<subaddr>,<satype> [,<alpha>]]</p> <p>intermediate result code is returned from TA to TE before any +CR or V.25ter [14] responses. It is manufacturer specific if this response is used when normal voice call is established.</p>
<p>AT+COLP?</p>	<p>Read command gives the status of <n>, and triggers an interrogation of the provision status of the COLP service according 3GPP TS 22.081 (given in <m>) in the format:</p> <p>+COLP: <n>,<m></p> <p>where: <n> 0 - COL presentation disabled 1 - COL presentation enabled</p> <p><m> - status of the COLP service on the GSM network 0 - COLP not provisioned 1 - COLP provisioned 2 - unknown (e.g. no network is present)</p>
<p>AT+COLP=?</p>	<p>Test command reports the range for the parameter <n></p>



4.2.8.3.10. Called line identification presentation +CDIP

+CDIP - parameter command syntax	
AT+CDIP=[<n>]	<p>This command relates to a network service that provides "multiple called numbers (called line identifications) service" to an MT. This command enables a called subscriber to get the called line identification of the called party when receiving a mobile terminated call. Set command enables or disables the presentation of the called line identifications at the TE.</p> <p>When the presentation of the called line identification at the TE is enabled, +CDIP:<number>,<type>[,<subaddr>,<satype>] response is returned after every RING (or +CRING: <type>; refer subclause "Cellular result codes +CRC") result code sent from TA to TE. It is manufacturer specific if this response is used when normal voice call is answered.</p> <p><n> (parameter sets/shows the result code presentation status to the TE): 0 disable 1 enable</p> <p><number>: string type phone number of format specified by <type></p> <p><type>: type of address octet in integer format (refer 3GPP TS 24.008 [8] subclause 10.5.4.7)</p> <p><subaddr>: string type subaddress of format specified by <satype></p> <p><satype>: type of subaddress octet in integer format (refer 3GPP TS 24.008 [8] subclause 10.5.4.8)</p>
AT+CDIP?	<p>+CDIP: <n>,<m></p> <p>Read command gives the status of <n>, and triggers an interrogation of the provision status of the "multiple called numbers" service. Test command returns values supported as a compound value.</p> <p>Defined values:</p> <p><n> (parameter sets/shows the result code presentation status to the TE): 0 disable 1 enable</p> <p><m> (parameter shows the subscriber "multiple called numbers" service status in the network): 0 "multiple called numbers service" is not provisioned 1 "multiple called numbers service" is provisioned 2 unknown (e.g. no network, etc.)</p>
AT+CDIP=?	+CDIP: (list of supported <n>s)



4.2.8.3.11. Call Forwarding Number And Conditions - +CCFC

+CCFC - Call Forwarding Number And Condition	SELINT 2
<p>AT+CCFC= <reason>, <cmd>[,<number>],[<type>],[<class>] [,,<time>]]]</p>	<p>Execution command controls the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported.</p> <p>Parameters:</p> <p><reason> 0 - unconditional 1 - mobile busy 2 - no reply 3 - not reachable 4 - all calls (not with query command) 5 - all conditional calls (not with query command)</p> <p><cmd> 0 - disable 1 - enable 2 - query status 3 - registration 4 - erasure</p> <p><number> - string type phone number of forwarding address in format specified by <type> parameter</p> <p><type> - type of address octet in integer format : 129 - national numbering scheme 145 - international numbering scheme (contains the character "+")</p> <p><class> - sum of integers each representing a class of information which the command refers to; default 7 (voice + data + fax) 1 - voice (telephony) 2 - data 4 - fax (facsimile service) 8 - short message service 16 - data circuit sync 32 - data circuit async 64 - dedicated packet access 128 - dedicated PAD access</p> <p><time> - time in <i>seconds</i> to wait before call is forwarded; it is valid only when <reason> "no reply" is enabled (<cmd>=1) or queried (<cmd>=2) 1..30 - automatically rounded to a multiple of 5 seconds (default is 20)</p> <p>Note: when <cmd>=2 and command successful, it returns:</p> <p>+CCFC: <status>,<class1>[,<number>,<type>][,,<time>]] <CR><LF> +CCFC: <status>,<class2>[,<number>,<type>][,,<time>]] ...]]</p>



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

4.2.8.3.12. Call Forwarding Flags - #CFF

#CFF – Call Forwarding Flags	
AT#CFF=<enable>	Set command enables/disables the presentation of the call forwarding flags URC. Parameter: <enable> 0 - Disable the presentation of the #CFF URC (default value). 1 - Enable the presentation of the #CFF URC each time the call forward configuration is changed. This parameter is saved in the profile configuration. Unconditional (CFU) SS setting is changed or checked and, at startup, the presentation of the status of the call forwarding flags, as they are currently stored on SIM. The URC format is: #CFF: <enable>,<status>,<fwdtonum> where: <status> 0 – CFU disabled 1 – CFU enabled <fwdtonum> The number that the incoming calls are forwarded to.
AT#CFF?	Read command reports whether the presentation of the call forwarding flags URC is currently enabled or not, and, if the flags field is present in the SIM, the current status of the call forwarding flags as they are currently stored on SIM, and the number incoming calls are forwarded to. The format is: #CFF: <enable>[,<status>,< fwdtonum >]
AT#CFF=?	Test command returns the range of available values for parameter <enable>.



4.2.8.3.13. Call Waiting - +CCWA

+CCWA - Call Waiting	SELINT 2
<p>AT+CCWA= [<n>,<cmd> [,<class>]]]</p>	<p>Set command allows the control of the call waiting supplementary service. Activation, deactivation, and status query are supported.</p> <p>Parameters:</p> <p><n> - enables/disables the presentation of an unsolicited result code: 0 - disable 1 - enable</p> <p><cmd> - enables/disables or queries the service at network level: 0 - disable 1 - enable 2 - query status</p> <p><class> - is a sum of integers each representing a class of information which the command refers to; default is 7 (voice + data + fax) 1 - voice (telephony) 2 - data 4 - fax (facsimile services) 8 - short message service 16 - data circuit sync 32 - data circuit async 64 - dedicated packet access 128 - dedicated PAD access</p> <p>Note: the response to the query command is in the format:</p> <p>+CCWA: <status>,<class1>[<CR><LF> +CCWA: <status>,<class2>[...]]</p> <p>where <status> represents the status of the service: 0 - inactive 1 - active <classn> - same as <class></p> <p>Note: the unsolicited result code enabled by parameter <n> is in the format::</p> <p>+CCWA: <number>,<type>,<class>,[<alpha>],[<cli_validity>] where: <number> - string type phone number of calling address in format specified by <type> <type> - type of address in integer format <class> - see before <alpha> - string type; alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with +CSCS. <cli_validity></p>



+CCWA - Call Waiting	SELINT 2
	<p>0 - CLI valid 1 - CLI has been withheld by the originator 2 - CLI is not available due to interworking problems or limitations of originating network</p> <p>Note: if parameter <cmd> omitted then the network is not interrogated.</p> <p>Note: On the query command, the class parameter must not be issued.</p> <p>Note: the difference between call waiting report disabling (AT+CCWA = 0,1,7) and call waiting service disabling (AT+CCWA = 0,0,7) is that in the first case the call waiting indication is sent to the device by network but the device does not report it to the DTE. Instead, in the second case the, call waiting indication is not generated by the network. Hence, the device returns busy to the third party in the 2nd case while in the 1st case a ringing indication is sent to the third party.</p> <p>Note: The command AT+CCWA=1,0 has no effect and is nonsense and must not be issued.</p>
AT+CCWA?	Read command reports the current value of the parameter <n> .
AT+CCWA=?	Test command reports the supported values for the parameter <n> .
Reference	3GPP TS 27.007



4.2.8.3.14. Call Holding Services - +CHLD

+CHLD - Call Holding Services	SELINT 2
<p>AT+CHLD=<n></p>	<p>Execution command controls the network call holding services. With this service, it is possible to temporarily disconnect a call and keep it suspended while the network retains it and in parallel, it is possible to connect another party or make a multiparty connection.</p> <p>Parameter: <n></p> <ul style="list-style-type: none"> 0 - releases all held calls, or sets the UDUB (User Determined User Busy) indication for a waiting call. (only from version D) 1 - releases all active calls (if any exist), and accepts the other (held or waiting) call 1X - releases a specific active call X 2 - places all active calls (if any exist) on hold and accepts the other (held or waiting) call. 2X - places all active calls on hold except call X with which communication shall be resumed (only from version D). 3 - adds a held call to the conversation 4 - connects the two calls and disconnects the subscriber from both calls (Explicit Call Transfer (ECT)) <p>Note: "X" is the numbering (starting with 1) of the call given by the sequence of setting up or receiving the calls (active, held or waiting) as seen by the served subscriber. Calls hold their number until they are released. New calls take the lowest available number.</p> <p>Note: where both a held and a waiting call exist, the above procedures apply to the waiting call (i.e. not to the held call) in conflicting situation.</p>
<p>AT+CHLD=?</p>	<p>Test command returns the list of supported <n>s.</p> <p>+CHLD: (0,1,1X,2,2X,3,4)</p>
<p>Reference</p>	<p>3GPP TS 27.007</p>
<p>Note</p>	<p>ONLY for VOICE calls</p>



4.2.8.3.15. Call deflection - +CTFR

+CTFR – Call deflection	SELINT 2
<p>+CTFR=<number>[,<type>[,<subaddr>[,<satype>]]]</p>	<p>This refers to a service that causes an incoming alerting call to be forward to a specified number.</p> <p>It is based on the GSM/UMTS supplementary service CD (Call Deflection; refer 3GPP TS 22.072 [30]). The interaction of this command with other commands based on other GSM/UMTS supplementary services is described in the GSM/UMTS standard. Refer subclause (3.2.3 ME Error Result Code - +CME ERROR: <err>) for possible <err> values.</p> <p>Defined values: <number>: string type phone number of format specified by <type> <type>: type of address octet in integer format (refer 3GPP TS 24.008 [8] subclause 10.5.4.7); default 145 when dialling string includes international access code character "+", otherwise 129 <subaddr>: string type subaddress of format specified by <satype> <satype>: type of subaddress octet in integer format (refer 3GPP TS 24.008 [8] subclause 10.5.4.8); default 128</p> <p>NOTE: Call Deflection is only applicable to teleservice 11.</p>
<p>AT+CTFR=?</p>	<p>Test command returns the OK result code</p>



4.2.8.3.17. Advice Of Charge - +CAOC

+CAOC - Advice Of Charge	SELINT 2
<p>AT+CAOC=<mode></p>	<p>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.</p> <p>Parameter: <mode> 0 - query CCM value 1 - disables unsolicited CCM reporting 2 - enables unsolicited CCM reporting</p> <p>Note: the unsolicited result code enabled by parameter <mode> is in the format:</p> <p>+CCCM: <ccm></p> <p>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)</p> <p>Note: the unsolicited result code +CCCM is sent when the CCM value changes, but not more than every 10 seconds.</p>
<p>AT+CAOC?</p>	<p>Read command reports the value of parameter <mode> in the format:</p> <p>+CAOC: <mode></p>
<p>AT+CAOC=?</p>	<p>Test command reports the supported values for <mode> parameter.</p>
<p>Reference</p>	<p>3GPP TS 27.007</p>
<p>Note</p>	<p>+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.</p>



4.2.8.3.19. SS Notification - +CSSN

+CSSN - SS Notification	SELINT 2
<p>AT+CSSN=[<n> [<m>]]</p>	<p>This refers to supplementary service related network initiated notifications. Set command enables/disables the presentation of notification result codes from TA to TE.</p> <p>Parameters: <n> - sets the +CSSI result code presentation status 0 - disable 1 - enable <m> - sets the +CSSU result code presentation status 0 - disable 1 - enable</p> <p>When <n>=1 and a supplementary service notification is received after a mobile originated call setup, an unsolicited code:</p> <p>+CSSI: <code1> is sent to TE before any other MO call setup result codes, where: <code1>: 0 - unconditional call forwarding is active 1 - some of the conditional call forwardings are active 2 - call has been forwarded 3 - call is waiting 5 - outgoing calls are barred 6 - incoming calls are barred</p> <p>When <m>=1 and a supplementary service notification is received during a mobile terminated call setup or during a call, an unsolicited result code:</p> <p>+CSSU: <code2> is sent to TE, where: <code2>: 0 - this is a forwarded call (MT call setup) 2 - call has been put on hold (during a voice call) 3 - call has been retrieved (during a voice call). 4 - multiparty call entered (during a voice call) 5 - call on hold has been released (this is not a SS notification) (during a voice call)</p>
AT+CSSN?	Read command reports the current value of the parameters.
AT+CSSN=?	Test command reports the supported range of values for parameters <n>, <m>.
Reference	3GPP TS 27.007



4.2.8.3.20. Non-Access-Stratum compliancy - #NASC

#NASC - Non-Access-Stratum compliancy		SELINT 2
AT#NASC= <mode>	<p>Set command allows to selects NAS compliancy.</p> <p>Parameter: < mode > - NAS specification-compliant 0 - Forces UE to Release 99 NAS specification - compliancy. 1 - Forces UE to Release 5 NAS specification - compliancy. 2 - Forces UE to Release 6 NAS specification - compliancy (NVM default value). 3 - Forces NAS to comply with 3GPP Release 7.</p> <p>Important note: It is necessary to power cycle the unit for the setting to take effect. Note: the mode is saved into the NVM</p>	
AT#NASC	Execution command returns the setting to the default value.	
AT#NASC?	Read command returns the current value of parameter <mode>.	
AT#NASC=?	<p>Test command returns all supported values of the parameter <mode>.</p> <p>Example: at#nasc=? #NASC: (0-3)</p> <p>OK</p>	



4.2.8.3.21. Closed User Group - +CCUG

+CCUG - Closed User Group Supplementary Service Control		SELINT 2
AT+CCUG= [<n>,<index> ,<info>]]]	Set command allows control of the Closed User Group supplementary service [GSM 02.85]. Parameters: <n> 0 - disable CUG temporary mode (factory default). 1 - enable CUG temporary mode: it enables to control the CUG information on the air interface as a default adjustment for all following outgoing calls. <index> 0..9 - CUG index (default set to 0) 10 – not an index (preferential CUG taken from subscriber data) <info> 0 - no information (default) 1 - suppress Outgoing Access (OA) 2 - suppress preferential CUG 3 - suppress OA and preferential CUG Note: The default value is (0,10,0).	
AT+CCUG?	Read command reports the current value of the parameters	
AT+CCUG=?	Test command returns the OK result code	
Reference	3GPP TS 27.007	



4.2.8.3.22. Preferred Operator List - +CPOL

+CPOL - Preferred Operator List	SELINT 2
<p>AT+CPOL= [<index>] [,<format> [,<oper>] [,<GSM_AcT>, <GSM_Compact_AcT>, <UTRAN_AcT> ,<EUTRAN_AcT>]]</p>	<p>Execution command writes an entry in the SIM list of preferred operators.</p> <p>Parameters:</p> <p><index> - integer type; the order number of operator in the SIM preferred operator list 1..n</p> <p><format> 0 – long format alphanumeric <oper> 1 – short format alphanumeric <oper> 2 - numeric <oper> <oper> - string type</p> <p><GSM_AcT> - GSM access technology 0 – access technology not selected 1 – access technology selected</p> <p><GSM_Compact_AcT> - GSM compact access technology 0 – access technology not selected 1 – access technology selected</p> <p><UTRAN_AcT> - UTRA access technology 0 – access technology not selected 1 – access technology selected</p> <p><E-UTRAN_AcTn> - E-UTRAN access technology: 0 access technology not selected 1 access technology selected</p> <p>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_Compact_AcT> is not supported but set value is accepted.</p>
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



4.2.8.3.23. Selection of preferred PLMN list - +CPLS

+CPLS – Selection of preferred PLMN list	SELINT 2
AT+CPLS=<list>	<p>The execution command is used to select a list of preferred PLMNs in the SIM/USIM.</p> <p>Parameters: <list>:</p> <ul style="list-style-type: none"> 0 - User controlled PLMN selected from Access Technology EFPLMNwAcT, if not found in the SIM/UICC then use PLMN preferred list EFPLMNsel (this file is only available in SIM card or GSM application selected in UICC) 1 - Operator controlled PLMN selector with Access Technology EFOPLMNwAcT 2 - HPLMN selector with Access Technology EFHPLMNwAcT <p>Note: the value set by command is directly stored in NVM and doesn't depend on the specific CMUX instance.</p>
AT+CPLS?	<p>Read command returns the selected PLMN selector <list> from the SIM/USIM.</p>
AT+CPLS=?	<p>Test command returns the whole index range supported by the SIM/USIM.</p>
Reference	<p>3GPP TS 27.007</p>



4.2.8.4. Mobile Equipment Control

4.2.8.4.1. Phone Activity Status - +CPAS

+CPAS - Phone Activity Status		SELINT 2
AT+CPAS	Execution command reports the device status in the form: +CPAS: <pas> Where: <pas> - phone activity status 0 - ready (device allows commands from TA/TE) 3 - ringing (device is ready for commands from TA/TE , but the ringer is active) 4 - call in progress (device is ready for commands from TA/TE , but a call is in progress)	
AT+CPAS=?	Test command reports the supported range of values for <pas> . Note: although +CPAS is an execution command, ETSI 07.07 requires the Test command to be defined.	
Example	<pre> ATD03282131321; OK AT+CPAS +CPAS: 4 <i>the called phone has answered to your call</i> OK ATH OK </pre>	
Reference	3GPP TS 27.007	



4.2.8.4.2. Set Phone functionality - +CFUN

+CFUN - Set Phone Functionality	SELINT 2
AT+CFUN= [<fun>,<rst>]]	<p>Set command selects the level of functionality in the ME.</p> <p>Parameters:</p> <p><fun> - is the power saving function mode</p> <p>0 - minimum functionality, NON-CYCLIC SLEEP mode: in this mode, the AT interface is not accessible by UART. 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.</p> <p>1 - mobile full functionality with power saving disabled (factory default)</p> <p>4 - disable both TX and RX</p> <p>5 - mobile full functionality with power saving enabled</p> <p><rst> - reset flag</p> <p>0 - do not reset the ME before setting it to <fun> functionality level.</p> <p>1 - reset the ME before setting it to <fun> functionality level. This option works only with <fun>=1, with other values it will return an error.</p> <p>Note: AT+CFUN=2 is not supported.</p> <p>Note: Issuing AT+CFUN=4[,0] actually causes the module to perform either a network deregistration and a SIM deactivation.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Until the DTR line is ON, the module will not return back in the power saving condition.</p> <p>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</p>
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



+CPIN - Enter PIN	SELINT 2																																																																																								
	<p>PH-CORP PUK - ME is awaiting corporate personalization unblocking password</p> <p>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></p>																																																																																								
AT+CPIN=?	Test command returns OK result code.																																																																																								
Example	<pre> AT+CMEE=1 OK AT+CPIN? +CME ERROR: 1 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 </pre>																																																																																								
Note	<p>What follows is a list of the commands which are accepted when ME is pending SIM PIN or SIM PUK</p> <table border="1"> <tbody> <tr><td>A</td><td>&K</td><td>+FCLASS</td><td>+CPIN</td></tr> <tr><td>D</td><td>&N</td><td>+GCAP</td><td>+CSQ</td></tr> <tr><td>H</td><td>&P</td><td>+GCI</td><td>+CIND</td></tr> <tr><td>O</td><td>&S</td><td>+IPR</td><td>+CMER</td></tr> <tr><td>E</td><td>&V</td><td>+IFC</td><td>+CCLK</td></tr> <tr><td>I</td><td>&W</td><td>+ILRR</td><td>+CALA</td></tr> <tr><td>L</td><td>&Y</td><td>+ICF</td><td></td></tr> <tr><td>M</td><td>&Z</td><td>+CRSM</td><td></td></tr> <tr><td>P</td><td>+DS</td><td></td><td></td></tr> <tr><td>Q</td><td>%L</td><td>+DR</td><td></td></tr> <tr><td>%Q</td><td>+CGMI</td><td></td><td></td></tr> <tr><td>T</td><td>\Q</td><td>+CGMM</td><td></td></tr> <tr><td>V</td><td>+CGMR</td><td>+CLAC</td><td></td></tr> <tr><td>X</td><td>\V</td><td>+GMI</td><td>+CMEE</td></tr> <tr><td>Z</td><td>#CGMI</td><td>+GMM</td><td>+CGREG</td></tr> <tr><td>&C</td><td>#CGMM</td><td>+GMR</td><td>+CBC</td></tr> <tr><td>&D</td><td>#CGMR</td><td>+CGSN</td><td>+CSDH</td></tr> <tr><td>&F</td><td>#CGSN</td><td>+GSN</td><td>+CNMI</td></tr> <tr><td>+COPS</td><td>+CHUP</td><td>+CRC</td><td></td></tr> <tr><td>+CLIP</td><td>#SHDN</td><td>+CRLP</td><td></td></tr> <tr><td>+CPAS</td><td>+CR</td><td>+CREG</td><td></td></tr> <tr><td>+CFUN</td><td></td><td></td><td></td></tr> </tbody> </table>	A	&K	+FCLASS	+CPIN	D	&N	+GCAP	+CSQ	H	&P	+GCI	+CIND	O	&S	+IPR	+CMER	E	&V	+IFC	+CCLK	I	&W	+ILRR	+CALA	L	&Y	+ICF		M	&Z	+CRSM		P	+DS			Q	%L	+DR		%Q	+CGMI			T	\Q	+CGMM		V	+CGMR	+CLAC		X	\V	+GMI	+CMEE	Z	#CGMI	+GMM	+CGREG	&C	#CGMM	+GMR	+CBC	&D	#CGMR	+CGSN	+CSDH	&F	#CGSN	+GSN	+CNMI	+COPS	+CHUP	+CRC		+CLIP	#SHDN	+CRLP		+CPAS	+CR	+CREG		+CFUN			
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+CPAS	+CR	+CREG																																																																																							
+CFUN																																																																																									



+CPIN - Enter PIN		SELINT 2
	All the above commands, except +CSDH and +CNMI , can be issued even if ME is waiting for phone-to-SIM card password to be given	
Reference	3GPP TS 27.007	

4.2.8.4.4. Signal Quality - **+CSQ**

+CSQ - Signal Quality		SELINT 2
AT+CSQ	<p>Execution command reports received signal quality indicators in the form:</p> <p>+CSQ: <rss>,<ber></p> <p>Where:</p> <p><rss> - received signal strength indication</p> <p>0 - (-113) dBm or less</p> <p>1 - (-111) dBm</p> <p>2..30 - (-109)dBm..(-53)dBm / 2 dBm per step</p> <p>31 - (-51)dBm or greater</p> <p>99 - not known or not detectable</p> <p><ber> - bit error rate (in percent)</p> <p>0 - less than 0.2%</p> <p>1 - 0.2% to 0.4%</p> <p>2 - 0.4% to 0.8%</p> <p>3 - 0.8% to 1.6%</p> <p>4 - 1.6% to 3.2%</p> <p>5 - 3.2% to 6.4%</p> <p>6 - 6.4% to 12.8%</p> <p>7 - more than 12.8%</p> <p>99 - not known or not detectable</p> <p>Note: this command should be used instead of the %Q and %L commands, since the relevant parameters refer to the radio link and no line is present, hence %Q and %L have no meaning.</p> <p>Currently <ber> is available only in GSM network.</p>	
AT+CSQ=?	<p>Test command returns the supported range of values of the parameters <rss> and <ber>.</p> <p>Note: although +CSQ is an execution command without parameters, ETSI 07.07 requires the Test command to be defined.</p>	
Reference	3GPP TS 27.007	



4.2.8.4.5. Indicator Control - +CIND

+CIND - Indicator Control	SELINT 2
<p>AT+CIND= [<state> [,<state>[,...]]]</p>	<p>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 are shown in the test command AT+CIND=?</p> <p>Parameter: <state> - registration state 0 - The indicator is deregistered; no unsolicited result code (+CIEV URC) is automatically sent by the ME to the application, whenever the value of the associated indicator changes. 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. (default)</p>
<p>AT+CIND?</p>	<p>Read command returns the current value of ME indicators, in the format: +CIND: <ind>,<ind>,...<ind> Note: the order of the values for <ind> is the same as that in which the associated indicators appear from test command AT+CIND=?</p>
<p>AT+CIND=?</p>	<p>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)),... (<descr>, (list of supported <ind>s)) where: <descr> - indicator names as follows (along with their <ind> ranges). “battchg” - battery charge level. <ind>- battery charge level indicator range 0..5 – battery levels. 99 - not measurable. “signal” - signal quality. <ind> - signal quality indicator range 0..7 – signal levels. 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 current sound activity. 1 - There’s some current sound activity. “message” - message received. <ind> - message received indicator range.</p>



+CIND - Indicator Control	SELINT 2
	<p>0 - there is no unread short message at memory locations. 1 - unread short message at memory locations.</p> <p>“call” - call in progress. <ind> - call in progress indicator range. 0 – there are no calls in progress 1 - at least one call has been established.</p> <p>“roam” – roaming. <ind> - roaming indicator range. 0 - registered to home network or not registered. 1 - registered to other network .</p> <p>“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.</p> <p>“rsi” - received signal (field) strength. <ind> - received signal strength level indicator range. 0 - signal strength \leq (-113) dBm . 1..4 - signal strength in 15 dBm steps. 5 - signal strength \geq (-51) dBm . 99 - not measurable.</p> <p>"GPRS coverage" – there is packet service coverage. 0 – no packet service. 1 – module is attached to a packet service.</p> <p>"callsetup" – call setup status indicator. 0 - No active call setup. 1 - MT call is waiting or ringing. 2 - MO call was initiated. 3 - MO call ringing at B-party.</p>
Example	<p><i>Next command causes all the indicators to be registered</i> AT+CIND=1,1,1,1,1,1,1,1,1 <i>Next command causes all the indicators to be de-registered</i> AT+CIND=0,0,0,0,0,0,0,0,0 <i>Next command to query the current value of all indicators</i> AT+CIND? CIND: 4,0,1,0,0,0,0,0,2</p> <p>OK</p>
Note	See command +CMER
Reference	3GPP TS 27.007



4.2.8.4.6. Mobile Equipment Event Reporting - +CMER

+CMER - Mobile Equipment Event Reporting	SELINT 2
<p>AT+CMER= [<mode> [,<keyp> [,<disp> [,<ind> [,<bfr>]]]]]</p>	<p>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).</p> <p>Parameters:</p> <p><mode> - controls the processing of unsolicited result codes</p> <ul style="list-style-type: none"> 0 - discard +CIEV Unsolicited Result Codes. 1 - discard +CIEV Unsolicited Result Codes when TA-TE link is reserved (e.g. on-line data mode); otherwise forward them directly to the TE. 2 - buffer +CIEV Unsolicited Result Codes in the TA when TA-TE link is reserved (e.g. on-line data mode) and flush them to the TE after reservation; otherwise forward them directly to the TE. 3 - forward +CIEV Unsolicited Result Codes directly to the TE; when TA is in on-line data mode each +CIEV URC is replaced with a Break (100 ms), and is stored in a buffer; onche the ME goes into command mode (after +++ was entered), all URCs stored in the buffer will be output. <p><keyp> - keypad event reporting</p> <ul style="list-style-type: none"> 0 - no keypad event reporting <p><disp> - display event reporting</p> <ul style="list-style-type: none"> 0 - no display event reporting <p><ind> - indicator event reporting</p> <ul style="list-style-type: none"> 0 - no indicator event reporting 2 - indicator event reporting <p><bfr> - TA buffer clearing</p> <ul style="list-style-type: none"> 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) <p>Note: After AT+CMER has been switched on with e.g. AT+CMER=2,0,0,2 command (i.e. <bfr> is 0), URCs for all registered indicators will be issued only first time, if previous <mode> was 0, for backward compatibility. Values shown by the indicators will be current indicators values, not buffered ones. Subsequent AT+CMER commands with <mode> different from 0 and <bfr> equal to 0 will not flush the codes, even if <mode> was set again to 0 before. To flush the codes, <bfr> must be set to 1. Although it is possible to issue the command when SIM PIN is pending, it will answer ERROR if “message” or “smsfull” indicators are enabled in AT+CIND, because with pending PIN it is not possible to give a correct indication about SMS status. To issue the command when SIM PIN is pending you have to disable “message” and “smsfull” indicators in AT+CIND first.</p>
<p>AT+CMER?</p>	<p>Read command returns the current setting of parameters, in the format:</p> <p>+CMER: <mode>,<keyp>,<disp>,<ind>,<bfr></p>
<p>AT+CMER=?</p>	<p>Test command returns the range of supported values for parameters <mode>, <keyp>, <disp>, <ind>, <bfr>, in the format:</p>



+CMER - Mobile Equipment Event Reporting		SELINT 2
	+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	

4.2.8.4.7. Select Phonebook Memory Storage - +CPBS

+CPBS - Select Phonebook Memory Storage		SELINT 2
AT+CPBS=<storage>	Set command selects phonebook memory storage <storage>, which will be use by other phonebook commands. Parameter: <storage> "SM" - SIM phonebook "FD" - SIM fixed dialling-phonebook (only phase 2/2+ SIM) "LD" - SIM last-dialled-phonebook (+CPBF is not applicable for this storage) "MC" - device missed calls (unanswered received) list (+CPBF is not applicable for this storage) "RC" - ME received calls list (+CPBF is not applicable for this storage). "DC" - MT dialled calls list "ME" – MT phonebook "EN" - SIM/USIM (or MT) emergency number (+CPBW is not applicable for this storage) "ON" - SIM (or MT) own numbers (MSI storage may be available through +CNUM also). "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). "SD" - SIM Service Dialling Numbers (SDN) phonebook (+CPBW is not applicable for this storage).	
AT+CPBS?	Read command returns the current 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" <i>current phonebook storage is SIM</i> AT+CPBR=1 +CPBR: 1,"0105872928",129,"James" OK	
Reference	3GPP TS 27.007	



4.2.8.4.8. Read Phonebook Entries - +CPBR

+CPBR - Read Phonebook Entries	SELINT 2
<p>AT+CPBR= <index1> [,<index2>]</p>	<p>Execution command returns phonebook entries in location number range <index1>..<index2> from the current phonebook memory storage selected with +CPBS. If <index2> omitted, only location <index1> is returned.</p> <p>Parameters:</p> <p><index1> - integer type. value in the range of location numbers of the currently selected phonebook memory storage (see +CPBS).</p> <p><index2> - integer type. value in the range of location numbers of the currently selected phonebook memory storage (see +CPBS).</p> <p>The response format is:</p> <p>[+CPBR:<index1>,<number>,<type>,<text>,<group>], [<adnumber>],[<adtype>],[<secondtext>],[<email>][<CR><LF> +CPBR:<index2>,<number>,<type>,<text>,<group>], [<adnumber>],[<adtype>],[<secondtext>],[<email>[...]]]</p> <p>or</p> <p>+CME ERROR: <err></p> <p>where:</p> <p><index<i>n</i>> - the location number of the phonebook entry</p> <p><number> - string type phone number of format <type></p> <p><type> - type of phone number octet in integer format 129 - national numbering scheme 145 - international numbering scheme (contains the character "+")</p> <p><text> - the alphanumeric text associated to the number; used character set should be the one selected with command +CSCS.</p> <p><group> - group name the entry may belong to; used character set should be the one selected with command +CSCS.</p> <p><adnumber> - additional string type phone number of format <adtype>.</p> <p><adtype> - additional type number octet in integer format. 129 - national numbering scheme 145 - international numbering scheme (contains the character "+")</p> <p><secondtext> - the alphanumeric text associated to secondary text; used character set should be the one selected with command +CSCS.</p>



+CPBR - Read Phonebook Entries	SELINT 2
	<p><email> - The alphanumeric text associated to email address; used character set should be the one selected with command +CSCS.</p>
<p>AT+CPBR=?</p>	<p>Test command returns the supported range of values for parameters <index<i>n</i>> and the maximum lengths of <number> and <text> fields, in the format:</p> <p>+CPBR: (<minIndex> - <maxIndex>),<nlength>,<tlength>,<glength>,<slength>,<elength></p> <p>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> – group name length for example AND group, FDN group. <slength> – Secondary text length associate with the number <elength> – <email> length</p> <p>Note: the value of <nlength> could vary, depending on the availability of Extension service, in the following situations:</p> <ol style="list-style-type: none"> 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
<p>Note</p>	<p>Remember to select the PB storage with +CPBS command before issuing PB commands.</p>
<p>Example</p>	<pre>AT+CPBS="ME" OK AT+CPBS? +CPBS: "ME",1,100 OK AT+CPBR=? +CPBR: (1-500),40,20,2,20,20 OK AT+CPBR=1 +CPBR: 1,"01048771234",129,"James", "", "", 0, "", "" OK</pre>
<p>Reference</p>	<p>3GPP TS 27.007</p>



4.2.8.4.10. Write Phonebook Entry - +CPBW

+CPBW - Write Phonebook Entry	SELINT 2
<p>AT+CPBW= [<index>] [,<number>] [,<type>[,<text>[,<group>[,<adnumber>[,<adtype>[,<secondtext>[,<email>]]]]]]]]]</p>	<p>Execution command writes phonebook entry in location number <index> in the current phonebook memory storage selected with +CPBS.</p> <p>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 the entry may belong to; used character set should be the one selected with command +CSCS. <adnumber> - additional string type phone number of format <adtype>. <adtype> - additional type number octet in integer format. 129 - national numbering scheme 145 - international numbering scheme (contains the character "+") <secondtext> - the alphanumeric text associate secondary text; used character set should be the one selected with command +CSCS. <email> - The alphanumeric text associate email address; used character set should be the one selected with command +CSCS.</p> <p>Note: If record number <index> already exists, it will be overwritten.</p> <p>Note: if either <number>, <type>, <text>, <group>, <adnumber>, <adtype>, <secondtext> and <email> are omitted, the phonebook entry in location <index> is deleted.</p> <p>Note: if <index> is omitted or <index>=0, the number <number> is stored in the first free phonebook location.</p> <p>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>.</p>
<p>AT+CPBW=?</p>	<p>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:</p> <p>+CPBW: (list of supported <index>s),<nlength>, (list of supported <type>s),<tlength>,<glength>,<slength>,<elength></p> <p>where: <nlength> - integer type value indicating the maximum length of field <number>.</p>



+CPBW - Write Phonebook Entry		SELINT 2
	<p><tlength> - integer type value indicating the maximum length of field <text> <glength> – group name length for example AND group, FDN group. <slength> – Secondary text length associate with the <adnumber> number. <elength> – email length.</p>	
Reference	3GPP TS 27.007	
Note	Remember to select the PB storage with +CPBS command before issuing PB commands.	

4.2.8.4.11. Clock Management - +CCLK

+CCLK - Clock Management		SELINT 2
AT+CCLK=<time>	<p>Set command sets the real-time clock of the ME.</p> <p>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 -96..+96</p>	
AT+CCLK?	<p>Read command returns the current setting of the real-time clock, in the format <time>.</p> <p>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).</p>	
AT+CCLK=?	Test command returns the OK result code.	
Example	<pre>AT+CCLK="02/09/07,22:30:00+00" OK AT+CCLK? +CCLK: "02/09/07,22:30:25" OK</pre>	
Reference	3GPP TS 27.007	



4.2.8.4.12. Time Zone reporting - +CTZR

+CTZR – Time Zone reporting		SELINT 2
AT+CTZR=<onoff>	<p>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.</p> <p>Parameters: <onoff>: 0 Disable time zone change event reporting (default) 1 Enable time zone change event reporting</p>	
AT+CTZR?	Read command reports the currently selected <onoff> in the format: +CTZR: <onoff>	
AT+CTZR=?	Test command reports the supported range of values for parameter <onoff>	

4.2.8.4.13. Automatic Time Zone update - +CTZU

+CTZU – automatic Time Zone update		SELINT 2
AT+CTZU=<onoff>	<p>This command enables and disables automatic time zone update via NITZ.</p> <p>Parameters: <onoff>: 0 Disable automatic time zone update via NITZ (default) 1 Enable automatic time zone update via NITZ</p> <p>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.</p>	
AT+CTZU?	Read command reports the currently selected <onoff> in the format: +CTZU: <onoff>	
AT+CTZU=?	Test command reports the supported range of values for parameter <onoff>	



4.2.8.4.14. Restricted SIM Access - +CRSM

+CRSM - Restricted SIM Access	SELINT 2
<p>AT+CRSM= <command> [,<fileid> [,<P1>,<P2>,<P3> [,<data>]]]</p>	<p>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.</p> <p>Parameters:</p> <p><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</p> <p><fileid> - identifier of an elementary data file on SIM. Mandatory for every command except STATUS.</p> <p><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</p> <p><data> - information to be read/written to the SIM (hexadecimal character format).</p> <p>The response of the command is in the format:</p> <p>+CRSM: <sw1>,<sw2>[,<response>]</p> <p>where:</p> <p><sw1>,<sw2> - information from the SIM about the execution of the actual command either on successful or on failed execution.</p> <p><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.</p> <p>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.</p> <p>Note: use only decimal numbers for parameters <command>, <fileid>, <P1>, <P2> and <P3>.</p>
<p>AT+CRSM=?</p>	<p>Test command returns the OK result code</p>
<p>Reference</p>	<p>3GPP TS 27.007, GSM 11.11</p>



4.2.8.4.15. Generic SIM access - +CSIM

+CSIM – Generic SIM access	SELINT 2
<p>AT+CSIM=<length>, <command></p>	<p>Set command transmits to the MT the <command> it then shall send as it is to the SIM. In the same manner the SIM <response> shall be sent back by the MT to the TA as it is. Refer subclause 9.2 for <err> values.</p> <p>This command allows a direct control of the SIM by an distant application on the TE. The TE shall then take care of processing SIM information within the frame specified by GSM/UMTS.</p> <p>Parameters: <length> : integer type; length of the characters that are sent to TE in <command> or <response> (two times the actual length of the command or response) <command> : command passed on by the MT to the SIM in the format as described in GSM 51.011 [28] (hexadecimal character format; refer +CSCS)</p> <p>Possible response(s) +CSIM: <length>,<response> +CME ERROR: <err></p> <p>Note: Compared to Restricted SIM Access command +CRSM, the definition of +CSIM allows TE to take more control over the SIM-MT interface. The locking and unlocking of the interface may be done by a special <command> value or automatically by TA/MT (by interpreting <command> parameter). In case that TE application does not use the unlock command (or does not send a <command> causing automatic unlock)in a certain timeout value, MT may release the locking.</p>
<p>AT+CSIM=?</p>	<p>Test command returns the OK result code.</p>



4.2.8.4.16. Alert Sound - +CALM

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



4.2.8.4.17. Ringer Sound Level - +CRSL

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

4.2.8.4.18. Loudspeaker Volume Level - +CLVL

+CLVL - Loudspeaker Volume Level		SELINT 2
AT+CLVL=<level>	Set command is used to select the volume of the internal loudspeaker audio output of the device. Parameter: <level> - loudspeaker volume 0..max - the value of max can be read by issuing the Test command AT+CLVL=?	
AT+CLVL?	Read command reports the current <level> setting of the loudspeaker volume in the format: +CLVL: <level>	
AT+CLVL=?	Test command reports <level> supported values range in the format: +CLVL: (0-max)	
Reference	3GPP TS 27.007	



4.2.8.4.19. Microphone Mute Control - +CMUT

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

4.2.8.4.20. Accumulated Call Meter - +CACM

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



4.2.8.4.23. Call meter maximum event - +CCWE

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



4.2.8.4.24. Set voice mail number - +CSVM

+CSVM – Set Voice Mail Number		SELINT 2
AT+CSVM=<mode>[,<number>[,<type>]>]]	<p>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.</p> <p>Parameters:</p> <p><mode> 0 – disable the voice mail number 1 – enable the voice mail number (factory default)</p> <p><number> - string type phone number of format specified by <type> <type> - type of address octet in integer format 129 - unknown type of number and ISDN/Telephony numbering plan 145 - international type of number and ISDN/Telephony numbering plan (contains the character "+")</p> <p>Note: Set command only checks for parameters values validity; it does not any actual write to SIM to update voice mail number.</p>	
AT+CSVM?	<p>Read command returns the currently selected voice mail number and the status (i.e. enabled/disabled) in the format</p> <p>+CSVM:<mode>,<number>,<type></p>	
AT+CSVM=?	<p>Test command reports the range for the parameters <mode> and <type>.</p>	

4.2.8.4.25. Available AT Commands - +CLAC

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



4.2.8.5. Mobile Equipment Errors

4.2.8.5.1. Report Mobile Equipment Error - +CMEE

+CMEE - Report Mobile Equipment Error		SELINT 2
AT+CMEE=[<n>]	<p>Set command enables/disables the report of result code:</p> <p>+CME ERROR: <err></p> <p>as an indication of an error relating to the +Cxxx commands issued.</p> <p>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.</p> <p>Parameter: <n> - enable flag 0 - disable +CME ERROR:<err> reports, use only ERROR report. (default) 1 - enable +CME ERROR:<err> reports, with <err> in numeric format 2 - enable +CME ERROR: <err> reports, with <err> in verbose format</p>	
AT+CMEE?	<p>Read command returns the current value of subparameter <n>:</p> <p>+CMEE: <n></p>	
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	



4.2.8.6. Voice Control

4.2.8.6.1. DTMF Tones Transmission - +VTS

+VTS - DTMF Tones Transmission		SELINT 2
AT+VTS= <dtmfstring> [,<duration>]	Execution command allows the transmission of DTMF tones. Parameters: <dtmfstring> - string of <dtmf>s , i.e. ASCII characters in the set (0-9), #, *, (A-D,P) ; the string can be at most 255 <dtmf>s long; it allows the user to send a sequence of DTMF tones, each of them with a duration that was defined through +VTD command. <duration> - duration of a tone in 1/100 sec.; this parameter can be specified only if the length of first parameter is just one ASCII character. 0 - a single DTMF tone will be transmitted for a duration depending on the network, no matter what the current +VTD setting is. 1..255 - a single DTMF tone will be transmitted for a time <duration> (in 10 ms multiples), no matter what the current +VTD setting is. Note: P – pause of 3 seconds. Note: This command operates in voice mode only (see +FCLASS).	
AT+VTS=?	Test command provides the list of supported <dtmf>s and the list of supported <duration>s in the format: (list of supported <dtmf>s)[,(list of supported <duration>s)]	
Reference	3GPP TS 27.007 and TIA IS-101	

4.2.8.6.2. Tone Duration - +VTD

+VTD - Tone Duration		SELINT 2
AT+VTD= <duration>	Set command sets the length of tones transmitted with +VTS command. Parameter: <duration> - duration of a tone 0 - the duration of every single tone is dependent on the network (factory default) 1..255 - duration of every single tone in 1/10 sec.	
AT+VTD?	Read command reports the current Tone Duration, in the format: <duration>	
AT+VTD=?	Test command provides the list of supported <duration>s in the format: (list of supported <duration>s)	
Reference	3GPP TS 27.007 and TIA IS-101	

4.2.8.6.3. Embedded DTMF decoder enabling - #DTMF



#DTMF – Embedded DTMF decoder enabling		SELINT2
AT#DTMF=<mode> >	Set command enables/disables the embedded DTMF decoder. Parameters: <mode> : 0 – disable DTMF decoder (default) 1 – enables DTMF decoder 2 – enables DTMF decoder without URC notify Note: if <mode>=1, the receiving of a DTMF tone is pointed out with an unsolicited message through AT interface in the following format: #DTMFEV: x with x as the DTMF digit The value set by command is not saved and a software or hardware reset restores the default value. The value can be stored in NVM using profiles.	
AT#DTMF?	Read command reports the currently selected <mode> in the format: #DTMF: <mode>	
AT#DTMF=?	Test command reports supported range of values for all parameters.	



4.2.8.7. Commands For GPRS

4.2.8.7.1. GPRS Mobile Station Class - +CGCLASS

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

4.2.8.7.2. GPRS Attach Or Detach - +CGATT

+CGATT - GPRS Attach Or Detach		SELINT 2
AT+CGATT=[<state>]	Execution command is used to attach the terminal to, or detach the terminal from, the GPRS service depending on the parameter <state>.	
	Parameter: <state> - state of GPRS attachment 0 - detached 1 - attached	
AT+CGATT?	Read command returns the current GPRS service state.	
AT+CGATT=?	Test command requests information on the supported GPRS service states.	
Example	<pre> AT+CGATT? +CGATT: 0 OK AT+CGATT=? +CGATT: (0,1) OK AT+CGATT=1 OK </pre>	



+CGATT - GPRS Attach Or Detach		SELINT 2
Reference	3GPP TS 27.007	

4.2.8.7.3. GPRS Event Reporting - +CGEREP

+CGEREP - GPRS Event Reporting		SELINT 2
AT+CGEREP= [<mode>[,<bfr>]]	<p>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.</p> <p>Parameters:</p> <p><mode> - controls the processing of URCs specified with this command</p> <ul style="list-style-type: none"> 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. <p><bfr> - controls the effect on buffered codes when <mode> 1 or 2 is entered:</p> <ul style="list-style-type: none"> 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) <p style="text-align: center;">Unsolicited Result Codes</p> <p>The following unsolicited result codes and the corresponding events are defined:</p> <p>+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</p> <p>+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</p> <p>+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</p> <p>+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</p> <p>+CGEV: NW DETACH</p>	



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

4.2.8.7.4. GPRS Network Registration Status - +CGREG

+CGREG - GPRS Network Registration Status		SELINT 2
AT+CGREG=[<n>]	<p>Set command controls the presentation of an unsolicited result code +CGREG: (see format below).</p> <p>Parameter: <n> - result code presentation mode 0 - disable network registration unsolicited result code 1 - enable network registration unsolicited result code; if there is a change in the terminal GPRS network registration status, it is issued the unsolicited result code: 2 enable network registration and location information unsolicited result code +CGREG: <stat></p> <p>where: <stat> - registration status 0 - not registered, terminal is not currently searching a new operator to register to 1 - registered, home network 2 - not registered, but terminal is currently searching a new operator to register to 3 - registration denied 4 - unknown 5 - registered, roaming If <n>=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:</p>	



4.2.8.7.5. Printing IP Address Format - +CGPIAF

+CGPIAF - Printing IP Address Format	
AT+CGPIAF= [<IPv6_AddressFormat>,<IPv6_SubnetNotation>,<IPv6_LeadingZeros>,<IPv6_compressZeros>]]	<p>Set command decides what the format to print IPv6 address parameter.</p> <p>Parameters:</p> <p><IPv6_AddressFormat> - decides the IPv6 address format. Relevant for all AT command parameters that can hold an IPv6 address.</p> <p>0 – Use IPv4-like dot-notation. IP addresses, and subnetwork mask if applicable, are dot-separated.</p> <p>1 – Use IPv6-like colon-notation. IP address, and subnetwork mask if applicable and when given explicitly, are separated by a space.</p> <p><IPv6_SubnetNotation> - decides the subnet-notation for <remote address and subnet mask></p> <p>Setting does not apply if IPv6 address format <IPv6_AddressFormat> = 0.</p> <p>0 – Both IP address, and subnet mask are started explicitly, separated by a space.</p> <p>1 – The printout format is applying /(forward slash) subnet-prefix Classless Inter-Domain Routing (CIDR) notation.</p> <p><IPv6_LeadingZeros> - decides whether leading zeros are omitted or not. Setting does not apply if IPv6 address format <IPv6_AddressFormat> = 0.</p> <p>0 – Leading zeros are omitted.</p> <p>1 – Leading zeros are included.</p> <p><IPv6_CompressZeros> - decides whether 1-n instances of 16-bit- zero-values are replaced by only “::”. This applies only once. Setting does not apply if IPv6 address format <IPv6_AddressFormat> = 0.</p> <p>0 – No zero compression.</p> <p>1 – Use zero compression.</p>
AT+CGPIAF?	Read command returns the current parameter setting.
AT+CGPIAF=?	Test command returns values supported as compound parameter setting.
Example	<p>AT+CGPIAF=0,0,0,0 OK</p> <p>AT#SGACT=1,1 #SGACT: 252.1.171.171.205.205.239.224.0.0.0.0.0.0.1 OK</p> <p>at+CGPIAF=1,0,0,0 OK</p> <p>AT#SGACT=1,1 #SGACT: FC01:ABAB:CDCD:EFE0:0:0:0:1 OK</p>
Reference	3GPP TS 27.007



+CGDCONT - Define PDP Context		SELINT 2
	AT+CGDCONT? +CGDCONT: 1,"IP","APN","10.10.10.10",0,0 OK AT+CGDCONT=? +CGDCONT: (1-5),"IP",,(0-1),(0-1) OK	
Reference	3GPP TS 27.007	

4.2.8.7.7. Define Secondary PDP Context - +CGDSCONT

+CGDSCONT - parameter command syntax	
+CGDSCONT=[<cid>,<p_cid>,<d_comp>,<h_comp>]	<p>Possible response(s): OK ERROR</p> <p>Description: The set command specifies 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 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.</p> <p>Defined values <cid>: a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TMT 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</p>



+CGDSCONT - parameter command syntax	
	<p>local to the TE-MT interface. The list of permitted values is returned by the test form of the command.</p> <p><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.</p> <p><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.</p>
+CGDSCONT?	+CGDSCONT: <cid>, <p_cid>, <d_comp>, <h_comp> [<CR><LF>+CGDSCONT: <cid>, <p_cid>, <d_comp>, <h_comp> [...]]
+CGDSCONT=?	+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)

4.2.8.7.8. **Traffic Flow Template - +CGTFT**

+CGTFT - parameter command syntax	
+CGTFT= [<cid>, <packet filter identifier>, <evaluation precedence index> [, <source address and subnet mask> [, <protocol number (ipv4) / next header (ipv6)> [, <destination port	<p>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.</p> <p>The concept is further described in the 3GPP TS 23.060 [47]. A TFT consists of from one and up to 16 Packet Filters, each identified by a unique <packet filter identifier>.</p> <p>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 to be added to the TFT stored in the MT and used for the context identified by the (local) context identification parameter, <cid>.</p>



+CGTFT - parameter command syntax	
	<p><source port range>: string type. The string is given as dot-separated numeric (0-65535) parameters on the form "f.t".</p> <p><ipsec security parameter index (spi)>: numeric value in hexadecimal format. The value range is from 00000000 to FFFFFFFF.</p> <p><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 on the form "t.m".</p> <p><flow label (ipv6)>: numeric value in hexadecimal format. The value range is from 00000 to FFFFF. Valid for IPv6 only.</p> <p><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)</p> <p>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].</p>
+CGTFT?	<p>The read command returns the current settings for all Packet Filters for each defined context.</p> <p>+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>[...]]</p>
+CGTFT=?	<p>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</p>



+CGTFT - parameter command syntax

TFT is applicable only when IP traffic is carried over PPP. If PPP carries header-compressed IP packets, then a TFT can not be used.

+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>

+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)[...]



	<p>If a value is omitted for a particular class then the value is considered to be unspecified.</p> <p>Note: a special form of the Set command, +CGEQMIN=<cid> causes the requested profile for context number <cid> to become undefined. If signalling indication is set to 1, traffic handling priority should be 1.</p> <p><Source Statistics Descriptor> - Characteristics of the source of the submitted SDUs for a PDP context. This parameter should be provided if the <Traffic class> is specified as conversational or streaming.</p> <p>0 - Characteristics of SDUs is unknown (default value) 1 - Characteristics of SDUs corresponds to a speech source</p> <p><Signalling Indication> - Signalling content of submitted SDUs for a PDP context. This parameter should be provided if the <Traffic class> is specified as interactive.</p> <p>0 - PDP context is not optimized for signalling (default value) 1 - PDP context is optimized for signalling.</p>
<p>AT+CGEQMIN?</p>	<p>Read command returns the current settings for each defined context in the format:</p> <p>[+CGEQMIN: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic handling>,<Source statistics descriptor>,<Signalling indication><CR><LF>] [+CGEQMIN:...]</p> <p>If no PDP context defined, it has no effect and OK result code returned.</p>
<p>AT+CGEQMIN=?</p>	<p>Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format:</p> <p>+CGEQMIN: <PDP_Type>,(list of supported <Traffic class>s), (list of supported <Maximum bitrate UL>s),(list of supported <Maximum bitrate DL>s),(list of supported <Guaranteed bitrate UL>s),(list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s),(list of supported <Maximum SDU size>s),(list of supported <SDU error ratio>s),(list of supported <Residual bit error ratio>s),(list of supported <Delivery of erroneous SDUs>s),(list of supported <Transfer delay>s),(list of supported <Traffic handling priority>s),(list of supported <Source statistics descriptor>s),(list of supported <Signalling indication>s)</p>
<p>Example</p>	<p>AT+CGEQMIN=1,0,384,384,128,128,0,0,"0E0","0E0",0,0,0,0,0</p>



	<p>OK AT+CGEQMIN? +CGEQMIN: 1,0,384,384,128,128,0,0,"0E0","0E0",0,0,0,0</p> <p>OK</p> <p>AT+CGEQMIN=? +CGEQMIN: "IP",(0-4),(0-512),(0-16000),(0-512),(0-6000),(0-2), (0-520),("0E0","1E1","1E2","7E3","1E3","1E4","1E5","1E6"), ("0E0","5E2","1E2","5E3","4E3","1E3","1E4","1E5","1E6","6E8"),(0-3), (0,100-4000),(0-3),(0,1),(0,1)</p> <p>+CGEQMIN: "PPP",(0-4),(0-512),(0-16000),(0-512),(0-16000),(0-2),(0-1520), ("0E0","1E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2", "5E3","4E3","1E3","1E4","1E5","1E6","6E8"),(0-3),(0,100-4000), (0-3),(0,1),(0,1)</p> <p>+CGEQMIN: "IPV6",(0-4),(0-512),(0-16000),(0-512),(0-16000),(0-2),(0-1520), ("0E0","1E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2", "5E3","4E3","1E3","1E4","1E5","1E6","6E8"),(0-3),(0,100-4000), (0-3),(0,1),(0,1)</p> <p>OK</p>
Reference	3GPP TS 27.007; 3GPP TS 03.60/23.060; 3GPP TS 24.008



4.2.8.7.10. Quality of Service Profile (Minimum Acceptable) - +CGQMIN

+CGQMIN - Quality Of Service Profile (Minimum Acceptable)	
AT+CGQMIN= [<cid> [,<precedence> [,<delay> [,<reliability> [,<peak> [,<mean>]]]]]]	<p>Set command allows to specify a minimum acceptable profile which is checked by the terminal against the negotiated profile returned in the Activate PDP Context Accept message.</p> <p>Parameters: <cid> - PDP context identification (see +CGDCONT command). <precedence> - precedence class <delay> - delay class <reliability> - reliability class <peak> - peak throughput class <mean> - mean throughput class</p> <p>If a value omitted for a particular class then this class is not checked. Note: a special form of the Set command, +CGQMIN=<cid> causes the requested profile for context number <cid> to become undefined.</p>
AT+CGQMIN?	<p>Read command returns the current settings for each defined context in the format:</p> <p>+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>[<CR><LF>+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>[...]]</p> <p>If no PDP context has been defined, it has no effect and OK result code is returned.</p>
AT+CGQMIN=?	<p>Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format:</p> <p>+CGQMIN: <PDP_Type>,(list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s), (list of supported <peak>s), (list of supported <mean>s)</p> <p>Note: only the "IP" PDP_Type is currently supported.</p>
Example	<pre>AT+CGQMIN=1,0,0,3,0,0 OK AT+CGQMIN? +CGQMIN: 1,0,0,5,0,0 OK AT+CGQMIN=? +CGQMIN: "IP",(0-3),(0-4),(0-5),(0-9),(0-18,31) +CGQMIN: "PPP",(0-3),(0-4),(0-5),(0-9),(0-18,31) +CGQMIN: "IPV6",(0-3),(0-4),(0-5),(0-9),(0-18,31) OK</pre>
Reference	3GPP TS 27.007; 3GPP TS 03.60/23.060



4.2.8.7.11. Quality Of Service Profile - +CGQREQ

+CGQREQ - Quality Of Service Profile (Requested)	SELINT 2
<p>AT+CGQREQ= [<cid> [,<precedence> [,<delay> [,<reliability> [,<peak> [,<mean>]]]]]</p>	<p>Set command allows to specify a Quality of Service Profile that is used when the terminal sends an Activate PDP Context Request message to the network. It specifies a profile for the context identified by the (local) context identification parameter, <cid>.</p> <p>Parameters: <cid> - PDP context identification (see +CGDCONT command). <precedence> - precedence class <delay> - delay class <reliability> - reliability class <peak> - peak throughput class <mean> - mean throughput class</p> <p>If a value is omitted for a particular class then this class is not checked.</p> <p>Note: a special form of the Set command, +CGQREQ=<cid> causes the requested profile for context number <cid> to become undefined.</p>
<p>AT+CGQREQ?</p>	<p>Read command returns the current settings for each defined context in the format:</p> <p>+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>[<CR><LF>+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>[...]]</p> <p>If no PDP context has been defined, it has no effect and OK result code is returned.</p>
<p>AT+CGQREQ=?</p>	<p>Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format:</p> <p>+CGQREQ: <PDP_Type>,(list of supported <precedence>s), (list of supported <delay>s),(list of supported <reliability>s), (list of supported <peak>s),(list of supported <mean>s)</p> <p>Note: only the "IP" <PDP_Type> is currently supported.</p>
<p>Example</p>	<pre>AT+CGQREQ? +CGQREQ: 1,0,0,3,0,0 OK AT+CGQREQ=1,0,0,3,0,0 OK AT+CGQREQ=? +CGQREQ: "IP",(0-3),(0-4),(0-5),(0-9),(0-18,31) +CGQREQ: "PPP",(0-3),(0-4),(0-5),(0-9),(0-18,31) +CGQREQ: "IPV6",(0-3),(0-4),(0-5),(0-9),(0-18,31) OK</pre>
<p>Reference</p>	<p>3GPP TS 27.007; GSM 03.60</p>



4.2.8.7.12. 3G Quality Of Service Profile (Requested) - +CGEQREQ

+CGEQREQ – 3G Quality Of Service Profile (Requested)	SELINT 2
<p>AT+CGEQREQ= [<cid> [,<Traffic class> [,<Maximum bitrate UL> [,<Maximum bitrate DL> [,<Guaranteed bitrate UL> [,<Guaranteed bitrate DL> [,<Delivery order> [,<Maximum SDU size> [,<SDU error ratio> [,<Residual bit error ratio> [,<Delivery of erroneous SDUs> [,<Transfer delay> [,<Traffic handling priority>]]]]]]]</p>	<p>Set command allows to specify a 3G quality of service profile for the context identified by the(local) context identification parameter <cid> which is used when the MT sends an Activate PDP Context Request message to the network.</p> <p>Parameters: <cid> - PDP context identification (see +CGDCONT command). <Traffic class> - Traffic class 0 - conversational 1 - streaming 2 - interactive 3 - background 4 - subscribed value</p> <p><Maximum bitrate UL> - Maximum bitrate Up Link (kbits/s) 0 - subscribed value 1...5760</p> <p><Maximum bitrate DL> - Maximum bitrate down link (kbits/s) 0 - subscribed value 1...42200</p> <p><Guaranteed bitrate UL> - the guaranteed bitrate up link(kbits/s) 0 - subscribed value 1...5760</p> <p><Guaranteed bitrate DL> - the guaranteed bitrate down link(kbits/s) 0 - subscribed value 1...42200</p> <p><Delivery order> SDU Delivery order 0 - no 1 - yes 2 - subscribed value</p> <p><Maximum SDU size> Maximum SDU size in octets 0 - subscribed value 1...1520</p> <p><SDU error ratio> SDU error ratio - mEe mean $m \cdot 10^{-e}$, for example 1E2 mean $1 \cdot 10^{-2}$ "0E0" "1E1" "1E2" "7E3" "1E3" "1E4" "1E5" "1E6"</p>



	2),(0-1520),("0E0","1E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1E4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3),(0,1),(0,1) OK
Reference	3GPP TS 27.007; 3GPP TS 03.60/23.060; 3GPP TS 24.008

4.2.8.7.13. PDP Context activate or deactivate - +CGACT

+CGACT - PDP Context Activate Or Deactivate		SELINT 2
AT+CGACT=[<state>],[<cid>],[<cid>[,...]]]	<p>Execution command is used to activate or deactivate the specified PDP context(s)</p> <p>Parameters:</p> <p><state> - indicates the state of PDP context activation 0 - deactivated 1 - activated</p> <p><cid> - a numeric parameter which specifies a particular PDP context definition (see +CGDCONT command)</p> <p>Note: only three <cid>s can be activated at the same time. Note: if no <cid>s are specified, the activation form of the command activates the first three defined contexts. The deactivation form deactivates all the active contexts.</p>	
AT+CGACT?	<p>Read command returns the current activation state for all the defined PDP contexts in the format:</p> <p>+CGACT: <cid>,<state>[<CR><LF>+CGACT: <cid>,<state>[...]]</p>	
AT+CGACT=?	<p>Test command reports information on the supported PDP context activation states parameters in the format:</p> <p>+CGACT: (0,1)</p>	
Example	<pre>AT+CGACT=1,1 OK AT+CGACT? +CGACT: 1,1 OK</pre>	
Reference	3GPP TS 27.007	



4.2.8.7.14. 3G Quality Of Service Profile (Negotiated) - +CGEQNEG

+CGEQNEG – 3G Quality Of Service Profile (Negotiated)	SELINT 2
<p>AT+CGEQNEG= [<cid>[,<cid>[...]]]</p>	<p>This command allows the TE to retrieve the negotiated 3G quality of service profiles returned in the Activate PDP Context Accept message.</p> <p>Set command returns the negotiated 3G QoS profile for the specified context identifiers, <cid>s. The Qos profile consists of a number of parameters, each of which may have a separate value.</p> <p>+CGEQNEG: <cid>, <Traffic class>, <Maximum bitrate UL>, <Maximum bitrate DL>, <Guaranteed bitrate UL>, <Guaranteed bitrate DL>, <Delivery order>, <Maximum SDU size>, <SDU error ratio>, <Residual bit error ratio>, <Delivery of erroneous SDUs>, <Transfer delay>, <Traffic handling priority>[<CR><LF>] +CGEQNEG: <cid>, <Traffic class>, <Maximum bitrate UL>, <Maximum bitrate DL>, <Guaranteed bitrate UL>, <Guaranteed bitrate DL>, <Delivery order>, <Maximum SDU size>, <SDU error ratio>, <Residual bit error ratio>, <Delivery of erroneous SDUs>, <Transfer delay>, <Traffic handling priority>[...]]</p> <p>Parameters: <cid> - PDP context identification (see +CGDCONT command).</p> <p><Traffic class> - Traffic class 0 - conversational 1 - streaming 2 - interactive 3 - background 4 - subscribed value</p> <p><Maximum bitrate UL> - Maximum bitrate Up Link (kbits/s) 0 - subscribed value 1...8640</p> <p><Maximum bitrate DL> - Maximum bitrate down link (kbits/s) 0 - subscribed value 1...16000</p> <p><Guaranteed bitrate UL> - The guaranteed bitrate up link (kbits/s) 0 - subscribed value 1...8640</p> <p><Guaranteed bitrate DL> - the guaranteed bitrate down link (kbits/s) 0 - subscribed value 1...16000</p> <p><Delivery order> - SDU Delivery order 0 - no 1 - yes Other values are reserved</p>



	<p><Maximum SDU size> - Maximum SDU size in octets 0 - subscribed value 1...1520</p> <p><SDU error ratio> - SDU error ratio - mEe mean $m \cdot 10^{-e}$, for example 1E2 mean $1 \cdot 10^{-2}$ "0E0" "1E1" "1E2" "7E3" "1E3" "1E4" "1E5" "1E6"</p> <p><Residual bit error ratio> - Residual bitt error ratio - mEe mean $m \cdot 10^{-e}$, for example 1E2 mean $1 \cdot 10^{-2}$ "0E0" "5E2" "1E2" "5E3" "4E3" "1E3" "1E4" "1E5" "1E6" "6E8"</p> <p><Delivery of erroneous SDUs> - Delivery of erroneous SDUs 0 - no 1 - yes 2 - no detect Other values are reserved</p> <p><Transfer delay> - Transfer delay (milliseconds) 0 - subscribed value 100...4000</p> <p><Traffic handling priority>: Traffic handling priority 0 - subscribed value 1...3</p>
<p>AT+CGEQNEG=?</p>	<p>Test command returns a list of <cid>s associated with active contexts.</p>
<p>Example</p>	<p>AT+CGEQREQ? +CGEQREQ: 1,4,0,0,0,0,2,0,"0E0","0E0",3,0,0</p> <p>OK AT+CGACT=1,1 OK</p>



	AT+CGEQNEG=? +CGEQNEG: (1) OK AT+CGEQNEG=1 +CGEQNEG: 1,3,128,384,0,0,2,1500,"1E4","1E5",3,0,1 OK
Reference	3GPP TS 27.007; 3GPP TS 03.60/23.060; 3GPP TS 24.008



4.2.8.7.15. Show PDP Address - +CGPADDR

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



4.2.8.7.16. **Modify PDP context - +CGCMOD**

+CGCMOD – Modify PDP context	SELINT 2
<p>AT+CGCMOD= [<cid> [,<cid> [,...]]]</p>	<p>It has no effect and is included only for backward compatibility with landline modems</p> <p>Possible Response(s): OK ERROR</p> <p>The execution command used to modify the specified PDP context (s) with respect to QoS profiles and TFTs. After command has completed, the MT returns to V.250 online data state. If the requested modification for any specified context cannot be achieved, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command.</p> <p>For EPS, the modification request for an EPS bearer resource will be answered by the network by an EPS bearer modification request. The request must be accepted by the MT before the PDP context is effectively changed.</p> <p>If no <cid>s are specified the activation form of the command modifies all active contexts.</p> <p>The test command returns a list of <cid>s associated with active contexts.</p> <p>Defined Values <cid>: a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands).</p>
<p>AT+CGCMOD=?</p>	<p>+CGCMOD: (list of <cid>s associated with active contexts)</p>



4.2.8.7.17. Set Mode of Operator for EPS - +CEMODE

+CEMODE – Set mode of operation for EPS.	
AT+CEMODE=<mode>	<p>Set command configures the mode of operation for EPS</p> <p>Parameter: <mode>: a numeric parameter which indicates the mode of operation</p> <p>0 : PS mode 2 of operation 1 : CS/PS mode 1 of operation 2 : CS/PS mode 2 of operation 3 : PS mode 1 of operation</p> <p>NOTE: the definition for UE modes of operation can be found in 3GPP TS 24.301 [83] Other values are reserved and will result in an ERROR response to the set command.</p>
AT+CEMODE?	<p>Read command returns the currently configured values, in the format: +CEMODE: < mode ></p> <p>NOTE: The read command will return right values after set command. But effectively the mode of operation changes after power cycle.</p>
AT+CEMODE=?	<p>Test command returns the supported range of values of parameters < mode > +CEMODE: (0-3)</p>
Note	
Example	<pre>AT+CEMODE=1 OK AT+CEMODE? +CEMODE: 1 OK</pre>



4.2.8.7.18. Enter Data State - +CGDATA

+CGDATA - Enter Data State	
AT+CGDATA= [<L2P>,<cid> [,<cid>[,...]]]	<p>Execution command causes to perform whatever actions are necessary to establish a communication with the network using one or more GPRS PDP types.</p> <p>Parameters: <L2P> - string parameter that indicates the layer 2 protocol to be used "PPP" - PPP Point-to-point protocol <cid> - numeric parameter which specifies a particular PDP context definition (see +CGDCONT command).</p> <p>Note: if parameter <L2P> is omitted, the layer 2 protocol is unspecified</p>
AT+CGDATA=?	Test command reports information on the supported layer 2 protocols.
Example	<pre>AT+CGDATA=? +CGDATA: ("PPP",1 OK AT+CGDATA="PPP",1 OK</pre>
Reference	3GPP TS 27.007



4.2.8.7.19. Commands for Battery Charger

4.2.8.7.19.1. Battery Charge - +CBC

+ CBC - Battery Charge	SELINT 2
<p>AT+CBC</p>	<p>Execution command returns the current Battery Charge status in the format:</p> <p>+CBC: <bcs>,<bcl></p> <p>where:</p> <p><bcs> - battery status</p> <ul style="list-style-type: none"> 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 <p><bcl> - battery charge level, only if <bcs>=0</p> <ul style="list-style-type: none"> 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. <p>Note: <bcs>=1 indicates that the battery charger supply is inserted and the battery is being recharged if necessary with it. Supply for ME operations is taken anyway from VBATT pins.</p> <p>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.</p> <p>Note: <bcl> indicates battery charge level only if battery is connected and charger is not connected</p>
<p>AT+CBC=?</p>	<p>Test command returns parameter values supported as a compound value.</p> <p>+CBC: (0-3),(0-100)</p>
<p>Example</p>	<p>AT+CBC</p> <p>+CBC: 0,75</p> <p>OK</p>
<p>Note</p>	<p>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.</p>
<p>Reference</p>	<p>3GPP TS 27.007</p>



4.2.8.7.19.2. Battery and charger status - #CBC

#CBC- Battery And Charger Status	SELINT 2
AT#CBC	<p>Execution command returns the current Battery and Charger state in the format:</p> <p>#CBC: <ChargerState>,<BatteryVoltage></p> <p>where:</p> <p><ChargerState> - battery charger state</p> <ul style="list-style-type: none"> 0 - charger not connected 1 - charger connected and charging 2 - charger connected and charge completed <p><BatteryVoltage> - battery voltage in units of ten millivolts: it is the real battery voltage only if charger is not connected; if the charger is connected this value depends on the charger voltage.</p>
AT#CBC=?	Test command returns the OK result code.



4.2.9. 3GPP TS 27.005 AT Commands for SMS and CBS

4.2.9.1. General Configuration

4.2.9.1.1. Select Message Service - +CSMS

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



4.2.9.1.2. Preferred Message Storage - +CPMS

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



+CPMS - Preferred Message Storage		SELINT 2
	<p>OK</p> <p><i>(you have 5 out of 10 SMS SIM positions occupied)</i></p> <p>AT+CPMS="ME" +CPMS: "ME",15,100,"ME",15,100,"ME",15,100</p> <p>OK</p> <p><i>(change memory to ME where there are 15 SMS positions occupied)</i></p>	
Reference	GSM 27.005	

4.2.9.1.3. Message Format - +CMGF

+CMGF - Message Format		SELINT 2
AT+CMGF= [<mode>]	<p>Set command selects the format of messages used with send, list, read and write commands.</p> <p>Parameter: <mode> 0 - PDU mode, as defined in GSM 3.40 and GSM 3.41 (factory default) 1 - text mode</p>	
AT+CMGF?	Read command reports the current value of the parameter <mode>.	
AT+CMGF=?	Test command reports the supported value of <mode> parameter.	
Reference	GSM 27.005	



4.2.9.2. Message Configuration

4.2.9.2.1. Service Center Address - +CSCA

+CSCA -Service Center Address		SELINT 2
AT+CSCA= <number> [,<type>]	<p>Set command sets the Service Center Address to be used for mobile originated SMS transmissions.</p> <p>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 "+")</p> <p>Note: to use the SM service, is mandatory to set a Service Center Address at which service requests will be directed.</p> <p>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.</p> <p>Note: the current settings are stored through +CSAS</p>	
AT+CSCA?	<p>Read command reports the current value of the SCA in the format:</p> <p>+CSCA: <number>,<type></p> <p>Note: if SCA is not present the device reports an error message.</p>	
AT+CSCA=?	Test command returns the OK result code.	
Reference	GSM 27.005	



4.2.9.2.2. Set Text Mode Parameters - +CSMP

+CSMP - Set Text Mode Parameters		SELINT 2
AT+CSMP= [<fo> [,<vp> [,<pid> [,<dc>]]]]	Set command is used to select values for additional parameters for storing and sending SMS when the text mode is used (AT+CMGF=1)	
	Parameters: <fo> - depending on the command or result code: first octet of 3GPP TS 03.40/23.040 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format. <vp> - depending on SMS-SUBMIT <fo> setting: 3GPP TS 03.40/23.040 TP-Validity-Period either in integer format (default 167) or in quoted time-string format. <pid> - 3GPP TS 03.40/23.040 TP-Protocol-Identifier in integer format. <dc> - depending on the command or result code: 3GPP TS 03.38/23.038 SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme.	
	Note: the current settings are stored through +CSAS	
AT+CSMP?	Read command reports the current setting in the format: +CSMP: < fo>,<vp>,<pid>,<dc>	
AT+CSMP=?	Test command returns the OK result code.	
Example	<i>Set the parameters for an outgoing message with 24 hours of validity period and default properties:</i> AT+CSMP=17,167,0,0 OK	
Reference	GSM 27.005; 3GPP TS 23.040; 3GPP TS 23.038	



4.2.9.2.3. Show Text Mode Parameters - +CSDH

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

4.2.9.2.4. Select Cell Broadcast - +CSCB

+CSCB -Select Cell Broadcast Message Types		SELINT 2
AT+CSCB= [<mode>[,<mids> [,<dcss>]]]	Set command selects which types of Cell Broadcast Messages are to be received by the device. Parameters: <mode> 0 - the message types defined by <mids> and <dcss> are accepted (factory default) 1 - the message types defined by <mids> and <dcss> are rejected <mids> - Message Identifiers, string type: all different possible combinations of the CBM message identifiers; default is empty string (""). <dcss> - Data Coding Schemes, string type: all different possible combinations of CBM data coding schemes; default is empty string (""). Note: the current settings are stored through +CSAS	
AT+CSCB?	Read command reports the current value of parameters <mode>, <mids> and <dcss>.	
AT+CSCB=?	Test command returns the range of values for parameter <mode>.	
Example	AT+CSCB? +CSCB: 1,"", "" OK (all CBMs are accepted, none is rejected)	



+CSCB -Select Cell Broadcast Message Types		SELINT 2
	AT+CSCB=0,"0,1,300-315,450","0-3" OK	
Reference	GSM 27.005, 3GPP TS 23.041, 3GPP TS 23.038.	



4.2.9.2.5. Select service for MO SMS messages - +CGSMS

+CGSMS – Select service for MO SMS messages		SELINT 2
AT+CGSMS= [<service>]	The set command used to specify the service or service preference that the MT will 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 2 – Packet Domain preferred (use circuit switched if GRPS is not available) (factory default) 3 - Circuit switched preferred (use Packet Domain if circuit switched not available) Note: If SMS transfer via Packet Domain fails, <service> parameter automatically reset to Circuit switched.	
AT+CGSMS?	Read command returns the currently selected service or service preference in the form: +CGSMS: <service>	
AT+CGSMS=?	Test command reports the supported range of values for parameter <service>	
Reference	3GPP TS 27.007	



4.2.9.2.6. EPS – Network Registrarion Status - +CEREG

+CEREG – Select service for MO SMS messages	SELINT 2
<p>+CEREG=[<n>]</p>	<p>The set command controls the presentation of an unsolicited result code +CEREG: <stat> when <n>=1 and there is a change in the MT's EPS network registration status in E-UTRAN, or unsolicited result code.</p> <p>+CEREG: <stat>[, [<tac>],[<ci>],[<AcT>]] when <n>=2 and there is a change of the network cell in E-UTRAN. The parameters <AcT>, <tac> and <ci> are sent only if available. The value <n>=3 further extends the unsolicited result code with [, <cause_type>, <reject_cause>], when available, when the value of <stat> changes. Refer subclause 9.2 for possible <err> values.</p> <p>Note: If the EPS MT in GERAN/UTRAN/E-UTRAN also supports circuit mode services and/or GPRS services, the +CREG command and +CREG: result codes and/or the +CGREG command and +CGREG: result codes apply to the registration status and location information for those services.</p> <p>Possible response(s): +CME ERROR: <err></p>
<p>+CEREG?</p>	<p>Defined values:</p> <p><n>: integer type</p> <ul style="list-style-type: none"> 0 - disable network registration unsolicited result code 1 - enable network registration unsolicited result code +CEREG: <stat> 2 - enable network registration and location information unsolicited result code +CEREG: <stat>[, [<tac>],[<ci>],[<AcT>]] 3 - enable network registration, location information and EMM cause value information unsolicited result code. +CEREG: <stat>[, [<tac>],[<ci>],[<AcT>],[<cause_type>,<reject_cause>]] <p><stat>: integer type; indicates the EPS registration status</p> <ul style="list-style-type: none"> 0 - not registered, MT is not currently searching an operator to register to. 1 - registered, home network. 2 - not registered, but MT is currently trying to attach or searching an operator to register to. 3 - registration denied. 4 - unknown (e.g. out of E-UTRAN coverage). 5 - registered, roaming. 6 - registered for "SMS only", home network (not applicable) 7 - registered for "SMS only", roaming (not applicable). 8 - attached for emergency bearer services only (See NOTE 2). 9 - registered for "CSFB not preferred", home network (not applicable). 10 - registered for "CSFB not preferred", roaming (not applicable). <p>Note 2: 3GPP TS 24.008 [8] and 3GPP TS 24.301 [83] specify the condition when the MS is considered as attached for emergency bearer services.</p> <p><tac>: string type; two byte tracking area code in hexadecimal format (e.g. "00C3" equals 195 in decimal).</p> <p><ci>: string type; four byte E-UTRAN cell ID in hexadecimal format.</p>



+CEREG – Select service for MO SMS messages	SELINT 2
	<p><AcT>: integer type; indicates the access technology of the serving cell. 0 - GSM (not applicable) 1 - GSM Compact (not applicable) 2 - UTRAN (not applicable) 3 - GSM w/EGPRS (see NOTE 3) (not applicable) 4 - UTRAN w/HSDPA (see NOTE 4) (not applicable) 5 - UTRAN w/HSUPA (see NOTE 4) (not applicable) 6 - UTRAN w/HSDPA and HSUPA (see NOTE 4) (not applicable) 7 - E-UTRAN</p> <p>Note 3: 3GPP TS 44.060 [71] specifies the System Information messages which give the information about whether the serving cell supports EGPRS. Note 4: 3GPP TS 25.331 [74] specifies the System Information blocks which give the information about whether the serving cell supports HSDPA or HSUPA.</p> <p><cause_type>: integer type; indicates the type of <reject_cause>. 0 - Indicates that <reject_cause> contains an EMM cause value, see 3GPP TS 24.301 [83] Annex A. 1 - Indicates that <reject_cause> contains a manufacturer-specific cause.</p> <p><reject_cause>: integer type; contains the cause of the failed registration. The value is of type as defined by <cause_type>.</p> <p>+CEREG: <n>,<stat>[,<tac>],[<ci>],[<AcT>[,<cause_type>,<reject_cause>]]]</p>
+CEREG=?	Test command returns values supported as a compound value. +CEREG: (list of supported <n>s)
Reference	3GPP TS 27.007



4.2.9.2.7. Primary Notification Event Reporting + CPNER

+CPNER - Primary notification event reporting		SELINT 2
AT+CPNER=<reporting>	<p>Set command enables and disables reporting of primary notification events when received from the network with unsolicited result code.</p> <p>+CPNERU: <message_identifier>,<serial_number>,<warning_type>. Primary notification events used for public warning systems like ETWS (Earthquake and Tsunami Warning Systems).</p> <p>Parameter:</p> <p><reporting> - integer type, controlling reporting of primary notification events.</p> <ul style="list-style-type: none"> 0 - Disable primary notification events. 1 - Enable reporting of primary notification events without security information, unsolicited result code(default) <p>+CPNERU: <message_identifier>,<serial_number>,<warning_type></p> <p><message_identifier> string type in hexadecimal character format. The parameter contains the message identifier (2 bytes) of the primary notification.</p> <p><serial_number> string type in hexadecimal character format. The parameter contains the serial number (2 bytes) of the primary notification.</p> <p><warning_type> string type in hexadecimal character format. The parameter contains the warning type (2 bytes) of the primary notification.</p>	
AT+CPNER?	Read command reports the current value of the parameter <reporting>.	
AT+CPNER=?	Test command returns supported of <reporting> parameter.	
Example	<p>AT+CPNER?</p> <p>+CPNER: 1</p> <p>OK</p>	



4.2.9.2.8. Save Settings - +CSAS

+CSAS - Save Settings		SELINT 2
AT+CSAS [=<profile>]	Execution command saves settings which have been made by the +CSCA, +CSMP and +CSCB commands in local non volatile memory.	
	Parameter: <profile> 0 - it saves the settings to NVM (factory default). 1..n - SIM profile number; the value of n depends on the SIM (The LE910 allows to store up to 5).	
	Note: certain settings m not be supported by the SIM. Therefore, the settings always saved to the NVM, regardless the value of <profile>.	
	Note: If parameter is omitted the settings are saved in the non-volatile memory.	
AT+CSAS=?	Test command returns the possible range of values for the parameter <profile>.	
Reference	GSM 27.005	



4.2.9.2.9. Restore Settings - +CRES

+CRES - Restore Settings		SELINT 2
AT+CRES [=<profile>]	Execution command restores message service settings saved by +CSAS command from either NVM or SIM. Parameter: <profile> 0 - it restores message service settings from NVM. 1..n - it restores message service settings from SIM. The value of n depends on the SIM (The LE910 allows to store up to 5). Note: certain settings may not be support by the SIM and therefore they are always restored from NVM, regardless the value of <profile>. Note: If parameter is omitted the command restores message service settings from NVM.	
AT+CRES=?	Test command returns the possible range of values for the parameter <profile> .	
Reference	GSM 27.005	



4.2.9.3. Message Receiving And Reading

4.2.9.3.1. New Message Indications - +CNMI

+CNMI - New Message Indications To Terminal Equipment	SELINT 2
<p>AT+CNMI=[<mode>],[<mt>],[<bm>],[<ds>],[<bfr>]]]]]</p>	<p>Set command selects the behaviour of the device on how the receiving of new messages from the network is indicated to the DTE.</p> <p>Parameter:</p> <p><mode> - unsolicited result codes buffering option</p> <ul style="list-style-type: none"> 0 - Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications. 1 - Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved, otherwise forward them directly to the TE. 2 - Buffer unsolicited result codes in the TA in case the DTE is busy and flush them to the TE after reservation. Otherwise forward them directly to the TE. 3 - if <mt> is set to 1 an indication via 100 ms break is issued when a SMS is received while the module is in GPRS online mode. It enables the hardware ring line for 1 s. too. <p><mt> - result code indication reporting for SMS-DELIVER</p> <ul style="list-style-type: none"> 0 - No SMS-DELIVER indications are routed to the TE and messages are stored in SIM. 1 - If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using the following unsolicited result code: +CMTI: <mems>,<index> where: <mems> - memory storage where the new message is stored (see +CPMS) <index> - location on the memory where SMS is stored. 2 - SMS-DELIVERs (except class 2 messages and messages in the “store” message waiting indication group) are routed directly to the TE using the following unsolicited result code: <p style="text-align: center;">(PDU Mode)</p> <p>+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</p> <p style="text-align: center;">(TEXT Mode)</p> <p>+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:</p>



+CNMI - New Message Indications To Terminal Equipment	SELINT 2
	<p> <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 <toa>, <tosca> - type of number <oa> or <sca>: 129 - number in national format 145 - number in international format (contains the "+") <fo> - first octet of 3GPP TS 23.040 <pid> - Protocol Identifier <dcs> - Data Coding Scheme <sca> - Service Centre address, string type, converted in the currently selected character set (see +CSCS) <length> - text length <data> - TP-User-Data <ul style="list-style-type: none"> • If <dcs> indicates that GSM03.38 default alphabet is used and <fo> indicates that GSM03.40 TP-User-Data-Header-Indication is not set (bit 6 of <fo> is 0), each character of GSM alphabet will be converted into current TE character set (see +CSCS) • If <dcs> indicates that 8-bit or UCS2 data coding scheme is used or <fo> indicates that GSM03.40 TP-User-Data-Header-Indication is set (bit 6 of <fo> is 1), each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41) <p>Class 2 messages and messages in the “store” message waiting indication group result in indication as defined in <mt>=1.</p> <p>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.</p> <p><bm> - broadcast reporting option</p> <p>0 - Cell Broadcast Messages are not sent to the DTE</p> <p>2 - New Cell Broadcast Messages are sent to the DTE with the unsolicited result code:</p> <p style="text-align: center;">(PDU Mode)</p> <p>+CBM: <length><CR><LF><PDU></p> <p>where:</p> <p><length> - PDU length <PDU> - message PDU</p> <p style="text-align: center;">(TEXT Mode)</p> <p>+CBM:<sn>,<mid>,<dcs>,<pag>,<pags><CR><LF><data></p> <p>where:</p> <p><sn> - message serial number <mid> - message ID</p> </p>



+CNMI - New Message Indications To Terminal Equipment	SELINT 2
	<p> <dc> - Data Coding Scheme <pag> - page number <pags> - total number of pages of the message <data> - CBM Content of Message <ul style="list-style-type: none"> If <dc> indicates that GSM03.38 default alphabet is used , each character of GSM alphabet will be converted into current TE character set (see +CSCS) If <dc> 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) </p> <p> <ds> - SMS-STATUS-REPORTs reporting option 0 - status report receiving is not reported to the DTE and is not stored 1 - the status report is sent to the DTE with the following unsolicited result code: </p> <p style="text-align: center;">(PDU Mode)</p> <p> +CDS: <length><CR><LF><PDU> where: <length> - PDU length <PDU> - message PDU </p> <p style="text-align: center;">(TEXT Mode)</p> <p> +CDS: <fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st> where: <fo> - first octet of the message PDU <mr> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format <ra> - recipient address, string type, represented in the currently selected character set (see +CSCS) <tora> - type of number <ra> <scts> - arrival time of the message to the SC <dt> - sending time of the message <st> - message status as coded in the PDU </p> <p> 2 - if a status report is stored, then the following unsolicited result code is sent: +CDSI: <memr>,<index> where: <memr> - memory storage where the new message is stored "SM" <index> - location on the memory where SMS is stored <bfr> - buffered result codes handling method: 0 - TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode>=1..3 is entered (OK response shall be given before flushing the codes) </p>



+CNMI - New Message Indications To Terminal Equipment		SELINT 2																					
	1 - TA buffer of unsolicited result codes defined within this command is cleared when <mode>=1..3 is entered.																						
AT+CNMI?	Read command returns the current parameter settings for +CNMI command in the form: +CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>																						
AT+CNMI=?	Test command reports the supported range of values for the +CNMI command parameters.																						
Reference	GSM 27.005																						
Note	DTR signal is ignored, hence the indication is sent even if the DTE is inactive (DTR signal is Low). In this case the unsolicited result code may be lost so if MODULE remains active while DTE is not, at DTE startup is suggested to check whether new messages have reached the device meanwhile with command AT+CMGL=0 that lists the new messages received.																						
Note	It has been necessary to take the following decisions to get over any incoherence problem, due to the possibility to have contemporaneous different settings of parameter <mt> in different sessions (see #PORTCFG and +CMUX):																						
	<table border="1" style="width: 100%; text-align: center;"> <tr> <th style="width: 33%;">Message Class or Indication group, as in the DCS</th> <th style="width: 33%;">SM Class is No Class OR SM Class is 0 or 1 or 3 OR SM is an Indication with group "Discard"</th> <th style="width: 33%;">SM Class is 3</th> </tr> <tr> <td><mt> settings in different sessions</td> <td></td> <td></td> </tr> <tr> <td><mt>=2 for session "0" AND <mt>=anyvalue for other session(s)</td> <td>URC is shown only on session "0"</td> <td></td> </tr> <tr> <td><mt>=3 for session "0" AND <mt>=0 or 1 for other session(s)</td> <td></td> <td>URC is shown only on session "0"</td> </tr> </table>		Message Class or Indication group, as in the DCS	SM Class is No Class OR SM Class is 0 or 1 or 3 OR SM is an Indication with group "Discard"	SM Class is 3	<mt> settings in different sessions			<mt>=2 for session "0" AND <mt>=anyvalue for other session(s)	URC is shown only on session "0"		<mt>=3 for session "0" AND <mt>=0 or 1 for other session(s)		URC is shown only on session "0"									
Message Class or Indication group, as in the DCS	SM Class is No Class OR SM Class is 0 or 1 or 3 OR SM is an Indication with group "Discard"	SM Class is 3																					
<mt> settings in different sessions																							
<mt>=2 for session "0" AND <mt>=anyvalue for other session(s)	URC is shown only on session "0"																						
<mt>=3 for session "0" AND <mt>=0 or 1 for other session(s)		URC is shown only on session "0"																					
Note	The following table clarifies which URC is shown and if the DELIVER SM is stored, depending on the <mt> parameter value and the SM class.																						
	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="2"></th> <th colspan="5">SM CLASS</th> </tr> <tr> <th></th> <th></th> <th>0 / msg waiting discard</th> <th>1 / no class</th> <th>2</th> <th>3</th> <th>msg waiting store</th> </tr> </thead> <tbody> <tr> <td><mt></td> <td>0</td> <td>Store in <mems></td> <td>Store in <mems></td> <td>Store in SIM</td> <td>Store in <mems></td> <td>Store in <mems></td> </tr> </tbody> </table>				SM CLASS							0 / msg waiting discard	1 / no class	2	3	msg waiting store	<mt>	0	Store in <mems>	Store in <mems>	Store in SIM	Store in <mems>	Store in <mems>
		SM CLASS																					
		0 / msg waiting discard	1 / no class	2	3	msg waiting store																	
<mt>	0	Store in <mems>	Store in <mems>	Store in SIM	Store in <mems>	Store in <mems>																	



+CNMI - New Message Indications To Terminal Equipment							SELINT 2							
			1	Store in <mems> - Send ind +CMTI	Store in <mems> - Send ind +CMTI	Store in SIM - Send ind +CMTI	Store in <mems> - Send ind +CMTI	Store in <mems> - Send ind +CMTI						
			2	Route msg to TE: +CMT ²	Route msg to TE: +CMT1	Store in SIM - Send ind +CMTI	Route msg to TE: +CMT1	Store in <mems> - Send ind +CMTI						
			3	Store in <mems> - Send ind +CMTI	Store in <mems>- Send ind +CMTI	Store in SIM - Send ind +CMTI	Route msg to TE: +CMT1	Store in <mems> - Send ind +CMTI						
			where <mems> is the memory where the received messages are stored (see +CPMS)											
Note	<p>It has been necessary to take the following decision to get over an incoherence problem, due to the possibility to have contemporaneous different settings of parameter <ds> in different sessions (see #PORTCFG and +CMUX):</p> <table border="1"> <thead> <tr> <th colspan="2"><ds> settings in different sessions</th> </tr> </thead> <tbody> <tr> <td> <ds>=1 for session "0" AND <ds>=2 for at least one of the other sessions </td> <td> URC +CDS is shown only on session "0" and no status report is stored on SIM </td> </tr> <tr> <td> <ds>=0 for session "0" AND <ds>=2 for at least one of the other sessions </td> <td> no URC is shown on any session and no status report is stored on SIM </td> </tr> </tbody> </table>								<ds> settings in different sessions		<ds>=1 for session "0" AND <ds>=2 for at least one of the other sessions	URC +CDS is shown only on session "0" and no status report is stored on SIM	<ds>=0 for session "0" AND <ds>=2 for at least one of the other sessions	no URC is shown on any session and no status report is stored on SIM
<ds> settings in different sessions														
<ds>=1 for session "0" AND <ds>=2 for at least one of the other sessions	URC +CDS is shown only on session "0" and no status report is stored on SIM													
<ds>=0 for session "0" AND <ds>=2 for at least one of the other sessions	no URC is shown on any session and no status report is stored on SIM													

5 The SM is not stored!



4.2.9.3.2. New message acknowledgement - +CNMA

+CNMA – New Message Acknowledgement	
AT+CNMA	<p>Execution command confirms correct reception of a new message (SMS-DELIVER or SMS-STATUS-REPORT) which is routed directly to the TE.</p> <p>Acknowledge with +CNMA is possible only if the +CSMS parameter is set to 1 (+CSMS=1) when a +CMT or +CDS indication is shown.</p> <p>If no acknowledgement is given within the network timeout (17 seconds), an RP-ERROR is sent to the network, the <mt> and <ds> parameters of the +CNMI command are then reset to zero (do not show new message indication).</p> <p>If command is executed, but no acknowledgement is expected, or some other ME related error occurs, final result code +CMS ERROR: <err> is returned.</p> <p>The AT command syntax and functionalities are different between SMS PDU Mode and SMS Text Mode, as explained below.</p>
<i>(PDU Mode)</i> AT+CNMA[=<n>[,<length>]<CR>PDU is given<ctrl-Z/ESC>]]	<p>Either positive (RP-ACK) or negative (RP-ERROR) acknowledgement to the network is possible. Parameter <n> defines which one will be sent. Optionally (when <length> is greater than zero) an acknowledgement TPDU (SMS-DELIVER-REPORT for RP-ACK or RP-ERROR) may be sent to the network. The entering of PDU is done similarly as specified in command Send Message +CMGS, except that the SMSC address field is not present.</p> <p>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.</p>
<i>(Text Mode)</i> AT+CNMA	<p>Only positive acknowledgement to network (RP-ACK) is possible.</p>
<i>(PDU Mode)</i> AT+CNMA=?	<p>Test command returns the possible range of values for the parameter <n></p>
<i>(Text Mode)</i> AT+CNMA=?	<p>Test command returns the OK result code.</p>
Notes	<p>1 - In case that a directly routed message must be buffered in ME/TA (possible when +CNMI parameter <mode> equals 0 or 2) or AT interpreter remains too long in a state where result codes cannot be sent to TE (e.g. user is entering a message using +CMGS), acknowledgement (RP-ACK) is sent to the network without waiting +CNMA command from TE.</p>



+CNMA – New Message Acknowledgement	
	<p>2 - It has been necessary to take the following decision to get over any incoherence problem, due to the possibility to have contemporaneous different settings of parameter <mt> and <ds> of the +CNMI command in different sessions (see #PORTCFG and +CMUX): only the <mt> and <ds> setting for session “0” are considered as valid to decide if +CNMA acknowledgment is expected or not.</p>
Example	<p style="text-align: center;">(PDU Mode)</p> <pre> 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... Send positive acknowledgement to the network. AT+CNMA=0 OK Message is received from network. +CMT: "",70 06816000585426000480980600F170110370537284... Send negative acknowledgment (Unspecified error) to the network. AT+CNMA=2,3<CR> > 00FF00 <Ctrl-Z> OK </pre> <p style="text-align: center;">(Text Mode)</p> <pre> AT+CSMS=1 +CSMS: 1,1,1 OK Set Text mode. AT+CMGF=1 OK </pre>



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

4.2.9.3.3. More message to send - +CMMS

+CMMS – More Message to Send	SELINT 2
AT+CMMS=[<n>]	<p>Set command controls the continuity of SMS relay protocol link. When feature is enabled (and supported by network) multiple messages can be sent much faster as link is kept open.</p> <p>Parameter: <n> 0 - disable (factory default) 1 - keep enabled until the time between the response of the latest message send command (+CMGS, +CMSS, etc.) and the next send command exceeds 5 seconds, then the link is closed and the parameter <n> is automatically reset to 0 2 - enable (if the time between the response of the latest message send command and the next send command exceeds 5 seconds, the link is closed but the parameter <n> remains set to 2)</p>
AT+CMMS?	<p>Read command reports the current value of the parameter <n> in the format:</p> <p>+CMMS: <n></p>
AT+CMMS=?	Test command returns the range of supported <n>
Reference	3GPP TS 27.005



4.2.9.3.4. List Messages - +CMGL

+CMGL - List Messages	SELINT 2
<p>AT+CMGL [=<stat>]</p>	<p>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).</p> <p>The parameter type and the command output depend on the last settings of command +CMGF (message format to be used)</p> <p style="text-align: center;">(PDU Mode)</p> <p>Parameter: <stat> 0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent 4 - all messages.</p> <p>If there is at least one message to be listed the representation format is:</p> <p>+CMGL: <index>,<stat>,<alpha>,<length><CR><LF><pdu>[<CR><LF> +CMGL: <index>,<stat>,<alpha>,<length><CR><LF><pdu>[...]]</p> <p>where: <index> - message position in the memory storage list. <stat> - status of the message <alpha> - string type alphanumeric representation of <da> or <oa>, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS. <length> - length of the PDU in bytes <pdu> - message in PDU format according to GSM 3.40</p> <p style="text-align: center;">(Text Mode)</p> <p>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.</p> <p>The representation format for stored messages (either sent or unsent) or received messages (either read or unread, not message delivery confirm) is (the information written in italics will be present depending on +CSDH last setting):</p> <p>+CMGL: <index>,<stat>,<oa/da>,<alpha>,<scts>/,<toa/toda>,</p>



+CMGL - List Messages	SELINT 2
	<p>Note: If parameter is omitted the command returns the list of sms with “REC UNREAD” status.</p> <p>Note: the order in which the messages are reported by +CMGL corresponds to their position in the memory storage</p>
AT+CMGL=?	Test command returns a list of supported <stat>s
Reference	GSM 27.005, 3GPP TS 23.040

4.2.9.3.5. Read Message - +CMGR

+CMGR - Read Message	SELINT 2
<p>AT+CMGR= <index></p>	<p>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).</p> <p>Parameter: <index> - message index.</p> <p>The output depends on the last settings of command +CMGF (message format to be used)</p> <p style="text-align: center;">(PDU Mode)</p> <p>If there is a message in location <index>, the output has the following format:</p> <p>+CMGR: <stat>,<alpha>,<length><CR><LF><pdu></p> <p>where</p> <ul style="list-style-type: none"> <stat> - status of the message 0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent <p><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.</p> <p><length> - length of the PDU in bytes.</p> <p><pdu> - message in PDU format according to GSM 3.40.</p> <p>The status of the message and entire message data unit <pdu> is returned.</p> <p style="text-align: center;">(Text Mode)</p> <p>If there is a Received message in location <index> the output format is (the information written in <i>italics</i> will be present depending on +CSDH last setting):</p> <p>+CMGR: <stat>,<oa>,<alpha>,<scs>/,<toa>,<fo>,<pid>,</p>



+CMGR - Read Message	SELINT 2
	<p><data> - TP-User_data</p> <ul style="list-style-type: none"> • If <dcs> indicates that GSM03.38 default alphabet is used , each character of GSM alphabet will be converted into current TE character set (see +CSCS) • If <dcs> indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41) <p>Note: in both cases if status of the message is 'received unread', status in the storage changes to 'received read'.</p>
AT+CMGR=?	Test command returns the OK result code
Reference	GSM 27.005



4.2.9.3.6. PDP Context Read Dynamic Parameters - +CGCONTRDP

+CGCONTRDP - parameter command syntax	
<p>AT+CGCONTRDP = [<p_cid>]</p>	<p>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>]]]]]]] [...]]</p> <p>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 cannot be found an ERROR response is returned. If the parameter <p_cid> is omitted, the relevant information for all established PDP contexts are 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.</p> <p>Defined values <p_cid>: a numeric parameter which specifies a particular non secondary PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. <bearer_id>: a numeric parameter which 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 which shows the IP Address of the MT. The string is given as dot-separated numeric (0-255) parameters on 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 space: "a1.a2.a3.a4 a1:a2:a3:a4:a5:a6:a7:a8"</p>



+CGCONTRDP - parameter command syntax	
	<p><subnet_mask>: a string parameter which 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 separated by space.</p> <p><gw_addr>: a string parameter which 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 space.</p> <p><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.</p> <p><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> <p><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> <p><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.</p>
AT+CGCONTRDP=?	+CGCONTRDP: (list of <p_cid>s associated with active contexts)



4.2.9.3.7. Secondary PDP Context Read Dynamic Parameters -+CGSCONTRDP

+CGSCONTRDP - parameter command syntax	
<p>AT+CGSCONTRDP P=[<cid>]</p>	<p>Possible response(s): +CGSCONTRDP: <cid>, <p_cid>, <bearer_id> [<CR><LF>+CGSCONTRDP: <cid>, <p_cid>, <bearer_id> [...]]</p> <p>The execution command returns <p_cid> and <bearer_id> for a given <cid>. If the context cannot be found an ERROR response is returned.</p> <p>If the parameter <cid> is omitted, the <cid>, <p_cid> and <bearer_id> are returned for all established PDP contexts.</p> <p>In EPS, the Traffic Flow parameters are returned.</p> <p>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.</p> <p>Defined values</p> <p><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> <p><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.</p> <p><bearer_id>: a numeric parameter which identifies the bearer, EPS Bearer in EPS and NSAPI in UMTS/GPRS.</p>
<p>AT+CGSCONTRDP P=?</p>	<p>+CGSCONTRDP: (list of <cid>s associated with active contexts) The test command returns a list of <cid>s associated with active contexts.</p>



4.2.9.3.8. Traffic Flow Template Read Dynamic Parameters - +CGTFTRDP

+CGTFTRDP parameter command syntax	
<p>AT+CGTFTRDP= [<cid>]</p>	<p>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> [...]]</p> <p>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 cannot be found an ERROR response is returned. If the parameter <cid> is omitted, the Traffic Flow Templates for all established PDP contexts are returned. Parameters of both network and MT/TA initiated PDP contexts will be returned. <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 on the form "f.t".</p>



+CGTFTRDP parameter command syntax	
	<p><source port range>:string type. The string is given as dot-separated numeric (0-65535) parameters on the form "f.t".</p> <p><ipsec security parameter index (spi)>: numeric value in hexadecimal format. The value range is from 00000000 to FFFFFFFF.</p> <p><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 on the form "t.m".</p> <p><flow label (ipv6)>: numeric value in hexadecimal format. The value range is from 00000 to FFFFF. Valid for IPv6 only.</p> <p><direction> a numeric parameter which specifies the transmission direction in which the Packet Filter shall be applied.</p> <p>0 Pre Release 7 TFT Filter (see 3GPP TS 24.008 [8], table 10.5.162)</p> <p>1 Uplink</p> <p>2 Downlink</p> <p>3 Bidirectional (Used for Uplink and Downlink)</p> <p><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</p> <p>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].</p>
AT+CGTFTR=?	+CGTFTRDP: (list of <cid>s associated with active contexts) The test command returns a list of <cid>s associated with active contexts.



4.2.9.3.10. EPS Quality Of Service Read Dynamic Parameters -+CGEQOSRDP

+CGEQOSRDP - parameter command syntax	
<p>AT+CGEQOSRDP=[<cid>]</p>	<p>Possible Response(s): +CGEQOSRDP: <cid>, <QCI>, [<DL_GBR>,<UL_GBR>], [<DL_MBR>,<UL_MBR>] [<CR>>LF]+CGEQOSRDP: <cid>, <QCI>, [<DL_GBR>,<UL_GBR>], [<DL_MBR>,<UL_MBR>] [...]]</p> <p>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 found an ERROR response is returned. If the parameter <cid> is omitted, the Quality of Service parameters for all established PDP contexts are returned.</p> <p>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 guaranteed bit rate Traffic Flows [5 – 9] value range for non-guaranteed 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 which 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 24.301 [83]) <DL_MBR>: a numeric parameter which indicates DL MBR 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_MBR>: a numeric parameter which indicates UL MBR 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])</p>
<p>AT+CGEQOSRDP=?</p>	<p>+CGEQOSRDP: (list of <cid>s associated with active contexts)</p> <p>The test command returns a list of <cid>s associated with active contexts. Parameters of both network and MT/TA initiated PDP contexts will be returned.</p>



+CMGS - Send Message	SELINT 2
<p><i>(Text Mode)</i> AT+CMGS=<da> [,<toda>]</p>	<p style="text-align: center;">(Text Mode)</p> <p>Execution command sends to the network a message.</p> <p>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 "+")</p> <p>After command line is terminated with <CR>, the device responds sending a four character sequence prompt:</p> <p><CR><LF><greater_than><space> (IRA 13, 10, 62, 32)</p> <p>After this prompt text can be entered; the entered text should be formatted as follows:</p> <ul style="list-style-type: none"> - if current <dc> (see +CSMP) indicates that GSM03.38 default alphabet is used and current <fo> (see +CSMP) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM alphabet, according to GSM 27.005, Annex A; backspace can be used to delete last character and carriage returns can be used; after every <CR> entered by the user the sequence <CR><LF><greater_than><space> is sent to the TE. - if current <dc> (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) <p>Note: the DCD signal shall be in ON state while text is entered.</p> <p>Note: the echoing of entered characters back from the TA is controlled by echo command E</p> <p>To send the message issue Ctrl-Z char (0x1A hex). To exit without sending the message issue ESC char (0x1B hex).</p> <p>If message is successfully sent to the network, then the result is sent in the format:</p> <p>+CMGS: <mr></p> <p>where <mr> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format.</p>



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

4.2.9.4.3. Write Message To Memory - +CMGW

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



+CMGW - Write Message To Memory	SELINT 2
<p><i>(Text Mode)</i> AT+CMGW[=<da> [<tda> [<stat>]]</p>	<p>(Text Mode) Execution command writes in the <memw> memory storage a new message.</p> <p>Parameters: <da> - destination address, string type represented in the currently selected character set (see +CSCS). <tda> - type of destination address. 129 - number in national format 145 - number in international format (contains the "+") <stat> - message status. "REC UNREAD" - new received message unread (default for DELIVER messages) "REC READ" - received message read "STO UNSENT" - message stored not yet sent (default for SUBMIT messages) "STO SENT" - message stored already sent</p> <p>After command line is terminated with <CR>, the device responds sending a four character sequence prompt:</p> <p><CR><LF><greater_than><space> (IRA 13, 10, 62, 32)</p> <p>After this prompt text can be entered; the entered text should be formatted as follows:</p> <ul style="list-style-type: none"> - if current <dcs> (see +CSMP) indicates that GSM03.38 default alphabet is used and current <fo> (see +CSMP) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM alphabet, according to GSM 27.005, Annex A; backspace can be used to delete last character and carriage returns can be used; after every <CR> entered by the user the sequence <CR><LF><greater_than><space> is sent to the TE. - if current <dcs> (see +CSMP) indicates that 8-bit or UCS2 data coding scheme is used or current <fo> (see +CSMP) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the ‘asterisk’ will be entered as 2A (IRA50 and IRA65) and this will be converted to an octet with integer value 0x2A) <p>Note: the DCD signal shall be in ON state while text is entered.</p> <p>Note: the echoing of entered characters back from the TA is controlled by echo command E</p> <p>To write the message issue Ctrl-Z char (0x1A hex).</p> <p>To exit without writing the message issue ESC char (0x1B hex).</p>



+CMGW - Write Message To Memory	SELINT 2
	<p>If message is successfully written in the memory, then the result is sent in the format:</p> <p>+CMGW: <index> where: <index> - message location index in the memory <memw>.</p> <p>If message storing fails for some reason, an error code is reported.</p> <p>Note: care must be taken to ensure that during the command execution, no other SIM interacting commands are issued.</p> <p>Note: it is possible to save a concatenation of at most 10 SMS; the maximum number of chars depends on the <dc>: 1530 chars if 3GPP TS 23.038 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used. If entered text is longer than this maximum value an error is raised.</p> <p>Note: in text mode, not only SUBMIT messages can be stored in SIM, but also DELIVER messages. The type of saved message depends upon the current <fo> parameter (see +CSMP). For a DELIVER message, current <vp> parameter (see +CSMP) is used to set the message Service Centre Time Stamp <scts>, so it has to be an absolute time string, e.g. "09/01/12,11:15:00+04". SUBMIT messages can only be stored with status "STO UNSENT" or "STO SENT"; DELIVER messages can only be stored with status "REC UNREAD" or "REC READ".</p>
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.



4.2.9.4.4. Delete Message - +CMGD

+CMGD - Delete Message		SELINT 2
AT+CMGD= <index> [,<delflag>]	Execution command deletes from memory <memr> the message(s). Parameter: <index> - message index in the selected storage <memr> that can have values form 1 to N, where N depends on the available space (see +CPMS) <delflag> - an integer indicating multiple message deletion request. 0 (or omitted) - delete message specified in <index> 1 - delete all read messages from <memr> storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched 2 - delete all read messages from <memr> storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched 3 - delete all read messages from <memr> storage, sent and unsent mobile originated messages, leaving unread messages untouched 4 - delete all messages from <memr> storage. Note: if <delflag> is present and not set to 0 then, if <index> is greater than 0, <index> is ignored and ME shall follow the rules for <delflag> shown above.	
AT+CMGD=?	Test command shows the valid memory locations and optionally the supported values of <delflag>.	
Example	+CMGD: (supported <index>s list)[,(supported <delflag>s list)] AT+CMGD=? +CMGD: (1,2,3,6,7,17,18,19,20,37,38,39,47),(0-4) OK	
Reference	GSM 27.005	



<p><da>[,<tda>]]]]><CR>Text can be entered<ctrl-Z/ESC></p>	<p><ct> - TP-Command-Type in integer format specified in 3GPP TS 23.040. Default value is 0. <pid> - TP-Protocol-Identifier in integer format. Range 0-255. Default value is 0. <mn> - TP-Message-Number in integer format. <da> - TP-Destination-Address-Value field in string format represented in the currently selected character set (see +CSCS). <tda> - TP-Destination-Address Type-of-Address octet: 129 - number in national format 145 - number in international format (contains the "+")</p> <p>After command line is terminated with <CR>, the device responds sending a four character sequence prompt:</p> <p><CR><LF><greater_than><space> (IRA 13, 10, 62, 32)</p> <p>Note: the DCD signal shall be in ON state while text entered.</p> <p>Note: the echoing of entered characters back from the TA is controlled by echo command E</p> <p>To send the message issue Ctrl-Z char (0x1A hex). To exit without sending the message issue ESC char (0x1B hex).</p> <p>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:</p> <p>+CMGC: <mr>[, <scts>]</p> <p>Where: <mr> - TP-Message-Reference in integer format. <scts> - TP-Service Centre Time Stamp in Time String Format.</p> <p>Note: if message sending fails for some reason, an error code reported.</p> <p>Note: care taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.</p>
<p>AT+CMGC=?</p>	<p>Test command returns the OK result code.</p>
<p>Note</p>	<p>To avoid malfunctions is suggested to wait for the +CMGC: <mr> or +CMS ERROR: <err> response before issuing further commands.</p>
<p>Example</p>	<p><i>Set PDU mode</i> AT+CMGF=0 AT+CMGC=15 > 07917952140230f202440002340C917952446585600100</p>



4.2.10. Custom AT Commands

4.2.10.1. Configuration AT Commands

4.2.10.1.1. Hardware Identification - #HWREV

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

4.2.10.1.2. Manufacturer Identification - #CGMI

#CGMI - Manufacturer Identification		SELINT 2
AT#CGMI	Execution command returns the device manufacturer identification code with command echo.	
AT#CGMI=?	Test command returns the OK result code.	
Example	AT#CGMI #CGMI: Telit OK	

4.2.10.1.3. Model Identification - #CGMM

#CGMM - Model Identification		SELINT 2
AT#CGMM	Execution command returns the device model identification code with command echo.	
AT#CGMM=?	Test command returns the OK result code.	
Example	AT#CGMM #CGMM:LE910 OK	

4.2.10.1.4. Revision Identification - #CGMR

#CGMR - Revision Identification		SELINT 2
AT#CGMR	Execution command returns device software revision number with command echo.	
AT#CGMR=?	Test command returns the OK result code.	
Example	AT#CGMR #CGMR: 17.00.000 OK	



4.2.10.1.5. Product Serial Number Identification - #CGSN

#CGSN - Product Serial Number Identification		SELINT 2
AT#CGSN	Execution command returns the product serial number, identified as the IMEI of the mobile, with command echo.	
AT#CGSN[=<snt>]	<p>Set command causes the TA to return IMEI (International Mobile station Equipment Identity number) and related information to identify the MT that the TE connected to.</p> <p>Parameter:</p> <p><snt> - indicating the serial number type that has been requested.</p> <ul style="list-style-type: none"> 0 returns <sn> 1 returns the IMEI (International Mobile station Equipment Identity) 2 returns the IMEISV (International Mobile station Equipment Identity and Software Version number) 3 returns the SVN (Software Version Number) <p>where:</p> <p><sn> - Indicate the product “serial number”, identified as the IMEI of the mobile, with command echo.</p> <p><imei> - string type in decimal format indicating the IMEI. . IMEI is composed of Type Allocation Code (TAC) (8 digits), Serial Number (SNR) (6 digits) and the Check Digit (CD) (1 digit). Character set used in <imei> is as specified by command Select TE Character Set +CSCS.</p> <p><imeisv> - string type in decimal format indicating the IMEISV. The 16 digits of IMEISV are composed of Type Allocation Code (TAC) (8 digits), Serial Number (SNR) (6 digits) and the software version (SVN) (2 digits). Character set used in <imeisv> is as specified by command Select TE Character Set +CSCS.</p> <p><svn> - string type in decimal format indicating the current SVN which is a part of IMEISV. Character set used in <svn> is as specified by command Select TE Character Set +CSCS.</p>	
AT#CGSN=?	Test command returns the OK result code.	
Example	<p>AT#CGSN</p> <p>#CGSN: 358677008900540</p> <p>OK</p>	



4.2.10.1.5. Handset Microphone Gain - #HSMICG

#HSMICG - Handset Microphone Gain		SELINT 2
AT#HSMICG= [<level>]	<p>Set command sets the handset microphone input gain</p> <p>Parameter: <level>: handset microphone input gain 0..7 - handset microphone gain (+6dB/step, factory default = 0)</p> <p>It has no effect and is included only for backward compatibility.</p> <p>Returns the OK result code.</p>	
AT#HSMICG?	<p>Read command returns the current handset microphone input gain, in the format: #HSMICG: <level></p>	
AT#HSMICG=?	<p>Test command returns the supported range of values of parameter <level>.</p> <p>Exemple: AT#HSMICG=? #HSMICG: (0-7)</p> <p>OK</p> <p>The OK result code.</p>	

4.2.10.1.6. Handsfree Receiver Gain - #HFRECG

#HFRECG - Handsfree Receiver Gain		SELINT 2
AT#HFRECG= <level>	<p>Set command sets the handsfree analogue output gain</p> <p>Parameter: <level>: handsfree analogue output gain 0..6 - handsfree analogue output (-2dB/step, factory default=0)</p> <p><i>Note: This command Influence on +CRSL +CLVL gain dB and another output gain.</i></p> <p><i>Note: This parameter is saved in NVM issuing AT&W command.</i></p>	
AT#HFRECG?	<p>Read command returns the current handsfree analog output gain, in the format: #HFRECG: <level></p>	
AT#HFRECG=?	<p>Test command returns the supported range of values of parameter <level>.</p>	



4.2.10.1.7. Handset Receiver Gain - #HSRECG

#HSRECG - Handset Receiver Gain		SELINT 2
AT#HSRECG= <level>	It has no effect and is included only for backward compatibility. Returns the OK result code.	
AT#HSRECG?	Read command reports: The OK result code.	
AT#HSRECG=?	Test command reports : The OK result code.	

4.2.10.1.8. Ringer Sound Level - +CRSL

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



4.2.10.1.10. Audio Codec - #CODEC

#CODEC - Audio Codec		SELINT 2
AT#CODEC= [<codec>]	<p>Set command sets the audio codec mode.</p> <p>Parameter: <codec></p> <p>0 - all the codec modes are enabled (equivalent to the setting 255) (factory default)</p> <p>1.. s Sum of integers each representing a specific codec mode:</p> <ul style="list-style-type: none"> 1 - FR, full rate mode enabled 2 - EFR, enhanced full rate mode enabled 4 - HR, half rate mode enabled 8 - AMR-FR, AMR full rate mode enabled 16 - AMR-HR, AMR half rate mode enabled 32 - GSM-AMR-WB, GSM AMR Wide band mode enabled 64 - UMTS-AMR-NB, UMTS AMR Narrow band mode enabled 128 - UMTS-AMR-WB, UMTS AMR Wide band mode enabled <p>Note: The codec setting is saved in the profile parameters. Note: codecs 8, 16, 32, 128 if not added to mask will not be used by network Note: codecs 1, 2, 4, 64 if not added to mask can be used by network but call will be dropped</p>	
AT#CODEC?	Read command returns current audio codec mode in the format: #CODEC: <codec>	
AT#CODEC=?	Test command returns the range of available values for parameter <codec>	
Example	AT#CODEC=14 OK <i>sets the codec modes HR (4), EFR (2) and AMR-FR (8)</i>	



	<p>2 - EFR, enhanced full rate mode enabled 4 - HR, half rate mode enabled 8 - FAMR, AMR full rate mode enabled 16 - HAMR, AMR half rate mode enabled 32 - AMRWB, GSM-AMR Wide band mode enabled 64 - UAMRNB, UMTS-AMR Narrow band mode enabled 128 - UAMRWB, UMTS-AMR Wide band mode enabled</p> <p>(if <format>=1) <codec_used> - one of the following channel modes: None – no TCH FR - full rate speech 1 on TCH EFR - full rate speech 2 on TCH HR - half rate speech 1 on TCH FAMR - full rate speech 3 – AMR on TCH HAMR - half rate speech 3 – AMR on TCH AMRWB - GSM-AMR Wide band mode enabled UAMRNB - UMTS-AMR Narrow band mode enabled UAMRWB - UMTS-AMR Wide band mode enabled FD96 - full data 9.6 FD48 - full data 4.8 FD24 - full data 2.4 HD48 - half data 4.8 HD24 - half data 2.4 FD144 - full data 14.4</p> <p><codec_setn> FR - full rate mode enabled EFR - enhanced full rate mode enabled HR - half rate mode enabled FAMR - AMR full rate mode enabled HAMR - AMR half rate mode enabled AMRWB - GSM-AMR Wide band mode enabled UAMRNB - UMTS-AMR Narrow band mode enabled UAMRWB - UMTS-AMR Wide band mode enabled</p> <p>Note: The command refers to codec information in speech call and to channel mode in data/fax call. Note: if AT#CODEC is 0, the reported codec set for <format>=0 is 0 (all codec).</p>
AT#CODECINFO?	Read command reports <format> and <mode> parameter values in the format: #CODECINFO: <format>,<mode>
AT#CODECINFO=?	Test command returns the range of supported <format> and <mode>. <codec>
Example	



4.2.10.1.13. Select Ringer Sound - #SRS

#SRS - Select Ringer Sound		SELINT 2
AT#SRS= [<n>,<tout>]	Set command sets the ringer sound. Parameters: <n> - ringing tone 0 - current ringing tone 1..max - ringing tone number, where max can be read by issuing the Test command AT#SRS=?. <tout> - ringing tone playing time-out in seconds. 0 - ringer is stopped (if present) and current ringer sound is set. 1..60 - ringer sound playing for <tout> seconds and, if <n> > 0, ringer sound <n> is set as default ringer sound. Notes: <ul style="list-style-type: none"> • When the command is issued with <n> > 0 and <tout> > 0, the <n> ringing tone is played for <tout> seconds and stored as default ringing tone. • If command is issued with <n> > 0 and <tout> = 0, the playing of the ringing is stopped (if present) and <n> ringing tone is set as current. • If command is issued with <n> = 0 and <tout> > 0 then the current ringing tone is played. • If both <n> and <tout> are 0 then the default ringing tone is set as current and ringing is stopped. • If all parameters are omitted then the behavior of Set command is the same as Read command 	
AT#SRS?	Read command reports current selected ringing and its status in the form: #SRS: <n>,<status> where: <n> - ringing tone number 1..max <status> - ringing status 0 - selected but not playing 1 - currently playing	
AT#SRS=?	Test command reports the supported values for the parameters <n> and <tout>	



4.2.10.1.14. Audio Profile Factory Configuration - #PRST

#PRST - Audio Profile Factory Configuration		SELINT 2
AT#PRST	<p>Execution command resets the actual audio parameters in the NVM of the device to the default set. It is not allowed if active audio profile is 0.</p> <p>The audio parameters to reset are:</p> <ul style="list-style-type: none"> - microphone line gain - earpiece line gain - side tone gain - LMS adaptation speed (step size) - LMS filter length (number of coefficients) - speaker to micro signal power relation - noise reduction max attenuation - noise reduction weighting factor (band 300-500Hz) - noise reduction weighting factor (band 500-4000Hz) - AGC Additional attenuation - AGC minimal attenuation - AGC maximal attenuation 	
AT#PRST=?	Test command returns the OK result code.	
Example	<p>AT#PRST OK Current audio profile is reset</p>	



4.2.10.1.18. **Set Handsfree Sidetone - #SHFSD**

#SHFSD - Set Handsfree Sidetone		SELINT 2
AT#SHFSD= [<mode> [,<gain level>]]	<p>Set command enables/disables the sidetone on Handsfree audio output and change the gain level.</p> <p>Parameter:</p> <p><mode> 0 - Disables the Handsfree sidetone (factory default) 1 - Enables the Handsfree sidetone.</p> <p><gain level> 0..30 - handsfree sidetone gain level (+2dB/step, factory default=15)</p> <p>Note: These parameters saved in NVM issuing AT&W command.</p>	
AT#SHFSD?	<p>Read command reports whether the handsfree sidetone is currently enabled or not, and current gain level in the format:</p> <p>#SHFSD: <mode>,<gain level></p>	
AT#SHFSD=?	<p>Test command returns the supported range of values of parameter <mode>,<gain level>.</p>	

4.2.10.1.19. **Tone Classes Volume - #TSVOL**

#TSVOL – Tone Classes Volume		SELINT 2
AT#TSVOL= <class>, <mode> [,<volume>]	<p>Set command is used to select the volume mode for one or more tone classes.</p> <p>Parameters:</p> <p><class> -sum of integers each representing a class of tones which the command refers to :</p> <ul style="list-style-type: none"> 1 - GSM tones 2 - ringer tones 4 - alarm tones 8 - signaling tones 16 - DTMF tones 32 - SIM Toolkit tones 64 - user defined tones (TBD) 128 - reserved 255 - all classes <p><mode> - it indicates which volume is used for the classes of tones represented by <class></p> <ul style="list-style-type: none"> 0 - default volume is used 1 - The volume <volume> is used. <p><volume> - volume to be applied to the set of classes of tones represented by <class>; it is mandatory if <mode> is 1.</p> <p>0..max - the value of max can be read issuing the Test command AT#TSVOL=?</p>	



#TSVOL – Tone Classes Volume	SELINT 2
	<p>Note: The class DTMF Tones (<class>=16) refers only to the volume for locally generated DTMF tones. It doesn't affect the level of the DTMF generated by the network as result of AT+VTS command. The all classes don't effect on active voice call only AT+CLVL value effected. Effected on analog mode only.</p>
<p>AT#TSVOL?</p>	<p>Read command returns for each class of tones the last setting of <mode> and, if <mode> is not 0, of <volume> too, in the format: # TSVOL: 1,<mode1>[,<volume1>]<CR><LF> ... #TSVOL: 64,<mode64>[,<volume64>] Note: no info is returned for class 128.</p>
<p>AT#TSVOL=?</p>	<p>Test command returns the supported range of values of parameters <class>, <mode> and <volume>.</p>
<p>Example</p>	<pre>at#tsvol=84,1,5 OK at#tsvol? #TSVOL: 1,0 # TSVOL: 2,0 # TSVOL: 4,1,5 # TSVOL: 8,0 # TSVOL: 16,1,5 # TSVOL: 32,0 #TSVOL: 64,1,5 OK</pre>



4.2.10.1.20. Set Headset Sidetone - #SHSSD

#SHSSD - Set Headset Sidetone		SELINT 2
AT#SHSSD= [<mode> ,<gain level>]]	<p>Set command enables/disables the sidetone on Headset audio output and change the gain level.</p> <p>Parameter: <mode> 0 - Disables the Headset sidetone (factory default) 1 - Enables the Headset sidetone. <gain level> 0..30 - Headset sidetone gain level (+2dB/step, factory default=15)</p> <p>Note: These parameters are saved in NVM issuing AT&W command.</p>	
AT#SHSSD?	<p>Read command reports whether the Headset sidetone is currently enabled or not, and current gain level in the format:</p> <p>#SHSSD: <mode>,<gain level></p>	
AT#SHSSD=?	<p>Test command returns the supported range of values of parameter <mode>,<gain level>.</p>	

4.2.10.1.21. Handsfree Echo Canceller - #SHFEC

#SHFEC - Handsfree Echo Canceller		SELINT 2
AT#SHFEC= [<mode>]	<p>It has no effect and is included only for backward compatibility.</p> <p>Parameter: <mode> (0,1) - (0 is factory default)</p> <p>Returns the OK result code. Note: This setting returns to default after power off. Note: Added to #ADSPC</p>	
AT#SHFEC?	<p>Read command reports the value of parameter <mode>, in the format:</p> <p>#SHFEC: <mode></p>	
AT#SHFEC=?	<p>Test command returns the supported range of values of parameter <mode>.</p>	



4.2.10.1.26. Audio DSP Configuration - #ADSPC

#ADSPC - Audio DSP Configuration	SELINT 2
<p>AT#ADSPC=<n> [,<ecns mode>]</p>	<p>Set command switches the DSP profile audio path depending on parameter <n></p> <p>Parameter:</p> <p><n> - DSP profile configuration</p> <ol style="list-style-type: none"> 0. Automatic (factory default) 1. Hands Free 2. Headset 3. Handset 4. Speaker phone Bluetooth 5. TTY <p><ecns mode></p> <ol style="list-style-type: none"> 1. Disables ECNS mode (default) 2. Enables ECNS. <p>Note:</p> <p>On Automatic mode:</p> <ul style="list-style-type: none"> • Digital: handset • Analog: according to #CAP • This command influence on the #CAP/ #SRP. • On Active/Incoming Voice Call return Error. • When #TTY command enabled, SET #ADSPC command return Error.
<p>AT#ADSPC?</p>	<p>Read command reports the active DSP profile configuration in the format:</p> <p>For TTY profile: #ADSPC: <n></p> <p>For Another DSP profile: #ADSPC: <n>, < ecns mode >.</p>
<p>AT#ADSPC=?</p>	<p>Test command reports the supported values for the parameter <n>.</p>



4.2.10.1.27. Singnalling Tones Mode - #STM

#STM - Signalling Tones Mode		SELINT 2
AT#STM=[<mode>]	<p>Set command enables/disables the signalling tones output on the selected audio path</p> <p>Parameter: <mode> - signalling tones status 0 - Signalling tones disabled. 1 - Signalling tones enabled. (factory default) 2 – All tones disabled.</p> <p>Note: AT#STM=0 has the same effect as AT+CALM=2. AT#STM=1 has the same effect as AT+CALM=0.</p>	
AT#STM?	<p>Read command reports whether the current signaling tones status is enabled or not, in the format:</p> <p>#STM: <mode></p>	
AT#STM=?	Test command reports supported range of values for parameter <mode>.	

4.2.10.1.28. Teletype Writer - #TTY

#TTY - TeleType Writer		SELINT 2
AT#TTY=<support>	<p>Set command enables/disables the TTY functionality.</p> <p>Parameter: <support> Disable TTY functionality.(factory default) Enable Full TTY mode. Enable VCO mode (Voice Carry Over). Enable HCO mode (Hearing Carry Over)</p> <p>Note: Enabling this command, blocked #ADSPC set command. The value set by command is directly stored in NVM and doesn't depend on the specific AT instance. On Active/MT/MO Voice Call return Error.</p>	
AT#TTY?	<p>Read command returns the currently TTY mode, in the format:</p> <p>#TTY: <support></p>	
AT#TTY=?	Test command reports the supported range of values for parameter <Support>.	



4.2.10.1.29. Write to I2C - #I2CWR

#I2CWR – Write to I2C	SELINT 2
<p>AT#I2CWR= <sdaPin>, <sclPin>, <deviceId>, <registerId>, <len></p>	<p>This command is used to Send Data to an I2C peripheral connected to module GPIOs</p> <p><sdaPin>: GPIO number for SDA . Valid range is “any input/output pin” (see “Hardware User’s Guide”.)</p> <p><sclPin>: GPIO number to be used for SCL. Valid range is “any output pin” (see “Hardware User’s Guide”).</p> <p><deviceId>: address of the I2C device, with the LSB, used for read\write command. It doesn’t matter if the LSB is set to 0 or to 1. 10 bit addressing supported. Value has to be written in hexadecimal form (without 0x).</p> <p><registerId>: Register to write data to , range 0..255. Value has to be written in hexadecimal form (without 0x).</p> <p><len>: number of data to send. Valid range is 1-254.</p> <p>The module responds to the command with the prompt '>' and awaits for the data to send.</p> <p>To complete the operation send Ctrl-Z char (0x1A hex); to exit without writing the message send ESC char (0x1B hex).</p> <p>Data shall be written in Hexadecimal Form.</p> <p>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.</p> <p>Note: At the end of the execution GPIO will be restored to the original setting (check AT#GPIO Command) Device address, register address where to read from\ write to, and date bytes have to be written in hexadecimal form without 0x.</p>
<p>AT#I2CWR=?</p>	<p>Test command returns the range of each parameter.</p>
<p>Example</p>	<p>AT#I2CWR=2,3,30,10,14 > 00112233445566778899AABBCCDD<ctrl-z> OK</p> <p>Set GPIO2 as SDA, GPIO3 as SCL; Device I2C address is 0x30; 0x10 is the address of the first register where to write I2C data; 14 data bytes will be written since register 0x10.</p>



4.2.10.1.31. Software ShutDown - #SHDN

#SHDN - Software Shutdown		SELINT 2
AT#SHDN	<p>Execution command causes device detach from the network and shut down. Before definitive shut down an OK response is returned.</p> <p>Note: when issuing the command any previous activity terminated and the device will not respond to any further command.</p> <p>Note: to turn it on again Hardware pin ON/OFF must be tied low.</p> <p>Note: The maximum time to shutdown the device, completely is 25 seconds.</p>	
AT#SHDN=?	Test command returns the OK result code.	

4.2.10.1.32. Module's Reboot - #REBOOT

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



4.2.10.1.33. Periodic Reset - #ENHRST

#ENHRST – Periodic Reset		SELINT 2
AT#ENHRST= <mod>[,<delay>]	<p>Set command enables/disables the unit reset after <delay> minutes.</p> <p>Parameters:</p> <p><mod> 0 – disables the unit reset (factory default) 1 – enables the unit reset only for one time 2 – enables the periodic unit reset</p> <p><delay> - time interval after that the unit reboots; numeric value in minutes</p> <p>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</p> <p>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.</p>	
AT#ENHRST?	<p>Read command reports the current parameter settings for #ENHRST command in the format:</p> <p>#ENHRST: <mod>[,<delay>,<remainTime>]</p> <p><remainTime> - time remaining before next reset</p>	
AT#ENHRST=?	<p>Test command reports supported range of values for parameters <mod> and <delay>.</p> <p>AT#ENHRST=? #ENHRST: (0-2),(0-11000(</p> <p>OK</p>	
Examples	<p>AT#ENHRST=1,60 Module reboots after 60 minutes ...</p> <p>AT#ENHRST=1,0 Module reboots now ...</p> <p>AT#ENHRST=2,60 Module reboots after 60 minutes and indefinitely after every following power on ...</p>	



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

#GPIO - General Purpose Input/Output Pin Control	SELINT 2
<p>AT#GPIO=[<pin>,<mode>,<dir>,<save>] </p>	<p>Execution command sets the value of the general purpose output pin GPIO<pin> according to <dir> and <mode> parameter. Not all configurations for the three parameters are valid.</p> <p>Parameters: <pin> - GPIO pin number; supported range is from 1 to a value that depends on the hardware.</p> <p><mode> - its meaning depends on <dir> setting: 0 - if <dir>=0 – INPUT, remove any Pull-up/Pull-down. <ul style="list-style-type: none"> output pin cleared to 0 (Low) if <dir>=1 - OUTPUT no meaning if <dir>=2 - ALTERNATE FUNCTION no meaning if <dir>=3 – TRISTATE PULL DOWN 1 - if <dir>=0 – INPUT, if <dir>=0 – INPUT, remove any Pull-up/Pull-down. <ul style="list-style-type: none"> output pin set to 1 (High) if <dir>=1 - OUTPUT no meaning if <dir>=2 - ALTERNATE FUNCTION no meaning if <dir>=3 – TRISTATE PULL DOWN 2 - pin direction is ALTERNATE FUNCTION (see Note). 3 - if <dir>=0 – INPUT, enable Pull-Up 4 - if <dir>=0 – INPUT, enable Pull-Down</p> <p><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 respectively (see Note).</p> <p><save> - GPIO pin save configuration 0 – pin configuration is not saved 1 – pin configuration is saved</p> <p>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></p> <p>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;</p>



#GPIO - General Purpose Input/Output Pin Control	SELINT 2
	<ul style="list-style-type: none"> • logic value present in output of the pin GPIO<pin> in the case the pin <dir> is currently set to output; • no meaning value for the pin GPIO<pin> in the case the pin <dir> is set to alternate function or Tristate pull down. <p>Note: "ALT1" value is valid only for following pins: _ GPIO1: alternate function is "Stat Led"; _ GPIO7: alternate function is "DAC Output" "ALT2" value is valid for all GPIOs: alternate function is "Alarm Pin" "ALT3" value is valid for all GPIOs as "TempMon Pin" "ALT4" value is valid for all GPIOs as "AD_Det Pin" "ALT5" value is valid for all GPIOs as "AD_rep Pin" Note: while using the pins in the alternate function, the GPIO read/write access to that pin is not accessible and shall be avoided. Note: GPIO7 is also configured as DAC pin (ALT1 function) with the command #DAC. Note: Alarm Pin can be also configured through #ALARMPIN command Note: AD_Det and AD_Rep pin can be also configured through #GSMAD command Note: "ALTERNATE FUNCTION" value is valid only for following pins: GPIO4 - alternate function is "RF Transmission Control" GPIO5 - alternate function is "RF Transmission Monitor" GPIO6 - alternate function is "Alarm Output" (see +CALA and #ALARMPIN) GPIO7 - alternate function is "Buzzer Output" (see #SRP)</p>
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 range>,<mode range>,<dir range>,<save>
Example	<pre> at#gpio=? #GPIO: (1-10),(0-4),(0-6),(0,1) OK at#gpio=3,1,1 // setting gpio_3 as output and value is HIGH OK at#gpio=4,1,1,1 // setting gpio_4 as output and value is HIGH an GPIO pin save configuration OK at#gpio=3,2 // report gpio_3 state #GPIO: 1,1 OK at#gpio? // read command #GPIO: 1,1 // gpio 1 is output and output value is HIGH </pre>



#GPIO - General Purpose Input/Output Pin Control	SELINT 2
	<pre>#GPIO: 0,0 #GPIO: 1,1 #GPIO: 0,0 #GPIO: 0,1 // gpio 5 is input and input value is HIGH #GPIO: 1,0 #GPIO: 0,0 #GPIO: 0,0 #GPIO: 0,0 #GPIO: 1,1 OK</pre>
Note	All gpio's states (mode and direction) are saved in nv memory, so the last state is restored after power cycle.



4.2.10.1.35. STAT_LED GPIO Setting - #SLED

#SLED - STAT_LED GPIO Setting	SELINT 2
<p>AT#SLED= <mode> [,<on_duration> [,<off_duration>]]</p>	<p>Set command sets the behaviour of the STAT_LED GPIO</p> <p>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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • not registered : blinking 0,5s on and 0,5s off • 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)</p> <p>Note: values are saved in NVM by command #SLEDSAV</p> <p>Note: when module boot the STAT_LED GPIO always tied High and holds this value until the first NVM reading.</p>
<p>AT#SLED?</p>	<p>Read command returns the STAT_LED GPIO current setting, in the format:</p> <p>#SLED: <mode>,<on_duration>,<off_duration></p>
<p>AT#SLED=?</p>	<p>Test command returns the range of available values for parameters <mode>, <on_duration> and <off_duration>.</p>



4.2.10.1.36. Save STAT_LED GPIO Setting - #SLEDSAV

#SLEDSAV - Save STAT_LED GPIO Setting		SELINT 2
#SLEDSAV	Execution command saves STAT_LED setting in NVM.	
AT#SLEDSAV=?	Test command returns OK result code.	



4.2.10.1.3. Read Analog/Digital Converter Input - #ADC

#ADC - Read Analog/Digital Converter Input	SELINT 2
<p>AT#ADC= [<adc>,<mode> [,<dir>]]</p>	<p>Execution command reads pin<adc> voltage, converted by ADC, and outputs it in the format:</p> <p>#ADC: <value></p> <p>where: <value> - pin<adc> voltage, expressed in mV</p> <p>Parameters: <adc> - index of pin 1 – on pad ADC_IN1 <mode> - required action 2 - query ADC value <dir> - direction; its interpretation is currently not implemented 0 - no effect.</p> <p>Note: The command returns the last valid measure.</p>
<p>AT#ADC?</p>	<p>Read command reports all pins voltage, converted by ADC, in the format:</p> <p>#ADC: <value>[<CR><LF>#ADC: <value>[...]]</p>
<p>AT#ADC=?</p>	<p>Test command reports the supported range of values of the command parameters <adc>, <mode> and <dir>.</p>



4.2.10.1.4. Auxiliary Voltage Output Control - #VAUX

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

4.2.10.1.5. Auxiliary Voltage Output Save - #VAUXSAV

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



4.2.10.1.6. Battery and Charger Status - #CBC

#CBC- Battery And Charger Status		SELINT 2
AT#CBC	<p>Execution command returns the current Battery and Charger state in the format:</p> <p>#CBC: <ChargerState>,<BatteryVoltage></p> <p>where:</p> <p><ChargerState> - battery charger state</p> <ul style="list-style-type: none"> 0 - charger not connected 1 - charger connected and charging 2 - charger connected and charge completed <p><BatteryVoltage> - battery voltage in units of ten millivolts: it is the real battery voltage only if charger is not connected; if the charger is connected this value depends on the charger voltage.</p>	
AT#CBC=?	Test command returns the OK result code.	

4.2.10.1.7. GPRS Auto-Attach Property - #AUTOATT

#AUTOATT - Auto-Attach Property		SELINT 2
AT#AUTOATT=[<auto>]	<p>Set command enables/disables the TE GPRS auto-attach property.</p> <p>Parameter:</p> <p><auto></p> <ul style="list-style-type: none"> 0 - disables GPRS auto-attach property 1 - enables GPRS auto-attach property (factory default): after the command #AUTOATT=1 has been issued (and at every following startup) the terminal will automatically try to attach to the GPRS service. 	
AT#AUTOATT?	<p>Read command reports whether the auto-attach property is currently enabled or not, in the format:</p> <p>#AUTOATT: <auto></p>	
AT#AUTOATT=?	Test command reports available values for parameter <auto> .	



4.2.10.1.8. Multislot Class Control - #MSCLASS

#MSCLASS - Multislot Class Control		SELINT 2
AT#MSCLASS= [<class>, <autoattach>]	Set command sets the multislot class Parameters: <class> - multislot class (1-12, 30-33) - GPRS class (33 factory default) <autoattach> 0 - the new multislot class is enabled only at the next detach/attach or after a reboot. 1 - the new multislot class is enabled immediately, automatically forcing a detach / attach procedure (only in case of GSM network registered).	
AT#MSCLASS?	Read command reports the current value of the multislot class in the format: #MSCLASS: <class>	
AT#MSCLASS=?	Test command reports the range of available values for both parameters <class> and <autoattach>.	



4.2.10.1.9. Cell Monitor - #MONI

#MONI - Cell Monitor	SELINT 2
<p>AT#MONI= <number></p>	<p>Set command sets one cell out of seven, in a neighbour of the serving cell including it, from which extract GSM/WCDMA/LTE-related information.</p> <p>Parameter: <number></p> <p><GSM network> 0..6 - it is the ordinal number of the cell, in a neighbour of the serving cell (default 0, serving cell). 7 - it is a special request to obtain GSM-related information from the whole set of seven cells in the neighbour of the serving cell.</p> <p><WCDMA network> 0 – it is the active set 1 – it is the candidate set 2 – it is the synchronized neighbour set 3 – it is the asynchronized neighbour set 4..7 – it is not available</p> <p><LTE network> 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 5..7 – it is not available</p>
<p>AT#MONI</p>	<p>Read command reports the following GSM/WCDMA-related information for selected cell and dedicated channel (if exists).</p> <p><GSM network> a) When extracting data for the serving cell and the network name is known the format is: (GSM network) #MONI: <netname> BSIC:<bsic> RxQual:<qual> LAC:<lac> Id:<id> ARFCN:<arfcn> PWR:<dBm> TA:<timadv> (WCDMA network) #MONI: <netname> PSC:<psc> RSCP:<rscp> LAC:<lac> Id:<id> EcIo:<ecio> UARFCN:<uarfcn> PWR:<dBm> DRX:<drx> SCR:<scr> URA:<ura_id> (LTE network) #MONI: <netname> RSRP:<rsrp> RSRQ:<rsrq> TAC:<tac> Id:<id> EARFCN:<earfcn> PWR:<dBm> DRX:<drx></p> <p>b) When the network name is unknown, the format is:</p>



#MONI - Cell Monitor	SELINT 2
	<p><scr> - Scrambling code <rsrp> - Reference Signal Received Power <rsrq> - Reference Signal Received Quality <tac> - Tracking Area Code <earfcn> - E-UTRA Assigned Radio Channel <ura_id> - UTRAN Registration Area Identity</p> <p>Note: TA: <timadv> is reported only for the serving cell.</p> <p>When the last setting done is AT#MONI=7, then the Read command reports the above information for each of the cells in the neighbour of the serving cell, formatting them in a sequence of <CR><LF>-terminated strings. Currently, it is available in case of GSM network.</p>
AT#MONI=?	<p>Test command reports the maximum number of cells, in a neighbour of the serving cell excluding it, from which we can extract GSM/WCDMA-related information, along with the ordinal number of the current selected cell, in the format: #MONI: (<MaxCellNo>,<CellSet>)</p> <p>where: <MaxCellNo> - maximum number of cells, in a neighbour of the serving cell and excluding it, from which we can extract GSM-related informations. This value is always 6. <CellSet> - the last setting done with command #MONI.</p>
Note	<p>The refresh time of the measures is preset to 3 sec. The timing advance value is meaningful only during calls or GPRS transfers active.</p>

4.2.10.1.10. HSDPA Channel Quality Indication - #CQI

#CQI - HSDPA Channel Quality	SELINT 2
AT#CQI	<p>Execution command reports channel quality indication in the form: #CQI: <cqi></p> <p>Where: <cqi> - cqi value 0 - out of range 1 (worst) – 30 (best) 31 - not known or not detectable</p>
AT#CQI=?	<p>Test command returns the supported range of values of the parameters <cqi>.</p>
Note	<p>Will only work while socket is open and data transfer is active. Working only with UTRAN (see +WS46).</p>



4.2.10.1.11. Packet Service Network Type - #PSNT

#PSNT – Packet Service Network Type	SELINT 2
<p>AT#PSNT=<mode></p>	<p>Set command enables/disables unsolicited result code for packet service network type (PSNT).</p> <p>Parameter: <mode> 0 - disable PSNT unsolicited result code (factory default) 1 - enable PSNT unsolicited result code 2 - PSNT unsolicited result code enabled; read command reports HSUPA and HSDPA related info.</p> <p>Note: <mode> parameter setting is stored in NVM.</p>
<p>AT#PSNT?</p>	<p>Read command reports the <mode>,<nt> and HSUPA and HSDPA related info in the format: (<mode> = 2) #PSNT: <mode>,<nt>,<is_hsupa_available>,<is_hsupa_used>,<is_hsdpa_available>,<is_hsdpa_used> (<mode> = 0 or <mode> = 1) #PSNT: <mode>,<nt></p> <p>Where: <mode> 0 - PSNT unsolicited result code disabled 1 - PSNT unsolicited result code enabled 2 - PSNT unsolicited result code enabled; read command reports HSUPA and HSDPA related info <nt> - network type 0 - GPRS network 1 - EGPRS network 2 - WCDMA network 3 - HSDPA network 4 - Unknown or not registered. <is_hsupa_available> - HSUPA available 0 – HSUPA is not supported by network 1 – HSUPA is supported by network <is_hsupa_used> - HSUPA used 0 – HSUPA is not in use 1 – HSUPA is in use <is_hsdpa_available> - HSDPA available 0 – HSDPA is not supported by network 1 – HSDPA is supported by network <is_hsdpa_used> - HSDPA used 0 – HSDPA is not in use 1 – HSDPA is in use</p>



#PSNT – Packet Service Network Type	SELINT 2
	<p>Note: when the type of network is HSPA, the indication is certainly valid during traffic, while it could be not valid in idle because it depends on network broadcast parameters.</p>
AT#PSNT=?	Test command returns the range of supported <mode>s.



4.2.10.1.12. Read Current Network Status in 3G Network - #RFSTS

#RFSTS – Read current network Status in 3G network		SELINT 2																																													
AT#RFSTS	Read current status in the format (GSM network) #RFSTS: <PLMN>,<ARFCN>,<RSSI>,<LAC>,<RAC>,[<TXPWR>],<MM>,<RR>,<NOM>,<CID>,<IMSI>,[<NetNameAsc>],<SD>,<ABND>[CR,LF] [CR,LF]																																														
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#RFSTS – Read current network Status in 3G network			SELINT 2
LAC	2011	Localization Area Code	
RAC	11	Routing Area Code	
TXPWR	1	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	
NOM	1	Network Operator Mode	
BLER	005	Block Error Rate (005 means 0.5 %)	
CID	2825220	Cell ID	
IMSI	"450050203619261"	International Mobile Station ID	
NetNameAsc	"SKTelecom"	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)	
CsAccess	3	Circuit Switch Access (0: Normal calls only, 1: Emergency calls only, 2: No calls, 3: All calls)	
PsAccess	3	Packet Switch Access (0: Normal calls only, 1: Emergency calls only, 2: No calls, 3: All calls)	
nAST	3	Number of Active Set(Maximum 6)	
nUARFCN		UARFCN of n-th active set	
nPSC		PSC of n-th active set	
nEc/Io		Ec/Io of n-th active Set	
(LTE network)			
#RFSTS: <PLMN>,<EARFCN>,<RSRP>,<RSSI>,<RSRQ>,<TAC>,[<TXPWR>],<DRX>,<MM>,<RRC>,<CID>,<IMSI>,[<NetNameAsc>],<SD>,<ABND>[CR,LF] [CR,LF]			
Parameter	GSM Example	Description	
PLMN	"262 25"	Country code and operator code(MCC, MNC)	
EARFCN	6400	E-UTRA 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	



#RFSTS – Read current network Status in 3G network			SELINT 2
NetNameAs c	" 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 1 : nSAT : Number of active set. Maximum is 6
Note 2 : If nSAT value is 1, it means that active set number 1. Module does not display after parameters of nSAT.
Note 3 : TXPWR of GSM network means 1 tx burst
Note 4 : 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
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 5: 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



#RFSTS – Read current network Status in 3G network	SELINT 2
	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 38: RR_STATE_MAX



4.2.10.1.13. Temperature Monitor- #TEMPMON

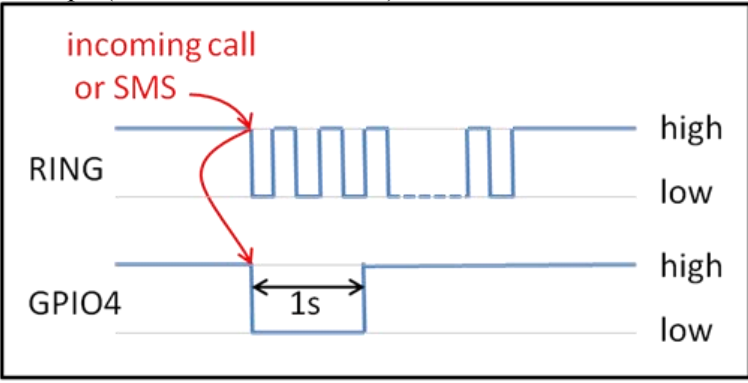
#TEMPMON - Temperature Monitor	SELINT 2
<p>AT#TEMPMON = <mod>[,<urcmode>[,<action>[,<GPIO>]]]</p>	<p>Set command sets the behavior of the module internal temperature monitor.</p> <p>Parameters:</p> <p><mod> 0 - sets the command parameters. 1 - triggers the measurement of the module internal temperature, reporting the result in the format: #TEMPMEAS: <level>,<value></p> <p>where: <level> - threshold level -2 - Extreme temperature lower bound. -1 - Operating temperature lower bound. 0 - normal temperature. 1 - Operating temperature upper bound. 2 - Extreme temperature upper bound. (see note 1)</p> <p><value> actual temperature expressed in Celsius degrees. Setting of the following optional parameters has meaning only if <mod>=0:</p> <p><urcmode> - URC presentation mode. (Default 1) 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></p> <p>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 1).</p> <p>0 - (00) - No action. 1 - (01) - Activating of thermal mitigation according to thermal configuration file. 2 - (10) - 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.</p> <p>3- (11) - This value contains <action=1> and <action=2> i.e. activate thermal mitigation and a GPIO indication. If this <action> is required, it is mandatory to set the <GPIO> parameter too.</p>



	<GPIO> - GPIO number. Valid range is any TGPIO pin as described in #GPIO command. This parameter is needed and required only if <action>=2 or 3 are enabled.
AT#TEMPMON ?	Read command reports the current parameter settings for #TEMPMON command in the format: #TEMPMON: <urcmode>,<action> [,<GPIO>]
AT#TEMPMON =?	Test command reports the supported range of values for parameters <mod>,<urcmode>,<action>,<GPIO>
Notes	<ol style="list-style-type: none"> 1. Thresholds levels are defined in #TEMPCFG command. See there for detailed description on thermal mitigation configuration. 2. Last <action> setting is saved in the 'config.ini' file ('mitigate'/'none mitigate'), and in the NVM ('gpio indication'/'none gpio indication'). 3. Last <GPIO> is saved in the NVM. 4. Thermal mitigation is disabled automatically when using laboratory test SIM.



4.2.10.1.14. Set RING CFG Parameters - #WKIO

#WKIO – Set RING CFG Parameters	SELINT 2
<p>AT#WKIO = [<Mode> [,<Pin> [,<Trigger> [,<Timer>]]]]</p>	<p>Set command configures the service.</p> <p>Parameter: <Mode>: Enable\Disable for the feature. 0 – Disable (default). 1 – Enable.</p> <p><Pin>: Set the outputs line for wakeup detection 0 – Ring Only (default). 1 – Ring & GPIO 4. 2 – GPIO 4 3 – No Pins</p> <p><Trigger>: Line will be Wakeup By 0 – SMS. 1 – CALL. 2 – SMS Or CALL (default).</p> <p><Timer> Set the time interval for the wakeup line to be at HIGH state range (1-60) Sec default 1 sec.</p> <p>Example(RINGCFG? → 1,1,2,1):</p>  <p>Note: 1. To received Pulse in the ring line you need to set AT\R=2 and save profile (the ring wave shape will be Pulse only when call received). 2. To be able to wake up by SMS need to set the command AT#E2SMSRI at power up.</p>
<p>AT#WKIO?</p>	<p>Read command returns the current settings of parameters in the format: #WKIO:< Mode >,< Pin >,< Trigger > ,<Timer></p>
<p>AT#WKIO=?</p>	<p>Test command returns the supported values for the RINGCFG parameters: #WKIO:< (0,1),(0,2),(0,3),(1-60)</p>

4.2.10.1.15. Query Temperature Overflow - #QTEMP



#QTEMP - Query Temperature Overflow	
AT#QTEMP=[<mode>]	Set command has currently no effect. The interpretation of parameter <mode> currently not implemented. The value assigned to it will simply have no effect. Valid values: 0 – returns "OK".
AT#QTEMP?	Read command queries the device internal temperature sensor for over temperature and reports the result in the format: #QTEMP: <temp> where: <temp> - over temperature indicator 0 - The device temperature is in the working range. 1 - The device temperature is out of the working range. See note for working range definition.
#QTEMP=?	Test command reports supported range of values for parameter <mode>.
Note	Working range is the normal range as defined in #TEMPCFG command. Working range default value is (-30°C...+80°C). The device should not be operated out of its working temperature range, elsewhere proper functioning of the device is not ensured.



4.2.10.1.16. Temperature Monitor CONFIGURATION - #TEMPCFG

#TEMPCFG – Temperature Monitor Configuration	SELINT 2
<p>AT#TEMPCFG= <etlz_clr>,<etlz>, <etlz_act_in>,<otlz_clr>,<otlz_act_in>,<otnz_clr>,<otnz_act_in>,<otuz_clr>,<otuz_act_in>,<etuz_clr>,<etuz>,<etuz_act_in></p>	<p>Set command sets the Temperature zones used in the #TEMPMON command.</p> <p>Parameters:</p> <p><etlz_clr> Extreme low zone temperature threshold clear. Has only one valid value: -273°C. see notes <etlz> Extreme low zone temperature threshold. Default value -33°C. <etlz_act_in> Extreme low zone action info. Default value 0.</p> <p><otlz_clr> Operate low zone temperature threshold clear. Default value -35°C. <otlz> Operate low zone temperature threshold. Default value -28°C. <otlz_act_in> Operate low zone action info. Default value 0.</p> <p><otnz_clr> Operate normal zone temperature threshold clear. Default value -30°C. <otnz> Operate normal zone temperature threshold. Default value 95°C. <otnz_act_in> Operate normal zone action info. Default value 0.</p> <p><otuz_clr> Operate up zone temperature threshold clear. Default value 93°C. <otuz> Operate up zone temperature threshold. Default value 100°C. <otuz_act_in> Operate up zone action info. Default value 3.</p> <p><etuz_clr> Extreme up zone temperature threshold clear. Default value 98°C. <etuz> Extreme up zone temperature threshold. Has only one valid value: 528°C. see notes <etuz_act_in> Extreme up zone action info. Default value 3.</p> <p>See notes for detailed description of thermal mitigation configuration.</p>
<p>AT#TEMPCFG?</p>	<p>Read command reports the current parameter setting for #TEMPCFG command in the format:</p> <p>#TEMPCFG: <etlz_clr>,<etlz>,<etlz_act_in>,<otlz_clr>,<otlz>,<otlz_act_in>,<otnz_clr>,<otnz>,<otnz_act_in>,<otuz_clr>,<otuz>,<otuz_act_in>,<etuz_clr>,<etuz>,<etuz_act_in></p>
<p>AT#TEMPCFG=?</p>	<p>Test command reports the supported range values for parameters <x_clr>,<x>,<x_action_info>. Where "x" is substitute for "etlz", "otlz", "otnz", "otuz", "etuz". Values are: #TEMPCFG: (-40-100),(-40-100),(0-3)</p>



Notes:

After setting new values, it is must to execute power cycle or #REBOOT command in order the mitigation algorithm will operate by them.

Thermal mitigation mechanism works like this:

The whole temperature scale is divided into 5 states (zones).

Each measured temperature should be belonging to a particular state called the "**current state**".

State is defined by the following fields:

"thresholds" – upper temperature boundary of the state. Values are in °C.

"thresholds_clr" – lower temperature boundary of the state. Values are in °C.

"actions" – indicator that indicates if an action should be taken or not in the "**current state**".

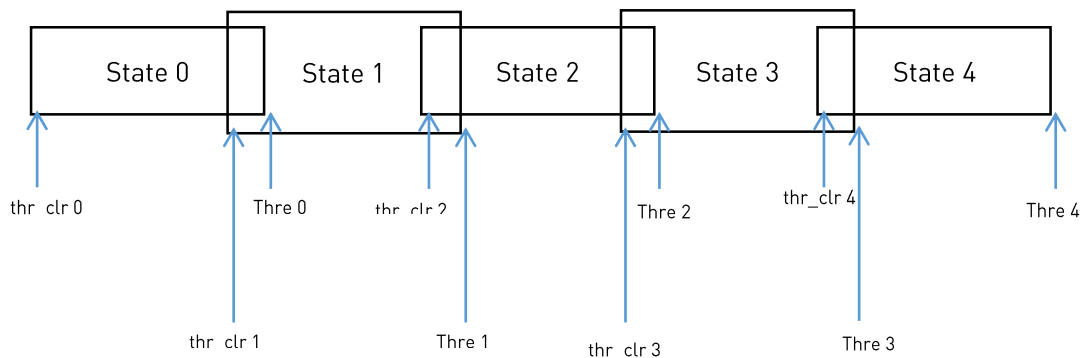
Values are: **"none"/"mitigate"**.

"action_info" – thermal mitigation action type that should be taken care if "**actions**" field is **"mitigate"**.

Values are:

- 0 - No mitigation action is required.
- 1 - Mitigation action - data throttling (reducing uplink baud rate).
- 2 - Mitigation action - TX backoff (reducing MTPL - Max Tx Power Limit).
- 3 - Emergency Calls Only.

Here is the graph that illustrates the temperature states and their limits.



When temperature exceeds the "**current state**" "**threshold**", the thermal mitigation algorithm searches the next state that this temperature is **lower** than its "**threshold**". After it finds it, the "**current state**" is updated to that "**state**" and then it checks whether "**action**" is **"mitigate"**, if yes, then it activates the mitigation according to the "**action info**" of the "**current state**".

When temperature decreases below "**threshold_clr**" then it does the same algorithm as above, but in the opposite direction. It searches the next state that this temperature is **greater** than its "**threshold_clr**", updates the "**current state**" to that state, and activates mitigation as described above.



There are 2 rules in which states definition should obey:

Overlap between 2 adjacent states of at least 2 deg, i.e. ("thre state(x)" – "thre_clr state(x+1)") >= 2

Every state shall have "free" temperature range which has no part in any overlap range.

This range should be at least 2 deg, i.e. ("thre_clr(x+2)" – "thre(x)") >= 2 .

- Rule '1' comes to ensure hysteresis in the transition between two states.
- Rule '2' comes to ensure a minimum range for a stable state.

State 0 is '**Extreme low zone**'.

State 1 is '**Operate low zone**'.

State 2 is '**Operate normal zone**'.

State 3 is '**Operate up zone**'.

State 4 is '**Extreme up zone**'.

etlz_clr – Extreme low zone threshold clear is enforced to have value of '-273'. Module doesn't operate in such temperature, but this value is logically set in order to define clearly 'thermal state' to temperatures below -40 deg.

etuz – Extreme up zone threshold is enforced to have value of '528'. Module doesn't operate in such temperature, but this value is logically set in order to define clearly 'thermal state' to temperatures above 100 deg.

"#TEMPMON" set command, changes field "actions" to "**mitigate**" or "**none**" to all zones.

All above parameters are saved in a configuration file in the module file system.

Examples:

AT#TEMPCFG= -273,-33,3,-35,-28,2,-30,80,0,78,90,3,88,528,3

OK

Explanation:

zone	Thr_clr	Thr	Action info
'Extreme low zone'	-273	-33	3 – emergency call only
'Operate low zone'	-35	-28	2 – TX backoff
'Operate normal zone'	-30	80	0 – no mitigation
'Operate up zone'	78	90	3 - emergency call only
'Extreme up zone'	88	528	3 - emergency call only

All zones have hysteresis and free temperature range.



AT#TEMPCFG=-273,-33,3,-35,-28,2,-30,80,0,79,90,3,88,528,3
 +CME ERROR: operation not supported

Explanation:

zone	Thr_clr	Thr	Action info
'Extreme low zone'	-273	-33	3 – emergency call only
'Operate low zone'	-35	-28	2 – TX backoff
'Operate normal zone'	-30	80	0 – no mitigation
'Operate up zone'	79	90	3 - emergency call only
'Extreme up zone'	88	528	3 - emergency call only

(**'Thr'** of **'Operate normal zone'**) - (**'Thr_clr'** of **'Operate up zone'**) = $1 < 2$

Rule 1 was broken - Hysteresis is lesser than 2 deg.

AT#TEMPCFG=-273,-33,3,-35,-28,2,-30,80,0,78,90,3,81,528,3
 +CME ERROR: operation not supported

Explanation:

zone	Thr_clr	Thr	Action info
'Extreme low zone'	-273	-33	3 – emergency call only
'Operate low zone'	-35	-28	2 – TX backoff
'Operate normal zone'	-30	80	0 – no mitigation
'Operate up zone'	78	90	3 - emergency call only
'Extreme up zone'	81	528	3 - emergency call only

(**'Thr_clr'** of **'Extreme up zone'**) - (**'Thr'** of **'Operate normal zone'**) = $1 < 2$

Rule 2 was broken - free temperature range is lesser then 2 deg.



4.2.10.1.17. Wake from Alarm Mode - #WAKE

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



4.2.10.1.18. Serving Cell Information - #SERVINFO

#SERVINFO - Serving Cell Information	SELINT 2
<p>AT#SERVINFO O</p>	<p>Execution command reports information about serving cell, in the format:</p> <p>(GSM network) #SERVINFO: <B-ARFCN>,<dBM>,[<NetNameAsc>],<NetCode>,<BSIC>,<LAC>,<TA>,<GPRS>[,<PB-ARFCN>],[<NOM>],<RAC>,[PAT]]</p> <p>(WCDMA network) #SERVINFO: <UARFCN>,<dBM>,[<NetNameAsc>],<NetCode>,<PSC>,<LAC>,<DRX>,<SD>,<RSCP>,<NOM>,<RAC>,<URA></p> <p>(LTE network) #SERVINFO: <EARFCN>,<dBM>,[<NetNameAsc>],<NetCode>,<PhysicalCellId>,<TAC>,<DRX>,<SD>,<RSRP></p> <p>where: <B-ARFCN> - BCCH ARFCN of the serving cell <dBM> - received signal strength in dBm <NetNameAsc> - operator name, quoted string type or “” if network name is unknown. <NetCode> - country code and operator code, hexadecimal representation <BSIC> - Base Station Identification Code <LAC> - Localization Area Code <TA> - Time Advance: it’s available only if a GSM or GPRS is running <GPRS> - GPRS supported in the cell 0 - not supported 1 - supported</p> <p>The following informations will be present only if GPRS is supported in the cell</p> <p><PB-ARFCN> - Not supported by 3GPP. PBCCH ARFCN of the serving cell; it’ll be printed only if PBCCH is supported by the cell, otherwise the label “hopping” will be printed <NOM> - Network Operation Mode ..”I” “II” ..”III” <RAC> - Routing Area Color Code <PAT> - Priority Access Threshold ..0 ..3..6</p>



#SERVINFO - Serving Cell Information	SELINT 2
<p><UARFCN> - UMTS ARFCN of the serving cell <PSC> - Primary Synchronization Scrambling Code <DRX> - Discontinuous reception cycle length <SD> - Service Domain 0 – No Service 1 – CS Only 2 – PS Only 3 – CS & PS <RSCP> - Received Signal Code Power in dBm <EARFCN> - E-UTRA Assigned Radio Channel <PhysicalCellId> - Physical Cell ID <TAC> - Tracking Area Code <RSRP> - Reference Signal Received Power <URA> - UTRAN Registration Area Identity</p>	

4.2.10.1.19. Query SIM Status - #QSS

#QSS - Query SIM Status	SELINT 2
<p>AT#QSS= [<mode>]</p>	<p>Set command enables/disables the Query SIM Status unsolicited indication in the ME.</p> <p>Parameter: <mode> - type of notification</p> <p>0 - disabled (factory default); it's possible only to query the current SIM status through Read command AT#QSS?</p> <p>1 - enabled; the ME informs at every SIM status change through the following unsolicited indication:</p> <p>#QSS: <status> where: <status> - current SIM status 0 - SIM NOT INSERTED 1 - SIM INSERTED</p> <p>2 - enabled, the ME informs at every SIM status change through the following unsolicited indication:</p> <p>#QSS: <status> where: <status> - current SIM status 0 - SIM NOT INSERTED 1 - SIM INSERTED 2 - SIM INSERTED and PIN UNLOCKED</p>



#QSS - Query SIM Status		SELINT 2
	3 - SIM INSERTED and READY (SMS and Phonebook access are possible).	
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 OK	

4.2.10.1.20. Dialling Mode - #DIALMODE

#DIALMODE - Dialling Mode		SELINT 2
AT#DIALMODE = [<mode>]	Set command sets dialling modality. Parameter: <mode> 0 - (voice call only) OK result code is received as soon as it starts remotely ringing (factory default) 1 - (voice call only) OK result code is received only after the called party answers. Any character typed aborts the call and OK result code is received. 2 - (voice call and data call) the following custom result codes are received, monitoring step by step the call status: DIALING (MO in progress) RINGING (remote ring) CONNECTED (remote call accepted) RELEASED (after ATH) DISCONNECTED (remote hang-up) Note: The setting is saved in NVM and available on following reboot.	
AT#DIALMODE?	Read command returns current ATD dialling mode in the format: #DIALMODE: <mode>	
AT#DIALMODE =?	Test command returns the range of values for parameter <mode>	



4.2.10.1.24. SMS Overflow - #SMOV

#SMOV - SMS Overflow		SELINT 2
AT#SMOV= [<mode>]	Set command enables/disables the SMS overflow signalling function. Parameter: <mode> 0 - disables SMS overflow 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	

4.2.10.1.25. Sms Un- Change Status - #SMSUCS

#SMSUCS - SMS Un-Change Status		SELINT 2
AT#SMSUCS	Set command allows to keep the SMS Status to UNREAD after +CMGR or +CMGL. Parameter: <mode> 0 - The SMS Status will change. (default) 1 - The SMS Status will not change.	
AT#SMSUCS?	Read command reports the current value of the parameter <mode>.	
AT#SMSUCS=?	Test command returns the OK result code.	
Example	AT#SMSUCS? #SMSUCS: 1 OK AT+CMGR=1 +CMGR: "REC UNREAD", "+393333075581", "", "08/07/07,10:48:44+36" TEST MESSAGE. OK AT+CMGR=1 +CMGR: "REC UNREAD", "+393333075581", "", "08/07/07,10:48:44+36"	



#SMSUCS - SMS Un-Change Status		SELINT 2
	TEST MESSAGE.	
	OK	

4.2.10.1.26. Mailbox Numbers - #MBN

#MBN - Mailbox Numbers		SELINT 2
AT#MBN	<p>Execution command returns the mailbox numbers stored on SIM, if this service is provided by the SIM.</p> <p>The response format is: [#MBN: <index>,<number>,<type>[,<text>][,<mboxtype>]<CR><LF> #MBN: <index>,<number>,<type>[,<text>][,<mboxtype>][...]]]</p> <p>where: <index> - record number <number> - string type mailbox number in the format <type> <type> - type of mailbox number octet in integer format 129 - national numbering scheme 145 - international numbering scheme (contains the character "+") <text> - the alphanumeric text associated to the number; used character set should be the one selected with command +CSCS <mboxtype> - the message waiting group type of the mailbox, if available: "VOICE" - voice "FAX" - fax "EMAIL" - electronic mail "OTHER" - other</p> <p>Note: if all queried locations are empty (but available), no information text lines will be returned.</p>	
AT#MBN=?	Test command returns the OK result code.	



4.2.10.1.27. Message Waiting Indication - #MWI

#MWI - Message Waiting Indication	SELINT 2
<p>AT#MWI=<enable></p>	<p>Set command enables/disables the presentation of the message waiting indicator URC.</p> <p>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..</p> <p>The URC format is:</p> <p>#MWI: <status>,<indicator>[,<count>]</p> <p>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>.</p> <p>The presentation at startup of the message waiting indicators status, as they are currently stored on SIM, is as follows:</p> <p>#MWI: <status>[,<indicator>[,<count>]][<CR><LF> #MWI: <status>,<indicator>[,<count>][...]]]</p> <p>where: <status> 0 - no waiting message indicator is currently set: if this the case no other information is reported 1 - there are waiting messages related to the message waiting indicator <indicator>. <indicator> 1 - either Line 1 (CPHS context) or Voice (3GPP context) 2 - Line 2 (CPHS context) 3 - Fax 4 - E-mail</p>



#MWI - Message Waiting Indication		SELINT 2
	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 whether 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>.	

4.2.10.1.28. Repeat Last Command - #/

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

4.2.10.1.29. Network Timezone - #NITZ

#NITZ - Network Timezone		SELINT 2
AT#NITZ= [<val> [,<mode>]]	<p>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.</p> <p>Date and time information can be sent by the network after GSM registration or after GPRS attach.</p> <p>Parameters: <val> 0 - disables (a) automatic data/time updating, (b) Full Network Name applying and (c) #NITZ URC; moreover it sets the #NITZ URC 'basic' format (see <datetime> below)(factory default)</p> <p>1..15 - as a sum of:</p> <ul style="list-style-type: none"> 1 - enables automatic date/time updating 2 - enables Full Network Name applying (not supported by LE) 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) <p><mode> 0 - disables #NITZ URC (factory default) 1 - enables #NITZ URC; after date and time updating the following unsolicited indication is sent:</p> <p>#NITZ: <datetime></p>	



#NITZ - Network Timezone	SELINT 2
	<p>where:</p> <p><datetime> - string whose format depends on subparameter <val></p> <p>“yy/MM/dd,hh:mm:ss” - ‘basic’ format, if <val> is in (0..3)</p> <p>“yy/MM/dd,hh:mm:ss±zz” - ‘extended’ format, if <val> is in (4..7)</p> <p>“yy/MM/dd,hh:mm:ss±zz,d” - ‘extended’ format with DST support, if <val> is in (8..15)</p> <p>where:</p> <p>yy - year</p> <p>MM - month (in digits)</p> <p>dd - day</p> <p>hh - hour</p> <p>mm - minute</p> <p>ss - second</p> <p>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)</p> <p>d – Number of hours added to the local TZ because of Daylight Saving Time (summertime) adjustment: range is 0-2.</p> <p>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”</p>
AT#NITZ?	<p>Read command reports whether (a) automatic date/time updating, (b) Full Network Name applying, (c) #NITZ URC (as well as its format) are currently enabled or not, in the format:</p> <p>#NITZ: <val>,<mode></p>
AT#NITZ=?	<p>Test command returns supported values of parameters <val> and <mode>.</p>

4.2.10.1.30. Clock Management - #CCLK

#CCLK - Clock Management	SELINT 2
AT#CCLK=<time>	<p>Set command sets the real-time clock of the ME.</p> <p>Parameter:</p> <p><time> - current time as quoted string in the format: "yy/MM/dd,hh:mm:ss±zz,d"</p> <p>yy - year (two last digits are mandatory), range is (00..99)</p> <p>MM - month (two last digits are mandatory), range is (01..12)</p> <p>dd - day (two last digits are mandatory), available ranges are (01..28), (01..29), (01..30)</p>



#CCLK - Clock Management		SELINT 2
	<p>(01..31)</p> <p>hh - hour (two last digits are mandatory), range is (00..23).</p> <p>mm - minute (two last digits are mandatory), range is (00..59).</p> <p>ss - seconds (two last digits are mandatory), range is (00..59).</p> <p>±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 – 96..+96.</p> <p>d - number of hours added to the local TZ because of Daylight Saving Time (summertime) adjustment, range is 0-2.</p>	
AT#CCLK?	Read command returns the current setting of the real-time clock, in the format <time>.	
AT#CCLK=?	Test command returns the OK result code.	
Example	<p>AT#CCLK="14/02/18,08:00:00+12,1"</p> <p>OK</p> <p>AT#CCLK?</p> <p>#CCLK: "14/02/18,08:00:02+12,1"</p> <p>OK</p> <p>NOTE: The way of writing the <time>: "yy/mm/dd,hh:mm:ss±zz,d" - AT#CCLK="02/09/07,22:30:00+00,1"</p>	
Reference	3GPP TS 27.007	

4.2.10.1.31. Clock Mode - #CCLKMODE

#CCLKMODE – Clock Mode		SELINT 2
AT#CCLKMODE=<mode>	<p>Set command enables the local time or the UTC time in AT+CCLK and AT#CCLK commands and in #NITZ URC.</p> <p>Parameter: <mode> - time and date mode 0 - Local time + local time zone offset (default) 1 – UTC time + local time zone offset Note: the setting is saved automatically in NVM.</p>	
AT#CCLKMODE?	<p>Read command reports whether the local time or the UTC time is enabled, in the format:</p> <p>#CCLKMODE: <mode> (<mode> described above).</p>	
AT#CCLKMODE=?	Test command reports the supported range of values for parameter <mode>.	



Example:	<pre>at#cclkmode? #CCLKMODE: 0 OK #NITZ: 14/01/19,16:38:41+08 at+cclk? +CCLK: "14/01/19,16:38:50+08" OK at#cclkmode=1 OK at+cclk? +CCLK: "14/01/19,14:39:01+08" OK</pre>
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4.2.10.1.32. Alarm Management - +CALA

+CALA - Alarm Management	SELINT 2
<p>AT+CALA=<time>[,<n>[,<type>[,<text>[,<recurr>[,<silent>]]]]]</p>	<p>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.</p> <ul style="list-style-type: none"> • Currently just one alarm can be set. • DO NOTE! Alarms are not supported after disconnecting from power. Coin cell are supported. In case of a power cut, alarm will be deleted and needs to be re-set. <p>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.</p> <p>Parameters:</p> <p><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")</p> <p><n> - index of the alarm 0 - The only value supported is 0.</p> <p><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)</p>



2 - The MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE issues an unsolicited code every 3s:

+CALA: <text>

Where <text> is the +CALA optional parameter previously set.

The device keeps on sending the unsolicited code every 3s until a #WAKE or #SHDN command is received or a 90 seconds timer expires. If the device is in "alarm mode" and it does not receive the #WAKE command within 90s then it shuts down. (default)

3 - The MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE starts playing the alarm tone on the selected path for the ringer (see command #SRP). The device keeps on playing the alarm tone until a #WAKE or #SHDN command is received or a 90 s time-out occurs. If the device is in "alarm mode" and it does not receive the #WAKE command within 90s then it shuts down. If alarm expires during a call alarm sound will stop when the call is disconnected.

4 - The MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE brings the pin GPIO6 high, provided its <direction> has been set to alarm output, and keeps it in this state until a #WAKE or #SHDN command is received or a 90 seconds timer expires. If the device is in "alarm mode" and it does not receive the #WAKE command within 90s then it shuts down.

5 - The MODULE will make both the actions as for type=2 and <type>=3.

6 - The MODULE will make both the actions as for type=2 and <type>=4.

7 - The MODULE will make both the actions as for type=3 and <type>=4.

8 - The MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE sets High the RI output pin. The RI output pin remains High until next #WAKE issue or until a 90s timer expires. If the device is in "alarm mode" and it does not receive the #WAKE command within 90s. After that it shuts down.

<text> - unsolicited alarm code text string. It has meaning only if <type> is equal to 2 or 5 or 6.

<recurr> - string type value indicating day of week for the alarm in one of the following formats:

“<1..7>[,<1..7>[, ...]]” - it sets a recurrent alarm for one or more days in the week; the digits 1 to 7 corresponds to the days in the week (Monday is 1).

“0” - it sets a recurrent alarm for all days in the week.

<silent> - integer type indicating if the alarm is silent or not.

0 - the alarm will not be silent;

1 - the alarm will be silent.



4.2.10.1.34. Select Band - #BND

#BND - Select Band	SELINT 2
<p>AT#BND= <GSM band>, <WCDMA band>, <LTE band></p>	<p>Set command selects the current band.</p> <p>Parameter <GSM band>: For LE910-NAG 3 - GSM 850 MHz + PCS 1900 MHz</p> <p>For LE910-EUG 0 - GSM 900 MHz + DCS 1800 MHz</p> <p><WCDMA band>: For LE910-NAG and LE910-NVG: 1 – B2 (1900 MHz) 2 – B5 (850 MHz) 4 – B2 (1900 MHz) + B5 (850 MHz)</p> <p>For LE910-EUG: 0 – B1 (2100 MHz) 2 – B5 (850 MHz) 5 – B8 (900 MHz) 6 – B1 (2100 MHz) + B8 (900 MHz) 8 – B1 (2100 MHz) + B5 (850 MHz)</p> <p><LTE band> For LE910-NAG: 0x00000 No bands allowed 0x00002 EUTRAN BAND2 0x00008 EUTRAN BAND4 0x00010 EUTRAN BAND5 0x10000 EUTRAN BAND17 0x1001A All EUTRAN bands</p> <p>For LE910-NVG and LE910-SVG: 0x00000 No bands allowed 0x00008 EUTRAN BAND4 0x01000 EUTRAN BAND13 0x01008 All EUTRAN bands</p> <p>For LE910-EUG: 0x00000 No bands allowed 0x00004 EUTRAN BAND3 0x00040 EUTRAN BAND7 0x80000 EUTRAN BAND20 0x80044 All EUTRAN bands</p>



	Note: This setting is maintained even after power off.
AT#BND?	Read command returns the current selected band in the format: #BND: <GSM band>, <WCDMA band>, <LTE band>
AT#BND=?	Test command returns the supported range of values of parameters <GSM band> , <WCDMA band> and <LTE band>.

4.2.10.1.35. Automatic Band Selection - #AUTOBND

#AUTOBND - Automatic Band Selection		SELINT 2
AT#AUTOBND= [<value>]	Remains for backward compatibility purpose only 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>.	

4.2.10.1.36. Skip Escape Sequence - #SKIPESC

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



4.2.10.1.41. Power Saving Mode Ring Indicator - #PSMRI

#PSMRI – Power Saving Mode Ring Indicator		SELINT 2
AT#PSMRI=<n>	<p>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>.</p> <p>Parameter: <n> - RI enabling 0 - disables RI pin response for URC message(factory default) 50-1150 - enables RI pin response for URC messages.</p> <p>Note: the behavior for #PSMRI is invoked only when modem is in sleep mode (AT+CFUN=5 and DTR Off on Main UART)</p>	
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.	

4.2.10.1.42. Command Mode Flow Control - #CFLO

#CFLO – Command Mode Flow Control		SELINT 2
AT#CFLO=<mode>	<p>Set command enables/disables the flow control in command mode. If enabled, current flow control is applied to both command mode and data mode.</p> <p>Parameter: <mode> 0 – Disable flow control set in command mode (factory default) 1 - Enable flow control set in command mode</p> <p>Note: This behavior is valid only for Main UART port.</p>	
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>	



4.2.10.1.46. Enable RX Diversity and set DARP - #RXDIV

#RXDIV – enable RX Diversity and set DARP	SELINT 2
<p>AT#RXDIV= <DIV_enable>,<DARP_mode></p>	<p>This command enables/disables the RX Diversity and sets the DARP.</p> <p>Parameters: <DIV_enable> - RX Diversity 0 - disable the RX Diversity 1 - enable RX Diversity (default value) 6 - Test mode. The main antenna port is used for the Tx chain; second antenna port is used as the only Rx chain. <DARP_mode> - DARP mode 0 – DARP not supported 1 – DARP phase 1(default value)</p> <p>Notes: - The values set by command are directly stored in NVM, and they are available at next power on. - If <DIV_enable> is set to 0, then <DARP_mode> is automatically set to 1 regardless the set value.</p>
<p>AT#RXDIV?</p>	<p>Read command reports the currently selected <DIV_enable> and <DARP_mode> parameters in the format: #RXDIV: <DIV_enable>,<DARP_mode></p>
<p>AT#RXDIV=?</p>	<p>Test command reports the supported range of values for parameters <DIV_enable> and <DARP_mode>.</p>



4.2.10.1.47. GSM Antenna Detection - #GSMAD

#GSMAD – GSM Antenna Detection	SELINT 2
<p>AT#GSMAD= <mod>, [<urcmode> [,<interval> [,<detGPIO> [,<repGPIO> [,<antenna > [<adc>]]]]]</p>	<p>Set command sets the behavior of antenna detection algorithm</p> <p>Parameters:</p> <p><mod></p> <p>0 - detection algorithm not active</p> <p>1 - detection algorithm active; detection is started every <interval> period, using <detGPIO> for detection.</p> <p>2 - triggers the new measurement of the antenna presence, reporting the result in the format: #GSMAD: <antenna>,<presence></p> <p>where:</p> <p><presence></p> <p>0 - antenna connected.</p> <p>1 - antenna connector short circuited to ground.</p> <p>2 - antenna connector short circuited to power.</p> <p>3 - antenna not detected (open).</p> <p><antenna></p> <p>1 - Main (default)</p> <p>2 - DIV</p> <p>3 - GPS</p> <p>3 - instantaneous activation of the antenna detection algorithm as modality 2 but in this case the command doesn't return until the algorithm ended.</p> <p>The returned value is the antenna <presence> status just detected.</p> <p>Format:</p> <p>AT#GSMAD=3</p> <p>#GSMAD: <presence></p> <p>OK</p> <p>This instantaneous activation doesn't affect a periodic activation eventually started before, then the output format would be:</p> <p>AT#GSMAD=3</p> <p>#GSMAD: <presence></p> <p>OK</p> <p>#GSMAD: <presence> // URC resulting of previous #GSMAD=1</p> <p><urcmode> - URC presentation mode. It has meaning only if <mod> is 1.</p> <p>0 - it disables the presentation of the antenna detection URC</p>



	<p>1 - it enables the presentation of the antenna detection URC, whenever the antenna detection algorithm detects a change in the antenna status; the unsolicited message is in the format: #GSMAD: <antenna>,<presence></p> <p>where: <presence> and < antenna > are as before <interval> - duration in seconds of the interval between two consecutive antenna detection algorithm runs (default is 120). It has meaning only if <mod> is 1. 1..3600 - seconds</p> <p><detGPIO> - defines which GPIO shall be used as input by the Antenna Detection algorithm. (default is 1) Valid range is “any input pin number” (see “Hardware User Guide”).</p> <p><repGPIO> - defines which GPIO shall be used by the Antenna Detection algorithm to report antenna condition. Value 0 means that no report is made using GPIO (default 0). It has meaning only if <mod> is 1. 0 - no report is made using GPIO Valid range is “any output pin number” (see “Hardware User Guide”).</p> <p><antenna> - index of requested antenna. 1 - Main (default) 2 - DIV 3 - GPS</p> <p><adc> - index of requested ADC. 1 - ADC1 (default) 2 - ADC2 3 - ADC3</p> <p>Note: last <urcmode> settings are saved as extended profile parameters. Note: GPIO is set to LOW when antenna is connected. Set to HIGH otherwise Note: #GSMAD parameters, excluding <urcmode>, are saved in NVM.</p>
<p>AT#GSMAD=?</p>	<p>Test command reports the supported range of values for parameters <mod>, <urcmode>, <interval>, <detGPIO> and <repGPIO>,<antenna>,<adc>.</p>
<p>AT#GSMAD?</p>	<p>Read command returns the current parameter settings for #GSMAD command in the format: #GSMAD: <mod>,<urcmode>,<interval>,<detGPIO>,<repGPIO>,<antenna>,<adc><CR><LF> #GSMAD: <mod>,<urcmode>,<interval>,<detGPIO>,<repGPIO>,<antenna>,<adc ><CR><LF> #GSMAD: <mod>,<urcmode>,<interval>,<detGPIO>,<repGPIO>,<antenna>,<adc ><CR><LF></p>



4.2.10.1.48. Set Encryption Algorithm - #ENCALG

#ENCALG - Set Encryption Algorithm	SELINT 2
<p>AT#ENCALG= [<encGSM>] [,<encGPRS>]</p>	<p>This command enables or disables the GSM and/or GPRS encryption algorithms supported by the module.</p> <p>Parameters: <encGSM>: 0 – no GSM encryption algorithm 1..7 - sum of integers each representing a specific GSM encryption algorithm: 1 – A5/1 2 – A5/2 4 – A5/3 255 - reset the default values</p> <p><encGPRS>: 0 – no GPRS encryption algorithm 1..7 - sum of integers each representing a specific GPRS encryption algorithm: 1 – GEA1 2 – GEA2 4 – GEA3 255 - reset the default values</p> <p>Note: the values are stored in NVM and available on following reboot. Note: For possible <encGSM> encryptions see test command response</p>
<p>AT#ENCALG?</p>	<p>Read command reports the currently selected <encGSM> and <encGPRS>, and the last used <usedGSM> and <usedGPRS> in the format:</p> <p>#ENCALG: <encGSM>,<encGPRS>,<usedGSM>,<usedGPRS></p> <p>Parameters: <usedGSM>: 0 – no GSM encryption algorithm 1 – A5/1 2 – A5/2 4 – A5/3 255 - unknown information</p> <p><usedGPRS>: 0 – no GPRS encryption algorithm 1 – GEA1 2 – GEA2 4 – GEA3 255 - unknown information</p>
<p>AT#ENCALG=?</p>	<p>Test command reports the supported range of values for parameters in the format: <encGSM> and <encGPRS>.</p>
<p>Example</p>	<p>AT#ENCALG? #ENCALG: 5,2,1,1</p>



#ENCALG - Set Encryption Algorithm	SELINT 2
	<p>OK AT#ENCALG=5,1 OK Sets the GSM encryption algorithm A5/1 and A5/3, and the GPRS encryption algorithm GEA1. It will be available at the next reboot. AT#ENCALG? #ENCALG: 5,2,1,1 OK The last two values indicate that the last used GSM encryption algorithm is A5/1 and the last used GPRS encryption algorithm is GEA1. After reboot AT#ENCALG? #ENCALG: 5,1,1,1</p>



4.2.10.2. Multisocket AT Commands

4.2.10.2.1. Socket Status - #SS

#SS - Socket Status	SELINT 2
AT#SS	<p>Execution command reports the current status of the sockets in the format:</p> <p>#SS: <connId>,<state>,<locIP>,<locPort>,<remIP>,<remPort> [<CR><LF><connId>,<state>,<locIP>,<locPort>,<remIP>,<remPort> [...]]</p> <p>where: <connId> - socket connection identifier 1..6 <state> - actual state of the socket: 0 - Socket Closed. 1 - Socket with an active data transfer connection. 2 - Socket suspended. 3 - Socket suspended with pending data. 4 - Socket listening. 5 - Socket with an incoming connection. Waiting for the user accept or shutdown command. 6 – Socket in opening process. The socket is not in Closed state but still not in Active or Suspended or Suspended with pending data state. <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.</p>
AT#SS=?	Test command returns the OK result code.



4.2.10.2.3. Socket Type - #ST

#ST – Socket Type	SELINT 2
<p>AT#ST [=<ConnId>]</p>	<p>Set command reports the current type of the socket (TCP/UDP) and its direction (Dialer / Listener)</p> <p>Parameter: <ConnId> - socket connection identifier 1..6</p> <p>The response format is: #ST: <connId>,<type>,<direction></p> <p>Where: <connId> - socket connection identifier 1..6</p> <p><type> - socket type 0 – No socket 1 – TCP socket 2 – UDP socket</p> <p><direction> - direction of the socket 0 – No 1 – Dialer 2 – Listener</p> <p>Note: issuing #ST<CR> causes getting information about type of all the sockets; the response format is: #ST: <connId1>,<type1>,<direction1> <CR><LF> ... #ST: <connId6>,< type 6>,< direction 6></p>
<p>AT#ST=?</p>	<p>Test command reports the range for parameter <connId>.</p>
<p>Example</p>	<p>single socket:</p> <p>AT#ST=3 #ST: 3,2,1 Socket 3 is an UDP dialer.</p>



4.2.10.2.4. Context Activation - #SGACT

#SGACT - Context Activation		SELINT 2
AT#SGACT= <cid>,<stat> [,<userId>, <pwd>]	<p>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</p> <p>Parameters: <cid> - PDP context identifier 1..5 - numeric parameter which specifies a particular PDP context definition <stat> 0 - deactivate the context 1 - activate the context <userId> - string type, used only if the context requires it <pwd> - string type, used only if the context requires it</p> <p>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 activated by piggybacking on LTE attach procedure and maintained until detached from NW. This command with cid 1 is just binding or unbinding application to the default PDP context.</p>	
AT#SGACT?	<p>Returns the state of all the five contexts, in the format:</p> <p>#SGACT: <cid1>,<Stat1><CR><LF> ... #SGACT: <cid5>,<Stat5></p> <p>where: <cidn> - as <cid> before <statn> - context status 0 - context deactivated 1 - context activated</p>	
AT#SGACT=?	Reports the range for the parameters <cid> and <stat>	

4.2.10.2.5. Socket Shutdown - #SH

#SH - Socket Shutdown		SELINT 2
AT#SH=<connId>	<p>This command is used to close a socket.</p> <p>Parameter: <connId> - socket connection identifier 1..6</p> <p>Note: a socket connection can be closed only when it is in suspended mode (with pending data too). Trying to close an active socket connection will produce an error.</p>	
AT#SH=?	Test command returns the OK result code.	





4.2.10.2.6. Socket Configuration - #SCFG

#SCFG - Socket Configuration		SELINT 2
AT#SCFG= <connId>,<cid>,<pktSz>,<maxTo>,<connTo>,<txTo>	Set command sets the socket configuration parameters. Parameters: <connId> - socket connection identifier 1..6 <cid> - PDP context identifier 1..5 - numeric parameter which specifies a particular PDP context definition <pktSz> - packet size to be used by the TCP/UDP/IP stack for data sending. Used for online data mode only. 0 - automatically chosen by the device. 1..1500 - packet size in bytes. <maxTo> - exchange timeout(or socket inactivity time); if there's no data exchange within this timeout period the connection is closed 0 - no timeout n(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. 0 - no timeout n(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. Used for online data mode only. 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 - Socket Configuration	SELINT 2
<pre>#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</pre>	

4.2.10.2.7. Socket Configuration Extended - #SCFGEXT

#SCFGEXT - Socket Configuration Extended	SELINT 2
<pre>AT#SCFGEXT= <connId>, <srMode>, <dataMode>, <keepalive> [,<ListenAutoRsp>],< sendDataMode> </pre>	<p>Set command sets the socket configuration extended parameters.</p> <p>Parameters:</p> <p><connId> - socket connection identifier 1..6</p> <p><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 depends on the subparameter <dataMode> value</p> <p><dataMode> - “data view mode” presentation format 0 - data represented as text (default) 1 - data represented as sequence of hexadecimal numbers (from 00 to FF) 3 – Data view with UDP datagram informations: SRING : <remoteIP>,<remotePort><connId>,<recData>,<dataLeft>,<data> same as before with <remoteIP>,<remotePort> and <dataLeft> that means the number of bytes left in the UDP datagram</p> <p><keepalive> - TCP keepalive timer timeout -The interval between two keepalive transmissions in idle condition. 0 - TCP keepalive timer is deactivated (default)</p>



#SCFGEXT - Socket Configuration Extended	SELINT 2
	<p>1..240 - TCP keepalive timer timeout in minutes</p> <p><ListenAutoRsp> - Set the listen auto-response mode, that affects the commands AT#SL and AT#SLUDP 0 - Deactivated (default) 1 – Activated</p> <p><sendDataMode>- data mode for sending data in command mode(AT#SEND) 0 - data represented as text (default) 1 - data represented as sequence of hexadecimal numbers (from 00 to FF) Each octet of the data is given as two IRA character long hexadecimal number</p> <p>Note: KeepAlive Interval - Interval between two successive keepalive retransmissions, if acknowledgement to the previous keepalive transmission is not received. Non configurable value: 75 sec.</p> <p>KeepAlive Probes - The number of unacknowledged retransmissions to send out before closing socket. Non configurable value: 9 retransmissions.</p> <p>Note: these values are automatically saved in NVM</p> <p>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.</p>
AT#SCFGEXT?	<p>Read command returns the current socket extended configuration parameters values for all the six sockets, in the format: #SCFGEXT: <connId1>,<srMode1>,<dataMode1>,<keepalive1>,<ListenAutoRsp1>,<sendDataMode1>,<CR><LF> ... #SCFGEXT: <connId6>,<srMode6>,<dataMode6>,<keepalive6>,<ListenAutoRsp6>,<sendDataMode6>,<CR><LF></p>
AT#SCFGEXT=?	<p>Test command returns the range of supported values for all the subparameters</p>
Example	<p>Socket 1 set with data view string, text data mode, a keepalive time of 30 minutes and listen auto-response set.</p> <p>Socket 3 set with data amount string, hex recv data mode, no keepalive and listen auto-response not set.</p> <p>Socket 4 set with hex recv and send data mode</p> <p>at#scfgext?</p>



#SCFGEXT - Socket Configuration Extended	SELINT 2
	<pre>#SCFGEXT: 1,2,0,30,1,0 #SCFGEXT: 2,0,0,0,0,0 #SCFGEXT: 3,1,1,0,0,0 #SCFGEXT: 4,0,1,0,0,1 #SCFGEXT: 5,0,0,0,0,0 #SCFGEXT: 6,0,0,0,0,0 OK</pre>



4.2.10.2.8. Socket Dial - #SD

#SD - Socket Dial	SELINT 2
<p>AT#SD=<connId>,<txProt>,<rPort>,<IPaddr>[,<closureType>[,<IPort>[,<connMode>[,<txTime>]]]]</p>	<p>Execution command opens a remote connection via socket. Parameters: <connId> - socket connection identifier 1..6</p> <p><txProt> - transmission protocol 0 - TCP 1 - UDP</p> <p><rPort> - remote host port to contact 1..65535</p> <p><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</p> <p><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 (+++)</p> <p><IPort> - UDP connections local port 1..65535</p> <p><connMode> - Connection mode 0 - online mode connection (default) 1 - command mode connection</p> <p><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.</p> <p>Note: <closureType> parameter is valid for TCP connections only and has no effect (if used) for UDP connections.</p> <p>Note: <IPort> parameter is valid for UDP connections only and has no effect (if used) for TCP connections.</p> <p>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.</p>



4.2.10.2.10. Socket Restore - #SO

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



4.2.10.2.11. Socket Listen - #SL

#SL - Socket Listen	SELINT 2
<p>AT#SL=<connId>, <listenState>, <listenPort> [,<lingerT>]</p>	<p>This command opens/closes a socket listening for an incoming connection on a specified port.</p> <p>Parameters: <connId> - socket connection identifier 1..6 <listenState> - 0 - closes socket listening 1 - starts socket listening <listenPort> - local listening port 0..65535 <lingerT> - linger time 0 - immediate closure after remote closure 255 - local host closes only after an escape sequence (+++)</p> <p>Note: if successful, commands returns a final result code OK. If the ListenAutoRsp flag has not been set through the command AT#SCFGEXT (for the specific connId), then, when a TCP connection request comes on the input port, if the sender is not filtered by internal firewall (see #FRWL), an URC is received:</p> <p>+SRING : <connId></p> <p>Afterwards we can use #SA to accept the connection or #SH to refuse it.</p> <p>If the ListenAutoRsp flag has been set, then, when a TCP connection request comes on the input port, if the sender is not filtered by the internal firewall (see command #FRWL), the connection is automatically accepted: the CONNECT indication is given and the modem goes into online data mode.</p> <p>If the socket is closed by the network the following URC is received:</p> <p>#SKTL: ABORTED</p>
AT#SL?	Read command returns all the actual listening TCP sockets.
AT#SL=?	Test command returns the range of supported values for all the subparameters.
Example	<p>Next command opens a socket listening for TCP on port 3500 without.</p> <p>AT#SL=1,1,3500 OK</p>



4.2.10.2.12. Socket Listen UDP - #SLUDP

#SLUDP - Socket Listen UDP	SELINT 2
<p>AT#SLUDP= <connId>, <listenState>[, <listenPort>]</p>	<p>This command opens/closes a socket listening for an incoming UDP connection on a specified port.</p> <p>Parameters: <connId> - socket connection identifier 1..6</p> <p><listenState> - 0 - closes socket listening 1 - starts socket listening</p> <p><listenPort> - local listening port 1..65535</p> <p>Note: if successful, the command returns a final result code OK. If the ListenAutoRsp flag has not been set through the command AT#SCFGEXT (for the specific connId), then, when an UDP connection request comes on the input port, if the sender is not filtered by internal firewall (see #FRWL), an URC is received: +SRING : <connId></p> <p>Afterwards we can use #SA to accept the connection or #SH to refuse it.</p> <p>If the ListenAutoRsp flag has been set, then, when an UDP connection request comes on the input port, if the sender is not filtered by the internal firewall (see command #FRWL), the connection is automatically accepted: the CONNECT indication is given and the modem goes into online data mode.</p> <p>If the socket is closed by the network the following URC is received:</p> <p>#SLUDP: ABORTED</p> <p>Note: when closing the listening socket <listenPort> is a don't care parameter</p>
<p>AT#SLUDP?</p>	<p>Read command returns all the actual listening UDP sockets.</p>
<p>AT#SLUDP=?</p>	<p>Test command returns the range of supported values for all the subparameters.</p>
<p>Example</p>	<p>Next command opens a socket listening for UDP on port 3500.</p> <p>AT#SLUDP=1,1,3500 OK</p>



4.2.10.2.13. Receive Data in Command Mode - #SRECV

#SRECV – Received Data in Command Mode	SELINT 2
<p>AT#SRECV= <connId>, <maxByte>, [<UDPInfo>]</p>	<p>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.</p> <p>Parameters:</p> <p><connId> - socket connection identifier 1..6</p> <p><maxByte> - max number of bytes to read 1..1500</p> <p><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.</p> <p>AT#SRECV=<connId>,<maxBytes>,1 #SRECV: <remoteIP>,<remotePort><connId>,<recData>,<dataLeft> data</p> <p>Note: issuing #SRECV when there's no buffered data raises an error.</p>
<p>AT#SRECV=?</p>	<p><i>Test command returns the range of supported values for parameters: <connId> <maxByte> and <UDPInfo></i></p>
<p>Example</p>	<p>SRING URC (<srMode> be 0, <dataMode> be 0) telling data have just come through connected socket identified by <connId>=1 and are now buffered</p> <p>SRING: 1 Read in text format the buffered data AT#SRECV=1,15 #SRECV: 1,15 stringa di test OK</p> <p>Or: if the received datagram, received from <IPaddr and <IPport> is of 60 bytes AT#SRECV=1,15,1 #SRECV: <IPaddr>,<IPport>,1,15,45 stringa di test OK</p> <p>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</p> <p>SRING: 2,15 Read in hexadecimal format the buffered data</p>



#SRECV – Received Data in Command Mode	SELINT 2
	<p>AT#SRECV=2,15 #SRECV: 2,15 737472696e67612064692074657374 OK</p> <p>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</p>



4.2.10.2.14. Send Data In Command Mode - #SSEND

#SSEND – Send Data in Command Mode		SELINT 2
AT#SSEND= <connId>	<p>Execution command permits, while the module is in command mode, to send data through a connected socket.</p> <p>Parameters: <connId> - socket connection identifier</p> <p>1..6 - The device responds to the command with the prompt ‘>’ and waits for the data to send.</p> <p>To complete the operation send Ctrl-Z char (0x1A hex); to exit without writing the message send ESC char (0x1B hex).</p> <p>If data are successfully sent, then the response is OK.</p> <p>If data sending fails for some reason, an error code is reported.</p> <p>Note: the maximum number of bytes to send is 1500;</p> <p>Note: it’s possible to use #SSEND only if the connection was opened by #SD, else the ME is raising an error</p> <p>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)</p>	
AT#SSEND=?	Test command returns OK message.	
Example	<p><i>Send data through socket number 2</i></p> <pre>AT#SSEND=2 >Test<CTRL-Z> OK</pre>	

4.2.10.2.15. Send data in Command Mode extended - #SENDEXT

#SENDEXT - Send Data In Command Mode extended		SELINT 2
AT#SENDEXT= <connId>, <bytestosend>	<p>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).</p> <p>Parameters: <connId> - socket connection identifier</p> <p>1..6 < bytestosend > - number of bytes to be sent</p> <p>Please refer to test command for range</p> <p>The device responds to the command with the prompt ‘>’ <greater_than><space> and waits for the data to send.</p> <p>When <bytestosend> bytes have been sent, operation is automatically completed.</p> <p>If data are successfully sent, then the response is OK.</p> <p>If data sending fails for some reason, an error code is reported.</p> <p>Note: it’s possible to use #SENDEXT only if the connection was opened by #SD, else the ME is raising an error.</p> <p>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)</p>	



#SSENDEXT - Send Data In Command Mode extended		SELINT 2
AT#SSENDEXT=?	Test command returns the range of supported values for parameters < connId > and <bytestosend>	
Example	<p>Open the socket in command mode: at#sd=1,0,<port>,"IP address",0,0,1 OK</p> <p>Give the command specifying total number of bytes as second Parameter: at#ssendext=1,256 > ; // Terminal echo of bytes sent is displayed here OK</p> <p>All possible bytes(from 0x00 to 0xFF) are sent on the socket as generic bytes.</p>	

4.2.10.2.16. Context Activation and Configuration - #SGACTCFG

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



	<p>parameter, thus it is possible to restore it even if the multiplexer control channel is released and set up, back and forth.</p> <p>Note: <retry> and <delay> setting are global parameter saved in NVM</p> <p>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</p>
<p>AT#SGACTCFG?</p>	<p>Read command reports the state of all the five contexts, in the format: #SGACTCFG: <cid1>,<retry1>,<delay1>, < urcmode >CR<<LF> ... #SGACTCFG: <cid5>,<retry5>,<delay5>,< urcmode > where: <cidn> - as <cid> before <retryn> - as <retry> before <delayn> - as <delay> before < urcmode > - as < urcmode > before</p>
<p>AT#SGACTCFG=?</p>	<p>Test command reports supported range of values for parameters <cid>,<retry>,<delay>and < urcmode ></p>



4.2.10.2.17. Context activation configuration extended - #SGACTCFGEXT

#SGACTCFGEXT - context activation configuration extended	
AT#SGACTCFGEXT= <cid> , <abortAttemptEnable> [,<unused> [,<unused> [,<unused>]]]	<p>Execution command is used to enable new features related to context activation.</p> <p>Parameters: <cid> - PDP context identifier (see +CGDCONT command) 1..5 - numeric parameter which specifies a particular PDP context definition <abortAttemptEnable> 0 – old behaviour: no abort possible while attempting context activation 1 – abort during context activation attempt is possible by sending a byte on the serial port.</p> <p>It takes effect on successive GPRS context activation attempt through #SGACT command in the following manner. While waiting for AT#SGACT=<cid>,1 response(up to 150 s) is possible to abort attempt by sending a byte and get back AT interface control(NO CARRIER indication).</p> <p>Note: If we receive delayed CTXT ACTIVATION ACCEPT after abort, network will be automatically informed of our aborted attempt through relative protocol messages(SM STATUS) and will also close on its side. Otherwise, if no ACCEPT is received after abort, network will be informed later of our PDP state through other protocol messages (routing area update for instance).</p>
AT#SGACTCFGEXT?	<p>Read command reports the state of all the five contexts, in the format: #SGACTCFGEXT: <cid1>,< abortAttemptEnable1 >,0,0,0<CR><LF> ... #SGACTCFGEXT: <cid5>,< abortAttemptEnable5 >,0,0,0<CR><LF></p> <p>where: <cidn> - as <cid> before <abortAttemptEnable n> - as <abortAttemptEnable> before.</p> <p>Note: values are automatically saved in NVM</p>
AT#SGACTCFGEXT=?	<p>Test command reports supported range of values for all parameters</p>



4.2.10.1. SSL Commands

4.2.10.1.1. Enable a SSL socket - #SLEN

#SLEN – Enable a SSL socket		SELINT 2
AT#SLEN= <SSId>, <Enable>	<p>This command enables a socket secured by SSL.</p> <p>Parameters: <SSId> - Secure Socket Identifier 1 – Until now SSL block manages only one socket</p> <p><Enable> 0 – deactivate secure socket [default] 1 – activate secure socket</p> <p>Note: if secure socket is not enabled only test requests can be made for every SSL command except #SLS (SSL status) which can be issued also if the socket is disabled. Read commands can be issued if at least a <SSId> is enabled.</p> <p>Note: these values are automatically saved in NVM. Note: an error is raised if #SLEN=X, 1 is issued when the socket 'X' is already enabled and if #SLEN=X, 0 is issued when the socket 'X' is already disabled. Note: a SSL socket cannot be disabled by issuing #SLEN=1 if it is connected.</p>	
AT#SLEN?	<p>Read command reports the current value of the <status> parameter, in the format: #SLEN: <SSId>,<Enable><CR><LF> <CR><LF> OK</p>	
AT#SLEN=?	<p>Test command returns the range of supported values for all the parameters: #SLEN: (1),(0,1)</p>	
Example	<p>AT#SLEN=1,1 OK</p>	



4.2.10.1.2. Opens a socket SSL to a remote server - #SSLD

#SSLD – Opens a socket SSL to a remote server	SELINT 2
<p>AT#SSLD=<SSId>,<rPort>,<IPAddress>,<ClosureType>[,<connMode>[,<Timeout>]]</p>	<p>Execution command opens a remote connection via socket secured through SSL. Both, command and online modes can be used.</p> <p>In the first case ‘OK’ is printed on success, and data exchange can be performed by means of #SSLSEND and #SSLRCV commands.</p> <p>In online mode ‘CONNECT’ message is printed, and data can be sent/received directly to/by the serial port. Communication can be suspended by issuing the escape sequence (by default +++) and restored with #SSLO command.</p> <p>Parameters:</p> <p><SSId> - Secure Socket Identifier 1 - Until now SSL block manage only one socket</p> <p><rPort> - Remote TCP port to contact 1..65535</p> <p><IPAddress> - string type, address of SSL server</p> <p><ClosureType> - how to close SSL socket 0 – Until now only closure type 0 supported. SSL session id and keys are free.</p> <p><connMode> - connection mode 0 – online mode connection. 1 – command mode connection (factory default).</p> <p><Timeout> - time-out in 100 ms units. It represents the maximum allowed TCP inter-packet delay. It means that, when more data is expected during the handshake, the module awaits <Timeout> * 100 msecs for the next packet. If no more data can be read, the module gives up the handshake and raises an ERROR response.</p> <p>Note: IT’S NOT the total handshake timeout or, in other words, it’s not the absolute maximum time between the #SSLD issue and the CONNECT/OK/ERROR response. Though by changing this parameter you can limit the handshake duration (for example in case of congested network or busy server), there’s no way to be sure to get the command response within a certain amount of time, because it depends on the TCP connection time, the handshake time and the computation time (which depends on the authentication mode and on the size of keys and certificates).10..5000 - hundreds of ms (factory default is 100)</p> <p>Note: if secure socket is not enabled using AT#SSLEN only test requests can be made.</p> <p>Note: if timeout is not set for SSL connection the default timeout value, set by AT#SSLCFG, is used.</p> <p>Note: in online mode the socket is closed after an inactivity period (configurable with #SSLCFG, with a default value of 90 seconds), and the ‘NO CARRIER’ message is printed.</p> <p>Note: in online mode data are transmitted as soon as the data packet size is reached or as after a transmission timeout. Both these parameters are configurable by using #SSLCFG.</p> <p>Note: Before opening a SSL connection, make sure to have stored the needed secure data (Certificate, CA certificate, private key), using AT#SSLSECDATA, for the security level set through AT#SSLSECCFG.</p>



#SSLD – Opens a socket SSL to a remote server		SELINT 2
AT#SSLD=?	Test command returns the range of supported values for all the parameters: #SSLD: (1),(1-65535),,(0),(0,1),(10-5000)	
Example	<p>Start command mode: AT#SSLD=1,8500,"84.94.194.21",0,1 OK</p> <p>Start online mode: AT#SSLD =1,8500,"84.94.194.21",0,0 OK</p> <p>CONNECT</p>	

4.2.10.1.3. Send data through a SSL socket - #SSLSEND

#SSLSEND – Send data through a SSL socket		SELINT 2
AT#SSLSEND= <SSId>[,< Timeout >]	<p>This command allows sending data through a secure socket.</p> <p>Parameters:</p> <p><SSId> - Secure Socket Identifier 1 - Until now SSL block manage only one socket.</p> <p><Timeout> - socket send timeout, in 100 ms. units. 10..5000 - hundreds of ms. (factory default is 100)</p> <p>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</p> <p>Note: The maximum number of bytes to send is 1023. Note: If secure socket is not enabled using AT#SSLEN only test requests can be made. Note: If timeout is not set for SSL connection the default timeout value, set by AT#SSLCFG, is used. Note: Before sending data through the SSL connection it has to be established using AT#SSLD</p>	
AT#SSLSEND=?	Test command returns the range of supported values for all the parameters: #SSLSEND: (1),(10-5000)	



4.2.10.1.4. Read data from a SSL socket - #SSLRECV

#SSLRECV – Read data from a SSL socket	SELINT 2
<p>AT#SSLRECV= <SSId>,<MaxNumByte>[,<TimeOut>]</p>	<p>This command allows receiving data from a secure socket.</p> <p>Parameters: <SSId> - Secure Socket Identifier 1 - Until now SSL block manage only one socket. <MaxNumByte> - max number of bytes to read 1..1000 < Timeout > - time-out in 100 ms units 10..5000 - hundreds of ms (factory default is 100) If no data are received the device responds: #SSLRECV: 0<CR><LF> TIMEOUT<CR><LF> <CR><LF> OK If the remote host closes the connection the device responds: #SSLRECV: 0<CR><LF> DISCONNECTED<CR><LF> <CR><LF> OK If data are received the device responds: #SSLRECV: NumByteRead<CR><LF> ...(Data read)... <CR><LF> <CR><LF> OK</p> <p>Note: if secure socket is not enabled using AT#SSLEN only test requests can be made. Note: if timeout is not set for SSL connection the default timeout value, set through AT#SSLCFG, is used. Note: before receiving data from the SSL connection it has to be established using AT#SSLD.</p>
<p>AT#SSLRECV=?</p>	<p>Test command returns the range of supported values for all the parameters: #SSLRECV: (1),(1-1000),(10-5000)</p>



4.2.10.1.5. Report the status of a SSL socket - #SSLS

#SSLS - Report the status of a SSL socket		SELINT 2
AT#SSLS=<SSId>	<p>This command reports the status of secure sockets.</p> <p>Parameters: <SSId> - Secure Socket Identifier 1 - Until now SSL block manages only one socket If secure socket is connected the device responds to the command: #SSLS: <SSId>,2,<CipherSuite> otherwise: #SSLS: <SSId>,<ConnectionStatus> <ConnectionStatus> available values are: 0 – Socket Disabled 1 – Connection closed 2 – Connection open</p> <p>Note: this command can be issued even if the <SSId> is not enabled.</p>	
AT#SSLS=?	<p>Test command returns the range of supported values for all the parameters. #SSLS: (1)</p>	
Example	<p>AT#SSLS=1</p> <p>#SSLS: 1,1</p> <p>OK</p>	

4.2.10.1.6. Close a SSL socket - #SSLH

#SSLH – Close a SSL socket		SELINT 2
AT#SSLH= <SSId>[,<ClosureType>]	<p>This command allows closing the SSL connection.</p> <p>Parameters: <SSId> - Secure Socket Identifier 1 - Until now SSL block manage only one socket. < ClosureType >: how to close SSL socket 0 – Until now, only closure type 0 supported. SSL session id and keys are free.</p> <p>Note: if secure socket is not enabled using AT#SSLEN only test requests can be made.</p>	
AT#SSLH=?	<p>Test command returns the range of supported values for all the parameters: #SSLH: (1),(0)</p>	



4.2.10.1.8. Configure security parameters of a SSL socket – #SSLSECCFG

#SSLSECCFG – Configure security parameters of a SSL socket		SELINT 2
AT#SSLSECCFG= <SSId>,<CipherSuite >,<SecLevel>	<p>This command allows configuring SSL connection parameters.</p> <p>Parameters:</p> <p><SSId> - Secure Socket Identifier</p> <p>1 - Until now SSL block manage only one socket</p> <p><CipherSuite></p> <p>0 - Chiper Suite is chosen by remote Server [default]</p> <p>1 - SSL_RSA_WITH_RC4_128_MD5</p> <p>2 - SSL_RSA_WITH_RC4_128_SHA</p> <p>3 - TLS_RSA_WITH_AES_256_CBC_SHA</p> <p><SecLevel></p> <p>0 - No authentication [default]</p> <p>1 - Manage server authentication</p> <p>2 - Manage server and client authentication if requested by the remote server</p> <p>Note: if no authentication is set no security data are needed (Client certificate, Server CAcertificate and Client private key).</p> <p>Note: if only server authentication is managed then Server CAcertificate has to be stored through AT#SSLSECDATA.</p> <p>Note: if server and client authentication are managed then client certificate and private key, and server CAcertificate have to be stored through AT#SSLSECDATA. Please note that private keys with password are not Supported.</p> <p>Note: only “rsa_sign” certificates are supported by the Telit Module in client authentication. The remote server must support this certificate type, otherwise the handshake will fail.</p> <p>Note: if secure socket is not enabled using #SLEN only test requests can be made. Read command can be issued if at least a <SSId> is enabled.</p> <p>Note: these values are automatically saved in NVM.</p>	
AT#SSLSECCFG?	<p>Read command reports the currently selected parameters in the format:</p> <p>#SSLSECCFG: <SSId1>,<CipherSuite>,<SecLevel></p>	
AT#SSLSECCFG=?	<p>Test command returns the range of supported values for all the parameters.</p> <p>#SSLSECCFG: (1),(0-2),(0-2)</p>	



4.2.10.1.9. Configure general parameters of a SSL socket - #SSLCFG

#SSLCFG – Configure general parameters of a SSL socket	SELINT 2
<p>AT#SSLCFG= <SSId>,<cid>,<pktSz >,<maxTo>,<defTo>,<txTo> [,<UNUSED_1>[,<UNUSED_2>[,<UNUSED_3>[,<UNUSED_4>]]]]</p>	<p>This command allows configuring SSL connection parameters.</p> <p>Parameters: <SSId> - Secure Socket Identifier 1 - Until now SSL block manages only one socket <cid> - PDP Context Identifier. 1 - Until now only context one is supported. <pktSz> - packet size to be used by the SSL/TCP/IP stack for data sending. 0 - select automatically default value (300). 1..1500 - packet size in bytes. <maxTo> - exchange timeout (or socket inactivity timeout); in online mode, if there's no data exchange within this timeout period the connection is closed. 0 - no timeout 1..65535 - timeout value in seconds (default 90 s.) <defTo> - Timeout that will be used by default whenever the corresponding parameter of each command is not set. 10...5000 - Timeout in tenth of seconds (default 100). <txTo> - data sending timeout; in online mode after this period data are sent also if they're less than max packet size. 0 - no timeout 1..255 - timeout value in hundreds of milliseconds (default 50). Note: if secure socket is not enabled using #SSLEN only test requests can be made. Read command can be issued if at least a <SSId> is enabled. Note: these values are automatically saved in NVM.</p>
<p>AT#SSLCFG?</p>	<p>Read command reports the currently selected parameters in the format:</p> <p>#SSLCFG: <SSId1>,<cid>,<pktSz>,<maxTo>,<defTo><txTo>,0,0,0,0</p>
<p>AT#SSLCFG=?</p>	<p>Test command returns the range of supported values for all the parameters.</p> <p>#SSLCFG: (1),(1),(0-1500),(0-65535),(10-5000),(0-255),(0),(0),(0),(0)</p>



4.2.10.1.10. Manage the security data - #SSLSECDATA

#SSLSECDATA - Manage the security data	SELINT 2
<p>AT#SSLSECDATA= <SSId>,<Action>,<Data Type>[,<Size>]</p>	<p>This command allows to store, delete and read security data (Certificate, CA certificate, private key) into NVM.</p> <p>Parameters: <SSId> - Secure Socket Identifier 1 - Until now SSL block manages only one socket. <Action> - Action to do. 0 – Delete data from NVM. 1 – Store data into NVM. 2 – Read data from NVM. <DataType> 0 – Certificate. 1 – CA certificate. 2 – RSA Private key. <Size> - Size of security data to be stored 1..2047</p> <p>If the <Action> parameter is 1 (store data into NVM) the device responds to the command with the prompt '>' and waits for the data to store. 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 stored, then the response is OK; if it fails for some reason, an error code is reported. If the <Action> parameter is 2 (read data from NVM), data specified by <DataType> parameter is shown in the following format: #SSLSECDATA: <connId>,<DataType> <DATA> OK If <DataType> data has not been stored (or it has been deleted) the response has the following format: #SSLSECDATA: <connId>,<DataType> No data stored OK</p> <p>Note: Secured data has to be in PEM format. Note: private keys with password ARE NOT supported. Note: only “rsa_sign” certificates are supported by the Telit Module in client authentication. The remote server must support this certificate type, otherwise the handshake will fail. Note: <size> parameter is mandatory if the <write> action is issued, but it has to be omitted for <delete> or <read> actions are issued. Note: if secure socket is not enabled using AT#SSLEN only test requests can be made. Note: If socket is connected an error code is reported.</p>



4.2.10.2. FTP AT Commands

4.2.10.2.1. FTP Time – Out - #FTPTO

#FTPTO - FTP Time-Out		SELINT 2
AT#FTPTO= [<tout>]	<p>Set command sets the time-out used when opening either the FTP control channel or the FTP traffic channel.</p> <p>Parameter: <tout> - time-out in 100 ms units 100..5000 - hundreds of ms (factory default is 100)</p> <p>Note: The parameter is not saved in NVM.</p>	
AT#FTPTO?	<p>Read command returns the current FTP operations time-out, in the format:</p> <p>#FTPTO: <tout></p>	
AT#FTPTO=?	<p>Test command returns the range of supported values for parameter <tout></p>	

4.2.10.2.1. FTP Open - #FTPOPEN

#FTPOPEN - FTP Open		SELINT 2
AT#FTPOPEN= [<server:port>, <username>, <password>, <mode>]	<p>Execution command opens an FTP connection toward the FTP server.</p> <p>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</p> <p>Note: In FTP Open case, the solution dependency limits the maximum time out to 1200 (120 seconds). The FTPTO value that exceed 1200 is considered as 1200.</p> <p>Note: Before opening FTP connection the GPRS must been activated with AT#GPRS=1 or AT# SGACT</p>	
AT#FTPOPEN=?	<p>Test command returns the OK result code.</p>	



4.2.10.2.1. FTP Close - #FTPTO

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

4.2.10.2.1. FTP Config - #FTPCFG

#FTPCFG – FTP Config		SELINT 2
AT#FTPCFG= <tout>, <IPPignoring> [,<FTPSEn>]	<p><tout> - time-out in 100 ms units 100..5000 – hundreds of ms (factory default is 100)</p> <p>Set command set the time-out used when opening either the FTP control channel or the FTP traffic channel.</p> <p>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.</p> <p><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.</p> <p><FTPSEn> 0 – Disable FTPS security: all FTP commands will perform plain FTP connections.</p>	
AT#FTPCFG?	Read command reports the currently selected parameters in the format: AT#FTPCFG=<tout>,<IPPignoring>,<FTPSEn>	
AT#FTPCFG=?	Test command reports the supported range of values for parameter(s) <tout>,<IPPignoring>,<FTPSEn>	



4.2.10.2.1. FTP Put - #FTPPUT

#FTPPUT – FTP Put		SELINT 2
AT#FTPPUT= [[<filename>] [,<connMode>]]	<p>Execution command, issued during an FTP connection, opens a data connection and starts sending <filename> file to the FTP server.</p> <p>If the data connection succeeds, a CONNECT indication is sent, otherwise a NO CARRIER indication is sent.</p> <p>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)</p> <p>Parameter: <filename> - string type, name of the file (maximum length 200 characters) <connMode> 0 – online mode 1 – command mode</p> <p>Note: use the escape sequence +++ to close the data connection.</p> <p>Note: The command causes an ERROR result code to be returned if no FTP connection has been opened yet.</p>	
AT#FTPPUT=?	<p>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)</p> <p>where: <length> - integer type value indicating the maximum length of <filename></p>	

4.2.10.2.1. FTP Get - #FTPCFG

#FTPCFG – FTP Get		SELINT 2
AT#FTPGET= [<filename>]	<p>Execution command, issued during an FTP connection, opens a data connection and starts getting a file from the FTP server.</p> <p>If the data connection succeeds a CONNECT indication is sent, otherwise a NO CARRIER indication is sent.</p> <p>The file is received on the serial port.</p> <p>Parameter: <filename> - file name, string type.</p> <p>Note: The command causes an ERROR result code to be returned if no FTP connection has been opened yet.</p>	
AT#FTPGET=?	<p>Test command returns the OK result code.</p>	



4.2.10.2.1. FTP Get in command mode - #FTPGETPKT

#FTPGETPKT - FTP Get in command mode	SELINT 2
<p>AT#FTPGETPKT= <filename> [,<viewMode>]</p>	<p>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.</p> <p>The data port is opened and we remain in command mode and we see the result code OK. Retrieval from FTP server of “remotefile” is started, but data are only buffered in the module. It’s possible to read data afterwards issuing #FTPRECV command.</p> <p>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</p> <p>Note: The command causes an ERROR result code to be returned in case no FTP connection has been opened yet.</p> <p>Note: Command closure should always be handled by application. In order to avoid download stall situations a timeout should be implemented by the application.</p>
<p>AT#FTPGETPKT?</p>	<p>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</p>
<p>AT#FTPGETPKT=?</p>	<p>Test command returns the OK result code.</p>



4.2.10.2.1. FTP Type - #FTPTYPE

#FTPTYPE - FTP Type		SELINT 2
AT#FTPTYPE= [<type>]	Set command, issued during an FTP connection, sets the file transfer type. Parameter: <type> - file transfer type: 0 - binary 1 - ascii Note: The command causes an ERROR result code to be returned if no FTP connection has been opened yet.	
#FTPTYPE?	Read command returns the current file transfer type, in the format: #FTPTYPE: <type>	
#FTPTYPE=?	Test command returns the range of available values for this command	

4.2.10.2.1. FTP Delete - #FTPDELE

#FTPDELE - FTP Delete		SELINT 2
AT#FTPDELE= [<filename>]	Execution command, issued during an FTP connection, deletes a file from the remote working directory. Parameter: <filename> - string type, it's the name of the file to delete. Note: The command causes an ERROR result code to be returned if no FTP connection has been opened yet.	
AT#FTPDELE=?	Test command returns the OK result code.	

4.2.10.2.1. FTP Print Working Directory - #FTPPWD

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



4.2.10.2.1. FTP Change Working Directory - #FTPCWD

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

4.2.10.2.1. FTP List - #FTPLIST

#FTPLIST - FTP List		SELINT 2
AT#FTPLIST[=<name>]	<p>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.</p> <p>Parameter: <name> - string type, it's the name of the directory or file.</p> <p>Note: The command causes an ERROR result code to be returned if no FTP connection has been opened yet.</p> <p>Note: issuing AT#FTPLIST<CR> opens a data connection and starts getting from the server the list of contents of the working directory.</p>	
AT#FTPLIST=?	Test command returns the OK result code.	

4.2.10.2.1. Get file size from FTP - #FTPFSIZE

#FTPFSIZE – Get file size from FTP		SELINT 2
AT#FTPFSIZE=<filename>	<p>Execution command, issued during an FTP connection, permits to get file size of <filename> file.</p> <p>Note: #FTPTYPE=0 command has to be issued before #FTPFSIZE command, to set file transfer type to binary mode.</p>	
AT#FTPFSIZE=?	Test command returns the OK result code.	



4.2.10.2.1. FTP Append - #FTPAPP

#FTPAPP – FTP Append	SELINT 2
<p>AT#FTPAPP= [<filename> [,<connMode>]]</p>	<p>Execution command, issued during an FTP connection, opens a data connection and append data to existing <filename> file.</p> <p>If the data connection succeeds, a CONNECT indication is sent, Afterward a NO CARRIER indication is sent when the socket is closed.</p> <p>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)</p> <p>Parameters: <filename> – string type, name of the file. <connMode> 0 – online mode 1 – command mode</p> <p>Note: use the escape sequence +++ to close the data connection</p> <p>Note: The command causes an ERROR result code to be returned if no FTP connection has been opened yet.</p>
<p>AT#FTPAPP=?</p>	<p>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)</p> <p>where: <length> – integer type value indicating the maximum length of <filename></p>



4.2.10.2.1. Set restart position for FTP GET - #FTPREST

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



4.2.10.2.1. Receive Data In Command Mode - #FTP_RECV

#FTP_RECV – Receive Data In Command Mode	SELINT 2
<p>AT#FTP_RECV=<blocksize></p>	<p>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 #FTP_GETPKT command, onto the serial port.</p> <p>This number is limited to the current number of bytes of the remote file which have been transferred from the FTP server.</p> <p>Parameter: <blocksize> – max number of bytes to read 1..3000</p> <p>Note: it's necessary to have previously opened FTP data port and started download and buffering of remote file through #FTP_GETPKT command. Note: issuing #FTP_RECV 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 (FTP_RECV returns 0 and FTP_GETPKT gives an EOF 0 indication).</p>
<p>AT#FTP_RECV?</p>	<p>Read command reports the number of bytes currently received from FTP server, in the format:</p> <p>#FTP_RECV:<available></p>
<p>AT#FTP_RECV=?</p>	<p>Test command reports the supported range of values for parameter < blocksize ></p>
<p>Example</p>	<p>AT#FTP_RECV? #FTP_RECV: 3000</p> <p>OK</p> <p><i>Read required part of the buffered data:</i></p> <p>AT#FTP_RECV=400 #FTP_RECV:400</p> <p>Text row number 1 * 11111111111111111111111111111111 * Text row number 2 * 22222222222222222222222222222222 * Text row number 3 * 33333333333333333333333333333333 * Text row number 4 * 44444444444444444444444444444444 * Text row number 5 * 555555555555555555555555555555 * Text row number 6 * 666666666666666666666666666666 * Text row number 7 * 777777777777777777777777777777 * Text row number 8 * 888888888888888888888888888888 * OK AT#FTP_RECV=200 #FTP_RECV:200</p>



```
88888 *  
Text row number 9 * 99999999999999999999999999999999 *  
Text row number 10 * AAAAAAAAAAAAAAAAAAAAAAAAAAAAAA * Text row  
number 11 * BBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBB *  
Text row number 12 * CCCCCCCCCCCCCCCCCC  
  
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)
```



4.2.10.2.1. FTP Append Extended - #FTPAPPEXT

#FTPAPPEXT - FTP Append Extended	SELINT 2
<p>AT#FTPAPPEXT= <bytestosend> [,<eof>]</p>	<p>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 <connMode> parameter set to command mode connection.</p> <p>Parameters: <bytestosend> - number of bytes to be sent 1..1500</p> <p><eof> - data port closure 0 – normal sending of data chunk 1 – close data port after sending data chunk</p> <p>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</p> <p>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.</p>
<p>AT#FTPAPPEXT=?</p>	<p>Test command reports the supported range of values for parameters <bytestosend> and <eof></p>
<p>Example</p>	<p>AT#FTPOPEN="IP",username,password OK</p> <p>AT#FTPPUT=<filename>,1 <i>(the new param 1 means that we open the connection in command mode)</i> OK</p> <p><i>Here data socket will stay opened, but interface will be available (command mode)</i></p> <p>AT#FTPAPPEXT=Size >... write here the binary data. As soon Size byte are written, data are sent and OK is returned #FTPAPPEXT:<SentBytes> OK</p> <p>.....</p> <p><i>Last #FTPAPPEXT will close the data socket, because second (optional)</i></p>



	<p><i>parameter has this meaning:</i></p> <p>AT#FTPAPPEXT=Size,1 >... write here the binary data. As soon Size byte are written, data are sent and OK is returned #FTPAPPEXT:<SentBytes> OK</p> <p><i>If the user has to reopen the data port to send another (or append to the same) file, he can restart with the FTTPUT (or FTPAPP). Then FTPAPPEXT, ... to send the data chunks on the reopened data port.</i></p> <p><i>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.</i></p> <p><i>Also in this case obviously, data port will have to be reopened with FTTPUT and so on...(same sequence)</i></p>
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4.2.10.2.1. FTP Read Message - #FTPMSG

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



4.2.10.3. Enhanced IP Easy Extension AT Commands

4.2.10.3.1. IP Easy Authentication Type - #SGACTAUTH

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

4.2.10.3.2. Authentication User ID - #USERID

#USERID - Authentication User ID		SELINT 2
AT#USERID= [<user>]	<p>Set command sets the user identification string to be used during the authentication step.</p> <p>Parameter:</p> <p><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 "").</p>	
AT#USERID?	<p>Read command reports the current user identification string, in the format:</p> <p>#USERID: <user></p>	
AT#USERID=?	<p>Test command returns the maximum allowed length of the string parameter <user>.</p>	
Example	<pre>AT#USERID="myName" OK AT#USERID? #USERID: "myName" OK</pre>	



4.2.10.3.3. Authentication Password - #PASSW

#PASSW - Authentication Password		SELINT 2
AT#PASSW= [<pwd>]	Set command sets the user password string to be used during the authentication step. Parameter: <pwd> - string type, it's the authentication password; the max length for this value is the output of Test command, AT#PASSW=? (factory default is the empty string "").	
AT#PASSW=?	Test command returns the maximum allowed length of the string parameter <pwd>.	
Example	AT#PASSW="myPassword" OK	

4.2.10.3.4. Packet Size - #PKTSZ

#PKTSZ - Packet Size		SELINT 2
AT#PKTSZ= [<size>]	Set command sets the default packet size to be used by the TCP/UDP/IP stack for data sending. Used for online data mode only. 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	



4.2.10.3.5. Data Sending Time-Out - #DSTO

#DSTO -Data Sending Time-Out	SELINT 2
AT#DSTO= [<tout>]	Set command sets the maximum time that the module awaits before sending anyway a packet whose size is less than the default one. Used for online data mode only. Parameter: <tout> - packet sending time-out in 100ms units (factory default is 50) 0 - no time-out, wait forever for packets to be completed before send. 1..255 hundreds of ms Note: In order to avoid low performance issues, it is suggested to set the data sending time-out to a value greater than 5. Note: this time-out applies to data whose size is less than packet size and whose sending would have been delayed for an undefined time until new data to be sent had been received and full packet size reached.
AT#DSTO?	Read command reports the current data sending time-out value.
AT#DSTO=?	Test command returns the allowed values for the parameter <tout>.
Example	<pre>AT#DSTO=10 ->1 sec. time-out OK AT#DSTO? #DSTO: 10 OK</pre>



4.2.10.3.6. Socket Inactivity Time-Out - #SKTTO

#SKTTO - Socket Inactivity Time-Out		SELINT 2
AT#SKTTO= [<tout>]	<p>Set command sets the maximum time with no data exchanging on the socket that the module awaits before closing the socket and deactivating the GPRS context.</p> <p>Parameter: <tout> - socket inactivity time-out in seconds units 0 - no time-out. 1..65535 - time-out in sec. units(factory default is 90).</p> <p>Note: this time-out applies when no data is exchanged in the socket for a long time and therefore the socket connection has to be automatically closed and the GPRS context deactivated.</p>	
AT#SKTTO?	Read command reports the current socket inactivity time-out value.	
AT#SKTTO=?	Test command returns the allowed values for parameter <tout>.	
Example	<pre>AT#SKTTO=30 OK ->(30 sec. time-out) AT#SKTTO? #SKTTO: 30 OK</pre>	

4.2.10.3.7. Socket Definition - #SKTSET

#SKTSET - Socket Definition		SELINT 2
AT#SKTSET= [<socket type>, <remote port>, <remote addr>, [<closure type>], [<local port>]]	<p>Set command sets the socket parameters values.</p> <p>Parameters: <socket type> - socket protocol type 0 - TCP (factory default) 1 - UDP <remote port> - remote host port to be opened 0..65535 - port number (factory default is 0) <remote addr> - address of the remote host, string type. This parameter can be either: - any valid IP address in the format: xxx.xxx.xxx.xxx - any host name to be solved with a DNS query in the format: <host name> (factory default is the empty string "") <closure type> - socket closure behaviour for TCP 0 - local host closes immediately when remote host has closed (default) 255 - local host closes after an escape sequence (+++) <local port> - local host port to be used on UDP socket 0..65535 - port number</p> <p>Note: <closure type> parameter is valid only for TCP socket type, for UDP sockets shall be left unused.</p>	



#SKTSET - Socket Definition	SELINT 2
	<p>Note: <local port> parameter is valid only for UDP socket type, for TCP sockets shall be left unused.</p> <p>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.</p> <p>Note: the DNS Query to be successful requests that:</p> <ul style="list-style-type: none"> - the GPRS context 1 is correctly set with +CGDCONT - the authentication parameters are set (#USERID, #PASSW) - the GPRS coverage is enough to permit a connection.
AT#SKTSET?	Read command reports the socket parameters values, in the format:
AT#SKTSET=?	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.



4.2.10.3.8. Socket Open - #SKTOP

#SKTOP - Socket Open		SELINT 2
AT#SKTOP	<p>Execution command activates the context number 1, proceeds with the authentication with the user ID and password previously set by #USERID and #PASSW commands, and opens a socket connection with the host specified in the #SKTSET command. Eventually, before opening the socket connection, it issues automatically a DNS query to solve the IP address of the host name.</p> <p>If the connection succeeds a CONNECT indication is sent, otherwise a NO CARRIER indication is sent.</p>	
AT#SKTOP=?	Test command returns the OK result code.	
Example	<pre>AT#SKTOP ..GPRS context activation, authentication and socket open.. CONNECT</pre>	
Note	This command is obsolete. It's suggested to use the couple #SGACT and #SO instead of it.	

4.2.10.3.9. Query DNS - #QDNS

#QDNS - Query DNS		SELINT 2
AT#QDNS= [<host name>]	<p>Execution command executes a DNS query to solve the host name into an IP address.</p> <p>Parameter: <host name> - host name, string type.</p> <p>If the DNS query is successful then the IP address will be reported in the result code:</p> <p>#QDNS:"<host name>",<IP address></p> <p>Note: the command has to activate the GPRS context if it was not previously activated. In this case the context is deactivated after the DNS query.</p> <p>Note: <IP address> is in the format: xxx.xxx.xxx.xxx</p>	
AT#QDNS=?	Test command returns the OK result code.	
Note	This command requires that the authentication parameters are correctly set and that the GPRS network is present.	



4.2.10.3.10. DNS Response Caching - #CACHEDNS

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



4.2.10.3.11. Manual DNS Selection - #DNS

#DNS – Manual DNS Selection	SELINT 2
<p>AT#DNS=<cid>, <primary>, <secondary></p>	<p>Set command allows to manually set primary and secondary DNS servers for a PDP context defined by +CGDCONT.</p> <p>Parameters: <cid> - context identifier 1..5 - numeric parameter which specifies a particular PDP context definition <primary> Ipv4- 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”) Ipv6- manual primary DNS server, string type, in the format “xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.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”). Ipv6 can also be in HEX format: “xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx”</p> <p><secondary> Ipv4- 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”) Ipv6- manual primary DNS server, string type, in the format “xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.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”). Ipv6 can also be in HEX format: “xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx”</p> <p>Note: if <primary> is ”0.0.0.0” and <secondary> is not “0.0.0.0”, then issuing AT#DNS=... raises an error.</p> <p>Note: if <primary> is ”0.0.0.0” were using the primary DNS server come from the network as consequence of a context activation.</p> <p>Note: if <primary> is not ”0.0.0.0” and <secondary> is “0.0.0.0”, then were using only the manual primary DNS server.</p> <p>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.</p>
<p>AT#DNS?</p>	<p>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></p>



#DNS – Manual DNS Selection		SELINT 2
	<p>#DNS: <cid>,<primary>,<secondary>]] In case +cgdcont determined as ipv4v6 the format is [#DNS: <cid>,<primary ip4>,<primary ip6>,<secondary ip4>,<secondary ip6>[<CR><LF> #DNS: <cid>,<primary ip4>,<primary ip6>,<secondary ip4>,<secondary ip6>]]</p>	
AT#DNS=?	<p>Test command reports the supported range of values for the <cid> parameter only, in the format: #DNS: (1-5),,</p>	

4.2.10.3.12. Socket TCP Connection Time-Out - #SKTCT

#SKTCT - Socket TCP Connection Time-Out		SELINT 2
AT#SKTCT= [<tout>]	<p>Set command sets the TCP connection time-out for the first CONNECT answer from the TCP peer to be received.</p> <p>Parameter: <tout> - TCP first CONNECT answer time-out in 100ms units 10..1200 - hundreds of ms (factory default value is 600).</p> <p>Note: this time-out applies only to the time that the TCP stack waits for the CONNECT answer to its connection request.</p> <p>Note: The time for activate the GPRS and resolving the name with the DNS query (if the peer was specified by name and not by address) is not counted in this time-out.</p>	
AT#SKTCT?	Read command reports the current TCP connection time-out.	
AT#SKTCT=?	Test command returns the allowed values for parameter <tout>.	
Example	<p>AT#SKTCT=600 OK <i>socket first connection answer time-out has been set to 60 s.</i></p>	



4.2.10.3.13. Socket Parameters Save - #SKTSAV

#SKTSAV - Socket Parameters Save		SELINT 2
AT#SKTSAV	<p>Execution command saves the actual socket parameters in the NVM of the device.</p> <p>The socket parameters to store are:</p> <ul style="list-style-type: none"> - 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	<p>AT#SKTSAV</p> <p>OK</p> <p><i>socket parameters have been saved in NVM</i></p>	
Note	If some parameters have not been previously specified then a default value will be stored.	

4.2.10.3.14. Socket Parameters Reset - #SKTRST

#SKTRST - Socket Parameters Reset		SELINT 2
AT#SKTRST	<p>Execution command resets the actual socket parameters in the NVM of the device to the default ones.</p> <p>The socket parameters to reset are:</p> <ul style="list-style-type: none"> - 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	<p>AT#SKTRST</p> <p>OK</p> <p><i>socket parameters have been reset</i></p>	



4.2.10.3.15. GPRS Context Activation - #GPRS

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



4.2.10.3.16. Socket Dial - #SKTD

#SKTD - Socket Dial	SELINT 2
<p>AT#SKTD= [<socket type>, <remote port>, <remote addr>, [<closure type>], [<local port>]]</p>	<p>Set command opens the socket towards the peer specified in the parameters.</p> <p>Parameters: <socket type> - socket protocol type 0 - TCP (factory default) 1 - UDP <remote port> - remote host port to be opened 0..65535 - port number (factory default is 0) <remote addr> - address of the remote host, string type. This parameter can be either: - any valid IP address in the format: xxx.xxx.xxx.xxx - any host name to be solved with a DNS query in the format: <host name> (factory default is the empty string "") <closure type> - socket closure behaviour for TCP 0 - local host closes immediately when remote host has closed (default) 255 - local host closes after an escape sequence (+++) <local port> - local host port to be used on UDP socket 0..65535 - port number</p> <p>Note: <closure type> parameter is valid only for TCP socket type, for UDP sockets shall be left unused.</p> <p>Note: <local port> parameter is valid only for UDP socket type, for TCP sockets shall be left unused.</p> <p>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.</p> <p>Note: the command to be successful requests that: - the GPRS context 1 is correctly set with +CGDCONT - the authentication parameters are set (#USERID, #PASSW) the GPRS coverage is enough to permit a connection - the GPRS has been activated with AT#GPRS=1</p> <p>Note: If all parameters are omitted then the behaviour of Set command is the same as Read command.</p>
<p>AT#SKTD?</p>	<p>Read command reports the socket dial parameters values, in the format:</p> <p>AT#SKTD: <socket type>,<remote port>,<remote addr>,<closure type>,<local port></p>
<p>AT#SKTD=?</p>	<p>Test command returns the allowed values for the parameters.</p>
<p>Example</p>	<p>AT#SKTD=0,1024,"123.255.020.001",255 CONNECT</p>



#SKTD - Socket Dial	SELINT 2
	<p>AT#SKTD=1,1024,"123.255.020.001", ,1025 CONNECT <i>In this way my local port 1025 is opened to the remote port 1024</i></p> <p>AT#SKTD=0,1024,"www.telit.net", 255 CONNECT</p>
Note	The main difference between this command and #SKTOP is that this command does not interact with the GPRS context status, leaving it ON or OFF according to the #GPRS setting, therefore when the connection made with #SKTD is closed the context (and hence the local IP address) is maintained.

4.2.10.3.17. Socket Listen Ring - #E2SLRI

#E2SLRI - Socket Listen Ring	SELINT 2
AT#E2SLRI=[<n>]	<p>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.</p> <p>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</p>
AT#E2SLRI?	<p>Read command reports whether the Ring Indicator pin response to a Socket Listen connect is currently enabled or not, in the format:</p> <p>#E2SLRI: <n></p>
AT#E2SLRI=?	Test command returns the allowed values for parameter <status>.



4.2.10.3.18. Socket Listen - #SKTL

#SKTL - Socket Listen	SELINT 2
<p>AT#SKTL =[<mode>, <socket type>, <input port>, [<closure type>]]</p>	<p>Execution command opens/closes the socket listening for connection requests.</p> <p>Parameters: <mode> - socket mode 0 - closes socket listening 1 - starts socket listening <socket type> - socket protocol type 0 - TCP 1 - UDP <input port> - local host input port to be listened 0..65535 - port number <closure type> - socket closure behaviour for TCP 0 - local host closes immediately when remote host has closed (default) 255 - local host closes after an escape sequence (+++)</p> <p>Command returns the OK result code if successful.</p> <p>Note: the command to be successful requests that:</p> <ul style="list-style-type: none"> - the GPRS context 1 is correctly set with +CGDCONT - the authentication parameters are set (#USERID, #PASSW) - the GPRS coverage is enough to permit a connection - the GPRS has been activated with AT#GPRS=1 <p>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:</p> <p style="padding-left: 40px;">+CONN FROM: <remote addr></p> <p>Where: <remote addr> - host address of the remote machine that contacted the device.</p> <p>When the connection is established the CONNECT indication is given and the modem goes into data transfer mode.</p> <p>On connection close or when context is closed with #GPRS=0 the socket is closed and no listen is anymore active.</p> <p>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</p>
<p>AT#SKTL?</p>	<p>Read command returns the current socket listening status and the last settings of parameters <socket type>, <input port> and <closure type>, in the format:</p> <p>#SKTL: <status>,<socket type>,<input port>,<closure type></p>



#SKTL - Socket Listen	SELINT 2
	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	<pre> Activate GPRS AT#GPRS=1 +IP: ###.###.###.### OK Start listening AT#SKTL=1,0,1024 OK or AT#SKTL=1,0,1024,255 OK Receive connection requests +CONN FROM: 192.164.2.1 CONNECT exchange data with the remote host send escape sequence +++ NO CARRIER Now listen is not anymore active to stop listening AT#SKTL=0,0,1024, 255 OK </pre>
Note	The main difference between this command and #SKTD is that #SKTL does not contact any peer, nor does any interaction with the GPRS context status, leaving it ON or OFF according to the #GPRS setting, therefore when the connection made with #SKTL is closed the context (and hence the local IP address) is maintained.



4.2.10.3.19. Firewall Setup - #FRWL

#FRWL - Firewall Setup	SELINT 2
<p>AT#FRWL= [<action>, <ip_address>, <net_mask>]</p>	<p>Execution command controls the internal firewall settings.</p> <p>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</p> <p>Command returns OK result code if successful.</p> <p>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 matched, then the packet is accepted and the rule scan is finished; if criteria not matched for any chain the packet silently dropped.</p>
<p>AT#FRWL?</p>	<p>Read command reports the list of all ACCEPT chain rules registered in the Firewall settings in the format:</p> <p>#FRWL: <ip_addr>,<net_mask> #FRWL: <ip_addr>,<net_mask> OK</p>
<p>AT#FRWL=?</p>	<p>Test command returns the allowed values for parameter <action>.</p>
<p>Example</p>	<p><i>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</i> <i>We need to add the following chain to the firewall:</i> AT#FRWL=1,"197.158.1.1","255.255.0.0" OK</p>
<p>Note</p>	<p>For outgoing connections made with #SKTOP and #SKTD the remote host is dynamically inserted into the ACCEPT chain for all the connection duration. Therefore, the #FRWL command used only for defining the #SKTL behaviour, deciding which hosts allowed to connect to the local device.</p> <p>Rules not saved in NVM, at startup the rules list will be #FRWL: "000.000.000.000","000.000.000.000".</p>



4.2.10.3.20. GPRS Data Volume - #GDATAVOL

#GDATAVOL - GPRS Data Volume	SELINT 2
<p>AT#GDATAVOL= [<mode>]</p>	<p>Execution command reports, for every active PDP context, the amount of data the last GPRS session received and transmitted, or it will report the total amount of data received and transmitted during all past GPRS sessions, since last reset.</p> <p>Parameter: <mode> 0 - it resets the GPRS data counter for the all the available PDP contexts (1-16) 1 - it reports the last GPRS session data counter for the all the set PDP contexts (i.e. all the PDP contexts with APN parameter set using +CGDCONT), in the format:</p> <p>#GDATAVOL: <cidn>,<totn>,<sentn>,<receivedn>[<CR><LF> #GDATAVOL: <cidm>,<totm>,<sentm>,<receivedm>[...]]</p> <p>where: <cidn> - PDP context identifier 1..16 - numeric parameter which specifies a particular PDP context definition <totn> - number of bytes either received or transmitted in the last GPRS session for <cidn> PDP context; <sentn> - number of bytes transmitted in the last GPRS session for <cidn> PDP context; <receivedn> - number of bytes received in the last GPRS session for <cidn> PDP context; 2 - it reports the total GPRS data counter, since last reset, for the all the set PDP contexts (i.e. all the PDP context with APN parameter set using +CGDCONT), in the format:</p> <p>#GDATAVOL: <cidn>,<totn>,<sentn>,<receivedn>[<CR><LF> #GDATAVOL: <cidm>,<totm>,<sentm>,<receivedm>[...]]</p> <p>where: <cidn> - PDP context identifier 1..16 - numeric parameter which specifies a particular PDP context definition <totn> - number of bytes either received or transmitted, in every GPRS session since last reset, for <cidn> PDP context; <sentn> - number of bytes transmitted, in every GPRS session since last reset, for <cidn> PDP context; <receivedn> - number of bytes received, in every GPRS session since last reset, for <cidn> PDP context;</p> <p>Note: last GPRS session counters are not saved in NVM so they are loosen at power off. Note: total GPRS session counters are saved on NVM.</p>
<p>AT#GDATAVOL=?</p>	<p>Test command returns the range of supported values for parameter <mode>.</p>



4.2.10.3.21. ICMP Ping Support - #ICMP

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

4.2.10.3.22. Maximum TCP Payload Size - #TCPMAXDAT

#TCPMAXDAT – Maximum TCP Payload Size		SELINT 2
AT#TCPMAXDAT=<size>	Set command allows to set the maximum TCP payload size in TCP header options. Parameter: <size> - maximum TCP payload size accepted in one single TCP/IP datagram; it is sent in TCP header options in SYN packet. 0 - the maximum TCP payload size is automatically handled by module (default). 496..1420 - maximum TCP payload size	
AT#TCPMAXDAT?	Read command reports the current maximum TCP payload size, in the format: #TCPMAXDAT: <size>	
AT#TCPMAXDAT=?	Test command reports the supported range of values for parameter <size>	



4.2.10.3.23. TCP Reassembly - #TCPREASS

#TCPREASS – TCP Reassembly		SELINT 2
AT#TCPREASS= <n>	Set command enables/disables the TCP reassembly feature , in order to handle fragmented TCP packets. Parameter: <n> 1 - enable TCP reassembly feature(default)	
AT#TCPREASS?	Read command returns whether the TCP reassembly feature is enabled or not, in the format: #TCPREASS: <n>	
AT#TCPREASS=?	Test command returns the supported range of values for parameter <n>.	



4.2.10.4. Easy Scan® Extension AT Commands

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

Note: #CSURVEXT still not implemented, so all dependent settings work as if #CSURVEXT=0

4.2.10.4.1. Network survey - #CSURV

#CSURV - Network Survey	SELINT 2
<p>AT#CSURV[= [<s>,<e>]]</p>	<p>Execution command allows to perform a quick survey through channels belonging to the band selected by last #BND command issue, starting from channel <s> to channel <e>. Issuing AT#CSURV<CR>, a full band scan is performed.</p> <p>Parameters: <s> - starting channel <e> - ending channel</p> <p>After issuing the command the device responds with the string: Network survey started... and, after a while, a list of informations, one for each received carrier, is reported, each of them in the format: In 2G (For BCCH-Carrier) arfcn: <arfcn> bsic: <bsic> rxLev: <rxLev> ber: <ber> mcc: <mcc> mnc: <mnc> lac: <lac> cellId: <cellId> cellStatus: <cellStatus> numArfcn: <numArfcn> arfcn: [<arfcn1> ..[<arfcn64>]] [numChannels: <numChannels> array: [<ba1> ..[<ba32>]] [pbch: <pbch> [nom: <nom> rac: <rac> spgc: <spgc> pat: <pat> nco: <nco> t3168: <t3168> t3192: <t3192> drxmax: <drxmax> ctrlAck: <ctrlAck> bsCVmax: <bsCVmax> alpha: <alpha> pcMeasCh: <pcMeasCh>]]] <CR><LF><CR><LF><CR><LF></p> <p>where: <arfcn> - C0 carrier assigned radio channel (BCCH - Broadcast Control Channel). <bsic> - base station identification code; if #CSURVF last setting is 0, <bsic> is a decimal number, else it is a 2-digits octal number. <rxLev> - decimal number; it is the reception level (in dBm). <ber> - decimal number; it is the bit error rate (in %). <mcc> - hexadecimal 3-digits number; it is the mobile country code. <mnc> - hexadecimal 2-digits number; it is the mobile network code.</p>



	<p><lac> - location area code; if #CSURVF last setting is 0, <lac> is a decimal number, else it is a 4-digits hexadecimal number.</p> <p><cellId> - cell identifier; if #CSURVF last setting is 0, <cellId> is a decimal number, else it is a 4-digits hexadecimal number.</p> <p><cellStatus> - string type; it is the cell status</p> <p>..CELL_SUITABLE - C0 is a suitable cell.</p> <p>CELL_LOW_PRIORITY - the cell is low priority based on the received system information.</p> <p>CELL_FORBIDDEN - the cell is forbidden.</p> <p>CELL_BARRED - the cell is barred based on the received system information.</p> <p>CELL_LOW_LEVEL - the cell <rxLev> is low.</p> <p>CELL_OTHER - none of the above e.g. exclusion timer running, no BCCH available...etc.</p> <p><numArfcn> - number of valid channels in the Cell Channel Description.</p> <p><arfcn> - arfcn of a valid channel in the Cell Channel Description (<i>n</i> is in the range 1..<numArfcn>)</p> <p><numArfcn> - decimal number; it is the number of valid channels in the Cell Channel Description.</p> <p><arfcn> - decimal number; it is the arfcn of a valid channel in the Cell Channel Description (<i>n</i> is in the range 1..<numArfcn>).</p> <p><numChannels> - decimal number; it is the number of valid channels in the BCCH Allocation list; the output of this information for non-serving cells depends on last #CSURVEXT setting:</p> <p>If #CSURVEXT=0 this information is displayed only for serving cell.</p> <p>If #CSURVEXT=1 or 2 this information is displayed also for every valid scanned BCCH carrier.</p> <p><ban> - decimal number; it is the arfcn of a valid channel in the BA list (<i>n</i> is in the range 1..<numChannels>); the output of this information for non-serving cells depends on last #CSURVEXT setting:</p> <p>If #CSURVEXT=0 this information is displayed only for serving cell.</p> <p>If #CSURVEXT=1 or 2 this information is displayed also for every valid scanned BCCH carrier.</p> <p><i>(The following informations will be printed only if GPRS is supported in the cell)</i></p> <p><pbccch> - packet broadcast control channel</p> <p>0 - pbccch not activated on the cell</p> <p>1 - pbccch activated on the cell</p> <p><nom> - network operation mode</p> <p>1</p> <p>2</p> <p>3</p> <p><rac> - routing area code</p> <p>0..255 -</p> <p><spgc> - SPLIT_PG_CYCLE support</p> <p>..0 - SPLIT_PG_CYCLE is not supported on CCCH on this cell</p> <p>..1 - SPLIT_PG_CYCLE is supported on CCCH on this cell</p> <p><pat> - priority access threshold</p>
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	<p>0 - 3..6 - <nco> - network control order 0..2 - <t3168> - timer 3168 <t3192> - timer 3192 <drxmax> - discontinuous reception max time (in seconds) <ctrlAck> - packed control ack <bsCVmax> - blocked sequenc countdown max value <alpha> - alpha parameter for power control <pcMeasCh> - type of channel which shall be used for downlink measurements for power control 0 - BCCH 1 - PDCH (For non BCCH-Carrier) arfcn: <arfcn> rxLev: <rxLev></p> <p>where: <arfcn> - decimal number; it is the RF channel <rxLev> - decimal number; it is the reception level (in dBm) In 3G uarfcn: <uarfcn> rxLev: <rxLev> mcc: <mcc> mnc: <mnc> scr code: <scrcode> cellId: <cellId> lac: <lac> cellStatus: <cellStatus> <CR><LF><CR><LF><CR><LF></p> <p>where: <uarfcn> - The carrier frequency is designated by the UTRA Absolute Radio Frequency Channel Number. <rxLev> - decimal number; it is the reception level (in dBm). <mcc> - hexadecimal 3-digits number; it is the mobile country code. <mnc> - hexadecimal 2-digits number; it is the mobile network code. <scrcode> - decimal number; it is the scrambling code <cellId> - cell identifier; if #CSURVF last setting is 0, <cellId> is a decimal number, else it is a 4-digits hexadecimal number. <lac> - location area code; if #CSURVF last setting is 0, <lac> is a decimal number, else it is a 4-digits hexadecimal number. <cellStatus> - string type; it is the cell status. CELL_SUITABLE - C0 is a suitable cell. CELL_LOW_PRIORITY - the cell is low priority based on the received system information. CELL_FORBIDDEN - the cell is forbidden. CELL_BARRED - the cell is barred based on the received system information. CELL_LOW_LEVEL - the cell <rxLev> is low. CELL_OTHER - none of the above e.g. exclusion timer running, no BCCH available...etc. Lastly, the #CSURV output ends in two ways, depending on the last #CSURVF setting: if #CSURVF=0 or #CSURVF=1</p>
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	<p>The output ends with the string: Network survey ended if #CSURVF=2 the output ends with the string: Network survey ended (Carrier: <NoARFCN> BCCh: <NoBCCh>) Where: <NoARFCN> - number of scanned frequencies <NoBCCH> - number of found BCCh</p>
<p>Example</p>	<pre>(2G) AT#CSURV Network survey started... arfcn: 48 bsic: 24 rxLev: -52 ber: 0.00 mcc: 610 mnc: 1 lac: 33281 cellId: 3648 cellStatus: CELL_SUITABLE numArfcn: 2 arfcn: 30 48 numChannels: 5 array: 14 19 22 48 82 arfcn: 14 rxLev: 8 Network survey ended OK (wcdma) at#csurv Network survey started ... uarfcn: 10812 rxLev: -87 mcc: 450 mnc: 08 scr code: 6528 cellId: 10683976 lac: 5121 cellStatus: CELL_LOW_PRIORITY uarfcn: 10713 rxLev: -87 mcc: 450 mnc: 05 scr code: 1200 cellId: 2171648 lac: 8209 cellStatus: CELL_LOW_PRIORITY Network survey ended OK</pre>
<p>Note</p>	<p>1. The command is executed within max. 2 minute.</p>



4.2.10.4.2. Network Survey (Numeric Format) - #CSURVC

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



	<p><numChannels> - decimal number; it is the number of valid channels in the BCCH Allocation list; the output of this information for non-serving cells depends on last #CSURVEXT setting: If #CSURVEXT=0 this information is displayed only for serving cell If #CSURVEXT=1 or 2 this information is displayed also for every valid scanned BCCH carrier.</p> <p><ban> - decimal number; it is the arfcn of a valid channel in the BA list (<i>n</i> is in the range 1..<numChannels>); the output of this information for non-serving cells depends on last #CSURVEXT setting: If #CSURVEXT=0 this information is displayed only for serving cell If #CSURVEXT=1 or 2 this information is displayed also for every valid scanned BCCH carrier.</p> <p><i>(The following informations will be printed only if GPRS is supported in the cell)</i></p> <p><pbcc> - packet broadcast control channel 0 - pbcc not activated on the cell 1 - pbcc activated on the cell</p> <p><nom> - network operation mode 1 2 3</p> <p><rac> - routing area code 0..255</p> <p><spgc> - SPLIT_PG_CYCLE support ..0 - SPLIT_PG_CYCLE is not supported on CCCH on this cell ..1 - SPLIT_PG_CYCLE is supported on CCCH on this cell</p> <p><pat> - priority access threshold. 0 3..6</p> <p><nco> - network control order. 0..2 -</p> <p><t3168> - timer 3168. <t3192> - timer 3192. <drxmax> - discontinuous reception max time (in seconds). <ctrlAck> - packed control ack. <bsCVmax> - blocked sequenc countdown max value. <alpha> - alpha parameter for power control. <pcMeasCh> - type of channel which shall be used for downlink measurements for power control. 0 - BCCH 1 - PDCH (For non BCCH-Carrier) <arfcn>,<rxLev> where: <arfcn> - decimal number; it is the RF channel <rxLev> - decimal number; it is the reception level (in dBm)</p>
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	<p>In 3G <code><uarfcn>,<rxLev>,<mcc>,<mnc>,<scrcode>,<cellId>,<lac>,<cellStatus></code> <code><CR><LF><CR><LF><CR><LF></code></p> <p>where: <code><uarfcn></code> - The carrier frequency is designated by the UTRA Absolute Radio Frequency Channel Number <code><rxLev></code> - decimal number; it is the reception level (in dBm) <code><mcc></code> - hexadecimal 3-digits number; it is the mobile country code <code><mnc></code> - hexadecimal 2-digits number; it is the mobile network code <code><scrcode></code> - decimal number; it is the scrambling code <code><cellId></code> - cell identifier; if #CSURVF last setting is 0, <code><cellId></code> is a decimal number, else it is a 4-digits hexadecimal number <code><lac></code> - location area code; if #CSURVF last setting is 0, <code><lac></code> is a decimal number, else it is a 4-digits hexadecimal number <code><cellStatus></code> - string type; it is the cell status ..CELL_SUITABLE - C0 is a suitable cell. CELL_LOW_PRIORITY - the cell is low priority based on the received system information. CELL_FORBIDDEN - the cell is forbidden. CELL_BARRED - the cell is barred based on the received system information. CELL_LOW_LEVEL - the cell <code><rxLev></code> is low. CELL_OTHER - none of the above e.g. exclusion timer running, no BCCH available...etc. The last information from #CSURVC depends on the last #CSURVF setting: When #CSURVF=0 or #CSURVF=1 The output ends with the string “Network survey ended“ when #CSURVF=2 the output ends with the string “Network survey ended (Carrier: <NoARFCN> BCCh: <NoBCCh>)” Where: <code><NoARFCN></code> - number of scanned frequencies <code><NoBCCH></code> - number of found BCCh</p>
<p>Example</p>	<p>AT#CSURVC Network survey started... 48,24,-52,0.00,610,1,33281,3648,0,2,30 48,5,14 19 22 48 82 14,8 Network survey ended OK</p>
<p>Note</p>	<p>The command is executed within max. 2 minute. The information provided by #CSURVC is the same as that provided by #CSURV. The difference is that the output of #CSURVC is in numeric format only.</p>



4.2.10.4.3. Network Survey of User Defined Channels - #CSURVU

#CSURVU - Network Survey Of User Defined Channels		SELINT 2
<p>AT#CSURVU=[<ch1>[,<ch2>[,... [,<ch10>]]]]</p>	<p>Execution command allows performing a quick survey through the given channels. The range of available channels depends on the last #BND issue. The result format is like command #CSURV. In 4G (partly implemented) Currently work only if module camped on LTE cell.</p> <p>Parameters: <chn> - channel number (ARFCN (in case of 2G), UARFCN (in case of 3G), EARFCN (in case of 4G)) Note: the <chn> must be selected in same RAT.</p>	
<p>Example</p>	<p>AT#CSURVU=59,110 Network survey started... arfcn: 59 bsic: 16 rxLev: -76 ber: 0.00 mcc: 546 mnc: 1 lac: 54717 cellId: 21093 cellStatus: CELL_SUITABLE numArfcn 2 arfcn: 36 59 arfcn: 110 rxLev: -107 Network survey ended OK</p>	
<p>Note</p>	<p>The command is executed within max. 2 minute.</p>	

4.2.10.4.4. Network Survey of User Defined Channels (Numeric Format) - #CSURVUC

#CSURVUC - Network Survey Of User Defined Channels (Numeric Format)		SELINT 2
<p>AT#CSURVUC=[<ch1>[,<ch2>[,... [,<ch10>]]]]</p>	<p>Execution command allows performing a quick survey through the given channels. The range of available channels depends on the last #BND issue. The result format is like command #CSURVC. In 4G (partly implemented) Currently work only if module camped on LTE cell.</p> <p>Parameters: <chn> - channel number (ARFCN (in case of 2G), UARFCN (in case of 3G), EARFCN (in case of 4G)) Note: the <chn> must be selected in same RAT.</p>	
<p>Example</p>	<p>AT#CSURVUC=59,110 Network survey started... 59,16,-76,0.00,546,1,54717,21093,0,2,36 59 110,-107 Network survey ended OK</p>	
<p>Note</p>	<p>The command is executed within max. 2 minute. The information provided by #CSURVUC is the same as that provided by #CSURVU. The difference is that the output of #CSURVUC is in numeric format only.</p>	



4.2.10.4.5. **BCCH Network Survey - #CSURVB**

#CSURVB - BCCH Network Survey		SELINT 2
AT#CSURVB= [<n>]	<p>Execution command performs a quick network survey through M (maximum number of available frequencies depending on last selected band and RAT) channels. The survey stops as soon as <n> BCCH carriers are found. The result format is like command #CSURV.</p> <p>Parameter: <n> - number of desired BCCH carriers 1..M</p>	
AT#CSURVB=?	<p>Test command reports the range of values for parameter <n> in the format: (1-M) where M is the maximum</p>	

4.2.10.4.6. **BCCH Network Survey (Numeric Format) - #CSURVBC**

#CSURVBC - BCCH Network Survey (Numeric Format)		SELINT 2
AT#CSURVBC= [<n>]	<p>Execution command performs a quick network survey through M (maximum number of available frequencies depending on last selected band and RAT) channels. The survey stops as soon as <n> BCCH carriers are found. The result is given in numeric format and is like command #CSURVC.</p> <p>Parameter: <n> - number of desired BCCH carriers 1..M</p>	
AT#CSURVBC=?	<p>Test command reports the range of values for parameter <n> in the format: (1-M)</p> <p>Where M is the maximum number of available frequencies depending on last selected band and RAT.</p>	



4.2.10.4.7. Network Survey Format - #CSURVF

#CSURVF - Network Survey Format	SELINT 2
AT#CSURVF= [<format>]	Set command controls the format of the numbers output by all the Easy Scan®. Parameter: <format> - numbers format 0 - Decimal 1 - Hexadecimal values, no text (for formats 0 and 1 - the output ends with the string: "Network survey ended") 2 - Hexadecimal values with text the output ends with the string: Network survey ended (Carrier: <NoARFCN> BCCh: <NoBCCh>) Where: <NoARFCN> - number of scanned frequencies <NoBCCH> - number of found BCCh
AT#CSURVF?	Read command reports the current number format, as follows: #CSURVF: <format>
AT#CSURVF=?	Test command reports the supported range of values for the parameter <format>.

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

#CSURVNLF - <CR><LF> Removing On Easy Scan® Commands Family	SELINT 2
AT#CSURVNLF= [<value>]	Set command enables/disables the automatic <CR><LF> removing from each information text line. Parameter: <value> 0 - disables <CR><LF> removing; they'll be present in the information text (factory default) 1 - remove <CR><LF> from information text
AT#CSURVNLF?	Read command reports whether automatic <CR><LF> removing is currently enabled or not, in the format: <value>
AT#CSURVNLF=?	Test command reports the range of values for parameter <value>.



4.2.10.4.9. PLMN Network Survey - #CSURVP

#CSURVP - PLMN Network Survey		SELINT 2
AT#CSURVP= <plmn>	<p>Execution command performs a quick network survey through channels. The survey stops as soon as a BCCH carriers belonging to the selected PLMN is found.</p> <p>The result format is like command #CSURV.</p> <p>Parameter: <plmn> - the desired PLMN in numeric format</p>	
AT#CSURVP=?	Test command returns OK	

4.2.10.4.10. PLMN Network Survey (Numeric Format) - #CSURVPC

#CSURVPC - PLMN Network Survey (Numeric Format)		SELINT 2
AT#CSURVPC= <plmn>	<p>Execution command performs a quick network survey through channels. The survey stops as soon as a BCCH carriers belonging to the selected PLMN is found.</p> <p>The result is given in numeric format and is like command #CSURVC.</p> <p>Parameter: <plmn> - the desired PLMN in numeric format</p>	
AT#CSURVPC=?	Test command returns OK	



4.2.10.4.11. Manual Closed Subscriber Group Search- #MCSGS

#MCSGS – Manual Closed Subscriber Group Search	
AT#MCSGS	<p>Execution command used to request Manual CSG Search.</p> <p>If CSG search launched successfully returns OK.</p> <p>Note 1: if module registered on VPLMN return error: "operation not supported" Note 2: if previous powerup/periodic/manual CSG search didn't finished yet return error: "wrong state" Note 3: if used inappropriate SIM or file EFCSGL empty return error: "SIM wrong" Note 4: periodic CSG search run every 125 min (or 125 min after last successful manual CSG search)</p>
AT#MCSGS?	<p>Read command reports the state of CSG search and CSG registration.</p> <p>#MCSGS:<CSG_search_state>,<CSG_registration_state></p> <p><CSG_search_state> 0 – No active CSG search 1- power-up CSG search 2 – periodic CSG search 3 – manual CSG search</p> <p><CSG_registration_state> 0 – inactive CSG registration 1 – active CSG registration</p>
Note	for AT&T



4.2.10.5. SIM Toolkit AT Commands

4.2.10.5.1. SIM Toolkit Interface Activation - #STIA

#STIA - SIM Toolkit Interface Activation	SELINT 2
<p>AT#STIA= [<mode> [,<timeout>]]</p>	<p>Set command is used to activate the SAT sending of unsolicited indications when a proactive command is received from SIM.</p> <p>Parameters: <mode> 0 - disable SAT (default) 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 without unsolicited indication #STN and 3GPP TS 23.038 alphabet used 18 - enable SAT and extended unsolicited indication #STN (see #STGI) and 3GPP TS 23.038 alphabet used 19 - enable SAT and reduced unsolicited indication #STN (see #STGI)and 3GPP TS 23.038 alphabet used 33 - enable SAT without unsolicited indication #STN and UCS2 alphabet used 34 - enable SAT and extended unsolicited indication #STN (see #STGI)and UCS2 alphabet used 35 - enable SAT and reduced unsolicited indication #STN (see #STGI)and UCS2 alphabet used</p> <p><timeout> - time-out for user responses 1..255 - time-out in minutes (default 10). Any ongoing (but unanswered) proactive command will be aborted automatically after <timeout> minutes. In this case the terminal response is either “ME currently unable to process command”, or if applicable, “No response from user”.</p> <p>In addition an unsolicited indication will be sent to the external application: #STN: <cmdTerminateValue></p> <p>where: <cmdTerminateValue> is defined as <cmdType> + terminate offset; the terminate offset equals 100.</p> <p>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:</p> <ul style="list-style-type: none"> 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: <p>#STN: <cmdType></p>



- if <mode> parameter of #STIA command has been set to 2 (extended unsolicited indication) the format of the unsolicited indication depends on the specific command:

if <cmdType>=1 (REFRESH)

an unsolicited notification will be sent to the user:

#STN: <cmdType>,<refresh type>

where:

<refresh type>

- 0 - SIM Initialization and Full File Change Notification.
- 1 - File Change Notification.
- 2 - SIM Initialization and File Change Notification.
- 3 - SIM Initialization.
- 4 - SIM Reset.

In this case neither #STGI nor #STSR commands are required:

- AT#STGI is accepted anyway.
- AT#STSR=<cmdType>,0 will answer OK but do nothing.

if <cmdType>=17 (SEND SS)

if <cmdType>=19 (SEND SHORT MESSAGE)

if <cmdType>=20 (SEND DTMF)

if <cmdType>=32 (PLAY TONE)

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

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

where:

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

In these cases neither #STGI nor #STSR commands are required:

- AT#STGI is accepted anyway.
- AT#STSR=<cmdType>.
0 will answer OK but do nothing.

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

#STN: 119

if <cmdType>=33 (DISPLAY TEXT)

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

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

where:

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

0..255 - used as a bit field:

bit 1:



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

In this case:

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

if **<cmdType>=40** (SET UP IDLE MODE TEXT)

an unsolicited notification will be sent:

#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.

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

an unsolicited notification will be sent to the user:

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

where:

<text> - optional text string sent by SIM

In this case:

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

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

an unsolicited notification will be sent:

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

where:

<event list mask> - (optional)hexadecimal number representing the list of events to monitor (see GSM 11.14)

- '00' = MT call



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

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

In these cases neither #STGI nor #STSR commands are required:

- AT#STGI is accepted anyway.
- AT#STSR=<cmdType>.
0 will answer OK but do nothing.

All other commands:

the unsolicited indication will report just the proactive command type:

#STN: <cmdType>

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

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

Where:

<cmdTerminateValue>

- 150 - SMS control response
- 160 - call/SS/USSD response

<Result>

- 0 - Call/SMS not allowed
- 1 - Call/SMS allowed
- 2 - Call/SMS allowed with modification

<Number> - Called number, Service Center Address or SS String in ASCII format.

<MODestAddr> - MO destination address in ASCII format.

<TextInfo> - alpha identifier provided by the SIM in ASCII format.

Note: an unsolicited result code

#STN: 254



	<p>is sent if the user has indicated the need to end the proactive SIM application session (AT#STSR=<cmdType>,16 i.e. “proactive SIM application session terminated by the user” according to GSM 11.14). The TA does not need to respond directly, i.e. AT#STSR is not required. It is possible to restart the SAT session from the main menu again with the command AT#STGI=37. Note: The settings are saved on user profile and available on following reboot. SIM Toolkit activation/deactivation is only performed at power on. Note: from version 10.0x.xx4 the set command returns ERROR when USIM is enabled (AT#ENAUSIM? returns 1).</p>
<p>AT#STIA?</p>	<p>Read command can be used to get information about the SAT interface in the format: #STIA: <state>,<mode>,<timeout>,<SatProfile></p> <p>where: <state> - the device is in one of the following state: 0 - SIM has not started its application yet 1 - SIM has started its application (SAT main menu ready) <mode> - SAT and unsolicited indications enabling status (see above) <timeout> - time-out for user responses (see above) <SatProfile> - SAT Terminal Profile according to GSM 11.14, i. e. the list of SIM Application Toolkit facilities that are supported by the ME. The profile cannot be changed by the TA. Note: In SAT applications usually an SMS message is sent to the network provider containing service requests, e.g. to send the latest news. The provider returns a message with the requested information. Before activating SAT it is recommended to set the SMS text mode with command AT+CMGF=1 and to enable unsolicited indications for incoming SMS messages with command +CNMI.</p>
<p>AT#STIA=?</p>	<p>Test command returns the range of available values for the parameters <mode> and <timeout>.</p>
<p>Note</p>	<p>Just one instance at a time, the one which first issued AT#STIA=<i>n</i> (with <i>n</i> 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.</p>
<p>Note</p>	<p>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).</p>



4.2.10.5.2. SIM Toolkit Information - #STGI

#STGI - SIM Toolkit Information	SELINT 2
<p>AT#STGI= [<cmdType>]</p>	<p>#STGI set command is used to request the parameters of a proactive command from the ME.</p> <p>Parameter: <cmdType> - proactive command ID according to GSM 11.14 (decimal). These are only those command types that use the AT interface. SAT commands which are not using the AT interface (not MMI related SAT commands, e.g. PROVIDE LOCAL INFORMATION) are executed without sending any indication to the user:</p> <ul style="list-style-type: none"> 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 33 - DISPLAY TEXT 34 - GET INKEY 35 - GET INPUT 36 - SELECT ITEM 37 - SET UP MENU 40 - SET UP IDLE MODE TEXT <p>Requested command parameters are sent using an #STGI indication: #STGI: <parameters></p> <p>Where: <parameters> depends upon the ongoing proactive command as follows: if <cmdType>=1 (REFRESH) #STGI: <cmdType>,<refresh type></p> <p>where: <refresh type></p> <ul style="list-style-type: none"> 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 <p>if <cmdType>=5 (SET UP EVENT LIST) #STGI: <cmdType>,<event list mask></p> <p>where: <event list mask> - hexadecimal number representing the list of events to monitor (see GSM 11.14): - '00' = MT call - '01' = Call connected</p>



	<p>bit 8: 0 - clear message after a delay 1 - wait for user to clear message <text> - text to be displayed to user <duration> - Time duration to be displayed to user if <cmdType>=34 (GET INKEY) #STGI: <cmdType>,<commandDetails>,<text></p> <p>where: <commandDetails> - unsigned Integer used as a bit field. 0..255 - used as a bit field:</p> <p>bit 1: 0 - Digits only (0-9, *, # and +) 1 - Alphabet set;</p> <p>bit 2: 0 - SMS default alphabet (GSM character set) 1 - UCS2 alphabet</p> <p>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</p> <p>bits 4 to 7: 0</p> <p>bit 8: 0 - No help information available 1 - Help information available <text> - String as prompt for text.</p> <p>if <cmdType>=35 (GET INPUT) #STGI: <cmdType>,<commandDetails>,<text>,<responseMin>,<responseMax>[,<defaultText>]</p> <p>where: <commandDetails> - unsigned Integer used as a bit field. 0..255 - used as a bit field:</p> <p>bit 1: 0 - Digits only (0-9, *, #, and +) 1 - Alphabet set</p> <p>bit 2: 0 - SMS default alphabet (GSM character set) 1 - UCS2 alphabet</p> <p>bit 3: 0 - ME may echo user input on the display 1 - User input shall not be revealed in any way. Hidden entry mode (see GSM 11.14) is only available when using digit input. In hidden entry mode only characters ('0'-'9', '*' and '#') are allowed.</p>
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	<p>bit 4: 0 - User input to be in unpacked format 1 - User input to be in SMS packed format</p> <p>bits 5 to 7: 0</p> <p>bit 8: 0 - No help information available 1 - Help information available</p> <p><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</p> <p>if <cmdType>=36 (SELECT ITEM) The first line of output is: #STGI: <cmdType>,<commandDetails>,<numOfItems>[,<titleText>] <CR><LF></p> <p>One line follows for every item, repeated for <numOfItems>: #STGI: <cmdType>,<itemId>,<itemText>[,<nextActionId>]</p> <p>where: <commandDetails> - unsigned Integer used as a bitfield 0..255 - used as a bit field:</p> <p>bit 1: 0 - Presentation type is not specified 1 - Presentation type is specified in bit 2</p> <p>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'</p> <p>bit 3: 0 - No selection preference 1 - Selection using soft key preferred</p> <p>bits 4 to 7: 0</p> <p>bit 8: 0 - No help information available 1 - Help information available</p> <p><numOfItems> - number of items in the list <titleText> - string giving menu title <itemId> - item identifier 1..<numOfItems> <itemText> - title of item</p>
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	<p><nextActionId> - the next proactive command type to be issued upon execution of the menu item. 0 - no next action information available.</p> <p>if <cmdType>=37 (SET UP MENU) The first line of output is: #STGI:<cmdType>,<commandDetails>,<numOfItems>,<titleText> <CR><LF></p> <p>One line follows for every item, repeated for <numOfItems>:</p> <p>#STGI: <cmdType>,<itemId>,<itemText>[,<nextActionId>]</p> <p>where: <commandDetails> - unsigned Integer used as a bitfield 0..255 - used as a bit field: bit 1: 0 - no selection preference 1 - selection using soft key preferred bit 2 to 7: 0 bit 8: 0 - no help information available 1 - help information available <numOfItems> - number of items in the list <titleText> - string giving menu title <itemId> - item identifier 1..<numOfItems> <itemText> - title of item <nextActionId> - the next proactive command type to be issued upon execution of the menu item. 0 - no next action information available.</p> <p>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.</p>
AT#STGI?	<p>The read command can be used to request the currently ongoing proactive command and the SAT state in the format #STGI: <state>,<cmdType></p> <p>where: <state> - SAT interface state (see #STIA) <cmdType> - ongoing proactive command An error message will be returned if there is no pending command.</p>
AT#STGI=?	<p>Test command returns the range for the parameters <state> and <cmdType>.</p>
Note	<p>The unsolicited notification sent to the user:</p>



	<p>#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.</p> <p>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.</p> <p>The unsolicited notification sent to the user: #STN:237</p> <p>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.</p>
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4.2.10.5.3. SIM Toolkit Send Response - #STSR

#STSR - SIM Toolkit Send Response	SELINT 2
<p>AT#STSR= [<cmdType>, <userResponse> [,<data>]]</p>	<p>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.</p> <p>Parameters: <cmdType> - integer type; proactive command ID according to GSM 11.14 (see #STGI) <userResponse> - action performed by the user 0 - command performed successfully (call accepted in case of call setup) 16 - proactive SIM session terminated by user 17 - backward move in the proactive SIM session requested by the user 18 - no response from user 19 - help information required by the user 20 - USSD/SS Transaction terminated by user 32 - TA currently unable to process command 34 - user has denied SIM call setup request 35 - user cleared down SIM call before connection or network release <data> - data entered by user, depending on <cmdType>, only required if <Result> is 0: <i>Get Inkey</i> <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) <i>Get Input</i> <data> - contains the string of characters entered by the user (see above) <i>Select Item</i> <data> - contains the item identifier selected by the user Note: Use of icons is not supported. All icons related actions will respond with no icon available.</p>
<p>AT#STSR?</p>	<p>The read command can be used to request the currently ongoing proactive command and the SAT state in the format: #STSR: <state>,<cmdType></p> <p>where: <state> - SAT interface state (see #STIA)</p>



	<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>.

4.2.10.6. SAP AT Commands Set

4.2.10.6.1. Remote SIM Enable - #RSEN

#RSEN – Remote SIM Enable	SELINT 2
AT#RSEN=<mode>[,<sapformat>[,<role>[,<muxch>[,<beacon>]]]]	<p>Set command used to enable/disable the Remote SIM feature. The command returns ERROR if requested on a non-multiplexed interface.</p> <p>Parameter: <mode> 0 - disable 1 - enable <sapformat> 0 - X-SAP (unsupported) 1 - binary SAP (default) <role> 0 - remote SIM Client (default) 1 - remote SIM Server (unsupported) <muxch>- MUX Channel Number; mandatory if <mode>=1 and <sapformat>=1 1..3 <beacon>- retransmission timer of SAP Connection Request 0 - only one transmission (default) 1..100 - timer interval in seconds.</p> <p>Notes: If the module has a SIM inserted, when it receives the enable Command: - de-register from the actual network - de-initialize the current SIM.</p> <p>NOTE for <sapformat>=1(binary SAP): while RSEN is activate SAP connection status is signalled with following URC:</p> <p>#RSEN: <conn> Where: <conn>- connection status 0 - disconnected 1 - connected</p>
AT#RSEN?	Read command returns the connection status of Remote SIM feature.
AT#RSEN=?	Test command returns all supported values of Remote SIM Enable command.



4.2.10.7.3. E-mail Authentication User Name - #EUSER

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



4.2.10.7.4. E-mail Authentication Password - #EPASSW

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



4.2.10.7.5. E-mail Sending With GPRS Context Activation - #SEMAIL

#SEMAIL - E-mail Sending With GPRS Context Activation		SELINT 2
AT#SEMAIL= [<da>,<subj>	<p>Execution command activates a GPRS context, if not previously activated by #EMAILACT, and sends an e-mail message. The GPRS context is deactivated when the e-mail is sent.</p> <p>Parameter: <da> - destination address, string type. <subj> - subject of the message, string type.</p> <p>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</p> <p>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.</p>	
AT#SEMAIL=?	Test command returns the OK result code.	
Example	AT#SEMAIL="me@myaddress.com","subject of the mail" >message body... this is the text of the mail message... CTRL-Z ..wait.. OK <i>Message has been sent.</i>	
Note	This command is obsolete. It's suggested to use the couple #EMAILACT and #EMAILD instead of it.	



4.2.10.7.6. E-mail GPRS Context Ativation - #EMAILACT

#EMAILACT - E-mail GPRS Context Ativation	SELINT 2
AT#EMAILACT= [<da>,<subj>	Execution command deactivates/activates the GPRS context, eventually proceeding with the authentication with the parameters given with #PASSW and #USERID. Parameter: <mode> - GPRS context activation mode 0 - GPRS context deactivation request 1 - GPRS context activation request
AT#EMAILACT?	Read command reports the current status of the GPRS context for the e-mail, in the format: #EMAILACT: <status> where: <status> 0 - GPRS context deactivated. 1 - GPRS context activated
AT#EMAILACT=?	Test command returns the allowed values for parameter <mode>.
Example	AT#EMAILACT=1 OK <i>Now GPRS Context has been activated</i> AT#EMAILACT=0 OK <i>Now GPRS context has been deactivated.</i>



4.2.10.7.7. E-mail Sending - #EMAILD

#EMAILD - E-mail Sending	SELINT 2
<p>AT#EMAILD= [<da>,<subj></p>	<p>Execution command sends an e-mail message if GPRS context has already been activated with AT#SGACT=1,1 or AT#EMAILACT=1 or AT#GPRS=1.</p> <p>Parameter: <da> - destination address, string type.</p> <p>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.</p> <p>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.</p>
<p>AT#EMAILD=?</p>	<p>Test command returns the OK result code.</p>
<p>Example</p>	<p>AT#SEMAIL="me@myaddress.com", "subject of the mail" >message body... this is the text of the mail message... CTRL-Z</p> <p>..wait.. OK</p> <p><i>Message has been sent.</i></p>
<p>Note</p>	<p>The only difference between this command and the #SEMAIL is that this command does not interact with the GPRS context status, leaving it ON or OFF according to the #EMAILACT setting, thus, when the connection made with #EMAILD is closed, the context status is maintained.</p>



4.2.10.7.8. E-mail Parameters save - #ESAV

#ESAV - E-mail Parameters Save		SELINT 2
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.	

4.2.10.7.9. E-mail Parameters Reset - #ERST

#ERST - E-mail Parameters Reset		SELINT 2
AT#ERST	Execution command resets the actual e-mail parameters in the NVM of the 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.	

4.2.10.7.10. SMTP Read Message - #EMAILMSG

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



4.2.10.8. Remote AT

4.2.10.8.1. Enable SMS AT Run service - #SMSATRUN

#SMSATRUN – Enable SMS AT Run service		SELINT 2
AT#SMSATRUN= <mod>	<p>Set command enables/disables the SMS AT RUN service.</p> <p>Parameter: <mod> 0: Service Disabled 1: Service Enabled</p> <p>Note1: When the service is active on a specific AT instance (see AT#SMSATRUNCFG), that instance cannot be used for any other scope. Note2: the current settings are stored in NVM.</p>	
AT#SMSATRUN?	Read command returns the current settings of <mode> in the format: # SMSATRUN: <mod>	
AT#SMSATRUN=?	Test command returns the supported values for the SMSATRUN parameters.	

4.2.10.8.2. Set SMS AT Run Parameters - #SMSATRUNCFG

#SMSATRUNCFG – Set SMS AT Run Parameters		SELINT 2
AT#SMSATRUNCFG= <instance> [,<urcmod> [,<timeout>]]	<p>Set command configures the SMS AT RUN service.</p> <p>Parameter: <instance>: AT instance that will be used by the service to run the AT Command. Range 1 - 3, default 1. 1 – UART 2 – USB1 3 – USB2</p> <p><urcmod>: 0 – disable unsolicited message 1 - Enable an unsolicited message when an AT commands 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></p> <p>Note: the current settings are stored in NVM.</p>	
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	



4.2.10.8.3. SMS AT Run White List - AT#SMSATWL

#SMSATWL – SMS AT Run White List	SELINT 2
<p>AT#SMSATWL= <action> ,<index> [,<entryType> [,<string>]]</p>	<p>Set command to handle the white list.</p> <p><action>: 0 – Add an element to the WhiteList 1 – Delete an element from the WhiteList 2 – Print and element of the WhiteList</p> <p><index>: Index of the WhiteList. Range 1-8</p> <p><entryType>: 0 – Phone Number 1 – Password --> Future intention not supported for SMS at.</p> <p>NOTE: A maximum of two Password Entry can be present at same time in the white List</p> <p><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</p> <p>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.</p>
<p>AT#SMSATWL?</p>	<p>Read command returns the list elements in the format: #SMSATWL: [<entryType>,<string>]</p>
<p>AT#SMSATWL=?</p>	<p>Test command returns the supported values for the parameter <action>, <index> and <entryType></p>



4.2.10.9. GPS AT Commands Set

4.2.10.9.1. GPS Power Management - \$GPSP

\$GPSP – GPS Power Management		SELINT 2
AT\$GPSP = [<mode>]	Set command allows to manage power-up or down of the GPS controller Parameter: <status> 0 - GPS controller is powered down (default) 1 - GPS controller is powered up Note: the current setting is stored through \$GPSSAV	
AT\$GPSP?	Read command reports the current value of the <status> parameter, in the format: \$GPSP: <status>	
AT\$GPSP=?	Test command reports the range of supported values for parameter <status>	
Example	AT\$GPSP=0 OK	



4.2.10.9.3. Get Acquired Position - \$GPSACP

\$GPSACP - Get Acquired Position	
AT\$GPSACP	<p>Execution command returns information about the last GPS position in the format: \$GPSACP: <UTC>,<latitude>,<longitude>,<hdop>,<altitude>,<fix>,<cog>,<spkm>,<spkn>,<date>,<nsat></p> <p>where: <UTC> - UTC time (hhmmss.sss) referred to GGA sentence <latitude> - format is ddmm.mmmm N/S (referred to GGA sentence)</p> <p>where: dd - degrees 00..90 mm.mmmm - minutes 00.0000..59.9999 N/S: North / South <longitude> - format is dddmm.mmmm E/W (referred to GGA sentence)</p> <p>where: ddd - degrees 000..180 mm.mmmm - minutes 00.0000..59.9999 E/W: East / West <hdop> - x.x - Horizontal Dilution of Precision (referred to GGA sentence) <altitude> - xxxx.x Altitude - mean-sea-level (geoid) in meters (referred to GGA sentence) <fix> - 0 - Invalid Fix 2 - 2D fix 3 - 3D fix <cog> - ddd.mm - Course over Ground (degrees, True) (referred to VTG sentence)</p> <p>where: ddd - degrees 000..360 mm - minutes 00..59 <spkm> - xxxx.x Speed over ground (Km/hr) (referred to VTG sentence) <spkn> - xxxx.x- Speed over ground (knots) (referred to VTG sentence) <date> - ddmmyy Date of Fix (referred to RMC sentence)</p> <p>where: dd - day 01..31 mm - month 01..12 yy - year 00..99 - 2000 to 2099 <nsat> - nn - Total number of satellites in use (referred to GGA sentence) 00..12</p>



\$GPSACP - Get Acquired Position	
AT\$GPSACP?	Read command has the same meaning as the Execution command.
AT\$GPSACP=?	Test command returns the OK result code.
Example	<pre>at\$gpsp? \$gpsp: 0 <when module is down there no aquired position> at\$gpsacp \$GPSACP: 000000.000,,,,,0,,,,000000,00 OK at\$gpsp=1 OK <Until first fix is received the command will display initial GPS position> at\$gpsacp \$GPSACP: 3124.6000N,03504.2000E,0.0,-18.0,0,0.0,0.0,0.0,060180,00 <Once fix has been received the command will display actual GPS position> OK at\$gpsacp \$GPSACP: 3206.4020N,03450.2678E,1.1,3.3,0,0.0,0.0,0.0,030613,06 OK</pre>
Reference	NMEA 01803 Specifications.



4.2.10.9.4. Unsolicited NMEA Data Configuration - \$GPSNMUN

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



	Give the current frame selected (GSA) The unsolicited message will be: \$GPSNMUN: \$GPGSA,A,3,23,20,24,07,13,04,02,,,,,2.4,1.6,1.8*3C
Reference	NMEA 01803 Specifications

4.2.10.9.5. Save GPS Parameters Configuration - \$GPSSAV

\$GPSSAV - Save GPS Parameters Configuration		SELINT 2
AT\$GPSSAV	Execution command stores the current GPS parameters in the NVM of the device.	
AT\$GPSSAV=?	Test command returns the OK result code	
Example	AT\$GPSSAV OK	
Note	The saved parameters are: \$gpsp sate. \$gpsnmun parameters. \$gpsat type. The module must be restarted to use the new configuration.	

4.2.10.9.6. Restore to Default GPS Parameters - \$GPRST

\$GPRST - Restore To Default GPS Parameters		SELINT 2
AT\$GPRST	Execution command resets the GPS parameters to “Factory Default” configuration and stores them in the NVM of the device.	
AT\$GPRST=?	Test command returns the OK result code.	
Example	AT\$GPRST OK	
Note	The parameters that are restored are: \$gpsnmun parameters are set to '0' \$gpsp state is set to '0'. \$gpsat <type> is '1'.	



4.2.10.9.7. Set the GNSS (or GLONASS) Capability - \$GPSGLO

\$GPSGLO – Set the GNSS (or GLONASS) Capability		SELINT 2
AT\$GPSGLO=<type>	Set command selects the GNSS(or GLONASS)capability used. Parameter: <type> 0 – Disable GNSS(or GLONASS) 1 – Enable GNSS(or GLONASS) (default)	
AT\$GPSGLO?	Read command returns the currently used GNSS(or GLONASS), in the format: \$GPSGLO: <type>	
AT\$GPSGLO=?	Test command reports the range of supported values for parameter <type>	
Note	This command saved in NVM and has effect only at the next power cycle.	
Example	AT\$GPSGLO=1 OK	

4.2.10.9.8. GPS Start Location Service Request - \$GPSSLSR

\$GPSSLSR – GPS Start Location Service Request		SELINT 2
AT\$GPSSLSR= <transport_protocol> ,<pos_mode>	Command used to start the Receiver in Autonomous or A-GPS mode. Parameter: <transport_protocol>: 0 – C-Plane 1 – SUPL 2 – Invalid <pos_mode> - 0: Pure MS Assisted - Location estimate from the network (MS Assisted mode). 1: MS Based - Assistance Data from the network (MS Based mode). Note: If <pos_mode > is Pure MS Assisted or MS Base the <transport_protocol> should be SUPL. 2: MS Assisted Based - Combination of MS-A and MS-B modes, location estimate computed both at UE and Network. Note: The QUALCOMM solution modules family aren't supported about 2:MS Assisted Based. Command returns ERROR 3: Autonomous – Autonomous GPS mode of operation. Note: If <pos_mode> is Autonomous the <transport_protocol> should be invalid.	



\$GPSSLR – GPS Start Location Service Request		SELINT 2
	Note: <pos_mode> value of 255 means there is no active session running.	
AT\$GPSSLR?	Read command returns the current settings, in the format: \$GPSSLR: <transport_protocol>,<pos_mode >	
AT\$GPSSLR=?	Test command returns the supported range of values of parameters \$GPSSLR: (0-2),(0-3)	

4.2.10.9.9. Unsolicited NMEA Extended Data Configuration - \$GPSNMUNEX

\$GPSNMUNEX - Unsolicited NMEA Extended Data Configuration		SELINT 2
AT\$GPSNMUNEX= <GNGNS>,<GNGSA>, <GLGSV>,<GPGRS>	Set command permits to activate an Unsolicited streaming of of GNSS(or GLONASS) data (in NMEA extended format) through the NMEA port and defines which NMEA extended sentences will be available Parameters: <GNGNS> - Fix data for of GNSS(or GLONASS) receivers 0 - disable (default) 1 – enable <GNGSA> - DOP and of GNSS(or GLONASS) satellites 0 - disable (default) 1 – enable <GLGSV> - GLONASS satellites in view 0 - disable (default) 1 – enable <GPGRS> - GPS Range Residuals 0 - disable (default) 1 – enable	
AT\$GPSNMUNEX?	Read command returns the NMEA extended sentences availability status, in the format: \$GLONMUN:<GNGNS>,<GNGSA> ,<GLGSV> ,<GPGRS>	
AT\$GPSNMUNEX=?	Test command returns the supported range of values for parameters: <GNGNS>,<GNGSA> ,<GLGSV> ,<GPGRS>	
Note	NMEA extended data is displayed on NMEA port depending on \$GPSNMUN setting.	
Example	AT\$GPSNMUNEX=1,0,0,0	



\$GPSNMUNEX - Unsolicited NMEA Extended Data Configuration		SELINT 2
	OK These sets the GNGNS as available sentence in the unsolicited message: AT\$GPSNMUNEX? \$GPSNMUNEX: 1,0,0,0 OK Give the current frame selected(GNGNS)The unsolicited message will be: \$GNGNS:080558.0,3731.306144,N,12655.784429,E,AN,09,1.0,68.0,18.0,,*5B	

4.2.10.9.10. Execute enabling/disabling User Plane MSA mode - \$GPSUPLANE

\$GPSUPLANE – Execute enabling/disabling User Plane MSA mode		SELINT 2
AT\$GPSUPLANE =<mode> ,<passwd>	Execution command enable/disable gpsOne User Plane MSA mode <mode> 0 – Disable gpsOne User Plane MSA mode. 1 – Enable gpsOne User Plane MSA mode.	
AT\$GPSUPLANE?	Read command returns the values of saved < mode>. <mode> \$GPSUPLANE: 1	
AT\$GPSUPLANE=?	Test command returns the supported range of values of parameters < mode >,< s/w version > \$GPSUPLANE: (0,1),(s/w ver.)	
Example	AT+GMR 09.01.004-B001 OK AT\$GPSUPLANE=0,09.01.004-B001 OK AT\$GPSUPLANE? \$GPSUPLANE: 0 OK AT\$GPSUPLANE=1,09.01.004-B001 OK AT\$GPSUPLANE? \$GPSUPLANE: 1 OK	

4.2.10.9.11. Executes GPS Get Position for SUPL UP in UMTS network - \$LOCMODE



\$LOCMODE – Executes GPS Get Position for SUPL UP in UMTS network.		SELINT 2
AT\$LOCMODE=<mode>	Execute command gets GPS position of SUPL UP (A-GPS) Parameter: <mode >: integer type 0 : End Get Position 1 : SET-Assisted Get Position 2 : SET-Based Get Position 3 : AFLT(N/S in UMTS) 4 : Standalone Get Position	
AT\$LOCMODE?	Read command returns the currently used values, in the format: \$LOCMODE: < mode >	
AT\$LOCMODE=?	Test command returns the supported range of values of parameters < mode> \$LOCMODE: (0-4)	
Example	AT\$LOCMODE =1 OK	



4.2.10.10. Emergency Call and ECall Management

4.2.10.10.1. mode activation - #MSDPUSH

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

4.2.10.10.2. Sending MSD data to IVS - #MSDSEND

#MSDSEND – Sending MSD data to IVS		SELINT 2
AT#MSDSEND	<p>Execution command allows to send 140 bytes of MSD data to the IVS embedded while modem is in command mode.</p> <p>The device responds to the command with the prompt '>' and waits for the MSD to send.</p> <p>To complete the operation send Ctrl-Z char (0x12A hex); to exit without writing the message send ESC char (0x1B hex).</p> <p>If data are successfully sent, then the response is OK If data sending fails for some reason, an error code is reported.</p> <p>Note: the maximum number of bytes to send is 140; trying to send more data will cause the surplus to be discarded and lost.</p>	
AT#MSDSEND=?	Test command returns the OK result code	



4.2.10.10.3. Initiate eCall - +CECALL

+CECALL – Initiate eCall	SELINT 2
AT+CECALL=<type of eCall>	Set command is used to trigger an eCall to the network. Based on the configuration selected, it can be used to either trigger a test call, a reconfiguration call, a manually initiated call or an automatically initiated call. Parameters: <type of eCall>: 0 – test call 1 – reconfiguration call 2 – manually initiated eCall 3 – automatically initiated eCall
AT+CECALL?	Read command returns the type of eCall that is currently in progress in the format: +CECALL: [<type of eCall>]
AT+CECALL=?	Test command reports the supported range of values for parameter <type of eCall>.



4.2.10.11. Additional AT Commands

4.2.10.11.1. Dormant Control Command - #CDORM

#CDORM – Dormant control command		SELINT 2
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 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 17. (only for Exit dormancy action)	
AT#CDORM?	The read command returns the current settings and status. #CDORM:<unsolicited_status>[,<call_id>,<dormant_status>][<CR><LF> #CDORM:<unsolicited_status>,<call_id>,<dormant_status>[...]] OK Where: <unsolicited_status> 0 - Disabled unsolicited indication 1 – Enabled unsolicited indication The default value is 0.	
B	The test command returns the possible ranges of <action> and <call_id>	
Reference		



4.2.10.11.2. Network Emergency Number Update - #NWEN

#NWEN - Network Emergency Number Update		SELINT 2
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> 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>	

4.2.10.11.3. Delete All Phonebook Entries - #CPBD

#CPBD - Delete All Phonebook Entries		SELINT 2
AT#CPBD	Execution command deletes all phonebook entries in the current phonebook memory 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.	



4.2.10.11.4. Enhanced call tone disable - #ECTD

#ECTD – Enhanced call tone disable		SELINT 2
AT#ECTD= [<type>]	Set command sets to disable related with call tone according to <type> parameter. Parameter: <type> - sum of integers each representing a type of call tones which the command refers to 0 – Not disable call tones 1 – Call end tone (factory default).	
AT#ECTD?	Read command returns the current type of disabled call tone: #ECTD: <type>	
AT#ECTD=?	Test command reports the range for the parameter <type>	

4.2.10.11.5. SIM Presence Status - #SIMPR

#SIMPR – SIM Presence Status		SELINT 2
AT#SIMPR= [<mode>]	Set command enables/disables the Query SIM Presence Status unsolicited indication in the ME. This command reports also the status of the remote SIM, if the SAP functionality has been enabled by the AT#RSEN command (AT#RSEN=1). 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 <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 – SIM Presence Status		SELINT 2
	#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	

4.2.10.11.6. New Operator Names - #PLMNMODE

#PLMNMODE – New Operator Names		SELINT 2
AT#PLMNMODE= <mode>	Set command apply's to new operator names depending on the parameter <mode>. Parameter: <mode> 0 – previous operator names(factory default) 1 – new operator names Note: if <mode>=1, AT+COPN command shows new operator names. The command can be used in state CPIN: READY Note: <mode> is saved in NVM.	
AT#PLMNMODE?	Read command returns current value of the parameter <mode>.	
AT#PLMNMODE=?	Test command returns supported values of the parameter <mode>.	

4.2.10.11.7. Network Scan Timer - #NWSCANTMR

#NWSCANTMR – Network Scan Timer		SELINT 2
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.)	
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#NWSANTMR?	Read command reports the current parameter setting for #NWSANTMR command in the format: #NWSANTMR: <tmr>
AT#NWSANTMR=	Test command reports the supported range of values for parameter <tmr>
Note	This command is not supported in UC864-G AT&T. 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)



4.2.10.12. AT Run Commands

4.2.10.12.1. Enable SMS AT Run service - #SMSATRUN

#SMSATRUN – Enable SMS AT Run service		SELINT 2
AT#SMSATRUN= <mod>	<p>Set command enables/disables the SMS AT RUN service.</p> <p>Parameter: <mod> 0 - Service Disabled 1 - Service Enabled</p> <p>Note1: When the service is active on a specific AT instance (see AT#SMSATRUNCFG), that instance cannot be used for any other scope except for OTA service that has the highest priority.</p> <p>Note2: the current settings are stored in NVM</p>	
AT#SMSATRUN?	<p>Read command returns the current settings of <mode> and the value of <stat> in the format:</p> <p># SMSATRUN: <mod>,<stat></p> <p>where: <stat> - service status 0 – not active 1 - active</p>	
AT#SMSATRUN=?	Test command returns the supported values for the SMSATRUN parameters	
Notes	<p>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.</p>	



4.2.10.12.2. Set SMS AT Run Parameters - #SMSATRUNCFG

#SMSATRUNCFG – Set SMS AT Run Parameters	SELINT2
<p>AT#SMSATRUNCFG= <instance> [,<urcmod> [,<timeout>]]</p>	<p>Set command configures the SMS AT RUN service.</p> <p>Parameter: <instance>: AT instance that will be used by the service to run the AT Command. Range 1 - 3, default 3. 1 – UART 2 – USB1 3 – USB2</p> <p><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.</p> <p><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.</p> <p>Note 1: the current settings are stored in NVM. Note 2: the instance used for the SMS AT RUN service is the same used for the EvMoni service. Therefore, when the #SMSATRUNCFG sets the <instance> parameter, the change is reflected also in the <instance> parameter of the #ENAEVMONICFG command, and viceversa. Note 3: the set command returns ERROR if the command AT#ENAEVMONI? returns 1 as <mod> parameter or the command AT#SMSATRUN? returns 1 as <mod> parameter</p>
<p>AT#SMSATRUNCFG?</p>	<p>Read command returns the current settings of parameters in the format: #SMSATRUNCFG:<instance>,<urcmod>,<timeout></p>
<p>AT#SMSATRUNCFG=?</p>	<p>Test command returns the supported values for the SMSATRUNCFG parameters</p>



4.2.10.12.3. SMS AT Run White List - #SMSATWL

#SMSATWL – SMS AT Run White List	SELINT 2
<p>AT#SMSATWL= <action> ,<index> [,<entryType> [,<string>]]</p>	<p>Set command to handle the white list.</p> <p><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</p> <p><entryType>: 0 – Phone Number 1 – Password</p> <p>Note: A maximum of two Passwords entry, can be present at same time in the white List.</p> <p><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.</p> <p>Note: When the character “*” is used, it means that all the numbers that begin with the defined digit are part of the white list.</p> <p>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.</p>
<p>AT#SMSATWL?</p>	<p>Read command returns the list elements in the format: #SMSATWL: [<entryType>,<string>]</p>
<p>AT#SMSATWL=?</p>	<p>Test command returns the supported values for the parameter <action>, <index> and <entryType></p>



4.2.10.12.4. Set TCP AT Run Service Parameters - #TCPATRUNCFG

#TCPATRUNCFG – Set TCP AT Run Service Parameters	SELINT 2
<pre>AT#TCPATRUNCFG = <connId> ,<instance> ,<tcpPort> ,<tcpHostPort> ,<tcpHost> [,<urcmod> [,<timeout> [,<authMode> [,<retryCnt> [,<retryDelay>]]]]</pre>	<p>Set command configures the TCP AT RUN service Parameters:</p> <p><connId> socket connection identifier. Default 1. Range 1..6. This parameter is mandatory.</p> <p><instance> AT instance that will be used by the service to run the AT Command. Command. Range 1 - 3, default 2. 1 – UART 2 – USB1 3 – USB2</p> <p><tcpPort> Tcp Listen port for the connection to the service in server mode. Default 1024. Range 1...65535. This parameter is mandatory.</p> <p><tcpHostPort> Tcp remote port of the Host to connect to, in client mode. Default 1024. Range 1...65535. This parameter is mandatory.</p> <p><tcpHost> IP address of the Host, string type. This parameter can be either: - any valid IP address in the format: “xxx.xxx.xxx.xxx” - any host name to be solved with a DNS query This parameter is mandatory. Default “”.</p> <p><urcmod> 0 – disable unsolicited messages 1 - enable an unsolicited message when the TCP socket is connected or disconnect (default).</p> <p>When unsolicited is enabled, an asynchronous TCP Socket connection is indicated to TE with unsolicited result code: #TCPATRUN: <iphostaddress></p> <p>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.</p> <p><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.</p> <p><authMode> determines the authentication procedure in server mode: 0 – (default) when connection is up, username and password (in this order and each of them followed by a Carriage Return) have to be sent to the module before the first AT command.</p>



	<p>1 – when connection is up, the user receives a request for username and, if username is correct, a request for password. Then the message "Login successful" will close authentication phase.</p> <p>Note 1: if username and/or password are not allowed (see AT#TCPATRUNAUTH) the connection will close immediately.</p> <p><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.</p> <p><retryDelay> In client mode, delay between one attempt and the other. In minutes. Default: 2. Range 1...3600.</p> <p>Note 2: the current settings are stored in NVM.</p> <p>Note 3: to start automatically the service when the module is powered-on, the automatic PDP context activation has to be set (see AT#SGACTCFG command).</p> <p>Note 4: the set command returns ERROR if the command AT#TCPATRUND? returns 1 as <mod> parameter or the command AT# TCPATRUND? returns 1 as <mod> parameter</p>
<p>AT#TCPATRUNCFG ?</p>	<p>Read command returns the current settings of parameters in the format: #TCPATRUNCFG: <connId>,<instance>,<tcpPort>,<tcpHostPort>,<tcpHost>,<urcmod>,<timeout>,<authMode>,<retryCnt>,<retryDelay></p>
<p>AT#TCPATRUNCFG =?</p>	<p>Test command returns the supported values for the TCPATRUNCFG parameters</p>



4.2.10.12.5. Enables TCP AT Run Service in listen (server) mode -#TCPATRNL

#TCPATRNL – Enables TCP AT Run Service in listen (server) mode	SELINT2
AT#TCPATRNL= <mod>	<p>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.</p> <p>Parameter: <mod> 0 - Service Disabled 1 - Service Enabled</p> <p>Note 1: If SMSATRNL is active on the same instance (see AT#TCPATRNLCFG) the command will return ERROR.</p> <p>Note 2: when the service is active it is on a specific AT instance (see AT#TCPATRNLCFG), that instance cannot be used for any other scope.</p> <p>Note 3: the current settings are stored in NVM.</p> <p>Note 4: to start automatically the service when the module is powered-on, the automatic PDP context activation has to be set (see AT#SGACTCFG command).</p>
AT#TCPATRNL?	<p>Read command returns the current settings of <mode> and the value of <stat> in the format:</p> <p>#TCPATRNL: <mod>,<stat></p> <p>where: <stat> - connection status 0 – not in listen 1 - in listen or active</p>
AT#TCPATRNL=?	Test command returns the supported values for the TCPATRNL parameters



4.2.10.12.6. TCP AT Run Firewall List - #TCPATRUFRL

#TCPATRUFRL – TCP AT Run Firewall List	SELINT2
<p>AT#TCPATRUFRL= <action>, <ip_addr>, <net_mask></p>	<p>Set command controls the internal firewall settings for the TCPATRUFRL connection.</p> <p>Parameters: <action> - command action 0 - remove selected chain 1 - add an ACCEPT chain 2 - Remove all chains (DROP everything); <ip_addr> and <net_mask> has no meaning in this case. <ip_addr> - remote address to be added into the ACCEPT chain; string type, it can be any valid IP address in the format: xxx.xxx.xxx.xxx <net_mask> - mask to be applied on the <ip_addr>; string type, it can be any valid IP address mask in the format: xxx.xxx.xxx.xxx Command returns OK result code if successful. Firewall general policy is DROP, therefore all packets that are not included into an ACCEPT chain rule will be silently discarded. When a packet comes from the IP address incoming_IP, the firewall chain rules will be scanned for matching with the following criteria:</p> <p>incoming_IP & <net_mask> = <ip_addr> & <net_mask></p> <p>If a criterion is matched, then the packet is accepted and the rule scan is finished; if a criterion is not matched for any chain the packet is silently dropped.</p> <p>Note 1: A maximum of 5 firewalls can be present at same time in the List. Note 2: the firewall list is saved in NVM</p>
<p>AT#TCPATRUFRL?</p>	<p>Read command reports the list of all ACCEPT chain rules registered in the</p> <p>Firewall settings in the format:</p> <p>#TCPATRUFRL: <ip_addr>,<net_mask> #TCPATRUFRL: <ip_addr>,<net_mask> ... OK <stat> - connection status 0 – not in listen 1 - in listen or active</p>
<p>AT#TCPATRUFRL=?</p>	<p>Test command returns the allowed values for parameter <action>.</p>

4.2.10.12.7. TCP AT Run Authentication Parameters List - #TCPATRUAUTH

#TCPATRUAUTH – TCP AT Run Authentication Parameters List	SELINT2
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<p>AT#TCPATRUNAATH = <action>, <userid>, <passw></p>	<p>Execution command controls the authentication parameters for the TCPATRUN connection.</p> <p>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.</p> <p><userid> - user to be added into the ACCEPT chain; string type, maximum length 50</p> <p><passw> - password of the user on the <userid>; string type, maximum length 50</p> <p>Command returns OK result code if successful.</p> <p>Note 1: A maximum of 3 entries (password and userid) can be present at same time in the List.</p> <p>Note 2: the Authentication Parameters List is saved in NVM.</p>
<p>AT#TCPATRUNAATH?</p>	<p>Read command reports the list of all ACCEPT chain rules registered in the Authentication settings in the format: #TCPATRUNAATH: <user_id>,<passw> #TCPATRUNAATH: <user_id>,<passw> OK</p>
<p>AT#TCPATRUNAATH=?</p>	<p>Test command returns the allowed values for parameter <action>.</p>



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

#TCPATRUND – Enables TCP Run AT Service in dial (client) mode	SELINT2
AT#TCPATRUND=<mod>	<p>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).</p> <p>Parameter: <mod> 0 - Service Disabled 1 - Service Enabled</p> <p>Note 1: If SMSATRUND is active on the same instance (see AT#TCPATRUNCFG) the command will return ERROR.</p> <p>Note 2: when the service is active it is on a specific AT instance (see AT#TCPATRUNCFG), that instance cannot be used for any other scope.</p> <p>Note 3: the current setting are stored in NVM</p> <p>Note 4: to start automatically the service when the module is powered-on, the automatic PDP context activation has to be set (see AT#SGACTCFG command).</p> <p>Note 5: 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.</p>
AT#TCPATRUND?	<p>Read command returns the current settings of <mode> and the value of <stat> in the format: #TCPATRUND: <mod>,<stat></p> <p>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)</p>
AT#TCPATRUND=?	Test command returns the supported values for the TCPATRUND parameters



4.2.10.12.9. Closes TCP Run AT Socket - #TCPATRUNCLOSE

#TCPATRUNCLOSE – Closes TCP Run AT Socket		SELINT2
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.	
AT#TCPATRUNCLOSE=?	Test command returns OK	

4.2.10.12.10. For TCP Run AT Service, allows the user to give AT commands in sequence - #TCPATCMDSEQ

#TCPATCMDSEQ – For TCP Run AT Service, allows the user to give AT commands in sequence	
AT#TCPATCMDSEQ=<mod>	Set command enable/disable, for TCP Run AT service, a feature that allows giving more than one AT command without waiting for responses. It does not work with commands that uses the prompt '>' to receive the message body text (e.g. “at+cmgs”, “at#semail”) 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

4.2.10.12.11. Connects the TCP Run AT service to a serial port - #TCPATCONSER

#TCPATCONSER – Connects the TCP Run AT service to a serial port		SELINT2
AT#TCPATCONSER=<port>,<rate>	Set command sets the TCP Run AT in transparent mode, in order to have direct access to the serial port specified. Data will be transferred directly, without being elaborated, between the TCP Run AT service and the serial port specified. Parameter: <port> 0 – 2. Serial port to connect to. 0 – UART 1 – USB1 2 – USB2 <rate> baud rate for data transfer. Allowed values are 300,1200,2400,4800,9600,19200,38400,57600,115200. Note1: the command has to be issued from the TCP ATRUN instance.	



	<p>Note2: After this command has been issued, if no error has occurred, then a “CONNECT” will be returned by the module to advise that the TCP ATRUN instance is in <i>online mode</i> and connected to the port specified.</p> <p>Note3: To exit from online mode and close the connection, the escape sequence (+++) has to be sent on the TCP ATRUN instance.</p>
AT#TCPATCONSER=?	Test command returns the supported values for the TCPATCONSER parameters.

4.2.10.12.12. Set the delay on Run AT command execution - #ATRUNDELAY

#ATRUNDELAY – Set the delay on Run AT command execution		SELINT2
AT#ATRUNDELAY= <srv>,<delay>	<p>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.</p> <p><srv> 0 – TCP Run AT service 1 - SMS Run AT service</p> <p><delay> Value of the delay, in seconds. Range 0..30. Default value 0 for both services (TCP and SMS).</p> <p>Note 1: The use of the delay is recommended to execute some AT commands that require network interaction or switch between GSM and GPRS services. For more details see the RUN AT User Guide.</p> <p>Note 2: The delay is valid till a new AT#ATRUNDELAY is set.</p>	
AT#ATRUNDELAY?	<p>Read command returns the current settings of parameters in the format:</p> <p>#ATRUNDELAY: 0, <delayTCP> #ATRUNDELAY: 1, <delaySMS> OK</p>	
AT#ATRUNDELAY=?	Test command returns the supported values for the ATRUNDELAY parameters	



5. List of acronyms

ARFCN	Absolute Radio Frequency Channel Number
AT	Attention command
BA	BCCH Allocation
BCCH	Broadcast Control Channel
CA	Cell Allocation
CBM	Cell Broadcast Message
CBS	Cell Broadcast Service
CCM	Current Call Meter
CLIR	Calling Line Identification Restriction
CTS	Clear To Send
CUG	Closed User Group
DCD	Data Carrier Detect
DCE	Data Communication Equipment
DCS	Digital Cellular System
DGPS	Differential GPS, the use of GPS measurements, which are differentially corrected
DNS	Domain Name System
DSR	Data Set Ready
DTE	Data Terminal Equipment
DTMF	Dual Tone Multi Frequency
DTR	Data Terminal Ready
GGA	GPS Fix data
GLL	Geographic Position – Latitude/Longitude
GLONASS	Global positioning system maintained by the Russian Space Forces
GMT	Greenwich Mean Time
GNSS	Any single or combined satellite navigation system (GPS, GLONASS and combined GPS/GLONASS)
GPRS	Global Packet Radio Service
GPS	Global Positioning System
GSA	GPS DOP and Active satellites
GSM	Global System Mobile
GSV	GPS satellites in view
HDLC	High Level Data Link Control
HDOP	Horizontal Dilution of Precision
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
IRA	International Reference Alphabet
IWF	Interworking Function
MO	Mobile Originated
MT	<i>either Mobile Terminated or Mobile Terminal</i>
NMEA	National Marine Electronics Association



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

