

# LE9x0 AT Commands Reference Guide

80407ST10116a Rev.14.1 -2017-05-14



## APPLICABILITY TABLE

PRODUCT
LE920-EUG
LE920-NAG
LE920-CNG

PRODUCT
LE910-EUG
LE910-NAG
LE910-SVG



# Contents

<b>1</b>	<b>Introduction.....</b>	<b>16</b>
1.1	Scope .....	16
1.2	Audience.....	16
1.3	Contact Information, Support .....	16
1.4	Document Organization.....	17
1.5	Text Conventions.....	17
1.6	Related Documents.....	17
1.7	Document History.....	18
<b>2</b>	<b>Overview 23</b>	
2.1	About the document .....	23
<b>3</b>	<b>AT COMMANDS.....</b>	<b>24</b>
3.1	Definitions .....	24
3.2	AT Command Syntax .....	24
3.2.1	String Type Parameters.....	25
3.2.2	Command Lines .....	25
3.2.3	ME Error Result Code - +CME ERROR: <err> .....	28
3.2.3.1	Message Service Failure Result Code - .....	30
3.2.3.1	+CMS ERROR: <err> .....	30
3.2.4	Information Responses and Result Codes.....	31
3.2.5	Command Response Time-Out.....	32
3.2.6	Command Issuing Timing .....	34
3.3	Storage .....	35
3.3.1	Factory Profile and User Profiles.....	35
3.4	AT Commands References .....	36
3.4.1	Command Line General Format.....	36
3.4.1	Command Line Prefixes.....	36
3.4.1.1.1	Starting a Command Line - AT .....	36
3.4.1.1.2	Last Command Automatic Repetition - A/ .....	37
3.4.2	General Configuration Commands .....	38
3.4.2.1.1	Select Interface Style - #SELINT .....	38
3.4.2.1.2	Set notification port - #NOPT .....	38
3.4.2.1.3	USB composition configuration - #usbcfg .....	39
3.4.2.1.4	command Delay - #ATDELAY .....	40
3.4.3	Hayes Compliant AT Commands .....	41
3.4.3.1	Generic Modem Control .....	41
3.4.3.1.1	Set To Factory-Defined Configuration - &F .....	41
3.4.3.1.2	Soft Reset - Z.....	41
3.4.3.1.3	Select Active Service Class - +FCLASS .....	42
3.4.3.1.4	Default Reset Basic Profile Designation - &Y .....	42



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

3.4.3.1.5	Default Reset Full Profile Designation - &P .....	43
3.4.3.1.6	Store Current Configuration - &W .....	43
3.4.3.1.7	Store Telephone Number on Module Internal Phonebook - &Z .....	43
3.4.3.1.8	Display Internal Phonebook Stored Numbers - &N .....	44
3.4.3.1.9	Manufacturer Identification - +GMI.....	44
3.4.3.1.10	Model Identification - +GMM.....	44
3.4.3.1.11	Request FLEX Revision Identification - #CGMF .....	44
3.4.3.1.12	Revision Identification - +GMR.....	44
3.4.3.1.13	Capabilities List - +GCAP .....	45
3.4.3.1.14	Serial Number - +GSN .....	45
3.4.3.1.15	Display Current Base Configuration and Profile - &V .....	46
3.4.3.1.16	Display Current Configuration and Profile - &V0 .....	46
3.4.3.1.17	S Registers Display - &V1 .....	46
3.4.3.1.18	Display Last Connection Statistics - &V2 .....	46
3.4.3.1.19	Extended S Registers Display - &V3 .....	46
3.4.3.1.20	Single Line Connect Message - \V .....	47
3.4.3.1.21	Country of Installation - +GCI .....	47
3.4.3.1.22	Line Signal Level - %L .....	47
3.4.3.1.23	Line Quality - %Q .....	48
3.4.3.1.24	Speaker Loudness - L .....	48
3.4.3.1.25	Speaker Mode - M .....	48
3.4.3.2	DTE - Modem Interface Control .....	48
3.4.3.2.1	Command Echo - E .....	48
3.4.3.2.2	Quiet Result Codes - Q .....	49
3.4.3.2.3	Response Format - V .....	49
3.4.3.2.4	Extended Result Codes - X.....	51
3.4.3.2.5	Identification Information - I.....	51
3.4.3.2.6	Data Carrier Detect (DCD) Control - &C.....	51
3.4.3.2.7	Data Terminal Ready (DTR) Control - &D.....	52
3.4.3.2.8	Standard Flow Control - \Q .....	52
3.4.3.2.9	Flow Control - &K .....	53
3.4.3.2.10	Data Set Ready (DSR) Control - &S .....	53
3.4.3.2.11	Fixed DTE Interface Rate - +IPR .....	54
3.4.3.2.12	DTE-Modem Local Flow Control - +IFC .....	55
3.4.3.2.13	DTE-Modem Character Framing - +ICF .....	55
3.4.3.2.14	Ring (RI) Control - \R .....	56
3.4.3.2.15	DTE-Modem Local Rate Reporting - +ILRR.....	56
3.4.3.2.16	Select Flow Control Specified By Type - +FLO .....	57
3.4.3.3	Call Control.....	57
3.4.3.3.1	Dial - D .....	57
3.4.3.3.2	Tone Dial - T .....	59
3.4.3.3.3	Pulse Dial - P .....	59
3.4.3.3.4	Answer - A .....	60
3.4.3.3.5	Disconnect - H.....	60
3.4.3.3.6	Return To On Line Mode - O .....	60
3.4.3.3.7	Guard Tone - &G.....	60
3.4.3.3.8	Sync/Async Mode - &Q .....	61
3.4.3.4	Modulation Control .....	61
3.4.3.4.1	Line Quality Monitor and Auto Retrain or Fallback/Fallforward - %E.....	61
3.4.3.5	Compression Control.....	61
3.4.3.5.1	Data Compression - +DS.....	61
3.4.3.5.2	Data Compression Reporting - +DR .....	62



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

3.4.3.6	Break Control .....	62
3.4.3.6.1	Transmit Break To Remote - \B .....	62
3.4.3.6.2	Break Handling - \K .....	62
3.4.3.6.3	Operating Mode - \N .....	63
3.4.3.7	S Parameters .....	63
3.4.3.7.1	Number of Rings to Auto Answer - S0 .....	64
3.4.3.7.2	Ring Counter - S1 .....	64
3.4.3.7.3	Escape Character - S2 .....	64
3.4.3.7.4	Command Line Termination Character - S3 .....	65
3.4.3.7.5	Response Formatting Character - S4 .....	65
3.4.3.7.6	Command Line Editing Character - S5 .....	65
3.4.3.7.7	Connection Completion Time-Out - S7 .....	66
3.4.3.7.8	Carrier Off With Firm Time - S10 .....	66
3.4.3.7.9	Escape Prompt Delay - S12 .....	67
3.4.3.7.10	Delay to DTR off - S25 .....	67
3.4.3.7.11	Disconnect Inactivity Timer - S30 .....	67
3.4.3.7.12	Delay before Forced Hang Up - S38 .....	68
3.4.4	3GPP TS 27.007 AT Commands .....	68
3.4.4.1	General .....	68
3.4.4.1.1	Request Manufacturer Identification - +CGMI .....	68
3.4.4.1.2	Request Model Identification - +CGMM .....	68
3.4.4.1.3	Request Revision Identification - +CGMR .....	69
3.4.4.1.4	Request Product Serial Number Identification - +CGSN .....	69
3.4.4.1.5	Select TE Character Set - +CSCS .....	71
3.4.4.1.6	Request International Mobile Subscriber Identity (IMSI) - +CIMI .....	72
3.4.4.1.7	Read ICCID (Integrated Circuit Card Identification) - +ICCID .....	72
3.4.4.1.8	Serial and Software Version Number - +IMEISV .....	72
3.4.4.1.9	PCCA STD-101 Select Wireless Network - +WS46 .....	72
3.4.4.1.10	Network Selection Menu Availability - +PACSP .....	73
3.4.4.2	Call Control .....	73
3.4.4.2.1	Call mode - +CMOD .....	73
3.4.4.2.2	Hang Up Call - +CHUP .....	74
3.4.4.2.3	Select type of address - +CSTA .....	74
3.4.4.2.4	Select Bearer Service Type - +CBST .....	75
3.4.4.2.5	Radio Link Protocol - +CRLP .....	76
3.4.4.2.6	Service Reporting Control - +CR .....	77
3.4.4.2.7	Extended Error Report - +CEER .....	78
3.4.4.2.8	Cellular Result Codes - +CRC .....	78
3.4.4.2.9	HSCSD non-transparent call configuration +CHSN .....	79
3.4.4.2.10	Single Numbering Scheme - +CSNS .....	80
3.4.4.2.11	Voice Hang Up Control - +CVHU .....	80
3.4.4.2.12	Setting Time Format - +CSTF .....	80
3.4.4.2.13	Setting Date Format - +CSDF .....	81
<b>Refer subclause 9.2 for possible &lt;err&gt; values. ....</b>		<b>81</b>
3.4.4.3	Network Service Handling .....	82
3.4.4.3.1	Subscriber Number - +CNUM .....	82
3.4.4.3.2	Read Operator Names - +COPN .....	83
3.4.4.3.3	Network Registration Report - +CREG .....	83
3.4.4.3.4	Operator Selection - +COPS .....	85
3.4.4.3.5	Facility Lock/Unlock - +CLCK .....	87
3.4.4.3.6	Change Facility Password - +CPWD .....	89



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

3.4.4.3.7	Calling Line Identification Presentation - +CLIP .....	90
3.4.4.3.8	Calling Line Identification Restriction - +CLIR .....	91
3.4.4.3.9	Connected Line Identification Restriction status - +COLR .....	92
3.4.4.3.10	Connected line identification presentation - COLP .....	92
3.4.4.3.11	Called line identification presentation - +CDIP .....	93
3.4.4.3.12	Call Forwarding Number and Conditions - +CCFC .....	94
3.4.4.3.13	Call Forwarding Flags - #CFF .....	96
3.4.4.3.14	Call Waiting - +CCWA .....	97
3.4.4.3.15	Call Holding Services - +CHLD .....	98
3.4.4.3.16	Call deflection - +CTFR .....	99
3.4.4.3.17	Unstructured Supplementary Service Data - +CUSD .....	99
3.4.4.3.18	Advice of Charge - +CAOC .....	100
3.4.4.3.19	List Current Calls - +CLCC .....	101
3.4.4.3.20	SS Notification - +CSSN .....	102
3.4.4.3.21	Non-Access-Stratum compliancy - #NASC .....	103
3.4.4.3.22	Closed User Group Supplementary Service Control - +CCUG .....	104
3.4.4.3.23	Preferred Operator List - +CPOL .....	104
3.4.4.3.24	Selection of preferred PLMN list - +CPLS .....	105
3.4.4.4	Mobile Equipment Control .....	106
3.4.4.4.1	Phone Activity Status - +CPAS .....	106
3.4.4.4.2	Set Phone Functionality - +CFUN .....	107
3.4.4.4.3	Enter PIN - +CPIN .....	108
3.4.4.4.4	Signal Quality - +CSQ .....	110
3.4.4.4.5	Indicator Control - +CIND .....	111
3.4.4.4.6	Indicator Control for current values - #CIND .....	114
3.4.4.4.7	Mobile Equipment Event Reporting - +CMER .....	114
3.4.4.4.8	Select Phonebook Memory Storage - +CPBS .....	116
3.4.4.4.9	Read Phonebook Entries - +CPBR .....	117
3.4.4.4.10	Find Phonebook Entries - +CPBF .....	118
3.4.4.4.11	Write Phonebook Entry - +CPBW .....	120
3.4.4.4.12	Clock Management - +CCLK .....	122
3.4.4.4.13	Restricted SIM Access - +CRSM .....	123
3.4.4.4.14	Accumulated Call Meter - +CACM .....	125
3.4.4.4.15	Ringer Sound Level - +CRSL .....	125
3.4.4.4.16	Loudspeaker Volume Level - +CLVL .....	126
3.4.4.4.17	Microphone Mute Control - +CMUT .....	126
3.4.4.4.18	Silence Command - +CSIL .....	127
3.4.4.4.19	Accumulated Call Meter Maximum - +CAMP .....	127
3.4.4.4.20	Price per Unit and Currency Table - +CPUC .....	128
3.4.4.4.21	Call meter maximum event - +CCWE .....	128
3.4.4.4.22	Available AT Commands - +CLAC .....	129
3.4.4.4.23	Set voice mail number - +CSVM .....	129
3.4.4.4.24	Time Zone Reporting - +CTZR .....	130
3.4.4.4.25	Automatic Time Zone update - +CTZU .....	130
3.4.4.5	Mobile Equipment Errors .....	131
3.4.4.5.1	Report Mobile Equipment Error - +CMEE .....	131
3.4.4.6	Voice Control .....	132
3.4.4.6.1	DTMF Tones Transmission - +VTS .....	132
3.4.4.6.2	Tone Duration - +VTD .....	132
3.4.4.6.3	Embedded DTMF decoder enabling - #DTMF .....	133
3.4.4.7	Commands for GPRS .....	133
3.4.4.7.1	GPRS Mobile Station Class - +CGCLASS .....	133





## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

3.4.5.4.5	More Message to Send - +CMMS .....	196
3.4.5.4.6	Send SMS command - +CMGC .....	197
3.4.6	3GPP2 SMS message Configuration .....	200
3.4.6.1	Configuration .....	200
3.4.6.1.1	Set Text Mode Parameters - + CSMP .....	200
3.4.6.1.2	Save Settings- +CSAS .....	201
3.4.6.1.3	Restor Settings- +CRES .....	202
3.4.6.1.4	New Message Indications to Terminal Equipment - +CNMI .....	202
3.4.6.1.5	Preferred Message Storage- +CPMS .....	207
3.4.6.1.6	Delivery Acknowledgment Message request- +CDAK .....	208
3.4.6.1.7	List Messages - +CMGL .....	208
3.4.6.1.8	Read Message - +CMGR .....	212
3.4.6.1.9	Send Message - +CMGS .....	214
3.4.6.1.10	Write Message to Memory - +CMGW .....	216
3.4.6.1.11	Set Payload Length - #SMSPSIZ .....	219
3.4.7	Custom AT Commands .....	220
3.4.7.1	Configuration AT Commands .....	220
3.4.7.1.1	Hardware Identification - #HWREV .....	220
3.4.7.1.2	Manufacturer Identification - #CGMI .....	220
3.4.7.1.3	Model Identification - #CGMM .....	220
3.4.7.1.4	Revision Identification - #CGMR .....	220
3.4.7.1.5	Product Serial Number Identification - #CGSN .....	221
3.4.7.1.6	Select GSM Hexadecimal Representation - #CSCSEXT .....	222
3.4.7.1.7	International Mobile Subscriber Identity (IMSI) - #CIMI .....	223
3.4.7.1.8	Read ICCID (Integrated Circuit Card Identification) - #CCID .....	223
3.4.7.1.9	Serial and Software Version Number - #IMEISV .....	224
3.4.7.1.10	Service Provider Name - #SPN .....	224
3.4.7.1.11	Change Audio Path - #CAP .....	224
3.4.7.1.12	Handsfree Microphone Gain - #HFMICG .....	225
3.4.7.1.13	Handset Microphone Gain - #HSMICG .....	225
3.4.7.1.14	Handsfree Receiver Gain - #HFRECG .....	226
3.4.7.1.15	Handset Receiver Gain - #HSRECG .....	226
3.4.7.1.16	Singnalling Tones Mode - #STM .....	227
3.4.7.1.17	Audio DSP Configuration - #ADSPC .....	227
3.4.7.1.18	Headset GPIO Select - #HSGS .....	228
3.4.7.1.19	DVI Speaker Volume Level - #PCMRXG .....	229
3.4.7.1.20	Set delay before close the PCM Clock/SYNC - #PCMDelay .....	229
3.4.7.1.21	Extended Digital Voiceband Interface - #DVICLK .....	229
3.4.7.1.22	Digital Voiceband Interface Configuration- #DVICFG .....	230
3.4.7.1.23	Speaker Mute Control - #SPKMUT .....	231
3.4.7.1.24	Audio Codec - #CODEC .....	232
3.4.7.1.25	Audio Codec - #CODECINFO .....	232
3.4.7.1.26	Select Ringer Path - #SRP .....	235
3.4.7.1.27	Select Ringer Sound - #SRS .....	235
3.4.7.1.28	Audio Profile Factory Configuration - #PRST .....	236
3.4.7.1.29	Audio Profile Configuration save - #PSAV .....	237
3.4.7.1.30	Audio Profile Selection - #PSEL .....	238
3.4.7.1.31	Audio Profile Setting - #PSET .....	238
3.4.7.1.32	Store the ACDB (Audio Calibration Database) file - #ACDB .....	239
3.4.7.1.33	Tone Classes Volume - #TSVOL .....	240
3.4.7.1.34	Set Handsfree Sidetone - #SHFSD .....	241
3.4.7.1.35	Set Headset Sidetone - #SHSSD .....	242



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

3.4.7.1.36	Handsfree Echo Canceller - #SHFEC.....	242
3.4.7.1.37	Handset Echo Canceller - #SHSEC.....	242
3.4.7.1.38	Handsfree Noise Reduction - #SHFNR.....	243
3.4.7.1.39	Handset Noise Reduction - #SHSNR.....	243
3.4.7.1.40	Extended Error Report for Network Reject Cause - #CEERNET.....	244
3.4.7.1.41	Display PIN Counter - #PCT.....	245
3.4.7.1.42	Software ShutDown - #SHDN.....	246
3.4.7.1.43	Rebbots the unit - #REBOOT.....	247
3.4.7.1.44	Periodic Reset - #ENHRST.....	247
3.4.7.1.45	General Purpose Input/Output Pin Control - #GPIO.....	248
3.4.7.1.46	STAT_LED GPIO Setting - #SLED.....	251
3.4.7.1.47	Save STAT_LED GPIO Setting - #SLEDSAV.....	252
3.4.7.1.48	Digital Voiceband Interface - #DVI.....	252
3.4.7.1.49	SMS Ring Indicator - #E2SMSRI.....	252
3.4.7.1.50	Read Analog/Digital Converter Input - #ADC.....	253
3.4.7.1.51	Auxiliary Voltage Output Control - #VAUX.....	254
3.4.7.1.52	Auxiliary Voltage Output save - #VAUXSAV.....	254
3.4.7.1.53	Battery and Charger Status - #CBC.....	255
3.4.7.1.54	GPRS Auto-Attach Property - #AUTOATT.....	255
3.4.7.1.55	Multislot Class Control - #MSCLASS.....	255
3.4.7.1.56	V24 Output Pins Configuration - #V24CFG.....	256
3.4.7.1.57	V24 Output Pins Control - #V24.....	257
3.4.7.1.58	Cell Monitor - #MONI.....	257
3.4.7.1.59	HSDPA Channel Quality Indication - #CQI.....	260
3.4.7.1.60	Packet Service Network Type - #PSNT.....	261
3.4.7.1.61	Read Current Network Status in 3G Network - #RFSTS.....	262
3.4.7.1.62	Temperature Monitor- #TEMPMON.....	266
3.4.7.1.63	Query Temperature Overflow - #QTEMP.....	268
3.4.7.1.64	Temperature Monitor CONFIGURATION - #TEMPCFG.....	268
3.4.7.1.65	Set RING CFG Parameters - #WKIO.....	272
3.4.7.1.66	Wake from Alarm Mode - #WAKE.....	273
3.4.7.1.67	ALARM PIN - #ALARMPIN.....	274
3.4.7.1.68	Serving Cell Information - #SERVINFO.....	275
3.4.7.1.69	Query SIM Status - #QSS.....	276
3.4.7.1.70	Dialling Mode - #DIALMODE.....	277
3.4.7.1.71	No Carrier Indication Handling - #NCIH.....	278
3.4.7.1.72	Automatic Call - #ACAL.....	278
3.4.7.1.73	Extended Automatic Call - #ACALEXT.....	279
3.4.7.1.74	Extended Call Monitoring - #ECAM.....	280
3.4.7.1.75	SMS Overflow - #SMOV.....	281
3.4.7.1.76	Sms Un- Change Status - #SMSUCS.....	281
3.4.7.1.77	Mailbox Numbers - #MBN.....	282
3.4.7.1.78	Message Waiting Indication - #MWI.....	283
3.4.7.1.79	Repeat Last Command - #/.....	284
3.4.7.1.80	Network Timezone - #NITZ.....	284
3.4.7.1.81	Clock Management - #CCLK.....	285
3.4.7.1.82	Clock Mode - #CCLKMODE.....	286
3.4.7.1.83	Alarm Management - +CALA.....	287
3.4.7.1.84	Delete Alarm - +CALD.....	289
3.4.7.1.85	Generic SIM access - +CSIM.....	289
3.4.7.1.86	Alert Sound - +CALM.....	290
3.4.7.1.87	Select Band - #BND.....	291



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

3.4.7.1.88	Automatic Band Selection - #AUTOBND .....	293
3.4.7.1.89	Skip Escape Sequence - #SKIPESC .....	294
3.4.7.1.90	Subscriber number - #SNUM .....	294
3.4.7.1.91	Escape Sequence Guard Time - #E2ESC .....	294
3.4.7.1.92	PPP-GPRS Connection Authentication Type - #GAUTH .....	295
3.4.7.1.93	GSM Antenna Detection - #GSMAD .....	296
3.4.7.1.94	SIM Detection Mode-#SIMDET .....	297
3.4.7.1.95	Teletype Writer - #TTY .....	298
3.4.7.1.96	Write to I2C - #I2CWR .....	298
3.4.7.1.97	Report concatenated SMS indexes - #CMGLCONCINDEX .....	299
3.4.7.1.98	Power Saving Mode Ring Indicator - #PSMRI .....	300
3.4.7.1.99	Extended Reset - #z .....	300
3.4.7.1.100	Enhanced Network Selection - #ENS .....	301
3.4.7.1.101	Enable RX Diversity and set DARP - #RXDIV .....	301
3.4.7.1.102	Swap RX from main to diversity #RXTOGGLE .....	302
3.4.7.1.103	Ciphering indication - # CIPHIND .....	302
3.4.7.1.104	Set Encryption Algorithm - #ENCALG .....	303
3.4.7.1.105	Configure FRAT Trigger parameter - #FRATTRIGGER .....	305
3.4.7.2	Multisocket AT Commands .....	306
3.4.7.2.1	Socket Status - #SS .....	306
3.4.7.2.2	Socket Info - #SI .....	307
3.4.7.2.3	Socket Type - #ST .....	308
3.4.7.2.4	Context Activation - #SGACT .....	309
3.4.7.2.5	Socket Shutdown - #SH .....	310
3.4.7.2.6	Socket Configuration - #SCFG .....	310
3.4.7.2.7	Context activation configuration extended - #SGACTCFGEXT .....	312
3.4.7.2.8	PAD forward character - #PADFWD .....	313
3.4.7.2.9	PAD command features - #PADCMD .....	313
3.4.7.2.10	Socket Configuration Extended - #SCFGEXT .....	313
3.4.7.2.11	Socket Configuration Extended 2 - #SCFGEXT2 .....	315
3.4.7.2.12	Socket Configuration Extended 3 - #SCFGEXT3 .....	317
3.4.7.2.13	Socket Dial - #SD .....	318
3.4.7.2.14	Base64 encoding/decoding of socket sent/received data - #BASE64 .....	320
3.4.7.2.15	Socket Accept - #SA .....	322
3.4.7.2.16	Socket Restore - #SO .....	322
3.4.7.2.17	Socket Listen - #SL .....	323
3.4.7.2.18	Detect the Cause of a Socket disconnection - #SLASTCLOSURE .....	323
3.4.7.2.19	Socket Listen UDP - #SLUDP .....	325
3.4.7.2.20	Receive Data in Command Mode - #SRECV .....	325
3.4.7.2.21	Send UDP data to a specific remote host - #SENDUDP .....	327
3.4.7.2.22	Send UDP data to a specific remote host extended - #SENDUDPEXT .....	328
3.4.7.2.23	Send Data in Command Mode - #SEND .....	329
3.4.7.2.24	Send data in Command Mode extended - #SENDEXT .....	329
3.4.7.2.25	IP Easy Authentication Type - #SGACTAUTH .....	330
3.4.7.2.26	Context Activation and Configuration - #SGACTCFG .....	332
3.4.7.3	SSL Commands .....	333
3.4.7.3.1	Enable a SSL socket - #SSLEN .....	333
3.4.7.3.2	Opens a socket SSL to a remote server - #SSLD .....	334
3.4.7.3.3	Send data through a SSL socket - #SSLSEND .....	335
3.4.7.3.4	Read data from a SSL socket - #SSLRECV .....	337
3.4.7.3.5	Report the status of a SSL socket - #SSLS .....	338
3.4.7.3.6	Close a SSL socket - #SSLH .....	338



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

3.4.7.3.7	Restore a SSL socket after a +++ - #SSLO .....	339
3.4.7.3.8	Configure general parameters of a SSL socket - #SSLCFG .....	340
3.4.7.3.9	Configure security parameters of a SSL socket - #SSLSECCFG .....	340
3.4.7.3.10	Manage the security data - #SSLSECDATA .....	341
3.4.7.4	FTP AT Commands .....	343
3.4.7.4.1	FTP Time - Out - #FTPTO .....	343
3.4.7.4.2	FTP Open - #FTPOPEN .....	343
3.4.7.4.3	FTP Close - #FTPCLOSE .....	344
3.4.7.4.4	FTP Config - #FTPCFG .....	344
3.4.7.4.5	FTP Put - #FTPPUT .....	345
3.4.7.4.6	FTP Get - #FTPGET .....	345
3.4.7.4.7	FTP Get in command mode - #FTPGETPKT .....	346
3.4.7.4.8	FTP Type - #FTPTYPE .....	346
3.4.7.4.9	FTP Delete - #FTPDELE .....	347
3.4.7.4.10	FTP Print Working Directory - #FTPPWD .....	347
3.4.7.4.11	FTP Change Working Directory - #FTPCWD .....	347
3.4.7.4.12	FTP List - #FTPLIST .....	348
3.4.7.4.13	Get file size from FTP - #FTPFSIZE .....	348
3.4.7.4.14	FTP Append - #FTPAPP .....	348
3.4.7.4.15	Set restart position for FTP GET - #FTPREST .....	349
3.4.7.4.16	Receive Data In Command Mode - #FTPREC .....	350
3.4.7.4.17	FTP Append Extended - #FTPAPPEXT .....	351
3.4.7.4.18	FTP Read Message - #FTPMSG .....	353
3.4.7.5	AT Commands .....	353
3.4.7.5.1	Authentication User ID - #USERID .....	353
3.4.7.5.2	Authentication Password - #PASSW .....	353
3.4.7.5.3	Packet Size - #PKTSZ .....	354
3.4.7.5.4	Data Sending Time-Out - #DSTO .....	354
3.4.7.5.5	Socket Inactivity Time-Out - #SKTTO .....	355
3.4.7.5.6	Socket Definition - #SKTSET .....	356
3.4.7.5.7	Socket Open - #SKTOP .....	357
3.4.7.5.8	Query DNS - #QDNS .....	357
3.4.7.5.9	DNS Response Caching - #CACHEDNS .....	358
3.4.7.5.10	Manual DNS Selection - #DNS .....	359
3.4.7.5.11	Socket TCP Connection Time-Out - #SKTCT .....	360
3.4.7.5.12	Socket Parameters save - #SKTSAV .....	360
3.4.7.5.13	Socket Parameters Reset - #SKTRST .....	361
3.4.7.5.14	GPRS Context Activation - #GPRS .....	361
3.4.7.5.15	PPP Configuration - #PPPCFG .....	362
3.4.7.5.16	Socket Dial - #SKTD .....	363
3.4.7.5.17	Socket Listen Ring - #E2SLRI .....	364
3.4.7.5.18	Socket Listen - #SKTL .....	365
3.4.7.5.19	Firewall Setup - #FRWL .....	367
3.4.7.5.20	GPRS Data Volume - #GDATAVOL .....	368
3.4.7.5.21	ICMP Ping Support - #ICMP .....	369
3.4.7.5.22	Send PING request - #PING .....	370
3.4.7.5.23	DNS from Network - #NWDNS .....	371
3.4.7.5.24	Maximum TCP Payload Size - #TCPMAXDAT .....	371
3.4.7.5.25	TCP Reassembly - #TCPREASS .....	372
3.4.7.5.26	Configure the TCP window size- #TCPMAXWIN .....	372
3.4.7.5.27	Ethernet Control Model setup - #ECM .....	373
3.4.7.5.28	Ethernet Control Model configure- #ECMC .....	373



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

3.4.7.5.29	Ethernet Control Model shutdown- #ECMD.....	375
3.4.7.6	Easy Scan® Extension AT Commands.....	375
3.4.7.6.1	Network survey - #CSURV.....	376
3.4.7.6.2	Network Survey (Numeric Format) - #CSURVC.....	380
3.4.7.6.3	Network Survey of User Defined Channels - #CSURVU.....	383
3.4.7.6.4	Network Survey of User Defined Channels (Numeric Format) - #CSURVUC.....	384
3.4.7.6.5	BCCH Network Survey - #CSURVB.....	384
3.4.7.6.6	BCCH Network Survey (Numeric Format) - #CSURVBC.....	385
3.4.7.6.7	Network Survey Format - #CSURVF.....	385
3.4.7.6.8	<CR><LF> Removing On Easy Scan® Commands Family - #CSURVNLF.....	385
3.4.7.6.9	PLMN Network Survey - #CSURVP.....	386
3.4.7.6.10	PLMN Network Survey (Numeric Format) - #CSURVPC.....	386
3.4.7.6.11	Manual Closed Subscriber Group Search- #MCSGS.....	386
3.4.7.7	SIM Toolkit AT Commands.....	387
3.4.7.7.1	SIM Toolkit Interface Activation - #STIA.....	387
3.4.7.7.2	SIM Toolkit Information - #STGI.....	392
3.4.7.7.3	SIM Toolkit Send Response - #STSR.....	398
3.4.7.8	Phonebook AT Commands Set.....	400
3.4.7.8.1	Read Group Entries - #CPBGR.....	400
3.4.7.8.2	Read Group Entries - #CPBGW.....	400
3.4.7.9	SAP AT Commands Set.....	401
3.4.7.9.1	Remote SIM Enable - #RSEN.....	401
3.4.7.10	E-mail Management AT Commands.....	402
3.4.7.10.1	E-mail SMTP Server - #ESMTP.....	402
3.4.7.10.2	E-mail sender address - #EADDR.....	402
3.4.7.10.3	E-mail Authentication Password - #EPASSW.....	403
3.4.7.10.4	E-mail Sending With GPRS Context Activation - #SEMAIL.....	403
3.4.7.10.5	E-mail GPRS Context Activation - #EMAILACT.....	404
3.4.7.10.6	E-mail Sending - #EMAILD.....	405
3.4.7.10.7	E-mail Parameters save - #ESAV.....	406
3.4.7.10.8	E-mail Parameters Reset - #ERST.....	406
3.4.7.10.9	SMTP Read Message - #EMAILMSG.....	406
3.4.7.10.10	Configure SMTP parameters - #SMTPCFG.....	407
3.4.7.10.11	Configure Email PDP Cid - #EMAILPDPCFG.....	407
3.4.7.11	HTTP AT COMMANDS.....	408
3.4.7.11.1	Configure HTTP parameters - #HTTPCFG.....	408
3.4.7.11.2	Send HTTP GET, HEAD or DELETE request - #HTTPQRY.....	410
3.4.7.11.3	Send HTTP POST or PUT request - #HTTPSND.....	411
3.4.7.11.4	Receive HTTP server data - #HTTPRCV.....	413
3.4.7.12	GPS AT Commands Set.....	414
3.4.7.12.1	GPS Power Management - \$GPSP.....	414
3.4.7.12.2	GPS Module Reset - \$GPSR.....	414
3.4.7.12.3	Get Acquired Position - \$GPSACP.....	415
3.4.7.12.4	Unsolicited NMEA Data Configuration - \$GPSNMUN.....	418
3.4.7.12.5	Save GPS Parameters Configuration - \$GPSSAV.....	419
3.4.7.12.6	Restore to Default GPS Parameters - \$GPSRST.....	419
3.4.7.12.7	GPS Antenna Supply Voltage Readout - \$GPSAV.....	419
3.4.7.12.8	GPS Antenna Type Definition - \$GPSAT.....	420
3.4.7.12.9	Set the GNSS (or GLONASS) Capability - \$GPSGLO.....	420
3.4.7.12.10	Unsolicited NMEA Extended Data Configuration - \$GPSNMUNEX.....	421
3.4.7.12.11	GPS Quality of Service - \$GPSQOS.....	423
3.4.7.12.12	GPS Start Location Service Request- \$GPSSLR.....	424



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

3.4.7.12.13	GPS Stop Location Service Request - \$GPSSTOP .....	427
3.4.7.12.14	Update SLP address - \$SLP.....	428
3.4.7.12.15	Update SLP address - \$LCSSLP .....	428
3.4.7.12.16	Update SLP address type - \$SLPTYPE.....	429
3.4.7.12.17	Set the User Plane Secure Transport - \$SUPLSEC .....	429
3.4.7.12.18	Configure SUPL TLS and Hash - \$SUPLCFG .....	430
3.4.7.12.19	Set the version of supported SUPL - \$SUPLV .....	430
3.4.7.12.20	Update location information - \$LCSLUI.....	431
3.4.7.12.21	Update terminal information - \$LCSTER .....	431
3.4.7.12.22	Enable/Disable unsolicited response - \$LICLS .....	432
3.4.7.12.23	LCS certificate - \$LTC .....	433
3.4.7.12.24	Lock context for LCS use - \$LCSLK .....	433
3.4.7.12.25	Clear GPS Data - \$GPSCLR .....	434
3.4.7.13	E-mail Management AT Commands .....	435
3.4.7.13.1	Move Short Message to other memory - #SMSMOVE.....	435
3.4.7.13.2	SMS Commnads Operation Mode - #SMSMODE .....	436
<b>3.5</b>	<b>Custom AT Commands .....</b>	<b>437</b>
3.5.1.1.1	Dormant Control Command - #CDORM .....	437
3.5.1.1.2	Network Emergency Number Update - #NWEN .....	438
3.5.1.1.3	Delete All Phonebook Entries - #CPBD.....	438
3.5.1.1.4	Enhanced call tone disable - #ECTD.....	438
3.5.1.1.5	SIM Presence Status - #SIMPR.....	439
3.5.1.1.6	New Operator Names - #PLMNMODE .....	439
3.5.1.1.7	Network Scan Timer - #NWSCANTMR .....	440
3.5.2	AT Run Commands .....	440
3.5.2.1.1	Enable SMS AT Run service - #SMSATR .....	440
3.5.2.1.2	Set SMS AT Run Parameters - #SMSATRUNCFG.....	441
3.5.2.1.3	SMS AT Run White List - #SMSATWL .....	442
3.5.2.1.4	Set TCP AT Run Service Parameters - #TCPATRUNCFG .....	443
3.5.2.1.5	Enables TCP AT Run Service in listen (server) mode - #TCPATRUNL.....	445
3.5.2.1.6	TCP AT Run Firewall List - #TCPATRUNFRWL .....	445
3.5.2.1.7	TCP AT Run Authentication Parameters List - #TCPATRUNAUTH .....	446
3.5.2.1.8	Enables TCP Run AT Service in dial (client) mode - #TCPATRUND .....	447
3.5.2.1.9	Closes TCP Run AT Socket - #TCPATRUNCLOSE .....	448
3.5.2.1.10	For TCP Run AT Service, allows the user to give AT commands in sequence - #TCPATCMDSEQ .....	448
3.5.2.1.11	Connects the TCP Run AT service to a serial port - #TCPATCONSER.....	449
3.5.2.1.12	Set the delay on Run AT command execution - #ATRUNDelay .....	449
<b>3.6</b>	<b>Event Monitor Commands .....</b>	<b>450</b>
3.6.1.1.1	Enable EvMoni Service - #ENAEVMONI.....	450
3.6.1.1.2	EvMoni Service parameter - #ENAEVMONICFG .....	450
3.6.1.1.3	Event Monitoring - #EVMONI .....	452
3.6.1.1.4	Send Message - #CMGS.....	455
3.6.1.1.5	Write Message To Memory - #CMGW .....	456
<b>3.7</b>	<b>Emergency Call and ECall Management.....</b>	<b>458</b>
3.7.1.1.1	IVS push mode activation - #MSDPUSH .....	458
3.7.1.1.2	Sending MSD data to IVS - #MSDSEND .....	458
3.7.1.1.3	Initiate eCall - +CECALL .....	459
3.7.1.1.4	Embedded IVS inband modem enabling - #ECALL .....	459
3.7.1.1.5	Determine Encoding Rule - #ECALLTYPE .....	460



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

3.7.1.1.6	MSD of Vehicle Information - #MSDVI.....	461
3.7.1.1.7	MSD of GPS Information and Vehicle - #MSDGI.....	462
3.7.1.1.8	Dial an Emergency Call - #EMRGD.....	464
3.7.1.1.9	#MSDREAD – Read current MSD.....	465
<b>3.8</b>	<b>m2mAIR Cloud Commands .....</b>	<b>467</b>
3.8.1.1.1	Configure deviceWISE parameters - #DWCFCG.....	468
3.8.1.1.2	Connect to M2M Service - #DWCONN .....	470
3.8.1.1.3	Query connection status - #DWSTATUS.....	470
3.8.1.1.4	Send data to M2M Service - #DWSEND .....	471
3.8.1.1.5	Send raw data to M2M Service - #DWSENDER .....	472
3.8.1.1.6	Receive data from M2M Service - #DWRCV .....	472
3.8.1.1.7	Receive raw data from M2M Service - #DWRCVR .....	473
3.8.1.1.8	List information on messages pending from M2M Service - #DWLRCV .....	474
3.8.1.1.9	Enable Agent Features - #DWEN.....	474
<b>3.9</b>	<b>OTA commands.....</b>	<b>475</b>
3.9.1.1.1	#OTAEN command.....	475
3.9.1.1.2	OTAUIDM Command.....	476
3.9.1.1.3	#OTASUAN command .....	477
3.9.1.1.4	#OTACFG command .....	480
3.9.1.1.5	#OTASS- Switches FOTA update server address to test or production .....	480
3.9.1.1.6	Terminal Notifications.....	481
<b>3.10</b>	<b>WLAN commands .....</b>	<b>483</b>
3.10.1.1.1	Enable/disable WLAN - #WLANSTART .....	483
3.10.1.1.2	Enable/disable broadcast - #WLANBROADCAST .....	484
3.10.1.1.3	Change the SSID name - #WLANSSID.....	485
3.10.1.1.4	Change WLAN mode - #WLANMODE.....	485
3.10.1.1.5	Return assigned IP address - # WLANIP .....	486
3.10.1.1.6	Return signal strength of the network - # WLANSIGNAL .....	486
3.10.1.1.7	Scanning wifi networks - #WLANSCAN .....	486
3.10.1.1.8	Connect to SSID - #WLANCONNECT .....	486
3.10.1.1.9	Disconnect from the network - #WLANDISCONNECT .....	487
3.10.1.1.10	Use to add or change the hostapd.conf. - #WLANCONFIG .....	487
3.10.1.1.11	Use to changing wlan security parameters - #WLANSECURITY.....	488
3.10.1.1.12	Use to change the channel number and the wlan protocol- # WLANPC.....	488
3.10.1.1.13	Display last error in detailed form. - #WLANCFGERROR.....	489
3.10.1.1.14	Enable/disable MAC address filter- # WLANMACMODE .....	489
3.10.1.1.15	Use to add/ remove MAC address to/from accept list - #WLANMACACCEPT.....	490
3.10.1.1.16	Use to add/ remove MAC address to/from deny list - #WLANMACDENY .....	490
3.10.1.1.17	Use to set the regulatory domain - #WLANCOUNTRYCODE .....	491
3.10.1.1.18	Use to change the WLAN clock size - #WLANCLOCK .....	491
3.10.1.1.19	Enable/disable WLAN unsolicited message - #WLANINDI .....	492
<b>3.11</b>	<b>AT parser abort.....</b>	<b>493</b>
<b>4</b>	<b>List of acronyms.....</b>	<b>494</b>



## DISCLAIMER

The information contained in this document is the proprietary information of Telit Communications S.p.A. and its affiliates (“TELIT”).

The contents are confidential and any disclosure to persons other than the officers, employees, agents or subcontractors of the owner or licensee of this document, without the prior written consent of Telit, is strictly prohibited.

Telit makes every effort to ensure the quality of the information it makes available. Notwithstanding the foregoing, Telit does not make any warranty as to the information contained herein, and does not accept any liability for any injury, loss or damage of any kind incurred by use of or reliance upon the information.

Telit disclaims any and all responsibility for the application of the devices characterized in this document, and notes that the application of the device must comply with the safety standards of the applicable country, and where applicable, with the relevant wiring rules.

Telit reserves the right to make modifications, additions and deletions to this document due to typographical errors, inaccurate information, or improvements to programs and/or equipment at any time and without notice.

Such changes will, nevertheless be incorporated into new editions of this document.

Copyright: Transmittal, reproduction, dissemination and/or editing of this document as well as utilization of its contents and communication thereof to others without express authorization are prohibited. Offenders will be held liable for payment of damages. All rights are reserved.

Copyright © Telit Communications SpA 2008, 2012.



# 1 Introduction

## 1.1 Scope

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

## 1.2 Audience

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

## 1.3 Contact Information, Support

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

[TS-EMEA@telit.com](mailto:TS-EMEA@telit.com)

[TS-NORTHAMERICA@telit.com](mailto:TS-NORTHAMERICA@telit.com)

[TS-LATINAMERICA@telit.com](mailto:TS-LATINAMERICA@telit.com)

[TS-APAC@telit.com](mailto:TS-APAC@telit.com)

Alternatively, use:

<http://www.telit.com/en/products/technical-support-center/contact.php>

For detailed information about where you can buy the Telit modules or for recommendations on accessories and components visit:

<http://www.telit.com>

To register for product news and announcements or for product questions contact Telit's Technical Support Center (TTSC).

Our aim is to make this guide as helpful as possible. Keep us informed of your comments and suggestions for improvements.

Telit appreciates feedback from the users of our information.



## 1.4 Document Organization

This document contains the following chapters:

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

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

Chapter 3: “AT Commands” The core of this **Reference** guide.

## 1.5 Text Conventions



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



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



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

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

## 1.6 Related Documents

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



## 1.7 Document History

Revision	Date	SW release	Changes
ISSUE #0	2012-09-06	-	First draft
ISSUE #1	2013-02-05	17.00.x01-A012	First release in MKT samples
ISSUE #2	2013-08-04	17.00.x01-A020	
ISSUE #3	2013-21-05	17.00.x01-A031	<b>Updated command:</b> #PSNT, #PSMRI, #SCFG, #DSTO, #PKTSZ ,+CNMI ,+WS46  <b>New commands:</b> +CGPIAF, +CTZR, +CTZU, #WKIO, #BND, #AUTOBND, #RFSTS
ISSUE #4	2013-18-07	17.00.x01-A040	<b>Updated command:</b> #BND, +CFUN, +CREG, +CGREG, #SCFGEXT, +CCLK, +CGEQREQ, #SERVINFO, #MONI  <b>New commands:</b> #CAP, #SRP, #ADSP, #PCMRXG, +CLVL, +CMUT, \$GPSP, #DVI, +CGMF, #CCLK, #SHSSD, #SHFSD, #SHFEC, #SHSEC, #SHFNR, #SHSNR, #ADSPC, \$GPSP, \$GPSR, \$GPSACP, \$GPSNMUN, \$GPSSAV, \$GPSRST, \$GPSAV, \$GPSAT, #HFMICG, #HSMICG, #HFRECG, #HSRECG, +CRSL, #SPKMUT, \$GPSGLO, \$GPSNMUNEX, #CODEC, #CODECINFO
ISSUE #5	2013-18-08	17.00.x01-A043	<b>Updated command:</b> +CGPIAF, +CMOD, +GCAP, #SLUDP, #SS, #DVI  <b>New commands:</b> +CEMODE, #ADC, +FLO, &K, #NASC
ISSUE #6	2013-10-10	17.00.x01-A052	<b>Updated command:</b> #ADSPC, S12, \$GPSNMUN, +CGSMS, #SSEND, #NASC ,+CPBR, #ECTD, #DVI, #GPIO  <b>Removed command:</b> #GPSP, #TESTNUM  <b>New commands:</b> #CDORM, #STM, #TTY, #STIA, #STGI, #STSR, #CSCSEXT
ISSUE #7	2013-18-12	17.00.x02	<b>Updated command:</b> #WKIO, +IPR, +CSCS, #PLMNMODE, +CMEE, #GPIO , #TEMPMON, \$GPSAT, #DNS, #SSEND, #SRECV, #SD, #SH, ATE, #STGI



## 80407ST10116A Rev.14.1 - 2017-05-14

## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

			<p>#ECALL, ECALLTYPE, #MSDVI, #MSDGI, #SMSMOVE, #SMSMODE, \$GPSSLR</p> <p>+IMEISV, #IMEISV, #BASE64, #PADCMD, #PADFWD, #DVICFG, +ICCID, #ACDB, #EMRGD, +COLR, #FTPAPPEXT, #FTPREECV, #FTPREST, #FTPAPP, #FTPSIZE, #FTPLIST, #FTPCWD, #FTPPWD, #FTPDELE, #FTPMSG, #FTPTYPE, #FTPGETPKT, #FTPGET, #FTPPUT, #FTPCFG, #FTPCLOSE, #FTPOPEN, #FTPTO</p> <p><b>Removed Commands</b>  +CV120, +CEAP, +CERP, +CVMOD, +CEN, #NVMUSR, +CUAD, #COLR, +ES</p>
ISSUE #11	2014-12-16	17.01.x00	<p><b>Updated command:</b>  #RFSTS, +CPOL, +CMGD, #SSLD, \$GPSNMUNEX, +CSQ, +CIND, #MONI, #PLMNMODE, +CPBF, #CQI, +CPBR, +CPBW, +CGAP, #SGACT, #SMSMODE, #SD, #TEMPCFG, #CAP, #SRP, #HSMICG, #HSRECG, #SHFEC, #SHSEC, #SHFNR, #SHSNR, &amp;C, +CMGS, +CMGW, \$SLP, \$SLPTYPE, \$LCSSLP, \$LCSLUI, \$LCSTER, \$LICLS, \$LTC, \$LCSLK, \$SUPLV, \$SUPLSEC, \$GPSCLR, #GPRS, #SKTSET, +CGQMIN, +CGEQMIN, #BND, \$GPSR, removed +CGMF, #MSDVI, +CALA, #GPIO, removed #CFLO</p> <p><b>New commands:</b>  #CESTHLCK, #ATDELAY, #ALARMPIN, #NCIH, #V24, #V24CFG, +CSIL, \$GPSNMUNEX, #AGPSCFG, #AGPSSND, #AGPSRCV, #SMTPCFG, \$GPSQOS, \$GPSSLR, \$GPSSTOP, #MSDREAD, #CIND, #CGMF</p>



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

ISSUE #12	2015-01-13	<p>17.01.xxx –A040 (LE920 series)</p> <p>17.01.571 (LE910-SVG w/VoLTE)</p>	<p><b>In this revision LE910 and LE920 merged to one document.</b></p> <p><b>Updated command:</b>  +CGREG,#SKTD,#SKTSET,\$GPSR, \$GPSSLR,+CNMI  #HTTPCFG, #SMTPCFG, #ACDB, +CALA, #GPIO, #SKTD,  #SD, #SKTSET, #SSLD, #RFSTS,  #FTPCFG,+CEMODE, #PING, #BND, #ADSPC,+CLIP,  #WLANCONNECT, #WLANMACACCEPT,  #WLANMACDENY,#OTAEN, #OTASUAN ,#OTACFG  ,#OTASS,+CEER, AT\$GPSR, #ENS,  #WLANCOUNTRYCODE</p> <p><b>New commands:</b>  #ENAEVMONI, #ENAEVMONICFG,#EVMONI, #CMGS,  #CMGW, #WLANSTART, #WLANBROADCAST,  #WLANSSID ,#WLANMODE , # WLANMACMODE,  #WLANSCAN ,#WLANCONNECT ,#WLANDISCONNECT  ,#WLANSECURITY ,#WLANCFGERROR ,  #WLANCONFIG ,#WLANMACACCEPT,  #WLANMACDENY, #WLANCOUNTRYCODE,  #CODECIMS, #DVICLK ,#DVICFG, #PCMDelay ,  #CIPHIND ,#EMAILPDPCFG,  #OTAEN, #OTASUAN ,#OTACFG ,#OTASS ,#USBCFG,  #WLANIP, #WLANSIGNAL, #OTAUFTPGETENH,  #OTAUIDM, #WLANPC</p> <p><b>3GPP2 command:</b>  +CSMP, +CSAS, +CRES, +CNMI,  +CMGL, +CMGR, +CMGS, +CMGW,+CPMS,+CDAK</p>
-----------	------------	--	---



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

ISSUE #13	2015-11-04	17.01.xx2 (LE910 series)  17.01.xxx –B065 (LE920 series)	<p><b>Updated command:</b> #WLANSTART, #SSLD, #WLANSECURITY, #SSLCFG, #SSLD, #SLED, #GPIO, #PCMRXG, #EMAILD, +CGREG, +CSQ, #EMAILD, +CGREG, +CSQ, #RFSTS, #RXDIV, #WLANSECURITY, #SSLCFG, #FRWL, #TCPMAXWIN, #ESMTP, #SEMAIL, #EMAILACT, #EMAILD, #MWI, #WKIO, +CGREG, #SGACT, #GPIO, #FTPOPEN, #CMGS, #CMGW, +CMGL, +CMGR, +CMTI, #SMSPSIZ, #FTPGET, #FTPCLOSE, #DNS, #SGACTCFGEXT, +CGREG, +CREG, #WLANSTART, #SSLS, #SSLSECCFG, #SCFGEXT3, #HTTPCFG, #FRATTRIGGER, #FTPCFG, #QSS</p> <p><b>New commands:</b> #TCPMAXWIN, #ECM, #ECMC, #ECMD, #WLANINDI, #FRATTRIGGER, #RXTOGGLE, #PPPCFG, #WLANCLOCK, \$SUPLCFG, #DWCFG, #DWCONN, #DWSTATUS, #DWSEND, #DWSENDER, #DWRCV, #DWRCVR, #DWLRCV, #DWEN</p>
ISSUE #14	2015-12-23		<b>Updated Ch.3.9</b>
ISSUE #14.1	2017-05-14		<b>Cosmetic changes</b>



## 2 Overview

### 2.1 About the document

This document is to describe all AT commands implemented on the Telit wireless module LE9x0



## 3 AT COMMANDS

The Telit wireless module family can be controlled via the serial interface using the standard AT commands<sup>1</sup>. 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. ETSI GSM 07.07 specific AT command and GPRS specific commands.
3. ETSI GSM 07.05 specific AT commands for SMS (Short Message Service) and CBS (Cell Broadcast Service)
4. FAX Class 1 compatible commands

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.

### 3.2 AT Command Syntax

The syntax rules followed by Telit implementation of either Hayes AT commands or GSM/WCDMA commands are very similar to those of standard basic and extended AT commands. There are two types of extended command:

<sup>1</sup> 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.



- **Parameter type commands.** This type of commands may be “set” (to store a value or values for later use), “read” (to determine the current value or values stored), or “tested” (to determine ranges of values supported). Each of them has a test command (trailing =?) to give information about the type of its subparameters; they also have a Read command (trailing?) to check the current values of subparameters.
- **Action type commands.** This type of command may be “executed” or “tested”.
- “executed” to invoke a particular function of the equipment, which generally involves more than the simple storage of a value for later use
- “tested” to determine:  
Whether or not the equipment implements the Action Command (in this case issuing the correspondent Test command - trailing =? - returns the **OK** result code), and if subparameters are associated with the action, the ranges of subparameters values that are supported.

Action commands do not store the values of any of their possible subparameters.

**Moreover:**

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

### 3.2.1 String Type Parameters

A string either enclosed between quotes or not considered a valid string type parameter input. According to V25.ter space characters ignored on the command line and May used freely for formatting purposes. Unless, they embedded on 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 explicitly reported in the specific descriptions.

### 3.2.2 Command Lines

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



The **command line prefix** consists of the characters “AT” or “at”, or, to repeat the execution of the previous command line, the characters “A/” or “a/”.

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

The basic structures of the command line are:

- **ATCMD1<CR>** where **AT** is the command line prefix, **CMD1** is the body of a **basic command** (nb: the name of the command never begins with the character “+”) and **<CR>** is the command line terminator character
- **ATCMD2=10<CR>** where 10 is a subparameter
- **AT+CMD1 ;+CMD2=,10<CR>** These are two examples of **extended commands** (nb: the name of the command always begins with the character “+”<sup>2</sup>).

They are delimited with semicolon. In the second command, the subparameter 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 perform in a single command line as shown below:

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

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

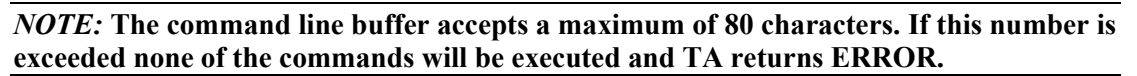
If command **V1** is enabled (verbose responses codes) and all commands in a command line has been performed successfully, result code **<CR><LF>OK<CR><LF>** is sent from the TA to the TE, if subparameter values of a command are not accepted by the TA or command itself is invalid, or command cannot be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

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

<sup>2</sup> 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**





### 3.2.3 ME Error Result Code - +CME ERROR: <err>

This is NOT a command it is the error response to +Cxxx 3gpp TS 27.007 commands.

Syntax: +CME ERROR: <err>

**Parameter:** <err> - error code can be either numeric or verbose (see +CMEE). The possible values of <err> are reported in the table:

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



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

Numeric Format	Verbose Format
106	Illegal ME (#6)*
107	GPRS service not allowed (#7)*
111	PLMN not allowed (#11)*
112	Location area not allowed (#12)*
113	Roaming not allowed in this location area (#13)*
<b>GPRS related errors to a failure to Activate a Context and others:</b>	
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
<b>Easy GPRS® related errors</b>	
550	generic undocumented error
551	wrong state
552	wrong mode
553	context already activated
554	stack already active
555	activation failed
556	context not opened
557	cannot setup socket
558	cannot resolve DN
559	time-out in opening socket
560	cannot open socket
561	remote disconnected or time-out
562	connection failed
563	tx error
564	already listening
<b>Network survey errors</b>	
657	Network survey error (No Carrier)*
658	Network survey error (Busy)*
659	Network survey error (Wrong request)*
660	Network survey error (Aborted)*
<b>Supplementary service related error</b>	
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
<b>AT+COPS test command related error</b>	
680	LU processing
681	Network search aborted
682	PTM mode
<b>AT+WS46 test command related error</b>	
683	Active call state
684	RR connection Established



\*(Values in parentheses are 3gpp TS 24.008 cause codes) Message Service Failure Result Code - +CMS ERROR: <err>

### 3.2.3.1 Message Service Failure Result Code -

#### +CMS ERROR: <err>

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

**Syntax:** +CMS ERROR: <err>

**Parameter:** <err> - numeric error code. The <err> values are reported in the table:

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



## 3.2.4 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

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



### 3.2.5 Command Response Time-Out

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

In the table below are listed only the commands whose interaction with the SIM or the network could lead to long response timings. When not otherwise specified, timing is referred to set command.

For phonebook and SMS writing and reading related commands, timing is referred to commands issued after phonebook sorting is completed.

For DTMF sending and dialing commands timing is referred to module registered on network (“AT+CREG?” answer is “+CREG: 0,1” or “+CREG: 0,5”).

Command	Estimated maximum time to get response (Seconds)
<b>+COPS</b>	125 (test command)
<b>+CLCK</b>	15 (SS operation)
	5 (FDN enabling/disabling)
<b>+CPWD</b>	15 (SS operation)
	5 (PIN modification)
<b>+CLIP</b>	15 (read command)
<b>+CLIR</b>	15 (read command)
<b>+CCFC</b>	15
<b>+CCWA</b>	15
<b>+CHLD</b>	30
<b>+CPIN</b>	30
<b>+CPBS</b>	5 (FDN enabling/disabling)
<b>+CPBR</b>	5 (single reading)
	15 (complete reading of a 500 records full phonebook)
<b>+CPBF</b>	10 (string present in a 500 records full phonebook)
	5 (string not present)
<b>+CPBW</b>	5
<b>+CACM</b>	5
<b>+CAMM</b>	5
<b>+CPUC</b>	180



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

<b>+VTS</b>	20 (transmission of full “1234567890*#ABCD” string with no delay between tones, default duration)
<b>+CSCA</b>	5 (read and set commands)
<b>+CSAS</b>	5
<b>+CMGS</b>	120 after CTRL-Z; 1 to get ‘>’ prompt
<b>+CMSS</b>	120 after CTRL-Z; 1 to get ‘>’ prompt
<b>+CMGW</b>	5 after CTRL-Z; 1 to get ‘>’ prompt
<b>+CMGD</b>	5 (single SMS cancellation) 25 (cancellation of 50 SMS)
<b>+CNMA</b>	120 after CTRL-Z; 1 to get ‘>’ prompt
<b>+CMGR</b>	5
<b>+CMGL</b>	100
<b>+CGACT</b>	150
<b>+CGATT</b>	140
<b>D</b>	120 (voice call) Timeout set with ATS7 (data call)
<b>A</b>	60 (voice call) Timeout set with ATS7 (data call)
<b>H</b>	30
<b>+CHUP</b>	60
<b>+COPN</b>	10
<b>+COPL</b>	180 ( <b>Currently not supported by LE920</b> )
<b>+CRSM</b>	180
<b>+FRH</b>	Timeout set with ATS7
<b>+FTH</b>	Timeout set with ATS7
<b>+FRM</b>	Timeout set with ATS7
<b>+FTM</b>	Timeout set with ATS7
<b>+FRS</b>	Timeout set with the command itself
<b>+FTS</b>	Timeout set with the command itself
<b>+WS46</b>	10
<b>#MBN</b>	10
<b>#MSCLAS S</b>	15
<b>#GPRS</b>	150



<b>#SKTD</b>	140 (DNS resolution + timeout set with AT#SKTCT)
<b>#SKTOP</b>	290 ( context activation + DNS resolution + timeout set with AT#SKTCT)
<b>#QDNS</b>	170
<b>#SGACT</b>	150
<b>#SH</b>	10
<b>#SD</b>	140 (DNS resolution + connection timeout set with AT#SCFG)

### 3.2.6 Command Issuing Timing

The chain Command -> Response shall always be respected and a new command must not be issued before the module has terminated all the sending of its response result code (whatever it may be).

This applies especially to applications that “sense” the **OK** text and therefore may send the next command before the complete code <CR><LF>OK<CR><LF> is sent by the module.

It is advisable anyway to wait for at least 20ms between the end of the reception of the response and the issue of the next AT command.

If the response codes are disabled and therefore the module does not report any response to the command, then at least the 20ms pause time will be respected.

During command mode, due to hardware limitations, under severe CPU load the serial port can lose some characters if placed in autobauding at high speeds. Therefore, if you encounter this problem fix the baud rate with +IPR command.





## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

#CSCSEXT, #HSGS, #CODEC, #CODECINFO, #PSEL, #E2SMSRI, #PSNT, #QSS, #NCIH, #ACAL, #SMOV, #MWI, #SKIPESC, #E2ESC, #SIMDET, #CFLO, #PSMRI, #E2SLRI, #STIA, #SIMPR, #ECALL, #ECAM, +CIND, #ACALEXT, #NITZ, +CLIP, +CLIR, +CIND, +CPBS, +CLVL, +CMUT, +CSIL, #DTMF, #HFMICG, #HFRECG, #STM, #ADSPC, #PCMRXG, #DVICFG, #SPKMUT, #SRS, #TSVOL, #SHFSD, #SHSSD, #DVI, #ACALEXT, +CALM, +CECALL

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

#SELINT, +WS46, +COPS, +CPLS, +CCWE, +CTZU, +CGCLASS, +CGDCONT, +CGQMIN, +CGEQMIN, +CGQREQ, +CGEQREQ, +CEMODE, +CGSMS, +CGEQOS, #AUTOATT, #MSCCLASS, #WKIO, #ALARMPIN, #DIALMODE, #CCLKMODE, +CALA, #GSMAD, #ENS, #SCFGEXT, #SCFGEXT2, #SCFGEXT3, #BASE64, #SSLEN, #DNS, #ICMP, #TCPMAXDAT, #HTTPCFG, #SGPSGLO, #SSL, #SSLTYPE, #SUPLV, #AGPSCFG, #SSLTYPE, #LICLS, #SUPLV, #SUPLV, #SMSMODE, #SMSMODE, #NWEN, #PLMNMODE, #NWSANTMR, #SMSATRUN, #SMSATRUNCFG, #TCPATRUNCFG, #ECALLTYPE, #BND, #SCFG, #TCPREASS, &Y, #VAUX, #TEMPMON, #BND, #TTY, #PASSW, #EPASSW, #SMTPCFG, #TCPATRUNFRWL,

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

+CSCA, +CPNER	+CSMP,	+CSCB,
Stored by +CSAS <sup>3</sup> command and restored by +CRES <sup>4</sup> command.		
#USERID, #DSTO, #SKTCT	#PASSW, #SKTTO,	#PKTSZ, #SKTSET

Stored by #SKTSAV command and automatically restored at startup.  
Factory default values will be restored by the command #SKTRST.

## 3.4 AT Commands References

### 3.4.1 Command Line General Format

#### 3.4.1 Command Line Prefixes

##### 3.4.1.1.1 *Starting a Command Line - AT*

<sup>3</sup> Both commands +CSAS and +CRES deal with non-volatile memory, intending for it either the NVM and the SIM storage.



AT - Starting A Command Line	
AT	The prefix <b>AT</b> , or <b>at</b> , is a two-character abbreviation ( <b>ATtention</b> ), always used to start a command line to be sent from TE to TA
Reference	3GPP TS 27.007

#### 3.4.1.1.2 Last Command Automatic Repetition - A/

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



## 3.4.2 General Configuration Commands

### 3.4.2.1.1 *Select Interface Style - #SELINT*

#SELINT - Select interface style	
AT#SELINT=<v>	Set command sets the AT command interface style depending on parameter <v>.  <b>Parameter:</b> <v> - AT command interface 2 - switches the AT command interface style of the product, to LE920 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 recommended performing a reboot the module after every #SELINT setting.

### 3.4.2.1.2 *Set notification port - #NOPT*

#NOPT - Set notification port

AT#NOPT=<num>

Set command sets the port output notification data (Indication data)

LE920 Family has the following 5 ports:

- 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.

Each port has the capability like as below table

	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									

USB Diagnostic and UART TRACE are reserved for Telit Service.

USB Modem, USB Auxiliary and UART DATA are dedicated for M2M Interface.



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

### 3.4.2.1.3 *USB composition configuration - #usbcfg*

#usbcfg – USB composition configuration	
<b>AT#USBCFG=&lt;composition&gt;</b>	Set command sets the USB composition according to <composition> number given, where: 0 - use 0x1201 composition file 1 - use 0x1203 composition file 2 - use 0x1204 composition file 3 - use 0x1205 composition file 4 - use 0x1206 composition file  0x1201: DIAG + ADB + RMnet + NMEA + MODEM + MODEM + SAP  0x1203: DIAG + ADB + Rndis + NMEA + MODEM + MODEM + SAP  0x1204: DIAG + ADB + MBIM + NMEA + MODEM + MODEM + SAP  0x1205: MBIM  0x1206: DIAG + ADB + ECM + NMEA + MODEM + MODEM + SAP  After setting a new composition the device will reboot.  If trying to set the same composition as currently set the command will return error.



	<p>If composition settings failed the command will return error.</p> <p>If the new composition was set successfully the command will return OK.</p>
<b>AT#USBCFG?</b>	<p>Read command returns the current composition set by number as detailed in the section above:</p> <p>0x1201 composition file returns 0 0x1203 composition file returns 1 0x1204 composition file returns 2 0x1205 composition file returns 3 0x1206 composition file returns 4</p>
<b>AT#USBCFG=?</b>	Test command returns OK.

#### 3.4.2.1.4 *command Delay* - #ATDELAY

<b>#ATDELAY – AT Command Delay</b>	<b>SELINT 2</b>
<b>AT#ATDELAY=&lt;delay&gt;</b>	<p>Set command sets a delay in second for the execution of following AT command.</p> <p><b>Parameters:</b> &lt;delay&gt; - delay in 100 milliseconds intervals; 0 means no delay Note: &lt;delay&gt; is only applied to first command executed after #ATDELAY</p>
<b>AT#ATDELAY?</b>	<p>Read command reports the currently selected parameter in the format:</p> <p><b>#ATDELAY: &lt;delay&gt;</b></p>



<b>AT#ATDELAY=?</b>	Test command returns the supported range of values for parameter <b>&lt;delay&gt;</b>
<b>Example</b>	Delay “at#gpio=1,1,1” execution of 5 seconds: at#gpio=1,0,1;#atdelay=50;#gpio=1,1,1 OK

### 3.4.3 Hayes Compliant AT Commands

#### 3.4.3.1 Generic Modem Control

#### 3.4.3.1.1 Set To Factory-Defined Configuration - &F

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

#### 3.4.3.1.2 *Soft Reset - Z*

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



<b>Z - Soft Reset</b>	
Reference	V25ter.

### 3.4.3.1.3 *Select Active Service Class - +FCLASS*

<b>+FCLASS - Select Active Service Class</b>	
AT+FCLASS=<n>	Set command sets the wireless module in specified connection mode (data, fax, voice). Hence, all the calls done afterwards will be data or voice.  <b>Parameter:</b> <n> 0 - data 1 - fax class(not supported by LTE) 8 - voice
AT+FCLASS?	Read command returns the current configuration value of the parameter <n>.
AT+FCLASS=?	Test command returns all supported values of the parameters <n>.
Reference	3GPP TS 27.007

### 3.4.3.1.4 *Default Reset Basic Profile Designation - &Y*

<b>&amp;Y - Default Reset Basic Profile Designation</b>	
AT&Y[<n>]	Execution command defines the basic profiles loaded on startup.  <b>Parameter:</b> <n> 0..1 - profile (default is 0): the wireless module is able to store 2 complete configurations (see &W).  <b>Note:</b> Differently from command Z<n>, which loads just once the desired profile, the one chosen through command &Y will be loaded on every startup.  <b>Note:</b> If parameter is omitted, the command has the same behaviour as AT&Y0  <b>Note:</b> In LE920, AT&Y not supported.



### 3.4.3.1.5 Default Reset Full Profile Designation - &P

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

### 3.4.3.1.6 Store Current Configuration - &W

<b>&amp;W - Store Current Configuration</b>	
<b>AT&amp;W[&lt;n&gt;]</b>	<p>Execution command stores on profile &lt;n&gt; the complete configuration of the device.</p> <p><b>Parameter:</b>  &lt;n&gt;  0..1 - profile</p> <p><b>Note:</b> if parameter omitted, the command has the same behaviour of <b>AT&amp;W0</b>.</p>

### 3.4.3.1.7 Store Telephone Number on Module Internal Phonebook - &Z

<b>Z - Store Telephone Number In The Wireless Module Internal Phonebook</b>	
<b>AT&amp;Z&lt;n&gt;=&lt;nr&gt;</b>	<p>Execution command stores in the record &lt;n&gt; the telephone number &lt;nr&gt;. The records cannot be over written, They must be cleared before rewriting.</p> <p><b>Parameters:</b>  &lt;n&gt; - phonebook record  &lt;nr&gt; - telephone number(string type)</p> <p><b>Note:</b> 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><b>Note:</b> to delete the record &lt;n&gt; the command <b>AT&amp;Z&lt;n&gt;=&lt;CR&gt;</b> must be issued.</p> <p><b>Note:</b> the records in the module memory can be viewed with the command <b>&amp;N</b>, while the telephone number stored in the record <b>n</b> can be dialed by giving the command <b>ATDS=&lt;n&gt;</b>.</p>



#### 3.4.3.1.8 *Display Internal Phonebook Stored Numbers - &N*

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

#### 3.4.3.1.9 *Manufacturer Identification - +GMI*

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

#### 3.4.3.1.10 *Model Identification - +GMM*

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

#### 3.4.3.1.11 *Request FLEX Revision Identification - #CGMF*

<b>#CGMF – Request FLEX Revision Identification</b>	
<b>AT#CGMF</b>	Execution command returns the device FLEX identification code without command echo.
<b>AT#CGMF=?</b>	Test command returns <b>OK</b> result code.

#### 3.4.3.1.12 *Revision Identification - +GMR*

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



### 3.4.3.1.13 *Capabilities List - +GCAP*

<b>+GCAP - Capabilities List</b>	
<b>AT+GCAP</b>	Execution command returns the equipment supported command set list. <b>Where:</b> +CGSM: 3GPP TS command set +FCLASS: Fax command set +DS: Data Service common modem command set +ES: WCDMA data Service common modem command set +MS: Mobile Specific command set +ES: WCDMA data Service common modem command set
<b>Reference</b>	V.25ter

### 3.4.3.1.14 *Serial Number - +GSN*

<b>+GSN - Serial Number</b>	
<b>AT+GSN</b>	Execution command returns the device board serial number.  <b>Note:</b> The number returned is not the IMSI, it is only the board number
<b>AT+GSN[=&lt;snt&gt;]</b>	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. <b>Parameter:</b> <snt> - 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. <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.
<b>Reference</b>	V.25ter



### 3.4.3.1.15 *Display Current Base Configuration and Profile - &V*

<b>&amp;V - Display Current Base Configuration And Profile</b>	
<b>AT&amp;V</b>	Execution command returns some of the base configuration parameters settings.

### 3.4.3.1.16 *Display Current Configuration and Profile - &V0*

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

### 3.4.3.1.17 *S Registers Display - &V1*

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

### 3.4.3.1.18 *Display Last Connection Statistics - &V2*

<b>&amp;V2 - Display Last Connection Statistics</b>	
<b>AT&amp;V2</b>	Execution command returns the last connection statistics & connection failure reason.

### 3.4.3.1.19 *Extended S Registers Display - &V3*



&V3 - Extended S Registers Display														
AT&V3	Execution command returns the value of the S registers in decimal and hexadecimal value in the format:  <table><tr><td>REG</td><td>DEC</td><td>HEX</td></tr><tr><td>&lt;reg0&gt;</td><td>&lt;dec&gt;</td><td>&lt;hex&gt;</td></tr><tr><td>&lt;reg1&gt;</td><td>&lt;dec&gt;</td><td>&lt;hex&gt;</td></tr><tr><td>...</td><td></td><td></td></tr></table> <b>Where:</b> <regn> - S register number 000..005 007 012 025 030 038 <dec> - current value in decimal notation <hex> - current value in hexadecimal notation		REG	DEC	HEX	<reg0>	<dec>	<hex>	<reg1>	<dec>	<hex>	...		
REG	DEC	HEX												
<reg0>	<dec>	<hex>												
<reg1>	<dec>	<hex>												
...														

#### 3.4.3.1.20 *Single Line Connect Message - \V*

<b>\V - Single Line Connect Message</b>	
<b>AT\V&lt;n&gt;</b>	<p>Execution command set single line connect message.</p> <p><b>Parameter:</b>            &lt;n&gt;            0 - off            1 - on</p>

#### 3.4.3.1.21 *Country of Installation - +GCI*

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

#### 3.4.3.1.22 *Line Signal Level - %L*



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

#### 3.4.3.1.23 *Line Quality - %Q*

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

#### 3.4.3.1.24 *Speaker Loudness - L*

<b>L - Speaker Loudness</b>	
<b>ATL&lt;n&gt;</b>	It has no effect and is included only for backward compatibility with landline modems

#### 3.4.3.1.25 *Speaker Mode - M*

<b>M - Speaker Mode</b>	
<b>ATM&lt;n&gt;</b>	It has no effect and is included only for backward compatibility with landline modems

### 3.4.3.2 DTE - Modem Interface Control

#### 3.4.3.2.1 *Command Echo - E*

<b>E - Command Echo</b>	
<b>ATE[&lt;n&gt;]</b>	Set command enables/disables the command echo.  <b>Parameter:</b> <b>&lt;n&gt;</b> 0 - Disables command echo 1 - Enables command echo (factory default), hence command sent to the device echo back to the <b>DTE</b> before the response is given.  <b>Note:</b> if parameter is omitted, the command has the same behaviour of <b>ATE0</b>
<b>ATE?</b>	Read command returns the current value of n.
<b>Reference</b>	V25ter



### 3.4.3.2.2 *Quiet Result Codes - Q*

<b>Q - Quiet Result Codes</b>	
<b>ATQ[&lt;n&gt;]</b>	<p>Set command enables or disables the result codes.</p> <p><b>Parameter:</b>  <b>&lt;n&gt;</b>            0 - enables result codes (factory default)            1 - disables result codes            2 - disables result codes            (only for backward compatibility)</p> <p><b>Note:</b> After issuing either <b>ATQ1</b> or <b>ATQ2</b> every information text transmitted in response to commands is not affected</p> <p><b>Note:</b> if parameter is omitted, the command has the same behaviour of <b>ATQ0</b></p>
<b>Example</b>	<p>After issuing <i>ATQ1</i> or <i>ATQ2</i></p> <p>AT+CGACT=?  <b>+CGACT: (0-1) nothing is appended to the response</b></p>
<b>Reference</b>	V25ter

### 3.4.3.2.3 *Response Format - V*

<b>V - Response Format</b>					
<b>ATV[&lt;n&gt;]</b>	<p>Set command determines the contents of the header and trailer transmitted with result codes and information responses. It also determines if result codes are transmitted in a numeric form or an alphanumeric form (see [§3.2.4 Information Responses And Result Codes] for the table of result codes).</p> <p><b>Parameter:</b>  <b>&lt;n&gt;</b>            0 - limited headers and trailers and numeric format of result codes</p> <table border="1"> <tr> <td>i formation responses</td><td>&lt;text&gt;&lt;CR&gt;&lt;LF&gt;</td></tr> <tr> <td>result codes</td><td>&lt;numeric code&gt;&lt;CR&gt;</td></tr> </table> <p>1 - full headers and trailers and verbose format of result codes (factory default)</p>	i formation responses	<text><CR><LF>	result codes	<numeric code><CR>
i formation responses	<text><CR><LF>				
result codes	<numeric code><CR>				



V - Response Format			
		information responses	<code>&lt;CR&gt;&lt;LF&gt;</code> <code>&lt;text&gt;&lt;CR&gt;&lt;LF&gt;</code>
		result codes	<code>&lt;CR&gt;&lt;LF&gt;</code> <code>&lt;verbose code&gt;&lt;CR&gt;&lt;LF&gt;</code>
	<p><b>Note:</b> the <code>&lt;text&gt;</code> portion of information responses is not affected by this setting.</p> <p><b>Note:</b> if parameter is omitted, the command has the same behaviour of ATV0</p>		
<b>Reference</b>	V25ter		



#### 3.4.3.2.4 Extended Result Codes - X

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

#### 3.4.3.2.5 Identification Information - I

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

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

<b>&amp;C - Data Carrier Detect (DCD) Control</b>	
<b>AT&amp;C[&lt;n&gt;]</b>	Set command controls the RS232 <b>DCD</b> output behaviour.



<b>&amp;C - Data Carrier Detect (DCD) Control</b>	
	<p><b>Parameter:</b>  <b>&lt;n&gt;</b>            0 - <b>DCD</b> remains <b>high</b> always.            1 - <b>DCD</b> follows the Carrier detect status: if carrier detected <b>DCD</b> is high, otherwise <b>DCD</b> is <b>low</b>. (factory default)            2 - <b>DCD</b> is always <b>high</b> except for 1sec 'wink' when a data call is disconnected.</p> <p><b>Note:</b> if parameter is omitted, the command has the same behaviour of <b>AT&amp;C0</b></p>
<b>Reference</b>	V25ter

#### 3.4.3.2.7 *Data Terminal Ready (DTR) Control - &D*

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

#### 3.4.3.2.8 *Standard Flow Control - \Q*

<b>\Q - Standard Flow Control</b>	
<b>AT\Q[&lt;n&gt;]</b>	<p>Set command controls the RS232 flow control behaviour.</p> <p><b>Parameter:</b>  <b>&lt;n&gt;</b>            0 - no flow control</p>



<b>\Q - Standard Flow Control</b>	
	1 - software bi-directional with filtering ( <b>XON/XOFF</b> ) 2 - hardware mono-directional flow control (only <b>CTS</b> active) 3 - hardware bi-directional flow control (both <b>RTS/CTS</b> active) (factory default)  <b>Note:</b> if parameter is omitted, the command has the same behaviour as <b>AT\Q0</b>  <b>Note:</b> Hardware flow control ( <b>AT\Q3</b> ) is not active in command mode.  <b>Note:</b> \Q's settings are functionally a subset of &K's ones.
<b>Reference</b>	V25ter

### 3.4.3.2.9 Flow Control - &K

<b>&amp;K - Flow Control</b>	SELINT 2
<b>AT&amp;K[&lt;n&gt;]</b>	Set command controls the RS232 flow control behaviour. <b>Parameter:</b> <n> <b>0</b> - no flow control <b>3</b> - hardware bi-directional flow control (both RTS/CTS active) (factory default) <b>Note:</b> if parameter is omitted, the command has the same behaviour as AT&K0. <b>Note:</b> &K has no Read Command. To verify the current setting of &K, simply check the settings of the active profile issuing AT&V. <b>Note:</b> Hardware flow control (AT&K3) is not active in command mode.
<b>Note:</b> &K has no Read Command. To verify the current setting of &K, simply check the settings of the active profile issuing AT&V.	
<b>Note:</b> Hardware flow control (AT&K3) is not active in command mode.	

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

<b>&amp;S - Data Set Ready (DSR) Control</b>	
<b>AT&amp;S[&lt;n&gt;]</b>	Set command controls the RS232 <b>DSR</b> pin behaviour. <b>Parameter:</b> <n> <b>0</b> - always <b>High</b> <b>1</b> - Follows the GSM traffic channel indication <b>2</b> - <b>High</b> when connected



&S - Data Set Ready (DSR) Control	
	<p>3 - <b>High</b> when device is ready to receive commands (factory default).</p> <p><b>Note:</b> if option 1 selected, then <b>DSR</b> tied <b>High</b> when the device receives from the network the UMTS traffic channel indication.</p> <p><b>Note:</b> in power saving mode the <b>DSR</b> pin always tied <b>Low</b> &amp; USB_VBUS pin always tied Low.</p> <p><b>Note:</b> if parameter is omitted, the command has the same behaviour of <b>AT&amp;S0</b></p> <p><b>Note:</b> If option 1 or 2 active, <b>DSR</b> will not tied <b>High</b> in case of GSM voice connection.</p>

#### 3.4.3.2.11 Fixed DTE Interface Rate - +IPR

+IPR - Fixed DTE Interface Rate	
AT+IPR=<rate>	<p>Set command specifies the <b>DTE</b> speed (UART only) at which the device accepts commands during command mode operations. The command could be use to fix the <b>DTE-DCE</b> interface speed.</p> <p><b>Note:</b> DTE speed of USB does not change.</p> <p><b>Parameter:</b>            &lt;rate&gt;            300            600            1200            2400            4800            9600            19200            38400            57600            115200 (default)            230400            460800            921600            2900000            3200000            3686400            4000000</p>



<b>+IPR - Fixed DTE Interface Rate</b>	
	If <b>&lt;rate&gt;</b> specified <b>DTE-DCE</b> speed fixed to that speed, hence no speed auto-detection (autobauding) enabled.
<b>AT+IPR?</b>	Read command returns the current value of <b>+IPR</b> parameter.
<b>AT+IPR=?</b>	Test command returns the list of supported autodetectable <b>&lt;rate&gt;</b> values and the list of fixed-only <b>&lt;rate&gt;</b> values in the format:  <b>+IPR:</b> (list of supported autodetectable <b>&lt;rate&gt;</b> values), (list of fixed-only <b>&lt;rate&gt;</b> values)
<b>Reference</b>	V25ter

#### 3.4.3.2.12 *DTE-Modem Local Flow Control - +IFC*

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

#### 3.4.3.2.13 *DTE-Modem Character Framing - +ICF*

<b>+ICF - DTE-Modem Character Framing</b>	
<b>AT+ICF=&lt;format&gt;[,&lt;parity&gt;]</b>	Set command defines the asynchronous character framing used when autobauding is disabled. The LE920 family supports only the 8 Data, 1 Stop setting.  <b>Parameters:</b> <b>&lt;format&gt;</b> - 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. <b>3</b> - 8 Data, 1 Stop (default)



<b>+ICF - DTE-Modem Character Framing</b>	
	<p><b>&lt;parity&gt;</b> - determines how the parity bit is generated and checked, if present; setting this subparameter has no meaning.</p> <p>0 - Odd (not supported)</p> <p>1 - Even (not supported)</p>
<b>AT+ICF?</b>	Read command returns current settings for subparameters <b>&lt;format&gt;</b> and <b>&lt;parity&gt;</b> . The current setting of subparameter <b>&lt;parity&gt;</b> will always be represented as 0.
<b>AT+ICF=?</b>	Test command returns the ranges of values for the parameters <b>&lt;format&gt;</b> and <b>&lt;parity&gt;</b>
<b>Reference</b>	V25ter
<b>Example</b>	<p>AT+ICF = 3 - 8N1 (default)</p> <p>AT+ICF=?</p> <p>+ICF: (3)</p>

#### 3.4.3.2.14 *Ring (RI) Control - \R*

<b>\R - Ring (RI) Control</b>	
<b>ATVR[&lt;n&gt;]</b>	<p>Set command controls the <b>RING</b> output pin behaviour.</p> <p><b>Parameter:</b></p> <p><b>&lt;n&gt;</b></p> <p>0 - <b>RING</b> on during ringing and further connection</p> <p>1 - <b>RING</b> on during ringing (factory default)</p> <p>2 - <b>RING</b> follows the ring signal</p> <p><b>Note:</b> to check the ring option status use <b>&amp;V</b> command.</p> <p><b>Note:</b> if parameter is omitted, the command has the same behaviour of <b>ATVR0</b></p>

#### 3.4.3.2.15 *DTE-Modem Local Rate Reporting - +ILRR*

<b>+ILRR - DTE-Modem Local Rate Reporting</b>	
<b>AT+ILRR=&lt;n&gt;</b>	<p>Set command controls whether or not the <b>+ILRR: &lt;rate&gt;</b> information text is transmitted from the <b>modem</b> (module) to the <b>DTE</b>.</p> <p><b>Parameter:</b></p> <p><b>&lt;n&gt;</b></p> <p>0 - local port speed rate reporting disabled (factory default)</p> <p>1 - local port speed rate reporting enabled</p> <p><b>Note:</b> this information if enabled is sent upon connection.</p>
<b>AT+ILRR?</b>	Read command returns active setting of <b>&lt;n&gt;</b> .



<b>+ILRR - DTE-Modem Local Rate Reporting</b>	
<b>AT+ILRR=?</b>	Test command returns all supported values of the parameter <n>
<b>Reference</b>	V25ter

### 3.4.3.2.16 *Select Flow Control Specified By Type - +FLO*

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

## 3.4.3.3 **Call Control**

### 3.4.3.3.1 *Dial - D*

<b>D – Dial</b>	
<b>ATD&lt;number&gt;[;]</b>	Execution command starts a call to the phone number given as parameter. If “;” is present, a <b>voice</b> call to the given number is performed, regardless of the current value of the connection mode set by +FCLASS command. <b>Parameter:</b> <number> - phone number to be dialed  <b>Note:</b> type of call ( <b>data</b> , <b>fax</b> or <b>voice</b> ) depends on last +FCLASS setting. <b>Note:</b> the numbers accepted are 0-9 and *,#,”A”,”B”,”C”,”+”. <b>Note:</b> for backwards compatibility with landline modems modifiers “T”, ”P”,”R”, ”,”,”W”, “!”, “@” are accepted but have no effect.
<b>ATD&gt;&lt;str&gt;[;]</b>	Issues a call to phone number which corresponding alphanumeric field is <str>; all available memories will search for the correct entry. If “;” is present a <b>voice</b> call is performed.  <b>Parameter:</b>



D – Dial	
	<p><b>&lt;str&gt;</b> - alphanumeric field corresponding to phone number. It must be enclosed in quotation marks.</p> <p><b>Note:</b> parameter <b>&lt;str&gt;</b> is case sensitive.</p> <p><b>Note:</b> used character set should be the one selected with <b>+CSCS</b>.</p>
<b>ATD&lt;mem&gt;&lt;n&gt;[;]</b>	<p>Issues a call to phone number in phonebook memory storage <b>&lt;mem&gt;</b>, entry location <b>&lt;n&gt;</b> (available memories may be queried with <b>AT+CPBS=?</b>). If “;” is present a <b>voice</b> call is performed.</p> <p><b>Parameters:</b>  <b>&lt;mem&gt;</b> - phonebook memory storage;  “SM” - SIM/UICC phonebook  “FD” - SIM/USIM fixed dialing phonebook  “LD” - SIM/UICC last dialing phonebook  “MC” – Missed calls list  “RC” - Received calls list  “DC” - MT dialled calls list  “ME” - MT phonebook  “EN” - SIM/USIM (or MT) emergency number(+CPBW is not be applicable for this storage)  “ON” - SIM (or MT) own numbers (MSI torage may be available through +CNUM also).  “MB” - Mailbox numbers stored on SIM.  If this service is provided by the SIM (see #MBN).</p> <p><b>&lt;n&gt;</b> - entry location; it should be in the range of locations available in the memory used.</p>
<b>ATD&lt;n&gt;[;]</b>	<p>Issue a call to a phone number on entry location <b>&lt;n&gt;</b> of the active phonebook memory storage (see <b>+CPBS</b>). If “;” is present a <b>voice</b> call is performed.</p> <p><b>Parameter:</b>  <b>&lt;n&gt;</b> - active phonebook memory storage entry location; it should be in the range of locations available in the active phonebook memory storage.</p>
<b>ATDL</b>	Issues a call to the last number dialed.
<b>ATDS=&lt;nr&gt;[;]</b>	<p>Issues a call to the number stored in the MODULE internal phonebook position number <b>&lt;nr&gt;</b>. If “;” is present a <b>voice</b> call is performed.</p> <p><b>Parameter:</b>  <b>&lt;nr&gt;</b> - internal phonebook position to be called  (See commands <b>&amp;N</b> and <b>&amp;Z</b>)</p>
<b>ATD&lt;number&gt;I[;]</b> <b>ATD&lt;number&gt;i[;]</b>	<p>Issues a call overwriting the CLIR supplementary service subscription default value for this call If “;” is present a <b>voice</b> call is performed. <b>I</b> - invocation, restrict CLI presentation</p>



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

### 3.4.3.3.2 Tone Dial - T

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

### 3.4.3.3.3 Pulse Dial - P



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

#### 3.4.3.3.4 *Answer - A*

<b>A - Answer</b>	
<b>ATA</b>	Execution command answers an incoming call if automatic answer is disabled.  <b>Note:</b> This command MUST be the last in the command line and followed immediately by a <CR> character.
<b>Reference</b>	V25ter.

#### 3.4.3.3.5 *Disconnect - H*

<b>H - Disconnect</b>	
<b>ATH</b>	Execution command uses to close the current conversation (voice, data or fax).  <b>Note:</b> 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 <b>register S2</b> ) is required before issuing this command, otherwise if <b>&amp;D1</b> option is active, <b>DTR</b> pin has to be tied <b>Low</b> to return in command mode.
<b>Reference</b>	V25ter.

#### 3.4.3.3.6 *Return To On Line Mode - O*

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

#### 3.4.3.3.7 *Guard Tone - &G*

<b>&amp;G - Guard Tone</b>	
<b>AT&amp;G</b>	Set command has no effect is included only for backward compatibility with landline modems.



<b>&amp;G - Guard Tone</b>	

### 3.4.3.3.8 *Sync/Async Mode - &Q*

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

## 3.4.3.4 Modulation Control

### 3.4.3.4.1 *Line Quality Monitor and Auto Retrain or Fallback/Fallforward - %E*

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

## 3.4.3.5 Compression Control

### 3.4.3.5.1 *Data Compression - +DS*

<b>+DS - Data Compression</b>	
<b>AT+DS=[&lt;dir&gt;[,&lt;n&gt;eg&gt;[,&lt;P1&gt;[,&lt;P2&gt;]]]]</b>	<p>Set command sets the V42 compression parameter.</p> <p><b>Parameter:</b></p> <p><b>&lt;dir&gt;</b> : desired direction of operations  0 - no compression (factory default)  1 - Transmit only.  2 - Receive only.  3 - Both directions, accept any direction )Default(.</p> <p><b>&lt;n&gt;</b> : 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 &lt;direction&gt;.</p> <p><b>&lt;P1&gt;</b> : maximum number of dictionary entries  512-2048(Factory default is 2048)</p> <p><b>&lt;P2&gt;</b> : the maximum string length  6 – the only supported value</p>



<b>+DS - Data Compression</b>	
<b>AT+DS?</b>	Read command returns current value of the data compression parameter.
<b>AT+DS=?</b>	Test command returns all supported values of the parameter <n>
<b>Reference</b>	V25ter

### 3.4.3.5.2 Data Compression Reporting - +DR

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

## 3.4.3.6 Break Control

### 3.4.3.6.1 Transmit Break To Remote - \B

<b>\B - Transmit Break To Remote</b>	
<b>ATVB</b>	Execution command has no effect and is included only for backward compatibility with landline modems

### 3.4.3.6.2 Break Handling - \K

<b>\K - Break Handling</b>	
<b>ATVK[&lt;n&gt;]</b>	Execution command has no effect and is included only for backward compatibility with landline modems <b>Parameter:</b> <n> 0..5



#### 3.4.3.6.3 *Operating Mode - \N*

<b>N - Operating Mode</b>	
AT+N	Execution command has no effect and is included only for backward compatibility with landline modems

### 3.4.3.7 S Parameters

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

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



**NOTE:** what follows is a special way to select and set an **S-Parameter**:

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

**Example:**

**ATS7<CR>** establishes **S7** as last selected parameter.

**Reference:** V25ter and RC56D/RC336D



### 3.4.3.7.1 *Number of Rings to Auto Answer - S0*

<b>S0 - Number Of Rings To Auto Answer</b>	
<b>ATS0=[&lt;n&gt;]</b>	Set command sets the number of rings required before device automatically answers an incoming call.  <b>Parameter:</b> <n> - number of rings 0 - auto answer disabled (factory default) 1..255 - number of rings required before automatic answer.
<b>ATS0?</b>	Read command returns the current value of <b>S0 parameter</b> .
<b>Reference</b>	V25ter

### 3.4.3.7.2 *Ring Counter - S1*

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

### 3.4.3.7.3 *Escape Character - S2*

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



#### 3.4.3.7.4 Command Line Termination Character - S3

<b>S3 - Command Line Termination Character</b>	
<b>ATS3=[&lt;char&gt;]</b>	<p>Set command sets the value of the character 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 <b>S4 parameter</b>.</p> <p><b>Parameter:</b>            &lt;char&gt; - command line termination character            (decimal ASCII)            0..127 - factory default value is 13 (ASCII &lt;CR&gt;)</p> <p><b>Note:</b> the “previous” value of <b>S3</b> used to determine the command line termination character for entering the command line containing the <b>S3</b> setting command. However the result code issued shall use the “new” value of <b>S3</b> (as set during the processing of the command line)</p>
<b>ATS3?</b>	<p>Read command returns the current value of <b>S3 parameter</b>.</p> <p><b>Note:</b> the format of the numbers in output is always 3 digits, left-filled with 0s</p>
<b>Reference</b>	V25ter

#### 3.4.3.7.5 Response Formatting Character - S4

<b>S4 - Response Formatting Character</b>	
<b>ATS4=[&lt;char&gt;]</b>	<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 <b>S3 parameter</b>.</p> <p><b>Parameter:</b>            &lt;char&gt; - response formatting character (decimal ASCII)            0..127 - factory default value is 10 (ASCII LF)</p> <p><b>Note:</b> if the value of <b>S4</b> changed in a command line, the result code issued in response of that command line will use the new value of <b>S4</b>.</p>
<b>ATS4?</b>	<p>Read command returns the current value of <b>S4 parameter</b>.</p> <p><b>Note:</b> the format of the numbers in output is always 3 digits, left-filled with 0s</p>
<b>Reference</b>	V25ter

#### 3.4.3.7.6 Command Line Editing Character - S5

<b>S5 - Command Line Editing Character</b>	
<b>ATS5=[&lt;char&gt;]</b>	<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><b>Parameter:</b></p>



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

#### 3.4.3.7.7 Connection Completion Time-Out - S7

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

#### 3.4.3.7.8 Carrier Off With Firm Time - S10

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



### 3.4.3.7.9 *Escape Prompt Delay - S12*

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

### 3.4.3.7.10 *Delay to DTR off - S25*

<b>S25 -Delay To DTR Off</b>	
ATS25=[<time>]	<p>Set command defines the amount of time, in hundredths of second, that the device will ignore the <b>DTR</b> for taking the action specified by command <b>&amp;D</b>.</p> <p><b>Parameter:</b>            &lt;time&gt; - expressed in hundredths of a second            0..255 - factory default value is 5.</p> <p><b>Note:</b> the delay is effective only if its value is greater than 5.</p>
ATS25?	<p>Read command returns the current value of <b>S25 parameter</b>.</p> <p><b>Note:</b> the format of the numbers in output is always 3 digits, left-filled with 0s</p>

### 3.4.3.7.11 *Disconnect Inactivity Timer - S30*

<b>S30 -Disconnect Inactivity Timer</b>	
ATS30=[<tout>]	<p>Set command defines the inactivity time-out in minutes. The device disconnects if no characters are exchanged for a period at least &lt;tout&gt; minutes.</p>



<b>S30 -Disconnect Inactivity Timer</b>	
	<b>Parameter:</b> <tout> - expressed in minutes 0 - disabled, disconnection due to inactivity is disabled (factory default). 1..127 - inactivity time-out value
<b>ATS30?</b>	Read command returns the current value of <b>S30 parameter</b> . <b>Note:</b> the format of the numbers in output is always 3 digits, left-filled with 0s

#### 3.4.3.7.12 *Delay before Forced Hang Up - S38*

<b>S38 -Delay Before Forced Hang Up</b>	
<b>ATS38=&lt;delay&gt;</b>	Set command sets the delay, in seconds, between the device's receipt of <b>H</b> command (or <b>ON-to-OFF</b> transition of <b>DTR</b> ) and the disconnect operation.  <b>Parameter:</b> <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.  <b>Note:</b> <delay> parameter can be used to ensure that data in device buffer is sent before device disconnects.
<b>ATS38?</b>	Read command returns the current value of <b>S38 parameter</b> . <b>Note:</b> the format of the numbers in output is always 3 digits, left-filled with 0s

### 3.4.4 3GPP TS 27.007 AT Commands

#### 3.4.4.1 General

##### 3.4.4.1.1 *Request Manufacturer Identification - +CGMI*

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

##### 3.4.4.1.2 *Request Model Identification - +CGMM*



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

#### 3.4.4.1.3 *Request Revision Identification - +CGMR*

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

#### 3.4.4.1.4 *Request Product Serial Number Identification - +CGSN*

<b>+CGSN - Request Product Serial Number Identification</b>	
<b>AT+CGSN[=&lt;sn&gt;]</b>	<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><b>Parameter:</b></p> <p><b>&lt;sn&gt;</b> - indicating the serial number type that has been requested.</p> <ul style="list-style-type: none"> <li>0 - returns &lt;sn&gt;</li> <li>1 - returns the IMEI (International Mobile station Equipment Identity)</li> <li>2 - returns the IMEISV (International Mobile station Equipment Identity and Software Version number)</li> <li>3 returns the SVN (Software Version Number)</li> </ul> <p><b>where:</b></p> <p><b>&lt;sn&gt;</b> - Indicate the product “serial number”, identified as the IMEI of the mobile, without command echo.</p> <p><b>&lt;imei&gt;</b> - 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 &lt;imei&gt; is as specified by command Select TE Character Set +CSCS.</p> <p><b>&lt;imeisv&gt;</b> - 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 &lt;imeisv&gt; is as specified by command Select TE Character Set +CSCS.</p> <p><b>&lt;svn&gt;</b> - string type in decimal format indicating the current SVN which is a part of IMEISV. Character set used in &lt;svn&gt; is as specified by command Select TE Character Set +CSCS.</p>
<b>AT+CGSN</b>	Execution command returns the product “serial number”, identified as the IMEI of the mobile, without command echo.
<b>AT+CGSN=?</b>	Test command returns supported <sn> values.
<b>Reference</b>	3GPP TS 27.007



**AT Commands Reference Guide**  
80407ST10116A Rev.14.1 - 2017-05-14



### 3.4.4.1.5 Select TE Character Set - +CSCS

+CSCS - Select TE Character Set	
AT+CSCS= [<chset>]	<p>Set command sets the current character set used by the device.</p> <p><b>Parameter:</b>            &lt;chset&gt; - character set            "GSM" - "GSM" - GSM default alphabet (3GPP TS 03.38/23.008).            "IRA" - <b>international Reference</b> 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).</p>
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	<p>AT+CSCS=?            +CSCS: ("GSM","IRA","8859-1","PCCP437","UCS2")</p> <p>OK</p> <p>AT+CSCS?            +CSCS: "IRA"</p> <p>OK</p> <p>AT+CPBW=1,"8475763000",129,"Lin Zhao"            OK</p> <p>AT+CSCS="UCS2"            OK</p> <p>AT+CPBR=1            +CPBR: 1,"8475763000",129,004C006E006E0020005A00680061006F            OK</p> <p>AT+CSCS="IRA"            OK</p> <p>AT+CPBR=1            +CPBR: 1,"8475763000",129,"Lin Zhao"</p>



<b>+CSCS - Select TE Character Set</b>	
	OK
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.1.6 *Request International Mobile Subscriber Identity (IMSI) - +CIMI*

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

#### 3.4.4.1.7 *Read ICCID (Integrated Circuit Card Identification) - +ICCID*

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

#### 3.4.4.1.8 *Serial and Software Version Number - +IMEISV*

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

#### 3.4.4.1.9 *PCCA STD-101 Select Wireless Network - +WS46*

<b>+WS46 - PCCA STD-101 Select Wireless Network</b>	
<b>AT+WS46=[&lt;n&gt;]</b>	Set command selects the cellular network (Wireless Data Service, WDS) to operate with the TA (WDS-Side Stack Selection).  <b>Parameter:</b>



	<p>&lt;n&gt; - integer type, it is the WDS-Side Stack used by the TA.</p> <p>12 GSM Digital Cellular Systems (GERAN only)</p> <p>22 UTRAN only</p> <p>25 3GPP Systems (GERAN and UTRAN and E-UTRAN) (factory default)</p> <p>28 E-UTRAN only</p> <p>29 GERAN and UTRAN</p> <p>30 GERAN and E-UTRAN</p> <p>31 UTRAN and E-UTRAN</p> <p><b>Note:</b> The values in &lt;n&gt; for Query are mutually exclusive. If one value (e.g. "25") is returned, other values shall not be returned.</p> <p><b>Note:</b> &lt;n&gt; parameter setting is stored in NVM and available at next reboot.</p>
<b>AT+WS46?</b>	<p>Read command reports the currently selected cellular network, in the format:</p> <p><b>+ WS46: &lt;n&gt;</b></p>
<b>AT+WS46=?</b>	Test command reports the range for the parameter <n>.
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.1.10 Network Selection Menu Availability - +PACSP

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

### 3.4.4.2 Call Control

#### 3.4.4.2.1 Call mode - +CMOD

<b>+CMOD - parameter command syntax</b>	
<b>+CMOD= [&lt;mode&gt;]</b>	<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>



<b>+CMOD - parameter command syntax</b>	
	<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><b>Note:</b> +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 (&amp;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><b>Defined values</b>  <b>&lt;mode&gt;:</b>  0 - single mode (default mode)</p>
<b>+CMOD?</b>	Test command returns values supported as a compound value. <b>+CMOD:</b> <mode>
<b>+CMOD=?</b>	<b>+CMOD:</b> (list of supported <mode>s)

#### 3.4.4.2.2 *Hang Up Call - +CHUP*

<b>+CHUP - Hang Up Call</b>	
<b>AT+CHUP</b>	Execution command cancels all active and held calls, also if a multi-party session is running.
<b>AT+CHUP=?</b>	Test command returns the OK result code
<b>Reference</b>	GSM 07.07

#### 3.4.4.2.3 *Select type of address - +CSTA*

<b>+CSTA - Select type of address</b>	
<b>AT+CSTA=[&lt;type&gt;]</b>	Set command selects the type of number for further dialling commands (D) according to GSM/UMTS specifications.  <b>Parameter:</b> <b>&lt;type&gt;:</b> 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
<b>AT+CSTA?</b>	Read command returns selected <b>&lt;type&gt;</b>
<b>AT+CSTA=?</b>	Test command returns supported <b>&lt;type&gt;s</b>
<b>Reference</b>	3GPP TS 27.007



### 3.4.4.2.4 Select Bearer Service Type - +CBST

+CBST - Select Bearer Service Type	
<b>AT+CBST=</b> <b>[&lt;speed&gt;</b> <b>[,&lt;name&gt;</b> <b>[,&lt;ce&gt;]]]</b>	<p>Set command sets the bearer service &lt;name&gt; with data rate &lt;speed&gt;, and the connection element &lt;ce&gt; 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).</p> <p><b>Parameters:</b></p> <p><b>&lt;speed&gt;</b> - data rate</p> <ul style="list-style-type: none"> <li>0 - autobauding (autobaud)</li> <li>7 - 9600 bps (V.32)</li> <li>12 - 9600 bps (V.34)</li> <li>14 - 14400 bps (V.34)</li> <li>16 - 28800 bps (V.34)</li> <li>17 - 33600 bps (V.34)</li> <li>39 - 9600 bps (V.120)</li> <li>43 - 14400 bps (V.120)</li> <li>48 - 28800 bps (V.120)</li> <li>51 - 56000 bps (V.120)</li> <li>71 - 9600 bps (V.110 or X.31 flag stuffing)</li> <li>75 - 14400 bps (V.110 or X.31 flag stuffing)</li> <li>80 - 14400 bps (V.110 or X.31 flag stuffing)</li> <li>81 - 38400 bps (V.110 or X.31 flag stuffing)</li> <li>83 - 56000 bps (V.110 or X.31 flag stuffing)</li> <li>84 - 64000 bps (X.31 flag stuffing)</li> <li>116 - 64000 bps (bit transparent)</li> <li>134 - 64000 bps (multimedia)</li> </ul> <p><b>&lt;name&gt;</b> - bearer service name</p> <ul style="list-style-type: none"> <li>0 - data circuit asynchronous(UDI or 3.1 kHz modem)</li> <li>1 - data circuit synchronous(UDI or 3.1 kHz modem)</li> <li>4 - data circuit asynchronous(RDI)</li> </ul> <p><b>&lt;ce&gt;</b> - connection element</p> <ul style="list-style-type: none"> <li>0 - transparent</li> <li>1 - non transparent (default)</li> </ul> <p><b>The bearer service on LE920 family only has support for the following combinations:</b></p> <p><b>&lt;GSM network&gt;</b></p> <p>AT+CBST= 0,0,1 (Autobaud 9.6k, non transparent)</p> <p>AT+CBST= 7,0,1 (V.32 9.6k, non transparent)</p> <p>AT+CBST=12,0,1 (V.34 9.6k, non transparent))</p> <p>AT+CBST=14,0,1 (V.34 14.4k, non transparent)</p> <p>AT+CBST=39,0,1 (V.120 9.6k, non transparent)</p> <p>AT+CBST=43,0,1 (V.120 14.4k, non transparent)</p> <p>AT+CBST=71,0,1 (V.110 9.6k, non transparent)</p> <p>AT+CBST=75,0,1 (V.110 14.4k, non transparent)</p>



<b>+CBST - Select Bearer Service Type</b>	
	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)  <b>&lt;WCDMA network&gt;</b> 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)
<b>AT+CBST?</b>	Read command returns current value of the parameters <b>&lt;speed&gt;</b> , <b>&lt;name&gt;</b> and <b>&lt;ce&gt;</b>
<b>AT+CBST=?</b>	Test command returns the supported range of values for the parameters.
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.2.5 Radio Link Protocol - +CRLP

<b>+CRLP - Radio Link Protocol</b>	
<b>AT+CRLP=</b> <b>[&lt;iws&gt;[,&lt;mws&gt;[,&lt;T1&gt;</b> <b>1&gt;[,&lt;N2&gt;</b> <b>[,&lt;ver&gt;]]]]]</b>	Set command sets Radio Link Protocol (RLP) parameters used when non-transparent data calls originated.  <b>Parameters:</b> <b>&lt;iws&gt;</b> - IWF window Dimension 1..61 - factory default value is 61 (ver 0/1) 1..488 - factory default value is 240 (ver 2) <b>&lt;mws&gt;</b> - MS window Dimension 1..61 - default value is 61 ( ver 0/1 ) 1..488 - factory default value is 240 (ver 2) <b>&lt;T1&gt;</b> - acknowledge timer (10 ms units). 39..255 - default value is 48 (ver 0 or 1) 42..255 – deefault value is 52 (ver 2) <b>&lt;N2&gt;</b> - retransmission attempts 1..255 - default value is 6 (ver 0/1/2) <b>&lt;ver&gt;</b> - protocol version 0..2



<b>+CRLP - Radio Link Protocol</b>	
<b>AT+CRLP?</b>	Read command returns current settings for each supported RLP version <ver>. +CRLP: <iws>,<mws>,<T1>,<N2> +CRLP: <iws>,<mws>,<T1>,<N2>,<ver>  OK
<b>AT+CRLP=?</b>	Test command returns the range of setting value for each supported RLP version <ver>.
<b>Reference</b>	3GPP TS 27.007
<b>Note</b>	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 )

#### 3.4.4.2.6 Service Reporting Control - +CR

<b>+CR - Service Reporting Control</b>	
<b>AT+CR=[&lt;mode&gt;]</b>	Set command controls whether or not intermediate result code +CR is returned from TA to TE.  <b>Parameter:</b> <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. It's format is: <b>Note:</b> After power off/on in LE920 the value return to "0". +CR: <serv>  <b>where:</b> <serv> ASYNC - asynchronous transparent SYNC - synchronous transparent REL ASYNC - asynchronous non-transparent REL SYNC - synchronous non-transparent.  <b>Note:</b> This command replaces V.25ter [14] command Modulation Reporting Control (+MR), which is not appropriate for use with a UMTS terminal.
<b>AT+CR?</b>	Read command returns whether or not intermediate result code +CR is enabled, in the format:  +CR: <mode>



<b>+CR - Service Reporting Control</b>	
<b>AT+CR=?</b>	Test command returns the supported range of values of parameter <b>&lt;mode&gt;</b> .
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.2.7 *Extended Error Report - +CEER*

<b>+CEER - Extended Error Report</b>	
<b>AT+CEER</b>	<p>Execution command returns two lines of information text <b>&lt;report&gt;</b> offering the TA user an extended error report, in the format:</p> <p><b>+CEER: &lt;report&gt;</b>  <b>+CEER: &lt;report&gt;</b></p> <p>This report regards some error condition that may occur:</p> <ul style="list-style-type: none"> <li>- the failure in the last unsuccessful call setup (originating or answering)</li> <li>- the last call release</li> <li>- the last unsuccessful GPRS attach or unsuccessful PDP context activation,</li> <li>- the last GPRS detach or PDP context deactivation.</li> </ul> <p><b>Note 1:</b> the first line for the voice and the second line for data.  <b>Note 2:</b> if none of these conditions have occurred since power up then <b>“Normal, unspecified”</b> condition is reported</p>
<b>AT+CEER=?</b>	Test command returns <b>OK</b> result code.
<b>Reference</b>	3GPP TS 27.007, GSM 04.08

#### 3.4.4.2.8 *Cellular Result Codes - +CRC*

<b>+CRC - Cellular Result Codes</b>	
<b>AT+CRC=[&lt;mode&gt;]</b>	<p>Set command controls whether or not the extended format of incoming call indication is used.</p> <p><b>Parameter:</b>  <b>&lt;mode&gt;</b>  0 - disables extended format reporting (factory default)  1 - enables extended format reporting:</p> <p>When enabled, an incoming call is indicated to the <b>TE</b> with unsolicited result code <b>+CRING: &lt;type&gt;</b> Instead of the normal <b>RING</b>.</p> <p><b>Where:</b>  <b>&lt;type&gt;</b> - call type:  ASYNC - asynchronous transparent data  SYNC - synchronous transparent data  REL ASYNC - asynchronous non-transparent data  REL SYNC - synchronous non-transparent data  FAX - facsimile (TS 62)</p>



<b>+CRC - Cellular Result Codes</b>	
	VOICE - normal voice (TS 11)
<b>AT+CRC?</b>	Read command returns current value of the parameter <b>&lt;mode&gt;</b> .
<b>AT+CRC=?</b>	Test command returns supported values of the parameter <b>&lt;mode&gt;</b> .
<b>Reference</b>	3GPP TS 27.007

### 3.4.4.2.9 HSCSD non-transparent call configuration +CHSN

<b>+CHSN parameter command syntax</b>	
<b>AT+CHSN</b> <b>=[&lt;wAiur&gt;</b> <b>[,&lt;wRx&gt;</b> <b>[,&lt;topRx&gt;</b> <b>[,&lt;codings&gt;</b> <b>&gt;    </b>	<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 &lt;topRx&gt; or &lt;codings&gt; value during a call does not affect the current call. In GERAN, changing of &lt;wAiur&gt; or &lt;wRx&gt; affects the current call only if &lt;topRx&gt; was non-zero when call was established.</p> <p><b>Defined values</b></p> <p><b>&lt;wAiur&gt;</b>: 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 (<b>&lt;speed&gt;</b> subparameter from +CBST command), &lt;codings&gt;, and &lt;wRx&gt; (or &lt;maxRx&gt; from +CHSD command if &lt;wRx&gt;=0). Other values:</p> <ul style="list-style-type: none"> <li>1 - 9600 bps</li> <li>2 - 14400 bps</li> <li>4 - 28800 bps</li> <li>7 - 57600 bps</li> </ul> <p><b>&lt;wRx&gt;</b>: integer type; wanted amount of receive timeslots. Default value 0 indicates that TA shall calculate a proper value from currently selected &lt;wAiur&gt; and &lt;codings&gt;.</p> <p>This parameter is not applicable to UTRAN or EUTRAN UEs.</p> <p><b>&lt;topRx&gt;</b>: integer type; top value for &lt;wRx&gt; that user is going to request during the next established nontransparent HSCSD call. Default value 0 indicates that user is not going to change &lt;wAiur&gt;/&lt;wRx&gt; during the next call. This parameter is not applicable to UTRAN or E-UTRAN UEs.</p> <p><b>&lt;codings&gt;</b>: 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>
<b>AT+CHSN?</b>	<b>+CHSN:</b> <wAiur>,<wRx>,<topRx>,<codings>
<b>AT+CHSN=</b> <b>?</b>	<b>+CHSN:</b> (list of supported <wAiur>s), (list of supported <wRx>s), (list of supported <topRx>), (list of supported <codings>s)



### 3.4.4.2.10 *Single Numbering Scheme - +CSNS*

<b>+CSNS - Single Numbering Scheme</b>	
<b>AT+CSNS=</b> <b>[&lt;mode&gt;]</b>	<p>Set command selects the bearer used when the mobile terminated single numbering scheme call is established. Parameter values set with <b>+CBST</b> command used when <b>&lt;mode&gt;</b> equals to a data service.</p> <p><b>Parameter:</b>  <b>&lt;mode&gt;</b>  0 - voice (factory default)  2 - fax (TS 62)/9 (not supported by LTE)  4 - data</p> <p><b>Note:</b> if <b>+CBST</b> 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 <b>&lt;speed&gt;=71</b>, <b>&lt;name&gt;=0</b> and <b>&lt;ce&gt;=1</b> (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>
<b>AT+CSNS?</b>	Read command returns current value of the parameter <b>&lt;mode&gt;</b> .
<b>AT+CSNS=?</b>	Test command returns supported values of parameter <b>&lt;mode&gt;</b> .
<b>Reference</b>	3GPP TS 27.007

### 3.4.4.2.11 *Voice Hang Up Control - +CVHU*

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

### 3.4.4.2.12 *Setting Time Format - +CSTF*



<b>+CSTF - Setting Time Format</b>							
<b>AT+CSTF=[&lt;mode&gt;]</b>	<p>Set command sets the time format of the time information presented to the user. Refer subclause 9.2 for possible &lt;err&gt; values</p> <p><b>Possible Response(s):</b></p> <p>+CME ERROR: &lt;err&gt;</p> <p><b>Defined values</b></p> <p>&lt;mode&gt;: integer type. The default value is manufacturer specific.</p> <table> <tr> <td>1</td><td>HH:MM (24 hour clock)</td></tr> <tr> <td>2</td><td>HH:MM a.m./p.m.</td></tr> <tr> <td>3-7</td><td>Manufacturer specific</td></tr> </table>	1	HH:MM (24 hour clock)	2	HH:MM a.m./p.m.	3-7	Manufacturer specific
1	HH:MM (24 hour clock)						
2	HH:MM a.m./p.m.						
3-7	Manufacturer specific						
<b>AT+CSTF?</b>	<p>Read command reads the currnt setting.</p> <p><b>Possible Response(s):</b></p> <p>+CSTF: &lt;mode&gt;</p> <p>+CME ERROR: &lt;err&gt;</p>						
<b>AT+CSTF=?</b>	<p>Test command reads the supported &lt;modes&gt;s as a compound value.</p> <p>+CSTF: (list of supported &lt;mode&gt;s)</p> <p>+CME ERROR: &lt;err&gt;</p>						
<b>Reference</b>	3GPP TS 27.007						

#### 3.4.4.2.13 *Setting Date Format - +CSDF*

<b>+CSDF - Setting Date Format</b>	
<b>AT+CSDF=[[&lt;mode&gt;],[&lt;auxmode&gt;]]</b>	<p>This command sets the date format via MMI of the date information presented to the user, which is specified by use of the &lt;mode&gt; parameter. The &lt;mode&gt; 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 &lt;auxmode&gt; parameter (e.g. the &lt;auxmode&gt; affects the &lt;time&gt; of +CCLK and +CALA).</p> <p>If the parameter is omitted (" +CSDF=", "+CSDF=&lt;mode&gt;", "+CSDF=,&lt;auxmode&gt;"), then this sets the default value.</p> <p>Refer subclause 9.2 for possible &lt;err&gt; values.</p> <p><b>Possible Response(s):</b></p> <p>+CME ERROR: &lt;err&gt;</p>



<b>+CSDF - Setting Date Format</b>	
	<p><b>Defined values:</b></p> <p><b>&lt;mode&gt;:</b> integer type</p> <p><b>Note 1:</b> It is a manufactur specific which modes are supported.</p> <p>1 - DD-MMM-YYYY</p> <p><b>Note 2:</b> Presentation of MMM is language dependent.</p> <p>2 - DD-MM-YY</p> <p>3 - MM/DD/YY</p> <p>4 - DD/MM/YY</p> <p>5 - DD.MM.YY</p> <p>6 - YYMMDD</p> <p>7 - YY-MM-DD</p> <p>8-255 Manufacturer specific</p> <p><b>&lt;auxmode&gt;:</b> integer type</p> <p>1 - yy/MM/dd</p> <p>2 - yyyy/MM/dd</p> <p>all other values are reserved by the present document</p> <p><b>Note 3:</b> The &lt;time&gt; format of +CCLK and +CALA "yy/mm/dd,hh:mm:ss±zz" when &lt;auxmode&gt;=1 and it is "yyyy/mm/dd,hh:mm:ss±zz" when &lt;auxmode&gt;=2. If the MT does not support time zone information then the three last characters may be omitted (see +CCLK command).</p>
<b>AT+CSDF?</b>	<p>Read command reads the currnt setting.</p> <p><b>Possible Response(s):</b></p> <p><b>+CSDF:</b> &lt;mode&gt;[,&lt;auxmode&gt;]</p> <p><b>+CME ERROR:</b> &lt;err&gt;</p>
<b>AT+CSDF=?</b>	<p>Test command reads the supported &lt;modes&gt;s as a compound value.</p> <p><b>+CSDF:</b> (list of supported &lt;mode&gt;s)</p> <p>[,(list of supported &lt;auxmode&gt;s)]</p>
<b>Reference</b>	3GPP TS 27.007

### 3.4.4.3 Network Service Handling

#### 3.4.4.3.1 *Subscriber Number* - +CNUM

<b>+CNUM - Subscriber Number</b>	
<b>AT+CNUM</b>	<p>Execution command returns the MSISDN (if the phone number of the device has been stored in the SIM card) in the format:</p>



<b>+CNUM - Subscriber Number</b>	
	<p><b>+CNUM:</b> &lt;alpha&gt;,&lt;number&gt;,&lt;type&gt;[&lt;CR&gt;&lt;LF&gt;  <b>+CNUM:</b> &lt;alpha&gt;,&lt;number&gt;,&lt;type&gt;[...]]</p> <p><b>where:</b>            &lt;alpha&gt; - alphanumeric string associated to &lt;number&gt;; used character set should be the one selected with +CSCS.            &lt;number&gt; - string containing the phone number in the format &lt;type&gt;            &lt;type&gt; - type of number:                129 - national numbering scheme                145 - international numbering scheme (contains the character "+").</p>
<b>AT+CNUM=?</b>	Test command returns the <b>OK</b> result code
<b>Example</b>	AT+CNUM +CNUM: "PHONENUM1","2173848500",129 +CNUM: "FAXNUM","2173848501",129 +CNUM: "DATANUM","2173848502",129
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.3.2 Read Operator Names - +COPN

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

#### 3.4.4.3.3 Network Registration Report - +CREG

<b>+CREG - Network Registration Report</b>	
<b>AT+CREG=[&lt;mode&gt;]</b>	<p>Set command enables/disables network registration reports depending on the parameter &lt;mode&gt;.</p> <p><b>Parameter:</b>            &lt;mode&gt;                0 - disable network registration unsolicited result code (factory default)                1 - enable network registration unsolicited result code</p>



## +CREG - Network Registration Report

2 - enable network registration unsolicited result code with network Cell identification data  
3 - enable network registration unsolicited result code with network Cell identification data with expanded <ACT>

If <mode>=1, network registration result code reports:

+CREG: <stat>

Where:

<stat>

- 0 - not registered, ME is not currently searching  
a new operator to register to
- 1 - registered, home network
- 2 - not registered, but ME is currently searching  
a new operator to register to
- 3 - registration denied
- 4 - unknown
- 5 - registered, roaming

If <mode>=2, network registration result code reports:

+CREG: <stat>,[<lac>],[<ci>],[<AcT>]]

where:

<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

<ci>: string type; four byte GERAN/UTRAN/E-UTRAN cell ID in hexadecimal format.

<AcT>: integer type; access technology of the serving cell

0 GSM

2 UTRAN

7 E-UTRAN

If <mode>=3, network registration result code reports:

+CREG: <stat>,[<lac>],[<ci>],[<AcT>]]

where:

<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

<ci>: string type; four byte GERAN/UTRAN/E-UTRAN cell ID in hexadecimal format.

<AcT>: integer type; access technology of the serving cell

0 GSM

2 UTRAN

3 GSM w/EGPRS

4 UTRAN w/HSDPA

5 UTRAN w/HSUPA

6 UTRAN w/HSDPA and HSUPA



+CREG - Network Registration Report	
	<p>7 E-UTRAN</p> <p><b>Note:</b> &lt;Lac&gt;, &lt;Ci&gt; and &lt;Act&gt; are reported only if &lt;mode&gt;=2 and the mobile is registered on some network cell.</p>
AT+CREG?	<p>Read command reports the &lt;mode&gt; and &lt;stat&gt; parameter values in the format:</p> <p>+CREG: &lt;mode&gt;,&lt;stat&gt;[,&lt;Lac&gt;,&lt;Ci&gt;,&lt;Act&gt;]</p> <p><b>Note:</b> &lt;Lac&gt;, &lt;Ci&gt; and &lt;Act&gt; are reported only if &lt;mode&gt;=2 and the mobile is registered on some network cell.</p>
AT+CREG=?	Test command returns the range of supported <mode>
Example	<pre>AT OK at+creg? +CREG: 0,2  OK (the MODULE is in network searching state) at+creg? +CREG: 0,2  OK at+creg? +CREG: 0,2  OK at+creg? +CREG: 0,1  OK (the MODULE is registered) at+creg? +CREG: 0,1  OK</pre>
Reference	3GPP TS 27.007

#### 3.4.4.3.4 Operator Selection - +COPS

+COPS - Operator Selection	
AT+COPS= [<mode> [,<format>	<p>Set command forces an attempt to select and register the GSM\UMTS network operator.</p> <p>&lt;Mode&gt; parameter defines whether the operator selection is automatically or forced by</p>



+COPS - Operator Selection	
[,<oper>> [,<AcT>]]]]	<p>this command to operator &lt;oper&gt;.</p> <p>The operator &lt;oper&gt; given in format &lt;format&gt;.</p> <p><b>Parameters:</b></p> <p><b>&lt;mode&gt;</b></p> <ul style="list-style-type: none"> <li>0 - automatic choice (the parameter &lt;oper&gt; will be ignored) (factory default)</li> <li>1 - manual choice (&lt;oper&gt; field shall be present)</li> <li>2 - deregister from the network; the MODULE is kept unregistered until a +COPS with &lt;mode&gt;=0, 1 or 4 is issued</li> <li>3 - set only &lt;format&gt; parameter (the parameter &lt;oper&gt; will be ignored)</li> <li>4 - manual/automatic (&lt;oper&gt; field shall be present); if manual selection fails, automatic mode (&lt;mode&gt;=0) is entered</li> <li>5 - UNKNOWN.</li> </ul> <p>Note: 'UNKNOWN' is a value of 'read command' and not of 'set command'. This is a transient state that occur while modem is initialized.</p> <p><b>&lt;format&gt;</b></p> <ul style="list-style-type: none"> <li>0 - alphanumeric long form (max length 16 digits)</li> <li>1 - short format alphanumeric &lt;oper&gt;</li> <li>2 numeric &lt;oper&gt;</li> </ul> <p><b>&lt;Oper&gt;</b>: string type &lt;format&gt; 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. Returned &lt;oper&gt; 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 digit1) (network code digit 3) (network code digit 2) (network code digit 1).</p> <p><b>Note:</b> &lt;mode&gt; parameter setting is stored in NVM and available at next reboot, if it is not 3 (i.e.: set only &lt;format&gt; parameter).</p> <p><b>Note:</b> if &lt;mode&gt;=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><b>Note:</b> &lt;format&gt; parameter setting is never stored in NVM</p> <p><b>&lt;AcT&gt;</b>: access technology selected</p> <ul style="list-style-type: none"> <li>0 - GSM</li> <li>1 - GSM Compact</li> <li>2 - UTRAN</li> <li>3 - GSM w/EGPRS (see NOTE 1)</li> <li>4 - UTRAN w/HSDPA (see NOTE 2)</li> <li>5 - UTRAN w/HSUPA (see NOTE 2)</li> <li>6 - UTRAN w/HSDPA and HSUPA (see NOTE 2)</li> <li>7 - E-UTRAN</li> </ul> <p><b>NOTE:</b> 3GPP TS 44.060 [71] specifies the System Information messages which give the information about whether the serving cell supports EGPRS.</p> <p><b>NOTE:</b> 3GPP TS 25.331 [74] specifies the System Information blocks which give the information about whether the serving cell supports HSDPA or HSUPA.</p>



<b>+COPS - Operator Selection</b>	
<b>AT+COPS?</b>	Read command returns current value of <b>&lt;mode&gt;</b> , <b>&lt;format&gt;</b> and <b>&lt;oper&gt;</b> in format <b>&lt;format&gt;</b> ; if no operator is selected, <b>&lt;format&gt;</b> and <b>&lt;oper&gt;</b> are omitted <b>+COPS: &lt;mode&gt;[,&lt;format&gt;,&lt;oper&gt;,&lt;AcT&gt;]</b>
<b>AT+COPS=?</b>	Test command returns a list of quintuplets, each representing an operator present in the network. The quintuplets in the list are separated by commas: <b>+COPS: [list of supported (&lt;stat&gt;,long alphanumeric &lt;oper&gt;,short alphanumeric &lt;oper&gt;,numeric &lt;oper&gt;,&lt;AcT&gt;)s]</b> <b>[,,(list of supported &lt;mode&gt;s),(list of supported &lt;format&gt;s)]</b> <b>where:</b> <b>&lt;stat&gt;</b> - operator availability 0 - unknown 1 - available 2 - current 3 - forbidden <b>&lt;AcT&gt;</b> : 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 <b>Note:</b> once the command done with network scan, this command may require some seconds before the output is given.
<b>Example</b>	AT+COPS? +COPS: 0,0,"Test PLMN 1-1",0 OK at+cops=? +COPS: (2,"","","45008",2),(1,"Test PLMN 1-1","Test1-1","00101",0),(3,"","","45005",2),,(0-4),(0-2) OK
<b>Reference</b>	3GPP TS 27.007

### 3.4.4.3.5 Facility Lock/Unlock - +CLCK

<b>+CLCK - Facility Lock/Unlock</b>	
<b>AT+CLCK=</b> <b>&lt;fac&gt;</b> , <b>&lt;mode&gt;</b> <b>[,&lt;passwd&gt;</b> <b>[,&lt;class&gt;]]</b>	Execution command used to lock or unlock a <b>ME</b> or a network facility.  <b>Parameters:</b> <b>&lt;fac&gt;</b> - facility "SC" - SIM (PIN request) (device asks SIM password at power-up and when this lock command issued) "AO" - BAOC (Barr All Outgoing Calls) "OI" - BOIC (Barr Outgoing International Calls)



<b>+CLCK - Facility Lock/Unlock</b>	
	<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 <b>&lt;mode&gt;=0</b>)</p> <p>"AG" - All outGoing barring services (applicable only for <b>&lt;mode&gt;=0</b>)</p> <p>"AC" - All inComing barring services (applicable only for <b>&lt;mode&gt;=0</b>)</p> <p>"FD" - SIM fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <b>&lt;passwd&gt;</b>)</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 asks password when other than the first SIM/UICC card is inserted)</p> <p><b>&lt;mode&gt;</b> - defines the operation to be done on the facility</p> <ul style="list-style-type: none"> <li>0 - unlock facility</li> <li>1 - lock facility</li> <li>2 - query status</li> </ul> <p><b>&lt;passwd&gt;</b> - shall be the same as password specified for the facility from the <b>DTE</b> user interface or with command Change Password <b>+CPWD</b></p> <p><b>&lt;class&gt;</b> - sum of integers each representing a class of information (default is 7)</p> <ul style="list-style-type: none"> <li>1 - voice (telephony)</li> <li>2 - data (refers to all bearer services)</li> <li>4 - fax (facsimile services)(not supported by LTE)</li> <li>8 - short message service</li> <li>16 - data circuit sync</li> <li>32 - data circuit async</li> <li>64 - dedicated packet access</li> <li>128 - dedicated PAD access</li> </ul> <p><b>Note:</b> when <b>&lt;mode&gt;=2</b> and command successful, it returns:  <b>+CLCK: &lt;status&gt;[,&lt;class1&gt;][&lt;CR&gt;&lt;LF&gt;+CLCK: &lt;status&gt;,&lt;class2&gt;[...]]</b></p> <p><b>Where:</b>  <b>&lt;status&gt;</b> - the current status of the facility</p>



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

#### 3.4.4.3.6 Change Facility Password - +CPWD

<b>+CPWD - Change Facility Password</b>	
<b>AT+CPWD=</b> <fac>, <oldpwd>, <newpwd>	<p>Execution command changes the password for the facility lock function defined by command Facility Lock +CLCK.</p> <p><b>Parameters:</b>  &lt;fac&gt; - 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>&lt;oldpwd&gt; - string type, it shall be the same as password specified for the facility from the ME user interface or with command +CPWD.  &lt;newpwd&gt; - string type, it is the new password</p> <p><b>Note:</b> parameter &lt;oldpwd&gt; is the old password while &lt;newpwd&gt; is the new one.</p>
<b>AT+CPWD=?</b>	Test command returns a list of pairs (<fac>,<pwdlength>) which presents the available facilities and the maximum length of their password (<pwdlength>)
<b>Example</b>	at+cpwd=?



<b>+CPWD - Change Facility Password</b>	
	+CPWD:("AB",4),("AC",4),("AG",4),("AI",4),("AO",4),("IR",4),("OI",4),("OX",4),("SC",8),("P2",8) OK
<b>Reference</b>	3GPP TS 27.007

### 3.4.4.3.7 Calling Line Identification Presentation - +CLIP

<b>+CLIP - Calling Line Identification Presentation</b>	
<b>AT+CLIP=[&lt;n&gt;]</b>	<p>Set command enables/disables the presentation of the CLI (Calling Line Identity) at the <b>TE</b>. This command refers to the UMTS supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to get the CLI of the calling party when receiving a mobile terminated call.</p> <p><b>Parameters:</b>  &lt;n&gt;  0 - disables CLI indication (factory default)  1 - enables CLI indication</p> <p>If enabled the device reports after each RING the response:</p> <p><b>+CLIP: &lt;number&gt;,&lt;type&gt;,"",128,&lt;alpha&gt;,&lt;CLI_validity&gt;</b></p> <p><b>where:</b>  &lt;number&gt; - string type phone number of format specified by &lt;type&gt;  &lt;type&gt; - type of address octet in integer format  128 - both the type of number and the numbering plan are unknown  129 - Unknown type of number and ISDN/Telephony numbering plan  145 - International type of number and ISDN/Telephony numbering plan (contains the character "+")  161 - National type of number and ISDN/Telephony numbering plan  &lt;alpha&gt; - string type; alphanumeric representation of &lt;number&gt; corresponding to the entry found in phonebook; used character set should be the one selected with command Select <b>TE</b> character set +<b>CSCS</b>.  &lt;CLI_validity&gt;  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.</p>



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

#### 3.4.4.3.8 Calling Line Identification Restriction - +CLIR

<b>+CLIR - Calling Line Identification Restriction</b>	
<b>AT+CLIR=[&lt;n&gt;]</b>	<p>Set command overrides the CLIR subscription when temporary mode provisioned as a default adjustment 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><b>Parameter:</b>  <b>&lt;n&gt;</b> - 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>
<b>AT+CLIR?</b>	<p>Read command gives the default adjustment for all outgoing calls (<b>&lt;n&gt;</b>) and also triggers an interrogation of the provision status of the CLIR service (<b>&lt;m&gt;</b>), where</p> <p><b>&lt;n&gt;</b> - 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)  <b>&lt;m&gt;</b> - facility status on the Network  0 - CLIR service not provisioned  1 - CLIR service provisioned permanently</p>



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

#### 3.4.4.3.9 *Connected Line Identification Restriction status - +COLR*

<b>+COLR – Connected Line Identification Restriction status</b>	
<b>AT+COLR</b>	<p>This command refers to the GSM/UMTS supplementary service COLR (Connected Line Identification Restriction) that enables a called subscriber to restrict the possibility of presentation of connected line identity (COL) to the calling party after receiving a mobile terminated call. The command displays the status of the COL presentation in the network. It has no effect on the execution of the supplementary service COLR in the network.</p> <p>Execution command triggers an interrogation of the activation status of the COLR service according 3GPP TS 22.081 (given in &lt;m&gt;):  +COLR: &lt;m&gt;</p> <p><b>where:</b>  &lt;m&gt; integer type (parameter shows the subscriber COLR service status in the network)  0 - COLR not provisioned  1 - COLR provisioned  2 - unknown (e.g. no network, etc.)</p> <p>Activation, deactivation, registration and erasure of the supplementary service COLR are not applicable.</p>
<b>AT+COLR=?</b>	Test command tests for command existence

#### 3.4.4.3.10 *Connected line identification presentation - COLP*

<b>+COLP - Connected line identification presentation</b>	
<b>AT+COLP=[&lt;n&gt;]</b>	<p>Set command enables or disables the presentation of the COL at the TE</p> <p><b>Parameter:</b>  &lt;n&gt;  0 – disable (factory default)  1 - enable</p> <p><b>Note:</b> When enabled (and called subscriber allows),</p>



<b>+COLP - Connected line identification presentation</b>	
	+COLP: <number>,<type>[,<subaddr>,<satype> [,<alpha>]] 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.
<b>AT+COLP?</b>	Read command gives the status of <n> ,also triggers an interrogation of the provision status of the COLP service according 3GPP TS 22.081 [3] (given in <m>).  +COLP: <n>,<m> <b>Where:</b> <n> 0 – disable 1 – enable <m> 0 - COLP not provisioned 1 - COLP provisioned 2 - unknown (e.g. no network, etc.)
<b>AT+COLP=?</b>	Test command returns supported parameters <n>
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.3.11 *Called line identification presentation - +CDIP*

<b>+CDIP - parameter command syntax</b>	
<b>AT+CDIP=[&lt;n&gt;]</b>	This command related 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. When the presentation of the called line identification at the TE is enabled, <b>+CDIP:&lt;number&gt;,&lt;type&gt;[,&lt;subaddr&gt;,&lt;satype&gt;]</b> 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 used when normal voice call answered. <n> (parameter sets/shows the result code presentation status to the TE): 0 - disable 1 - enable <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) <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)
<b>AT+CDIP?</b>	<b>+CDIP: &lt;n&gt;,&lt;m&gt;</b>



<b>+CDIP - parameter command syntax</b>	
	<p>Read command gives the status of &lt;n&gt; also 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 &lt;n&gt; (parameter sets/shows the result code presentation status to the TE):</p> <ul style="list-style-type: none"> <li>0 - disable</li> <li>1 - enable</li> </ul> <p>&lt;m&gt; (parameter shows the subscriber "multiple called numbers" service status in the network):</p> <ul style="list-style-type: none"> <li>0 - "multiple called numbers service" is not provisioned</li> <li>1 - "multiple called numbers service" is provisioned</li> <li>2 - unknown (e.g. no network, etc.)</li> </ul>
<b>AT+CDIP=?</b>	+CDIP: (list of supported <n>s)

#### 3.4.4.3.12

#### *Call Forwarding Number and Conditions - +CCFC*

<b>+CCFC - Call Forwarding Number And Condition</b>	
<b>AT+CCFC=</b> <b>&lt;reason&gt;</b> , <b>&lt;cmd&gt;[,&lt;number&gt;[,</b> <b>&lt;type&gt;</b> <b>[,&lt;class&gt;</b> <b>[,,,&lt;time&gt;]]]</b>	<p>Execution command controls the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query supported.</p> <p><b>Parameters:</b></p> <p><b>&lt;reason&gt;</b></p> <ul style="list-style-type: none"> <li>0 - unconditional</li> <li>1 - mobile busy</li> <li>2 - no reply</li> <li>3 - not reachable</li> <li>4 - all calls (not with query command)</li> <li>5 - all conditional calls (not with query command)</li> </ul> <p><b>&lt;cmd&gt;</b></p> <ul style="list-style-type: none"> <li>0 - disable</li> <li>1 - enable</li> <li>2 - query status</li> <li>3 - registration</li> <li>4 - erasure</li> </ul> <p><b>&lt;number&gt;</b> - string type phone number of forwarding address in format specified by &lt;type&gt; parameter</p> <p><b>&lt;type&gt;</b> - type of address octet in integer format :</p> <ul style="list-style-type: none"> <li>129 - national numbering scheme</li> <li>145 - international numbering scheme (contains the character "+")</li> </ul>



## +CCFC - Call Forwarding Number And Condition

**<class>** - sum of integers each representing a class of information which the command refers to; default 7 (voice + data + fax)

- 1 - voice (telephony)
- 2 - data
- 4 - fax (facsimile services) (not supported by LTE)
- 8 - short message service
- 16 - data circuit sync
- 32 - data circuit async
- 64 - dedicated packet access
- 128 - dedicated PAD access

**<time>** - time in *seconds* to wait before call is forwarded; it is valid only when **<reason>** "no reply" is enabled (**<cmd>**=1) or queried (**<cmd>**=2)

1..30 - automatically rounded to a multiple of 5 seconds (default is 20)

**Note:** when **<cmd>**=2 and command successful, it returns:

**+CCFC:** <status>,<class1>[,<number>,<type>[,<time>]][<CR><LF>  
+CCFC: <status>,<class2>[,<number>,<type>[,<time>]][ ... ]

### where:

**<status>** - current status of the network service

- 0 - not active
- 1 - active

**<classn>** - same as **<class>**

**<time>** - it is returned only when **<reason>**=2 ("no reply") and **<cmd>**=2.

The other parameters are as seen before.

### Example:

AT+CCFC=0,2 → to check if the unconditional call forwarding is on or off.

AT+CCFC=0,3,"Number" → To register the unconditional call forwarding to the network.

AT+CCFC=0,1,"Number" → To activate the unconditional call forwarding.

AT+CCFC=0,0 → To deactivate the unconditional call forwarding .

Example for Registration & activation :

AT+CCFC=0,3,"+972575684414" → for registration



<b>+CCFC - Call Forwarding Number And Condition</b>	
	AT+CCFC=0,1,"+ 972575684414" → for activation  <b>Note:</b> Please see GSM 03.82 for more info.
<b>AT+CCFC=?</b>	Test command reports supported values for the parameter <reason>.
<b>Reference</b>	3GPP TS 27.007
<b>Note</b>	When querying the status of a network service (<cmd>=2) the response line for 'not active' case (<status>=0) should be returned only if service is not active for any <class>.

### 3.4.4.3.13 *Call Forwarding Flags - #CFF*

<b>#CFF – Call Forwarding Flags</b>	
<b>AT#CFF=&lt;enable&gt;</b>	Set command enables/disables the presentation of the call forwarding flags URC.  <b>Parameter:</b> <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: <b>#CFF: &lt;enable&gt;,&lt;status&gt;,&lt;fwdtonum&gt;</b> <b>where:</b> <status> 0 – CFU disabled 1 – CFU enabled <fwdtonum> The number that the incoming calls are forwarded to.
<b>AT#CFF?</b>	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: <b>#CFF: &lt;enable&gt;[,&lt;status&gt;,&lt; fwdtonum &gt;]</b>
<b>AT#CFF=?</b>	Test command returns the range of available values for parameter <enable>.



## 3.4.4.3.14

## +CCWA - Call Waiting

**AT+CCWA=**  
[<n>,<cmd>  
[,<class>]]]

<p>Set command allows the control of the call waiting supplementary service. Activation, deactivation, and status query supported.</p>
--

## Parameters:

**<n>** - enables/disables the presentation of an unsolicited result code:

- |             |            |
|-------------|------------|
| 0 - disable | 1 - enable |
|-------------|------------|

**<cmd>** - enables/disables or queries the service at network level:

- |                  |  |
|------------------|--|
| 0 - disable      |  |
| 1 - enable       |  |
| 2 - query status |  |

**<class>** - is a sum of integers each representing a class of information which the command refers to; default is 7 (**voice + data + fax**)

- 1 - voice (telephony)
- 2 - data
- 4 - fax (facsimile services)(not supported by LTE)
- 8 - short message service
- 16 - data circuit sync
- 32 - data circuit async
- 64 - dedicated packet access
- 128 - dedicated PAD access

**Note:** the response format to the query command is:

**+CCWA:** <sup>1</sup><status>,<sup>1</sup><class1>|<sup>1</sup><CR><sup>9</sup><LF>

```
+CCWA: <status>,<class2>[ ... ]
```

**Where:**

**<status>** represents the status of the service:

- 0 - inactive  
1 - active

**<class*n*>** - same as **<class>**

**Note:** the unsolicited result code enabled by parameter <n> is in the format:

+CCWA: &lt;number&gt;,&lt;type&gt;,&lt;class&gt;,[&lt;alpha&gt;][,&lt;cli validity&gt;]

**where:**

**<number>** - string type phone number of calling address in format specified by **<type>**

**<type>** - type of address in integer format

**<class>** - see before

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

```
<cli validity>
```

- 0 - CLI valid



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

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

### 3.4.4.3.15 Call Holding Services - +CHLD

<b>+CHLD - Call Holding Services</b>	
<b>AT+CHLD=[&lt;n&gt;]</b>	<p>Execution command controls the network call hold by the service. With this service, it is possible to disconnect temporarily a call and keep it suspended while the network, contemporary it is possible to connect another party or make a multiparty connection, retains it.</p> <p><b>Parameter:</b> <b>&lt;n&gt;</b></p> <ul style="list-style-type: none"> <li>0 - releases all held calls, or sets the UDUB (User Determined User Busy) indication for a waiting call.</li> <li>1 - releases all active calls (if any exist), and accepts the other (held or waiting) call</li> <li>1X - releases a specific active call X</li> <li>2 - Places all active calls (if any exist) on hold and accepts the other (held or waiting) call.</li> <li>2X - places all active calls on hold except call X with which communication shall be supported</li> <li>3 - adds an held call to the conversation</li> <li>4 - Connects the two calls and disconnects the subscriber from both calls (ECT).</li> </ul> <p><b>Note:</b> "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 released. New calls take the lowest available number.</p>



<b>+CHLD - Call Holding Services</b>	
	<b>Note:</b> 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.
<b>AT+CHLD=?</b>	Test command returns the list of supported <n>s.  <b>+CHLD: (0,1,1X,2,2X,3,4)</b>
<b>Reference</b>	3GPP TS 27.007
<b>Note</b>	ONLY for VOICE calls

#### 3.4.4.3.16 *Call deflection - +CTFR*

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

#### 3.4.4.3.17 *Unstructured Supplementary Service Data - +CUSD*



<b>+CUSD - Unstructured Supplementary Service Data</b>	
<b>AT+CUSD=</b> <b>[&lt;n&gt;[,&lt;str&gt;</b> <b>[,&lt;dcs&gt;]]]</b>	<p>Set command allows control of the Unstructured Supplementary Service Data (USSD [3GPP TS 02.90/22.090]).</p> <p><b>Parameters:</b></p> <p><b>&lt;n&gt;</b> - used to disable/enable the presentation of an unsolicited result code.</p> <p>0 - disable the result code presentation in the <b>DTA</b></p> <p>1 - enable the result code presentation in the <b>DTA</b></p> <p>2 - cancel an ongoing USSD session (not applicable to read command response)</p> <p><b>&lt;str&gt;</b> - USSD-string (when <b>&lt;str&gt;</b> parameter is not given, network is not interrogated)</p> <ul style="list-style-type: none"> <li>If <b>&lt;dcs&gt;</b> indicates that 3GPP TS 3.38/23.038 default alphabet is used <b>ME/TA</b> converts GSM alphabet into current TE character set (see <b>+CSCS</b>).</li> <li>If <b>&lt;dcs&gt;</b> indicates that 8-bit data coding scheme is used: <b>ME/TA</b> converts each 8-bit octet into two IRA character long hexadecimal number; e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65).</li> </ul> <p><b>&lt;dcs&gt;</b> - 3GPP TS 3.38/23.038 Cell Broadcast Data Coding Scheme in integer format (default is 0).</p> <p><b>Note:</b> the unsolicited result code enabled by parameter <b>&lt;n&gt;</b> is in the format:</p> <p><b>+CUSD: &lt;m&gt;[,&lt;str&gt;,&lt;dcs&gt;]</b> to the TE</p> <p><b>where:</b></p> <p><b>&lt;m&gt;:</b></p> <p>0 - no further user action required (network initiated USSD-Notify, or no further information needed after mobile initiated operation).</p> <p>1 - further user action required (network initiated USSD-Request, or further information needed after mobile initiated operation)</p> <p>2 - USSD terminated by the network</p> <p>3 - other local client has responded</p> <p>4 - operation not supported</p> <p>5 - network time out</p>
<b>AT+CUSD?</b>	Read command reports the current value of the parameter <b>&lt;n&gt;</b>
<b>AT+CUSD=?</b>	Test command reports the supported values for the parameter <b>&lt;n&gt;</b>
<b>Reference</b>	3GPP TS 27.007
<b>Note</b>	Only mobile initiated operations are supported

#### 3.4.4.3.18 *Advice of Charge - +CAOC*

<b>+CAOC - Advice Of Charge</b>	
<b>AT+CAOC=</b> <b>&lt;mode&gt;</b>	<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>



<b>+CAOC - Advice Of Charge</b>	
	<p><b>Parameter:</b>  <b>&lt;mode&gt;</b>  0 - query CCM value  1 - disables unsolicited CCM reporting  2 - enables unsolicited CCM reporting</p> <p><b>Note:</b> the unsolicited result code enabled by parameter <b>&lt;mode&gt;</b> is in the format:</p> <p><b>+CCCM: &lt;ccm&gt;</b></p> <p><b>where:</b>  <b>&lt;ccm&gt;</b> - 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><b>Note:</b> the unsolicited result code <b>+CCCM</b> sent when the CCM value changes, but not more than every 10 seconds.</p>
<b>AT+CAOC?</b>	<p>Read command reports the value of parameter <b>&lt;mode&gt;</b> in the format:</p> <p><b>+CAOC: &lt;mode&gt;</b></p>
<b>AT+CAOC=?</b>	Test command reports the supported values for <b>&lt;mode&gt;</b> parameter.
<b>Reference</b>	3GPP TS 27.007
<b>Note</b>	<b>+CAOC</b> command returns an estimate of the cost of the current call only, produced by the MS and based on the information provided by either AoCI or AOCC supplementary services; it is not stored in the SIM

#### 3.4.4.3.19 *List Current Calls - +CLCC*

<b>+CLCC - List Current Calls</b>	
<b>AT+CLCC</b>	<p>Execution command returns the list of current calls and their characteristics in the format:</p> <p><b>[+CLCC:&lt;id1&gt;,&lt;dir&gt;,&lt;stat&gt;,&lt;mode&gt;,&lt;mpty&gt;,&lt;number&gt;,&lt;type&gt; &lt;alpha&gt;[&lt;CR&gt;&lt;LF&gt;+CLCC:&lt;id2&gt;,&lt;dir&gt;,&lt;stat&gt;,&lt;mode&gt;,&lt;mpty&gt;,&lt;number&gt;,&lt;type&gt;,&lt;alpha&gt;[...]]]</b></p> <p><b>where:</b></p> <p><b>&lt;id<i>n</i>&gt;</b> - call identification number</p> <p><b>&lt;dir&gt;</b> - call direction</p> <p>0 - mobile originated call</p> <p>1 - mobile terminated call</p> <p><b>&lt;stat&gt;</b> - state of the call</p> <p>0 - active</p> <p>1 - held</p>



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

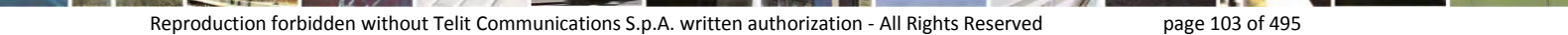
#### 3.4.4.3.20 *SS Notification - +CSSN*

<b>+CSSN - SS Notification</b>	
<b>AT+CSSN=</b> <b>[&lt;n&gt;[,&lt;m&gt;]]</b>	<p>It refers to supplementary service related network initiated notifications.  Set command enables/disables the presentation of notification result codes from <b>TA</b> to <b>TE</b>.</p> <p><b>Parameters:</b>  &lt;<b>n</b>&gt; - sets the +CSSI result code presentation status  0 - disable  1 - enable  &lt;<b>m</b>&gt; - sets the +CSSU result code presentation status  0 - disable  1 - enable</p> <p>When &lt;<b>n</b>&gt;=1 and a supplementary service notification is received after a mobile originated call setup, an unsolicited code:</p> <p><b>+CSSI: &lt;code1&gt;</b>  is sent to <b>TE</b> before any other <b>MO</b> call setup result codes, <b>where:</b></p>



3.4.4.3.21	<i>Non-Access-Stratum compliancy - #NASC</i>
------------	--

### C - Non-Access-Stratum compliancy



	OK
--	----

#### 3.4.4.3.22 *Closed User Group Supplementary Service Control - +CCUG*

<b>+CCUG - Closed User Group Supplementary Service Control</b>	
<b>AT+CCUG=</b> <b>[&lt;n&gt;</b> <b>[,&lt;index&gt;</b> <b>[,&lt;info&gt;]]]</b>	Set command allows control of the Closed User Group supplementary service [3GPP TS 02.85/22.085].  <b>Parameters:</b> <b>&lt;n&gt;</b> 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. <b>&lt;index&gt;</b> 0..9 - CUG index 10 - no index (preferential CUG taken from subscriber data) (default) <b>&lt;info&gt;</b> 0 - no information (default) 1 - suppress Outgoing Access (OA) 2 - suppress preferential CUG 3 - suppress OA and preferential CUG  <b>Note:</b> In LE920 the default value is (0,10,0).
<b>AT+CCUG?</b>	Read command reports the current value of the parameters
<b>AT+CCUG=?</b>	Test command returns the <b>OK</b> result code
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.3.23 *Preferred Operator List - +CPOL*

<b>+CPOL - Preferred Operator List</b>	
<b>AT+CPOL=</b> <b>[&lt;index&gt;]</b> <b>[,&lt;format&gt;</b> <b>[,&lt;oper&gt;</b> <b>[,&lt;GSM_Act&gt;,</b> <b>&lt;GSM_Compact</b> <b>_Act&gt;,</b> <b>&lt;UTRAN_Act&gt;,</b> <b>&lt;EUTRAN_Act&gt;</b> <b>]]]</b>	Execution command writes an entry in the SIM list of preferred operators.  <b>Parameters:</b> <b>&lt;index&gt;</b> - integer type; the order number of operator in the SIM preferred operator list 1..n <b>&lt;format&gt;</b> 2 - numeric <b>&lt;oper&gt;</b> <b>&lt;oper&gt;</b> - string type  <b>&lt;GSM_Act&gt;</b> - GSM access technology 0 – access technology not selected 1 – access technology selected  <b>&lt;GSM_Compact_Act&gt;</b> - GSM compact access technology



<b>+CPOL - Preferred Operator List</b>	
	<p>0 – access technology not selected 1 – access technology selected</p> <p>&lt;UTRA_AcT&gt; - UTRA access technology 0 – access technology not selected 1 – access technology selected</p> <p>&lt;E-UTRAN_AcTn&gt; - E-UTRAN access technology: 0 access technology not selected 1 access technology selected</p> <p><b>Note:</b> if &lt;index&gt; given but &lt;oper&gt; left out, the entry deleted. If &lt;oper&gt; given but &lt;index&gt; left out, &lt;oper&gt; put in the next free location. If only &lt;format&gt; given, the format of the &lt;oper&gt; in the read command changes. Currently &lt;GSM_Compact_AcT&gt; not supported but set value is acceptable.</p>
<b>AT+CPOL?</b>	Read command returns all used entries from the SIM list of preferred operators.
<b>AT+CPOL=?</b>	Test command returns the whole <index> range supported by the SIM and the range for the parameter <format>
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.3.24 Selection of preferred PLMN list - +CPLS

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



### 3.4.4.4 Mobile Equipment Control

#### 3.4.4.4.1 Phone Activity Status - +CPAS

<b>+CPAS - Phone Activity Status</b>	
<b>AT+CPAS</b>	<p>Execution command reports the device status in the form:</p> <p><b>+CPAS: &lt;pas&gt;</b></p> <p><b>Where:</b>  <b>&lt;pas&gt;</b> - phone activity status            0 - ready (device allows commands from <b>TA/TE</b>)            1 - unavailable (device does not allow commands from <b>TA/TE</b>)            2 - unknown (device is not guaranteed to respond to instructions)            3 - ringing (device is ready for commands from <b>TA/TE</b>, but the ringer is active)            4 - call in progress (device is ready for commands from <b>TA/TE</b>, but a call is in progress)</p> <p><b>Note:</b> In model LE920, LE910 “1,2” are not supported.</p>
<b>AT+CPAS=?</b>	<p>Test command reports the supported range of values for <b>&lt;pas&gt;</b>.</p> <p><b>Note:</b> although <b>+CPAS</b> is an execution command, 3gpp TS 27.007 requires the Test command to be defined.</p>
<b>Example</b>	<pre> ATD03282131321; OK AT+CPAS +CPAS: 4           the called phone has answered to your call  OK ATH OK           </pre>
<b>Reference</b>	3GPP TS 27.007



### 3.4.4.4.2 Set Phone Functionality - +CFUN

+CFUN - Set Phone Functionality	
<b>AT+CFUN=</b> <b>[&lt;fun&gt;</b> <b>[,&lt;rst&gt;]]</b>	<p>Set command selects the level of functionality in the ME.</p> <p><b>Parameters:</b></p> <p><b>&lt;fun&gt;</b> - is the power saving function mode</p> <ul style="list-style-type: none"> <li>0 - minimum functionality, NON-CYCLIC SLEEP mode: in this mode, the AT interface is not accessible by UART. Consequently, once you have set <b>&lt;fun&gt;</b> 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 <b>&lt;fun&gt;=1</b>.</li> <li>1 - mobile full functionality with power saving disabled (factory default)</li> <li>2 - disable TX (Not support)</li> <li>4 - disable both TX and RX</li> <li>5 - mobile full functionality with power saving enabled</li> </ul> <p>Special modes , you can see them through the read command but you can't set those mode :</p> <ul style="list-style-type: none"> <li>7 – Offline mode</li> <li>8 – FTM</li> </ul> <p><b>&lt;rst&gt;</b> - reset flag</p> <ul style="list-style-type: none"> <li>0 - do not reset the ME before setting it to <b>&lt;fun&gt;</b> functionality level.</li> <li>1- reset the ME before setting it to <b>&lt;fun&gt;</b> functionality level, This option works only with <b>&lt;fun&gt; =1</b>, with other it will return an error.</li> </ul> <p><b>Note:</b> AT+CFUN=2 is not supported.</p> <p><b>Note:</b> Issuing AT+CFUN=4[,0] actually causes the module to perform either a network deregistration and a SIM deactivation.</p> <p><b>Note:</b> 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><b>Note:</b> To place the module in power saving mode, set the <b>&lt;fun&gt;</b> parameter at value = 5 and the line DTR (RS232) must be set to OFF. Once in power saving, the CTS line switch to the OFF status to signal that the module is really in power saving condition. During the power saving condition, before sending any AT command on the serial line, the DTR must be enabled and it must be waited for the CTS (RS232) line to go in ON status.</p> <p>Until the DTR line is ON, the module will not return back in the power saving condition.</p> <p><b>Note:</b> 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>



<b>+CFUN - Set Phone Functionality</b>	
<b>AT+CFUN?</b>	Read command reports the current setting of <b>&lt;fun&gt;</b> .
<b>AT+CFUN=?</b>	Test command returns the list of supported values for <b>&lt;fun&gt;</b> and <b>&lt;rst&gt;</b> .
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.4.3 Enter PIN - +CPIN

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



+CPIN - Enter PIN																																																																									
	<p><b>PH-NETSUB PIN</b> - ME is waiting network subset personalization password to be given</p> <p><b>PH-NETSUB PUK</b> - ME is waiting network subset personalization unblocking password to be given</p> <p><b>PH-SP PIN</b> - ME is waiting service provider personalization password to be given</p> <p><b>PH-SP PUK</b> - ME is waiting service provider personalization unblocking password to be given</p> <p><b>PH-CORP PIN</b> - ME is waiting corporate personalization password to be given</p> <p><b>PH-CORP PUK</b> - ME is waiting corporate personalization unblocking password to be given</p> <p><b>Note:</b> Pin pending status at startup depends on PIN facility setting, to change or query the default power up setting use the command <b>AT+CLCK=SC,&lt;mode&gt;,&lt;pin&gt;</b></p>																																																																								
Example	<p>AT+CMEE=1</p> <p>OK</p> <p>AT+CPIN?</p> <p>+CME ERROR: 10                    <i>error: you have to insert the SIM</i></p> <p>AT+CPIN?</p> <p>+CPIN: READY                    <i>you inserted the SIM and device is not waiting for PIN to be given</i></p> <p>OK</p>																																																																								
Note	<p>What follows is a list of the commands which are accepted when ME is pending SIM PIN or SIM PUK</p> <table><tr><td>A</td><td>&amp;K</td><td>+FCLASS</td><td>+CPIN</td></tr><tr><td>D</td><td>&amp;N</td><td>+GCAP</td><td>+CSQ</td></tr><tr><td>H</td><td>&amp;P</td><td>+GCI</td><td>+CIND</td></tr><tr><td>O</td><td>&amp;S</td><td>+IPR</td><td>+CMER</td></tr><tr><td>E</td><td>&amp;V</td><td>+IFC</td><td>+CCLK</td></tr><tr><td>I</td><td>&amp;W</td><td>+ILRR</td><td>+CALA</td></tr><tr><td>L</td><td>&amp;Y</td><td>+ICF</td><td></td></tr><tr><td>M</td><td>&amp;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>&amp;C</td><td>#CGMM</td><td>+GMR</td><td>+CBC</td></tr><tr><td>&amp;D</td><td>#CGMR</td><td>+CGSN</td><td>+CSDH</td></tr><tr><td>&amp;F</td><td>#CGSN</td><td>+GSN</td><td>+CNMI</td></tr></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
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																																																																						



+CPIN - Enter PIN				
		+COPS	+CHUP	+CRC
		+CLIP	#SHDN	+CRLP
		+CPAS	+CR	+CREG
		+CFUN		
		All the above commands, but +CSDH and +CNMI, can be issued even if ME is waiting for phone-To-SIM card password to be given		
Reference	3GPP TS 27.007			

#### 3.4.4.4.4 Signal Quality - +CSQ

+CSQ - Signal Quality	
AT+CSQ	<p>Execution command reports received signal quality indicators in the form:</p> <p><b>+CSQ: &lt;rssi&gt;,&lt;sq&gt;</b></p> <p><b>Where:</b></p> <p><b>&lt;rssi&gt;</b> - received signal strength indication (3GPP)</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><b>&lt;rssi&gt;</b> - received signal strength indication (TDSCDMA)</p> <p>100: (-116) dBm or less</p> <p>101: (-115) dBm</p> <p>102...191 (-114...-26) dBm</p> <p>191: (-25) dBm or greater</p> <p>199: Not known or not detectable</p> <p><b>&lt;sq&gt;</b> - signal quality – as mentioned below:</p> <p><b>2G (GSM) – RXQUAL [bit error rate (in percent)]:</b></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><b>3G (UTRAN) – ECIO [in dBm]:</b></p> <p>0: (-1 ) to ( 0 )</p>



<b>+CSQ - Signal Quality</b>	
	<p>1: (-5 ) to (-2 )  2: (-8 ) to (-6 )  3: (-11) to (-9 )  4: (-15) to (-12)  5: (-18) to (-16)  6: (-22) to (-19)  7: (-24) to (-23)  99 - not known or not detectable</p> <p>4G (LTE) – RSRQ [in dBm]:  0: (-4 ) to (-3 )  1: (-6 ) to (-5 )  2: (-8 ) to (-7 )  3: (-10) to (-9 )  4: (-13) to (-11)  5: (-15) to (-14)  6: (-17) to (-16)  7: (-19) to (-18)  99 - not known or not detectable</p> <p><b>Note:</b> this command should be used instead of the %Q and %L commands, since GSM/WCDMA relevant parameters are the radio link ones and no line is present, hence %Q and %L have no meaning.</p>
<b>AT+CSQ=?</b>	<p>Test command returns the supported range of values of the parameters &lt;rsqi&gt; and &lt;ber&gt;.</p> <p><b>Note:</b> although +CSQ is an execution command without parameters, 3GPP TS 27.007 requires the Test command to be defined.</p>
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.4.5 *Indicator Control - +CIND*

<b>+CIND - Indicator Control</b>	
<b>AT+CIND=</b> [<state> [,<state> [...]]]	<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 (&lt;descr&gt;) and their order appear from test command AT+CIND=?</p> <p><b>Parameter:</b>  &lt;state&gt; - registration state</p>



<b>+CIND - Indicator Control</b>	
	<p>0 - The indicator is deregistered; there's no unsolicited result code (+CIEV URC) automatically sent by the ME to the application, whenever the value of the associated indicator changes.</p> <p>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>
<b>AT+CIND?</b>	<p>Read command returns the current value of ME indicators, in the format: +CIND: &lt;ind&gt;,&lt;ind&gt;,...&lt;ind&gt;</p> <p><b>Note:</b> the order of the values &lt;ind&gt;s is the same as that in which the associated indicators appear from test command AT+CIND=?.</p>
<b>AT+CIND=?</b>	<p>Test command returns pairs, where string value &lt;descr&gt; is a description (max. 16 chars) of the indicator and compound value is the supported values for the indicator, in the format: +CIND: (&lt;descr&gt;, (list of supported &lt;ind&gt;s)),(&lt;descr&gt;, (list of supported &lt;ind&gt;s)),... (&lt;descr&gt;, (list of supported &lt;ind&gt;s))</p> <p><b>where:</b>            &lt;descr&gt; - indicator names as follows (along with their &lt;ind&gt; ranges).            "battchg" - battery charge level.            &lt;ind&gt;- battery charge level indicator range (from 3300mV to 4200mV)            0..5 – bar levels.            99 - not measurable.</p> <p>"signal" - signal quality (see +CSQ).            &lt;ind&gt; - signal quality indicator range            0..7 – bar levels.            99 - not measurable.</p> <p>"service" - service availability.            &lt;ind&gt; - service availability indicator range            0 - not registered to any network.            1 – Registered.</p> <p>"sounder" - sounder activity.            &lt;ind&gt; - sounder activity indicator range            0 - there's no any sound activity.            1 - There's some sound activity.</p> <p>"message" - message received.            &lt;ind&gt; - message received indicator range.            0 - there is no unread short message at memory locations.            1 - unread short message at memory locations.</p>



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



#### 3.4.4.4.6 Indicator Control for current values - #CIND

#CIND – Indication Control ReaderIndication	
<b>AT#CIND?</b>	Read command returns the current values of +CIND, in the format:  #CIND: <cind_ind>,<cind_ind>, ... <cind_ind> <b>Where:</b> <cind_ind> - cind current set value according to the index of +CIND command. 0 - Unset 1 – Set
<b>AT#CIND=?</b>	Test command returns the supported range of values for the +CIND set <cind_ind>.
<b>Example</b>	Next command changed the +CIND values: AT+CIND=1,0,1,0,0,1,0,1,1,0,0  Next command to query the current value of all indicators: AT#CIND? #CIND: 1,0,1,0,0,1,0,1,1,0,0
<b>Note</b>	see command +CIND

#### 3.4.4.4.7 Mobile Equipment Event Reporting - +CMER

+CMER - Mobile Equipment Event Reporting	
<b>AT+CMER=</b> [<mode> [,<keyp> [,<disp> [,<ind> [,<bfr>]]]]]	Set command enables/disables sending of unsolicited result codes from TA to TE in the case of indicator state changes (n.b.: sending of URCs in the case of key pressings or display changes are currently not implemented).  <b>Parameters:</b> <mode> - controls the processing of unsolicited result codes 0 - discard +CIEV Unsolicited Result Codes.



+CMER - Mobile Equipment Event Reporting	
	<p>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.</p> <p>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.</p> <p>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 <b>Break</b> (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> <p>&lt;keyp&gt; - keypad event reporting 0 - no keypad event reporting</p> <p>&lt;disp&gt; - display event reporting 0 - no display event reporting</p> <p>&lt;ind&gt; - indicator event reporting 0 - no indicator event reporting 2 - indicator event reporting</p> <p>&lt;bfr&gt; - TA buffer clearing 0 - TA buffer of unsolicited result codes is cleared when &lt;mode&gt; 1..3 is entered 1 - TA buffer of unsolicited result codes is flushed to the TE when &lt;mode&gt; 1...3 is entered (OK response shall be given before flushing the codes)</p> <p><b>Note:</b> After AT+CMER has been switched on with e.g. AT+CMER=2,0,0,2 command (i.e. &lt;bfr&gt; is 0), URCs for all registered indicators will be issued only first time, if previous &lt;mode&gt; was 0, for backward compatibility. Values shown by the indicators will be current indicators values, not buffered ones. Subsequent AT+CMER commands with &lt;mode&gt; different from 0 and &lt;bfr&gt; equal to 0 will not flush the codes, even if &lt;mode&gt; was set again to 0 before. To flush the codes, &lt;bfr&gt; 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>
AT+CMER?	<p>Read command returns the current setting of parameters, in the format:</p> <p>+CMER: &lt;mode&gt;,&lt;keyp&gt;,&lt;disp&gt;,&lt;ind&gt;,&lt;bfr&gt;</p>
AT+CMER=?	<p>Test command returns the range of supported values for parameters &lt;mode&gt;, &lt;keyp&gt;, &lt;disp&gt;, &lt;ind&gt;, &lt;bfr&gt;, in the format:</p> <p>+CMER: (list of supported &lt;mode&gt;s),(list of supported &lt;keyp&gt;s),(list of supported &lt;disp&gt;s),(list of supported &lt;ind&gt;s),(list of supported &lt;bfr&gt;s)</p>
Reference	3GPP TS 27.007



#### 3.4.4.4.8 *Select Phonebook Memory Storage - +CPBS*

+CPBS - Select Phonebook Memory Storage	
<b>AT+CPBS=&lt;storage&gt;</b>	<p>Set command selects phonebook memory storage &lt;storage&gt;, which will be use by other phonebook commands.</p> <p><b>Parameter:</b>            &lt;storage&gt;            "SM" - SIM phonebook            "FD" - SIM fixed dialling-phonebook (only phase 2/2+ SIM)            "LD" - SIM last-dialling-phonebook (+CPBF is not applicable for this storage)            "MC" - device missed (unanswered received) calls list (+CPBF is not applicable for this storage)            "RC" - ME received calls list (+CPBF is not applicable for this storage).            "DC" - MT dialled calls list            "ME" - MT phonebook            "EN" - SIM/USIM (or MT) emergency number (+CPBW is not be applicable for this storage)            "ON" - SIM (or MT) own numbers (MSI torage may be available through +CNUM also).            "MB" - mailbox numbers stored on SIM; it is possible to select this storage only if the mailbox service provided by the SIM (see #MBN).            "SD" - SIM Service Dialling Numbers (SDN) phonebook (+CPBW is not applicable for this storage).</p>
<b>AT+CPBS?</b>	<p>Read command returns the actual values of the parameter &lt;storage&gt;, the number of occupied records &lt;used&gt; and the maximum index number &lt;total&gt;, in the format:</p> <p><b>+CPBS: &lt;storage&gt;,&lt;used&gt;,&lt;total&gt;</b></p> <p><b>Note:</b> For &lt;storage&gt;="MC": if there is more than one missed call from the same number, the read command will return only the last call.</p>
<b>AT+CPBS=?</b>	<p>Test command returns the supported range of values for the parameters &lt;storage&gt;.</p>
<b>Example</b>	<p>AT+CPBS="SM" → current phonebook storage is SIM            AT+CPBR=1            +CPBR: 1,"0105872928",129,"James"            OK</p>
<b>Reference</b>	<p>3GPP TS 27.007</p>



### 3.4.4.4.9 Read Phonebook Entries - +CPBR

+CPBR - Read Phonebook Entries	
<b>AT+CPBR=</b> <b>&lt;index1&gt;</b> <b>[,&lt;index2&gt;]</b>	<p>Execution command returns phonebook entries in location number range <b>&lt;index1&gt;..&lt;index2&gt;</b> from the current phonebook memory storage selected with +CPBS. If <b>&lt;index2&gt;</b> omitted, only location <b>&lt;index1&gt;</b> returned.</p> <p><b>Parameters:</b></p> <p><b>&lt;index1&gt;</b> - integer type. value in the range of location numbers of the currently selected phonebook memory storage (see +CPBS).</p> <p><b>&lt;index2&gt;</b> - 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><b>[+CPBR:&lt;index1&gt;,&lt;number&gt;,&lt;type&gt;,&lt;text&gt;,&lt;hidden&gt;]</b>  <b>[&lt;group&gt;],[&lt;adnumber&gt;],[&lt;adtype&gt;],[&lt;secondtext&gt;],[&lt;email&gt;][&lt;CR&gt;&lt;LF&gt;</b>  <b>+CPBR:&lt;index2&gt;,&lt;number&gt;,&lt;type&gt;,&lt;text&gt;,&lt;hidden&gt;]</b>  <b>[&lt;group&gt;],[&lt;adnumber&gt;],[&lt;adtype&gt;],[&lt;secondtext&gt;],[&lt;email&gt;[...]]]</b>  or  <b>+CME ERROR: &lt;err&gt;</b></p> <p><b>where:</b></p> <p><b>&lt;indexn&gt;</b> - the location number of the phonebook entry</p> <p><b>&lt;number&gt;</b> - string type phone number of format <b>&lt;type&gt;</b></p> <p><b>&lt;type&gt;</b> - type of phone number octet in integer format</p> <p>129 - national numbering scheme</p> <p>145 - international numbering scheme (contains the character "+")</p> <p><b>&lt;text&gt;</b> - the alphanumeric text associated to the number; used character set should be the one selected with command +CSCS.</p> <p><b>&lt;hidden&gt;</b> - indicates if the entry is hidden or not</p> <p>0: phonebook entry not hidden</p> <p>1: phonebook entry hidden</p> <p><b>&lt;group&gt;</b> - group name the entry may belong to; used character set should be the one selected with command +CSCS.</p> <p><b>&lt;adnumber&gt;</b> - additional string type phone number of format <b>&lt;adtype&gt;</b>.</p> <p><b>&lt;adtype&gt;</b> - additional type number octet in integer format.</p> <p>129 - national numbering scheme</p> <p>145 - international numbering scheme (contains the character "+")</p> <p><b>&lt;secondtext&gt;</b> - the alphanumeric text associate secondary text; used character set should be the one selected with command +CSCS.</p> <p><b>&lt;email&gt;</b> - The alphanumeric text associate email address; used character set should be the one selected with command +CSCS.</p>
<b>AT+CPBR=?</b>	<p>Test command returns the supported range of values for parameters <b>&lt;indexn&gt;</b> and the maximum lengths of <b>&lt;number&gt;</b> and <b>&lt;text&gt;</b> fields, in the format:</p>



+CPBR - Read Phonebook Entries	
	<p>+CPBR:&lt;minIndex&gt;&lt;maxIndex&gt;,&lt;nlength&gt;,&lt;tlength&gt;,&lt;glength&gt;,&lt;slength&gt;,&lt;elength&gt;</p> <p><b>where:</b>            &lt;minIndex&gt;- the minimum &lt;index&gt; number, integer type            &lt;maxIndex&gt;- the maximum &lt;index&gt; number, integer type            &lt;nlength&gt; - maximum &lt;number&gt; field length, integer type            &lt;tlength&gt; - maximum &lt;name&gt; field length, integer type            &lt;glength&gt; - group name length for example AND group, FDN group.            &lt;slength&gt; - Secondary text length associate with the number.            &lt;elength&gt; - &lt;email&gt; length</p> <p><b>Note:</b> the value of &lt;nlength&gt; could vary, depending on the availability of Extension service, in the following situations:</p> <ol style="list-style-type: none"> <li>1. if "SM" memory storage has been selected (see +CPBS) and the SIM supports the Extension1 service</li> <li>2. if "FD" memory storage has been selected (see +CPBS) and the SIM supports the Extension2 service</li> <li>3. if "MB" memory storage has been selected (see +CPBS) and the SIM supports the Extension6 service</li> </ol>
<b>Note</b>	Remember to select the PB storage with +CPBS command before issuing PB commands.
<b>Example</b>	<p>AT+CPBS="ME"            OK            AT+CPBS?            +CPBS: "ME",1,100</p> <p>OK            AT+CPBR=?            +CPBR: (1-500),40,20,2,20,20</p> <p>OK            AT+CPBR=1            +CPBR: 1,"01048771234",129,"James","", "",0,"", ""</p> <p>OK</p>
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.4.10 Find Phonebook Entries - +CPBF

+CPBF - Find Phonebook Entries	
AT+CPBF= <findtext>	<p>Execution command returns phonebook entries (from the current phonebook memory storage selected with +CPBS) which alphanumeric field start with string &lt;findtext&gt;.</p> <p><b>Parameter:</b>            &lt;findtext&gt; - string type, used character set should be the</p>





<b>+CPBF - Find Phonebook Entries</b>	
	<p>&lt;tlength&gt; - maximum length of field &lt;text&gt;, integer type          &lt;glength&gt; - group name length for example AND group, FDN group          &lt;slength&gt; - Secondary text length associate with the number          &lt;elength&gt; - email length  <i>Note: the value of &lt;nlength&gt; could vary, depending on the availability of Extension service, in the following situations:</i>          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>
<b>Note</b>	Remember to select the PB storage with +CPBS command before issuing PB commands.
<b>Example</b>	<p>AT+CPBS="ME" <i>Selecting phonebook</i>          OK          AT+CPBF="J" <i>Searching for string "J"</i>          +CPBF: 1,"01048771234",129,"James",,,,,0,,,,"          +CPBF: 2,"0169998888",129,"Jane",,,,,0,,,,"          OK  <i>Searching for everything in phone book, and finding all entries</i>          AT+CPBF=""          +CPBF: 1,"01048771234",129,"James",,,,,0,,,,"          +CPBF: 2,"0169998888",129,"Jane",,,,,0,,,,"          +CPBF: 7,"0115556666",129,"Juliet",,,,,0,,,,"          +CPBF: 5,"0181111234",129,"Kevin",,,,,0,,,,"          OK</p>
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.4.11 Write Phonebook Entry - +CPBW

<b>+CPBW - Write Phonebook Entry</b>	
<b>AT+CPBW=</b> [<index>] [<number> [<type> [<text> [<group> [<adnumber> [<adtype> [<secondtext>[,<email>]	<p>Execution command writes phonebook entry in location number &lt;index&gt; in the current phonebook memory storage selected with +CPBS.</p> <p><b>Parameters:</b>          &lt;index&gt; - integer type, value in the range of location numbers of the currently selected phonebook memory storage (see +CPBS).          &lt;number&gt; - string type, phone number in the format &lt;type&gt;          &lt;type&gt; - the type of number          129 - national numbering scheme          145 - international numbering scheme (contains the character "+")</p>





<b>+CPBW - Write Phonebook Entry</b>	
	<p>&lt;nlength&gt; - integer type value indicating the maximum length of field &lt;number&gt;.</p> <p>&lt;tlength&gt; - integer type value indicating the maximum length of field &lt;text&gt;</p> <p>&lt;glength&gt; – group name length for example AND group, FDN group.</p> <p>&lt;slength&gt; – Secondary text length associate with the &lt;adnumber&gt; number.</p> <p>&lt;elength&gt; – email length.</p> <p>Note: the value of &lt;nlength&gt; could vary, depending on the availability of Extension service, in the following situations:</p> <ol style="list-style-type: none"> <li>1. if “SM” memory storage has been selected (see +CPBS) and the SIM supports the Extension1 service</li> <li>2. if “FD” memory storage has been selected (see +CPBS) and the SIM supports the Extension2 service</li> <li>3. if “MB” memory storage has been selected (see +CPBS) and the SIM supports the Extension6 service</li> </ol>
<b>Reference</b>	3GPP TS 27.007
<b>Example</b>	AT+CPBW=? +CPBW: (1-500),40,(129,145),255,2,255,255 OK AT+CPBW=6,"18651896699",129,"John" OK
<b>Note</b>	Remember to select the PB storage with +CPBS command before issuing PB commands.

#### 3.4.4.4.12 *Clock Management - +CCLK*

<b>+CCLK - Clock Management</b>	
<b>AT+CCLK=</b> <b>&lt;time&gt;</b>	Set command sets the real-time clock of the ME.  <b>Parameter:</b> <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).



# AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

<b>+CCLK - Clock Management</b>	
	<p>range is (00..23)  <b>mm</b> - minute (two last digits are mandatory).  range is (00..59)  <b>ss</b> - Seconds (two last digits are mandatory).  range is (00..59)  <b>±zz</b> - 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>
<b>AT+CCLK?</b>	<p>Read command returns the current setting of the real-time clock, in the format <b>&lt;time&gt;</b>.</p> <p><b>Note:</b> the three last characters of <b>&lt;time&gt;</b>, i.e. the time zone information, are returned by <b>+CCLK?</b> only if the <b>#NITZ</b> URC '<i>extended</i>' format has been enabled (see <b>#NITZ</b>).</p>
<b>AT+CCLK=?</b>	Test command returns the <b>OK</b> result code.
<b>Example</b>	<p>AT+CCLK="02/09/07,22:30:00+00"  OK  AT+CCLK?  +CCLK: 02/09/07,22:30:25  OK</p>
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.4.13 *Restricted SIM Access - +CRSM*

+CRSM - Restricted SIM Access	
AT+CRSM= <command> [,<fileid> [,<P1>,<P2>, <P3>[,<data>]]]	<p>Execution command transmits to the <b>ME</b> the SIM &lt;command&gt; and its required parameters. <b>ME</b> handles internally all <b>SIM-ME</b> interface locking and file selection routines. As response to the command, <b>ME</b> sends the actual SIM information parameters and response data.</p> <p><b>Parameters:</b></p> <p>&lt;command&gt; - command passed on by the <b>ME</b> to the SIM</p> <ul style="list-style-type: none"> <li>176 - READ BINARY</li> <li>178 - READ RECORD</li> <li>192 - GET RESPONSE</li> <li>214 - UPDATE BINARY</li> <li>220 - UPDATE RECORD</li> <li>242 - STATUS</li> </ul> <p>&lt;Fileid&gt; - identifier of an elementary data file on SIM. Mandatory for every command except STATUS.</p> <p>&lt;P1&gt;,&lt;P2&gt;,&lt;P3&gt; - parameter passed on by the <b>ME</b> to the SIM; they are mandatory for every command except GET RESPONSE and STATUS 0..255</p>



+CRSM - Restricted SIM Access	
	<p><b>&lt;Data&gt;</b> - information to be read/written to the SIM (hexadecimal character format).</p> <p>The response of the command is in the format:</p> <p><b>+CRSM: &lt;sw1&gt;,&lt;sw2&gt;[,&lt;response&gt;]</b></p> <p><b>where:</b></p> <p><b>&lt;sw1&gt;,&lt;sw2&gt;</b> - information from the SIM about the execution of the actual command either on successful or failed execution.</p> <p><b>&lt;response&gt;</b> - on a successful completion of the command previously issued it returns the requested data (hexadecimal character format). It's not returned after a successful UPDATE BINARY or UPDATE RECORD command.</p> <p><b>Note:</b> 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><b>Note:</b> use only decimal numbers for parameters <b>&lt;command&gt;</b>, <b>&lt;fileid&gt;</b>, <b>&lt;P1&gt;</b>, <b>&lt;P2&gt;</b> and <b>&lt;P3&gt;</b>.</p>
<b>AT+CRSM=?</b>	Test command returns the <b>OK</b> result code
<b>Example</b>	<p>Read binary, ICCID(2FE2)  AT+CRSM=176,12258,0,0,10  +CRSM: 144,0,982850702001107686F4</p> <p>OK</p> <p>Read record, ADN(6F3A)  AT+CRSM=178,28474,1,4,40  +CRSM: 144,0,42434A554EFFFFFFFFFFFFFFFFFFFFFFFF06811056789282FFFFFFFFFFFFFFF</p> <p>OK</p> <p>Update Binary, KcGPRS(6F52)  AT+CRSM=214,28539,0,0,8,C69018C7958C87  +CRSM: 144,0</p> <p>OK</p> <p>Update Record, ADN(6F3A)</p>



<b>+CRSM - Restricted SIM Access</b>	
	AT+CRSM=220,28474,9,4,30,657469FF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF +CRSM: 144,0  OK  Status, FPLMN(6F7B) AT+CRSM=242,28539 +CRSM: 144,0,623C820238218410A0000000871002FFFFFFFFF8904 0300FFA5118001318103010A3282011E8304000030E08A01058B032F0609C609 9001C0830101830181
<b>Reference</b>	3GPP TS 27.007, 3GPP TS 11.11/51.011

#### 3.4.4.4.14 *Accumulated Call Meter - +CACM*

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

#### 3.4.4.4.15 *Ringer Sound Level - +CRSL*

<b>+CRSL - Ringer Sound Level</b>	
<b>AT+CRSL=&lt;level&gt;</b>	Set command used to select the incoming of the sound level of the call ringer on the device.  <b>Parameter:</b>



<b>+CRSL - Ringer Sound Level</b>	
	<b>&lt;level&gt;</b> - ringer sound level 0 - Off 1 - low 2 - middle 3 - high 4 - progressive
<b>AT+CRSL?</b>	Read command reports the current <b>&lt;level&gt;</b> setting of the call ringer in the format: <b>+CRSL: &lt;level&gt;</b>
<b>AT+CRSL=?</b>	Test command reports <b>&lt;level&gt;</b> supported values as compound value.  <b>+CRSL: (0-4)</b>
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.4.16 *Loudspeaker Volume Level - +CLVL*

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

#### 3.4.4.4.17 *Microphone Mute Control - +CMUT*

<b>+CMUT - Microphone Mute Control</b>	
<b>AT+CMUT=&lt;n&gt;</b>	Set command enables/disables the muting of the microphone audio line during a voice call.  <b>Parameter:</b> <b>&lt;n&gt;</b> 0 - mute off, microphone active (factory default) 1 - mute on, microphone muted.  <b>Note:</b> this command mutes/activates both microphone audio paths, internal mic and external mic.



<b>+CMUT - Microphone Mute Control</b>	
<b>AT+CMUT?</b>	Read command reports whether the muting of the microphone audio line during a voice call is enabled or not, in the format:  <b>+CMUT: &lt;n&gt;</b>
<b>AT+CMUT=?</b>	Test command reports the supported values for <n> parameter.
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.4.18 *Silence Command - +CSIL*

<b>+CSIL – silence command</b>	
<b>AT+CSIL=</b> <b>[&lt;mode&gt;]</b>	This command enables/disables the silent mode. When the phone is in silent mode, all signalling tones from MT are suppressed. <b>Parameters:</b> <b>&lt;mode&gt;:</b> <b>0</b> - Silent mode off (default) <b>1</b> - Silent mode on
<b>AT+CSIL?</b>	Read command reports the currently selected <mode> in the format: <b>+CSIL: &lt;mode&gt;</b>
<b>AT+CSIL=?</b>	Test command reports the supported range of values for parameter <mode>.

#### 3.4.4.4.19 *Accumulated Call Meter Maximum - +CAMP*

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



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

#### 3.4.4.4.20 *Price per Unit and Currency Table - +CPUC*

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

#### 3.4.4.4.21 *Call meter maximum event - +CCWE*

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



<b>+CCWE – Call Meter maximum event</b>	
	the format: <b>+CCWE: &lt;mode&gt;</b>
<b>AT+CCWE=?</b>	Test command reports the supported range of values for parameter <b>&lt;mode&gt;</b>
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.4.22 Available AT Commands - +CLAC

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

#### 3.4.4.4.23 Set voice mail number - +CSVM

<b>+CSVM – Set Voice Mail Number</b>	
<b>AT+CSVM=</b> <b>&lt;mode&gt;</b> <b>[,&lt;number&gt;</b> <b>[,&lt;type&gt;]]</b>	The number to the voice mail server is set with this command. The parameters <b>&lt;number&gt;</b> and <b>&lt;type&gt;</b> can be left out if the parameter <b>&lt;mode&gt;</b> is set to 0.  <b>Parameters:</b> <b>&lt;mode&gt;</b> 0 – disable the voice mail number 1 – enable the voice mail number (factory default) <b>&lt;number&gt;</b> - string type phone number of format specified by <b>&lt;type&gt;</b> . <b>&lt;type&gt;</b> - 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 "+") Note: Set command only checks for parameters values validity; it does not any actual write to SIM to update voice mail number.
<b>AT+CSVM?</b>	Read command returns the currently selected voice mail number and the status (i.e. enabled/disabled) in the format <b>+CSVM:&lt;mode&gt;,&lt;number&gt;,&lt;type&gt;</b>
<b>AT+CSVM=?</b>	Test command reports the range for the parameters <b>&lt;mode&gt;</b> and <b>&lt;type&gt;</b> .
<b>Reference</b>	3GPP TS 27.007



#### 3.4.4.4.24 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: &lt;tz&gt; whenever the time zone is changed.</p> <p><b>Parameters:</b></p> <p><b>&lt;onoff&gt;:</b></p> <p>0 - Disable time zone change event reporting (default)</p> <p>1 - Enable time zone change event reporting</p>
AT+CTZR?	<p>Read command reports the currently selected &lt;onoff&gt; in the format:</p> <p><b>+CTZR: &lt;onoff&gt;</b></p>
AT+CTZR=?	<p>Test command reports the supported range of values for parameter &lt;onoff&gt;</p>

#### 3.4.4.4.25 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><b>Parameters:</b></p> <p><b>&lt;onoff&gt;:</b></p> <p>0 - Disable automatic time zone update via NITZ (default)</p> <p>1 - Enable automatic time zone update via NITZ</p> <p><b>Note:</b> 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</p>



	been issued, NITZ message will cause a date and time update.
<b>AT+CTZU?</b>	Read command reports the currently selected <onoff> in the format: +CTZU: <onoff>
<b>AT+CTZU=?</b>	Test command reports the supported range of values for parameter <onoff>

### 3.4.4.5 Mobile Equipment Errors

#### 3.4.4.5.1 Report Mobile Equipment Error - +CMEE

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



<b>+CMEE - Report Mobile Equipment Error</b>	
Reference	3GPP TS 27.007

### 3.4.4.6 Voice Control

#### 3.4.4.6.1 DTMF Tones Transmission - +VTS

<b>+VTS - DTMF Tones Transmission</b>	
AT+VTS= <dtmfstring> [,duration]	<p>Execution command allows the transmission of DTMF tones.</p> <p><b>Parameters:</b></p> <p>&lt;dtmfstring&gt; - string of &lt;dtmf&gt;s, i.e. ASCII characters in the set (0-9), #, *, (A-D, P); the string can be at most 255 &lt;dtmf&gt;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.</p> <p>&lt;duration&gt; - 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.</p> <p>0 - a single DTMF tone will be transmitted for a duration depending on the network, no matter what the current +VTD setting is.</p> <p>10..255 - a single DTMF tone will be transmitted for a time &lt;duration&gt; (in 10 ms multiples), no matter what the current +VTD setting is.</p> <p><b>Note:</b> P – pause of 3 seconds.</p> <p><b>Note:</b> This command operates in voice mode only (see +FCLASS).</p>
AT+VTS=?	<p>Test command provides the list of supported &lt;dtmf&gt;s and the list of supported &lt;duration&gt;s in the format:</p> <p>(list of supported &lt;dtmf&gt;s)[,(list of supported &lt;duration&gt;s)]</p>
Reference	3GPP TS 27.007 and TIA IS-101

#### 3.4.4.6.2 Tone Duration - +VTD

<b>+VTD - Tone Duration</b>	
AT+VTD= <duration>	<p>Set command sets the length of tones transmitted with +VTS command.</p> <p><b>Parameter:</b></p> <p>&lt;duration&gt; - duration of a tone</p> <p>0 - the duration of every single tone is dependent on the network (factory default)</p> <p>1..255 - duration of every single tone in 1/10 sec.</p>
AT+VTD?	<p>Read command reports the current Tone Duration, in the format:</p> <p>&lt;duration&gt;</p>
AT+VTD=?	<p>Test command provides the list of supported &lt;duration&gt;s in the format:</p>



<b>+VTD - Tone Duration</b>	
	(list of supported <duration>s)
<b>Reference</b>	3GPP TS 27.007 and TIA IS-101

### 3.4.4.6.3 Embedded DTMF decoder enabling - #DTMF

<b>#DTMF – Embedded DTMF decoder enabling</b>	
<b>AT#DTMF=&lt;mode&gt;</b> >	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  <b>Note:</b> <ul style="list-style-type: none"> <li>if &lt;mode&gt;=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</li> <li>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.</li> </ul>
<b>AT#DTMF?</b>	Read command reports the currently selected <mode> in the format: #DTMF: <mode>
<b>AT#DTMF=?</b>	Test command reports supported range of values for all parameters.

## 3.4.4.7 Commands for GPRS

### 3.4.4.7.1 GPRS Mobile Station Class - +CGCLASS

<b>+CGCLASS - GPRS mobile station class</b>	
<b>AT+CGCLASS=</b> [<class>]	Set command sets the GPRS class according to <class> parameter.  <b>Parameter:</b> <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)



<b>+CGCLASS - GPRS mobile station class</b>	
	<b>Note:</b> the setting is saved in NVM (and available on following reboot).
<b>AT+CGCLASS?</b>	Read command returns the current value of the GPRS class in the format:  <b>+CGLASS: &lt;class&gt;</b>
<b>AT+CGCLASS=?</b>	Test command reports the range for the parameter <b>&lt;class&gt;</b>

#### 3.4.4.7.2 GPRS Attach or Detach - +CGATT

<b>+CGATT - GPRS Attach Or Detach</b>	
<b>AT+CGATT=</b> <b>[&lt;state&gt;]</b>	Execution command used to attach the terminal to, or detach the terminal from, the GPRS service depending on the parameter <b>&lt;state&gt;</b> .  <b>Parameter:</b> <b>&lt;state&gt;</b> - state of GPRS attachment 0 - detached 1 - attached
<b>AT+CGATT?</b>	Read command returns the current GPRS service state.
<b>AT+CGATT=?</b>	Test command requests information on the supported GPRS service states.
<b>Example</b>	AT+CGATT? +CGATT: 0  OK AT+CGATT=? +CGATT: (0,1)  OK AT+CGATT=1 OK
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.7.3 GPRS Event Reporting - +CGEREP

<b>+CGEREP - GPRS Event Reporting</b>	
<b>AT+CGEREP=</b> <b>[&lt;mode&gt;</b> <b>[,&lt;bfr&gt;]]</b>	Set command enables or disables sending of unsolicited result codes <b>+CGEV: XXX</b> (see below) from <b>TA</b> to <b>TE</b> in the case of certain events occurring in the <b>TA</b> or the network.  <b>Parameters:</b> <b>&lt;mode&gt;</b> - controls the processing of <b>URCs</b> specified with this command.



<b>+CGEREP - GPRS Event Reporting</b>	
	<p>0 - Buffer unsolicited result codes in the <b>TA</b>. If <b>TA</b> result code buffer is full, the oldest one can be discarded. No codes are forwarded to the <b>TE</b>.</p> <p>1 - Discard unsolicited result codes when <b>TA-TE</b> link is reserved (e.g. in on-line data mode); otherwise forward them directly to the <b>TE</b>.</p> <p>2 - Buffer unsolicited result codes in the <b>TA</b> when <b>TA-TE</b> link is reserved (e.g. in on-line data mode) and flush them to the <b>TE</b> when <b>TA-TE</b> link becomes available, otherwise forward them directly to the <b>TE</b>.</p> <p><b>&lt;bfr&gt;</b> - controls the effect on buffered codes when <b>&lt;mode&gt;</b> 1 or 2 is entered:</p> <p>0 - <b>TA</b> buffer of unsolicited result codes defined within this command is cleared when <b>&lt;mode&gt;=1</b> or <b>2</b> is entered.</p> <p>1 - <b>TA</b> buffer of unsolicited result codes defined within this command is flushed to the <b>TE</b> when <b>&lt;mode&gt;=1</b> or <b>2</b> is entered (<b>OK</b> response shall be given before flushing the codes).</p> <p><b>Unsolicited Result Codes</b></p> <p>The following unsolicited result codes and the corresponding events are defined:</p> <p><b>+CGEV: REJECT &lt;PDP_type&gt;, &lt;PDP_addr&gt;</b> A network request for PDP context activation occurred when the <b>TA</b> was unable to report it to the <b>TE</b> with a <b>+CRING</b> unsolicited result code and was automatically rejected.</p> <p><b>+CGEV: NW REACT &lt;PDP_type&gt;, &lt;PDP_addr&gt;, [&lt;cid&gt;]</b> The network has requested a context reactivation. The <b>&lt;cid&gt;</b> that was used to reactivate the context is provided if known to <b>TA</b>.</p> <p><b>+CGEV: NW DEACT &lt;PDP_type&gt;, &lt;PDP_addr&gt;, [&lt;cid&gt;]</b> The network has forced a context deactivation. The <b>&lt;cid&gt;</b> that was used to activate the context is provided if known to <b>TA</b>.</p> <p><b>+CGEV: ME DEACT &lt;PDP_type&gt;, &lt;PDP_addr&gt;, [&lt;cid&gt;]</b> The mobile equipment has forced a context deactivation. The <b>&lt;cid&gt;</b> that was used to activate the context is provided if known to <b>TA</b>.</p> <p><b>+CGEV: NW DETACH</b> The network has forced a GPRS detach. This implies that all active contexts have been deactivated. These are not reported separately.</p> <p><b>+CGEV: ME DETACH</b> The mobile equipment has forced a GPRS detach. This implies that all active contexts have been deactivated. These are not reported separately.</p> <p><b>+CGEV: ME CLASS &lt;class&gt;</b> The mobile equipment has forced a change of MS class. The highest available class is reported (see <b>+CGCLASS</b>)</p>
<b>AT+CGEREP?</b>	Read command returns the current <b>&lt;mode&gt;</b> and <b>&lt;bfr&gt;</b> settings, in the format:



<b>+CGEREP - GPRS Event Reporting</b>	
	<b>+CGEREP: &lt;mode&gt;,&lt;bfr&gt;</b>
<b>AT+CGEREP=?</b>	Test command reports the supported range of values for the +CGEREP command parameters.
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.7.4 GPRS Network Registration Status - +CGREG

<b>+CGREG - GPRS Network Registration Status</b>	
<b>AT+CGREG=[&lt;n&gt;]</b>	<p>Set command controls the presentation of an unsolicited result code  <b>+CGREG: (see format below).</b></p> <p><b>Parameter:</b>  &lt;n&gt; - 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:  <b>+CGREG: &lt;stat&gt;</b>  2 - enable network registration and location information unsolicited result code.  3 - enable network registration and location information unsolicited result code with expanded &lt;ACT&gt;.</p> <p><b>+CGREG: &lt;stat&gt;[,&lt;lac_tac&gt;,&lt;ci&gt;[,&lt;AcT&gt;,&lt;rac_mme_code&gt;]]</b></p> <p><b>where:</b>  &lt;stat&gt; - 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</p> <p>If &lt;n&gt;=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:  <b>+CGREG: &lt;stat&gt;[,&lt;lac_tac&gt;,&lt;ci&gt;,&lt;AcT&gt;,&lt;rac_mme_code&gt;]</b></p> <p><b>where:</b>  &lt;stat&gt; - registration status (see above for values)  &lt;lac_tac&gt; - location area code (2G, 3G) or tracking area code (4G) in hexadecimal format (e.g. "00C3" equals 195 in decimal)  &lt;ci&gt; - cell ID in hexadecimal format.  &lt;AcT&gt;: integer type; access technology of the serving cell</p>



<b>+CGREG - GPRS Network Registration Status</b>	
	<p><b>0 - GSM</b>  <b>2 - UTRAN</b>  <b>7 - E-UTRAN</b></p> <p><b>&lt;rac_mme_code&gt;</b> - string type; one byte routing area code (2G, 3G) or Mobile Management Entity code (4G) in hexadecimal format.</p> <p>If <b>&lt;n&gt;=3</b> - 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> <p><b>+CGREG: &lt;stat&gt;[,&lt;lac_tac&gt;,&lt;ci&gt;,&lt;Act&gt;,&lt;rac_mme_code&gt;]</b></p> <p><b>where:</b></p> <p><b>&lt;stat&gt;</b> - registration status (see above for values)  <b>&lt;lac&gt;</b> - location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)  <b>&lt;ci&gt;</b> - cell ID in hexadecimal format.  <b>&lt;Act&gt;</b>: integer type; access technology of the serving cell</p> <p><b>0 - GSM</b>  <b>2 - UTRAN</b>  <b>3 - GSM w/EGPRS</b>  <b>4 - UTRAN w/HSDPA</b>  <b>5 - UTRAN w/HSUPA</b>  <b>6 - UTRAN w/HSDPA and HSUPA</b>  <b>7 - E-UTRAN</b></p> <p><b>&lt;rac_mme_code&gt;</b> - string type; one byte routing area code (2G, 3G) or Mobile Management Entity code (4G) in hexadecimal format.</p>
<b>AT+CGREG?</b>	<p>Read command returns the status of result code presentation mode <b>&lt;n&gt;</b> and the integer <b>&lt;stat&gt;</b> which shows whether the network has currently indicated the registration of the terminal in the format:</p> <p><b>+CGREG: &lt;n&gt;,&lt;stat&gt;[,&lt;lac_tac&gt;,&lt;ci&gt;,&lt;Act&gt;,&lt;rac_mme_code&gt;]</b></p> <p><b>Note:</b> <b>&lt;lac_tac&gt;,&lt;ci&gt;,&lt;Act&gt;</b> and <b>&lt;rac_mme_code&gt;</b> are reported only if <b>&lt;n&gt;=2</b> and the mobile is registered on some network cell.</p>
<b>AT+CGREG=?</b>	Test command returns supported values for parameter <b>&lt;n&gt;</b>
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.7.5 *Printing IP Address Format - +CGPIAF*

<b>+CGPIAF - Printing IP Address Format</b>	
<b>AT+CGPIAF=</b> <b>[&lt;IPv6_AddressFormat&gt;</b>	<p>Set command decides what the format to print IPv6 address parameter.</p> <p><b>Parameters:</b></p>



<b>+CGPIAF - Printing IP Address Format</b>	
<p>[,&lt;IPv6_SubnetNotation&gt; [,&lt;IPv6_leadingZeros&gt; [,&lt;IPv6_compressZeros&gt;]]]]</p>	<p>&lt;IPv6_AddressFormat&gt; - 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>&lt;IPv6_SubnetNotation&gt; - decides the subnet-notation for &lt;remote address and subnet mask&gt; Setting does not apply if IPv6 address format &lt;IPv6_AddressFormat&gt; = 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>&lt;IPv6_LeadingZeros&gt; - decides whether leading zeros are omitted or not. Setting does not apply if IPv6 address format &lt;IPv6_AddressFormat&gt; = 0.</p> <p>0 – Leading zeros are omitted.</p> <p>1 – Leading zeros are included.</p> <p>&lt;IPv6_CompressZeros&gt; - 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 &lt;IPv6_AddressFormat&gt; = 0.</p> <p>0 – No zero compression.</p> <p>1 – Use zero compression.</p>
<b>AT+CGPIAF?</b>	Read command returns the current parameter setting.
<b>AT+CGPIAF=?</b>	Test command returns values supported as compound parameter setting.
<b>Example</b>	<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:CD:CD:FE0:0:0:0:1 OK</p>
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.7.6 Define PDP Context - +CGDCONT



<b>+CGDCONT - Define PDP Context</b>	
<b>AT+CGDCONT=</b> <b>[&lt;cid&gt;</b> <b>[,&lt;PDP_type&gt;</b> <b>[,&lt;APN&gt;</b> <b>[,&lt;PDP_addr&gt;</b> <b>[,&lt;d_comp&gt;</b> <b>[,&lt;h_comp&gt;</b> <b>[,&lt;pd1&gt;</b> <b>[,...,&lt;pdN&gt;]]]]]]]]</b>	<p>Set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter <b>&lt;cid&gt;</b>.</p> <p><b>Parameters:</b></p> <p><b>&lt;cid&gt;</b> - (PDP Context Identifier) numeric parameter which specifies a particular PDP context definition.</p> <p>1..<i>max</i> - where the value of <i>max</i> is returned by the Test command.</p> <p><b>&lt;PDP_type&gt;</b> - (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol.</p> <p>"IP" - Internet Protocol</p> <p>"PPP" - Point to Point Protocol</p> <p>"IPV6" - Internet Protocol, Version 6</p> <p>"IPV4V6" - Virtual <b>&lt;PDP_type&gt;</b> introduced to handle dual stack UE capability. IP</p> <p><b>&lt;APN&gt;</b> - (Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested.</p> <p><b>&lt;PDP_addr&gt;</b> - a string parameter that identifies the terminal in the address space applicable to the PDP. The allocated address may be read using the <b>+CGPADDR</b> command.</p> <p><b>&lt;d_comp&gt;</b> - numeric parameter that controls PDP data compression.</p> <p>0 - off (default if value is omitted)</p> <p>1 - on</p> <p>2 - V.42bis</p> <p><b>&lt;h_comp&gt;</b> - numeric parameter that controls PDP header compression.</p> <p>0 - off (default if value is omitted)</p> <p>1 - on</p> <p>2 - RFC1144 (applicable for SNDTCP only)</p> <p>3- RFC2507</p> <p>4- RFC3095 (applicable for PDCP only)</p> <p><b>&lt;pd1&gt;</b>, ..., <b>&lt;pdN&gt;</b> - zero to N string parameters whose meanings are specific to the <b>&lt;PDP_type&gt;</b></p> <p><b>Note:</b> a special form of the Set command, <b>+CGDCONT=&lt;cid&gt;</b>, causes the values for context number <b>&lt;cid&gt;</b> to become undefined.</p>
<b>AT+CGDCONT?</b>	<p>Read command returns the current settings for each defined context in the format:</p> <p><b>+CGDCONT: &lt;cid&gt;,&lt;PDP_type&gt;,&lt;APN&gt;,&lt;PDP_addr&gt;,&lt;d_comp&gt;,&lt;h_comp&gt;[,&lt;pd1&gt;[,...,&lt;pdN&gt;]]]</b><b>&lt;CR&gt;&lt;LF&gt;+CGDCONT: &lt;cid&gt;,&lt;PDP_type&gt;,&lt;APN&gt;,&lt;PDP_addr&gt;,&lt;d_comp&gt;,&lt;h_comp&gt;[,&lt;pd1&gt;[,...,&lt;pdN&gt;]]]</b></p>
<b>AT+CGDCONT=?</b>	Test command returns values supported as a compound value
<b>Example</b>	<b>AT+CGDCONT=1,"IP","APN","10.10.10.10",0,0</b>



<b>+CGDCONT - Define PDP Context</b>	
	OK AT+CGDCONT? +CGDCONT: 1,"IP","APN","10.10.10.10",0,0  OK AT+CGDCONT=? +CGDCONT: (1-16),"IP",,(0-2),(0-4) +CGDCONT: (1-16),"PPP",,(0-2),(0-4) +CGDCONT: (1-16),"IPV6",,(0-2),(0-4)  OK
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.7.7 Sets *IMS Pdp APN Name* - #IMSPDPSET

<b>#IMSPDPSET – sets IMS Pdp APN Name</b>	
<b>AT#IMSPDPSET = &lt;pdpApnName&gt;</b>	This command sets IMS Pdp APN Name. This name should be one of the APN names set in cgdcont command and appropriated context will be opened for IMS. <pdpApnName> - from 1 to 32 symbols ANSI fixed string.  <b>Note:</b> Can be used with or without quotes.
<b>AT#IMSPDPSET?</b>	Read command reports existing IMS Pdp APN Name in format: #IMSPDPSET: ims

#### 3.4.4.7.8 Codec for *IMS*- #CODECIMS

<b>#CODECIMS – Codec for IMS</b>	
<b>AT#CODECIMS= [&lt;amr_wb&gt;],[&lt;amr_nb&gt;],[&lt;amr_wb_en&gt;]</b>	Set command sets the IMS codec mode. Parameters: <amr_wb> - AMR Wideband mode; configurable as a bitmask - 0x1 - Mode 0 (6.60kbps) - 0x2 - Mode 1 (8.85kbps) - 0x4 - Mode 2 (12.65kbps) (Default) - 0x8 - Mode 3 (14.25kbps) - 0x10 - Mode 4 (15.85kbps) - 0x20 - Mode 5 (18.25kbps) - 0x40 - Mode 6 (19.85kbps) - 0x80 - Mode 7 (23.05kbps) - 0x100 - Mode 8 (23.85kbps)  <amr_nb> - AMR Narrowband mode; configurable as a bitmask



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

	<ul style="list-style-type: none"> <li>- 0x1 - Mode 0 (4.75kbps)</li> <li>- 0x2 - Mode 1 (5.15kbps)</li> <li>- 0x4 - Mode 2 (5.9kbps)</li> <li>- 0x8 - Mode 3 (6.17kbps)</li> <li>- 0x10 - Mode 4 (7.4kbps)</li> <li>- 0x20 - Mode 5 (7.95kbps)</li> <li>- 0x40 - Mode 6 (10.2kbps)</li> <li>- 0x80 - Mode 7 (12.2kbps) (Default)</li> <li>- 0x100 - Mode 8 (12.2kbps)</li> </ul> <p>&lt;amr_wb_en&gt; - High definition voice; it enables AMR-Wideband</p> <ul style="list-style-type: none"> <li>- 0 - Disable</li> <li>- 1 - Enable (Default)</li> </ul> <p>Note: The values are stored in the NV's file system.</p> <p>&lt;amr_wb&gt; - NV 67239</p> <p>&lt;amr_nb&gt; - NV 66031</p> <p>&lt;amr_wb_en&gt; - NV 65964</p>
AT#CODECIMS?	Read command returns the current IMS CODEC configuration mode in the format: #CODECIMS: <amr_wb>,<amr_nb>,<amr_wb_en>
AT#CODECIMS=?	Test command returns the available range values of parameters: <amr_wb>,<amr_nb>,<amr_wb_en>
Example	<p>at#codecims=149,5,1</p> <p>Means :</p> <p>&lt;amr_wb&gt; = 149 ; mode 0, 2, 4, 7</p> <p>&lt;amr_nb&gt; = 5 ; mode 0, 2</p> <p>&lt;amr_wb_en&gt; = 1 ; AMR-Wideband is enabled</p>

### 3.4.4.7.9 Define Secondary PDP Context - +CGDSCONT

+CGDSCONT parameter command syntax	
<b>AT+CGDSCONT=</b> [<cid>,<p_cid> [<d_comp> [<h_comp>]]]	<p>Possible response(s):</p> <p>OK</p> <p>ERROR</p> <p><b>Description:</b></p> <p>The set command specifies PDP context parameter values for a Secondary PDP context identified by the (local) context Identification parameter, &lt;cid&gt;.</p> <p>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.</p> <p>In EPS the command is used to define traffic flows.</p> <p>A special form of the set command, +CGDSCONT= &lt;cid&gt; causes the values for context number &lt;cid&gt; to become undefined.</p>



<b>+CGDSCONT parameter command syntax</b>	
	<p>The read command returns the current settings for each defined context.</p> <p><b>Defined values:</b></p> <p><b>&lt;cid&gt;:</b> a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TEMT 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> <p><b>&lt;p_cid&gt;:</b> a numeric parameter which specifies a particular PDP context definition which has been specified by use of the +CGDSCONT command. The parameter is local to the TE-MT interface. The list of permitted values is returned by the test form of the command.</p> <p><b>&lt;d_comp&gt;:</b> a numeric parameter that controls PDP data compression (applicable for SNDCPonly) (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><b>&lt;h_comp&gt;:</b> 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>
<b>AT+CGDSCONT?</b>	<b>AT+CGDSCONT:</b> <cid>, <p_cid>, <d_comp>, <h_comp>[<CR><LF>+CGDSCONT: <cid>, <p_cid>, <d_comp>, <h_comp> [...]]
<b>AT+CGDSCONT=?</b>	<b>AT+CGDSCONT:</b> (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)

#### 3.4.4.7.10 *Traffic Flow Template* +CGTFT

<b>+CGTFT parameter command syntax</b>	
<b>AT+CGTFT=</b> [<cid>, <packet filter identifier>, <evaluation precedence	<b>Possible Response(s):</b> OK ERROR



<b>+CGTFT parameter command syntax</b>	
<b>index&gt;[,&lt;source address and subnet mask&gt; [,&lt;protocol number (ipv4) / next header (ipv6)&gt; [,&lt;destination port range&gt; [,&lt;source port range&gt; [,&lt;ipsec security parameter index (spi)&gt; [,&lt;type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask&gt; [,&lt;flow label (ipv6)&gt; [,&lt;direction&gt;]]]]]]]]]</b>	<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 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 &lt;packet filter identifier&gt;. A Packet Filter also has an &lt;evaluation precedence index&gt; that is unique within all TFTs associated with all PDP contexts that are associated with the same PDP address.</p> <p>The set command specifies a Packet Filter that whom added to the TFT stored in the MT and used for the context identified by the (local) context identification parameter, &lt;cid&gt;. The specified TFT will be stored in the GGSN in UMTS/GPRS and Packet GW in EPS only at activation or MS-initiated modification of the related context. Since this is the same parameter that is used in the +CGDCONT and +CGDSCONT commands, the +CGTFT command is effectively an extension to these commands. The Packet Filters consist of a number of parameters, each of which may be set to a separate value.</p> <p>A special form of the set command, +CGTFT= &lt;cid&gt; causes all of the Packet Filters in the TFT for context number &lt;cid&gt; to become undefined. At any time there may exist only one PDP context with no associated TFT amongst all PDP contexts associated to one PDP address. At an attempt to delete a TFT, which would violate this rule, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command.</p> <p><b>Defined values</b></p> <p><b>&lt;cid&gt;:</b> a numeric parameter which specifies a particular PDP context definition(see the +CGDCONT and +CGDSCONT commands).</p> <p>The following parameters are defined in 3GPP TS 23.060 [47]:</p> <p><b>&lt;packet filter identifier&gt;:</b> a numeric parameter, value range from 1 to 16.</p> <p><b>&lt;evaluation precedence index&gt;:</b> a numeric parameter. The value range is from 0 to 255.</p> <p><b>&lt;source address and subnet mask&gt;:</b> 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.</p> <p><b>&lt;protocol number (ipv4) / next header (ipv6)&gt;:</b> a numeric parameter, value range from 0 to</p>





<b>+CGTFT parameter command syntax</b>	
	traffic class (ipv6) and mask>, <flow label (ipv6)>, <direction>[...]]
<b>AT+CGTFT=?</b>	<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 TFT is applicable only when IP traffic is carried over PPP. If PPP carries header-compressed IP packets, then a TFT cannot be use.</p> <p><b>AT+CGTFT:</b> &lt;PDP_type&gt;, (list of supported &lt;packet filter identifier&gt;s), (list of supported &lt;evaluation precedence index&gt;s), (list of supported &lt;source address and subnet mask&gt;s), (list of supported &lt;protocol number (ipv4) / next header (ipv6)&gt;s), (list of supported &lt;destination port range&gt;s), (list of supported &lt;source port range&gt;s), (list of supported &lt;ipsec security parameter index (spi)&gt;s), (list of supported &lt;type of service (tos) (ipv4) and mask / traffic class(ipv6) and mask&gt;s), (list of supported &lt;flow label (ipv6)&gt;s), (list of supported &lt;direction&gt;s) [&lt;CR&gt;&lt;LF&gt;</p> <p><b>AT+CGTFT:</b> &lt;PDP_type&gt;, (list of supported &lt;packet filter identifier&gt;s), (list of supported &lt;evaluation precedence index&gt;s), (list of supported &lt;source address and subnet mask&gt;s), (list of supported &lt;protocol number (ipv4) / next header (ipv6)&gt;s), (list of supported &lt;destination port range&gt;s), (list of supported &lt;source port range&gt;s), (list of supported &lt;ipsec security parameter index (spi)&gt;s), (list of supported &lt;type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask&gt;s), (list of supported &lt;flow label (ipv6)&gt;s), (list of supported &lt;direction&gt;s)[...]]</p>

## 3.4.4.7.11

**Quality of Service Profile (Minimum Acceptable) - +CGQMIN**

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



<b>+CGQMIN - Quality Of Service Profile (Minimum Acceptable)</b>	
	<p>+CGQMIN: &lt;cid&gt;,&lt;precedence&gt;,&lt;delay&gt;,&lt;reliability&gt;,&lt;peak&gt;,&lt;mean&gt;[&lt;CR&gt;&lt;LF&gt; +CGQMIN: &lt;cid&gt;,&lt;precedence&gt;,&lt;delay&gt;,&lt;reliability&gt;,&lt;peak&gt;,&lt;mean&gt;[...]]</p> <p>If no PDP context defined, it has no effect and <b>OK</b> result code returned.</p>
<b>AT+CGQMIN=?</b>	<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: &lt;PDP_Type&gt;,(list of supported &lt;precedence&gt;s), (list of supported &lt;delay&gt;s),(list of supported &lt;reliability&gt;s),(list of supported &lt;peak&gt;s),(list of supported &lt;mean&gt;s)</p> <p><b>Note:</b> only the "IP" PDP_Type currently supported.</p>
<b>Example</b>	<p>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) +CGQMIN: "IPV4V6",(0-3),(0-4),(0-5),(0-9),(0-18,31)  OK</p>
<b>Reference</b>	3GPP TS 27.007; 3GPP TS 03.60/23.060

### 3.4.4.7.12 3G Quality of Service Profile (Minimum Acceptable) - +CGEQMIN

<b>+CGEQMIN – 3G Quality Of Service Profile (Minimum Acceptable)</b>	
<p>AT+CGEQMIN= [&lt;cid&gt; [,&lt;Traffic class&gt; [,&lt;Maximum bitrate UL&gt; [,&lt;Maximum bitrate DL&gt; [,&lt;Guaranteed bitrate UL&gt; [,&lt;Guaranteed bitrate DL&gt; [,&lt;Delivery order&gt; [,&lt;Maximum SDU size&gt; [,&lt;SDU error ratio&gt; [,&lt;Residual bit error ratio&gt; [,&lt;Delivery of erroneous SDUs&gt;</p>	<p>Set command allows specify a 3G quality of service profile for the context identified by the (local) context identification parameter &lt;cid&gt; that is checked by the MT against the negotiated profile returned in the Activate/Modify PDP Context Accept Message.</p> <p><b>Parameters:</b>  &lt;cid&gt; - PDP context identification (see +CGDCONT command).  &lt;Traffic class&gt; - Traffic class  0 - conversational  1 - streaming  2 - interactive  3 - background</p>



## 80407ST10116A Rev.14.1 - 2017-05-14

<p>[,&lt;Transfer delay&gt;  [,&lt;Traffic handling priority&gt;  [,&lt;Source statistics descriptor&gt;  [,&lt;Signalling indication&gt;       ]</p>	<p>4 - subscribed value</p> <p>&lt;Maximum bitrate UL&gt; - Maximum bitrate Up Link (kbits/s)  0 - subscribed value  1...5760</p> <p>&lt;Maximum bitrate DL&gt; - Maximum bitrate down link (kbits/s)  0 - subscribed value 1...42200</p> <p>&lt;Guaranteed bitrate UL&gt; - the guaranteed bitrate up link(kbits/s)  0 - subscribed value 1...5760</p> <p>&lt;Guaranteed bitrate DL&gt; - the guaranteed bitrate down link(kbits/s)  0 - subscribed value 1...42200</p> <p>&lt;Delivery order&gt; SDU Delivery order  0 - no  1 - yes  2 - subscribed value</p> <p>&lt;Maximum SDU size&gt; Maximum SDU size in octets  0 - subscribed value 1...1520</p> <p>&lt;SDU error ratio&gt; SDU error ratio  - mEe mean <math>m \cdot 10^{-e}</math> , for example 1E2 mean <math>1 \cdot 10^{-2}</math>  "0E0"  "1E1"  "1E2"  "7E3"  "1E3"  "1E4"  "1E5"  "1E6"</p> <p>&lt;Residual bit error ratio&gt; Residual bitt error ratio  - mEe mean <math>m \cdot 10^{-e}</math> , for example 1E2 mean <math>1 \cdot 10^{-2}</math>  "0E0"  "5E2"  "1E2"  "5E3"  "4E3"  "1E3"  "1E4"  "1E5"  "1E6"  "6E8"</p>
---	---



## 80407ST10116A Rev.14.1 - 2017-05-14

# AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

	<p><b>+CGEQMIN:</b> &lt;PDP_type&gt;, (list of supported &lt;Traffic class&gt;s) ,(list of supported &lt;Maximum bitrate UL&gt;s), (list of supported &lt;Maximum bitrate DL&gt;s) ,(list of supported &lt;Guaranteed bitrate UL &gt;s), (list of supported &lt;Guaranteed bitrate DL &gt;s) ,(list of supported &lt;Delivery order&gt;s) ,(list of supported &lt;Maximum SDU size&gt;s) ,(list of supported &lt;SDU error ratio&gt;s) ,(list of supported &lt;Residual bit error ratio&gt;s) ,(list of supported &lt;Delivery of erroneous SDUs&gt;s) ,(list of supported &lt;Transfer delay&gt;s) ,(list of supported &lt;Traffic handling priority&gt;s) ,(list of supported &lt;Source statistics descriptor&gt;s) ,(list of supported &lt;Signalling indication&gt;s) [...]</p>
<b>Example</b>	<p>AT+CGEQMIN=1,0,384,384,128,128,0,0,"0E0","0E0",0,0,0 OK AT+CGEQMIN? +CGEQMIN: 1,0,384,384,128,128,0,0,"0E0","0E0",0,0,0 OK</p> <p>AT+CGEQMIN=? +CGEQMIN: "IP",(0-4),(0-5760),(0-42200),(0-5760),(0-42200),(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) +CGEQMIN: "PPP",(0-4),(0-5760),(0-42200),(0-5760),(0-42200),(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) +CGEQMIN: "IPV6",(0-4),(0-5760),(0-42200),(0-5760),(0-42200),(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) +CGEQMIN: "IPV4V6",(0-4),(0-5760),(0-42200),(0-5760),(0-42200),(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) OK</p>
<b>Reference</b>	3GPP TS 27.007; 3GPP TS 03.60/23.060; 3GPP TS 24.008



3.4.4.7.13

*Quality of Service Profile (Requested) - +CGQREQ*

<b>+CGQREQ - Quality Of Service Profile (Requested)</b>	
<b>AT+CGQREQ=</b> <b>[&lt;cid&gt;[,</b> <b>&lt;precedence&gt;</b> <b>[,&lt;delay&gt;[</b> <b>,&lt;reliability&gt;[,&lt;peak&gt;</b> <b>[,&lt;mean&gt;]]]]]</b>	<p>Set command allows specify Quality of Service Profile that 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, &lt;cid&gt;.</p> <p><b>Parameters:</b>            &lt;cid&gt; - PDP context identification (see +CGDCONT command).            &lt;precedence&gt; - precedence class            &lt;delay&gt; - delay class            &lt;reliability&gt; - reliability class            &lt;peak&gt; - peak throughput class            &lt;mean&gt; - mean throughput class</p> <p>If a value omitted for a particular class then this class is not checked.</p> <p><b>Note:</b> a special form of the Set command, +CGQREQ=&lt;cid&gt; causes the requested profile for context number &lt;cid&gt; to become undefined.</p>
<b>AT+CGQREQ?</b>	<p>Read command returns the current settings for each defined context in the format:</p> <p><b>+CGQREQ: &lt;cid&gt;,&lt;precedence&gt;,&lt;delay&gt;,&lt;reliability&gt;,&lt;peak&gt;,&lt;mean&gt;[&lt;CR&gt;&lt;LF&gt;+CGQREQ: &lt;cid&gt;,&lt;precedence&gt;,&lt;delay&gt;,&lt;reliability&gt;,&lt;peak&gt;,&lt;mean&gt;[...]]</b></p> <p>If no PDP context defined, it has no effect and <b>OK</b> result code returned.</p>
<b>AT+CGQREQ=?</b>	<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><b>+CGQREQ: &lt;PDP_Type&gt;,(list of supported &lt;precedence&gt;s),(list of supported &lt;delay&gt;s),(list of supported &lt;reliability&gt;s),(list of supported &lt;peak&gt;s),(list of supported &lt;mean&gt;s)</b></p> <p><b>Note:</b> only the "IP" PDP_Type currently supported.</p>
<b>Example</b>	<p>AT+CGQREQ?            +CGQREQ: 1,0,0,3,0,0</p> <p>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)</p> <p>OK</p>
<b>Reference</b>	3GPP TS 27.007; 3GPP TS 03.60/23.060



### 3.4.4.7.14 3G Quality of Service Profile (Requested) - +CGEQREQ

<b>+CGEQREQ – 3G Quality Of Service Profile (Requested)</b>	
<b>AT+CGEQREQ=</b> <b>[&lt;cid&gt;</b> <b>[,&lt;Traffic class&gt;</b> <b>[,&lt;Maximum</b> <b>bitrate UL&gt;</b> <b>[,&lt;Maximum</b> <b>bitrate DL&gt;</b> <b>[,&lt;Guaranteed</b> <b>bitrate UL&gt;</b> <b>[,&lt;Guaranteed</b> <b>bitrate DL&gt;</b> <b>[,&lt;Delivery order&gt;</b> <b>[,&lt;Maximum SDU</b> <b>size&gt;</b> <b>[,&lt;SDU error</b> <b>ratio&gt;</b> <b>[,&lt;Residual bit</b> <b>error ratio&gt;</b> <b>[,&lt;Delivery of</b> <b>erroneous SDUs&gt;</b> <b>[,&lt;Transfer delay&gt;</b> <b>[,&lt;Traffic</b> <b>handling</b> <b>priority&gt;                   </b> <b> </b>	<p>Set command allows to specify a 3G quality of service profile for the context identified by the(local) context identification parameter &lt;cid&gt; which is used when the MT sends an Activate PDP Context Request message to the network.</p> <p><b>Parameters:</b></p> <p><b>&lt;cid&gt;</b> - PDP context identification(see +CGDCONT command).</p> <p><b>&lt;Traffic class&gt;</b> - Traffic class</p> <ul style="list-style-type: none"> <li>0 - conversational</li> <li>1 - streaming</li> <li>2 - interactive</li> <li>3 - background</li> <li>4 - subscribed value</li> </ul> <p><b>&lt;Maximum bitrate UL&gt;</b> - Maximum bitrate Up Link (kbits/s)</p> <ul style="list-style-type: none"> <li>0 - subscribed value 1...5760</li> </ul> <p><b>&lt;Maximum bitrate DL&gt;</b> - Maximum bitrate down link (kbits/s)</p> <ul style="list-style-type: none"> <li>0 - subscribed value 1...42200</li> </ul> <p><b>&lt;Guaranteed bitrate UL&gt;</b> - the guaranteed bitrate up link(kbits/s)</p> <ul style="list-style-type: none"> <li>0 - subscribed value 1...5760</li> </ul> <p><b>&lt;Guaranteed bitrate DL&gt;</b> - the guaranteed bitrate down link(kbits/s)</p> <ul style="list-style-type: none"> <li>0 - subscribed value 1...42200</li> </ul> <p><b>&lt;Delivery order&gt;</b> SDU Delivery order</p> <ul style="list-style-type: none"> <li>0 - no</li> <li>1 - yes</li> <li>2 - subscribed value</li> </ul> <p><b>&lt;Maximum SDU size&gt;</b> Maximum SDU size in octets</p> <ul style="list-style-type: none"> <li>0 - subscribed value 1...1520</li> </ul> <p><b>&lt;SDU error ratio&gt;</b> SDU error ratio</p> <ul style="list-style-type: none"> <li>- mEe mean <math>m \cdot 10^{-e}</math> , for example 1E2 mean <math>1 \cdot 10^{-2}</math></li> <li>“0E0”</li> <li>“1E1”</li> <li>“1E2”</li> <li>“7E3”</li> <li>“1E3”</li> <li>“1E4”</li> <li>“1E5”</li> </ul>



+CGEQREQ – 3G Quality Of Service Profile (Requested)	
	<p>“1E6”</p> <p>&lt;Residual bit error ratio&gt; Residual bitt error ratio - mEe mean <math>m \cdot 10^{-e}</math> , for example 1E2 mean <math>1 \cdot 10^{-2}</math></p> <p>“0E0”</p> <p>“5E2”</p> <p>“1E2”</p> <p>“5E3”</p> <p>“4E3”</p> <p>“1E3”</p> <p>“1E4”</p> <p>“1E5”</p> <p>“1E6”</p> <p>“6E8”</p> <p>&lt;Delivery of erroneous SDUs&gt; Delivery of erroneous SDUs 0 - no 1 – yes 2 – no detect 3 – subscribed value</p> <p>&lt;Transfer delay &gt; Transfer delay (milliseconds) 0 – subscribed value 100...4000</p> <p>&lt;Traffic handling priority &gt; Traffic handling priority 0 - subscribed value 1...3</p> <p>&lt;Source Statistics Descriptor&gt; A numeric parameter that specifies 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 (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).</p> <p>0 - Characteristics of SDUs is unknown (default value) 1 - Characteristics of SDUs corresponds to a speech source</p> <p>&lt;Signalling Indication&gt; A numeric parameter used to indicate signalling content of submitted SDUs for a PDP context. This parameter should be provided if the Traffic class is specified as interactive (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).</p> <p>0 - PDP context is not optimized for signalling (default value) 1 - PDP context is optimized for signalling</p> <p><b>Note:</b> a special form of the Set command, +CGEQREQ=&lt;cid&gt; causes the requested profile for context number &lt;cid&gt; to become undefined.</p>
AT+CGEQREQ?	Read command returns the current settings for each defined context in the format:



<b>+CGEQREQ – 3G Quality Of Service Profile (Requested)</b>	
	<p><b>[+CGEQREQ: &lt;cid&gt;,&lt;Traffic class&gt;,&lt;Maximum bitrate UL&gt;,&lt;Maximum bitrate DL&gt;,&lt;Guaranteed bitrate UL&gt;,&lt;Guaranteed bitrate DL&gt;,&lt;Delivery order&gt;,&lt;Maximum SDU size&gt;,&lt;SDU error ratio&gt;,&lt;Residual bit error ratio&gt;,&lt;Delivery of erroneous SDUs&gt;,&lt;Transfer delay&gt;,&lt;Traffic handling&gt;,&lt;Source Statistics Descriptor&gt; ,&lt;Signalling Indication&gt;&lt;CR&gt;&lt;LF&gt;]</b> [...]</p> <p>If no PDP context defined, it has no effect and <b>OK</b> result code returned.</p>
<b>AT+CGEQREQ=?</b>	<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><b>+CGQREQ:</b> &lt;PDP_Type&gt;,(list of supported &lt;Traffic class&gt;s), (list of supported &lt;Maximum bitrate UL&gt;s),(list of supported &lt;Maximum bitrate DL&gt;s),(list of supported &lt;Guaranteed bitrate UL&gt;s),(list of supported &lt;Guaranteed bitrate DL&gt;s),(list of supported &lt;Delivery order&gt;s),(list of supported&lt;Maximum SDU size&gt;s),(list of supported&lt;SDU error ratio&gt;s),(list of supported&lt;Residual bit error ratio&gt;s),(list of supported &lt;Delivery of erroneous SDUs&gt;s),(list of supported &lt;Transfer delay&gt;s),(list of supported &lt;Traffic handling priority&gt;s ,(list of supported &lt;Source statistics descriptor&gt;s),(list of supported &lt;Signalling indication&gt;s)</p>
<b>Example</b>	<p>AT+CGEQREQ=1,0,384,384,128,128,0,0,"0E0","0E0",0,0,0 OK AT+CGEQREQ? +CGEQREQ: 1,0,384,384,128,128,0,0,"0E0","0E0",0,0,0,0 OK AT+CGEQREQ=? <b>+CGEQREQ:</b> "IP",(0-4),(0-5760),(0-42200),(0-5760),(0-42200),(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)  <b>+CGEQREQ:</b> "PPP",(0-4),(0-5760),(0-42200),(0-5760),(0-42200),(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)  <b>+CGEQREQ:</b> "IPv6",(0-4),(0-5760),(0-42200),(0-5760),(0-42200),(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>



<b>+CGEQREQ – 3G Quality Of Service Profile (Requested)</b>	
	<b>+CGEQREQ:</b> "IPV4V6",(0-4),(0-5760),(0-42200),(0-5760),(0-42200),(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)  OK
<b>Reference</b>	3GPP TS 27.007; 3GPP TS 03.60/23.060; 3GPP TS 24.008

#### 3.4.4.7.15 *PDP Context Activate or Deactivate - +CGACT*

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

#### 3.4.4.7.16 *PDP Context Modify - +CGCMOD*

<b>CGCMOD action command syntax</b>	
<b>AT+CGCMOD=</b> [<cid> [,<cid> [,...]]]	It has no effect and is included only for backward compatibility with landline modems  <b>Possible Response(s):</b> OK



<b>CGCMOD action command syntax</b>	
	<p><b>ERROR</b></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 effectively changed.</p> <p>If no &lt;cid&gt;s are specified the activation form of the command modifies all active contexts.</p> <p>The test command returns a list of &lt;cid&gt;s associated with active contexts.</p> <p><b>Defined Values</b></p> <p><b>&lt;cid&gt;:</b> a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands).</p>
<b>AT+CGCMOD=?</b>	+CGCMOD: (list of <cid>s associated with active contexts)

#### 3.4.4.7.17 *Call establishment lock - #CESTHLCK*

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

#### 3.4.4.7.18 *Show PDP Address - +CGPADDR*

<b>+CGPADDR - Show PDP Address</b>	
<b>AT+CGPADDR=[&lt;cid&gt;[,&lt;cid&gt;]</b>	Execution command returns a list of PDP addresses for the specified context identifiers in the format:



<b>+CGPADDR - Show PDP Address</b>	
[...]]]	<p><b>+CGPADDR:</b> &lt;cid&gt;,&lt;PDP_addr&gt;[&lt;CR&gt;&lt;LF&gt;+CGPADDR: &lt;cid&gt;,&lt;PDP_addr&gt;[...]]</p> <p><b>Parameters:</b>            &lt;cid&gt; - a numeric parameter which specifies a particular PDP context definition (see +CGDCONT command). If no &lt;cid&gt; specified, the addresses for all defined contexts are returned.            &lt;PDP_addr&gt; - a string that identifies the terminal in an 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 &lt;cid&gt;;&lt;PDP_addr&gt; is omitted if none is available</p>
<b>AT+CGPADDR=?</b>	Test command returns a list of defined <cid>s.
<b>Example</b>	<p>AT#GPRS=1 +IP: xxx.yyy.zzz.www</p> <p>OK AT+CGPADDR=1 +CGPADDR: 1,"xxx.yyy.zzz.www"</p> <p>OK AT+CGPADDR=? +CGPADDR: (1) OK</p>
<b>Reference</b>	3GPP TS 27.007

#### 3.4.4.7.19

#### 3G Quality of Service Profile (Negotiated) - +CGEQNEG

<b>+CGEQNEG – 3G Quality Of Service Profile (Negotiated)</b>	
<b>AT+CGEQNEG=</b> [<cid> [,<cid>[,...]]]	<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, &lt;cid&gt;s. The Qos profile consists of a number of parameters, each of which may have a separate value.</p> <p><b>+CGEQNEG:</b> &lt;cid&gt;, &lt;Traffic class&gt;, &lt;Maximum bitrate UL&gt;, &lt;Maximum bitrate DL&gt;, &lt;Guaranteed bitrate UL&gt;, &lt;Guaranteed bitrate DL&gt;, &lt;Delivery order&gt;, &lt;Maximum SDU size&gt;, &lt;SDU error ratio&gt;, &lt;Residual bit error ratio&gt;, &lt;Delivery of erroneous SDUs&gt;, &lt;Transfer delay&gt;, &lt;Traffic handling priority&gt;[&lt;CR&gt;&lt;LF&gt;</p>



+CGEQNEG – 3G Quality Of Service Profile (Negotiated)	
	<p><b>+CGEQNEG: &lt;cid&gt;, &lt;Traffic class&gt;, &lt;Maximum bitrate UL&gt;, &lt;Maximum bitrate DL&gt;, &lt;Guaranteed bitrate UL&gt;, &lt;Guaranteed bitrate DL&gt;, &lt;Delivery order&gt;, &lt;Maximum SDU size&gt;, &lt;SDU error ratio&gt;, &lt;Residual bit error ratio&gt;, &lt;Delivery of erroneous SDUs&gt;, &lt;Transfer delay&gt;, &lt;Traffic handling priority&gt;[...]</b></p> <p><b>Parameters:</b></p> <p><b>&lt;cid&gt;</b> - PDP context identification (see +CGDCONT command).</p> <p><b>&lt;Traffic class&gt;</b> - Traffic class  0 - conversational  1 - streaming  2 - interactive  3 - background  4 - subscribed value</p> <p><b>&lt;Maximum bitrate UL&gt;</b> - Maximum bitrate Up Link (kbits/s)  0 - subscribed value 1...8640</p> <p><b>&lt;Maximum bitrate DL&gt;</b> - Maximum bitrate down link (kbits/s)  0 - subscribed value 1...16000</p> <p><b>&lt;Guaranteed bitrate UL&gt;</b> - The guaranteed bitrate up link (kbits/s)  0 - subscribed value 1...8640</p> <p><b>&lt;Guaranteed bitrate DL&gt;</b> - the guaranteed bitrate down link (kbits/s)  0 - subscribed value 1...16000</p> <p><b>&lt;Delivery order&gt;</b> - SDU Delivery order  0 - no  1 - yes  Other values are reserved</p> <p><b>&lt;Maximum SDU size&gt;</b> - Maximum SDU size in octets  0 - subscribed value 1...1520</p> <p><b>&lt;SDU error ratio&gt;</b> - SDU error ratio  - mEe mean <math>m \cdot 10^{-e}</math>, for example 1E2 mean <math>1 \cdot 10^{-2}</math>  “0E0”  “1E1”  “1E2”  “7E3”  “1E3”  “1E4”</p>



+CGEQNEG – 3G Quality Of Service Profile (Negotiated)	
	<p>"1E5" "1E6"</p> <p>&lt;<b>Residual bit error ratio</b>&gt; - Residual bitt error ratio - mEe mean <math>m \cdot 10^{-e}</math>, for example 1E2 mean <math>1 \cdot 10^{-2}</math></p> <p>"0E0" "5E2" "1E2" "5E3" "4E3" "1E3" "1E4" "1E5" "1E6" "6E8"</p> <p>&lt;<b>Delivery of erroneous SDUs</b>&gt; - Delivery of erroneous SDUs 0 - no 1 - yes 2 - no detect Other values are reserved</p> <p>&lt;<b>Transfer delay</b>&gt; - Transfer delay (milliseconds) 0 - subscribed value 100...4000</p> <p>&lt;<b>Traffic handling priority</b>&gt;: Traffic handling priority 0 - subscribed value 1...3</p>
AT+CGEQNEG=?	Test command returns a list of <cid>s associated with active contexts.
Example	<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> <p>AT+CGEQNEG=? +CGEQNEG: (1)</p> <p>OK</p> <p>AT+CGEQNEG=1 +CGEQNEG: 1,3,128,384,0,0,2,1500,"1E4","1E5",3,0,1</p>



<b>+CGEQNEG – 3G Quality Of Service Profile (Negotiated)</b>	
	OK
<b>Reference</b>	3GPP TS 27.007; 3GPP TS 03.60/23.060; 3GPP TS 24.008

#### 3.4.4.7.20 *Set Mode of Operator for EPS - +CEMODE*

<b>+CEMODE – Set mode of operation for EPS.</b>	
<b>AT+CEMODE=&lt;mode&gt;</b>	<p>Set command configures the mode of operation for EPS</p> <p><b>Parameter:</b>  <b>&lt;mode&gt;</b>: a numeric parameter which indicates the mode of operation</p> <p>0 - PS mode 2 of operation  1 - CS/PS mode 1 of operation (factory default)  2 - CS/PS mode 2 of operation  3 - PS mode 1 of operation (factory default for LE910-SVG only)</p> <p><b>Note:</b> 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>
<b>AT+CEMODE?</b>	<p>Read command returns the currently configured values, in the format:  <b>+CEMODE: &lt; mode &gt;</b></p> <p><b>Note:</b> The read command will return right values after set command. But effectively the mode of operation changes after power cycle.</p>
<b>AT+CEMODE=?</b>	<p>Test command returns the supported range of values of parameters &lt; mode&gt;  <b>+CEMODE: (0-3)</b></p>
<b>Note</b>	
<b>Example</b>	<pre>AT+CEMODE=1 OK AT+CEMODE? +CEMODE: 1 OK</pre>

#### 3.4.4.7.21 *Enter Data State - +CGDATA*

<b>+CGDATA - Enter Data State</b>	
<b>AT+CGDATA=[&lt;L2P&gt;,&lt;cid&gt;</b>	<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>



<b>+CGDATA - Enter Data State</b>	
[,<cid>[,...]]]	<p><b>Parameters:</b></p> <p>&lt;L2P&gt; - string parameter that indicates the layer 2 protocol to be used  "PPP" - PPP Point-to-point protocol</p> <p>&lt;cid&gt; - numeric parameter which specifies a particular PDP context definition (see +CGDCONT command).</p> <p><b>Note:</b> if parameter &lt;L2P&gt; is omitted, the layer 2 protocol is unspecified</p>
<b>AT+CGDATA=?</b>	Test command reports information on the supported layer 2 protocols.
<b>Example</b>	AT+CGDATA=? +CGDATA: ("PPP")  OK AT+CGDATA="PPP",1 OK
<b>Reference</b>	3GPP TS 27.007

### 3.4.4.8 Commands for Battery Charger

#### 3.4.4.8.1 Battery Charge - +CBC

<b>+CBC - Battery Charge</b>	
<b>AT+CBC</b>	<p>Execution command returns the current Battery Charge status in the format:</p> <p><b>+CBC: &lt;bcs&gt;,&lt;bcl&gt;</b></p> <p><b>where:</b></p> <p>&lt;bcs&gt; - battery status  0 - ME is powered by the battery  1 - ME has a battery connected, and charger pin is being powered  2 - ME does not have a battery connected  3 - Recognized power fault, calls inhibited</p> <p>&lt;bcl&gt; - battery charge level  0 - battery is exhausted, or ME does not have a battery connected  25 - battery charge remained is estimated to be 25%  50 - battery charge remained is estimated to be 50%  75 - battery charge remained is estimated to be 75%  100 - battery is fully charged.</p> <p><b>Note:</b> &lt;bcs&gt;=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>



**AT Commands Reference Guide**  
80407ST10116A Rev.14.1 - 2017-05-14

<b>+CBC - Battery Charge</b>	
	<b>Note:</b> without battery/power connected on <b>VBATT</b> pins or during a power fault the unit is not working, therefore values <b>&lt;bcs&gt;=2</b> and <b>&lt;bcs&gt;=3</b> will never appear.
<b>AT+CBC=?</b>	Test command returns parameter values supported as a compound value.  <b>+CBC: (0-3),(0-100)</b>  <b>Note:</b> although <b>+CBC</b> is an execution command, 3gpp TS 27.007 requires the Test command to be defined.
<b>Example</b>	AT+CBC +CBC: 0,75 OK
<b>Note</b>	The <b>ME</b> does not make differences between being powered by a battery or by a power supply on the <b>VBATT</b> pins, so it is not possible to distinguish between these two cases.
<b>Reference</b>	3GPP TS 27.007



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

### 3.4.5.1 General Configuration

#### 3.4.5.1.1 Select Message Service - +CSMS

<b>+CSMS - Select Message Service</b>	
<b>AT+CSMS= &lt;service&gt;</b>	<p>Set command selects messaging service &lt;service&gt;. It returns the types of messages supported by the ME:</p> <p><b>Parameter:</b>            &lt;service&gt;            0 - The syntax of SMS AT commands is compatible with 3GPP TS 27.005 Phase 2 version 4.7.0 (factory default)            1 - The syntax of SMS AT commands is compatible with 3GPP TS 27.005 Phase 2+ version.</p> <p>Set command returns the types of messages supported by the ME:</p> <p><b>+CSMS: &lt;mt&gt;,&lt;mo&gt;,&lt;bm&gt;</b></p> <p><b>where:</b>            &lt;mt&gt; - mobile terminated messages support            0 - type not supported            1 - type supported            &lt;mo&gt; - mobile originated messages support            0 - type not supported            1 - type supported            &lt;bm&gt; - broadcast type messages support            0 - type not supported            1 - type supported</p>
<b>AT+CSMS?</b>	<p>Read command reports current service setting along with supported message types in the format:</p> <p><b>+CSMS: &lt;service&gt;,&lt;mt&gt;,&lt;mo&gt;,&lt;bm&gt;</b></p> <p><b>where:</b>            &lt;service&gt; - messaging service (see above)            &lt;mt&gt; - mobile terminated messages support (see above)            &lt;mo&gt; - mobile originated messages support (see above)            &lt;bm&gt; - broadcast type messages support (see above)</p>
<b>AT+CSMS=?</b>	Test command reports the supported value of the parameter <service>.
<b>Example</b>	<p>AT+CSMS=1            +CSMS: 1,1,1</p> <p>OK            AT+CSMS?</p>



+CSMS - Select Message Service	
	+CSMS: 1,1,1,1  OK
Reference	3GPP TS 27.005; 3GPP TS 03.40/23.040; 3GPP TS 03.41/23.041

### 3.4.5.1.2 Preferred Message Storage - +CPMS

+CPMS - Preferred Message Storage	
AT+CPMS= <memr>[,<memw> [,<mems>]]	<p>Set command selects memory storages &lt;memr&gt;, &lt;memw&gt; and &lt;mems&gt; to be used for reading, writing, sending and storing SMs.</p> <p><b>Parameters:</b></p> <p>&lt;memr&gt; - memory from which messages are read and deleted  “ME” – SMS memory storage in Flash  “SM” – SIM SMS memory storage (default)  “SR” – Status Report message storage (in SIM EF-SMSR file exists otherwise in the RAM volatile memory)</p> <p><b>Note:</b> "SR" non volatile memory is cleared when another SIM card is inserted. It is kept, even after a reset, while the same SIM card is inserted.</p> <p>&lt;memw&gt; - memory to which writing and sending operations are made  “ME” – SMS memory storage in Flash  “SM” – SIM SMS memory storage (default)</p> <p>&lt;mems&gt; - memory to which received SMs are preferred to be stored  “ME” – SMS memory storage in Flash  “SM” – SIM SMS memory storage (default)</p> <p>The command returns the memory storage status in the format:</p> <p>+CPMS: &lt;usedr&gt;,&lt;totalr&gt;,&lt;usedw&gt;,&lt;totalw&gt;,&lt;useds&gt;,&lt;totals&gt;</p> <p><b>where:</b></p> <p>&lt;usedr&gt; - number of SMs stored into &lt;memr&gt;  &lt;totalr&gt; - max number of SMs that &lt;memr&gt; can contain  &lt;usedw&gt; - number of SMs stored into &lt;memw&gt;  &lt;totalw&gt; max number of SMs that &lt;memw&gt; can contain  &lt;useds&gt; - number of SMs stored into &lt;mems&gt;  &lt;totals&gt; - max number of SMS that &lt;mems&gt; can contain</p>
AT+CPMS?	<p>Read command reports the message storage status in the format:</p> <p>+CPMS: &lt;memr&gt;,&lt;usedr&gt;,&lt;totalr&gt;,&lt;memw&gt;,&lt;usedw&gt;,&lt;totalw&gt;,&lt;mems&gt;,&lt;useds&gt;,&lt;totals&gt;</p>



<b>+CPMS - Preferred Message Storage</b>	
	<b>Where:</b> <memr>, <memw> and <mems> are the selected storage memories for reading, writing and storing respectively.
<b>AT+CPMS=?</b>	Test command reports the supported values for parameters <memr>, <memw> and <mems>
<b>Example</b>	AT+CPMS? +CPMS: "ME",27, 50,"ME",27, 50,"SR",1,20  OK AT+CPMS="SM","ME","SM" +CPMS: 1,20,27, 50,1,20  OK AT+CPMS? +CPMS: "SM",1,20,"ME",27, 50,"SM",1,20  OK <i>(You have 1 out of 255 SMS SIM positions occupied)</i>
<b>Reference</b>	3GPP TS 27.005

### 3.4.5.1.3 Message Format - +CMGF

<b>+CMGF - Message Format</b>	
<b>AT+CMGF=[&lt;mode&gt;]</b>	Set command selects the format of messages used with send, list, read and write commands.  <b>Parameter:</b> <b>&lt;mode&gt;</b> 0 - PDU mode, as defined in 3GPP TS 3.40/23.040 and 3GPP TS 3.41/23.041 (factory default) 1 - text mode
<b>AT+CMGF?</b>	Read command reports the current value of the parameter <mode>.
<b>AT+CMGF=?</b>	Test command reports the supported value of <mode> parameter.
<b>Example</b>	AT+CMGF=1 OK
<b>Reference</b>	3GPP TS 27.005

## 3.4.5.2 Message Configuration

### 3.4.5.2.1 Service Center Address - +CSCA

<b>+CSCA -Service Center Address</b>	
<b>AT+CSCA=&lt;number&gt;</b>	Set command sets the Service Center Address to use for mobile originated SMS transmissions.



<b>+CSCA -Service Center Address</b>	
[,<type>]	<p><b>Parameter:</b>  &lt;number&gt; - SC phone number in the format defined by &lt;type&gt;  &lt;type&gt; - the type of number  129 - national numbering scheme  145 - international numbering scheme (contains the character "+")</p> <p><b>Note:</b> to use the SM service, is mandatory to set a Service Center Address at which service requests directed.</p> <p><b>Note:</b> in Text mode the settings is used by send &amp; write commands; in PDU mode, setting is used by the same commands, but only when the length of the SMSC address coded into the &lt;pdu&gt; parameter equals zero.</p> <p><b>Note:</b> 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><b>+CSCA: &lt;number&gt;,&lt;type&gt;</b></p> <p><b>Note:</b> If SCA is not present, the device reports an error message.</p>
AT+CSCA=?	Test command returns the <b>OK</b> result code.
<b>Example</b>	AT+CSCA="821029190903",145 OK AT+CSCA? +CSCA: "+821029190903",145 OK
<b>Reference</b>	3GPP TS 27.005

### 3.4.5.2.2 Select service for MO SMS services - +CGSMS

<b>+CGSMS – Select service for MO SMS messages</b>	
AT+CGSMS=[<service>]	<p>The set command used to specify the service or service preference that the MT will use to send MO SMS messages.</p> <p><b>Parameters:</b>  &lt;service&gt; -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)</p>



<b>+CGSMS – Select service for MO SMS messages</b>	
	3 - Circuit switched preferred (use Packet Domain if circuit switched not available)  <b>Note:</b> If SMS transfer via Packet Domain fails, <service> parameter automatically reset to Circuit switched.
<b>AT+CGSMS?</b>	Read command reports the currently selected service or service preference :  <b>+CGSMS: &lt;service&gt;</b>
<b>AT+CGSMS=?</b>	Test command reports the supported range of values for parameter <b>&lt;service&gt;</b>
<b>Reference</b>	3GPP TS 27.007

### 3.4.5.2.3 EPS – Network Registrarion Status - +CEREG

<b>+CEREG – Network Registrarion Status</b>	
<b>+CEREG=[&lt;n&gt;]</b>	<p>The set command controls the presentation of an unsolicited result code +CEREG: &lt;stat&gt; when &lt;n&gt;=1 and there is a change in the MT's EPS network registration status in E-UTRAN, or unsolicited result code.</p> <p><b>+CEREG: &lt;stat&gt;[,&lt;tac&gt;],[&lt;ci&gt;],[&lt;AcT&gt;]]</b> when &lt;n&gt;=2 and there is a change of the network cell in E-UTRAN. The parameters &lt;AcT&gt;, &lt;tac&gt; and &lt;ci&gt; are sent only if available. The value &lt;n&gt;=3 further extends the unsolicited result code with [&lt;cause_type&gt;,&lt;reject_cause&gt;], when available, when the value of &lt;stat&gt; changes. Refer subclause 9.2 for possible &lt;err&gt; values.</p> <p><b>Note:</b> 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><b>Possible response(s):</b> <b>+CME ERROR: &lt;err&gt;</b></p>
<b>+CEREG?</b>	<p><b>Defined values:</b>  <b>&lt;n&gt;:</b> integer type  0 - disable network registration unsolicited result code  1 - enable network registration unsolicited result code <b>+CEREG: &lt;stat&gt;</b>  2 - enable network registration and location information unsolicited result code <b>+CEREG: &lt;stat&gt;[,&lt;tac&gt;],[&lt;ci&gt;],[&lt;AcT&gt;]]</b>  3 - enable network registration, location information and EMM cause value information unsolicited result code. <b>+CEREG: &lt;stat&gt;[,&lt;tac&gt;],[&lt;ci&gt;],[&lt;AcT&gt;],[&lt;cause_type&gt;,&lt;reject_cause&gt;]]</b>  <b>&lt;stat&gt;:</b> integer type; indicates the EPS registration status  0 - not registered, MT is not currently searching an operator to register to.  1 - registered, home network.</p>



<b>+CEREG – Network Registrarion Status</b>	
	<p>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> <p><b>Note 2:</b> 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><b>&lt;tac&gt;:</b> string type; two byte tracking area code in hexadecimal format (e.g. "00C3" equals 195 in decimal).  <b>&lt;ci&gt;:</b> string type; four byte E-UTRAN cell ID in hexadecimal format.  <b>&lt;AcT&gt;:</b> 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><b>Note 3:</b> 3GPP TS 44.060 [71] specifies the System Information messages which give the information about whether the serving cell supports EGPRS.  <b>Note 4:</b> 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><b>&lt;cause_type&gt;:</b> integer type; indicates the type of &lt;reject_cause&gt;.  0 - Indicates that &lt;reject_cause&gt; contains an EMM cause value, see 3GPP TS 24.301 [83] Annex A.  1 - Indicates that &lt;reject_cause&gt; contains a manufacturer-specific cause.  <b>&lt;reject_cause&gt;:</b> integer type; contains the cause of the failed registration. The value is of type as defined by &lt;cause_type&gt;.</p> <p><b>+CEREG:</b> &lt;n&gt;,&lt;stat&gt;[,&lt;tac&gt;],[&lt;ci&gt;],[&lt;AcT&gt;],[&lt;cause_type&gt;,&lt;reject_cause&gt;]]]</p>
<b>+CEREG=?</b>	<p>Test command returns values supported as a compound value.  <b>+CEREG: (list of supported &lt;n&gt;s)</b></p>
<b>Reference</b>	3GPP TS 27.007



### 3.4.5.2.4 PDP Context Read Dynamic Parameters +CGCONTRDP

+CGCONTRDP parameter command syntax	
<b>AT+CGCONTRDP</b> <b>=</b> <b>[&lt;p_cid&gt;]</b>	<p><b>Possible response(s):</b></p> <p><b>+CGCONTRDP:</b> &lt;p_cid&gt;,&lt;bearer_id&gt;,&lt;apn&gt;[,&lt;ip_addr&gt;,&lt;subnet_mask&gt;[,&lt;gw_addr&gt;[,&lt;DNS_prim_addr&gt;[,&lt;DNS_sec_addr&gt;[,&lt;P-CSCF_prim_addr&gt;[,&lt;P-CSCF_sec_addr&gt;]]]]][&lt;CR&gt;&lt;LF&gt;</p> <p><b>+CGCONTRDP:</b> &lt;p_cid&gt;,&lt;bearer_id&gt;,&lt;apn&gt;[,&lt;ip_addr&gt;,&lt;subnet_mask&gt;[,&lt;gw_addr&gt;[,&lt;DNS_prim_addr&gt;[,&lt;DNS_sec_addr&gt;[,&lt;PCSCF_prim_addr&gt;[,&lt;PCSCF_sec_addr&gt;]]]]][...]</p> <p><b>Description:</b></p> <p>The execution command returns the relevant information: &lt;bearer_id&gt;, &lt;apn&gt;, &lt;ip_addr&gt;, &lt;subnet_mask&gt;, &lt;gw_addr&gt;, &lt;DNS_prim_addr&gt;, &lt;DNS_sec_addr&gt;, &lt;P-CSCF_prim_addr&gt; and &lt;P-CSCF_sec_addr&gt; for a non- secondary PDP Context established by the network with the primary context identifier &lt;p_cid&gt;. If the context can't be found an ERROR response is returned.</p> <p>If the parameter &lt;p_cid&gt; omitted, the relevant information for all established PDP contexts returned.</p> <p><b>NOTE:</b> The dynamic part of the PDP context will only exist if established by the network.</p> <p>The test command returns a list of &lt;p_cid&gt;s associated with active contexts.</p> <p><b>Defined values:</b></p> <p><b>&lt;p_cid&gt;</b> - a numeric parameter specifies a particular non secondary PDP context definition. The parameter is local to the TE-MT interface and used in other PDP context-related commands.</p> <p><b>&lt;bearer_id&gt;</b> - a numeric parameter identifies the bearer, EPS Bearer in EPS and NSAPI in UMTS/GPRS.</p> <p><b>&lt;APN&gt;</b> - a string parameter which is a logical name that was used to select the GGSN or the external packet data network.</p> <p><b>&lt;ip_addr&gt;</b> - a string parameter 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.</p> <p>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> <p><b>&lt;subnet_mask&gt;</b> - a string parameter shows the subnet mask for the IP Address of the MT. The string given as dot-separated numeric (0-255) parameters.</p> <p>If the MT has dual stack capabilities the string shows the dot separated IPV4 subnet mask followed by the dot Separates IPV6 subnet mask. The subnet masks are separates by space.</p>



<b>+CGCONTRDP parameter command syntax</b>	
	<p><b>&lt;gw_addr&gt;</b> - a string parameter shows the Gateway Address of the MT. The string is given as dot-separated numeric (0-255) parameters. If the MT has dual stack capabilities the parameter shows first the dot separated IPV4 Gateway address followed by the dot separated IPV6 Gateway Address. The gateway addresses are separated by space.</p> <p><b>&lt;DNS_prim_addr&gt;</b> - 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><b>&lt;DNS_sec_addr&gt;</b> - 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><b>&lt;P_CSCF_prim_addr&gt;</b> - 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><b>&lt;P_CSCF_sec_addr&gt;</b> - 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>
<b>+CGCONTRDP=?</b>	<b>+CGCONTRDP:</b> (list of <p_cid>s associated with active contexts)

### 3.4.5.2.5 Secondary PDP Context Read Dynamic Parameters - +CGSCONTRDP

<b>+CGSCONTRDP - parameter command syntax</b>	
<b>AT+CGSCONTRDP=</b> <b>P=</b> <b>[&lt;cid&gt;]</b>	<p><b>Possible response(s):</b>  <b>+CGSCONTRDP:</b>&lt;cid&gt;,&lt;p_cid&gt;,&lt;bearer_id&gt;[&lt;CR&gt;&lt;LF&gt;  <b>+CGSCONTRDP:</b> &lt;cid&gt;,&lt;p_cid&gt;,&lt;bearer_id&gt; [...]]</p> <p>The execution command returns &lt;p_cid&gt; and &lt;bearer_id&gt; for a given &lt;cid&gt;. If the context cannot be found an ERROR response returned.If the parameter &lt;cid&gt; omitted, the &lt;cid&gt;,&lt;p_cid&gt; and &lt;bearer_id&gt; returned for all established PDP contexts.</p> <p>In EPS, the Traffic Flow parameters returned.</p>



<b>+CGSCONTRDP - parameter command syntax</b>	
	<p><b>NOTE:</b> Parameters for network initiated PDP contexts returned as well. The dynamic part of the PDP context will only exist if established by the network.</p> <p><b>Defined values:</b></p> <p><b>&lt;cid&gt;</b> 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><b>&lt;p_cid&gt;</b> 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><b>&lt;bearer_id&gt;</b> a numeric parameter which identifies the bearer, EPS Bearer in EPS and NSAPI in UMTS/GPRS.</p>
<b>+CGSCONTRDP=?</b>	<b>+CGSCONTRDP:</b> (list of <cid>s associated with active contexts) The test command returns a list of <cid>s associated with active contexts.

#### 3.4.5.2.6 Traffic Flow Template Read Dynamic Parameters - +CGTFTRDP

<b>+CGTFTRDP - parameter command syntax</b>	
<b>AT+CGTFTRDP=[&lt;cid&gt;]</b>	<p><b>Possible Response(s):</b></p> <p><b>+CGTFTRDP:</b> &lt;cid&gt;, &lt;packet filter identifier&gt;, &lt;evaluation precedence index&gt;, &lt;source address and subnet mask&gt;, &lt;protocol number (ipv4) / next header (ipv6)&gt;, &lt;destination port range&gt;, &lt;source port range&gt;, &lt;ipsec security parameter index (spi)&gt;, &lt;type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask&gt;, &lt;flow label ipv6&gt;, &lt;direction&gt;, &lt;NW packet filter Identifier&gt;[&lt;CR&gt;&lt;LF&gt;</p> <p><b>+CGTFTRDP:</b> &lt;cid&gt;, &lt;packet filter identifier&gt;, &lt;evaluation precedence index&gt;, &lt;source address and subnet mask&gt;, &lt;protocol number (ipv4) / next header (ipv6)&gt;, &lt;destination port range&gt;, &lt;source port range&gt;, &lt;ipsec security parameter index (spi)&gt;, &lt;type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask&gt;, &lt;flow label (ipv6)&gt;, &lt;direction&gt;, &lt;NW packet filter Identifier&gt; [...]]</p> <p>The execution command returns the relevant information about Traffic Flow Template of &lt;cid&gt; together with the additional network assigned values when established by the network. If the context can't be found, an ERROR response is returned.</p> <p>If the parameter &lt;cid&gt; omitted, the Traffic Flow Templates for all established PDP contexts returned.</p> <p>Parameters of both network and MT/TA initiated PDP contexts returned.</p> <p><b>&lt;cid&gt;:</b> a numeric parameter which specifies a particular PDP context definition or Traffic Flows definition (see +CGDCONT and +CGDSCONT commands).</p> <p>The following parameters are defined in 3GPP TS 23.060 [47] -</p> <p><b>&lt;packet filter identifier&gt;:</b> a numeric parameter. The value range is from 1 to 16.</p>



+CGTFTRDP - parameter command syntax	
	<p><b>&lt;evaluation precedence index&gt;:</b> a numeric parameter. The value range is from 0 to 255.</p> <p><b>&lt;source address and subnet mask&gt;:</b> 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 <b>or</b>            "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.</p> <p><b>&lt;protocol number (ipv4) / next header (ipv6)&gt;:</b> a numeric parameter, value range from 0 to 255.</p> <p><b>&lt;destination port range&gt;:</b> string type. The string is given as dot-separated numeric (0-65535) parameters on the form "f.t".</p> <p><b>&lt;source port range&gt;:</b> string type. The string is given as dot-separated numeric (0-65535) parameters on the form "f.t".</p> <p><b>&lt;ipsec security parameter index (spi)&gt;:</b> numeric value in hexadecimal format. The value range is from 00000000 to FFFFFFFF.</p> <p><b>&lt;type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask&gt;:</b> string type. The string given as dot-separated numeric (0-255) parameters on the form "t.m".</p> <p><b>&lt;flow label (ipv6)&gt;:</b> numeric value in hexadecimal format. The value range is from 00000 to FFFFF. Valid for IPv6 only.</p> <p><b>&lt;direction&gt;</b> a numeric parameter which specifies the transmission direction in which the Packet Filter shall be applied.            0 Pre Release 7 TFT Filter (see 3GPP TS 24.008 [8], table 10.5.162)            1 - Uplink            2 - Downlink            3 - Bidirectional (Used for Uplink and Downlink)</p> <p><b>&lt;NW packet filter Identifier&gt;</b> a numeric parameter. The value range is from 1 to 16. In EPS the value is assigned by the network when established</p> <p><b>NOTE:</b> 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=?	<p><b>+CGTFTRDP:</b> (list of &lt;cid&gt;s associated with active contexts) The test command returns a list of &lt;cid&gt;s associated with active contexts.</p>



### 3.4.5.2.7 Define EPS Quality of Service +CGEQOS

+CGEQOS - parameter command syntax	
<b>AT+CGEQOS=</b> <b>[&lt;cid&gt;</b> <b>[,&lt;QCI&gt;</b> <b>[,&lt;DL_GBR&gt;,</b> <b>&lt;UL_GBR&gt;</b> <b>[,&lt;DL_MBR&gt;,&lt;UL_MBR&gt;]]]</b>	<p><b>Possible Response(s):</b>  + CME ERROR: &lt;err&gt;</p> <p>The set command allows the TE to specify the EPS Quality of Service parameters &lt;cid&gt;, &lt;QCI&gt;, [&lt;DL_GBR&gt; and &lt;UL_GBR&gt;] and [&lt;DL_MBR&gt; and &lt;UL_MBR&gt;] for a PDP context or Traffic Flows. When in UMTS/GPRS the MT applies a mapping function to UMTS/GPRS Quality of Service. Refer subclause 9.2 for &lt;err&gt; values.</p> <p>A special form of the set command, +CGEQOS= &lt;cid&gt; causes the values for context number &lt;cid&gt; to become undefined.</p> <p>&lt;cid&gt; a numeric parameter which specifies a particular EPS Traffic Flows definition in EPS and a PDP Context definition in UMTS/GPRS.</p> <p>&lt;QCI&gt; a numeric parameter specifies a class of EPS QoS. (see 3GPP TS 23.203 [85])  0 QCI is selected by network  [1 – 4] value range for guaranteed bit rate Traffic Flows  [5 – 9] value range for non-guaranteed bit rate Traffic Flows</p> <p>&lt;DL_GBR&gt; a numeric parameter who 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])</p> <p>&lt;UL_GBR&gt; a numeric parameter who 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])</p> <p>&lt;DL_MBR&gt; a numeric parameter, indicates DL MBR in case of GBR QCI. The value is in kbit/s. This parameter omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83])</p> <p>&lt;UL_MBR&gt; a numeric parameter, indicates UL MBR in case of GBR QCI. The value is in kbit/s. This parameter omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83])</p>
<b>AT+CGEQOS?</b>	<p>The read command returns the current settings for each defined QoS.</p> <p>+CGEQOS:&lt;cid&gt;,&lt;QCI&gt;,&lt;DL_GBR&gt;,&lt;UL_GBR&gt;,&lt;DL_MBR&gt;,&lt;UL_MBR&gt;][&lt;CR&gt;&gt;LF]+CGEQOS: &lt;cid&gt;,&lt;QCI&gt;,&lt;DL_GBR&gt;,&lt;UL_GBR&gt;,&lt;DL_MBR&gt;,&lt;UL_MBR&gt;][...]]</p>
<b>AT+CGEQOS=?</b>	<p>The test command returns the ranges of the supported parameters.</p> <p>+CGEQOS: (range of supported &lt;cid&gt;s) ,(list of supported &lt;QCI&gt;s) ,(list of supported &lt;DL_GBR&gt;s) ,(list of supported &lt;UL_GBR&gt;s) ,(list of supported &lt;DL_MBR&gt;s) ,(list of supported &lt;UL_MBR&gt;s)</p>



### 3.4.5.2.8 EPS Quality of Service Read Dynamic Parameters - +CGEQOSRDP

<b>+CGEQOSRDP - parameter command syntax</b>	
<b>AT+CGEQOSRDP=</b> <b>[&lt;cid&gt;]</b>	<p><b>Possible Response(s):</b>  <b>+CGEQOSRDP:</b>&lt;cid&gt;,&lt;QCI&gt;,[&lt;DL_GBR&gt;,&lt;UL_GBR&gt;],[&lt;DL_MBR&gt;,&lt;UL_MBR&gt;][&lt;CR&gt;&gt;LF&gt;  <b>+CGEQOSRDP:</b>&lt;cid&gt;,&lt;QCI&gt;,[&lt;DL_GBR&gt;,&lt;UL_GBR&gt;],[&lt;DL_MBR&gt;,&lt;UL_MBR&gt;][...]</p> <p><b>Description:</b>  The execution command returns the Quality of Service parameters &lt;QCI&gt;,[&lt;DL_GBR&gt; and &lt;UL_GBR&gt;] and [&lt;DL_MBR&gt; and &lt;UL_MBR&gt;] of the established PDP Context associated to the provided context identifier &lt;cid&gt;. If the context cannot be founded an ERROR response is returned.  If the parameter &lt;cid&gt; omitted, the Quality of Service parameters for all established PDP contexts returned.</p> <p><b>Defined values:</b>  &lt;cid&gt; a numeric parameter which specifies a particular Traffic Flows definition in EPS and a PDP Context definition in UMTS/GPRS.  &lt;QCI&gt; 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.  &lt;DL_GBR&gt;;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])  &lt;UL_GBR&gt; a numeric parameter indicates UL GBR in case of GBR QCI. The value is in kbit/s. This parameter omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83])  &lt;DL_MBR&gt; a numeric parameter indicates DL MBR in case of GBR QCI. The value is in kbit/s. This parameter omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83])  &lt;UL_MBR&gt;; a numeric parameter indicates UL MBR in case of GBR QCI. The value is in kbit/s. This parameter omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83])</p>
<b>AT+CGEQOSRDP=?</b>	<p><b>+CGEQOSRDP:</b> (list of &lt;cid&gt;s associated with active contexts)  The test command returns a list of &lt;cid&gt;s associated with active contexts. Parameters of both network and MT/TA initiated PDP contexts returned.</p>

### 3.4.5.2.9 Set Text Mode Parameters - +CSMP

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



<b>+CSMP - Set Text Mode Parameters</b>	
[,<pid> [,<dc>]]]	<b>Parameters:</b> <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.  <b>Note:</b> the current settings are stored through <b>+CSAS</b>
AT+CSMP?	Read command reports the current setting in the format:  <b>+CSMP: &lt; fo&gt;,&lt;vp&gt;,&lt;pid&gt;,&lt;dc&gt;</b>
AT+CSMP=?	Test command returns the <b>OK</b> result code.
<b>Example</b>	Set the parameters for an outgoing message with 24 hours of validity period and default properties:  AT+CSMP=17,167,0,0 OK
<b>Reference</b>	3GPP TS 27.005; 3GPP TS 03.40/23.040; 3GPP TS 03.38/23.038

### 3.4.5.2.10 *Show Text Mode Parameters - +CSDH*

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



### 3.4.5.2.11 *Select Cell Broadcast Message Types - +CSCB*

<b>+CSCB -Select Cell Broadcast Message Types</b>	
<b>AT+CSCB=</b> [<mode> [,<mids> [,<dcss>]]]	<p>Set command selects which types of Cell Broadcast Messages received by the device.</p> <p><b>Parameters:</b></p> <p><b>&lt;mode&gt;</b>  0 - the message types defined by &lt;mids&gt; and &lt;dcss&gt; are accepted (factory default)  1 - the message types defined by &lt;mids&gt; and &lt;dcss&gt; are rejected</p> <p><b>&lt;mids&gt;</b> - Message Identifiers, string type: all different possible combinations of the CBM message identifiers; default is empty string ("").</p> <p><b>&lt;dcss&gt;</b> - Data Coding Schemes, string type: all different possible combinations of CBM data coding schemes; default is empty string ("").</p> <p><b>Note:</b> the current settings are stored through +CSAS</p>
<b>AT+CSCB?</b>	Read command reports the current value of parameters <mode>, <mids> and <dcss>.
<b>AT+CSCB=?</b>	Test command returns the range of values for parameter <mode>.
<b>Example</b>	<p>AT+CSCB? +CSCB: 1,"", ""</p> <p>OK <i>(all CBMs are accepted, none is rejected)</i>  AT+CSCB=0,"0,1,300-315,450","0-3"  OK</p>
<b>Reference</b>	3GPP TS 27.005, 3GPP TS 03.41/23.041, 3GPP TS 03.38/23.038.



### 3.4.5.2.13 *Primary Notification Event Reporting + CPNER*

<b>+CPNER - Primary notification event reporting</b>	
<b>AT+CPNER=</b> <b>&lt;reporting&gt;</b>	<p>Set command enables and disables reporting of primary notification events when received from the network with unsolicited result code.</p> <p><b>+CPNERU:</b> &lt;message_identifier&gt;,&lt;serial_number&gt;,&lt;warning_type&gt;. Primary notification events used for public warning systems like ETWS (Earthquake and Tsunami Warning Systems).</p> <p><b>Parameter:</b></p> <p><b>&lt;reporting&gt;</b> - integer type, controlling reporting of primary notification events.</p> <p>0 - Disable primary notification events.</p> <p>1 - Enable reporting of primary notification events without security information, unsolicited result code(default)</p> <p><b>+CPNERU:</b> &lt;message_identifier&gt;,&lt;serial_number&gt;,&lt;warning_type&gt;</p> <p><b>&lt;message_identifier&gt;</b> string type in hexadecimal character format. The parameter contains the message identifier (2 bytes) of the primary notification.</p> <p><b>&lt;serial_number&gt;</b> string type in hexadecimal character format. The parameter contains the serial number (2 bytes) of the primary notification.</p> <p><b>&lt;warning_type&gt;</b> string type in hexadecimal character format. The parameter contains the warning type (2 bytes) of the primary notification.</p>
<b>AT+CPNER?</b>	Read command reports the current value of the parameter <reporting>.
<b>AT+CPNER=?</b>	Test command returns supported of <reporting> parameter.
<b>Example</b>	<p>AT+CPNER?</p> <p>+CPNER: 1</p> <p>OK</p>

### 3.4.5.2.14 *Save Settings - +CSAS*

<b>+CSAS - Save Settings</b>	
<b>AT+CSAS[=</b> <b>&lt;profile&gt;]</b>	Execution command saves settings which have been made by the +CSCA, +CSMP and +CSCB commands in local non-volatile memory.



+CSAS - Save Settings	
	<p><b>Parameter:</b>  <b>&lt;profile&gt;</b>            0 - it saves the settings to NVM (factory default).            1..n - SIM profile number; the value of n depends on the SIM(1e920 allow to store up to 5).</p> <p><b>Note:</b> certain settings may not be supported by the SIM. Therefore, the settings always saved to the NVM, regardless the value of <b>&lt;profile&gt;</b>.</p> <p><b>Note:</b> If parameter is omitted the settings are saved in the non-volatile memory.</p>
AT+CSAS=?	Test command returns the possible range of values for the parameter <b>&lt;profile&gt;</b> .
Reference	3GPP TS 27.005

#### 3.4.5.2.15 *Restore Settings - +CRES*

+CRES - Restore Settings	
AT+CRES[= [<profile>]	<p>Execution command restores message service settings saved by +CSAS command from either NVM or SIM.</p> <p><b>Parameter:</b>  <b>&lt;profile&gt;</b>            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 (1e920 allow to store up to 5).</p> <p><b>Note:</b> certain settings may not be support by the SIM and therefore they are always restored from NVM, regardless the value of <b>&lt;profile&gt;</b>.</p> <p><b>Note:</b> If parameter is omitted the command restores message service settings from NVM.</p>
AT+CRES=?	Test command returns the possible range of values for the parameter <b>&lt;profile&gt;</b> .
Reference	3GPP TS 27.005

### 3.4.5.3 Message Receiving and Reading

#### 3.4.5.3.1 *New Message Indications to Terminal Equipment - +CNMI*



+CNMI - New Message Indications To Terminal Equipment	
<b>AT+CNMI=</b> <b>[&lt;mode&gt;</b> <b>[,&lt;mt&gt;[,&lt;bm&gt;</b> <b>[,&lt;ds&gt;</b> <b>[,&lt;bfr&gt;]]]]]</b>	<p>Set command selects the behaviour of the device on how the receiving of new messages from the network indicated to the <b>DTE</b>.</p> <p><b>Parameter:</b></p> <p><b>&lt;mode&gt;</b> - unsolicited result codes buffering option</p> <ul style="list-style-type: none"> <li>0 - Buffer unsolicited result codes in the <b>TA</b>. If <b>TA</b> result code buffer is full, indications may be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications.</li> <li>1 - Discard indication and reject new received message unsolicited result codes when <b>TA-TE</b> link is reserved, otherwise forward them directly to the <b>TE</b>.</li> <li>2 - Buffer unsolicited result codes in the <b>TA</b> in case the <b>DTE</b> is busy and flush them to the <b>TE</b> after reservation. Otherwise, forward them directly to the <b>TE</b>.</li> <li>3 - if <b>&lt;mt&gt;</b> 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.</li> </ul> <p><b>Note:</b> In <b>&lt;mode&gt;</b> field, "3" not supported.</p> <p><b>&lt;mt&gt;</b> - result code indication reporting for SMS-DELIVER</p> <ul style="list-style-type: none"> <li>0 - No SMS-DELIVER indications are routed to the <b>TE</b> and message is stored.</li> <li>1 - If SMS-DELIVER is stored into <b>ME/TA</b>, indication of the memory location is routed to the <b>TE</b> using the following unsolicited result code:  <b>+CMTI: &lt;memr&gt;,&lt;index&gt;</b></li> </ul> <p><b>where:</b></p> <p><b>&lt;memr&gt;</b> - memory storage where the new message is  Stored: "SM" , "ME"</p> <p><b>&lt;index&gt;</b> - location on the memory where SMS is stored.</p> <ul style="list-style-type: none"> <li>2 - SMS-DELIVERs (except class 2 messages and messages in the message waiting indication group) are routed directly to the <b>TE</b> using the following unsolicited result code:</li> </ul> <p><b>(PDU Mode)</b>  <b>+CMT: &lt;alpha&gt;,&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt;</b></p> <p><b>where:</b></p> <p><b>&lt;alpha&gt;</b> - alphanumeric representation of originator/destination number corresponding to the entry found in <b>MT</b> phonebook. used character set should be the one selected with command <b>+CSCS</b>.</p> <p><b>&lt;length&gt;</b> - PDU length</p> <p><b>&lt;pdu&gt;</b> - PDU message</p> <p><b>(TEXT Mode)</b>  <b>+CMT:&lt;oa&gt;,&lt;alpha&gt;,&lt;sets&gt;/,&lt;tooa&gt;,&lt;fo&gt;,&lt;pid&gt;,&lt;dcs&gt;,&lt;</b></p>



+CNMI - New Message Indications To Terminal Equipment	
	<p><i>&lt;sca&gt;</i>, <i>&lt;tosca&gt;</i>, <i>&lt;length&gt;</i> / &lt;CR&gt; &lt;LF&gt; &lt;data&gt; (the information written in italics will be present depending on +CSDH last setting)</p> <p><b>where:</b></p> <p><i>&lt;oa&gt;</i> - originating address, string type converted in the currently selected character set (see +CSCS)</p> <p><i>&lt;alpha&gt;</i> - alphanumeric representation of <i>&lt;oa&gt;</i>, used character set should be the one selected with command +CSCS.</p> <p><i>&lt;scts&gt;</i> - arrival time of the message to the SC</p> <p><i>&lt;toa&gt;</i>, <i>&lt;tosca&gt;</i> - type of number <i>&lt;oa&gt;</i> or <i>&lt;sca&gt;</i>:</p> <p>129 - number in national format</p> <p>145 - number in international format (contains the "+")</p> <p><i>&lt;fo&gt;</i> - first octet of 3GPP TS 03.40/23.040</p> <p><i>&lt;pid&gt;</i> - Protocol Identifier</p> <p><i>&lt;dcs&gt;</i> - Data Coding Scheme</p> <p><i>&lt;sca&gt;</i> - Service Centre address, string type, converted in the currently selected character set (see +CSCS)</p> <p><i>&lt;length&gt;</i> - text length</p> <p><i>&lt;data&gt;</i> - TP-User-Data</p> <ul style="list-style-type: none"> <li>If <i>&lt;dcs&gt;</i> indicates that GSM03.38/23.038 default alphabet is used and <i>&lt;fo&gt;</i> indicates that GSM03.40/23.040 TP-User-Data-Header-Indication is not set (bit 6 of <i>&lt;fo&gt;</i> is 0), each character of GSM/WCDMA alphabet will be converted into current TE character set (see +CSCS)</li> <li>If <i>&lt;dcs&gt;</i> indicates that 8-bit or UCS2 data coding scheme is used or <i>&lt;fo&gt;</i> indicates that GSM03.40/23.040 TP-User-Data-Header-Indication is set (bit 6 of <i>&lt;fo&gt;</i> 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)</li> </ul> <p>Class 2 messages and messages in the message waiting indication group (stored message) result in indication as defined in <b>&lt;mt&gt;=1</b>.</p> <p>Acknowledge for the received SMS-DELIVER SM is sent to network immediately when +CSMS <i>&lt;service&gt;</i> is set to '0' or when +CSMS <i>&lt;service&gt;</i> is set to '1', acknowledge is sent via +CNMA command during predefined time-out, an error is sent to network in case timeout expires, Next +CMT response is depend on acknowledge of current received +CMT response in case +CSMS <i>&lt;service&gt;</i> parameter set to '1'.</p> <p>3 - Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in <b>&lt;mt&gt;=2</b>. Messages of other data coding schemes result in indication as defined in <b>&lt;mt&gt;=1</b>.</p> <p><b>&lt;bm&gt;</b> - broadcast reporting option</p> <p>0 - Cell Broadcast Messages are not sent to the <b>DTE</b></p>



## +CNMI - New Message Indications To Terminal Equipment

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

### (PDU Mode)

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

**where:**

<length> - PDU length

<PDU> - message PDU

### (TEXT Mode)

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

**where:**

<sn> - message serial number

<mid> - message ID

<dcs> - Data Coding Scheme

<pag> - page number

<pags> - total number of pages of the message

<data> - CBM Content of Message

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

<ds> - SMS-STATUS-REPORTs reporting option

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

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

### (PDU Mode)

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

**where:**

<length> - PDU length

<PDU> - message PDU

### (TEXT Mode)

**+CDS:** <fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st>

**where:**

<fo> - first octet of the message PDU

<mr> - message **Reference** number

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

<tora> - type of number <ra>

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

<dt> - sending time of the message

<st> - message status as coded in the PDU



+CNMI - New Message Indications To Terminal Equipment	
	<p>Acknowledge for the received SMS-STATUS-REPORT SM is sent to network immediately when +CSMS &lt;service&gt; is set to '0' or when +CSMS &lt;service&gt; is set to '1', acknowledge is sent via +CNMA command during pre-defined timeout, an error is sent to network in case timeout expire, Next +CDS response is depend on acknowledge of current received +CDS response in case +CSMS &lt;service&gt; parameter set to '1'.</p> <p>2 - if a status report is stored, then the following unsolicited result code is sent: <b>+CDSI: &lt;memr&gt;,&lt;index&gt;</b></p> <p><b>where:</b>            &lt;memr&gt; - memory storage where the new message is stored "SR"            &lt;index&gt; - location on the memory where SMS is stored            &lt;bfr&gt; - buffered result codes handling method:            0 - TA buffer of unsolicited result codes defined within this command is flushed to the TE when &lt;mode&gt;=1..3 is entered (OK response shall be given before flushing the codes)            1 - TA buffer of unsolicited result codes defined within this command is cleared when &lt;mode&gt;=1..3 is entered.</p>
AT+CNMI?	<p>Read command returns the current parameter settings for +CNMI command in the form:</p> <p><b>+CNMI: &lt;mode&gt;,&lt;mt&gt;,&lt;bm&gt;,&lt;ds&gt;,&lt;bfr&gt;</b></p>
AT+CNMI=?	Test command reports the supported range of values for the +CNMI command parameters.
Reference	3GPP TS 27.005
Example	<p>AT+CMGF=1 OK AT+CNMI=1,2,0,1,0 OK</p> <p><i>Received message from network</i>            +CMT: "+821020955219",,"07/07/26,20:09:07+36"            TEST MESSAGE</p>
Note	<p><b>DTR</b> signal is ignored, hence the indication is sent even if the <b>DTE</b> is inactive ( <b>DTR</b> signal is <b>Low</b>). In this case the unsolicited result code may be lost so if MODULE remains active while <b>DTE</b> is not, at <b>DTE</b> startup is suggested to check whether new messages have reached the device meanwhile with command <b>AT+CMGL=0</b> that lists the new messages received.</p>

### 3.4.5.3.2 List Messages - +CMGL



+CMGL - List Messages	
<p><b>AT+CMGL=</b> <b>[=&lt;stat&gt;]</b></p>	<p>Execution command reports the list of all the messages with status value <b>&lt;stat&gt;</b> stored into <b>&lt;memr&gt;</b> message storage (<b>&lt;memr&gt;</b> 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;"><b>(PDU Mode)</b></p> <p><b>Parameter:</b> <b>&lt;stat&gt;</b>  0 - new message  1 - read message  2 - stored message not yet sent  3 - stored message already sent  4 - all messages.</p> <p>Each message to be listed is represented in the format:  <b>+CMGL: &lt;index&gt;,&lt;stat&gt;,&lt;alpha&gt;,&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt;</b></p> <p><b>where:</b>  <b>&lt;index&gt;</b> - message position in the memory storage list.  <b>&lt;stat&gt;</b> - status of the message  <b>&lt;alpha&gt;</b> - string type alphanumeric representation of <b>&lt;da&gt;</b> or <b>&lt;oa&gt;</b>, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS.  <b>&lt;length&gt;</b> - length of the PDU in bytes  <b>&lt;pdu&gt;</b> - message in PDU format according to 3GPP TS 3.40/23.040</p> <p><b>(Text Mode)</b>  <b>Parameter:</b>  <b>&lt;stat&gt;</b>  "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>Each message to be listed is represented in the format (the information written in <i>italics</i> will be present depending on +CSDH last setting):</p> <p><b>+CMGL: &lt;index&gt;,&lt;stat&gt;,&lt;oa/da&gt;,&lt;alpha&gt;,&lt;scts&gt;/,&lt;tooa/toda&gt;,&lt;length&gt;/&lt;CR&gt;&lt;LF&gt; &lt;data&gt;</b></p> <p><b>Where:</b>  <b>&lt;index&gt;</b> - message position in the storage</p>



<b>+CMGL - List Messages</b>	
	<p> <b>&lt;stat&gt;</b> - message status  <b>&lt;oa/da&gt;</b> - originator/destination address, string type , represented in the currently selected character set (see +CSCS)  <b>&lt;alpha&gt;</b> - string type alphanumeric representation of <b>&lt;da&gt;</b> or <b>&lt;oa&gt;</b>, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS.  <b>&lt;scts&gt;</b> - TP-Service Centre Time Stamp in Time String Format  <b>&lt;tooa/toda&gt;</b> - type of number <b>&lt;oa/da&gt;</b>  129 - number in national format  145 - number in international format (contains the "+")  <b>&lt;length&gt;</b> - text length  <b>&lt;data&gt;</b> - TP-User-Data <ul style="list-style-type: none"> <li>• If <b>&lt;dcs&gt;</b> indicates that GSM03.38/23.038 default alphabet is used , each character of GSM/WCDMA alphabet will be converted into current TE character set (see +CSCS)</li> <li>• If <b>&lt;dcs&gt;</b> 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)</li> </ul> <p>Each message delivery confirm is represented in the format:</p> <p><b>+CMGL: &lt;index&gt;,&lt;stat&gt;,&lt;fo&gt;,&lt;mr&gt;,,,&lt;scts&gt;,&lt;dt&gt;,&lt;st&gt;</b></p> <p><b>Where:</b>  <b>&lt;index&gt;</b> - message position in the storage  <b>&lt;stat&gt;</b> - message status  <b>&lt;fo&gt;</b> - first octet of the message PDU  <b>&lt;mr&gt;</b> - message <b>Reference</b> number  <b>&lt;scts&gt;</b> - arrival time of the message to the SC  <b>&lt;dt&gt;</b> - sending time of the message  <b>&lt;st&gt;</b> - message status as coded in the PDU</p> <p><b>Note:</b> If parameter is omitted the command returns the list of sms with “<b>REC UNREAD</b>” status.</p> </p>
<b>AT+CMGL=?</b>	Test command returns a list of supported <b>&lt;stat&gt;</b> s
<b>Example</b>	AT+CMGF=1 <i>Set Text mode</i> OK AT+CMGL +CMGL: 1,"REC UNREAD","+821020955219",,"07/07/26,20:05:11+36" SMS Test message +CMGL: 2,"REC UNREAD","+821020955219",,"07/07/26,20:05:58+36" SMS Test message... +CMGL: 3,"REC UNREAD","+821020955219",,"07/07/26,20:06:37+36" SMS Test Message.. +CMGL: 4,"REC UNREAD","+821020955219",,"07/07/26,20:07:43+36" TEST MESSAGE..



+CMGL - List Messages	
	<pre>+CMGL: 5,"REC UNREAD","+821020955219",,"07/07/26,20:09:07+36" TEST MESSAGE  OK AT+CMGF=0      Set PDU mode OK AT+CMGL=2 +CMGL: 0,2,,24 079128019291903011640A8110567892820000A70CF4F29C0E6A97E7F3F0B90 C +CMGL: 1,2,,21 079128019291903011640A8110516529700000A709027A794E77B95C2E +CMGL: 26,2,,17 08812801009901025911640A8110567892820014A704C7D1B1DB  OK</pre>
Reference	3GPP TS 27.005

### 3.4.5.3.3 Read Message - +CMGR

+CMGR - Read Message	
AT+CMGR= <index>	<p>Execution command reports the message with location value &lt;index&gt; from &lt;memr&gt; message storage (&lt;memr&gt; is the message storage for read and delete SMs as last settings of command +CPMS).</p> <p><b>Parameter:</b> &lt;index&gt; - message index.</p> <p>The output depends on the last settings of command +CMGF (message format to be used)</p> <p><b>(PDU Mode)</b> The output has the following format:</p> <p><b>+CMGR: &lt;stat&gt;,&lt;alpha&gt;,&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt;</b></p> <p><b>Where:</b>          &lt;stat&gt; - status of the message              0 - new message              1 - read message              2 - stored message not yet sent              3 - stored message already sent          &lt;alpha&gt; - string type alphanumeric representation of &lt;da&gt; or &lt;oa&gt;,                  corresponding to an entry found in the phonebook; used character set is                  the one selected with command +CSCS.</p>



+CMGR - Read Message	
	<p>&lt;length&gt; - length of the PDU in bytes.          &lt;pdu&gt; - message in PDU format according to 3GPP TS 3.40/23.040.</p> <p>The status of the message and entire message data unit &lt;pdu&gt; returned.</p> <p><b>(Text Mode)</b>          Output format for received messages (the information written in <i>italics</i> will be present depending on +CSDH last setting):          +CMGR: &lt;stat&gt;,&lt;oa&gt;,&lt;alpha&gt;,&lt;scts&gt;[/,&lt;toa&gt;,&lt;fo&gt;,&lt;pid&gt;,&lt;dcs&gt;,&lt;sca&gt;,&lt;tosca&gt;,&lt;length&gt;]/&lt;CR&gt;&lt;LF&gt;&lt;data&gt;</p> <p>Output format for sent messages:          +CMGR: &lt;stat&gt;,&lt;da&gt;,&lt;alpha&gt;[/,&lt;toda&gt;,&lt;fo&gt;,&lt;pid&gt;,&lt;dcs&gt;,&lt;vp&gt;]/,&lt;sca&gt;,&lt;tosca&gt;,&lt;length&gt;]/&lt;CR&gt;&lt;LF&gt;&lt;data&gt;</p> <p>Output format for message delivery confirm:          +CMGR: &lt;stat&gt;,&lt;fo&gt;,&lt;mr&gt;,,,&lt;scts&gt;,&lt;dt&gt;,&lt;st&gt;</p> <p><b>where:</b>          &lt;stat&gt; - status of the message            "REC UNREAD" - new received message unread            "REC READ" - received message read            "STO UNSENT" - message stored not yet sent            "STO SENT" - message stored already sent          &lt;fo&gt; - first octet of the message PDU          &lt;mr&gt; - message <b>Reference</b> number          &lt;scts&gt; - arrival time of the message to the SC          &lt;dt&gt; - sending time of the message          &lt;st&gt; - message status as coded in the PDU          &lt;pid&gt; - Protocol Identifier          &lt;dcs&gt; - Data Coding Scheme          &lt;oa&gt; - Originator address, string type represented in the currently selected character set (see +CSCS)          &lt;da&gt; - Destination address, string type represented in the currently selected character set (see +CSCS)          &lt;alpha&gt; - string type alphanumeric representation of &lt;da&gt; or &lt;oa&gt;, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS.          &lt;sca&gt; - Service Centre number          &lt;toa&gt;,&lt;toda&gt;,&lt;tosca&gt; - type of number &lt;oa&gt;,&lt;da&gt;,&lt;sca&gt;            129 - number in national format            145 - number in international format (contains the "+")          &lt;length&gt; - text length          &lt;data&gt; - TP-User data</p>



<b>+CMGR - Read Message</b>	
	<ul style="list-style-type: none"> <li>If <b>&lt;dcs&gt;</b> indicates that GSM03.38/23.038 default alphabet is used , each character of GSM/WCDMA alphabet will be converted into current TE character set (see +CSCS)</li> <li>If <b>&lt;dcs&gt;</b> indicates that 8-bit or LE920 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)</li> </ul> <p><b>Note:</b> in both cases if status of the message is 'received unread', status in the storage changes to 'received read'.</p>
<b>AT+CMGR=?</b>	Test command returns the <b>OK</b> result code
<b>Example</b>	<pre>AT+CMGF=0 AT+CMGR=1 +CMGR: 2,,21 079128019291903011640A8110516529700000A709027A794E77B95C2E  OK AT+CMGF=1 OK AT+CMGR=3 +CMGR: "REC READ","+821020955219",,"07/07/19,10:06:34+36" test message/.....  OK</pre>
<b>Reference</b>	3GPP TS 27.005

#### 3.4.5.3.4 New Message Acknowledgement to ME/TA - +CNMA

<b>+CNMA – New Message Acknowledgement</b>	
<b>(PDU Mode)</b> <b>AT+CNMA[=&lt;n&gt;</b> <b>[,&lt;length&gt;</b> <b>[&lt;CR&gt;PUD is</b> <b>given&lt;ctrl-Z/ESC&gt;]]</b>	<p><i>Execution command confirms correct reception of a new message (SMS-DELIVER or SMS-STATUS-REPORT) which is routed directly to the TE.</i></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 show.</p> <p>If no acknowledgement is given within the network timeout, an RP-ERROR is sent to the network, the &lt;mt&gt; and &lt;ds&gt; parameters of the +CNMI command are then reset to zero (do not show new message indication).</p> <p>Either positive (RP-ACK) or negative (RP-ERROR) acknowledgement to the network is possible.</p> <p><b>Parameter:</b>  <b>&lt;n&gt;</b> - Type of acknowledgement in PDU mode</p>



<b>+CNMA – New Message Acknowledgement</b>	
	<p>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.  &lt;length&gt; : Length of the PDU message.</p> <p><b>Note:</b> Refer to 3GPP TS 23.040 Recommendation for other PDU negative acknowledgement codes.</p>
<b>(Text Mode)</b> <b>AT+CNMA</b>	Only positive acknowledgement to network (RP-ACK) is possible.
<b>(PDU Mode)</b> <b>AT+CNMA=?</b>	Test command returns the possible range of values for the parameter <n>
<b>Example</b>	<p><b>(PDU Mode)</b>  <i>SMS AT commands compatible with 3GPP TS 27.005 Phase 2+ version.</i>  AT+CSMS=1  +CSMS: 1,1,1  OK</p> <p><i>Set PDU mode.</i>  AT+CMGF=0  OK</p> <p>AT+CNMI=2,2,0,0,0  OK</p> <p><i>Message received from network.</i>  +CMT: "",70  06816000585426000480980600F170110370537284...</p> <p><i>Send positive acknowledgement to the network.</i>  AT+CNMA=0  OK</p> <p><i>Message received from network.</i>  +CMT: "",70  06816000585426000480980600F170110370537284...</p> <p><i>Send negative acknowledgement (Unspecified error) to the network.</i>  AT+CNMA=2,3&lt;CR&gt;  &gt; 00FF00 &lt;Ctrl-Z&gt;  OK</p> <p><b>(Text Mode)</b>  <i>SMS AT commands compatible with 3GPP TS 27.005 Phase 2+ version.</i></p>



+CNMA – New Message Acknowledgement	
	<p>AT+CSMS=1 +CSMS: 1,1,1 OK</p> <p><i>Set Text mode.</i> AT+CMGF=1 OK</p> <p>AT+CNMI=2,2,0,0,0 OK</p> <p><i>Message 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>
<b>Reference</b>	3GPP TS 27.005



### 3.4.5.4 Message Sending and Writing

#### 3.4.5.4.1 Send Message - +CMGS

+CMGS - Send Message	
<p><b>(PDU Mode)</b> AT+CMGS= &lt;length&gt;</p>	<p><b>(PDU Mode)</b> Execution command sends to the network a message.</p> <p><b>Parameter:</b> &lt;length&gt; - length of the PDU to be sent in bytes (excluding the SMSC address octets) 7..164</p> <p>After command line is terminated with &lt;CR&gt;, the device responds sending a four character sequence prompt: &lt;CR&gt;&lt;LF&gt;&lt;greater_than&gt;&lt;space&gt; (IRA 13, 10, 62, 32) and waits for the specified number of bytes.</p> <p><b>Note:</b> the DCD signal shall be in ON state while PDU is given.</p> <p><b>Note:</b> the echoing of given characters back from the TA is controlled by echo command E</p> <p><b>Note:</b> the PDU shall be hexadecimal format (each octet of the PDU is given as two IRA character long hexadecimal number) and given in one line.</p> <p><b>Note:</b> when the octet length of the SMSC address (given in the PDU) equals zero, the SMSC address set with command +CSCA is used. In this case, the SMSC Type-of-Address octet shall not be present in the PDU.</p> <p>To send the message issue <b>Ctrl-Z</b> char (0x1A hex). To exit without sending the message issue <b>ESC</b> char (0x1B hex). If message is successfully sent to the network, then the result is sent in the format: <b>Note:</b> Optionally (when +CSMS &lt;service&gt; value is 1 and network supports) &lt;scts&gt; is returned: <b>+CMGS:</b> &lt;mr&gt;[, &lt;scts&gt;]</p> <p><b>Where:</b> &lt;mr&gt; - message <b>Reference</b> number. &lt;scts&gt; - TP-Service Centre Time Stamp in Time String Format.</p> <p><b>Note:</b> if message sending fails for some reason, an error code reported. <b>Note:</b> to ensure that during the command execution, which may take several seconds, no other SIM interacting commands issued, care must taken.</p>
<p><b>(Text Mode)</b> AT+CMGS= &lt;da&gt; [,&lt;toda&gt;]</p>	<p><b>(Text Mode)</b> Execution command sends to the network a message.</p> <p><b>Parameters:</b></p>



## +CMGS - Send Message

<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 "+")

After command line is terminated with <CR>, the device responds sending a four character sequence prompt:

<CR><LF><greater\_than><space> (IRA 13, 10, 62, 32)

After this prompt text can be entered; the entered text should be formatted as follows:

- if current <dc> (see +CSMP) indicates that GSM03.38/23.038 default alphabet is used and current <fo> (see +CSMP) indicates that 3GPP TS 03.40/23.040 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM/WCDMA alphabet, according to 3GPP TS 27.005, Annex A; **backspace** can be used to delete last character and **carriage returns** can be used.
- if current <dc> (see +CSMP) indicates that 8-bit or UCS2 data coding scheme is used or current <fo> (see +CSMP) indicates that 3GPP TS 03.40/23.040 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the 'asterisk' will be entered as **2A** (IRA50 and IRA65) and this will be converted to an octet with integer value **0x2A**)

**Note:** the DCD signal shall be in ON state while text entered.

**Note:** the echoing of entered characters back from the TA is controlled by echo command E

To send the message issue **Ctrl-Z** char (**0x1A** hex).

To exit without sending the message issue **ESC** char (**0x1B** hex).

If message is successfully sent to the network, then the result is sent in the format:

Note : Optionally (when +CSMS <service> value is 1 and network supports) <scts> is returned:

+CMGS: <mr>[, <scts>]

**Where:**

<mr> - message **Reference** number.

<scts> - TP-Service Centre Time Stamp in Time String Format.



# AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

+CMGS - Send Message	
	<p><b>Note:</b> if message sending fails for some reason, an error code reported.</p> <p><b>Note:</b> care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.</p> <p><b>Note:</b> it is possible to save a concatenation of at most 16 SMs; the maximum number of chars depends on the &lt;dc&gt;: 2448 chars; 2144 chars if 8-bit is used; 1072 chars if UCS2 is used</p>
AT+CMGS=?	Test command returns the <b>OK</b> result code.
Note	To avoid malfunctions is suggested to wait for the +CMGS: <mr> or +CMS <b>ERROR:</b> <err> response before issuing further commands.
Example	<p><i>Set PDU mode</i></p> <p>AT+CMGF=0</p> <p>AT+CMGS=18</p> <p>&gt; 088128010099010259115507811020905512F90000A704F4F29C0E</p> <p>+CMGS: 124</p> <p>OK</p> <p><i>Set text mode</i></p> <p>AT+CMGF=1</p> <p>AT+CSMP=17,167,0,0</p> <p>AT+CMGS="01090255219",129</p> <p>&gt;TEST MESSAGE</p> <p>+CMGS:125</p> <p>OK</p>
Reference	3GPP TS 27.005



### 3.4.5.4.2 Send Message from Storage - +CMSS

<b>+CMSS - Send Message From Storage</b>	
<b>AT+CMSS=</b> <b>&lt;index&gt;[,&lt;da&gt;</b> <b>[,&lt;toda&gt;]]</b>	<p>Execution command sends to the network a message which is already stored in the <b>&lt;memw&gt;</b> storage (see +CPMS) at the location <b>&lt;index&gt;</b>.</p> <p><b>Parameters:</b></p> <p><b>&lt;index&gt;</b> - location value in the message storage <b>&lt;memw&gt;</b> of the message to send</p> <p><b>&lt;da&gt;</b> - destination address - string type represented in the currently selected character set (see +CSCS). if it is given it shall be used instead of the one stored with the message.</p> <p><b>&lt;toda&gt;</b> - type of destination address</p> <p>129 - number in national format</p> <p>145 - number in international format (contains the "+")</p> <p>If message is successfully sent to the network then the result is sent in the format:  <b>+CMSS: &lt;mr&gt;[, &lt;scts&gt;]</b>          (Note: Optionally (when +CSMS &lt;service&gt; value is 1 and network supports) &lt;scts&gt; is returned)</p> <p><b>where:</b></p> <p><b>&lt;mr&gt;</b> - message <b>Reference</b> number.</p> <p><b>&lt;scts&gt;</b> - TP-Service Centre Time Stamp in Time String Format.</p> <p>If message sending fails for some reason, an error code is reported:</p> <p><b>+CMS ERROR:&lt;err&gt;</b></p> <p><b>Note:</b> to store a message in the <b>&lt;memw&gt;</b> storage see command +CMGW.</p> <p><b>Note:</b> care must be taken to ensure that during the command execution, which may take several seconds, no other <b>SIM</b> interacting commands are issued.</p>
<b>AT+CMSS=?</b>	Test command returns the <b>OK</b> result code.
<b>Note</b>	To avoid malfunctions is suggested to wait for the <b>+CMSS: &lt;mr&gt;</b> or <b>+CMS ERROR: &lt;err&gt;</b> response before issuing further commands.
<b>Example</b>	AT+CMGF=1 OK AT+CMGW="0165872928" > test message...  +CMGW: 28 AT+CMSS=28 +CMSS: 136  OK
<b>Reference</b>	3GPP TS 27.005



### 3.4.5.4.3 Write Message to Memory - +CMGW

<b>+CMGW - Write Message To Memory</b>	
<b>(PDU Mode)</b> <b>AT+CMGW=</b> <b>&lt;length&gt;</b> <b>[,&lt;stat&gt;]</b>	<p><b>(PDU Mode)</b></p> <p>Execution command writes in the <b>&lt;memw&gt;</b> memory storage a new message.</p> <p><b>Parameter:</b></p> <p><b>&lt;length&gt;</b> - length in bytes of the PDU to be written.  7..164</p> <p><b>&lt;stat&gt;</b> - message status.  0 - new message  1 - read message  2 - stored message not yet sent (default)  3 - stored message already sent</p> <p>The device responds to the command with the prompt '&gt;' and waits for the specified number of bytes.</p> <p>To write the message issue <b>Ctrl-Z</b> char (<b>0x1A</b> hex).  To exit without writing the message issue <b>ESC</b> char (<b>0x1B</b> hex).</p> <p>If message is successfully written in the memory, then the result is sent in the format:</p> <p><b>+CMGW: &lt;index&gt;</b></p> <p><b>where:</b>  <b>&lt;index&gt;</b> - message location index in the memory <b>&lt;memw&gt;</b>.</p> <p>If message storing fails for some reason an "error" code reported.</p> <p><b>Note:</b> to ensure that during the command execution, no other SIM interacting commands issued care must be taken of.</p>
<b>(Text Mode)</b> <b>AT+CMGW[=&lt;da&gt;</b> <b>[,&lt;toda&gt;</b> <b>[,&lt;stat&gt;]]]</b>	<p><b>(Text Mode)</b></p> <p>Execution command writes in the <b>&lt;memw&gt;</b> memory storage a new message.</p> <p><b>Parameters:</b></p> <p><b>&lt;da&gt;</b> - destination address, string type represented in the currently selected character set (see +CSCS).</p> <p><b>&lt;toda&gt;</b> - type of destination address.  129 - number in national format  145 - number in international format (contains the "+")</p> <p><b>&lt;stat&gt;</b> - message status.  "REC UNREAD" - new received message unread  "REC READ" - received message read  "STO UNSENT" - message stored not yet sent (default)  "STO SENT" - message stored already sent</p>



## +CMGW - Write Message To Memory

After command line is terminated with <CR>, the device responds sending a four character sequence prompt:

<CR><LF><greater\_than><space> (IRA 13, 10, 62, 32)

After this prompt text can be entered; the entered text should be formatted as follows:

- if current <dc> (see +CSMP) indicates that GSM03.38/23.038 default alphabet is used and current <fo> (see +CSMP) indicates that 3GPP TS 03.40/23.040 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM/WCDMA alphabet, according to 3GPP TS 27.005, Annex A; **backspace** can be used to delete last character and **carriage returns** can be used.
- if current <dc> (see +CSMP) indicates that 8-bit or UCS2 data coding scheme is used or current <fo> (see +CSMP) indicates that 3GPP TS 03.40/23.040 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the 'asterisk' will be entered as 2A (IRA50 and IRA65) and this will be converted to an octet with integer value 0x2A)

**Note:** the DCD signal shall be in ON state while text entered.

**Note:** the echoing of entered characters back from the TA is controlled by echo command E

To write the message issue **Ctrl-Z** char (0x1A hex).

To exit without writing the message issue **ESC** char (0x1B hex).

If message is successfully written in the memory, then the result is sent in the format:

+CMGW: <index>

where:

<index> - message location index in the memory <memw>.

If message storing fails for some reason, an error code reported.

**Note:** care will taken to ensure that during the command execution, no other SIM interacting commands issued.

**Note:** it is possible to save a concatenation of at most 16 SMs; the maximum number of chars depends on the <dc>: 2448 chars; 2144 chars if 8-bit is used; 1072 chars if UCS2 is used

**Note:** in text mode, not only SUBMIT messages can be stored in SIM, but also



<b>+CMGW - Write Message To Memory</b>	
	<p>DELIVER messages.</p> <p>The type of saved message depends upon the current &lt;fo&gt; parameter (see +CSMP). For a DELIVER message, current &lt;vp&gt; parameter (see +CSMP) is used to set the message Service Centre Time Stamp &lt;scts&gt;, so it has to be an absolute time string, e.g. "09/01/12,11:15:00+04".</p> <p>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>
<b>AT+CMGW=?</b>	Test command returns the <b>OK</b> result code.
<b>Reference</b>	3GPP TS 27.005
<b>Example</b>	<pre> AT+CMGF=0          set PDU mode OK AT+CMGW=18 &gt; 088128010099010259115507811020905512F90000A704F4F29C0E  +CMGW: 29  OK  AT+CMGF=1          set text mode OK AT+CSMP=17,167,0,0 OK AT+CSCA="821029190903",145 OK AT+CMGW="0165872928" &gt; test message...  +CMGW: 28 </pre>
<b>Note</b>	To avoid malfunctions is suggested to wait for the <b>+CMGW: &lt;index&gt;</b> or <b>+CMS ERROR: &lt;err&gt;</b> response before issuing further commands.

#### 3.4.5.4.4 Delete Message - +CMGD

<b>+CMGD - Delete Message</b>	
<b>AT+CMGD=</b> <b>&lt;index&gt;</b> <b>[,&lt;delflag&gt;]</b>	<p>Execution command deletes from memory &lt;memr&gt; the message(s).</p> <p><b>Parameter:</b></p> <p>&lt;index&gt; - message index in the selected storage &lt;memr&gt;</p> <p>&lt;delflag&gt; - an integer indicating multiple message deletion request.</p> <p>0 (or omitted) - delete message specified in &lt;index&gt;</p> <p>1 - delete all read messages from &lt;memr&gt; storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched</p>



+CMGD - Delete Message	
	<p>2 - delete all read messages from &lt;memr&gt; storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched</p> <p>3 - delete all read messages from &lt;memr&gt; storage, sent and unsent mobile originated messages, leaving unread messages untouched</p> <p>4 - Delete all messages from &lt;memr&gt; storage.</p> <p><b>Note:</b> if &lt;delflag&gt; is present and not set to 0 then &lt;index&gt; is ignored and ME shall follow the rules for &lt;delflag&gt; shown above.</p>
AT+CMGD=?	<p>Test command shows the valid memory locations and optionally the supported values of &lt;delflag&gt;.</p> <p><b>+CMGD: (supported &lt;index&gt;s list)[,(supported &lt;delflag&gt;s list)]</b></p>
Example	<p>AT+CMGD=?</p> <p>+CMGD:</p> <p>(0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50),(0-4)</p> <p>OK</p> <p>AT+CMGD=11            <i>Delete message in 10th record</i></p> <p>OK</p> <p>AT+CMGD=1,4           <i>Delete all messages</i></p> <p>OK</p>
Reference	3GPP TS 27.005

#### 3.4.5.4.5 More Message to Send - +CMMS

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



<b>+CMMS – More Message to Send</b>	
<b>AT+CMMS=?</b>	Test command reports the supported value of <n> parameter.
<b>Reference</b>	3GPP TS 27.005

#### 3.4.5.4.6 Send SMS command - +CMGC

+CMGC - Send SMS command														
<b>(PDU Mode)</b> AT+CMGC= <length><CR> PDU is given<Ctrl- Z/ESC>	<b>(PDU Mode)</b> Execution command sends command message from a TE to the network (SMS-COMMAND).													
	<b>Parameter:</b> <length> - Length of the actual TP data unit in octets. (Excluding the SMSC address octets). <PDU> - Message header and contents in PDU mode format. See description in Table:													
	Reference	Description	Length											
	<SCA>	Service Center address: 1 BYTE: length (number of followed octets). Mandatory 1 BYTE: <tosca> - value between 128-255	1, 3-12 BYTES (When length is 1, length BYTE = 0)											
	<FO>	First Octet. <table><tr><td>Bit/s</td><td>Reference</td><td>Description</td></tr><tr><td>0-1</td><td>Message-Type-Indicator</td><td>Parameter describing the message type. 1 0 SMS-COMMAND (in the direction MS to SC)</td></tr><tr><td>5</td><td>TP-Status-Report-Request</td><td>Parameter indicating if a status report is requested by the MS 0 A status report is not requested 1 A status report is requested</td></tr><tr><td>6</td><td>TP-User-Data-Header-Indicator</td><td>Parameter indicating whether the beginning of the User Data field contains a Header in addition to the short message or contains only the short message 0 The TP-UD field contains only the short message 1 The beginning of the TP-UD field contains a Header in addition to the short message</td></tr></table>	Bit/s	Reference	Description	0-1	Message-Type-Indicator	Parameter describing the message type. 1 0 SMS-COMMAND (in the direction MS to SC)	5	TP-Status-Report-Request	Parameter indicating if a status report is requested by the MS 0 A status report is not requested 1 A status report is requested	6	TP-User-Data-Header-Indicator	Parameter indicating whether the beginning of the User Data field contains a Header in addition to the short message or contains only the short message 0 The TP-UD field contains only the short message 1 The beginning of the TP-UD field contains a Header in addition to the short message
Bit/s	Reference	Description												
0-1	Message-Type-Indicator	Parameter describing the message type. 1 0 SMS-COMMAND (in the direction MS to SC)												
5	TP-Status-Report-Request	Parameter indicating if a status report is requested by the MS 0 A status report is not requested 1 A status report is requested												
6	TP-User-Data-Header-Indicator	Parameter indicating whether the beginning of the User Data field contains a Header in addition to the short message or contains only the short message 0 The TP-UD field contains only the short message 1 The beginning of the TP-UD field contains a Header in addition to the short message												



## 80407ST10116A Rev.14.1 - 2017-05-14

--

**Note:** if message sending fails for some reason, an error code reported.



	<p><b>Note:</b> care taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands issued.</p>
<p>(Text Mode)  <b>AT+CMGC=</b>  <b>&lt;fo&gt;,&lt;ct&gt;[,</b>  <b>&lt;pid&gt;[,&lt;mn&gt;[,</b>  <b>&lt;da&gt;[,&lt;toda&gt;]]]]&gt;&lt;C</b>  <b>R&gt;Text can be</b>  <b>entered&lt;ctrl-Z/ESC&gt;</b></p>	<p align="center"><b>(Text Mode)</b></p> <p>Execution command sends to the network a message.</p> <p><b>Parameters:</b>  <b>&lt;fo&gt;</b> - First octet of 3GPP TS 23.040 SMS-COMMAND in integer format.  <b>&lt;ct&gt;</b> - TP-Command-Type in integer format specified in 3GPP TS 23.040. Default value is 0.  <b>&lt;pid&gt;</b> - TP-Protocol-Identifier in integer format. Range 0-255. Default value is 0.  <b>&lt;mn&gt;</b> - TP-Message-Number in integer format.  <b>&lt;da&gt;</b> - TP-Destination-Address-Value field in string format represented in the currently selected character set (see +CSCS).  <b>&lt;toda&gt;</b> - 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 <b>&lt;CR&gt;</b>, the device responds sending a four character sequence prompt:</p> <p><b>&lt;CR&gt;&lt;LF&gt;&lt;greater_than&gt;&lt;space&gt; (IRA 13, 10, 62, 32)</b></p> <p><b>Note:</b> the <b>DCD</b> signal shall be in <b>ON</b> state while text entered.</p> <p><b>Note:</b> the echoing of entered characters back from the TA is controlled by echo command <b>E</b></p> <p>To send the message issue <b>Ctrl-Z</b> char (<b>0x1A</b> hex).  To exit without sending the message issue <b>ESC</b> char (<b>0x1B</b> hex).</p> <p>If message is successfully sent to the network, then the result is sent in the format:  <b>Note:</b> Optionally (when +CSMS &lt;service&gt; value is 1 and network supports) <b>&lt;scts&gt;</b> is returned:</p> <p><b>+CMGC: &lt;mr&gt;[, &lt;scts&gt;]</b></p> <p><b>Where:</b>  <b>&lt;mr&gt;</b> - TP-Message-Reference in integer format.  <b>&lt;scts&gt;</b> - TP-Service Centre Time Stamp in Time String Format.</p> <p><b>Note:</b> if message sending fails for some reason, an error code reported.</p> <p><b>Note:</b> care taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands issued.</p>



<b>AT+CMGC=?</b>	Test command returns the <b>OK</b> result code.
<b>Note</b>	To avoid malfunctions is suggested to wait for the <b>+CMGC: &lt;mr&gt;</b> or <b>+CMS ERROR: &lt;err&gt;</b> response before issuing further commands.
<b>Example</b>	<i>Set PDU mode</i> AT+CMGF=0 AT+CMGC=15 > 07917952140230f202440002340C917952446585600100  +CMGC: 124  OK  <i>Set text mode</i> AT+CMGF=1 AT+CSMP=17,167,0,0 AT+CMGS="01090255219",129 > Text Message is entered <CTRL-Z>  +CMGS:125  OK  at+cmgc=2,1,0,125 > Text Message is entered <CTRL-Z> OK
<b>Reference</b>	3GPP TS 27.005

## 3.4.6 3GPP2 SMS message Configuration

### 3.4.6.1 Configuration

#### 3.4.6.1.1 Set Text Mode Parameters - + CSMP

<b>+CSMP - Set Text Mode Parameters</b>	
<b>AT+CSMP=[&lt;callback_addr&gt;[,&lt;tele_id&gt;[,&lt;priority&gt;[,&lt;enc_type&gt;]]]]</b>	Set command is used to select values for additional parameters for storing and sending SMs when the text mode is used ( <b>AT+CMGF=1</b> ) <b>Parameters:</b> <pid> <callback_addr> - Callback address.



<b>+CSMP - Set Text Mode Parameters</b>	
	<p>Note: The maximum length is different with every carrier.  In case of Sprint and Aeris.Net: Maximum length is 32 characters  In case of Verizon: Maximum length is 20 characters  Note: Initially, this parameter is null. Some carrier networks discard SMS's without a callback number. Therefore, we recommend that customer setup callback number using AT+CSMP command.  Note : The <b>&lt;callback_addr&gt;</b> isn't used and saved for only Aeris.Net</p> <p><b>&lt;tele_id&gt;</b> - Teleservice ID  4097 - page  4098 - SMS message (factory default)</p> <p><b>&lt;priority&gt;</b> - Priority  Note: The priority is different with every carrier.  In case of Sprint and Aeris.Net:  0 - Normal (factory default)  1 - Interactive  2 - Urgent  3 - Emergency  In case of Verizon:  0 - Normal (factory default)  1 - High</p> <p><b>&lt;enc_type&gt;</b> - data coding scheme:  0 - 8-bit Octet (factory default for only Aeris.Net)  2 - 7-bit ASCII (factory default)  4 - 16-bit Unicode (Sprint does not support)</p> <p><b>Note:</b> the current settings are stored through <b>+CSAS</b></p>
<b>AT+CSMP?</b>	Read command reports the current setting in the format: <b>+CSMP: &lt;callback_addr&gt;,&lt;tele_id&gt;,&lt;priority&gt;,&lt;enc_type&gt;</b>
<b>AT+CSMP=?</b>	Test command returns the <b>OK</b> result code.
<b>Example</b>	AT+CSMP=? OK AT+CSMP? +CSMP: ,4098,0,0 OK AT+CSMP="1234567890",4097,1,2 OK AT+CSMP? +CSMP: "1234567890",4097,1,2 OK

### 3.4.6.1.2 *Save Settings- +CSAS*



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

### 3.4.6.1.3 *Restor Settings- +CRES*

<b>+CRES - Restore Settings</b>	
<b>AT+CRES[= [&lt;profile&gt;]</b>	Execution command restores message service settings saved by +CSAS command from NVM. <b>Parameter:</b> <b>&lt;profile&gt;</b> 0,1 - it restores message service settings from NVM.
<b>AT+CRES=?</b>	Test command returns the possible range of values for the parameter <b>&lt;profile&gt;</b> .
<b>Example</b>	AT+CRES=? +CRES: (0,1) OK AT+CRES=0 OK AT+CRES=1 OK

### 3.4.6.1.4 *New Message Indications to Terminal Equipment - +CNMI*



+CNMI - New Message Indications To Terminal Equipment	
<b>AT+CNMI=</b> <b>[&lt;mode&gt;</b> <b>[,&lt;mt&gt;[,&lt;bm&gt;</b> <b>[,&lt;ds&gt;</b> <b>[,&lt;bfr&gt;]]]]]</b>	<p>Set command selects the behaviour of the device on how the receiving of new messages from the network indicated to the <b>DTE</b>.</p> <p><b>Parameter:</b></p> <p><b>&lt;mode&gt;</b> - unsolicited result codes buffering option</p> <ul style="list-style-type: none"> <li>0 - Buffer unsolicited result codes in the <b>TA</b>. If <b>TA</b> result code buffer is full, indications may be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications.</li> <li>1 - Discard indication and reject new received message unsolicited result codes when <b>TA-TE</b> link is reserved, otherwise forward them directly to the <b>TE</b>.</li> <li>2 - Buffer unsolicited result codes in the <b>TA</b> in case the <b>DTE</b> is busy and flush them to the <b>TE</b> after reservation. Otherwise, forward them directly to the <b>TE</b>.</li> <li>3 - if <b>&lt;mt&gt;</b> 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.</li> </ul> <p><b>Note:</b> In <b>&lt;mode&gt;</b> field, "3" not supported.</p> <p><b>&lt;mt&gt;</b> - result code indication reporting for SMS-DELIVER</p> <ul style="list-style-type: none"> <li>0 - No SMS-DELIVER indications are routed to the <b>TE</b> and message is stored.</li> <li>1 - If SMS-DELIVER is stored into <b>ME/TA</b>, indication of the memory location is routed to the <b>TE</b> using the following unsolicited result code: <ul style="list-style-type: none"> <li><b>+CMTI: &lt;memr&gt;,&lt;index&gt;</b> <ul style="list-style-type: none"> <li><b>&lt;memr&gt;</b> - memory storage where the new message is stored: "SM" , "ME"</li> <li><b>&lt;index&gt;</b> - location on the memory where SMS is stored.</li> </ul> </li> </ul> </li> <li>2 - If SMS-DELIVER is stored into <b>ME/TA</b>, indication is routed to the <b>TE</b> using the following unsolicited result code: <p><b>(PDU Mode)</b></p> <p><b>+CMT: &lt;alpha&gt;,&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt;</b></p> <p><b>where:</b></p> <ul style="list-style-type: none"> <li><b>&lt;alpha&gt;</b> - alphanumeric representation of originator/destination number corresponding to the entry found in <b>MT</b> phonebook. Used character set should be the one selected with command <b>+CSCS</b>.</li> <li><b>&lt;length&gt;</b> - PDU length</li> <li><b>&lt;pdu&gt;</b> - PDU message</li> </ul> <p><b>(TEXT Mode)</b></p> <p><b>+CMT:&lt;orig_num&gt;,&lt;callback&gt;,&lt;date&gt;[,&lt;tooa&gt;,&lt;tele_id&gt;,&lt;priority&gt;,&lt;enc_type&gt;,&lt;length&gt;]&lt;CR&gt;&lt;LF&gt;&lt;data&gt;</b></p> <p>(the information written in italics will be present</p> </li> </ul>



+CNMI - New Message Indications To Terminal Equipment	
	<p>depending on +CSDH last setting)</p> <p><b>where:</b></p> <p>&lt;orig_num&gt; - originating address, string type converted in the currently selected character set (see +CSCS)</p> <p>&lt;callback&gt;- Callback number.</p> <p>&lt;date&gt; - Received date in form as "YYYYMMDDHHMMSS".</p> <p>&lt;toa&gt; - Type of &lt;orig_num&gt;.</p> <p>&lt;tele_id&gt; - Teleservice ID.</p> <p>4097 - page</p> <p>4098 - SMS message</p> <p>4099 - voice mail notification</p> <p>262144 - voice mail notification</p> <p>&lt;priority&gt; - Priority.</p> <p>Note: The priority is different with every carrier.</p> <p>0 - Normal (factory default)</p> <p>1 - Interactive</p> <p>2 - Urgent</p> <p>3 - Emergency</p> <p>In case of Verizon:</p> <p>0 - Normal (factory default)</p> <p>1 - High</p> <p>&lt;enc_type&gt; - Encoding type of message.</p> <p>0 - 8-bit Octet</p> <p>2 - 7-bit ASCII</p> <p>4 - 16-bit Unicode</p> <p>&lt;length&gt; - Length of message.</p> <p>&lt;data&gt; - Message data. (Indicates the new voice mail count, if &lt;tele_id&gt; is voice mail notification).</p> <p>Note: Regardless of &lt;mt&gt;, a message is saved in SMS memory storage.</p> <p>&lt;bm&gt; - broadcast reporting option</p> <p>0 - Cell Broadcast Messages are not sent to the <b>DTE</b></p> <p>2 - New Cell Broadcast Messages are sent to the <b>DTE</b> with the unsolicited result code:</p> <p><b>(PDU Mode)</b></p> <p>+CBM: &lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;PDU&gt;</p> <p><b>where:</b></p> <p>&lt;length&gt; - PDU length</p> <p>&lt;PDU&gt; - message PDU</p> <p><b>(TEXT Mode)</b></p> <p>+CBM:&lt;sn&gt;,&lt;mid&gt;,&lt;dcs&gt;,&lt;pag&gt;,&lt;pags&gt;&lt;CR&gt;&lt;LF&gt;&lt;data&gt;</p> <p><b>where:</b></p> <p>&lt;sn&gt; - message serial number</p> <p>&lt;mid&gt; - message ID</p> <p>&lt;dcs&gt; - Data Coding Scheme</p>



+CNMI - New Message Indications To Terminal Equipment	
	<p> <b>&lt;pag&gt;</b> - page number  <b>&lt;pags&gt;</b> - total number of pages of the message  <b>&lt;data&gt;</b> - CBM Content of Message         </p> <ul style="list-style-type: none"> <li>If <b>&lt;des&gt;</b> indicates that GSM03.38/23.038 default alphabet is used , each character of GSM/WCDMA alphabet will be converted into current TE character set (see +CSCS)</li> <li>If <b>&lt;des&gt;</b> 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)</li> </ul> <p> <b>&lt;ds&gt;</b> - SMS-DELIVERY-ACK reporting option.            result code indication reporting for SMS-DELIVER_ACK            0 - No SMS-DELIVER-ACK indications are routed to the TE and message is stored.            1 - SMS-DELIVERY-ACK is stored into ME/TA, indication of the memory location is routed to the TE using the following unsolicited result code:                <b>+CDSI: &lt;memr&gt;,&lt;index&gt;</b>                    <b>&lt;memr&gt;</b> - memory storage where the new message is stored: "SM", "ME"                    <b>&lt;index&gt;</b> - location on the memory where SMS is stored.         </p> <p>           2 - SMS-DELIVERY-ACK are routed directly to the TE using the following unsolicited result code:  <b>(PDU Mode)</b>  <b>+CDS: &lt;alpha&gt;,&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt;</b>  <b>where:</b>                <b>&lt;alpha&gt;</b> - 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.                <b>&lt;length&gt;</b> - PDU length                <b>&lt;pdu&gt;</b> - PDU message         </p> <p> <b>(TEXT Mode)</b>  <b>+CDS:&lt;orig_num&gt;,&lt;callback&gt;,&lt;date&gt;[,&lt;tooa&gt;,&lt;tele_id&gt;,&lt;priority&gt;,&lt;enc_type&gt;,&lt;length&gt;]&lt;CR&gt;&lt;LF&gt;&lt;data&gt;</b>            (the information written in italics will be present depending on +CSDH last setting)  <b>where:</b>                <b>&lt;orig_num&gt;</b> - originating address, string type converted in the currently selected character set (see +CSCS)                <b>&lt;callback&gt;</b>- Callback number.                <b>&lt;date&gt;</b> - Received date in form as "YYYYMMDDHHMMSS".                <b>&lt;tooa&gt;</b> - Type of &lt;orig_num&gt;.                <b>&lt;tele_id&gt;</b> - Teleservice ID.                    4097 - page                    4098 - SMS message         </p>



<b>+CNMI - New Message Indications To Terminal Equipment</b>	
	<p>4099 - voice mail notification  262144 - voice mail notification</p> <p><b>&lt;priority&gt;</b> - Priority.  Note: The priority is different with every carrier.  0 - Normal (factory default)  1 - Interactive  2 - Urgent  3 - Emergency  In case of Verizon:  0 - Normal (factory default)  1 - High</p> <p><b>&lt;enc_type&gt;</b> - Encoding type of message.  0 - 8-bit Octet  2 - 7-bit ASCII  4 - 16-bit Unicode</p> <p><b>&lt;length&gt;</b> - Length of message.  <b>&lt;data&gt;</b> - Message data.</p> <p>Note: Regardless of &lt;ds&gt;, a message is saved in SMS memory storage.</p> <p><b>&lt;bfr&gt;</b> - buffered result codes handling method:  0 - <b>TA</b> buffer of unsolicited result codes defined within this command is flushed to the <b>TE</b> when <b>&lt;mode&gt;=1..3</b> is entered (<b>OK</b> response shall be given before flushing the codes)  1 - <b>TA</b> buffer of unsolicited result codes defined within this command is cleared when <b>&lt;mode&gt;=1..3</b> is entered.</p>
<b>AT+CNMI?</b>	Read command returns the current parameter settings for <b>+CNMI</b> command in the form:  <b>+CNMI: &lt;mode&gt;,&lt;mt&gt;,&lt;bm&gt;,&lt;ds&gt;,&lt;bfr&gt;</b>
<b>AT+CNMI=?</b>	Test command reports the supported range of values for the <b>+CNMI</b> command parameters.
<b>Reference</b>	3GPP TS 27.005
<b>Example</b>	<pre>at+cnmi=1,1 OK +CMTI: "SM",3  at+cnmi=1,2 OK +CMT: "9193573366","", "20140907091234",129,4098,0,2,7 Test SMS</pre>



### 3.4.6.1.5 Preferred Message Storage- +CPMS

<b>+CPMS - Preferred Message Storage</b>	
<b>AT+CPMS= &lt;memr&gt;[,&lt;memw&gt;]</b>	<p>Set command selects memory storages &lt;memr&gt;, &lt;memw&gt; to be used for reading, writing, sending and storing SMS.</p> <p><b>Parameters:</b></p> <p>&lt;memr&gt; - memory from which messages are read and deleted  “ME” – SMS memory storage in Flash  “SM” – RUIM SMS memory storage (default)</p> <p>&lt;memw&gt; - memory to which writing and sending operations are made  “ME” – SMS memory storage in Flash  “SM” – RUIM SMS memory storage (default)</p> <p>The command returns the memory storage status in the format:</p> <p><b>+CPMS: &lt;usedr&gt;,&lt;totalr&gt;,&lt;usedw&gt;,&lt;totalw&gt;</b></p> <p><b>where:</b></p> <p>&lt;usedr&gt; - number of SMS stored into &lt;memr&gt;  &lt;totalr&gt; - max number of SMS that &lt;memr&gt; can contain  &lt;usedw&gt; - number of SMS stored into &lt;memw&gt;  &lt;totalw&gt; max number of SMS that &lt;memw&gt; can contain</p>
<b>AT+CPMS?</b>	<p>Read command reports the message storage status in the format:</p> <p><b>+CPMS: &lt;memr&gt;,&lt;usedr&gt;,&lt;totalr&gt;,&lt;memw&gt;,&lt;usedw&gt;,&lt;totalw&gt;</b></p> <p><b>Where:</b> &lt;memr&gt;, &lt;memw&gt; are the selected storage memories for reading, writing and storing respectively.</p>
<b>AT+CPMS=?</b>	Test command reports the supported values for parameters <memr>, <memw>.
<b>Example</b>	<p>In case supporting RUIM,</p> <p>AT+CPMS=?  +CPMS: ("ME","SM"),("ME","SM")  OK</p> <p>AT+CPMS?  +CPMS: "SM",2,10,"ME",15,99  OK</p>



<b>+CPMS - Preferred Message Storage</b>	
	AT+CPMS="SM","SM" +CPMS: 2,10,2,10 OK AT+CPMS? +CPMS: "SM",2,10,"SM",2,10 OK +CPMS: "SM",1,20,"ME",27, 99 OK

### 3.4.6.1.6 *Delivery Acknowledgment Message request- +CDAK*

<b>+CDAK - Delivery Acknowledgment Message request</b>	
AT+CDAK=<dak_req>	Set command indicates whether Delivery Acknowledgment Message is requested or not requested. <b>Parameters:</b> <dak_req> - 0 - SMS Delivery Acknowledgment Message is not requested. (default). 1 - SMS Delivery Acknowledgment Message is requested.
AT+CDAK?	Read command reports current selected <dak_req> value: +CDAK: <dak_req>
AT+CDAK=?	Test command reports the supported values for parameters <dak_req>.

### 3.4.6.1.7 *List Messages - +CMGL*

<b>+CMGL - List Messages</b>	
AT+CMGL=[<stat>]	<p>Execution command reports the list of all the messages with status value &lt;stat&gt; stored into &lt;memr&gt; message storage (&lt;memr&gt; 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)  (PDU Mode)</p> <p><b>Parameter:</b>  &lt;stat&gt;  0 - new message  1 - read message</p>



+CMGL - List Messages	
	<p>2 - stored message not yet sent 3 - stored message already sent 4 - all messages.</p> <p>Each message to be listed is represented in the format: +CMGL: &lt;index&gt;,&lt;stat&gt;,"",&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt; Case of received message from base station : &lt;PDU&gt;: &lt;orig_num&gt;&lt;date&gt;&lt;tele_id&gt;&lt;priority&gt;&lt;enc_type&gt;&lt;length&gt;&lt;data&gt; Case of sending message to base station: &lt;PDU&gt;: &lt;da&gt;&lt;callback&gt;&lt;tele_id&gt;&lt;priority&gt;&lt;enc_type&gt;&lt;length&gt;&lt;data&gt; where: &lt;index&gt; - message position in the memory storage list. &lt;stat&gt; - status of the message &lt;length&gt; - length of the PDU in bytes &lt;pdu&gt; - message in PDU format</p> <p style="text-align: center;"><b>(Text Mode)</b></p> <p><b>Parameter:</b> &lt;stat&gt; "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>Each message to be listed is represented in the format (the information written in <i>italics</i> will be present depending on +CSDH last setting): If there is at least a Received message to be listed the representation format is: <b>+CMGL:</b> &lt;index&gt;,&lt;stat&gt;,&lt;orig_num&gt;,&lt;callback&gt;,&lt;date&gt;[,&lt;tooa&gt;,&lt;tele_id&gt;,&lt;priority&gt;,&lt;enc_type&gt;,&lt;length&gt;]&lt;CR&gt;&lt;LF&gt;&lt;data&gt; If there is at least a Sent or an Unsent message to be listed the representation format is: <b>+CMGL:</b> &lt;index&gt;,&lt;stat&gt;,&lt;da&gt;,&lt;callback&gt;[,&lt;toda&gt;,&lt;tele_id&gt;,&lt;priority&gt;,&lt;enc_type&gt;,&lt;length&gt;]&lt;CR&gt;&lt;LF&gt;&lt;data&gt; Where &lt;orig_num&gt; - Origination number. &lt;da&gt; - Destination number. &lt;callback&gt; - Callback number. &lt;date&gt; - Received date in form as "YYYYMMDDHHMMSS". &lt;tooa&gt; - Type of &lt;orig_num&gt;. &lt;toda&gt; - Type of &lt;da&gt;. &lt;tele_id&gt; - Teleservice ID. 4097 - page 4098 - SMS message 4099 - voice mail notification</p>





+CMGL - List Messages	
	<pre> 07 &lt;addr_len: 7byte&gt; 80 &lt;type_addr: 128&gt; 1096224658F1 &lt;Callback_Number: 01692264851&gt; 1002 &lt;Teleservice_id: 4098(decimal)&gt; 00 &lt;priority: normal &gt; 00 &lt;encoding_type: 8-bit Octet &gt; 0A &lt;data_len: 10&gt; 61616161616161616161 &lt;data: aaaaaaaaa&gt; &lt;PDU Mode&gt; AT+CMGF=0 OK AT+CMGF? +CMGF: 0 OK AT+CMGL=? (0-4) OK AT+CMGL=4 +CMGL: 0,2,"",12 06801041394306001002000006313233343536 +CMGL: 1,2,"",15 06801041394306001002000009313233343536363737 +CMGL: 2,2,"",18 0680104139430600100200000C313132323334343434343434 +CMGL: 3,2,"",21 0680104139430600100200000F6166666173646565656565656565 OK &lt;Text Mode&gt; AT+CMGF=1 OK AT+CMGF? +CMGF: 1 OK AT+CMGL=? ("REC UNREAD","REC READ","STO UNSENT","STO SENT","ALL") OK at+cmgl="ALL" +CMGL: 0,"STO UNSENT","My Number","", 123456 +CMGL: 1,"STO UNSENT","My Number","", 123456677 +CMGL: 2,"STO UNSENT","My Number","", 112234444444 +CMGL: 3,"STO UNSENT","My Number","", affasdeeeeeeee OK </pre>



+CMGL - List Messages	
Reference	

### 3.4.6.1.8 Read Message - +CMGR

+CMGR - Read Message	
AT+CMGR=<index>	<p>Execution command reports the message with location value &lt;index&gt; from &lt;memr&gt; message storage (&lt;memr&gt; is the message storage for read and delete SMs as last settings of command +CPMS).</p> <p><b>Parameter:</b>            &lt;index&gt; - message index.            The output depends on the last settings of command +CMGF (message format to be used)</p> <p style="text-align: center;"><b>(PDU Mode)</b></p> <p>If there is at least one message to be listed the representation format is:  <b>+CMGR:&lt;stat&gt;,"",&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;PDU&gt;</b>            Case of received message from base station :  <b>&lt;PDU&gt;:</b>  <b>&lt;orig_num&gt;,&lt;date&gt;&lt;tele_id&gt;&lt;priority&gt;&lt;enc_type&gt;&lt;length&gt;&lt;data&gt;</b>            Case of sending message to base station:  <b>&lt;PDU&gt;:</b>  <b>&lt;da&gt;&lt;callback&gt;&lt;tele_id&gt;&lt;priority&gt;&lt;enc_type&gt;&lt;length&gt;&lt;data&gt;</b>            where  <b>&lt;stat&gt;</b> - status of the message            0 - new message            1 - read message            2 - stored message not yet sent            3 - stored message already sent  <b>&lt;length&gt;</b> - length of the PDU in bytes.  <b>&lt;pdu&gt;</b> - message in PDU format</p> <p style="text-align: center;"><b>(Text Mode)</b></p> <p>Output format for received messages (the information written in <i>italics</i> will be present depending on +CSDH last setting):            Output format for message delivery confirm:  <b>+CMGR:</b>  <b>&lt;stat&gt;,&lt;orig_num&gt;,&lt;callback&gt;,&lt;date&gt;[,&lt;tooa&gt;,&lt;tele_id&gt;,&lt;priority&gt;,&lt;enc_type&gt;,&lt;length&gt;]&lt;CR&gt;&lt;LF&gt;&lt;data&gt;</b>            If there is either a Sent or an Unsent message in location &lt;index&gt; the output format is:  <b>+CMGR:</b>  <b>&lt;stat&gt;,&lt;da&gt;,&lt;callback&gt;[,&lt;toda&gt;,&lt;tele_id&gt;,&lt;priority&gt;,&lt;enc_type&gt;,&lt;length&gt;]&lt;CR&gt;&lt;LF&gt;&lt;data&gt;</b>            where:  <b>&lt;stat&gt;</b> - status of the message</p>



+CMGR - Read Message	
	<p>"REC UNREAD" - new received message unread  "REC READ" - received message read  "STO UNSENT" - message stored not yet sent  "STO SENT" - message stored already sent  &lt;orig_num&gt; - Origination number.  &lt;callback&gt; - Callback number.  &lt;date&gt; - Received date in form as "YYYYMMDDHHMMSS".  &lt;tooa&gt; - Type of &lt;orig_num&gt;.  &lt;toda&gt; - Type of &lt;da&gt;.  &lt;tele_id&gt; - Teleservice ID.  4097 - page  4098 - SMS message  4099 - voice mail notification  4100 - WAP teleservice id  262144 - voice mail notification  &lt;priority&gt; - Priority.  Note: The priority is different with every carrier.  0 - Normal (factory default)  1 - High  &lt;enc_type&gt; - Encoding type of message.  0 - 8-bit Octet  2 - 7-bit ASCII  4 - 16-bit Unicode  9 - 7-bit GSM  &lt;length&gt; - Length of message.  &lt;data&gt; - Message data. (Indicates the new voice mail count, if &lt;tele_id&gt; is voice mail notification)</p>
AT+CMGR=?	Test command returns the <b>OK</b> result code
Example	<p>&lt;PDU Mode&gt;  Case of received message from base station:  AT+CMGR=29  +CMGR: 1,"",52  07802811495346350808040947271002020221C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C20  OK  07 &lt;addr_len: 7byte&gt;  80 &lt;type_addr: 128&gt;  281149534635 &lt;Origination number: 821194356453&gt;  080804094727 &lt;Date: 08/08/04,09:47:27&gt;  1002 &lt;Teleservice_id: 4098(decimal)&gt;  02 &lt;priority: urgent &gt;  02 &lt;encoding_type: ascii &gt;  21 &lt;data_len: 33&gt;  C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C3870E1C20</p>



<b>+CMGR - Read Message</b>	
	<pre> &lt;user_data: aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa&gt; Else: at+cmgr=31 +CMGR: 2,"",23 07801091346554F307801091346554F3100200000A616161616161616161 OK 07 &lt;addr_len: 7byte&gt; 80 &lt;type_addr: 128&gt; 1091346554F3 &lt;Origination number: 01193645534 &gt; 07 &lt;addr_len: 7byte&gt; 80 &lt;type_addr: 128&gt; 1091346554F3 &lt; Callback number: 01193645534 &gt; 1002 &lt;Teleservice_id: 4098(decimal)&gt; 00 &lt;priority: Normal &gt; 00 &lt;encoding_type: 8-bit Octet &gt; 0A &lt;data_len: 10&gt; 61616161616161616161 &lt;usr data: aaaaaaaaa&gt; &lt;Text Mode&gt; AT+CSDH=1 OK AT+CMGR=1 +CMGR: "REC READ","", "01191775982",20071217190804,,4098,,16,12 TEST MESSAGE OK AT+CMGR=2 +CMGR: "REC READ","",01191775982",20071221160610,,4098,,16,9 TEST MESSAGE2 OK AT+CMGR=3 +CMGR: "STO SENT","01191775982","01096529157",,4098,,16,9 TEST MESSAGE2 OK </pre>

### 3.4.6.1.9 Send Message - +CMGS

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



[illegible]

<b>+CMGS - Send Message</b>	
	1002 <Teleservice_id: 4098(decimal)> 02 <priority: ungent > 02 <encoding_type: 7-bit ASCII > 12 <data_len: 18> C3870E1C3870E1C387162C58B162C58B1620 <user_data: aaaaaaaaaabbbbbbbbbb>
<b>(Text Mode)</b> <b>AT+CMGS=</b> <b>&lt;da&gt;</b> <b>[,&lt;toda&gt;]</b>	<b>(Text Mode)</b> Execution command sends to the network a message. Parameters: <da> - destination address, string type represented in the currently selected character set (see +CSCS); ASCII characters in the set (0 9), #, *, (A D); Note: The maximum length is different with every carrier. In case of Sprint and Aeris.Net: Maximum length is 32 characters In case of Verizon: Maximum length is 20 characters. <toda> - type of destination address 129 - number in national format 145 - number in international format (contains the "+") To send the message issue <b>Ctrl-Z</b> char ( <b>0x1A</b> hex). To exit without sending the message issue <b>ESC</b> char ( <b>0x1B</b> hex). If message is successfully sent to the network, then the result is sent in the format: <b>+CMGS: &lt;mr&gt;</b> where <mr> - message reference number. Note: if message sending fails for some reason, an error code is reported. Note: To discard SMS, press the "ESC" key, an "OK" response will be returned.
<b>AT+CMGS=?</b>	Test command returns the <b>OK</b> result code.
<b>Note</b>	To avoid malfunctions is suggested to wait for the <b>+CMGS: &lt;mr&gt;</b> or <b>+CMS ERROR: &lt;err&gt;</b> response before issuing further commands.
<b>Example TEXT mode</b>	AT+CMGF=1 OK AT+CMGS="9194547830" > Test SMS +CMGS: 1 OK

#### 3.4.6.1.10 Write Message to Memory - +CMGW

<b>+CMGW - Write Message To Memory</b>	
<b>(PDU Mode)</b> <b>AT+CMGW=</b> <b>&lt;length&gt;</b>	<b>(PDU Mode)</b> Execution command writes in the <memw> memory storage a new message.







<b>+CMGW - Write Message To Memory</b>	
	+CMGW: 2 OK AT+CMGW="9194397977",129 > Test SMS +CMGW: 3 OK
<b>Note</b>	To avoid malfunctions is suggested to wait for the <b>+CMGW: &lt;index&gt;</b> or <b>+CMS ERROR: &lt;err&gt;</b> response before issuing further commands.

### 3.4.6.1.11 *Set Payload Length - #SMSPSIZ*

<b>#SMSPSIZ – Set Payload Length</b>	
<b>AT#SMSPSIZ =&lt;length&gt;</b>	This command set max payload length of SMS. Parameter: <length> - Max payload bytes length of SMS. 0-220 (default is 160)
<b>AT#SMSPSIZ?</b>	AT#SMSPSIZ? Read command reports the current value of the parameter <length>.
<b>AT#SMSPSIZ=?</b>	AT#SMSPSIZ=? Test command reports the supported value of <length> parameter.
<b>Example</b>	AT#SMSPSIZ=? #SMSPSIZ: (0-220) OK AT#SMSPSIZ? #SMSPSIZ: 160 OK AT#SMSPSIZ=100 OK AT#SMSPSIZ? #SMSPSIZ: 100



## 3.4.7 Custom AT Commands

### 3.4.7.1 Configuration AT Commands

#### 3.4.7.1.1 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.

#### 3.4.7.1.2 Manufacturer Identification - #CGMI

#CGMI - Manufacturer Identification	
AT#CGMI	Execution command returns the “device manufacturer identification code” with command echo.
AT#CGMI=?	Test command returns the <b>OK</b> result code.
Example	AT#CGMI #CGMI: Telit  OK

#### 3.4.7.1.3 Model Identification - #CGMM

#CGMM - Model Identification	
AT#CGMM	Execution command returns the “device model identification” code with command echo.
AT#CGMM=?	Test command returns the <b>OK</b> result code.
Example	AT#CGMM #CGMM:LE920  OK

#### 3.4.7.1.4 Revision Identification - #CGMR

#CGMR - Revision Identification	
AT#CGMR	Execution command returns “device software revision number” with command echo.



#CGMR - Revision Identification	
AT#CGMR=?	Test command returns the <b>OK</b> result code.
Example	AT#CGMR #CGMR: 08.01.005  OK

### 3.4.7.1.5 Product Serial Number Identification - #CGSN

#CGSN - Product Serial Number Identification	
AT#CGSN	Execution command returns the product serial number, identified as the IMEI of the mobile, with command echo.
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><b>Parameter:</b></p> <p>&lt;snt&gt; - indicating the serial number type that has been requested.</p> <ul style="list-style-type: none"> <li>0 returns &lt;sn&gt;</li> <li>1 returns the IMEI (International Mobile station Equipment Identity)</li> <li>2 returns the IMEISV (International Mobile station Equipment Identity and Software Version number)</li> <li>3 returns the SVN (Software Version Number)</li> </ul> <p><b>where:</b></p> <p>&lt;sn&gt; - Indicate the product “serial number”, identified as the IMEI of the mobile, with command echo.</p> <p>&lt;imei&gt; - 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 &lt;imei&gt; is as specified by command Select TE Character Set +CSCS.</p> <p>&lt;imeisv&gt; - 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 &lt;imeisv&gt; is as specified by command Select TE Character Set +CSCS.</p> <p>&lt;svn&gt; - string type in decimal format indicating the current SVN which is a part of IMEISV. Character set used in &lt;svn&gt; is as specified by command Select TE Character Set +CSCS.</p>
AT#CGSN=?	Test command returns the <b>OK</b> result code.
Example	AT#CGSN #CGSN: 358677008900540  OK



### 3.4.7.1.6 *Select GSM Hexadecimal Representation - #CSCSEXT*

#CSCSEXT - Select GSM Hexadecimal Characters Representation	
<b>AT#CSCSEXT=&lt;mode&gt;</b>	<p>Set commands enable/disable the hexadecimal characters representation while character set, one selected with +CSCS, is GSM. (For example, 4142 equals two 7-bit characters with decimal values 65,66).</p> <p><b>Parameter:</b>            &lt;mode&gt; -            0 – Disable HEX representation (Factory default).            1 – Enable HEX representation.</p>
<b>AT#CSCSEXT?</b>	Read command returns the current value of the <mode> parameter.
<b>AT#CSCSEXT=?</b>	Test command returns the supported values for parameter <mode>.
<b>Example</b>	<pre> AT+CSCS=? +CSCS: ("GSM","IRA","8859-1","PCCP437","UCS2")  OK  AT+CSCS="GSM" OK  AT#CSCSEXT? #CSCSEXT: 0 OK  AT+CPBW=1,"8475763000",129,"Lin Zhao" OK  at+cpbr=1 +CPBR: 1,"8475763000",129,"Lin Zhao","","",0,"",""  OK at+cmgw=8475763000 &gt; test #CSCSEXT +CMGW: 8  OK at+cmgr=8 +CMGR: "STO UNSENT","8475763000","Lin Zhao" test #CSCSEXT           </pre>



#CSCSEXT - Select GSM Hexadecimal Characters Representation	
	<p>OK</p> <p>AT#CSCSEXT=1</p> <p>OK</p> <p>AT+CPBR=1</p> <p>+CPBR: 1,"8475763000",129,004C006E006E0020005A00680061006F</p> <p>OK</p> <p>at+cmgr=8</p> <p>+CMGR: "STO</p> <p>UNSENT","38343735373633303030","004C006E006E0020005A00680061006F"</p> <p>7465737420234353435345585420</p> <p>OK</p>

#### 3.4.7.1.7 *International Mobile Subscriber Identity (IMSI) - #CIMI*

#CIMI - International Mobile Subscriber Identity (IMSI)	
<b>AT#CIMI</b>	Execution command returns the international mobile subscriber identity, identified as the IMSI number, with command echo.
<b>AT#CIMI=?</b>	Test command returns the <b>OK</b> result code.
<b>Example</b>	<p>AT#CIMI</p> <p>#CIMI: 450050209516643</p> <p>OK</p>

#### 3.4.7.1.8 *Read ICCID (Integrated Circuit Card Identification) - #CCID*

#CCID - Read ICCID	
<b>AT#CCID</b>	Execution command reads on SIM the ICCID (card identification number that provides a unique identification number for the SIM)
<b>AT#CCID=?</b>	Test command returns the <b>OK</b> result code.
<b>Example</b>	<p>AT#CCID</p> <p>#CCID: 8982050702100167684F</p> <p>OK</p>



#### 3.4.7.1.9 *Serial and Software Version Number - #IMEISV*

<b>+IMEISV - Serial and Software Version Number</b>	
<b>AT#IMEISV</b>	Execution command returns the IMEISV (International Mobile station Equipment Identity and Software Version number).
<b>Example</b>	At#imeisv #IMEISV: 3540660590080701

#### 3.4.7.1.10 *Service Provider Name - #SPN*

<b>#SPN - Service Provider Name</b>	
<b>AT#SPN</b>	Execution command returns the service provider string contained in the SIM field <b>SPN</b> , in the format:  <b>#SPN: &lt;spn&gt;</b>  <b>where:</b> <b>&lt;spn&gt;</b> - service provider string contained in the SIM field <b>SPN</b> , represented in the currently selected character set (see +CSCS).  <b>Note:</b> if the SIM field <b>SPN</b> is empty, the command returns just the <b>OK</b> result code
<b>AT#SPN=?</b>	Test command returns the <b>OK</b> result code.

#### 3.4.7.1.11 *Change Audio Path - #CAP*



#CAP - Change Audio Path	
AT#CAP=[<n>]	<p>It has no effect and is included only for backward compatibility.</p> <p><b>Parameter:</b> &lt;n&gt; - audio path</p> <ol style="list-style-type: none"> <li>0. Not supported</li> <li>1. Handsfree MIC1 – SPKR1 SPKR2 (automatic DSP profile 1 Hands Free) (factory default)</li> <li>2. Headset – MIC2 – SPKR1 SPKR2 (automatic DSP profile 2 Headset)</li> </ol> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• The command work only for Analog mode(#DVI = 0)</li> <li>• The audio path are mutually exclusive, enabling one disables the other.</li> <li>• When changing the audio path, the volume level is set at the previously stored value for that audio path (see +CLVL).</li> </ul>
AT#CAP?	<p>Read command reports the active audio path in the format:</p> <p><b>#CAP: &lt;n&gt;.</b></p>
AT#CAP=?	Test command reports the supported values for the parameter <n>.

#### 3.4.7.1.12 *Handsfree Microphone Gain - #HFMICG*

#HFMICG - Handsfree Microphone Gain	
AT#HFMICG=[<level>]	<p>Set command sets the handsfree analogue microphone input gain.</p> <p><b>Parameter:</b> &lt;level&gt;: handsfree microphone input gain 0..7 - handsfree microphone gain (+7dB/step, factory default=4)</p> <p><i>Note: This parameter is saved in NVM issuing AT&amp;W command.</i></p>
AT#HFMICG?	<p>Read command returns the current handsfree microphone input gain, in the format:</p> <p><b>#HFMICG: &lt;level&gt;</b></p>
AT#HFMICG=?	Test command returns the supported range of values of parameter <level>.

#### 3.4.7.1.13 *Handset Microphone Gain - #HSMICG*

#HSMICG - Handset Microphone Gain	
AT#HSMICG=	It has no effect and is included only for backward compatibility.



#HSMICG - Handset Microphone Gain	
[<level>]	<p><b>Parameter:</b>            &lt;level&gt;: handset microphone input gain            0..7 - handset microphone gain (+6dB/step, factory default = 0)</p> <p><b>Note: Effected on analog mode only</b></p>
AT#HSMICG?	Read command returns the current handset microphone input gain, in the format: <b>#HSMICG: &lt;level&gt;</b>
AT#HSMICG=?	Test command returns the supported range of values of parameter <level>.

#### 3.4.7.1.14 Handsfree Receiver Gain - #HFRECG

#HFRECG - Handsfree Receiver Gain	
AT#HFRECG=<level>	<p>Set command sets the handsfree analogue output gain</p> <p><b>Parameter:</b>            &lt;level&gt;: 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&amp;W command.</i></p> <p><b>Note: Effected on analog mode only</b></p>
AT#HFRECG?	Read command returns the current handsfree analog output gain, in the format: <b>#HFRECG: &lt;level&gt;</b>
AT#HFRECG=?	Test command returns the supported range of values of parameter <level>.

#### 3.4.7.1.15 Handset Receiver Gain - #HSRECG

#HSRECG - Handset Receiver Gain	
AT#HSRECG=<level>	<p>It has no effect and is included only for backward compatibility.</p> <p><b>Parameter:</b>            &lt;level&gt;: handset analogue output gain            0..6 - handset analogue output (-3dB/step, default value = 0)</p> <p><i>Note: This parameter is saved in NVM issuing AT&amp;W command.</i></p>



<b>AT#HSRECG?</b>	Read command returns the current handset analog output gain, in the format: <b>#HSRECG: &lt;level&gt;</b>
<b>AT#HSRECG=?</b>	Test command returns the supported range of values of parameter <level>.

### 3.4.7.1.16 *Signalling Tones Mode - #STM*

<b>#STM - Signalling Tones Mode</b>	
<b>AT#STM=</b> <b>[&lt;mode&gt;]</b>	Set command enables/disables the signalling tones output on the audio path selected with <b>#SRP</b> command (LE9x0 supported by fix SRP only).  <b>Parameter:</b> <mode> - signalling tones status 0 - Signalling tones disabled. 1 - Signalling tones enabled. (factory default) 2 - All tones disabled.  <b>Note:</b> <b>AT#STM=0</b> has the same effect as <b>AT+CALM=2</b> . <b>AT#STM=1</b> has the same effect as <b>AT+CALM=0</b> .
<b>AT#STM?</b>	Read command reports whether the current signaling tones status is enabled or not, in the format:  <b>#STM: &lt;mode&gt;</b>
<b>AT#STM=?</b>	Test command reports supported range of values for parameter <mode>.

### 3.4.7.1.17 *Audio DSP Configuration - #ADSPC*

<b>#ADSPC - Audio DSP Configuration</b>	
<b>AT#ADSPC=&lt;n&gt;</b> <b>[,&lt;ecns mode&gt;]</b>	Set command switches the DSP profile audio path depending on parameter <n>  <b>Parameter:</b> <n> - DSP profile configuration 0. Automatic (factory default) 1. Hands Free 2. Headset 3. Handset 4. Speaker phone Bluetooth 5. TTY  < ecns mode > 0. Disables ECNS mode (default) 1. Enables ECNS.



#ADSPC - Audio DSP Configuration	
	<b>Note:</b> <ul style="list-style-type: none"> <li>On Automatic mode: Digital: handset Analog: according to #CAP</li> <li>This command influence on the #CAP/ #SRP.</li> <li>On Active/MT/MO Voice Call return Error.</li> <li>When #TTY command enabled, SET #ADSPC command return Error.</li> <li>The &lt;n&gt; = 5 "TTY" only configured DSP profile to "Full TTY" mode , to enable TTY mode and another TTY mode using by #TTY command.</li> </ul>
AT#ADSPC?	Read command reports the active DSP profile configuration in the format: For TTY profile: #ADSPC: <n> For Another DSP profile: #ADSPC: <n>, <ecns mode >.
AT#ADSPC=?	Test command reports the supported values for the parameter <n>.

### 3.4.7.1.18 Headset GPIO Select - #HSGS

#HSGS - Headset GPIO Select	
AT#HSGS=<n>	Set command select the Headset GPIO for headset detect  <b>Parameter:</b> <n>: GPIO number for headset detect, Valid range is “any input/output pin” (see “Hardware User’s Guide”). (factory default=1)  <b>Note:</b> <ul style="list-style-type: none"> <li>See on “Hardware User’s Guide” Headset detection HW instructions.</li> <li>This command Influence on #GPIO and vice versa.</li> <li>This parameter is saved in NVM issuing AT&amp;W command.</li> </ul>
AT#HSGS?	Read command returns the current status of headset detection in the format:  #HSGS:<n>,<status>  <b>where:</b> <n> - Selected the GPIO number. <status> - 0- Not connected (Logic ‘H’ voltage level) 1- Connected (Logic ‘L’ voltage level)
AT#HSGS=?	Test command returns the supported range of values of parameter <n>.



#HSGS - Headset GPIO Select	

#### 3.4.7.1.19 *DVI Speaker Volume Level - #PCMRXG*

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

#### 3.4.7.1.20 *Set delay before close the PCM Clock/SYNC - #PCMDELAY*

#PCMDELAY – Set delay before close the PCM Clock/SYNC	
AT#PCMDELAY=<delay>	Set command Set delay before close the PCM Clock/SYNC  Parameters: <delay> - time in seconds to wait before close the PCM Clock/SYNC. (default 0 sec)  Note : <ul style="list-style-type: none"> <li>• Delay after the voice call only.</li> <li>• This parameter is saved in NVM issuing AT&amp;W command.</li> </ul>
AT#PCMDELAY?	Read command returns the current <delay> parameters, in the format: <b># PCMDELAY:&lt; delay &gt;</b>
AT#PCMDELAY =?	Test command returns the range of supported values for all the sub parameters.

#### 3.4.7.1.21 *Extended Digital Voiceband Interface - #DVICLK*



#DVICLK - Digital Voiceband Interface Extension	
AT#DVICLK=<clock>[,<samplerate>]	<p>Set command configures and activates the DVICLK clock signal and the Digital Voiceband Interface</p> <p>Parameters:</p> <p><b>&lt;clock&gt;</b></p> <p>0 – Disable (factory default)            128 – DVI Clock activated at 128KHz            256 – DVI Clock activated at 256KHz            512 – DVI Clock activated at 512KHz            1024 – DVI Clock activated at 1024KHz            2048 – DVI Clock activated at 2048KHz            4096 – DVI Clock activated at 4096KHz</p> <p><b>&lt;samplerate&gt;</b></p> <p>0 - audio scheduler sample rate 8KHz (factory default)            1 - audio scheduler sample rate 16KHz</p> <p>Note :</p> <ul style="list-style-type: none"> <li>On Active/MT/MO Voice Call return Error.</li> <li>Clock 4096KHz don't supported with Sample Rate 8KHz</li> <li>#DVICFG return Error, when &lt;clock&gt; enabled.</li> <li>On Clock value zero (0) the clock rate and sample rate taken from #DVICFG <b>&lt;clock&gt;</b> value.</li> <li>This parameter is saved in NVM issuing AT&amp;W command.</li> </ul>
AT#DVICLK?	<p>Read command reports last setting, in the format:</p> <p><b>#DVICLK:&lt; clock &gt; ,&lt;samplerate&gt;</b></p>
AT#DVICLK=?	Test command returns the range of supported values for all the sub parameters.

#### 3.4.7.1.22 *Digital Voiceband Interface Configuration- #DVICFG*

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



#DVICFG – DVI CONFIGURATION	
	<p>0 : disable 1 : enable(factory default)</p> <p>&lt;decoder format&gt;: PCM format in decoder path 0 : u-Law 1 : A-Law 2 : linear(factory default)</p> <p>&lt;encoder pad&gt;: PCM padding enable in encoder path 0 : disable 1 : enable(factory default)</p> <p>&lt;encoder format&gt;: PCM format in encoder path 0 : u-Law 1 : A-Law 2 : linear(factory default)</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• #DVICFG parameters are saved in the extended profile .</li> <li>• #DVICFG return Error, when #DVICLK enabled.</li> <li>• LE920 only supported by first parameter &lt;clock&gt; Normal mode (factory default) = 2048KHz with sample rate 8k. High speed mode = 4096KHz with sample rate 16k.</li> <li>• Another parameters (&lt;decoder pad&gt;,&lt;decoder format&gt;,&lt;encoder pad&gt;,&lt;encoder format&gt;)have no effect and are included only for backward compatibility.</li> </ul>
AT#DVICFG=?	Test command returns the supported range of values of parameter <clock>,<decoder pad>,<decoder format>,<encoder pad>,<encoder format>.

### 3.4.7.1.23 *Speaker Mute Control - #SPKMUT*

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



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

#### 3.4.7.1.24 Audio Codec - #CODEC

#CODEC - Audio Codec	
AT#CODEC= [<codec>]	Set command sets the audio codec mode. <b>Parameter:</b> <b>&lt;codec&gt;</b> 0 - all the codec modes are enabled (equivalent to the setting 255) (factory default) 1.. s Sum of integers each representing a specific codec mode: 1 - FR, full rate mode enabled 2 - EFR, enhanced full rate mode enabled 4 - HR, half rate mode enabled 8 - AMR-FR, AMR full rate mode enabled 16 - AMR-HR, AMR half rate mode enabled 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  <b>Note:</b> The codec setting is saved in the profile parameters. <b>Note:</b> codecs 8, 16, 32, 128 if not added to mask will not be used by network <b>Note:</b> codecs 1, 2, 4, 64 if not added to mask can be used by network but call will be dropped
AT#CODEC?	Read command returns current audio codec mode in the format: <b>#CODEC: &lt;codec&gt;</b>
AT#CODEC=?	Test command returns the range of available values for parameter <codec>
<b>Example</b>	AT#CODEC=14 OK <i>sets the codec modes HR (4), EFR (2) and AMR-FR (8)</i>

#### 3.4.7.1.25 Audio Codec - #CODECINFO

#CODECINFO - Audio Codec
--------------------------





**<codec\_set>**

0 - all codecs enabled

Sum of integers each representing a specific codec mode:

1 - FR, full rate mode enabled

2 - EFR, enhanced full rate mode enabled

4 - HR, half rate mode enabled

8 - FAMR, AMR full rate mode enabled

16 - HAMR, AMR half rate mode enabled

32 - AMRWB, GSM-AMR Wide band mode enabled

64 - UAMRNB, UMTS-AMR Narrow band mode enabled

128 - UAMRWB, UMTS-AMR Wide band mode enabled

(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

**<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

**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).



<b>AT#CODECINFO?</b>	Read command reports <format> and <mode> parameter values in the format: #CODECINFO: <format>,<mode>
<b>AT#CODECINFO=?</b>	Test command returns the range of supported <format> and <mode>. <codec>
<b>Example</b>	

### 3.4.7.1.26 *Select Ringer Path - #SRP*

<b>#SRP - Select Ringer Path</b>	
<b>AT#SRP=[&lt;n&gt;]</b>	It has no effect and is included only for backward compatibility.  <b>Parameter:</b> <n> - ringer path number 0 - sound output towards current selected audio path (see command #CAP) 1 - sound output towards handsfree 2 - sound output towards handset 3 - sound output towards Buzzer Output pin GPIO7  <b>Note:</b> #ADSPC(Audio DSP Configuration) commands doesn't Influence on Ringer Path. <b>Note:</b> In order to use the Buzzer Output an external circuitry must be added to drive it properly from the GPIO7 pin, furthermore the GPIO7 pin direction must be set to Buzzer output (Alternate function); see command #GPIO.
<b>AT#SRP?</b>	Read command reports the selected ringer path in the format:  #SRP: <n>.
<b>AT#SRP=?</b>	Test command reports the supported values for the parameter <n>.

### 3.4.7.1.27 *Select Ringer Sound - #SRS*

<b>#SRS - Select Ringer Sound</b>	
<b>AT#SRS=[&lt;n&gt;,&lt;tout&gt;]</b>	Set command sets the ringer sound.  <b>Parameters:</b> <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.



## 80407ST10116A Rev.14.1 - 2017-05-14

#SRS - Select Ringer Sound	
	<p>0 - ringer is stopped (if present) and current ringer sound is set.            1..60 - ringer sound playing for &lt;tout&gt; seconds and, if &lt;n&gt; &gt; 0, ringer sound &lt;n&gt; is set as default ringer sound.</p> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>• When the command is issued with &lt;n&gt; &gt; 0 and &lt;tout&gt; &gt; 0, the &lt;n&gt; ringing tone is played for &lt;tout&gt; seconds and stored as default ringing tone.</li> <li>• If command is issued with &lt;n&gt; &gt; 0 and &lt;tout&gt; = 0, the playing of the ringing is stopped (if present) and &lt;n&gt; ringing tone is set as current.</li> <li>• If command is issued with &lt;n&gt; = 0 and &lt;tout&gt; &gt; 0 then the current ringing tone is played.</li> <li>• If both &lt;n&gt; and &lt;tout&gt; are 0 then the default ringing tone is set as current and ringing is stopped.</li> <li>• If all parameters are omitted then the behavior of Set command is the same as Read command</li> </ul>
AT#SRS?	<p>Read command reports current selected ringing and its status in the form:            #SRS: &lt;n&gt;,&lt;status&gt;</p> <p><b>where:</b>            &lt;n&gt; - ringing tone number            1..max            &lt;status&gt; - ringing status            0 - selected but not playing            1 - currently playing</p>
AT#SRS=?	<p>Test command reports the supported values for the parameters &lt;n&gt; and &lt;tout&gt;</p>

### 3.4.7.1.28 *Audio Profile Factory Configuration - #PRST*

#PRST - Audio Profile Factory Configuration	
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><b>NOTE :It has no effect and is included only for backward compatibility.</b></p> <p>The audio parameters to reset are:</p> <ul style="list-style-type: none"> <li>- microphone line gain</li> <li>- earpiece line gain</li> <li>- side tone gain</li> <li>- LMS adaptation speed (step size)</li> <li>- LMS filter length (number of coefficients)</li> <li>- speaker to micro signal power relation</li> <li>- noise reduction max attenuation</li> </ul>



#PRST - Audio Profile Factory Configuration	
	<ul style="list-style-type: none"> <li>- noise reduction weighting factor (band 300-500Hz)</li> <li>- noise reduction weighting factor (band 500-4000Hz)</li> <li>- AGC Additional attenuation</li> <li>- AGC minimal attenuation</li> <li>- AGC maximal attenuation</li> </ul>
AT#PRST=?	Test command returns the OK result code.
Example	AT#PRST OK Current audio profile is reset

#### 3.4.7.1.29

#### Audio Profile Configuration save - #PSAV

#PSAV - Audio Profile Configuration Save	
AT#PSAV	<p>Execution command saves the actual audio parameters in the NVM of the device. It is not allowed if active audio profile is 0.</p> <p><b>NOTE :It has no effect and is included only for backward compatibility.</b></p> <p>The audio parameters to store are:</p> <ul style="list-style-type: none"> <li>- microphone line gain</li> <li>- earpiece line gain</li> <li>- side tone gain</li> <li>- LMS adaptation speed</li> <li>- LMS filter length (number of coefficients)</li> <li>- speaker to micro signal power relation</li> <li>- noise reduction max attenuation</li> <li>- noise reduction weighting factor (band 300-500Hz)</li> <li>- noise reduction weighting factor (band 500-4000Hz)</li> <li>- AGC Additional attenuation</li> <li>- AGC minimal attenuation</li> <li>- AGC maximal attenuation</li> </ul>
AT#PSAV=?	Test command returns the OK result code.



#PSAV - Audio Profile Configuration Save	
Example	AT#PSAV OK <i>Current audio profile is saved in NVM</i>

### 3.4.7.1.30 Audio Profile Selection - #PSEL

#PSEL - Audio Profile Selection	
AT#PSEL=<prof>	Set command selects the active audio profile.  <b>NOTE :It has no effect and is included only for backward compatibility.</b>  <b>Parameter:</b> <prof>: current profile 0 - standard profile 1..3 - extended profile, modifiable.  <i>Note: This parameter is saved in NVM issuing AT&amp;W command.</i>
AT#PSEL?	The read command returns the active profile in the format:  #PSEL:<prof>
AT#PSEL=?	Test command returns the supported range of values of parameter <prof>.

### 3.4.7.1.31 Audio Profile Setting - #PSET

#PSET - Audio Profile Setting	
AT#PSET= <scal_in> [,<scal_out> [,<side_tone_atten> [,<adaption_speed> [,<filter_length> [,<rxtxrelation> [,<nr_atten> [,<nr_w_0> [,<nr_w_1> [,<add_atten> [,<min_atten> [,<max_atten> 	Set command sets parameters for the active audio profile. It is not allowed if active audio profile is 0.  <b>NOTE :It has no effect and is included only for backward compatibility.</b>  <b>Parameters:</b> <scal_in> - microphone line digital gain (unused) <scal_out> - earpiece line digital gain (unused) <side_tone_atten> - side tone attenuation. <adaption_speed> - LMS adaptation speed (unused) <filter_length> - LMS filter length (number of coefficients) (unused) <rxtxrelation> - speaker to micro signal power relation (unused) <nr_atten> - noise reduction max attenuation (unused) <nr_w_0> - noise reduction weighting factor (band 300-500Hz) (unused)



#PSET - Audio Profile Setting	
	<p>&lt;nr_w_1&gt; - noise reduction weighting factor (band 500-4000Hz) (unused)          &lt;add_atten&gt; - AGC Additional attenuation (unused)          &lt;min_atten&gt; - AGC minimal attenuation (unused)          &lt;max_atten&gt; - AGC maximal attenuation (unused)</p> <p>It has no effect and is included only for backward compatibility.</p>
AT#PSET?	<p>Read command returns the parameters for the active profile in the format:</p> <p>#PSET:&lt;scal_in&gt;,&lt;scal_out&gt;,&lt;side_tone_atten&gt;,&lt;adaption_speed&gt;,&lt;filter_length&gt;,&lt;rxtxrelation&gt;,&lt;nr_atten&gt;,&lt;nr_w_0&gt;,&lt;nr_w_1&gt;,&lt;add_atten&gt;,&lt;min_atten&gt;,&lt;max_atten&gt;</p> <p>It is not allowed if active audio profile is 0.</p>
AT#PSET=?	Test command returns the supported range of values for the audio parameters.

### 3.4.7.1.32      *Store the ACDB (Audio Calibration Database) file - #ACDB*

#ACDB – Store the ACDB(Audio Calibration Database) file	
AT#ACDB = <size>	<p>Set command store audio_cal.acdb file on FS.</p> <p>Parameters:          &lt;size&gt; - Number of bytes to write to the file.</p> <p>After command line is terminated with &lt;CR&gt;, We see the intermediate result code <b>CONNECT</b>.          After this prompt the file can be entered on binary format.</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>
AT#ACDB?	<p>Read command returns the current &lt;size&gt; of the audio_cal.acdb file.</p> <p>#ACDB:&lt;size&gt;</p>
Example	<p>AT#ACDB=38          CONNECT          -----→ Send the file with 38 Bytes          OK</p>



#ACDB – Store the ACDB(Audio Calibration Database) file	
	AT#ACDB? #ACDB: 38  OK

### 3.4.7.1.33 *Tone Classes Volume - #TSVOL*

#TSVOL – Tone Classes Volume	
<b>AT#TSVOL=</b> <b>&lt;class&gt;,</b> <b>&lt;mode&gt;</b> <b>[,&lt;volume&gt;]</b>	<p>Set command is used to select the volume mode for one or more tone classes.</p> <p><b>Parameters:</b></p> <p><b>&lt;class&gt;</b> -sum of integers each representing a class of tones which the command refers to :</p> <ul style="list-style-type: none"> <li>1 - GSM tones</li> <li>2 - ringer tones</li> <li>4 - alarm tones</li> <li>8 - signaling tones</li> <li>16 - DTMF tones</li> <li>32 - SIM Toolkit tones</li> <li>64 - user defined tones (TBD)</li> <li>128 - reserved</li> <li>255 - all classes</li> </ul> <p><b>&lt;mode&gt;</b> - it indicates which volume is used for the classes of tones represented by &lt;class&gt;</p> <ul style="list-style-type: none"> <li>0 - default volume is used</li> <li>1 - The volume &lt;volume&gt; is used.</li> </ul> <p><b>&lt;volume&gt;</b> - volume to be applied to the set of classes of tones represented by &lt;class&gt;; it is mandatory if &lt;mode&gt; is 1.</p> <p>0..<i>max</i> - the value of <i>max</i> can be read issuing the Test command AT#TSVOL=?</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• The class DTMF Tones (&lt;class&gt;=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.</li> <li>• The all classes don't effect on active voice call only AT+CLVL value effected.</li> <li>• Effected on analog mode only.</li> </ul>
<b>AT#TSVOL?</b>	<p>Read command returns for each class of tones the last setting of &lt;mode&gt; and, if &lt;mode&gt; is not 0, of &lt;volume&gt; too, in the format:</p> <p># TSVOL: 1,&lt;mode1&gt;[,&lt;volume1&gt;]&lt;CR&gt;&lt;LF&gt;</p> <p>...</p> <p>#TSVOL: 64,&lt;mode64&gt;[,&lt;volume64&gt;]</p>



#TSVOL – Tone Classes Volume	
	Note: no info is returned for class 128.
<b>AT#TSVOL=?</b>	Test command returns the supported range of values of parameters <class>, <mode> and <volume>.
<b>Example</b>	<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>

### 3.4.7.1.34 *Set Handsfree Sidetone - #SHFSD*

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



### 3.4.7.1.35 Set Headset Sidetone - #SHSSD

#SHSSD - Set Headset Sidetone	
AT#SHSSD= [<mode> [,<gain level>]]	<p>Set command enables/disables the sidetone on Headset audio output and change the gain level.</p> <p><b>Parameter:</b>            &lt;mode&gt;            0 - Disables the Headset sidetone (factory default)            1 - Enables the Headset sidetone.            &lt;gain level&gt;            0..30 - Headset sidetone gain level (+2dB/step, factory default=15)</p> <p><b>Note:</b> These parameters are saved in NVM issuing AT&amp;W command.  <b>Note: Effected on analog mode only</b></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: &lt;mode&gt;,&lt;gain level&gt;</p>
AT#SHSSD=?	<p>Test command returns the supported range of values of parameter &lt;mode&gt;,&lt;gain level&gt;.</p>

### 3.4.7.1.36 Handsfree Echo Canceller - #SHFEC

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

### 3.4.7.1.37 Handset Echo Canceller - #SHSEC

#SHSEC - Handset Echo Canceller	
AT#SHSEC= <mode>	<p>It has no effect and is included only for backward compatibility.</p> <p><b>Parameter:</b>            &lt;mode&gt;</p>



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

#### 3.4.7.1.38 *Handsfree Noise Reduction - #SHFNR*

#SHFNR - Handsfree Noise Reduction	
AT#SHFNR=<mode>	It has no effect and is included only for backward compatibility.  <b>Parameter:</b> <mode> (0,1) - (0 is default)  <b>Note:</b> This parameter is saved in NVM issuing AT&W command. <b>Note :</b> Added to #ADSPC
AT#SHFNR?	Read command reports the value of parameter <mode> , in the format: <b>#SHFNR: &lt;mode&gt;</b>
AT#SHFNR=?	Test command returns the supported range of values of parameter <mode>.

#### 3.4.7.1.39 *Handset Noise Reduction - #SHSNR*

#SHSNR - Handset Noise Reduction	
AT#SHSNR=<mode>	It has no effect and is included only for backward compatibility.  <b>Parameter:</b> <mode> 0 - disables noise reduction for handset mode (default) 1 - enables noise reduction for handset mode  <b>Note:</b> This parameter is saved in NVM issuing AT&W command. <b>Note :</b> Added to #ADSPC
AT#SHSNR?	Read command reports whether the noise reduction function on audio handset input is currently enabled or not, in the format: <b># SHSNR: &lt;mode&gt;</b>
AT#SHSNR=?	Test command returns the supported range of values of parameter <mode>.



3.4.7.1.40

**Extended Error Report for Network Reject Cause – #CEERNET**

**#CEERNET - Extended Error Report for Network Reject Cause**

**AT#CEERNET**

Execute command causes the TA to return a numeric code in the format **#CEERNET:**  
<code>

This offers the user of the TA a report for the last mobility management (MM) or session management (SM) procedure not accepted by the network and a report of detach or deactivation causes from network.

<code> values as follows:

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



# AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

	34	SERV.OPTION TEMPORARILY OUT OF ORDER
	35	NSAPI ALREADY USED
	36	REGULAR DEACTIVATION
	37	QOS NOT ACCEPTED
	38	CALL CANNOT BE IDENTIFIED(MM cause failure) /SMN NETWORK FAILURE(SM cause failure)
	39	REACTIVATION REQUIRED
	40	NO PDP CTXT ACTIVATED(GMM cause failure)/FEATURE NOT SUPPORTED(SM cause failure)
	41	SEMANTIC ERROR IN TFT OPERATION
	42	SYNTACTICAL ERROR IN TFT OPERATION
	43	UNKNOWN PDP CNTXT
	44	SEM ERR IN PKT FILTER
	45	SYNT ERR IN PKT FILTER
	46	PDP CNTXT WITHOUT TFT ACTIVATED
	48	RETRY ON NEW CELL BEGIN(if MM cause failure) /ACTIVATION REJECTED BCM VIOLATION(if SM cause failure)
	81	INVALID TRANSACTION IDENTIFIER
	95	SEMANTICALLY INCORRECT MESSAGE
	96	INVALID MANDATORY INFORMATION
	97	MSG TYPE NON EXISTENT OR NOT IMPLEMENTED
	98	MSG TYPE NOT COMPATIBLE WITH PROTOCOL STATE
	99	IE NON_EXISTENT OR NOT IMPLEMENTED
	100	CONDITIONAL IE ERROR
	101	MSG NOT COMPATIBLE WITH PROTOCOL STATE
	111	PROTOCOL ERROR UNSPECIFIED
<b>Note:</b> if none of this condition has occurred since power up then <code> 0: “Normal, unspecified” condition is reported		
AT#CEERNET=?	Test command returns OK result code.	
Reference	GSM 24.008	

## 3.4.7.1.41 Display PIN Counter - #PCT

### #PCT - Display PIN Counter

AT#PCT	Execution command reports the PIN/PUK or PIN2/PUK2 input remaining attempts, depending on +CPIN requested password in the format:
--------	---



#PCT - Display PIN Counter	
	<p><b>#PCT: &lt;n&gt;</b></p> <p><b>where:</b>            &lt;n&gt; - remaining attempts            0 - the SIM is blocked.            1..3 - if the device is waiting either SIM PIN or SIM PIN2 to be given.            1..10 - if the device is waiting either SIM PUK or SIM PUK2 to be given.</p>
<b>AT#PCT=?</b>	Test command returns the OK result code.
<b>Example</b>	<p>AT+CPIN?            +CPIN: SIM PIN</p> <p>OK            AT#PCT                      <i>Check PIN remained counter</i>            #PCT: 3</p> <p>OK            AT+CPIN=1111              <i>Input incorrect PIN number</i>            +CME ERROR: incorrect password            AT#PCT            #PCT: 2</p>

#### 3.4.7.1.42      **Software ShutDown - #SHDN**

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



### 3.4.7.1.43 *Rebbots the unit - #REBOOT*

#REBOOT – Rebbots the unit	
<b>AT#REBOOT</b>	<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><b>Note:</b> 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><b>Note:</b> AT#REBOOT is an obsolete AT command; please refer to AT#ENHRST to perform a module reboot.</p>
<b>AT#REBOOT=?</b>	Test command returns <b>OK</b> result code.
<b>Example</b>	<pre>AT#REBOOT OK Module Reboots ...  AT#REBOOT OK  AT#REBOOT=? OK</pre>
<b>Reference</b>	

### 3.4.7.1.44 *Periodic Reset - #ENHRST*

#ENHRST – Periodic Reset	
<b>AT#ENHRST= &lt;mod&gt;[,&lt;delay&gt;]</b>	<p>Set command enables/disables the unit reset after &lt;delay&gt; minutes.</p> <p><b>Parameters:</b></p> <p><b>&lt;mod&gt;</b></p> <ul style="list-style-type: none"> <li>0 – disables the unit reset (factory default)</li> <li>1 – enables the unit reset only for one time</li> <li>2 – enables the periodic unit reset</li> </ul> <p><b>&lt;delay&gt;</b> - time interval after that the unit reboots; numeric value in minutes</p> <p><b>Note:</b> 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><b>Note:</b> 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>
<b>AT#ENHRST?</b>	<p>Read command reports the current parameter settings for #EHNRST command in the format:</p> <p>#EHNRST: &lt;mod&gt;[,&lt;delay&gt;,&lt;remainTime&gt;]</p>



	<b>&lt;remainTime&gt;</b> - time remaining before next reset
<b>AT#ENHRST=?</b>	Test command reports supported range of values for parameters <mod> and <delay>. AT#ENHRST=? #ENHRST: (0-2),(0-11000(  OK
<b>Examples</b>	AT#ENHRST=1,60 .... Module reboots after 60 minutes ... AT#ENHRST=1,0 .... Module reboots now ... AT#ENHRST=2,60 .... Module reboots after 60 minutes and indefinitely after every following power on ...

## 3.4.7.1.45

**General Purpose Input/Output Pin Control - #GPIO**

<b>#GPIO - General Purpose Input/Output Pin Control</b>	
<b>AT#GPIO=[&lt;pin&gt;,&lt;mode&gt;[,&lt;dir&gt;[,&lt;save&gt;]]]</b>	<p>Execution command sets the value of the general purpose output pin GPIO&lt;pin&gt; according to &lt;dir&gt; and &lt;mode&gt; parameter. Not all configurations for the three parameters are valid.</p> <p><b>Parameters:</b>  <b>&lt;pin&gt;</b> - GPIO pin number; supported range is from 1 to a value that depends on the hardware.</p> <p><b>&lt;mode&gt;</b> - its meaning depends on &lt;dir&gt; setting:  0 - if &lt;dir&gt;=0 – INPUT, remove any Pull-up/Pull-down  - output pin cleared to 0 (Low) if &lt;dir&gt;=1 - OUTPUT</p> <p>1 - if &lt;dir&gt;=0 – INPUT, if &lt;dir&gt;=0 – INPUT, remove any Pull-up/Pull-down  - output pin set to 1 (High) if &lt;dir&gt;=1 - OUTPUT</p> <p>2 - Reports the read value from the input pin if &lt;dir&gt;=0 – INPUT  - Reports the read value from the input pin if &lt;dir&gt;=1 - OUTPUT</p> <p>Note: Reports a no meaning value if ALTERNATE FUNCTION</p> <p>3 - if &lt;dir&gt;=0 – INPUT, enable Pull-Up</p>



#GPIO - General Purpose Input/Output Pin Control	
	<p>4 - if &lt;dir&gt;=0 – INPUT, enable Pull-Down</p> <p>&lt;dir&gt; - GPIO pin direction  0 - pin direction is INPUT  1 - pin direction is OUTPUT</p> <p>2,3,4,5,6,7,8,9 - pin direction is Alternate Function ALT1, ALT2, ALT3, ALT4, ALT5, ALT6, ALT7,ALT8 respectively this direction.</p> <p>&lt;save&gt; - GPIO pin save configuration  0 – pin configuration is not saved  1 – pin configuration is saved</p> <p><b>Note:</b> when &lt;save&gt; is omitted the configuration is stored</p> <p><b>Note:</b> when &lt;mode&gt;=2 (and &lt;dir&gt; is omitted) the command reports the direction and value of pin GPIO&lt;pin&gt; in the format:  <b>#GPIO:</b> &lt;dir&gt;,&lt;stat&gt;</p> <p><b>where:</b>  &lt;dir&gt; - current direction setting for the GPIO&lt;pin&gt;  &lt;stat&gt; - logic value read from pin GPIO&lt;pin&gt; in the case the pin &lt;dir&gt; is set to input;  <ul style="list-style-type: none"> <li>logic value present in output of the pin GPIO&lt;pin&gt; in the case the pin &lt;dir&gt; is currently set to output;</li> <li>no meaning value for the pin GPIO&lt;pin&gt; in the case the pin &lt;dir&gt; is set to alternate function or Tristate pull down.</li> </ul> </p> <p><b>Note:</b>  While using the pins in the alternate function, the GPIO read/write access to that pin is not accessible and shall be avoided.</p> <p>While pins in used by ALT function it cannot be used as GPIO out or by any other ALT function until the original ALT released it or we change it to GPIO in(default state).</p> <p><b>Note:</b>  "ALT1" value is valid only for GPIO1 "Stat Led" only in LE910  "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"  "ALT6" value is valid for all GPIOs as "FASTSHDN"  "ALT7" value is valid for GPIO4 as "WKIO"  "ALT8" value is valid for ALL "FARTTRIGGER"</p>
AT#GPIO?	Read command reports the read direction and value of all GPIO pins, in the format:



#GPIO - General Purpose Input/Output Pin Control	
	<p><b>#GPIO: &lt;dir&gt;,&lt;stat&gt;[&lt;CR&gt;&lt;LF&gt;#GPIO: &lt;dir&gt;,&lt;stat&gt;[...]]</b></p> <p><b>where:</b>            &lt;dir&gt; - as seen before            &lt;stat&gt; - as seen before</p> <p>If &lt;mode&gt; = 3,4 the output format is  <b>#GPIO:&lt;dir&gt;,&lt;stat&gt;,&lt;mode&gt;[&lt;CR&gt;&lt;LF&gt;#GPIO:&lt;dir&gt;,&lt;stat&gt;,&lt;mode&gt;[...]]</b></p>
<b>AT#GPIO=?</b>	Test command reports the supported range of values of the command parameters. <b>&lt;pin range&gt;,&lt;mode range&gt;,&lt;dir range&gt;,&lt;save&gt;</b>
<b>Examples</b>	<p>at#gpio=?            #GPIO: (1-10),(0-4),(0-1),(0,1)            OK</p> <p>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</p> <p>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            #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</p>
<b>Note</b>	All gpio's states (mode and direction) are saved in nv memory, so the last state is restored after power cycle.

STAT\_LED GPI



### 3.4.7.1.46 *STAT\_LED GPIO Setting - #SLED*

#SLED - STAT_LED GPIO Setting	
<b>AT#SLED=</b> <b>&lt;mode&gt;</b> <b>[,&lt;on_duration&gt;</b> <b>[,&lt;off_duration&gt;]]</b>	<p>Set command sets the behaviour of the <b>STAT_LED GPIO</b></p> <p><b>Parameters:</b></p> <p><b>&lt;mode&gt;</b> - defines how the <b>STAT_LED GPIO</b> is handled</p> <ul style="list-style-type: none"> <li>0 - GPIO tied <b>Low</b></li> <li>1 - GPIO tied <b>High</b></li> <li>2 - GPIO handled by Module Software (factory default) with the following timings: <ul style="list-style-type: none"> <li>• not registered : always on</li> <li>• registered in idle: blinking 1s on and 2s off</li> <li>• registered in idle with powersaving : blinking time depends on network condition in order to minimize power consumption</li> </ul> </li> <li>3 - GPIO is turned on and off alternatively, with period defined by the sum <b>&lt;on_duration&gt; + &lt;off_duration&gt;</b></li> <li>4 - GPIO handled by Module Software with the following timings: <ul style="list-style-type: none"> <li>• not registered : blinking 0,5s on and 0,5s off</li> <li>• registered in idle: blinking 300ms on and 2,7s off</li> <li>• registered in idle with powersaving: blinking time depends on network condition in order to minimize power consumption</li> </ul> </li> <li>5 – Stop Sled functionality</li> </ul> <p>Note: In LE910 GPIO will be set to default (gpio in).</p> <p><b>&lt;on_duration&gt;</b> - duration of period in which <b>STAT_LED GPIO</b> is tied <b>High</b> while <b>&lt;mode&gt;=3</b></p> <p>1..100 - in tenth of seconds (default is 10)</p> <p><b>&lt;off_duration&gt;</b> - duration of period in which <b>STAT_LED GPIO</b> is tied <b>Low</b> while <b>&lt;mode&gt;=3</b></p> <p>1..100 - in tenth of seconds (default is 10)</p> <p><b>Note:</b> values are saved in NVM by command <b>#SLEDSAV</b></p> <p><b>Note:</b> when module boot the <b>STAT_LED GPIO</b> always tied <b>High</b> and holds this value until the first NVM reading.</p>
<b>AT#SLED?</b>	<p>Read command returns the <b>STAT_LED GPIO</b> current setting, in the format:</p> <p><b>#SLED: &lt;mode&gt;,&lt;on_duration&gt;,&lt;off_duration&gt;</b></p>
<b>AT#SLED=?</b>	<p>Test command returns the range of available values for parameters <b>&lt;mode&gt;</b>, <b>&lt;on_duration&gt;</b> and <b>&lt;off_duration&gt;</b>.</p>



### 3.4.7.1.47 *Save STAT\_LED GPIO Setting - #SLEDSAV*

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

### 3.4.7.1.48 *Digital Voiceband Interface - #DVI*

#DVI - Digital Voiceband Interface	
AT#DVI=<mode> [,<dviport>, <clockmode>]	<p>Set command enables/disables the Digital Voiceband Interface.</p> <p><b>Parameters:</b></p> <p>&lt;mode&gt; - enables/disables the DVI.  0 - disable DVI; audio is forwarded to the analog line; DVI pins should be Not Connected/or Tri-State. (factory default)  1 - enable DVI; audio is forwarded to the DVI block</p> <p>&lt;dviport&gt;  2 - DVI port 2 will be used</p> <p>&lt;clockmode&gt;  0 - DVI slave(not supported)  1 - DVI master (factory default)</p> <p><b>Note:</b>  #DVI parameters saved in the extended profile.  LE9x0 supported by “DVI master” only.  The &lt;dviport&gt;/&lt;clockmode&gt; parameters have no effect and are included only for backward compatibility.  On Active/MT/MO Voice Call return Error.</p> <p><b>Note: Effected on digital mode only</b></p>
AT#DVI?	<p>Read command reports last setting, in the format:</p> <p>#DVI: &lt;mode&gt;,&lt;dviport&gt;,&lt;clockmode&gt;</p>
AT#DVI=?	Test command reports the range of supported values for parameters <mode>,<dviport> and <clockmode>
Example	<p>AT#DVI=1,2,1  OK</p> <p>DVI activated for audio. DVI is configured as master providing on DVI Port #2</p>

### 3.4.7.1.49 *SMS Ring Indicator - #E2SMSRI*



#E2SMSRI - SMS Ring Indicator	
AT#E2SMSRI=[<n>]	<p>Set command enables/disables the Ring Indicator pin response to an incoming SMS message.</p> <p>If #E2SMSRI enabled a negative, going pulse generated on receipt of an incoming SMS message.</p> <p>Duration of this pulse determined by the value of &lt;n&gt;.</p> <p><b>Parameter:</b></p> <p>&lt;n&gt; - <b>RI</b> enabling</p> <p>0 - disables <b>RI</b> pin response for incoming SMS messages (factory default)</p> <p>50..1150 - enables <b>RI</b> pin response for incoming SMS messages. The value of &lt;n&gt; is the duration in ms of the pulse generated on receipt of an incoming SM.</p> <p><b>Note:</b> if +CNMI=3,1 command is issued and the module is in a GPRS connection, a 100 ms break signal is sent and a 1 sec. pulse is generated on <b>RI</b> pin, no matter if the <b>RI</b> pin response is either enabled or not.</p>
AT#E2SMSRI?	<p>Read command reports the duration in ms of the pulse generated on receipt of an incoming SM, in the format:</p> <p><b>#E2SMSRI: &lt;n&gt;</b></p> <p><b>Note:</b> as seen before, the value &lt;n&gt;=0 means that the <b>RI</b> pin response to an incoming SM is disabled.</p>
AT#E2SMSRI=?	Reports the range of supported values for parameter <n>
Example	<p>AT#E2SMSRI=50</p> <p>OK</p>

### 3.4.7.1.50 *Read Analog/Digital Converter Input - #ADC*

#ADC - Read Analog/Digital Converter Input	
AT#ADC=[<adc>,<mode>[,<dir>]]	<p>Execution command reads pin&lt;adc&gt; voltage, converted by ADC, and outputs it in the format:</p> <p><b>#ADC: &lt;value&gt;</b></p> <p><b>where:</b></p> <p>&lt;value&gt; - pin&lt;adc&gt; voltage, expressed in mV</p> <p><b>Parameters:</b></p> <p>&lt;adc&gt; - index of pin</p> <p>1 - available for LE920 family</p> <p>2 - available for LE920 family</p> <p>3 - available for LE920 family</p> <p>&lt;mode&gt; - required action</p>



#ADC - Read Analog/Digital Converter Input	
	2 - query ADC value <dir> - direction; its interpretation is currently not implemented 0 - no effect.  <b>Note:</b> The command returns the last valid measure.
AT#ADC?	Read command reports all pins voltage, converted by ADC, in the format:  #ADC: <value>[<CR><LF>#ADC: <value>[...]]
AT#ADC=?	Test command reports the supported range of values of the command parameters <adc>, <mode> and <dir>.

#### 3.4.7.1.51 Auxiliary Voltage Output Control - #VAUX

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

#### 3.4.7.1.52 Auxiliary Voltage Output save - #VAUXSAV



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

### 3.4.7.1.53 *Battery and Charger Status - #CBC*

#CBC- Battery And Charger Status	
AT#CBC	<p>Execution command returns the current Battery and Charger state in the format:</p> <p><b>#CBC: &lt;ChargerState&gt;,&lt;BatteryVoltage&gt;</b></p> <p><b>where:</b></p> <p><b>&lt;ChargerState&gt;</b> - battery charger state</p> <ul style="list-style-type: none"> <li>0 - charger not connected</li> <li>1 - charger connected and charging</li> <li>2 - charger connected and charge completed</li> </ul> <p><b>&lt;BatteryVoltage&gt;</b> - 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 <b>OK</b> result code.

### 3.4.7.1.54 *GPRS Auto-Attach Property - #AUTOATT*

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

### 3.4.7.1.55 *Multislot Class Control - #MSCLASS*



#MSCLASS - Multislot Class Control	
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>.

#### 3.4.7.1.56 V24 Output Pins Configuration - #V24CFG

#V24CFG - V24 Output Pins Configuration	
AT#V24CFG=<pin>,<mode>	Set command sets the AT commands serial port interface output pins mode. Parameters: <pin> - AT commands serial port interface hardware pin: 0 - DCD (Data Carrier Detect) 1 - CTS (Clear To Send) 2 - RI (Ring Indicator) 3 - DSR (Data Set Ready) 4 - DTR (Data Terminal Ready). This is not an output pin: we maintain this value only for backward compatibility, but trying to set its state raises the result code "ERROR" (not yet implemented). 5 - RTS (Request To Send). This is not an output pin: we maintain this value only for backward compatibility, but trying to set its state raises the result code "ERROR" <mode> - AT commands serial port interface hardware pins mode: 0 - AT commands serial port mode: output pins controlled by serial port device driver. (default) 1 - GPIO mode: output pins directly controlled by #V24 command only.
AT#V24CFG?	Read command returns actual mode for all the pins (either output and input) in the format: #V24CFG: <pin1>,<mode1>[<CR><LF><CR><LF> #V24CFG: <pin2>,<mode2>[...]] Where: <pinn> - AT command serial port interface HW pin <moden> - AT commands serial port interface hardware pin mode
AT#V24CFG=?	Test command reports supported range of values for parameters <pin> and <mode>.



### 3.4.7.1.57 *V24 Output Pins Control - #V24*

#V24 - V24 Output Pins Control	
<b>AT#V24=</b> <b>&lt;pin&gt;[,&lt;state&gt;]</b>	Set command sets the AT commands serial port interface output pins state. <b>Parameters:</b> <b>&lt;pin&gt;</b> - AT commands serial port interface hardware pin: <b>0</b> - DCD (Data Carrier Detect) <b>1</b> - CTS (Clear To Send) <b>2</b> - RI (Ring Indicator) <b>3</b> - DSR (Data Set Ready) <b>4</b> - DTR (Data Terminal Ready). This is not an output <b>pin</b> : we maintain this value only for backward compatibility, but trying to set its state raises the result code "ERROR" (not yet implemented) <b>5</b> - RTS (Request To Send). This is not an output pin: we maintain this value only for backward compatibility, but trying to set its state raises the result code "ERROR" <b>&lt;state&gt;</b> - State of AT commands serial port interface output hardware pins(0,1,2,3) when pin is in GPIO mode (see #V24CFG): <b>0</b> - Low <b>1</b> - High <b>Note:</b> if <state> is omitted the command returns the actual state of the pin <pin>.
<b>AT#V24?</b>	Read command returns actual state for all the pins (either output and input) in the format: <b>#V24: &lt;pin1&gt;,&lt;state1&gt;[&lt;CR&gt;&lt;LF&gt;</b> <b>#V24: &lt;pin2&gt;,&lt;state2&gt;[...]]</b> <b>Where:</b> <b>&lt;pin&gt;</b> - AT command serial port interface HW pin. <b>&lt;state&gt;</b> - AT commands serial port interface hardware pin state.
<b>AT#V24=?</b>	Test command reports supported range of values for parameters <pin> and <state>.

### 3.4.7.1.58 *Cell Monitor - #MONI*

#MONI - Cell Monitor	
<b>AT#MONI=</b> <b>&lt;number&gt;</b>	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. <b>Parameter:</b> <b>&lt;number&gt;</b> <b>&lt;GSM network&gt;</b> <b>0..6</b> - it is the ordinal number of the cell, in a neighbour of the serving cell (default 0, serving cell).



<b>#MONI - Cell Monitor</b>	<p>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><b>&lt;WCDMA network&gt;</b>  0 – it is the active set  1 – it is the candidate set  2 – it is the synchronized neighbour set  3 – it is the unsynchronized neighbour set  4..6 – it is not available  7 - it is a special request to obtain WCDMA-related information from the all sets.</p> <p><b>&lt;LTE network&gt;</b>  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..6 – it is not available  7 - it is a special request to obtain LTE-related information from the all available neighbour cells.</p>
<b>AT#MONI</b>	<p>Read command reports the following GSM/WCDMA-related information for selected cell and dedicated channel (if exists).</p> <p><b>&lt;GSM network&gt;</b>  a) When extracting data for the serving cell and the network name is known the format is:  <b>(GSM network)</b>  #MONI: &lt;netname&gt; BSIC:&lt;bsic&gt; RxQual:&lt;qual&gt; LAC:&lt;lac&gt; Id:&lt;id&gt;  ARFCN:&lt;arfcn&gt; PWR:&lt;dBm&gt; TA:&lt;timadv&gt;  <b>(WCDMA network)</b>  #MONI: &lt;netname&gt; PSC:&lt;psc&gt; RSCP:&lt;rscp&gt; LAC:&lt;lac&gt; Id:&lt;id&gt;  EcIo:&lt;ecio&gt; UARFCN:&lt;uarfcn&gt; PWR:&lt;dBm&gt; DRX:&lt;drx&gt; SCR:&lt;scr&gt;  URA:&lt;ura_id&gt;  <b>(LTE network)</b>  #MONI: &lt;netname&gt; RSRP:&lt;rsrp&gt; RSRQ:&lt;rsrq&gt; TAC:&lt;tac&gt; Id:&lt;id&gt;  EARFCN:&lt;earfcn&gt; PWR:&lt;dBm&gt; DRX:&lt;drx&gt;</p> <p>b) When the network name is unknown, the format is:  <b>(GSM network)</b>  #MONI: Cc:&lt;cc&gt; Nc:&lt;nc&gt; BSIC:&lt;bsic&gt; RxQual:&lt;qual&gt; LAC:&lt;lac&gt;  Id:&lt;id&gt; ARFCN:&lt;arfcn&gt; PWR:&lt;dBm&gt; TA:&lt;timadv&gt;  <b>(WCDMA network)</b></p>



#MONI - Cell Monitor	
	<p>#MONI: Cc:&lt;cc&gt; Nc:&lt;nc&gt; PSC:&lt;psc&gt; RSCP:&lt;rscp&gt; LAC:&lt;lac&gt; Id:&lt;id&gt; EcIo:&lt;ecio&gt; UARFCN:&lt;uarfcn&gt; PWR:&lt;dBm&gt; DRX:&lt;drx&gt; SCR:&lt;scr&gt; URA:&lt;ura_id&gt; (LTE network)</p> <p>#MONI: Cc:&lt;cc&gt; Nc:&lt;nc&gt; RSRP:&lt;rsrp&gt; RSRQ:&lt;rsrq&gt; TAC:&lt;tac&gt; Id:&lt;id&gt; EARFCN:&lt;earfcn&gt; PWR:&lt;dBm&gt; DRX:&lt;drx&gt;</p> <p>c) When extracting data for an adjacent cell, the format is:</p> <p>(GSM network)</p> <p>#MONI: Adj Cell&lt;n&gt; [LAC:&lt;lac&gt; Id:&lt;id&gt;] ARFCN:&lt;arfcn&gt; PWR:&lt;dBm&gt; dBm</p> <p>(WCDMA network)</p> <p>#MONI: PSC:&lt;psc&gt; RSCP:&lt;rscp&gt; EcIo:&lt;ecio&gt; UARFCN:&lt;uarfcn&gt; SCR:&lt;scr&gt;</p> <p>(LTE network)</p> <p>(LTE intra-frequency and inter-frequency cells)</p> <p>#MONI: RSRP:&lt;rsrp&gt; RSRQ:&lt;rsrq&gt; PhysCellId:&lt;physicalCellId&gt; EARFCN:&lt;earfcn&gt; PWR:&lt;dBm&gt;</p> <p>(LTE WCDMA neighbour cells)</p> <p>#MONI: PSC:&lt;psc&gt; RSCP:&lt;rscp&gt; EcIo:&lt;ecio&gt; UARFCN:&lt;uarfcn&gt; SCR:&lt;scr&gt;</p> <p>(LTE GSM neighbour cells)</p> <p>#MONI: Adj Cell&lt;n&gt; BSIC:&lt;bsic&gt; ARFCN:&lt;arfcn&gt; PWR:&lt;dBm&gt;</p> <p><b>where:</b></p> <p>&lt;netname&gt; - name of network operator          &lt;cc&gt; - country code          &lt;nc&gt; - network operator code          &lt;n&gt; - progressive number of adjacent cell          &lt;bsic&gt; - base station identification code          &lt;qual&gt; - quality of reception 0..7          &lt;lac&gt; - localization area code          &lt;id&gt; - cell identifier          &lt;physicalCellId&gt; - physical cell identifier          &lt;pid&gt; - physical cell identifier          &lt;arfcn&gt; - assigned radio channel          &lt;dBm&gt; - received signal strength in dBm          &lt;timadv&gt; - timing advance          &lt;psc&gt; - primary synchronisation scrambling code          &lt;rscp&gt; - Received Signal Code Power in dBm          &lt;ecio&gt; - chip energy per total wideband power in dBm          &lt;uarfcn&gt; - UMTS assigned radio channel          &lt;drx&gt; - Discontinuous reception cycle length          &lt;scr&gt; - Scrambling code          &lt;rsrp&gt; - Reference Signal Received Power</p>



#MONI - Cell Monitor	
	<p>&lt;rsrq&gt; - Reference Signal Received Quality          &lt;tac&gt; - Tracking Area Code          &lt;earfcn&gt; - E-UTRA Assigned Radio Channel          &lt;ura_id&gt; - UTRAN Registration Area Identity</p> <p><b>Note:</b> TA: &lt;timadv&gt; reported only for the serving cell.</p> <p>When the last setting done is <b>AT#MONI=7</b>, 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 &lt;CR&gt;&lt;LF&gt;-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:  <b>#MONI: (&lt;MaxCellNo&gt;,&lt;CellSet&gt;)</b></p> <p><b>where:</b>          &lt;MaxCellNo&gt; - 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.          &lt;CellSet&gt; - the last setting done with command <b>#MONI</b>.</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>

### 3.4.7.1.59 HSDPA Channel Quality Indication - #CQI

#CQI - HSDPA Channel Quality Indication	
AT#CQI	<p>Execution command reports channel quality indication in the form:          #CQI: &lt;cqi&gt;  <b>Where:</b>          &lt;cqi&gt; - cqi value</p> <p><b>3G - UTRAN</b>          0 - out of range          1 (worst) – 30 (best)          31 - not known or not detectable</p>



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

	<b>4G - LTE</b> 0 - out of range 1 (worst) – 15 (best) 31 - not known or not detectable
<b>AT#CQI=?</b>	Test command returns the supported range of values of the parameters <cqi>.
<b>Note</b>	Will only work while socket is open and data transfer is active. Working only with UTRAN (see +WS46).

### 3.4.7.1.60 *Packet Service Network Type - #PSNT*

<b>#PSNT – Packet Service Network Type</b>	
<b>AT#PSNT=&lt;mode&gt;</b>	Set command enables/disables unsolicited result code for packet service network type (PSNT).  <b>Parameter:</b> <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.  <b>Note:</b> <mode> parameter setting is stored in NVM.
<b>AT#PSNT?</b>	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 – Packet Service Network Type	
	<p>#PSNT: &lt;mode&gt;,&lt;nt&gt;</p> <p><b>Where:</b>            &lt;mode&gt;            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            &lt;nt&gt; - network type            0 - GPRS network            1 - EGPRS network            2 - WCDMA network            3 - HSDPA network            4 - LTE network            5 - unknown or not registered            &lt;is_hsupa_available&gt; - HSUPA available            0 – HSUPA is not supported by network            1 – HSUPA is supported by network            &lt;is_hsupa_used&gt; - HSUPA used            0 – HSUPA is not in use            1 – HSUPA is in use            &lt;is_hsdpa_available&gt; - HSDPA available            0 – HSDPA is not supported by network            1 – HSDPA is supported by network            &lt;is_hsdpa_used&gt; - HSPA used            0 – HSDPA is not in use            1 – HSDPA is in use</p> <p><b>Note:</b> 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.

### 3.4.7.1.61 Read Current Network Status in 3G Network - #RFSTS

#RFSTS – Read current network Status in 3G network	
AT#RFSTS	<p>Read current status in the format</p> <p>(GSM network)</p>



**#RFSTS – Read current network Status in 3G network**
**#RFSTS:**

&lt;PLMN&gt;,&lt;ARFCN&gt;,&lt;RSSI&gt;,&lt;LAC&gt;,&lt;RAC&gt;,[&lt;TXPWR&gt;],&lt;MM&gt;,&lt;RR&gt;,&lt;NOM&gt;,&lt;CID&gt;,&lt;IMSI&gt;,[&lt;NetNameAsc&gt;],&lt;SD&gt;,&lt;ABND&gt;[CR,LF] [CR,LF]

Parameter	GSM Example	description
PLMN	"450 05"	Country code and operator code(MCC, MNC)
ARFCN	114	GSM Assigned Radio Channel
RSSI	-67	Received Signal Strength Indication
LAC	2011	Localization Area Code
RAC	11	Routing Area Code
TXPWR	1	Tx Power (In traffic only)
MM	19	Mobility Management
RR	0	Radio Resource
NOM	1	Network Operator Mode
CID	2825220	Cell ID
IMSI	"450050203619261"	International Mobile Station ID
NetNameAsc	"SKTelecom"	Operation Name, Quoted string type or "" if name is unknown
SD	3	Service Domain (0 : No Service, 1 : CS only, 2 : PS only, 3 : CS&PS)
ABND	2	Active Band (1 : GSM 850, 2 : GSM 900, 3 : DCS 1800, 4 : GSM 1900)

**(WCDMA network)**
**#RFSTS:**

&lt;PLMN&gt;,&lt;UARFCN&gt;,&lt;PSC&gt;,&lt;Ec/Io&gt;,&lt;RSCP&gt;,&lt;RSSI&gt;,&lt;LAC&gt;,&lt;RAC&gt;,[&lt;TXPWR&gt;],&lt;DRX&gt;,&lt;MM&gt;,&lt;RRC&gt;,&lt;NOM&gt;,[&lt;BLER&gt;],&lt;CID&gt;,&lt;IMSI&gt;,[&lt;NetNameAsc&gt;],&lt;SD&gt;,[&lt;CsAccess&gt;],[&lt;PsAccess&gt;],[&lt;nAST&gt;],[&lt;nUARFCN&gt;,&lt;nPSC&gt;,&lt;nEc/Io&gt;,,,][CR,LF] [CR,LF]

Parameter	WCDMA Example	description
PLMN	"450 05"	Country code and operator code(MCC, MNC)
UARFCN	10737	UMTS Assigned Radio Channel
PSC	75	Active PSC(Primary Synchronization Code)
Ec/Io	-7.0	Active Ec/Io(chip energy per total wideband dBm)
RSCP	-74	Active RSCP (Received Signal Code Power)
RSSI	-67	Received Signal Strength Indication
LAC	2011	Localization Area Code
RAC	11	Routing Area Code



# AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

#RFSTS – Read current network Status in 3G network			
	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	2B1C04	Cell ID (IN HEX)
	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
	ABND	0	Active Band (1 : 2100 MHz, 2 : 1900 MHz, 3 : 850 MHz, 4 : 900 MHz , 5 : 1700 MHz, 6 : 800 MHz, 7 : 1800 MHz)
<b>(LTE network)</b> <b>#RFSTS:</b> <PLMN>,<EARFCN>,<RSRP>,<RSSI>,<RSRQ>,<TAC>,[<TXPWR>],<DRX>,<MM>,<RRC>,<CID>,<IMSI>,[<NetNameAsc>],<SD>,<ABND>,<SINR>[CR,LF] [CR,LF]			
	Parameter	LTE 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)

## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

#RFSTS – Read current network Status in 3G network			
	DRX	64	Discontinuous reception cycle Length(cycle length : display using ms)
	MM	19	Mobility Management
	RRC	0	Radio Resource Control
	CID	0000007	Cell ID
	IMSI	"262011242110776"	International Mobile Station ID
	NetNameAsc	" Telekom.de "	Operation Name, Quoted string type or "" if network name is unknown
	SD	3	Service Domain (0: No Service, 1: CS only, 2: PS only, 3: CS+PS)
	ABND	20	Active Band (1..63) 3GPP TS 36.101
	SINR	93	Signal-to-Interface plus Noise Ratio (range 0 - 250)
<p><b>Note:</b> nSAT - Number of active set, Maximum is 6.</p> <p><b>Note:</b> If nSAT value is 1, it means that active set number 1. Module does not display after parameters of nSAT.</p> <p><b>Note:</b> TXPWR of GSM network means 1 tx burst</p> <p><b>Note:</b> MM - Mobility Management States are:</p> <ul style="list-style-type: none"> <li>0 - NULL</li> <li>3 - LOCATION_UPDATE_INITIATED</li> <li>5 - WAIT_FOR_OUTGOING_MM_CONNECTION</li> <li>6 - CONNECTION_ACTIVE</li> <li>7 - IMSI_DETACH_INITIATED</li> <li>8 - PROCESS_CM_SERVICE_PROMPT</li> <li>9 - WAIT_FOR_NETWORK_COMMAND</li> <li>10 - LOCATION_UPDATE_REJECTED</li> <li>13 - WAIT_FOR_RR_CONNECTION_LU</li> <li>14 - WAIT_FOR_RR_CONNECTION_MM</li> <li>15 - WAIT_FOR_RR_CONNECTION_IMSI_DETACH</li> <li>17 - REESTABLISHMENT_INITIATED</li> <li>18 - WAIT_FOR_RR_ACTIVE</li> <li>19 - IDLE</li> <li>20 - WAIT_FOR_ADDITIONAL_OUTGOING_MM_CONNECTION</li> <li>21 - WAIT_FOR_RR_CONNECTION_REESTABLISHMENT</li> <li>22 - WAIT_FOR_REESTABLISH_DECISION</li> <li>23 - LOCATION_UPDATING_PENDING</li> <li>25 - CONNECTION_RELEASE_NOT_ALLOWED</li> </ul> <p><b>Note:</b> RR/RRC - Radio Resource Control States are:</p> <ul style="list-style-type: none"> <li>0 - INACTIVE</li> </ul>			



#RFSTS – Read current network Status in 3G network	
	<ul style="list-style-type: none"> <li>1 - GOING_ACTIVE</li> <li>2 - GOING_INACTIVE</li> <li>3 - CELL_SELECTION</li> <li>4 - PLMN_LIST_SEARCH</li> <li>5 - IDLE</li> <li>6 - CELL_RESELECTION</li> <li>7 - CONNECTION_PENDING</li> <li>8 - CELL_REESTABLISH</li> <li>9 - DATA_TRANSFER</li> <li>10 - NO_CHANNELS</li> <li>11 - CONNECTION_RELEASE</li> <li>12 - EARLY_CAMPED_WAIT_FOR_SI</li> <li>13 - W2G_INTERRAT_HANDOVER_PROGRESS</li> <li>14 - W2G_INTERRAT_RESELECTION_PROGRESS</li> <li>15 - W2G_INTERRAT_CC_ORDER_PROGRESS</li> <li>16 - G2W_INTERRAT_RESELECTION_PROGRESS</li> <li>17 - WAIT_FOR_EARLY_PSCAN</li> <li>18 - GRR</li> <li>19 - G2W_INTERRAT_HANDOVER_PROGRESS</li> <li>21 - W2G_SERVICE_REDIRECTION_IN_PROGRESS</li> <li>22 - RESET</li> <li>29 - FEMTO</li> <li>30 - X2G_RESEL</li> <li>31 - X2G_RESEL_ABORTED</li> <li>32 - X2G_REDIR</li> <li>33 - G2X_REDIR</li> <li>34 - X2G_CGI</li> <li>35 - X2G_CCO_FAILED</li> <li>36 - X2G_CCO_ABORTED</li> <li>37 - X2G_CCO_FAILED_ABORTED</li> <li>38 - RR_STATE_MAX</li> </ul>

### 3.4.7.1.62 *Temperature Monitor- #TEMPMON*

#TEMPMON - Temperature Monitor
--------------------------------



<b>AT#TEMPMON</b> <b>=</b> <b>&lt;mod&gt;[,&lt;urcmo</b> <b>de&gt;[,&lt;action&gt;[,&lt;</b> <b>GPIO&gt;]]]</b>	<p>Set command sets the behavior of the module internal temperature monitor.</p> <p><b>Parameters:</b></p> <p><b>&lt;mod&gt;</b>  0 - sets the command parameters.  1 - triggers the measurement of the module internal temperature, reporting the result in the format:  <b>#TEMPMEAS: &lt;level&gt;,&lt;value&gt;</b></p> <p><b>where:</b>  <b>&lt;level&gt;</b> - 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><b>&lt;value&gt;</b> - actual temperature expressed in Celsius degrees.  Setting of the following optional parameters has meaning only if <b>&lt;mod&gt;=0</b>:</p> <p><b>&lt;urcmode&gt;</b> - 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:  <b>#TEMPMEAS: &lt;level&gt;,&lt;value&gt;</b></p> <p><b>where:</b>  <b>&lt;level&gt;</b> and <b>&lt;value&gt;</b> are as before.  <b>&lt;action&gt;</b> - 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 <b>&lt;GPIO&gt;</b> is tied HIGH when operating temperature bounds are reached; when the temperature is back to normal the output pin <b>&lt;GPIO&gt;</b> is tied LOW. If this <b>&lt;action&gt;</b> is required, it is mandatory to set the <b>&lt;GPIO&gt;</b> parameter too.</p> <p>3- (11) - This value contains <b>&lt;action=1&gt;</b> and <b>&lt;action=2&gt;</b> i.e. activate thermal mitigation and a GPIO indication. If this <b>&lt;action&gt;</b> is required, it is mandatory to set the <b>&lt;GPIO&gt;</b> parameter too.</p> <p><b>&lt;GPIO&gt;</b> - GPIO number. Valid range is any TGPIO pin as described in <b>#GPIO</b> command. This parameter is needed and required only if <b>&lt;action&gt;=2</b> or <b>3</b> are enabled.</p>
---	---



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

### 3.4.7.1.63 *Query Temperature Overflow - #QTEMP*

<b>#QTEMP - Query Temperature Overflow</b>	
<b>AT#QTEMP=[&lt;mode&gt;]</b>	Set command has currently no effect. The interpretation of parameter <mode> currently not implemented. The value assigned to it will simply have no effect. <b>Valid values:</b> 0 – returns "OK".
<b>AT#QTEMP?</b>	Read command queries the device internal temperature sensor for over temperature and reports the result in the format: <b>#QTEMP: &lt;temp&gt;</b> <b>where:</b> <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.
<b>AT#QTEMP=?</b>	Test command reports supported range of values for parameter <mode>.
<b>Note</b>	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.

### 3.4.7.1.64 *Temperature Monitor CONFIGURATION - #TEMPCFG*

<b>#TEMPCFG – Temperature Monitor Configuration</b>	
<b>AT#TEMPCFG=&lt;etlz_clr&gt;,&lt;etlz&gt;,&lt;etlz_act_in&gt;,&lt;otlz&gt;</b>	Set command sets the Temperature zones used in the #TEMPMON command.



<code>_clr&gt;,&lt;otlz&gt;,&lt;otlz_act_in&gt;,&lt;otnz_clr&gt;,&lt;otnz&gt;,&lt;otnz_act_in&gt;,&lt;otuz_clr&gt;,&lt;otuz&gt;,&lt;otuz_act_in&gt;,&lt;etuz_clr&gt;,&lt;etuz_act_in&gt;</code>	<p>Parameters:</p> <p><b>&lt;etlz_clr&gt;</b>: Extreme low zone temperature threshold clear. Has only one valid value: -273°C. see notes</p> <p><b>&lt;etlz&gt;</b>: Extreme low zone temperature threshold. Default value -33°C.</p> <p><b>&lt;etlz_act_in&gt;</b>: Extreme low zone action info. Default value 0.</p> <p><b>&lt;otlz_clr&gt;</b>: Operate low zone temperature threshold clear. Default value -35°C.</p> <p><b>&lt;otlz&gt;</b>: Operate low zone temperature threshold. Default value -28°C.</p> <p><b>&lt;otlz_act_in&gt;</b>: Operate low zone action info. Default value 0.</p> <p><b>&lt;otnz_clr&gt;</b>: Operate normal zone temperature threshold clear. Default value -30°C.</p> <p><b>&lt;otnz&gt;</b>: Operate normal zone temperature threshold. Default value 95°C.</p> <p><b>&lt;otnz_act_in&gt;</b>: Operate normal zone action info. Default value 0.</p> <p><b>&lt;otuz_clr&gt;</b>: Operate up zone temperature threshold clear. Default value 93°C.</p> <p><b>&lt;otuz&gt;</b>: Operate up zone temperature threshold. Default value 100°C.</p> <p><b>&lt;otuz_act_in&gt;</b>: Operate up zone action info. Default value 3.</p> <p><b>&lt;etuz_clr&gt;</b>: Extreme up zone temperature threshold clear. Default value 98°C.</p> <p><b>&lt;etuz&gt;</b>: Extreme up zone temperature threshold. Has only one valid value: 528°C. see notes</p> <p><b>&lt;etuz_act_in&gt;</b>: Extreme up zone action info. Default value 3.</p> <p>See notes for detailed description of thermal mitigation configuration.</p>
<b>AT#TEMPCFG?</b>	<p>Read command reports the current parameter setting for #TEMPCFG command in the format:</p> <p>#TEMPCFG:</p> <p><code>&lt;etlz_clr&gt;,&lt;etlz&gt;,&lt;etlz_act_in&gt;,&lt;otlz_clr&gt;,&lt;otlz&gt;,&lt;otlz_act_in&gt;,&lt;otnz_clr&gt;,&lt;otnz&gt;,&lt;otnz_act_in&gt;,&lt;otuz_clr&gt;,&lt;otuz&gt;,&lt;otuz_act_in&gt;,&lt;etuz_clr&gt;,&lt;etuz&gt;,&lt;etuz_act_in&gt;</code></p>
<b>AT#TEMPCFG=?</b>	<p>Test command reports the supported range values for parameters <code>&lt;x_clr&gt;,&lt;x&gt;,&lt;x_action_info&gt;</code>.</p> <p>Where "x" is substitute for "etlz", "otlz", "otnz", "otuz", "etuz".</p> <p>Values are:</p> <p>#TEMPCFG: (-40-100),(-40-100),(0-5)</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.

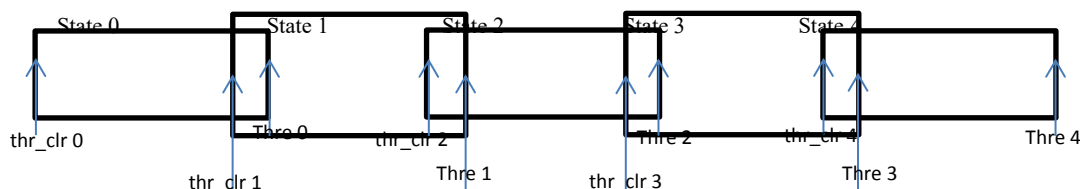
**4** - RF OFF. RX and TX circuits automatically disabled (using +CFUN=4).

**5**- Automatic shutdown. Module is powered off.

User is **prohibited** from setting '**action info**' equal to '**5**' in '**operate normal zone**'. This comes in order to prevent, setting 'Automatic shutdown' by a mistake to the normal operating temperature range.

A "+CME ERROR: operation not supported" error will be received as a response.

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:

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



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

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

Explain:

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

Explain:

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 braked - 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

Explain:

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

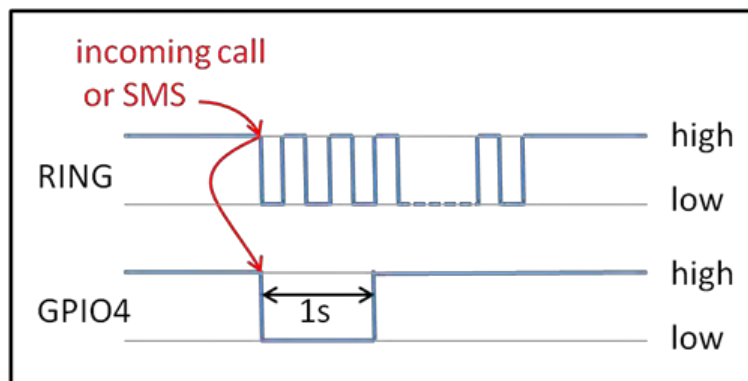


('Thr\_clr' of 'Extreme up zone') - ('Thr' of 'Operate normal zone') = 1 < 2

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

### 3.4.7.1.65

### Set RING CFG Parameters - #WKIO

#WKIO – Set RING CFG Parameters	
<b>AT#WKIO =</b> <b>[&lt;Mode&gt;</b> <b>[,&lt;Pin&gt;</b> <b>[,&lt;Trigger&gt;</b> <b>[,&lt;Timer&gt;]]]]</b>	<p>Set command configures the service.</p> <p>Parameter:</p> <p>&lt; Mode &gt;: Enable\Disable for the feature.</p> <p>0 – Disable (default).</p> <p>1 – Enable.</p> <p>&lt; Pin &gt;: Set the outputs line for wakeup detection</p> <p>0 – Ring Only (default, GPIO4 always in HIGH state).</p> <p>1 – Ring &amp; GPIO 4.</p> <p>2 – GPIO 4</p> <p>3 – No Pins (GPIO4 always in HIGH state).</p> <p>&lt;Trigger&gt;: Line will be Wakeup By</p> <p>0 – SMS.</p> <p>1 – CALL.</p> <p>2 – SMS Or CALL (default).</p> <p>&lt;Timer&gt;: 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> <div data-bbox="414 1361 1165 1740" data-label="Diagram">  <p>The diagram illustrates the RING and GPIO4 signals. The RING signal is shown as a series of pulses, with a red arrow indicating an 'incoming call or SMS' event. The GPIO4 signal is shown as a high-level signal that transitions to low for a duration of 1 second (indicated by a 1s pulse width) before returning to high.</p> </div> <p>Note:</p> <ol style="list-style-type: none"> <li>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).</li> </ol>

	2. To be able to wake up by SMS need to set the command AT#E2SMSRI at power up.
<b>AT#WKIO?</b>	Read command returns the current settings of parameters in the format: #WKIO:< Mode >,< Pin >,< Trigger > ,<Timer>
<b>AT#WKIO=?</b>	Test command returns the supported values for the RINGCFG parameters: <b>#WKIO:&lt; (0,1),(0-2),(0-3),(1-60)</b>

#### 3.4.7.1.66      *Wake from Alarm Mode - #WAKE*



#WAKE - Wake From Alarm Mode	
AT#WAKE=[<opmode>]	<p>Execution command stops any eventually present alarm activity and, if the module is in <b>alarm mode</b>, it exits the <b>alarm mode</b> and enters the <b>normal operating mode</b>.</p> <p><b>Parameter:</b>            &lt;opmode&gt; - operating mode            0 - normal operating mode; the module exits the <b>alarm mode</b>, enters the <b>normal operating mode</b>, any alarm activity is stopped (e.g. alarm tone playing) and an <b>OK</b> result code is returned.</p> <p><b>Note:</b> The "alarm mode" is indicated by hardware pin <b>CTS</b> to the <b>ON</b> status and <b>DSR</b> to the <b>OFF</b> status, while the "power saving" status is indicated by a <b>CTS - OFF</b>, <b>DSR - OFF</b> and <b>USB_VBUS - OFF</b> status. The normal operating status is indicated by <b>DSR - ON</b> or <b>USB_VBUS - ON</b> status.</p> <p><b>Note:</b> during the <b>alarm mode</b> 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 <b>#WAKE</b> and <b>#SHDN</b>, every other command must not be issued during this state.</p>
AT#WAKE?	<p>Read command returns the <b>operating status</b> of the device in the format:</p> <p><b>#WAKE: &lt;status&gt;</b>  <b>where:</b>            &lt;status&gt;            0 - Normal operating mode            1 - Alarm mode or normal operating mode with some alarm activity.</p>
AT#WAKE=?	Test command returns the OK result code.

### 3.4.7.1.67 *ALARM PIN - #ALARMPIN*

#ALARMPIN – Alarm Pin	
AT#ALARMPIN=<pin>	<p>Set command sets the GPIO pin for the ALARM pin</p> <p><b>Parameters:</b>            &lt;pin&gt; defines which GPIO shall be used as ALARM pin.            For the &lt;pin&gt; actual range, check the “Hardware User Guide”.</p> <p>Default value is 0, which means no ALARM pin set.</p>



#ALARMPIN – Alarm Pin	
	<b>Note:</b> the setting is saved in NVM <b>Note:</b> ALARM pin function of a GPIO corresponds to ALT2 function of the GPIO, So it can be also set through AT#GPIO command, ALT2 function.
AT#ALARMPIN?	Read command returns the current parameter settings for #ALARMPIN command in the format: #ALARMPIN: <pin>
AT#ALARMPIN=?	Test command reports the supported range of values for parameter <pin>.

### 3.4.7.1.68 *Serving Cell Information - #SERVINFO*

#SERVINFO - Serving Cell Information	
AT#SERVINFO	<p>Execution command reports information about serving cell, in the format:</p> <p><b>(GSM network)</b>  #SERVINFO:&lt;BARFCN&gt;,&lt;dBm&gt;,[&lt;NetNameAsc&gt;],&lt;NetCode&gt;,&lt;BSIC&gt;,&lt;LAC&gt;,&lt;TA&gt;,&lt;GPRS&gt;[,&lt;PB-ARFCN&gt;],[&lt;NOM&gt;],&lt;RAC&gt;,[PAT]]</p> <p><b>(WCDMA network)</b>  #SERVINFO:&lt;UARFCN&gt;,&lt;dBm&gt;,[&lt;NetNameAsc&gt;],&lt;NetCode&gt;,&lt;PSC&gt;,&lt;LAC&gt;,&lt;DRX&gt;,&lt;SD&gt;,&lt;RSCP&gt;,&lt;NOM&gt;,&lt;RAC&gt;,&lt;URA&gt;</p> <p><b>(LTE network)</b>  #SERVINFO:&lt;EARFCN&gt;,&lt;dBm&gt;,[&lt;NetNameAsc&gt;],&lt;NetCode&gt;,&lt;PhysicalCellId&gt;,&lt;TAC&gt;,&lt;DRX&gt;,&lt;SD&gt;,&lt;RSRP&gt;</p> <p><b>where:</b>  &lt;B-ARFCN&gt; - BCCH ARFCN of the serving cell  &lt;dBm&gt; - received signal strength in dBm  &lt;NetNameAsc&gt; - operator name, quoted string type or "" if network name is unknown.  &lt;NetCode&gt; - country code and operator code, hexadecimal representation  &lt;BSIC&gt; - Base Station Identification Code  &lt;LAC&gt; - Localization Area Code  &lt;TA&gt; - Time Advance: it's available only if a GSM or GPRS is running  &lt;GPRS&gt; - 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>



#SERVINFO - Serving Cell Information	
	<p>&lt;PB-ARFCN&gt; - 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 <b>"hopping"</b> will be printed</p> <p>&lt;NOM&gt; - Network Operation Mode            .."I"            "II"            .."III"</p> <p>&lt;RAC&gt; - Routing Area Color Code</p> <p>&lt;PAT&gt; - Priority Access Threshold            ..0            ..3..6</p> <p>&lt;UARFCN&gt; - UMTS ARFCN of the serving cell</p> <p>&lt;PSC&gt; - Primary Synchronization Scrambling Code</p> <p>&lt;DRX&gt; - Discontinuous reception cycle length</p> <p>&lt;SD&gt; - Service Domain            0 - No Service            1 - CS Only            2 - PS Only            3 - CS &amp; PS</p> <p>&lt;RSCP&gt; - Received Signal Code Power in dBm</p> <p>&lt;EARFCN&gt; - E-UTRA Assigned Radio Channel</p> <p>&lt;PhysicalCellId&gt; - Physical Cell ID</p> <p>&lt;TAC&gt; - Tracking Area Code</p> <p>&lt;RSRP&gt; - Reference Signal Received Power</p> <p>&lt;URA&gt; - UTRAN Registration Area Identity</p>

### 3.4.7.1.69 Query SIM Status - #QSS

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



#QSS - Query SIM Status	
	<p>1 - SIM INSERTED</p> <p>2 - enabled, the ME informs at every SIM status change through the following unsolicited indication:</p> <p><b>#QSS: &lt;status&gt;</b>  <b>where:</b>  &lt;status&gt; - current SIM status  0 - SIM NOT INSERTED  1 - SIM INSERTED  2 - SIM INSERTED and PIN UNLOCKED  3 - SIM INSERTED and READY  (SMS and Phonebook access are possible).</p> <p>Note: the command reports the SIM status change after the &lt;mode&gt; has been set to 2. We strongly suggest to set &lt;mode&gt;=2 and save the value in the user profile, then power off the module. The proper SIM status will be available at the next power on.</p>
<b>AT#QSS?</b>	<p>Read command reports whether the unsolicited indication <b>#QSS</b> is currently enabled or not, along with the SIM status, in the format:</p> <p><b>#QSS: &lt;mode&gt;,&lt;status&gt;</b>  (&lt;mode&gt; and &lt;status&gt; are described above)</p> <p>To get the proper SIM status, we strongly suggest to set &lt;mode&gt;=2 and save the value in the user profile, then power off and power on the module.</p>
<b>AT#QSS=?</b>	Test command returns the supported range of values for parameter <mode>.
<b>Example</b>	AT#QSS? #QSS:0,1  OK

### 3.4.7.1.70 *Dialling Mode - #DIALMODE*

#DIALMODE - Dialling Mode	
<b>AT#DIALMODE</b> = [<mode>]	<p>Set command sets dialling modality.</p> <p><b>Parameter:</b>  &lt;mode&gt;  0 - (voice call only) <b>OK</b> result code is received as soon as it starts remotely ringing (factory default)  1 - (voice call only) <b>OK</b> result code is received only after the called party answers. Any character typed aborts the call and <b>OK</b> result code received.  2 - (voice call and data call) the following custom result codes are received, monitoring step by step the call status:</p>



#DIALMODE - Dialling Mode	
	<b>DIALING</b> (MO in progress) <b>RINGING</b> (remote ring) <b>CONNECTED</b> (remote call accepted) <b>RELEASED</b> (after ATH) <b>DISCONNECTED</b> (remote hang-up)  <b>Note:</b> The setting is saved in NVM and available on following reboot.
AT#DIALMODE?	Read command returns current <b>ATD</b> dialling mode in the format:  #DIALMODE: <mode>
AT#DIALMODE=?	Test command returns the range of values for parameter <mode>

#### 3.4.7.1.71 *No Carrier Indication Handling - #NCIH*

#NCIH - No Carrier Indication Handling	
AT#NCIH=<enable>	Set command enables/disables sending of a 'NO CARRIER' indication when a remote call that is ringing is dropped by calling party before it is answered at called party.  <b>Parameter:</b> <enable> - 'NO CARRIER' indication sending. 0 - disables (factory default) 1 - enables
AT#NCIH?	Read command reports whether the feature is currently enables or not, in the format:  #NCIH: <enable>
AT#NCIH=?	Test command returns the supported range of values for the parameter <enable>.

#### 3.4.7.1.72 *Automatic Call - #ACAL*

#ACAL - Automatic Call	
AT#ACAL=[<mode>]	Set command enables/disables the automatic call function.  <b>Parameter:</b> <mode> 0 - disables the automatic call function (factory default) 1 - Enables the automatic call function. If enabled (and <b>&amp;D2</b> has been issued), the transition <b>OFF/ON</b> of <b>DTR</b> causes an automatic call to the first number (position 0) stored in the internal phonebook. <b>Note:</b> type of call depends on the last issue of command <b>+FCLASS</b> .
AT#ACAL?	Read command reports whether the automatic call function is currently enabled or not, in the format:



#ACAL - Automatic Call	
	<b>#ACAL: &lt;mode&gt;</b>  <b>Where:</b> <b>&lt;mode&gt;</b> 0 - automatic call function disabled 1 - automatic call function from internal phonebook enabled 2 - automatic call function from “SM” phonebook enabled (by AT#ACALEXT) 3 - automatic call function from “ME” phonebook enabled (by AT#ACALEXT)
<b>AT#ACAL=?</b>	Test command returns the supported range of values for parameter <mode>.
<b>Note</b>	See &Z to write and &N to read the number on module internal phonebook.

### 3.4.7.1.73 Extended Automatic Call - #ACALEXT

#ACALEXT - Extended Automatic Call	
<b>AT#ACALEXT=&lt;mode&gt;,&lt;index&gt;</b>	Set command enables/disables the extended automatic call function.  <b>Parameters:</b> <b>&lt;mode&gt;</b> 0 - Disables the automatic call function (factory default) 1 - Enables the automatic call function from internal phonebook. 2 - Enables the automatic call function from “SM” phonebook. 3 - Enables the automatic call function from “ME” phonebook. <b>&lt;index&gt;</b> - it indicates a position in the currently selected phonebook.  If the extended automatic call function is enabled and &D2 has been issued, the transition <b>OFF/ON</b> of <b>DTR</b> causes an automatic call to the number stored in position <index> in the selected phonebook.  <b>Note:</b> type of call depends on the last issue of command +FCLASS.
<b>AT#ACALEXT?</b>	Read command reports either whether the automatic call function is currently enabled or not, and the last <index> setting in the format:  <b>#ACALEXT: &lt;mode&gt;,&lt;index&gt;</b>
<b>AT#ACALEXT=?</b>	The range of available positions in a phonebook depends on the selected phonebook. This is the reason why the test command returns three ranges of values: the first for parameter <mode>, the second for parameter <index> when internal phonebook chosen, the third for parameter <index> when “SM” is the chosen phonebook, the fourth for parameter <index> when “ME” is the chosen phonebook.
<b>Note</b>	Issuing #ACALEXT causes the #ACAL <mode> to be changed. Issuing AT#ACAL=1 causes the #ACALEXT <index> to be set to default. It is recommended to NOT use contemporaneously either #ACALEXT and #ACAL
<b>Note</b>	See &Z to write and &N to read the number on module internal phonebook.



### 3.4.7.1.74 *Extended Call Monitoring - #ECAM*

#ECAM - Extended Call Monitoring	
AT#ECAM=[<onoff>]	<p>This command enables/disables the call monitoring function in the ME.</p> <p><b>Parameter:</b>  <b>&lt;onoff&gt;</b>            0 - disables call monitoring function (factory default)            1 - enables call monitoring function; the ME informs about call events, such as incoming call, connected, hang up etc. using the following unsolicited indication:</p> <p><b>#ECAM: &lt;ccid&gt;,&lt;ccstatus&gt;,&lt;calltype&gt;,,[&lt;number&gt;,&lt;type&gt;]</b></p> <p><b>Where:</b>  <b>&lt;ccid&gt;</b> - call ID  <b>&lt;ccstatus&gt;</b> - call status            0 - idle            1 - calling (MO)            2 - connecting (MO)            3 - active            4 - hold            5 - waiting (MT)            6 - alerting (MT)            7 - busy            8 - retrieved            9 - CNAP (Calling Name Presentation) information (MT)  <b>&lt;calltype&gt;</b> - call type            1 - voice            2 - data  <b>&lt;number&gt;</b> - called number (valid only for &lt;ccstatus&gt;=1)  <b>&lt;type&gt;</b> - type of &lt;number&gt;            129 - national number            145 - international number</p> <p><b>Note:</b> the unsolicited indication sent along with usual codes (OK, NO CARRIER, BUSY...).</p>
AT#ECAM?	<p>Read command reports whether the extended call monitoring function is currently enabled or not, in the format:</p> <p><b>#ECAM: &lt;onoff&gt;</b></p>



#ECAM - Extended Call Monitoring	
AT#ECAM=?	Test command returns the list of supported values for <onoff>

#### 3.4.7.1.75 *SMS Overflow - #SMOV*

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

#### 3.4.7.1.76 *Sms Un- Change Status - #SMSUCS*

#SMSUCS - SMS Un-Change Status	
AT#SMSUCS	Set command allows to keep the SMS Status to UNREAD after +CMGR or +CMGL.  <b>Parameter:</b> <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.



#SMSUCS - SMS Un-Change Status	
Example	<p>AT#SMSUCS? #SMSUCS: 1 OK</p> <p>AT+CMGR=1 +CMGR: "REC UNREAD","+393333075581","", "08/07/07,10:48:44+36" TEST MESSAGE.</p> <p>OK</p> <p>AT+CMGR=1 +CMGR: "REC UNREAD","+393333075581","", "08/07/07,10:48:44+36" TEST MESSAGE.</p> <p>OK</p>

### 3.4.7.1.77 Mailbox Numbers - #MBN

#MBN - Mailbox Numbers	
AT#MBN	<p>Execution command returns the mailbox numbers stored on SIM, if this service provided by the SIM.</p> <p>The response format is: [<b>#MBN</b>:&lt;index&gt;,&lt;number&gt;,&lt;type&gt;[,&lt;text&gt;][,&lt;mboxtype&gt;][&lt;CR&gt;&lt;LF&gt;#MBN:&lt;index&gt;,&lt;number&gt;,&lt;type&gt;[,&lt;text&gt;][,&lt;mboxtype&gt;][...]]]</p> <p><b>where:</b>            &lt;index&gt; - record number            &lt;number&gt; - string type mailbox number in the format &lt;type&gt;            &lt;type&gt; - type of mailbox number octet in integer format                129 - national numbering scheme                145 - international numbering scheme (contains the character "+")            &lt;text&gt; - the alphanumeric text associated to the number; used character set should be the one selected with command +CSCS            &lt;mboxtype&gt; - the message waiting group type of the mailbox if available:                "VOICE" - voice                "FAX" – fax (not supported by LTE)                "EMAIL" - electronic mail                "OTHER" - other</p> <p><b>Note:</b> if all queried locations are empty (but available), no information text lines returned.</p>
AT#MBN=?	Test command returns the <b>OK</b> result code.



## #MBN - Mailbox Numbers

### 3.4.7.1.78 Message Waiting Indication - #MWI

#### #MWI - Message Waiting Indication

<p><b>AT#MWI=&lt;enable&gt;</b></p>	<p>Set command enables/disables the presentation of the <b>message waiting indicator</b> URC.</p> <p><b>Parameter:</b> <b>&lt;enable&gt;</b></p> <ul style="list-style-type: none"> <li>0 - Disable the presentation of the #MWI URC</li> <li>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 <b>message waiting indicators</b>, as they are currently stored on SIM..</li> </ul> <p>Note: This parameter is saved in NVM issuing AT&amp;W command.</p> <p>The URC format is:</p> <p><b>#MWI: &lt;status&gt;,&lt;indicator&gt;[,&lt;count&gt;]</b></p> <p><b>where:</b> <b>&lt;status&gt;</b></p> <ul style="list-style-type: none"> <li>0 – clear - it has been deleted one of the messages related to the indicator <b>&lt;indicator&gt;</b>.</li> <li>1 – set - there's a new waiting message related to the indicator <b>&lt;indicator&gt;</b></li> </ul> <p><b>&lt;indicator&gt;</b></p> <ul style="list-style-type: none"> <li>1 - either Line 1 (CPHS context) or Voice (3GPP context)</li> <li>2 - Line 2 (CPHS context only)</li> <li>3 – Fax (not supported by LTE)</li> <li>4 - E-mail</li> <li>5 - Other</li> </ul> <p><b>&lt;count&gt;</b> - message counter - network information reporting the number of pending messages related to the message waiting indicator <b>&lt;indicator&gt;</b>.</p> <p>The presentation at startup of the <b>message waiting indicators</b> status, as they are currently stored on SIM, is as follows:</p> <p><b>#MWI: &lt;status&gt;[,&lt;indicator&gt;[,&lt;count&gt;]][&lt;CR&gt;&lt;LF&gt;</b>  <b>#MWI: &lt;status&gt;,&lt;indicator&gt;[,&lt;count&gt;][...]]]</b></p> <p><b>where:</b> <b>&lt;status&gt;</b></p> <ul style="list-style-type: none"> <li>0 - No waiting message indicator is currently set: if this the case no other information is reported</li> </ul>
-------------------------------------	---



#MWI - Message Waiting Indication	
	<p>1 - There are waiting messages related to the message waiting indicator <b>&lt;indicator&gt;</b>.</p> <p><b>&lt;indicator&gt;</b></p> <p>1 - Either Line 1 (CPHS context) or Voice (3GPP context)</p> <p>2 - Line 2 (CPHS context)</p> <p>3 - Fax(not supported by LTE)</p> <p>4 - E-mail</p> <p>5 - Other</p> <p><b>&lt;count&gt;</b> - message counter: number of pending messages related to the message waiting indicator <b>&lt;indicator&gt;</b> as it is stored on SIM.</p>
AT#MWI?	<p>Read command reports wheter the presentation of the <b>message waiting indicator</b> URC is currently enabled or not and the status of the <b>message waiting indicators</b> as they are currently stored on SIM. The format is:</p> <p><b>#MWI: &lt;enable&gt;,&lt;status&gt;[,&lt;indicator&gt;,&lt;count&gt;][&lt;CR&gt;&lt;LF&gt;</b>  <b>#MWI: &lt;enable&gt;,&lt;status&gt;,&lt;indicator&gt;,&lt;count&gt;][...]]</b></p>
AT#MWI=?	Test command returns the range of available values for parameter <b>&lt;enable&gt;</b> .

#### 3.4.7.1.79 Repeat Last Command - #/

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

#### 3.4.7.1.80 Network Timezone - #NITZ

#NITZ - Network Timezone	
<b>AT#NITZ=</b> <b>[&lt;val&gt;</b> <b>[,&lt;mode&gt;]]</b>	<p>Set command enables/disables (a) automatic date/time updating, (b) Full Network Name applying and (c) <b>#NITZ</b> URC; moreover it permits to change the <b>#NITZ</b> URC format.</p> <p>Date and time information can be sent by the network after GSM registration or after GPRS attach.</p> <p><b>Parameters:</b></p> <p><b>&lt;val&gt;</b></p> <p>0 - disables (a) automatic data/time updating, (b) Full Network Name applying and (c) <b>#NITZ</b> URC; moreover it sets the <b>#NITZ</b> URC 'basic' format (see <b>&lt;datetime&gt;</b> below)(factory default)</p> <p>1..15 - as a sum of:</p> <p>1 - enables automatic date/time updating</p> <p>2 - enables Full Network Name applying (not supported by LE)</p> <p>4 - it sets the <b>#NITZ</b> URC 'extended' format (see <b>&lt;datetime&gt;</b> below)</p> <p>8 - it sets the <b>#NITZ</b> URC 'extended' format with Daylight Saving Time(DST) support (see <b>&lt;datetime&gt;</b> below)</p>



#NITZ - Network Timezone	
	<p><b>&lt;mode&gt;</b>  0 - disables #NITZ URC (factory default)  1 - enables #NITZ URC; after date and time updating the following unsolicited indication is sent:</p> <p><b>#NITZ: &lt;datetime&gt;</b>  <b>where:</b>  &lt;datetime&gt; - string whose format depends on subparameter &lt;val&gt;  “yy/MM/dd,hh:mm:ss” - ‘basic’ format, if &lt;val&gt; is in (0..3)  “yy/MM/dd,hh:mm:ss±zz” - ‘extended’ format, if &lt;val&gt; is in (4..7)  “yy/MM/dd,hh:mm:ss±zz,d” - ‘extended’ format with DST support, if &lt;val&gt; is in (8..15)</p> <p><b>where:</b>  yy - year  MM - month (in digits)  dd - day  hh - hour  mm - minute  ss - second  zz - time zone (indicates the difference, expressed in quarter of an hour, between the local time and GMT; two last digits are mandatory, range is -47..+48)  d – Number of hours added to the local TZ because of Daylight Saving Time (summertime) adjustment: range is 0-2.  <b>Note:</b> If the DST information isn’t sent by the network, then the &lt;datetime&gt; parameter has the format “yy/MM/dd,hh:mm:ss±zz”</p>
AT#NITZ?	Read command reports whether (a) automatic date/time updating, (b) Full Network Name applying, (c) #NITZ URC (as well as its format) are currently enabled or not, in the format:  <b>#NITZ: &lt;val&gt;,&lt;mode&gt;</b>
AT#NITZ=?	Test command returns supported values of parameters <val> and <mode>.

## 3.4.7.1.81

**Clock Management - #CCLK**

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



#CCLK - Clock Management	
	(01..28) (01..29) (01..30) (01..31) <b>hh</b> - hour (two last digits are mandatory), range is (00..23). <b>mm</b> - minute (two last digits are mandatory), range is (00..59). <b>ss</b> - seconds (two last digits are mandatory), range is (00..59). <b>±zz</b> - 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. <b>d</b> - number of hours added to the local TZ because of Daylight Saving Time (summertime) adjustment, range is 0-2.
<b>AT#CCLK?</b>	Read command returns the current setting of the real-time clock, in the format <b>&lt;time&gt;</b> .
<b>AT#CCLK=?</b>	Test command returns the <b>OK</b> result code.
<b>Example</b>	AT#CCLK="14/02/18,08:00:00+12,1" OK AT#CCLK? #CCLK: "14/02/18,08:00:02+12,1"  OK  <b>NOTE:</b> The way of writing the <b>&lt;time&gt;</b> : "yy/mm/dd,hh:mm:ss±zz,d" - AT#CCLK="02/09/07,22:30:00+00,1"
<b>Reference</b>	3GPP TS 27.007

### 3.4.7.1.82 *Clock Mode - #CCLKMODE*

#CCLKMODE – Clock Mode	
<b>AT#CCLKMODE= &lt;mode&gt;</b>	Set command enables the local time or the UTC time in AT+CCLK and AT#CCLK commands and in #NITZ URC.  <b>Parameter:</b> <b>&lt;mode&gt;</b> - time and date mode 0 - Local time + local time zone offset (default) 1 – UTC time + local time zone offset <b>Note:</b> the setting is saved automatically in NVM.



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

<b>AT#CCLKMODE?</b>	Read command reports whether the local time or the UTC time is enabled, in the format: <b>#CCLKMODE: &lt;mode&gt;</b> (<mode> described above).
<b>AT#CCLKMODE=?</b>	Test command reports the supported range of values for parameter <mode>.
<b>Example:</b>	<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>

### 3.4.7.1.83 Alarm Management - +CALA

<b>+CALA - Alarm Management</b>	
<b>AT+CALA=&lt;time&gt;[,&lt;n&gt;[,&lt;type&gt;[,&lt;text&gt;[,&lt;recur&gt;[,&lt;silent&gt;]]]]]</b>	<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"> <li>Currently just one alarm can be set.</li> <li>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.</li> </ul> <p>When the RTC time reaches the alarm time then the alarm starts, the behavior of the MODULE depends upon the setting &lt;type&gt; and if the device was already ON at the moment when the alarm time had come.</p> <p><b>Parameters:</b>  &lt;time&gt; - 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 &lt;recur&gt; parameter is used: in this case &lt;time&gt; must not contain a date (i.e."hh:mm:ss±zz")  &lt;n&gt; - index of the alarm  0 - The only value supported is 0.</p>



	<p><b>&lt;type&gt;</b> - alarm behaviour type</p> <p><b>0</b> - reserved for other equipment use.</p> <p><b>1</b> - 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> <p><b>2</b> - 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:</p> <p><b>+CALA: &lt;text&gt;</b> Where &lt;text&gt; 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)</p> <p><b>3</b> - 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.</p> <p><b>4</b> - The MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE brings the alarmpin high, provided that one has been set (using #ALARMPIN or #GPIO), 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.</p> <p><b>5</b> - The MODULE will make both the actions as for type=2 and &lt;type&gt;=3.</p> <p><b>6</b> - The MODULE will make both the actions as for type=2 and &lt;type&gt;=4.</p> <p><b>7</b> - The MODULE will make both the actions as for type=3 and &lt;type&gt;=4.</p> <p><b>8</b> - 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.</p> <p><b>&lt;text&gt;</b> - unsolicited alarm code text string. It has meaning only if &lt;type&gt; is equal to 2 or 5 or 6.</p> <p><b>&lt;recurr&gt;</b> - string type value indicating day of week for the alarm in one of the following formats:</p>
--	--



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

	<p>“&lt;1..7&gt;[,&lt;1..7&gt;[, ... ]]" - 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).</p> <p>“0” - it sets a recurrent alarm for all days in the week.</p> <p>&lt;silent&gt; - integer type indicating if the alarm is silent or not.</p> <p><b>0 - the alarm will not be silent;</b></p> <p><b>1 - the alarm will be silent.</b></p> <p><b>Note:</b> a special form of the Set command, +CALA="", deletes an alarm in the ME</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>During the "alarm mode" the device will not make any network scan and will not register to any network and therefore is not able to dial or receive any call or SMS. The only commands that can be issued to the MODULE in this state are the #WAKE and #SHDN, every other command must not be issued during this state.</p>
<b>AT+CALA?</b>	<p>Read command returns the list of current active alarm settings in the ME, in the format: <b>[+CALA: &lt;time&gt;,&lt;n&gt;,&lt;type&gt;,&lt;text&gt;,&lt;recurr&gt;,&lt;silent&gt;]</b></p> <p><b>Note: on READ command &lt;time&gt; does not include the time zone.</b></p>
<b>AT+CALA=?</b>	<p>Test command returns the list of supported index values (currently just 0), alarm types, maximum length of the text to be displayed, maximum length of &lt;recurr&gt; and supported &lt;silent&gt;s, in the format:</p> <p><b>+CALA: (list of supported &lt;n&gt;s),(list of supported &lt;type&gt;s),&lt;tlength&gt;,&lt;rlength&gt;,(list of supported &lt;silent&gt;s)</b></p>
<b>Example</b>	AT+CALA="02/09/07,23:30:00+00" OK
<b>Reference</b>	3gpp TS 27.007

### 3.4.7.1.84 *Delete Alarm - +CALD*

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

### 3.4.7.1.85 *Generic SIM access - +CSIM*



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

### 3.4.7.1.86 *Alert Sound - +CALM*

#### **+CALM - Alert Sound Mode**



<b>AT+CALM=</b> <b>&lt;mode&gt;</b>	Set command is used to select the general alert sound mode of the device.  <b>Parameter:</b> <b>&lt;mode&gt;</b> 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  <b>Note:</b> if silent mode is selected then incoming calls will not produce alerting sounds but only the unsolicited messages <b>RING</b> or <b>+CRING</b> .
<b>AT+CALM?</b>	Read command returns the current value of parameter <b>&lt;mode&gt;</b> .
<b>AT+CALM=?</b>	Test command returns the supported values for the parameter <b>&lt;mode&gt;</b> as compound value.
	<b>+CALM: (0-2)</b>
<b>Reference</b>	3GPP TS 27.007

## 3.4.7.1.87

**Select Band - #BND**

<b>#BND - Select Band</b>	
<b>AT#BND=</b> <b>&lt;GSM_band&gt;</b> <b>[,&lt;WCDMA_band</b> <b>&gt;</b> <b>[,&lt;LTE_band_mas</b> <b>k&gt;</b> <b>[,&lt;TDSCDMA_ba</b> <b>nd_mask&gt;]]]</b>	Set command selects the current band.  <b>Parameter:</b> <b>&lt;GSM_band&gt;:</b> 0 - GSM 900 MHz + DCS 1800 MHz 1 - GSM 900 MHz + PCS 1900 MHz 2 - GSM 850 MHz + DCS 1800 MHz 3 - GSM 850 MHz + PCS 1900 MHz 4 - GSM 900 MHz + DCS 1800 MHz + PCS 1900 MHz 5 - GSM 900 MHz + DCS 1800 MHz + PCS 1900 MHz + GSM 850 MHz  <b>&lt;WCDMA_band&gt;:</b> 0 - B1 (2100 MHz) 1 - B2 (1900 MHz) 2 - B5 (850 MHz) 3 - B1 (2100 MHz) + B2 (1900 MHz) + B5 (850 MHz) 4 - B2 (1900 MHz) + B5 (850 MHz) 5 - B8 (900 MHz) 6 - B1 (2100 MHz) + B8 (900 MHz) 7 - B4 (1700 MHz) 8 - B1 (2100 MHz) + B5 (850 MHz) 9 - B1 (2100 MHz) + B8 (900 MHz) + B5 (850 MHz)



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

10 - B2 (1900 MHz) + B4 (1700 MHz) + B5 (850 MHz)  
 12 - B6 (800 MHz)  
 13 - B3 (1800 MHz)  
 14 - B1 (2100 MHz) + B2 (1900 MHz) + B4 (1700 MHz) + B5 (850 MHz) + B6 (800 MHz)  
 15 - B1 (2100 MHz) + B8 (900 MHz) + B3 (1800 MHz)  
 16 - B8 (900 MHz) + B5 (850 MHz)  
 17 - B2 (1900 MHz) + B4 (1700 MHz) + B5 (850 MHz) + B6 (800 MHz)  
 18 - B1 (2100 MHz) + B5 (850 MHz) + B6 (800 MHz) + B8 (900 MHz)  
 19 - B2 (1900 MHz) + B6 (800 MHz)  
 20 - B5 (850 MHz) + B6 (800 MHz)  
 21 - B2 (1900 MHz) + B5 (850 MHz) + B6 (800 MHz)

### < LTE\_band\_mask >

0x00000 No bands allowed  
 0x00001 EUTRAN BAND1  
 0x00002 EUTRAN BAND2  
 0x00004 EUTRAN BAND3  
 0x00008 EUTRAN BAND4  
 0x00010 EUTRAN BAND5  
 0x00040 EUTRAN BAND7  
 0x00080 EUTRAN BAND8  
 0x01000 EUTRAN BAND13  
 0x10000 EUTRAN BAND17  
 0x80000 EUTRAN BAND20  
 0x00200000000 EUTRAN BAND34  
 0x02000000000 EUTRAN BAND38  
 0x04000000000 EUTRAN BAND39  
 0x08000000000 EUTRAN BAND40  
 0x10000000000 EUTRAN BAND41

### < TDSCDMA\_band\_mask >

0x00000 No bands allowed  
 0x00001 TDS BAND34 A  
 0x00020 TDS BAND39 F  
 0x00010 TDS BAND40 E

**Note:** 127 - GSM/WCDMA invalid value

**Note:** FFFFFFFFFFFFFFFF - LTE/TDSCDMA invalid value for all models

**Note:** in set command LTE/TDSCDMA band mask should be entered in HEX format without "0x". In Read and test commands it also appears without "0x".

Example:

AT#BND=5,15,800C5



	OK
<b>AT#BND?</b>	Read command returns the current selected band in the format: <b>#BND: &lt; GSM_band &gt;[, &lt; WCDMA_band &gt;[,&lt; LTE_band_mask &gt;[,&lt; TDSCDMA_band_mask &gt;]]]</b>
<b>AT#BND=?</b>	Test command returns the supported range of values of parameters < GSM_band >, < WCDMA_band >, < LTE_band_mask >, < TDSCDMA_band_mask >, if the technology supported by model. LTE and TDSCDMA bands shown as maximal bit mask for model in HEX. Example: AT#BND=? #BND: (0-5),(0,5,6,13,15),(800C5)  OK  →800C5 LTE bit mask means all combinations of next bands could be accepted by SET command: 0x00000 No bands allowed 0x00001 EUTRAN BAND1 0x00004 EUTRAN BAND3 0x00040 EUTRAN BAND7 0x00080 EUTRAN BAND8 0x80000 EUTRAN BAND20

### 3.4.7.1.88 *Automatic Band Selection - #AUTOBND*

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



### 3.4.7.1.89 *Skip Escape Sequence - #SKIPESC*

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

### 3.4.7.1.90 *Subscriber number - #SNUM*

#SNUM – Subscriber Number <b>SELINT 2</b>	
AT#SNUM= <index>,<number>[,<alpha>]	<p>Set command writes the MSISDN information related to the subscriber (own number) on the EFmsisdn SIM file.</p> <p><b>Parameter:</b>            &lt;index&gt; - record number            The number of record in the EFmsisdn depends on the SIM. If only &lt;index&gt; value is given, then delete the EFmsisdn record in location &lt;index&gt; deleted.            &lt;number&gt; - string containing the phone number            &lt;alpha&gt; - alphanumeric string associated to &lt;number&gt;. Default value is empty string (""), Otherwise, the used character set should be the one selected with +CSCS. The string can be written between quotes; the number of characters depends on the SIM. If empty string is given (""), the corresponding &lt;alpha&gt; will be an empty string.</p> <p><b>Note:</b> the command return ERROR if EFmsisdn file is not present in the SIM or if MSISDN service not allocated and activated in the SIM Service Table (see 3GPP TS 11.11).</p>
AT#SNUM=?	Test command returns the OK result code

### 3.4.7.1.91 *Escape Sequence Guard Time - #E2ESC*



#E2ESC - Escape Sequence Guard Time	
AT#E2ESC= [<gt;]	<p>Set command sets a guard time in seconds for the escape sequence in GPRS to be considered a valid one (and return to on-line command mode).</p> <p><b>Parameter:</b> &lt;gt;&gt; 0 - no guard time (factory default) 1..10 - guard time in seconds</p> <p><b>Note:</b> if the Escape Sequence Guard Time set to a value different from zero, it overrides the one set with <b>S12</b>.</p>
AT#E2ESC?	<p>Read command returns current value of the escape sequence guard time, in the format:</p> <p><b>#E2ESC:</b> &lt;gt;&gt;</p>
AT#E2ESC=?	Test command returns the <b>OK</b> result code.

#### 3.4.7.1.92 *PPP-GPRS Connection Authentication Type - #GAUTH*

#GAUTH - PPP-GPRS Connection Authentication Type	
AT#GAUTH= [<type>]	<p>Set command sets the authentication type used in PDP Context Activation during PPP-GPRS connections.</p> <p><b>Parameter:</b> &lt;type&gt;&gt; 0 - no authentication 1 - PAP authentication (factory default) 2 - CHAP authentication 3 - AUTO authentication (PAP or CHAP or no authentication according to host application, factory default)</p> <p><b>Note:</b> if the settings on the server side (the host application) of the PPP are not compatible with the AT#GAUTH setting, then the PDP Context Activation will use no authentication.</p>
AT#GAUTH?	<p>Read command reports the current authentication type, in the format:</p> <p><b>#GAUTH:</b> &lt;type&gt;</p>
AT#GAUTH=?	Test command returns the range of supported values for parameter <type>.



3.4.7.1.93

**GSM Antenna Detection - #GSMAD**

#GSMAD - GSM Antenna Detection	
<b>AT#GSMAD=</b> <b>&lt;mod&gt;,</b> <b>[&lt;urcmode&gt;</b> <b>[,&lt;interval&gt;</b> <b>[,&lt;detGPIO&gt;</b> <b>[,&lt;repGPIO&gt;</b> <b>[,&lt;antenna &gt;</b> <b>[&lt;adc&gt;]]]]]</b>	<p>Set command sets the behavior of antenna detection algorithm</p> <p><b>Parameters:</b></p> <p><b>&lt;mod&gt;</b></p> <ul style="list-style-type: none"> <li>0 - detection algorithm not active</li> <li>1 - detection algorithm active; detection is started every <b>&lt;interval&gt;</b> period, using <b>&lt;detGPIO&gt;</b> for detection.</li> <li>2 - triggers the new measurement of the antenna presence, reporting the result in the format: <b>#GSMAD: &lt;antenna&gt;,&lt;presence&gt;</b></li> </ul> <p><b>where:</b></p> <p><b>&lt;presence&gt;</b></p> <ul style="list-style-type: none"> <li>0 - antenna connected.</li> <li>1 - antenna connector short circuited to ground.</li> <li>2 - antenna connector short circuited to power.</li> <li>3 - antenna not detected (open).</li> </ul> <p><b>&lt;antenna&gt;</b></p> <ul style="list-style-type: none"> <li>1 - Main (default)</li> <li>2 - DIV</li> <li>3 - GPS</li> </ul> <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 <b>&lt;presence&gt;</b> status just detected.</p> <p><b>Format:</b></p> <p>AT#GSMAD=3</p> <p>#GSMAD: &lt;presence&gt;</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: &lt;presence&gt;</p> <p><b>OK</b></p> <p>#GSMAD: &lt;presence&gt; // URC resulting of previous #GSMAD=1</p> <p><b>&lt;urcmode&gt;</b> - URC presentation mode. It has meaning only if <b>&lt;mod&gt;</b> is 1.</p> <ul style="list-style-type: none"> <li>0 - it disables the presentation of the antenna detection URC</li> </ul>



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

	<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:</p> <p><b>#GSMAD:</b> &lt;antenna&gt;,&lt;presence&gt;</p> <p><b>where:</b> &lt;presence&gt; and &lt; antenna &gt; are as before</p> <p>&lt;interval&gt; - duration in seconds of the interval between two consecutive antenna detection algorithm runs (default is 120). It has meaning only if &lt;mod&gt; is 1.</p> <p>1..3600 - seconds</p> <p>&lt;detGPIO&gt; - 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>&lt;repGPIO&gt; - 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 &lt;mod&gt; is 1.</p> <p>0 - no report is made using GPIO</p> <p>Valid range is “any output pin number” (see “Hardware User Guide”).</p> <p>&lt;antenna&gt; - index of requested antenna.</p> <p>1 - Main (default)</p> <p>2 - DIV</p> <p>3 - GPS</p> <p>&lt;adc&gt; - index of requested ADC.</p> <p>1 - ADC1 (default)</p> <p>2 - ADC2</p> <p>3 - ADC3</p> <p><b>Note:</b> last &lt;urcmode&gt; settings are saved as extended profile parameters.</p> <p><b>Note:</b> GPIO is set to LOW when antenna is connected. Set to HIGH otherwise</p> <p><b>Note:</b> #GSMAD parameters, excluding &lt;urcmode&gt;, are saved in NVM.</p>
<b>AT#GSMAD=?</b>	Test command reports the supported range of values for parameters <mod>, <urcmode>, <interval>, <detGPIO> and <repGPIO>,<antenna>,<adc >.
<b>AT#GSMAD?</b>	<p>Read command returns the current parameter settings for #GSMAD command in the format:</p> <p><b>#GSMAD:</b></p> <p>&lt;mod&gt;,&lt;urcmode&gt;,&lt;interval&gt;,&lt;detGPIO&gt;,&lt;repGPIO&gt;,&lt;antenna&gt;,&lt;adc&gt;&lt;CR&gt;&lt;LF&gt;</p> <p><b>#GSMAD:</b></p> <p>&lt;mod&gt;,&lt;urcmode&gt;,&lt;interval&gt;,&lt;detGPIO&gt;,&lt;repGPIO&gt;,&lt;antenna&gt;,&lt;adc &gt;&lt;CR&gt;&lt;LF&gt;</p> <p><b>#GSMAD:</b> &lt;mod&gt;,&lt;urcmode&gt;,&lt;interval&gt;,&lt;detGPIO&gt;,&lt;repGPIO&gt;,&lt;antenna&gt;,&lt;adc &gt;&lt;CR&gt;&lt;LF&gt;</p>

### 3.4.7.1.94 *SIM Detection Mode-#SIMDET*

<b>#SIMDET - SIM Detection Mode</b>	
<b>AT#SIMDET= &lt;mode&gt;</b>	<p>Set command specifies the SIM Detection mode.</p> <p><b>Parameter:</b></p> <p>&lt;mode&gt; - SIM Detection mode</p>



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

	0 - ignore SIMIN pin and simulate the status “SIM Not Inserted” 1 - ignore SIMIN pin and simulate the status “SIM Inserted” 2 - automatic SIM detection through SIMIN Pin (default)
<b>AT#SIMDET?</b>	Read command returns the currently selected Sim Detection Mode in the format:  #SIMDET: <mode>,<simin>  <b>where:</b> <mode> - SIM Detection mode, as before <simin> - SIMIN pin real status 0 - SIM not inserted 1 - SIM inserted
<b>AT#SIMDET=?</b>	Test command reports the supported range of values for parameter <mode>

### 3.4.7.1.95

### Teletype Writer - #TTY

#TTY - TeleType Writer	
<b>AT#TTY=&lt;support&gt;</b>	Set command enables/disables the TTY functionality. Parameter: <support> <ul style="list-style-type: none"> <li>• Disable TTY functionality.(factory default)</li> <li>• Enable Full TTY mode.</li> <li>• Enable VCO mode (Voice Carry Over).</li> <li>• Enable HCO mode (Hearing Carry Over)</li> </ul> <b>Note:</b> <ul style="list-style-type: none"> <li>• Enabling this command, blocked #ADSPC set command.</li> <li>• The value set by command is directly stored in NVM and doesn't depend on the specific AT instance.</li> <li>• On Active/MT/MO Voice Call return Error.</li> </ul>
<b>AT#TTY?</b>	Read command returns the currently TTY mode, in the format: #TTY: <support>
<b>AT#TTY=?</b>	Test command reports the supported range of values for parameter <Support>.

### 3.4.7.1.96

### Write to I2C - #I2CWR



#I2CWR – Write to I2C	
<b>AT#I2CWR=</b> <b>&lt;sdaPin&gt;, &lt;sclPin&gt;, &lt;deviceId&gt;, &lt;registerId&gt;, &lt;len&gt;</b>	<p>This command is used to Send Data to an I2C peripheral connected to module GPIOs</p> <p><b>&lt;sdaPin&gt;</b>: GPIO number for SDA . Valid range is “any input/output pin” (see “Hardware User’s Guide”).</p> <p><b>&lt;sclPin&gt;</b>: GPIO number to be used for SCL. Valid range is “any output pin” (see “Hardware User’s Guide”).</p> <p><b>&lt;deviceId&gt;</b>: 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><b>&lt;registerId&gt;</b>: Register to write data to , range 0..255. Value has to be written in hexadecimal form (without 0x).</p> <p><b>&lt;len&gt;</b>: number of data to send. Valid range is 1-254.</p> <p>The module responds to the command with the prompt '&gt;' 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.</p> <p>If data sending fails for some reason, an error code is reported.</p> <p>Example if CheckAck is set and no Ack signal was received on the I2C bus.</p> <p><b>Note:</b> At the end of the execution GPIO will be restored to the original setting ( check AT#GPIO Command )</p> <p>Device address, register address where to read from\ write to, and date bytes have to be written in hexadecimal form without 0x.</p>
<b>AT#I2CWR=?</b>	Test command returns the range of each parameter.
<b>Example</b>	<p>AT#I2CWR=2,3,30,10,14</p> <p>&gt; 00112233445566778899AABBCCDD&lt;ctrl-z&gt;</p> <p>OK</p> <p>Set GPIO2 as SDA, GPIO3 as SCL;</p> <p>Device I2C address is 0x30;</p> <p>0x10 is the address of the first register where to write I2C data;</p> <p>14 data bytes will be written since register 0x10.</p>

### 3.4.7.1.97

### *Report concatenated SMS indexes - #CMGLCONCINDEX*

#CMGLCONCINDEX – Report concatenated SMS indexes	
<b>AT#CMGLCONCINDEX</b>	The command will report a line for each concatenated SMS containing:



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

## 3.4.7.1.98

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

#PSMRI – Power Saving Mode Ring Indicator	
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.</p> <p>The duration of this pulse is determined by the value of &lt;n&gt;.</p> <p><b>Parameter:</b></p> <p>&lt;n&gt; - <b>RI</b> enabling</p> <p>0 - disables <b>RI</b> pin response for URC message(factory default)</p> <p>50-1150 - enables <b>RI</b> pin response for URC messages.</p> <p><b>Note:</b> 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: <b>#PSMRI: &lt;n&gt;</b>
AT#PSMRI=?	Reports the range of supported values for parameter <n>
Note	When RING signal for incoming call/SMS/socket listen is enabled, the behavior for #PSMRI will be ignored.

## 3.4.7.1.99

**Extended Reset - #z**


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

#### 3.4.7.1.100 *Enhanced Network Selection - #ENS*

#ENS - Enhanced Network Selection	
AT#ENS=[<mode>]	Set command is used to activate the ENS functionality. <b>Parameter:</b> <mode> 0 - Disable ENS functionality (default). 1 - Enable ENS functionality; If AT#ENS=1 has been issued, the following values will be automatically set and also at every next power-up: – All bands are enabled – SIM Application Toolkit enabled on user interface 0 if not previously enabled on a Different user interface (AT#STIA=2). – PLMN list not fixed (AT#PLMNMODE=1).
AT#ENS?	Read command reports whether the ENS functionality is currently enabled or not, in the format: #ENS: <mode> <b>where:</b> <mode> as above.
AT#ENS=?	Test command reports the available range of values for parameter <mode>.

#### 3.4.7.1.101 *Enable RX Diversity and set DARP - #RXDIV*

#RXDIV – enable RX Diversity and set DARP	
AT#RXDIV= <DIV_enable>, <DARP_mode>	This command enables/disables the RX Diversity and sets the DARP. <b>Parameters:</b> <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.



## 80407ST10116A Rev.14.1 - 2017-05-14

	<p><b>&lt;DARP_mode&gt;</b> - DARP mode</p> <p>0 – DARP not supported</p> <p>1 – DARP phase 1(default value)</p> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>- The values set by command are directly stored in NVM, and they are available at next power on.</li> <li>- If &lt;DIV_enable&gt; is set to 0, then &lt;DARP_mode&gt; is automatically set to 1 regardless the set value.</li> </ul>
<b>AT#RXDIV?</b>	<p>Read command reports the currently selected &lt;DIV_enable&gt; and &lt;DARP_mode&gt; parameters in the format:</p> <p>#RXDIV: &lt;DIV_enable&gt;,&lt;DARP_mode&gt;</p>
<b>AT#RXDIV=?</b>	<p>Test command reports the supported range of values for parameters &lt;DIV_enable&gt; and &lt;DARP_mode&gt;.</p>

#### 3.4.7.1.102 *Swap RX from main to diversity #RXTOGGLE*

## #RXTOGGLE – Swap RX from main to diversity

<b>AT#RXTOGGLE =</b> <b>&lt;Toggle_enable&gt;</b>	Set command moves the RX receiver from main antenna to the diversity antenna <b>Parameters:</b> <b>&lt; Toggle_enable &gt;</b>  0 – Set the RX to the main antenna. 1 - Set the RX to the Diversity antenna  <b>Note:</b> <b>Currently support swap only at LTE</b> <b>This command used for lab purpose.</b>
<b>AT#RXTOGGLE?</b>	Read command reports the currently selected <b>&lt; Toggle_enable &gt;</b> in the format: <b>#RXTOGGLE: &lt; Toggle_enable &gt;</b>
<b>AT#RXTOGGLE=?</b>	Test command reports the supported range of values

#### 3.4.7.1.103 *Ciphering indication - # CIPHIND*

### #CIPHIND – Ciphering Indication

**SELINT 2**

<b>AT#CIPHIND</b> = [<mode>]	Set command enables/disables unsolicited result code for cipher indication. The ciphering indicator feature allows to detect that ciphering is not switched on and to indicate this to the user. The
------------------------------	--



#CIPHIND – Ciphering Indication	SELINT 2
	<p>ciphering indicator feature may be disabled by the home network operator setting data in the SIM/USIM. If this feature is not disabled by the SIM/USIM, then whenever a connection is in place, which is unenciphered, or changes from ciphered to unenciphered or vice versa, an unsolicited indication shall be given to the user.</p> <p>Parameter:  <b>&lt;mode&gt;</b>  0 - disable #CIPHIND unsolicited result code (factory default)  1 - enable #CIPHIND unsolicited result code</p> <p><b>#CIPHIND: &lt;mode&gt;</b></p>
AT#CIPHIND?	<p>Read command reports the <b>&lt;mode&gt;</b>, <b>&lt;cipher&gt;</b> and <b>&lt;SIM/USIM flag&gt;</b>:</p> <p><b>#CIPHIND: &lt;mode&gt;,&lt;cipher&gt;,&lt;SIM/USIM flag&gt;</b></p> <p>where  <b>&lt;mode&gt;</b></p> <p>0 - #CIPHIND unsolicited result code disabled  1 - #CIPHIND unsolicited result code enabled</p> <p><b>&lt;cipher&gt;</b> - cipher status</p> <p>0 – cipher off  1 – cipher on  2 - unknown (missing network information)</p> <p><b>&lt; SIM/USIM flag &gt;</b> - SIM/USIM cipher status indication enabling</p> <p>0 – disabled  1 – enabled  2 - unknown (flag not read yet)</p>
AT#CIPHIND=?	Test command reports the range for the parameter <b>&lt;mode&gt;</b>

## 3.4.7.1.104

**Set Encryption Algorithm - #ENCALG**


#ENCALG - Set Encryption Algorithm	
<b>AT#ENCALG=</b> <b>[&lt;encGSM&gt;]</b> <b>[,&lt;encGPRS&gt;]</b>	<p>This command enables or disables the "GSM / WCDMA CS" and/or "GPRS / WCDMA PS" encryption algorithms supported by the module.</p> <p><b>Parameters:</b>  <b>&lt;encGSM&gt;:</b>            0 – no "GSM / WCDMA CS" encryption algorithm            1..7 - sum of integers each representing a specific "GSM / WCDMA CS" encryption algorithm:                1 – A5/1                2 – A5/2                4 – A5/3            255 - reset the default values</p> <p><b>&lt;encGPRS&gt;:</b>            0 – no "GPRS / WCDMA PS" encryption algorithm            1..7 - sum of integers each representing a specific "GPRS / WCDMA PS" 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 &lt;encGSM&gt; encryptions see test command response</p>
<b>AT#ENCALG?</b>	<p>Read command reports the currently selected &lt;encGSM&gt; and &lt;encGPRS&gt;, and the last used &lt;usedGSM&gt; and &lt;usedGPRS&gt; in the format:</p> <p><b>#ENCALG: &lt;encGSM&gt;,&lt;encGPRS&gt;,&lt;usedGSM&gt;,&lt;usedGPRS&gt;</b></p> <p><b>Parameters:</b>  <b>&lt;usedGSM&gt;:</b>            0 – no "GSM / WCDMA CS" encryption algorithm            1 – A5/1            2 – A5/2            4 – A5/3            255 - unknown information</p> <p><b>&lt;usedGPRS&gt;:</b>            0 – no "GPRS / WCDMA PS" encryption algorithm            1 – GEA1            2 – GEA2            4 – GEA3</p>



	255 - unknown information
<b>AT#ENCALG=?</b>	Test command reports the supported range of values for parameters in the format: <encGSM> and <encGPRS>.
<b>Example</b>	<p>AT#ENCALG?  #ENCALG: 5,2,1,1  OK  AT#ENCALG=5,1  OK  Sets the "GSM / WCDMA CS" encryption algorithm A5/1 and A5/3, and the "GPRS / WCDMA PS" 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 / WCDMA CS" encryption algorithm is A5/1 and the last used "GPRS / WCDMA PS" encryption algorithm is GEA1.  After reboot  AT#ENCALG?  #ENCALG: 5,1,1,1</p>

### 3.4.7.1.105 *Configure FRAT Trigger parameter - #FRATTRIGGER*

#FRATTRIGGER – configure FRAT Trigger parameter	
<b>AT#FRATTRIGGER=</b> <b>&lt;gpio_pin&gt;[,</b> <b>&lt;trigger_value&gt;]</b>	<p>This command sets the parameter needed to trigger the FRAT:</p> <p><b>Parameters:</b></p> <p><b>&lt;gpio_pin&gt;</b> - Numeric parameter that selects how to get the frat_trigger value.  0 – gets the frat_trigger value from <b>&lt;trigger_value&gt;</b>.  (1-10) – gets the frat_trigger value from TGPIIO #&lt;gpio_pin&gt;.</p> <p><b>&lt;trigger_value&gt;</b> - numeric parameter which selected how to trigger the FRAT.  0 – slow trigger  1 – fast trigger</p> <p><b>NOTE:</b>  &lt;gpio_pin&gt; is attached to ALT8 func (see AT#GPIO).  &lt;gpio_pin&gt; is save to NVM.  &lt;gpio_pin&gt; default is 0.</p> <p>&lt;trigger_value&gt; default is 1.  &lt;trigger_value&gt; will reset to default in each power up.</p>



#FRATTRIGGER – configure FRAT Trigger parameter	
AT#FRATTRIGGER?	Read command returns the current settings for the frat trigger: #FRATTRIGGER: <gpio_pin>,<trigger_value>
AT#FRATTRIGGER=?	Test command returns the supported range of parameters <gpio_pin>,<trigger_value>
NOTES	

### 3.4.7.2 Multisocket AT Commands

#### 3.4.7.2.1 *Socket Status - #SS*

<b>#SS - Socket Status</b>	
<b>AT#SS</b>	<p>Execution command reports the current status of the sockets in the format:</p> <p><b>#SS: &lt;connId&gt;,&lt;state&gt;,&lt;locIP&gt;,&lt;locPort&gt;,&lt;remIP&gt;,&lt;remPort&gt;</b>  <b>[&lt;CR&gt;&lt;LF&gt;&lt;connId&gt;,&lt;state&gt;,&lt;locIP&gt;,&lt;locPort&gt;,&lt;remIP&gt;,&lt;remPort&gt;</b>  <b>[...]]</b></p> <p><b>where:</b></p> <p><b>&lt;connId&gt;</b> - socket connection identifier  1..6</p> <p><b>&lt;state&gt;</b> - actual state of the socket:</p> <ul style="list-style-type: none"> <li>0 - Socket Closed.</li> <li>1 - Socket with an active data transfer connection.</li> <li>2 - Socket suspended.</li> <li>3 - Socket suspended with pending data.</li> <li>4 - Socket listening.</li> <li>5 - Socket with an incoming connection. Waiting for the user accept or shutdown command.</li> <li>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.</li> </ul> <p><b>&lt;locIP&gt;</b> - IP address associated by the context activation to the socket.</p> <p><b>&lt;locPort&gt;</b> - two meanings:</p> <ul style="list-style-type: none"> <li>- The listening port if we put the socket in listen mode.</li> <li>- The local port for the connection if we use the socket to connect to a remote machine.</li> </ul> <p><b>&lt;remIP&gt;</b> - when we are connected to a remote machine this is the remote IP address.</p>



<b>#SS - Socket Status</b>	
	<remPort> - it is the port we are connected to on the remote machine.
AT#SS=?	Test command returns the <b>OK</b> result code.

### 3.4.7.2.2 Socket Info - #SI

<b>#SI - Socket Info</b>	
AT#SI[=<connId>]	<p>Execution command is used to get information about socket data traffic.</p> <p><b>Parameters:</b>            &lt;connId&gt; - socket connection identifier            1..6            The response format is:  <b>#SI: &lt;connId&gt;,&lt;sent&gt;,&lt;received&gt;,&lt;buff_in&gt;,&lt;ack_waiting&gt;</b></p> <p><b>where:</b>            &lt;connId&gt; - socket connection identifier, as before            &lt;sent&gt; - total amount (in bytes) of sent data since the last time the socket connection identified by &lt;connId&gt; has been opened            &lt;received&gt; - total amount (in bytes) of received data since the last time the socket connection identified by &lt;connId&gt; has been opened            &lt;buff_in&gt; - total amount (in bytes) of data just arrived through the socket connection identified by &lt;connId&gt; and currently buffered, not yet read            &lt;ack_waiting&gt; - total amount (in bytes) of sent and not yet acknowledged data since the last time the socket connection identified by &lt;connId&gt; has been opened  <b>Note:</b> not yet acknowledged data are available only for TCP connections. The value &lt;ack_waiting&gt; is always 0 for UDP connections.  <b>Note:</b> issuing #SI&lt;CR&gt; causes getting information about data traffic of all the sockets, the response format is:  <b>#SI: &lt;connId1&gt;,&lt;sent1&gt;,&lt;received1&gt;,&lt;buff_in1&gt;,&lt;ack_waiting1&gt;</b>  <b>&lt;CR&gt;&lt;LF&gt;...</b>  <b>#SI: &lt;connId6&gt;,&lt;sent6&gt;,&lt;received6&gt;,&lt;buff_in6&gt;,&lt;ack_waiting6&gt;</b></p>
AT#SI=?	Test command reports the range for parameter <connId>.
Example	<p>AT#SI            #SI: 1,123,400,10,50            #SI: 2,0,100,0,0            #SI: 3,589,100,10,100            #SI: 4,0,0,0,0            #SI: 5,0,0,0,0            #SI: 6,0,98,60,0            OK</p> <p>Sockets 1,2,3,6 are opened with some data traffic.            For example socket 1 has 123 bytes sent, 400 bytes received,            10 byte waiting to be read and 50 bytes waiting to be acknowledged from the remote side.</p>



#SI - Socket Info	
	<p>AT#SI=1 #SI: 1,123,400,10,50 OK</p> <p>We have information only about socket number 1</p>

### 3.4.7.2.3 Socket Type - #ST

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



	AT#ST=3 #ST: 3,2,1 Socket 3 is an UDP dialer.
--	---

#### 3.4.7.2.4 Context Activation - #SGACT

#SGACT - Context Activation	
<b>AT#SGACT=</b> <b>&lt;cid&gt;,&lt;stat&gt;</b> <b>[,&lt;userId&gt;,&lt;pwd&gt;]</b>	<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><b>Parameters:</b></p> <p><b>&lt;cid&gt;</b> - PDP context identifier  1..5 - numeric parameter which specifies a particular PDP context definition (see +CGDCONT command)</p> <p><b>&lt;stat&gt;</b>  0 - deactivate the context  1 - activate the context</p> <p><b>&lt;userId&gt;</b> - string type,used only if the context requires it</p> <p><b>&lt;pwd&gt;</b> - string type, used only if the context requires it</p> <p>Execution command returns a list of IP addresses for the specified context identifiers in the format:  If IP or IPV6 PDP context:  <b>#SGACT: &lt;ipAddr&gt;</b></p> <p>For DUAL STACK IPV4V6 PDP context:  <b>#SGACT: [&lt;ipAddrV4&gt;],[&lt;ipAddrV6&gt;]</b></p> <p>Where:  <b>&lt;ipAddr&gt;</b> - ip address ipv4 or ipv6  <b>&lt;ipAddrV4&gt;</b> - ip address ipv4(if v4 PDP context activated)  <b>&lt;ipAddrV6&gt;</b> - ip address ipv6(if v6 PDP context activated)</p> <p><b>Note:</b> context activation/deactivation returns ERROR if there is not any socket associated to it (see AT#SCFG).</p> <p><b>Note:</b> 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> <p><b>Note:</b> If the unsolicited result code for obtaining IP address was enabled (urcmode value) using #SGACTCFG command, on start up and due to USB enumeration timing the unsolicited may not appear , user should manually use +CGPADDR command to see the IP address.</p>
<b>AT#SGACT?</b>	Returns the state of all the five contexts, in the format:



#SGACT - Context Activation	
	<p>#SGACT: &lt;cid1&gt;,&lt;Stat1&gt;&lt;CR&gt;&lt;LF&gt; ... #SGACT: &lt;cid5&gt;,&lt;Stat5&gt;</p> <p><b>where:</b>            &lt;cidn&gt; - as &lt;cid&gt; before            &lt;statn&gt; - context status            0 - context deactivated            1 - context activated</p>
AT#SGACT=?	Reports the range for the parameters <cid> and <stat>

#### 3.4.7.2.5 Socket Shutdown - #SH

#SH - Socket Shutdown	
AT#SH=<connId>	<p>This command is used to close a socket.</p> <p><b>Parameter:</b>            &lt;connId&gt; - socket connection identifier            1..6</p> <p><b>Note:</b> 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 <b>OK</b> result code.

#### 3.4.7.2.6 Socket Configuration - #SCFG

#SCFG - Socket Configuration	
AT#SCFG=<connId>,<cid>,<pktSz>,<maxTo>,<connTo>,<txTo>	<p>Set command sets the socket configuration parameters.</p> <p><b>Parameters:</b>            &lt;connId&gt; - socket connection identifier            1..6            &lt;cid&gt; - PDP context identifier            1..5 - numeric parameter which specifies a particular PDP context definition            &lt;pktSz&gt; - 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.            &lt;maxTo&gt; - exchange timeout( or socket inactivity time); if there's no data exchange within this timeout period the connection is closed</p>



#SCFG - Socket Configuration	
	<p>0 - no timeout  n(1...65535) - timeout value in seconds (default 90 s.)  <b>&lt;connTo&gt;</b> - connection timeout; if we can't establish a connection to the remote within this timeout period, an error is raised.</p> <p>0 - no timeout  n(10...1200) - timeout value in hundreds of milliseconds (default 600)  <b>&lt;txTo&gt;</b> - data sending timeout; data are sent even if they're less than max packet size , after this period. Used for online data mode only.</p> <p>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</p> <p><b>Note:</b> these values are automatically saved in NVM.</p>
<b>AT#SCFG?</b>	<p>Read command returns the current socket configuration parameters values for all the six sockets, in the format:</p> <p><b>#SCFG: &lt;connId1&gt;,&lt;cid1&gt;,&lt;pktsz1&gt;,&lt;maxTo1&gt;,&lt;connTo1&gt;,&lt;txTo1&gt;</b>  <b>&lt;CR&gt;&lt;LF&gt;</b></p> <p>...</p> <p><b>#SCFG: &lt;connId6&gt;,&lt;cid6&gt;,&lt;pktsz6&gt;,&lt;maxTo6&gt;,&lt;connTo6&gt;,&lt;txTo6&gt;</b>  <b>&lt;CR&gt;&lt;LF&gt;</b></p>
<b>AT#SCFG=?</b>	Test command returns the range of supported values for all the subparameters.
<b>Example</b>	<p>at#scfg?  #SCFG: 1,1,300,90,600,50  #SCFG: 2,2,300,90,600,50  #SCFG: 3,2,250,90,600,50  #SCFG: 4,1,300,90,600,50  #SCFG: 5,1,300,90,600,50  #SCFG: 6,1,300,90,600,50</p> <p>OK</p>



### 3.4.7.2.7 Context activation configuration extended - #SGACTCFGEXT

#SGACTCFGEXT - context activation configuration extended	
<b>AT#SGACTCFGEXT=</b> <b>&lt;cid&gt;,&lt;abortAttemptEnable&gt;</b> <b>[,&lt;unused&gt;</b> <b>[,&lt;unused&gt;</b> <b>[,&lt;unused&gt;</b> <b>]]]</b>	<p>Execution command is used to enable new features related to context activation.</p> <p><b>Parameters:</b>  <b>&lt;cid&gt;</b> - PDP context identifier (see +CGDCONT command)  1..5 - numeric parameter which specifies a particular PDP context definition  <b>&lt;abortAttemptEnable&gt;</b>  0 – old behavior: no abort possible while attempting context activation  1 – abort during context activation attempt is possible by sending a byte on the serial port.</p> <p>It takes effect on successive GPRS context activation attempt through #SGACT command in the following manner.  While waiting for AT#SGACT=&lt;cid&gt;,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><b>Note:</b> If we receive delayed CTEXT 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> <p><b>Note:</b> the command is not effective while the context is already open.</p>
<b>AT#SGACTCFGEXT?</b>	<p>Read command reports the state of all the five contexts, in the format:  <b>#SGACTCFGEXT: &lt;cid1&gt;,&lt; abortAttemptEnable1 &gt;,0,0,0&lt;CR&gt;&lt;LF&gt;</b>  ...  <b>#SGACTCFGEXT: &lt;cid5&gt;,&lt; abortAttemptEnable5 &gt;,0,0,0&lt;CR&gt;&lt;LF&gt;</b></p> <p><b>where:</b>  <b>&lt;cidn&gt;</b> - as &lt;cid&gt; before  <b>&lt;abortAttemptEnable n&gt;</b> - as &lt;abortAttemptEnable&gt; before.</p> <p><b>Note:</b> values are automatically saved in NVM</p>
<b>AT#SGACTCFGEXT=?</b>	<p>Test command reports supported range of values for all parameters</p>



#### 3.4.7.2.8 *PAD forward character - #PADFWD*

PAD forward character - #PADFWD	
AT#PADFWD= <char>[,<mode>]	<p>This command sets the char that immediately flushes pending data to socket, opened with AT#SD command.</p> <p><b>Parameters:</b>            &lt;char&gt; a number, from 0 to 255, that specifies the ascii code of the char used to flush data              &lt;mode&gt; flush mode,            0 – normal mode (default)            1 – reserved</p> <p><b>Note:</b> use AT#PADCMD to enable the socket char-flush activity.</p>
AT#PADFWD?	Read command reports the currently selected <char> and <mode> in the format: #PADFWD: <char>,mode
AT#PADFWD=?	Test command reports the supported range of values for parameters <char> and <mode>.

- **Feature PAD currently applicable for UART only**

#### 3.4.7.2.9 *PAD* command features - #PADCMD

<div>5.1.7.2.7 PAD command features - #PADCMD</div> <div><b>PAD command features - #PADCMD</b></div>	
<b>AT#PADCMD=</b> <b>&lt;mode&gt;</b>	<p>This command sets features of the pending data flush to socket, opened with AT#SD command.</p> <p><b>Parameters:</b>  <b>&lt;mode&gt;:</b>            Bit 1:            1 - enable forwarding;            0 – disable forwarding;</p> <p>Other bits reserved.</p> <p><b>Note:</b> forwarding depends on character defined by AT#PADFWD</p>
<b>AT#PADCMD?</b>	<p>Read command reports the currently selected &lt;mode&gt; in the format: #PADCMD: mode</p>
<b>AT#PADCMD=?</b>	<p>Test command reports the supported range of values for parameter &lt;mode&gt;.</p>

- **Feature PAD currently applicable for UART only**

#### 3.4.7.2.10 *Socket Configuration Extended - #SCFGEXT*



#SCFGEXT - Socket Configuration Extended	
<b>AT#SCFGEXT=</b> <b>&lt;connId&gt;</b> , <b>&lt;srMode&gt;</b> , <b>&lt;dataMode&gt;</b> , <b>&lt;keepalive&gt;</b> <b>[,&lt;ListenAutoRsp&gt;]</b> <b>,&lt;sendDataMode&gt;</b> <b>  </b>	<p>Set command sets the socket configuration extended parameters.</p> <p><b>Parameters:</b></p> <p><b>&lt;connId&gt;</b> - socket connection identifier  1..6</p> <p><b>&lt;srMode&gt;</b> - <b>S</b>Ring URC mode  0 - normal mode (default):  <b>SRING : &lt;connId&gt;</b>  <b>where:</b>  <b>&lt;connId&gt;</b> - socket connection identifier, as before  1 - data amount mode:  <b>SRING : &lt;connId&gt;,&lt;recData&gt;</b>  <b>where:</b>  <b>&lt;connId&gt;</b> - as before  <b>&lt;recData&gt;</b> - amount of data received on the socket connection  2 - data view mode:  <b>SRING : &lt;connId&gt;,&lt;recData&gt;,&lt;data&gt;</b>  <b>where:</b>  <b>&lt;connId&gt;</b> -  <b>&lt;recData&gt;</b> - as before  <b>&lt;data&gt;</b> - received data; the presentation format depends on the subparameter <b>&lt;dataMode&gt;</b> value</p> <p><b>&lt;dataMode&gt;</b> - “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:  <b>SRING : &lt;remoteIP&gt;,&lt;remotePort&gt;&lt;connId&gt;,&lt;recData&gt;,&lt;dataLeft&gt;,&lt;data&gt;</b> same as before with <b>&lt;remoteIP&gt;</b>,<b>&lt;remotePort&gt;</b> and <b>&lt;dataLeft&gt;</b> that means the number of bytes left in the UDP datagram</p> <p><b>&lt;keepalive&gt;</b> - <b>TCP keepalive</b> timer timeout -The interval between two keepalive transmissions in idle condition.  0 - <b>TCP keepalive</b> timer is deactivated (default)  1..240 - <b>TCP keepalive</b> timer timeout in minutes</p> <p><b>&lt;ListenAutoRsp&gt;</b> - Set the listen auto-response mode, that affects the commands AT#SL and AT#SLUDP  0 - Deactivated (default)  1 – Activated</p> <p><b>&lt;sendDataMode&gt;</b>- data mode for sending data in command mode(AT#SSEND)  0 - data represented as text (default)  1 - data represented as sequence of hexadecimal numbers (from 00 to FF)</p>



#SCFGEXT - Socket Configuration Extended	
	<p>Each octet of the data is given as two IRA character long hexadecimal number</p> <p><b>Note: KeepAlive Interval</b> - Interval between two successive keepalive retransmissions, if acknowledgement to the previous keepalive transmission is not received. Non configurable value: 75 sec.</p> <p><b>KeepAlive Probes</b> - The number of unacknowledged retransmissions to send out before closing socket. Non configurable value: 9 retransmissions.</p> <p><b>Note:</b> these values are automatically saved in NVM</p> <p><b>Note:</b> 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:</p> <p>#SCFGEXT: &lt;connId1&gt;,&lt;srMode1&gt;,&lt;dataMode1&gt;,&lt;keepalive1&gt;,&lt;ListenAutoRsp1&gt;,&lt;sendDataMode1&gt;,&lt;CR&gt;&lt;LF&gt;</p> <p>...</p> <p>#SCFGEXT: &lt;connId6&gt;,&lt;srMode6&gt;,&lt;dataMode6&gt;,&lt;keepalive6&gt;,&lt;ListenAutoRsp6&gt;,&lt;sendDataMode6&gt;,&lt;CR&gt;&lt;LF&gt;</p>
AT#SCFGEXT=?	Test command returns the range of supported values for all the subparameters
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> <pre>at#scfgext? #SCFGEXT: 1,2,0,30,1,0 #SCFGEXT: 2,0,0,0,0,0 #SCFGEXT: 3,1,1,0,0,0 #SCFGEXT: 4,0,1,0,0,1 #SCFGEXT: 5,0,0,0,0,0 #SCFGEXT: 6,0,0,0,0,0 OK</pre>

#### 3.4.7.2.11

#### Socket Configuration Extended 2 - #SCFGEXT2



#SCFGEXT2 - Socket Configuration Extended	
<b>AT#SCFGEXT2=</b> <b>&lt;connId&gt;</b> , <b>&lt;bufferStart&gt;</b> <b>[,&lt;abortConnAttempt</b> <b>&gt;</b> <b>[, unused_B&gt;</b> <b>[,&lt;unused_C&gt;</b> <b>[,&lt;noCarrierMode&gt;]]]</b> <b> </b>	<p>Set command sets the socket configuration extended parameters for features not included in #SCFGEXT command.</p> <p><b>Parameters:</b></p> <p><b>&lt;connId&gt;</b> - socket connection identifier 1..6</p> <p><b>&lt;bufferStart&gt;</b> - Set the sending timeout method based on new data received from the serial port (&lt;txTo&gt; timeout value is set by #SCFG command). Restart of transmission timer done when new data received from the serial port.</p> <p><b>0</b> – old behaviour for transmission timer (#SCFG command 6th parameter old behaviour, start only first time if new data are received from the serial port)</p> <p><b>1</b> – new behaviour for transmission timer : Restart when new data received from serial port</p> <p><b>Note:</b> is necessary to avoid overlapping of the two methods. Enabling new method, the old method for transmission timer (#SCFG) automatically disabled to avoid overlapping.</p> <p><b>Note:</b> check if new data have been received from serial port is done with a granularity that is directly related to #SCFG &lt;txTo&gt; setting with a maximum period of 1 sec.</p> <p><b>&lt;abortConnAttempt&gt;</b> - Enable connection attempt(#SD / #SKTD) abort before CONNECT (online mode) or OK (command mode)</p> <p><b>0</b> – Not possible to interrupt connection attempt</p> <p><b>1</b> – It is possible to interrupt the connection attempt (&lt;connTo&gt; set by #SCFG or DNS resolution running if required) and give back control to AT interface by reception of a character. As soon as the control given to the AT interface, the ERROR message will be received on the interface itself.</p> <p><b>Note:</b> values automatically saved in NVM.</p> <p><b>&lt;noCarrierMode&gt;</b> - permits to choose NO CARRIER indication format when the socket is closed as follows</p> <p><b>0</b> – NO CARRIER (default) Indication is sent as usual, without additional information</p> <p><b>1</b> – NO CARRIER:&lt;connId&gt; Indication of current &lt;connId&gt; socket connection identifier is added</p> <p><b>2</b> – NO CARRIER:&lt;connId&gt;,&lt;cause&gt; Indication of current &lt;connId&gt; socket connection identifier and closure &lt;cause&gt; added. For possible &lt;cause&gt; values, see also #SLASTCLOSURE</p> <p><b>Note:</b> like #SLASTCLOSURE, in case of subsequent consecutive closure causes received, the original disconnection cause indicated.</p> <p><b>Note:</b> in the case of command mode connection and remote closure with subsequent inactivity timeout closure without retrieval of all available data(#SRECV or SRING</p>



#SCFGEXT2 - Socket Configuration Extended	
	<p>mode 2), it is indicated cause 1 for both possible FIN and RST from remote. parameters values for all the six sockets, in the format: #SCFGEXT2:&lt;connId1&gt;,&lt;bufferStart1&gt;,&lt;abortConnAttempt&gt;,0,0,0 &lt;CR&gt;&lt;LF&gt; ... #SCFGEXT2:&lt;connId1&gt;,&lt;bufferStart1&gt;,&lt;abortConnAttempt&gt;,0,0,0</p>
AT?	
AT#SCFGEXT2=?	Test command returns the range of supported values for all the subparameters
Example	<p>AT#SCFGEXT2=1,1 OK AT#SCFGEXT2=2,1 OK AT#SCFGEXT2? #SCFGEXT2: 1,1,0,0,0,0 #SCFGEXT2: 2,1,0,0,0,0 #SCFGEXT2: 3,0,0,0,0,0 #SCFGEXT2: 4,0,0,0,0,0 #SCFGEXT2: 5,0,0,0,0,0 #SCFGEXT2: 6,0,0,0,0,0 OK AT#SCFG? #SCFG: 1,1,300,90,600,50 #SCFG: 2,1,300,90,600,50 #SCFG: 3,1,300,90,600,50 #SCFG: 4,2,300,90,600,50 #SCFG: 5,2,300,90,600,50 #SCFG: 6,2,300,90,600,50 OK AT#SCFG=1,1,300,90,600,30 OK Current configuration: socket with connId 1 and 2 are configured with new transmission timer behaviour. &lt;txTo&gt; corresponding value has been changed (#SCFG) for connId 1, for connId 2 has been left to default value.</p>

### 3.4.7.2.12 *Socket Configuration Extended 3 - #SCFGEXT3*

#SCFGEXT3 - Socket Configuration Extended 3	
<p>AT#SCFGEXT3= &lt;connId&gt;,&lt;immRsp&gt;[ ,&lt;closureTypeCmdM odeEnabling&gt;[,&lt; fastsring&gt;[,&lt;unused_ C&gt;[,&lt;unused_D&gt;]]]]]</p>	<p>Set command sets the socket configuration extended parameters for features not included in #SCFGEXT command nor in #SCFGEXT2 command. <b>Parameters:</b> &lt;connId&gt; - socket connection identifier 1..6</p>



#SCFGEXT3 - Socket Configuration Extended 3	
	<p><b>&lt;immRsp&gt;</b> - Enables AT#SD command mode immediate response  0 – factory default, means that AT#SD in command mode (see AT#SD) returns after the socket is connected  1 – Means that AT#SD in command mode returns immediately. Then the state of the connection can be read by the AT command AT#SS</p> <p><b>&lt;closureTypeCmdModeEnabling&gt;</b> - It has no effect and is included only for backward compatibility  0 – factory default</p> <p><b>&lt;fastsring&gt;</b> - It has no effect and is included only for backward compatibility  0 – factory default</p> <p><b>Note:</b> parameter is saved in NVM</p>
AT#SCFGEXT3?	<p>Read command returns the current socket extended configuration parameters values for all the six sockets, in the format:</p> <p>#SCFGEXT3: &lt;connId1&gt;,&lt;immRsp1&gt;,&lt;closureTypeCmdModeEnabling1&gt;,&lt;fastsring1&gt;,0,0&lt;CR&gt;&lt;LF&gt;</p> <p>...</p> <p>#SCFGEXT3: &lt;connId6&gt;,&lt;immRsp6&gt;,&lt;closureTypeCmdModeEnabling6&gt;,&lt;fastsring6&gt;,0,0&lt;CR&gt;&lt;LF&gt;</p>
AT#SCFGEXT3=?	Test command returns the range of supported values for all the parameters.

## 3.4.7.2.13

**Socket Dial - #SD**

#SD - Socket Dial	
<p>AT#SD=&lt;connId&gt;,&lt;txProt&gt;,&lt;rPort&gt;,&lt;IPaddr&gt;[,&lt;closureType&gt;[,&lt;lPort&gt;[,&lt;connMode&gt;[,&lt;txTime&gt;[,&lt;userIpType&gt;]]]]]</p>	<p>Execution command opens a remote connection via socket.</p> <p><b>Parameters:</b></p> <p><b>&lt;connId&gt;</b> - socket connection identifier  1..6</p> <p><b>&lt;txProt&gt;</b> - transmission protocol  0 - TCP  1 - UDP</p> <p><b>&lt;rPort&gt;</b> - remote host port to contact  1..65535</p> <p><b>&lt;IPaddr&gt;</b> - address of the remote host, string type. This parameter can be either:</p> <ul style="list-style-type: none"> <li>- any valid IP address in the format: "xxx.xxx.xxx.xxx"</li> <li>- any host name to be solved with a DNS query</li> <li>- any valid IPv6 address in the format: xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx or xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx</li> </ul> <p><b>&lt;closureType&gt;</b> - 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><b>&lt;lPort&gt;</b> - UDP connections local port  1..65535</p>



#SD - Socket Dial	
	<p><b>&lt;connMode&gt;</b> - Connection mode  0 - online mode connection (default)  1 - command mode connection</p> <p><b>&lt;txTime&gt;</b> - 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><b>&lt;userIpType&gt;</b> - ip type for socket to open  0 - no ip type chosen;[default]  1 - ipv4.  2 - ipv6.</p> <p><b>Note:</b> <b>&lt;userSockType&gt;</b> this parameter only valid when <b>&lt;ipaddr&gt;</b> is domain name and dual stack connection is open by (AT#sgact).</p> <p><b>Note:</b> when <b>&lt;userSockType&gt;</b> is “no ip type chosen“ ipv6 will be requested firstly. When ipv6 DNS server doesn't support so ipv4 will be requested.</p> <p><b>Note:</b> <b>&lt;closureType&gt;</b> parameter is valid for TCP connections only and has no effect (if used) for UDP connections.</p> <p><b>Note:</b> <b>&lt;lPort&gt;</b> parameter is valid for UDP connections only and has no effect (if used) for TCP connections.</p> <p><b>Note:</b> if we set <b>&lt;connMode&gt;</b> to <b>online mode connection</b> and the command is successful we enter in <b>online data mode</b> and we see the intermediate result code <b>CONNECT</b>. After the <b>CONNECT</b> we can suspend the direct interface to the socket connection (nb the socket stays open) using the escape sequence (+++): the module moves back to <b>command mode</b> and we receive the final result code <b>OK</b> after the suspension.</p> <p>After such a suspension, it's possible to resume it in every moment (unless the socket inactivity timer timeouts, see #SCFG) by using the #SO command with the corresponding <b>&lt;connId&gt;</b>.</p> <p><b>Note:</b> if we set <b>&lt;connMode&gt;</b> to <b>command mode connection</b> and the command is successful, the socket is opened and we remain in <b>command mode</b> and we see the result code <b>OK</b>.</p> <p><b>Note:</b> if there are input data arrived through a connected socket and not yet read because the module entered <b>command mode</b> before reading them (after an escape sequence or after #SD has been issued with <b>&lt;connMode&gt;</b> set to <b>command mode connection</b>), these data are buffered and we receive the <b>SRING</b> URC (<b>SRING</b> presentation format depends on the last #SCFGEXT setting); it's possible to read these data afterwards issuing #SRECV. Under the same hypotheses it's possible to send data while in <b>command mode</b> issuing #SEND.</p> <p><b>Note:</b> <b>&lt;txTime&gt;</b> parameter is valid for UDP connections only and has no effect (if used) for TCP connections. For slow servers it is recommended to adjust the time interval for uploading series of data packets in order to do not lose data. The following data packet will be sent after the previous data packet's time interval has been expired.</p>



#SD - Socket Dial	
AT#SD=?	Test command reports the range of values for all the parameters.
Example	<p>Open socket 1 in online mode</p> <p>AT#SD=1,0,80,"www.google.com",0,0,0</p> <p>CONNECT</p> <p>...</p> <p>Open socket 1 in command mode</p> <p>AT#SD=1,0,80,"www.google.com",0,0,1</p> <p>OK</p>

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

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



#BASE64 – Base64 encoding/decoding of socket sent/received data	
	<p>(Same rule as for &lt;enc&gt; regarding line feeds in the received file that has to be decoded)</p> <p><b>Note:</b> it is possible to use command to change current &lt;enc&gt;/&lt;dec&gt; settings for a socket already opened in command mode or in online mode after suspending it. (In this last case obviously it is necessary to set AT#SKIPESC=1).</p> <p><b>Note:</b> to use #BASE64 in command mode, if data to send exceed maximum value for #SENDEXT command, they have to be divided in multiple parts. These parts have to be a multiple of 57 bytes, except for the last one, to distinguish EOF condition. (Base64 encoding rules) For the same reason if #SRECV command is used by the application to receive data, a multiple of 78 bytes has to be considered.</p> <p><b>Note:</b> to use #SRECV to receive data with &lt;dec&gt; enabled, it is necessary to consider that: reading &lt;maxByte&gt; bytes from socket, user will get less due to decoding that is performed.</p> <p><b>Note:</b> values are automatically saved in NVM.</p>
AT#BASE64?	<p>Read command returns the current &lt;enc&gt;/&lt;dec&gt; settings for all the six sockets, in the format:</p> <pre>#BASE64:&lt;connId1&gt;&lt;enc1&gt;,&lt;dec1&gt;,0,0&lt;CR&gt;&lt;LF&gt; ... #BASE64:&lt;connId6&gt;,&lt;enc6&gt;,&lt;dec6&gt;,0,0&lt;CR&gt;&lt;LF&gt;</pre>
AT#BASE64=?	Test command returns the range of supported values for all the sub parameters.
Example	<pre>AT#SKIPESC=1 OK  AT#SD=&lt;connId&gt;,&lt;txProt&gt;,&lt;rPort&gt;,&lt;IPAddr&gt; CONNECT //Data sent without modifications(default) ..... +++ (suspension) OK  at#base64=&lt;connId&gt;,1,0 OK  AT#SO=&lt;connId&gt; CONNECT // Data received from serial port are encoded</pre>



#BASE64 – Base64 encoding/decoding of socket sent/received data	
	<pre>// base64 before to be sent on the socket ..... +++ (suspension) OK  at#base64=&lt;connId&gt;,0,1 OK  AT#SO=&lt;connId&gt; CONNECT // Data received from socket are decoded // base64 before to be sent on the serial port +++ (suspension) .....</pre>

#### 3.4.7.2.15 *Socket Accept - #SA*

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

#### 3.4.7.2.16 *Socket Restore - #SO*

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



### 3.4.7.2.17 *Socket Listen - #SL*

#SL - Socket Listen	
<b>AT#SL=&lt;connId&gt;,&lt;listenState&gt;,&lt;listenPort&gt;[,&lt;lingerT&gt;]</b>	<p>This command opens/closes a socket listening for an incoming connection on a specified port.</p> <p><b>Parameters:</b></p> <p><b>&lt;connId&gt;</b> - socket connection identifier 1..6</p> <p><b>&lt;listenState&gt;</b> - 0 - closes socket listening 1 - starts socket listening</p> <p><b>&lt;listenPort&gt;</b> - local listening port 0..65535</p> <p><b>&lt;lingerT&gt;</b> - linger time 0 - immediate closure after remote closure 255 - local host closes only after an escape sequence (+++)</p> <p><b>Note:</b> if successful, commands returns a final result code <b>OK</b>. 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 <b>#FRWL</b>), an URC is received:</p> <p><b>+SRING : &lt;connId&gt;</b></p> <p>Afterwards we can use <b>#SA</b> to accept the connection or <b>#SH</b> 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 <b>#FRWL</b>), the connection is automatically accepted: the <b>CONNECT</b> indication is given and the modem goes into <b>online data mode</b>.</p> <p>If the socket is closed by the network the following URC is received:</p> <p><b>#SKTL: ABORTED</b></p>
<b>AT#SL?</b>	Read command returns all the actual listening TCP sockets.
<b>AT#SL=?</b>	Test command returns the range of supported values for all the subparameters.
<b>Example</b>	<p>Next command opens a socket listening for TCP on port 3500 without.</p> <p>AT#SL=1,1,3500 OK</p>

### 3.4.7.2.18 *Detect the Cause of a Socket disconnection - #SLASTCLOSURE*



#SLASTCLOSURE – Detect the cause of a socket disconnection	
AT#SLASTCLOSURE=[<connId>]	<p>Execution command reports socket disconnection cause.</p> <p><b>Parameters:</b>            &lt;connId&gt; - socket connection identifier 1..6            The response format is:  <b>#SLASTCLOSURE: &lt;connId&gt;,&lt;cause&gt;</b></p> <p><b>where:</b>            &lt;connId&gt; - socket connection identifier, as before            &lt;cause&gt; - socket disconnection cause:  <b>0</b> – not available(socket has not yet been closed)  <b>1</b>.- remote host TCP connection close due to FIN/END: normal remote disconnection decided by the remote application  <b>2</b> -.remote host TCP connection close due to RST, all others cases in which the socket is aborted without indication from peer (for instance because peer doesn't send ack after maximum number of retransmissions/peer is no more alive). All these cases include all the "FATAL" errors after recv or send on the TCP socket(named as different from EWOULDBLOCK)  <b>3</b>.- socket inactivity timeout  <b>4</b>.- network deactivation(PDP context deactivation from network)</p> <p><b>Note:</b> any time socket is re-opened, last disconnection cause is reset. Command report 0(not available).  <b>Note:</b> user closure cause(#SH) is not considered and if a user closure is performed after remote disconnection, remote disconnection cause remains saved and is not overwritten.  <b>Note:</b> if more consecutive closure causes are received, the original disconnection cause is saved.            (For instance: if a TCP FIN is received from remote and later a TCP RST because we continue to send data, FIN cause is saved and not overwritten)  <b>Note:</b> also in case of &lt;closureType&gt;(#SD) set to 255, if the socket has not yet been closed by user after the escape sequence, #SLASTCLOSURE indicates remote disconnection cause if it has been received.  <b>Note:</b> in case of UDP, cause 2 indicates abnormal(local) disconnect. Cause 3 and 4 are still possible.            (Cause 1 is obviously never possible)</p> <p><b>Note:</b> in case of command mode connection and remote closure with subsequent inactivity timeout closure without retrieval of all available data(#SRECV or SRING mode 2), it is indicated cause 1 for both possible FIN and RST from remote.</p>
AT#SLASTCLOSURE=?	Test command reports the supported range for parameter <connId>



### 3.4.7.2.19 Socket Listen UDP - #SLUDP

#SLUDP - Socket Listen UDP	
<b>AT#SLUDP=</b> <b>&lt;connId&gt;</b> , <b>&lt;listenState&gt;</b> [, <b>&lt;listenPort&gt;</b> ]	<p>This command opens/closes a socket listening for an incoming UDP connection on a specified port.</p> <p><b>Parameters:</b></p> <p><b>&lt;connId&gt;</b> - socket connection identifier 1..6</p> <p><b>&lt;listenState&gt;</b> - 0 - closes socket listening 1 - starts socket listening</p> <p><b>&lt;listenPort&gt;</b> - local listening port 1..65535</p> <p><b>Note:</b> 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 : &lt;connId&gt;</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 <b>CONNECT</b> indication is given and the modem goes into <b>online data mode</b>.</p> <p>If the socket is closed by the network the following URC is received:</p> <p><b>#SLUDP: ABORTED</b></p> <p><b>Note:</b> when closing the listening socket &lt;listenPort&gt; is a don't care parameter</p>
<b>AT#SLUDP?</b>	Read command returns all the actual listening UDP sockets.
<b>AT#SLUDP=?</b>	Test command returns the range of supported values for all the subparameters.
<b>Example</b>	<p>Next command opens a socket listening for UDP on port 3500.</p> <p>AT#SLUDP=1,1,3500</p> <p>OK</p>

### 3.4.7.2.20 Receive Data in Command Mode - #SRECV

#SRECV - Received Data in Command Mode	
<b>AT#SRECV=</b> <b>&lt;connId&gt;</b> ,	<p>Execution command permits the user to read data arrived through a connected socket, but buffered and not yet read because the module entered <b>command mode</b></p>



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



#SRECV – Received Data in Command Mode	
	<p>#SRECV: 2,15 737472696e67612064692074657374 OK</p> <p>SRING URC (&lt;srMode&gt; be 2, &lt;dataMode&gt; be 0) displaying (in text format) 15 bytes data that have just come through connected socket identified by &lt;connId&gt;=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>

### 3.4.7.2.21 *Send UDP data to a specific remote host - #SENDUDP*

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



#SSENDUDP – send UDP data to a specific remote host	
	<p>OK  SRING: 1 // UDP data from a remote host available  AT#SA=1,1  OK  SRING: 1  AT#SI=1  #SI: 1,0,0,23,0 // 23 bytes to read  OK  AT#SRECV=1,23  #SRECV:1,23  message from first host  OK  AT#SS=1  #SS: 1,2,&lt;LocIP&gt;,&lt;LocPort&gt;,&lt;RemIP1&gt;,&lt;RemPort1&gt;  OK  AT#SSENDUDP=1,&lt;RemIP1&gt;,&lt;RemPort1&gt;  &gt;response to first host  OK  SRING: 1 // UDP data from a remote host available  AT#SI=1  #SI: 1,22,23,24,0 // 24 bytes to read  OK  AT#SRECV=1,24  #SRECV:1,24  message from second host  OK  AT#SS=1  #SS: 1,2,&lt;LocIP&gt;,&lt;LocPort&gt;,&lt;RemIP2&gt;,&lt;RemPort2&gt;  OK  Remote host has changed, we want to send a reponse:  AT#SSENDUDP=1,&lt;RemIP2&gt;,&lt;RemPort2&gt;  &gt;response to second host  OK</p>

### 3.4.7.2.22      *Send UDP data to a specific remote host extended - #SSENDUDPEXT*

#SSENDUDPEXT – send UDP data to a specific remote host extended	
<b>AT#SSENDUDPEXT=</b> <b>&lt;connId&gt;,</b> <b>&lt;bytestosend&gt;,</b> <b>&lt;remoteIP&gt;,</b> <b>&lt;remotePort&gt;</b>	<p>This command permits, while the module is in command mode, to send data over UDP to a specific remote host including all possible octets(from 0x00 to 0xFF)  As indicated about #SSENDUDP:  UDP socket has to be previously opened through #SLUDP / #SA, then we are able to send data to different remote hosts.</p>



#SSENDUDPEXT – send UDP data to a specific remote host extended	
	<p>Like #SENDEXT, the device responds with the prompt '&gt;' and waits for the data to send, operation is automatically completed when &lt;bytesosend&gt; have been sent.</p> <p><b>Parameters:</b></p> <p>&lt;connId&gt; - socket connection identifier 1..6</p> <p>&lt;bytesosend&gt; - number of bytes to be sent 1-1500</p> <p>&lt;remoteIP&gt; - IP address of the remote host in dotted decimal notation, string type: "xxx.xxx.xxx.xxx"</p> <p>&lt;remotePort&gt; - remote host port 1..65535</p>
AT#SSENDUDPEXT=?	<p>Test command reports the supported range of values for parameters &lt;connId&gt;,&lt;bytesosend&gt;,&lt;remoteIP&gt; and &lt;remotePort&gt;</p>

### 3.4.7.2.23 *Send Data in Command Mode - #SSEND*

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

### 3.4.7.2.24 *Send data in Command Mode extended - #SENDEXT*



#SSENDEXT - Send Data In Command Mode extended	
AT#SSENDEXT= <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><b>Parameters:</b>            &lt;connId&gt; - socket connection identifier            1..6            &lt;bytestosend&gt; - number of bytes to be sent            Please refer to test command for range            The device responds to the command with the prompt '&gt;'            &lt;greater_than&gt;&lt;space&gt; and waits for the data to send.            When &lt;bytestosend&gt; bytes have been sent, operation is automatically completed.            If data are successfully sent, then the response is <b>OK</b>.            If data sending fails for some reason, an error code is reported.  <b>Note:</b> it's possible to use #SSENDEXT only if the connection was opened by #SD, else the ME is raising an error.  <b>Note:</b> 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>
AT#SSENDEXT=?	Test command returns the range of supported values for parameters < connId > and <bytestosend>
<b>Example</b>	<p>Open the socket in command mode:            at#sd=1,0,&lt;port&gt;,"IP address",0,0,1            OK            Give the command specifying total number of bytes as second <b>Parameter:</b>            at#ssendext=1,256            &gt; ..... ; // Terminal echo of bytes sent is displayed here            OK            All possible bytes (from 0x00 to 0xFF) are sent on the socket as generic bytes.</p>

### 3.4.7.2.25 IP Easy Authentication Type - #SGACTAUTH

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



#SGACTAUTH – Easy GRPS Authentication Type	
AT#SGACTAUTH=?	Test command returns the range of supported values for parameter <type>.



## 3.4.7.2.26

<p><b>#SGACTCFG - Context Activation and Configuration</b></p> <p><b>AT#SGACTCFG=</b>  <b>&lt;cid&gt;</b>,  <b>&lt;retry&gt;</b>,  <b>[,&lt;delay&gt;</b>  <b>[,&lt;urcmode&gt;]]</b></p>	<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><b>Parameters:</b>  <b>&lt;cid&gt;</b> - PDP context identifier (see +CGDCONT command)          1..5 - numeric parameter which specifies a particular PDP context definition</p> <p><b>&lt;retry&gt;</b> - 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><b>&lt;delay&gt;</b> - 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><b>&lt;urcmode&gt;</b> - 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 &lt;auto&gt;=1. The unsolicited message is in the format:           #SGACT: &lt;ip_address&gt;          Reporting the local IP address obtained from the network.</p> <p><b>Note:</b> the URC presentation mode &lt;urcmode&gt; is related to the current AT instance only. Last &lt;urcmode&gt; setting is saved for every instance as extended profile parameter, thus it is possible to restore it even if the multiplexer control channel is released and set up, back and forth.</p> <p><b>Note:</b> &lt;retry&gt; and &lt;delay&gt; setting are global parameter saved in NVM</p> <p><b>Note:</b> 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><b>AT#SGACTCFG?</b></p>	<p>Read command reports the state of all the five contexts, in the format:          #SGACTCFG: &lt;cid1&gt;,&lt;retry1&gt;,&lt;delay1&gt;, &lt; urcmode &gt;CR&lt;LF&gt;           ...</p>



	#SGACTCFG: <cid5>,<retry5>,<delay5>,< urcmode > where: <cidn> - as <cid> before <retryn> - as <retry> before <delayn> - as <delay> before < urcmode > - as < urcmode > before
<b>AT#SGACTCFG=?</b>	Test command reports supported range of values for parameters <cid> >,<retry>,<delay>and < urcmode >

### 3.4.7.3 SSL Commands

#### 3.4.7.3.1 Enable a SSL socket - #SSLEN

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



### 3.4.7.3.2 Opens a socket SSL to a remote server - #SSLD

#SSLD – Opens a socket SSL to a remote server	
<p><b>AT#SSLD=&lt;SSId&gt;,&lt;rPort&gt;,&lt;IPAddress&gt;,&lt;ClosureType&gt;[,&lt;connMode&gt;[,&lt;Timeout&gt;]]</b></p>	<p>Execution command opens a remote connection via socket secured through SSL.</p> <p><b>Parameters:</b></p> <p><b>&lt;SSId&gt;</b> - Secure Socket Identifier  1 - Until now SSL block manage only one socket</p> <p><b>&lt;rPort&gt;</b> - Remote TCP port to contact 1..65535</p> <p><b>&lt;IPAddress&gt;</b> - string type, address of SSL server</p> <p><b>&lt;ClosureType&gt;</b> - how to close SSL socket  0 – Until now only closure type 0 supported. SSL session id and keys are free.</p> <p><b>&lt;connMode&gt;</b> - connection mode  0 – online mode connection.  1 – command mode connection (factory default).</p> <p><b>&lt;Timeout&gt;</b> - 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 &lt;Timeout&gt; * 100 msec for the next packet. If no more data can be read, the module gives up the handshake and raises an ERROR response.</p> <p><b>Note:</b> if we set &lt;connMode&gt; to <b>online mode connection</b> and the command is successful we enter into <b>online data mode</b> and we see the intermediate result code <b>CONNECT</b>. After the <b>CONNECT</b> we can suspend the direct interface to the socket connection (the socket stays open) using the escape sequence (+++): the module moves back to <b>command mode</b> and we receive the final result code <b>OK</b> after the suspension. After such a suspension, it is possible to resume it by using the #SSLO command with the corresponding &lt;connId&gt;.</p> <p><b>Note:</b> if we set &lt;connMode&gt; to <b>command mode connection</b> and the command is successful, the socket is opened and we remain in <b>command mode</b> and we see the result code <b>OK</b>.</p> <p><b>Note:</b> &lt;Timeout&gt; is the total handshake timeout or, in other words, it is 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><b>Note:</b> If secure socket is not enabled, only test requests can be made</p> <p><b>Note:</b> if timeout is not set for SSL connection the default timeout value, set by AT#SSLCFG, is used.</p> <p><b>Note:</b> 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>



#SSLD – Opens a socket SSL to a remote server	
	<p><b>Note:</b> in online mode data is transmitted as soon as the data packet size is reached or as after a transmission timeout. Both these parameters are configurable by using <b>#SSLCFG</b></p> <p><b>Note:</b> Before opening a SSL connection, make sure to have stored the needed secure data (Certificate, CA certificate, private key), using <b>AT#SSLSECDATA</b>, for the security level set through <b>AT#SSLSECCFG</b>.</p> <p><b>Note:</b> Before opening a SSL connection the GPRS context must have been activated by <b>AT#SGACT=x,1</b></p> <p><b>Note:</b> The PDP context definition that will be used, is set by <b>AT#SSLCFG</b> command</p>
<b>AT#SSLD=?</b>	Test command returns the range of supported values for all the parameters: <b>#SSLD: (1),(1-65535),,(0),(0,1),(10-5000)</b>
<b>Example</b>	<p>Start command mode: <b>AT#SSLD=1,8500,"84.94.194.21",0,1</b> <b>OK</b></p> <p>Start online mode: <b>AT#SSLD =1,8500,"84.94.194.21",0,0</b> <b>OK</b></p> <p><b>CONNECT</b></p> <p>Configure correct PDP context with AT#SSLCFG command: <b>at#sgact=3,1</b> <b>#SGACT: XX.XXX.XXX.XXX</b> <b>OK</b></p> <p><b>** Note the second parameter of sslcfg **</b> <b>at#sslcfg=1,3,300,90,100,50,0,0,0,0</b> <b>OK</b></p> <p><b>at#ssld=1,&lt;port&gt;,"IP or URL",0,0</b> <b>CONNECT</b></p>

### 3.4.7.3.3 *Send data through a SSL socket - #SSLSEND*



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



#### 3.4.7.3.4 Read data from a SSL socket - #SSLRECV

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



### 3.4.7.3.5 Report the status of a SSL socket - #SSLS

#SSLS - Report the status of a SSL socket	
AT#SSLS=<SSId>	<p>This command reports the status of secure sockets.</p> <p><b>Parameters:</b>            &lt;SSId&gt; - Secure Socket Identifier            1 - Until now SSL block manages only one socket</p> <p>If secure socket is connected the device responds to the command in following format:  <b>#SSLS: &lt;SSId&gt;,&lt;ConnectionStatus&gt;,&lt;CipherSuite&gt;</b>  <b>Note:</b> ConnectionStatus will equal 2</p> <p>otherwise:  <b>#SSLS: &lt;SSId&gt;,&lt;ConnectionStatus&gt;</b>  <b>Note:</b> ConnectionStatus value will be equal 0 or 1.</p> <p><b>ConnectionStatus</b> possible values are:            0 – Socket Disabled            1 – Connection closed            2 – Connection open</p> <p><b>CipherSuite</b> possible values are:            0 - Cipher Suite is chosen by remote Server [default]            1 - TLS_RSA_WITH_RC4_128_MD5            2 - TLS_RSA_WITH_RC4_128_SHA            3 - TLS_RSA_WITH_AES_256_CBC_SHA            4 - TLS_RSA_WITH_NULL_SHA</p> <p><b>Note:</b> This command can be issued, even if the &lt;SSId&gt; is not enabled.</p>
AT#SSLS=?	<p>Test command returns the range of supported values for all the parameters.  <b>#SSLS: (1)</b></p>
Example	<p><b>AT#SSLS=1</b>  <b>#SSLS: 1,1</b></p> <p><b>OK</b></p> <p><b>AT#SSLS=1</b>  <b>#SSLS: 1,2,0</b></p> <p><b>OK</b></p>

### 3.4.7.3.6 Close a SSL socket - #SSLH



#SSLH – Close a SSL socket	
AT#SSLH= <SSId>[,<ClosureType>]	<p>This command allows closing the SSL connection.</p> <p><b>Parameters:</b>            &lt;SSId&gt; - Secure Socket Identifier            1 - Until now SSL block manage only one socket.            &lt; ClosureType &gt;: how to close SSL socket            0 – Until now, only closure type 0 supported. SSL session id and keys are free.</p> <p><b>Note:</b> 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:</p> <p>#SSLH: (1),(0)</p>

### 3.4.7.3.7 Restore a SSL socket after a +++ - #SSLO

#SSLO - Restore a SSL socket after a +++	
AT#SSLO=<SSId>	<p>This command allows to restore a SSL connection (online mode) suspended by an escape sequence (+++). After the connection restore, the <b>CONNECT</b> message is printed.</p> <p>Please note that this is possible even if the connection has been started in command mode (#SSLD with &lt;connMode&gt; parameter set to 1).</p> <p><b>Parameters:</b>            &lt;SSId&gt; - Secure Socket Identifier            1 - Until now SSL block manage only one socket.</p> <p><b>Note:</b> if secure socket is not enabled using AT#SSLEN only test requests can be made.</p> <p><b>Note:</b> Before opening a SSL connection the GPRS context must have been activated by AT#SGACT=X, 1.</p> <p><b>Note:</b> if an error occur during reconnection the socket cannot be reconnected then a new connection has to be done.</p>
AT#SSLO=?	<p>Test command returns the range of supported values for all the parameters:</p> <p>#SSLO: (1)</p>



### 3.4.7.3.8 Configure general parameters of a SSL socket - #SSLCFG

#SSLCFG – Configure general parameters of a SSL socket	
<b>AT#SSLCFG=</b> <b>&lt;SSId&gt;,&lt;cid&gt;,&lt;pktSz&gt;,&lt;maxTo&gt;,&lt;defTo&gt;,&lt;txTo&gt;</b> <b>[,&lt;skipHostMismatch&gt;,&lt;UNUSED_2&gt;,&lt;UNUSED_3&gt;,&lt;UNUSED_4&gt;]   </b>	<p>This command allows configuring SSL connection parameters.</p> <p><b>Parameters:</b></p> <p><b>&lt;SSId&gt;</b> - Secure Socket Identifier  1 - Until now SSL block manages only one socket</p> <p><b>&lt;cid&gt;</b> - PDP context identifier  1..5 - numeric parameter which specifies a particular PDP context definition</p> <p><b>&lt;pktSz&gt;</b> - 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.</p> <p><b>&lt;maxTo&gt;</b> - 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.)</p> <p><b>&lt;defTo&gt;</b> - 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).</p> <p><b>&lt;txTo&gt;</b> - 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).</p> <p><b>&lt;skipHostMismatch&gt;</b> - ignores Host Mismatch alert.  0 - Do not ignore  1 - Ignore (default)..</p> <p><b>Note:</b> If secure socket is not enabled (using #SSLEN) only test requests can be made.</p> <p><b>Note:</b> these values automatically saved in NVM.</p>
<b>AT#SSLCFG?</b>	Read command reports the currently selected parameters in the format: <b>#SSLCFG:</b> <b>&lt;SSId1&gt;,&lt;cid&gt;,&lt;pktSz&gt;,&lt;maxTo&gt;,&lt;defTo&gt;,&lt;txTo&gt;,&lt;skipHostMismatch&gt;,0,0,0</b>
<b>AT#SSLCFG=?</b>	Test command returns the range of supported values for all the parameters. <b>#SSLCFG: (1),(1-5),(0-1500),(0-65535),(10-5000),(0-255),(0-1),(0),(0),(0)</b>

### 3.4.7.3.9 Configure security parameters of a SSL socket – #SSLSECCFG



#SSLSECCFG – Configure security parameters of a SSL socket	
AT#SSLSECCFG=<SSId>,<CipherSuite>,<SecLevel>	<p>This command allows configuring SSL connection parameters.</p> <p><b>Parameters:</b></p> <p><b>&lt;SSId&gt;</b> - Secure Socket Identifier</p> <p>1 - Until now SSL block manage only one socket</p> <p><b>&lt;CipherSuite&gt;</b></p> <p>0 - Chiper Suite is chosen by remote Server [default]</p> <p>1 - TLS_RSA_WITH_RC4_128_MD5</p> <p>2 - TLS_RSA_WITH_RC4_128_SHA</p> <p>3 - TLS_RSA_WITH_AES_256_CBC_SHA</p> <p>4 - TLS_RSA_WITH_NULL_SHA</p> <p><b>&lt;SecLevel&gt;</b></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><b>Note:</b> if no authentication is set no security data are needed (Client certificate, Server CAcertificate and Client private key).</p> <p><b>Note:</b> if only server authentication is managed then Server CAcertificate has to be stored through <b>AT#SSLSECDATA</b>.</p> <p><b>Note:</b> if server and client authentication are managed then client certificate and private key, and server CAcertificate have to be stored through <b>AT#SSLSECDATA</b>. Please note that private keys with password are not Supported.</p> <p><b>Note:</b> 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><b>Note:</b> if secure socket is not enabled using <b>#SSLEN</b> only test requests can be made. Read command can be issued if at least a &lt;SSId&gt; is enabled.</p> <p><b>Note:</b> these values are automatically saved in NVM.</p>
AT#SSLSECCFG?	<p>Read command reports the currently selected parameters in the format:</p> <p><b>#SSLSECCFG: &lt;SSId1&gt;,&lt;CipherSuite&gt;,&lt;SecLevel&gt;</b></p>
AT#SSLSECCFG=?	<p>Test command returns the range of supported values for all the parameters.</p> <p><b>#SSLSECCFG: (1),(0-2),(0-2)</b></p>

#### 3.4.7.3.10 *Manage the security data - #SSLSECDATA*

<b>#SSLSECDATA - Manage the security data</b>	
<b>AT#SSLSECDATA=</b> <b>&lt;SSId&gt;,&lt;Action&gt;,&lt;Data Type&gt;[,&lt;Size&gt;]</b>	<p>This command allows to store, delete and read security data (Certificate, CAcertificate, private key) into NVM.</p> <p><b>Parameters:</b></p> <p><b>&lt;SSId&gt;</b> - Secure Socket Identifier</p> <p>1 - Until now SSL block manages only one socket.</p>



#SSLSECDATA - Manage the security data	
	<p><b>&lt;Action&gt;</b> - Action to do.  0 – Delete data from NVM.  1 – Store data into NVM.  2 – Read data from NVM.  <b>&lt;DataType&gt;</b>  0 – Certificate.  1 – CA certificate.  2 – RSA Private key.  <b>&lt;Size&gt;</b> - Size of security data to be stored 1..2047  If the <b>&lt;Action&gt;</b> parameter is 1 (store data into NVM) the device responds to the command with the prompt ‘&gt;’ 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 <b>&lt;Action&gt;</b> parameter is 2 (read data from NVM), data specified by <b>&lt;DataType&gt;</b> parameter is shown in the following format:  <b>#SSLSECDATA: &lt;connId&gt;,&lt;DataType&gt;</b>  <b>&lt;DATA&gt;</b>  <b>OK</b>  If <b>&lt;DataType&gt;</b> data has not been stored (or it has been deleted) the response has the following format:  <b>#SSLSECDATA: &lt;connId&gt;,&lt;DataType&gt;</b>  <b>No data stored</b>  <b>OK</b></p> <p><b>Note:</b> Secured data has to be in PEM format.  <b>Note:</b> private keys with password ARE NOT supported.  <b>Note:</b> 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.  <b>Note:</b> <b>&lt;size&gt;</b> parameter is mandatory if the <b>&lt;write&gt;</b> action is issued, but it has to be omitted for <b>&lt;delete&gt;</b> or <b>&lt;read&gt;</b> actions are issued.  <b>Note:</b> if secure socket is not enabled using <b>AT#SSLEN</b> only test requests can be made.  <b>Note:</b> If socket is connected an error code is reported.</p>
<b>AT#SSLSECDATA?</b>	<p>Read command reports what security data are stored in the format:  <b>#SSLSECDATA:&lt;SSId1&gt;,&lt;CertIsSet&gt;,&lt;CAcertIsSet&gt;,&lt;PrivKeyIsSet&gt;</b></p> <p><b>&lt;CertIsSet&gt;</b>, <b>&lt;CAcertIsSet&gt;</b>, <b>&lt;PrivKeyIsSet&gt;</b> are 1 if related data are stored into NVM otherwise 0</p>
<b>AT#SSLSECDATA=?</b>	<p>Test command returns the range of supported values for all the parameters:  <b>#SSLSECDATA: (1),(0-2),(0-2),(1-2047)</b></p>



#### 3.4.7.4 FTP AT Commands

#### 3.4.7.4.1 *FTP Time – Out - #FTPTO*

#FTPTO - FTP Time-Out	
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><b>Parameter:</b>            &lt;tout&gt; - time-out in 100 ms units            100..5000 - hundreds of ms (factory default is 100)</p> <p><b>Note:</b> 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: &lt;tout&gt;</p>
AT#FTPTO=?	Test command returns the range of supported values

#### 3.4.7.4.2 *FTP Open* - #FTPOPEN

<b>#FTPOPEN - FTP Open</b>	
<b>AT#FTPOPEN=</b> <b>[&lt;server:port&gt;</b> <b>&lt;username&gt;</b> <b>&lt;password&gt;</b> <b>&lt;mode&gt;]</b>	<p>Execution command opens an FTP connection toward the FTP server.</p> <p><b>Parameters:</b></p> <p><b>&lt;server:port&gt;</b> string type, address and port of FTP server (factory default port 21), in the format:          “ipv4” / “ipv4:port”          “ipv6” / “[ipv6]” / “[ipv6]:port”          “dynamic_name” / “dynamic_name:port”</p> <p><b>&lt;username&gt;</b> string type, authentication user identification string for FTP.</p> <p><b>&lt;password&gt;</b> string type, authentication password for FTP.</p> <p><b>&lt;mode&gt;</b>          0 - active mode (factory default)          1 - passive mode</p>



	<p><b>Note:</b> 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><b>Note:</b> Before opening FTP connection the GPRS must been activated with AT#GPRS=1 or AT# SGACT</p>
AT#FTPOPEN=?	Test command returns the OK result code.

### 3.4.7.4.3 *FTP Close* - #FTPCLOSE

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

### 3.4.7.4.4 *FTP Config* - #FTPCFG

#FTPCFG – FTP Config	
AT#FTPCFG= <tout>, <IPPignoring> [,<FTPSEn> [,<FTPext>]]	<p>&lt;tout&gt; - 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><b>Note:</b> The parameter is not saved in NVM. <b>Note:</b> if parameter &lt;tout&gt; is omitted the behavior of Set command is the same as Read command.</p> <p>&lt;IPPignoring&gt; 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 IP address the client doesn't consider this and connects with server using the IP address used in AT#FTPOPEN.</p> <p>&lt;FTPSEn&gt; 0 – Disable FTPS security: all FTP commands will perform plain FTP connections.</p> <p>&lt; FTPext &gt; 0 – always use EPRT and EPSV commands(default) 1 – if both module and server ipv4 use PORT and PASV commands Option added to pass-through firewall that is unaware of the extended FTP commands for FTPOPEN, FTPLIST, FTPAPP, FTPGET</p>
AT#FTPCFG?	Read command reports the currently selected parameters in the format: AT#FTPCFG=<tout>,<IPPignoring>,<FTPSEn>,<FTPext>



<b>AT#FTPCFG=?</b>	Test command reports the supported range of values for parameter(s) <tout>,<IPpignoring>,<FTPSEn>,<FTPext>
--------------------	---

#### 3.4.7.4.5 *FTP Put - #FTPPUT*

<b>#FTPPUT – FTP Put</b>	
<b>AT#FTPPUT=</b> <b>[[&lt;filename&gt;]</b> <b>[,&lt;connMode&gt;]]</b>	<p>Execution command, issued during an FTP connection, opens a data connection and starts sending &lt;filename&gt; 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 &lt;connMode&gt; 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><b>Parameter:</b>            &lt;filename&gt; - string type, name of the file (maximum length 200 characters)            &lt;connMode&gt;            0 – online mode            1 – command mode</p> <p><b>Note:</b> use the escape sequence +++ to close the data connection.</p> <p><b>Note:</b> The command causes an ERROR result code to be returned if no FTP connection has been opened yet.</p>
<b>AT#FTPPUT=?</b>	<p>Test command reports the maximum length of &lt;filename&gt; and the supported range of values of &lt;connMode&gt;. The format is:            #FTPPUT:&lt;length&gt;,(list of supported &lt;connMode&gt;s)</p> <p><b>where:</b>            &lt;length&gt; - integer type value indicating the maximum length of &lt;filename&gt;</p>

#### 3.4.7.4.6 *FTP Get - #FTPGET*

<b>#FTPGET – FTP Get</b>	
<b>AT#FTPGET=</b> <b>[&lt;filename&gt;]</b>	<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 received on the serial port.</p> <p><b>Parameter:</b></p>



	<p>&lt;filename&gt; - file name, string type.</p> <p><b>Note:</b> The command causes an ERROR result code to be returned if no FTP connection has been opened yet.</p>
AT#FTPGET=?	Test command returns the OK result code.

#### 3.4.7.4.7 FTP Get in command mode - #FTPGETPKT

#FTPGETPKT - FTP Get in command mode	
<p>AT#FTPGETPKT= &lt;filename&gt; [,&lt;viewMode&gt;]</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.</p> <p>Retrieval from FTP server of “remotefile” is started, but data are only buffered in the module.</p> <p>It’s possible to read data afterwards issuing #FTPRECV command.</p> <p><b>Parameter:</b></p> <p>&lt;filename&gt; - file name, string type. (maximum length: 200 characters).</p> <p>&lt;viewMode&gt; - permit to choose view mode (text format or Hexadecimal)</p> <p>0 – text format (default)</p> <p>1 – hexadecimal format</p> <p><b>Note:</b> 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>
AT#FTPGETPKT?	<p>Read command reports current download state for &lt;filename&gt; with &lt;viewMode&gt; chosen, in the format:</p> <p>#FTPGETPKT: &lt;remotefile&gt;,&lt;viewMode&gt;,&lt;eof&gt;</p> <p>&lt;eof&gt;</p> <p>0 – file currently being transferred</p> <p>1 – complete file has been transferred to FTP client</p>
AT#FTPGETPKT=?	Test command returns the OK result code.

#### 3.4.7.4.8 FTP Type - #FTPTYPE

#FTPTYPE - FTP Type	
<p>AT#FTPTYPE= [&lt;type&gt;]</p>	<p>Set command, issued during an FTP connection, sets the file transfer type.</p>



	<b>Parameter:</b> <type> - file transfer type: 0 - binary 1 - ascii  <b>Note:</b> 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

#### 3.4.7.4.9 *FTP Delete - #FTPDELE*

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

#### 3.4.7.4.10 *FTP Print Working Directory - #FTPPWD*

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

#### 3.4.7.4.11 *FTP Change Working Directory - #FTPCWD*

#FTPCWD - FTP Change Working Directory	
AT#FTPCWD= [<dirname>]	Execution command, issued during an FTP connection, changes the working Directory on FTP server.



	<b>Parameter:</b> <dirname> - string type, it's the name of the new working directory.  <b>Note:</b> The command causes an ERROR result code to be returned if no FTP Connection has been opened yet.
<b>AT#FTPCWD=?</b>	Test command returns the OK result code.

#### 3.4.7.4.12 *FTP List - #FTPLIST*

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

#### 3.4.7.4.13 *Get file size from FTP - #FTPFSIZE*

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

#### 3.4.7.4.14 *FTP Append - #FTPAPP*

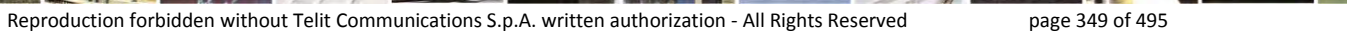
#FTPAPP – FTP Append	
<b>AT#FTPAPP=[&lt;filename&gt;[,&lt;connMode&gt;]]</b>	Execution command, issued during an FTP connection, opens a data connection and append data to existing <filename> file.



## 80407ST10116A Rev.14.1 - 2017-05-14

3.4.7.4.15      *Set restart position for FTP GET - #FTPREST*

```
#FTPREST – Set restart position for FTP GET
```



	<p><b>Note:</b> value set for &lt;restartposition&gt; has effect on next data transfer (data port opened by #FTPGET or #FTPGETPKT). Then &lt;restartposition&gt; value is automatically assigned to 0 for next download.</p>
<b>AT#FTPREST?</b>	Read command returns the current <restartposition> #FTPREST:<restartposition>
<b>AT#FTPREST=?</b>	Test command returns the OK result code.

#### 3.4.7.4.16 *Receive Data In Command Mode - #FTPRECV*

<b>#FTPRECV – Receive Data In Command Mode</b>	
<b>AT#FTPRECV=&lt;blocksize&gt;</b>	<p>Execution command permits the user to transfer at most &lt;blocksize&gt; bytes of remote file, provided that retrieving from the FTP server has been started with a previous #FTPGETPKT 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><b>Parameter:</b> &lt;blocksize&gt; – max number of bytes to read 1..3000</p> <p><b>Note:</b> it's necessary to have previously opened FTP data port and started download and buffering of remote file through #FTPGETPKT command. <b>Note:</b> issuing #FTPRECV when there's no FTP data port opened raises an error. Note: data port will stay opened if socket is temporary waiting to receive data (FTPRECV returns 0 and FTPGETPTK gives an EOF 0 indication).</p>
<b>AT#FTPRECV?</b>	<p>Read command reports the number of bytes currently received from FTP server, in the format:</p> <p>#FTPRECV:&lt;available&gt;</p>
<b>AT#FTPRECV=?</b>	Test command reports the supported range of values for parameter < blocksize >
<b>Example</b>	<p>AT#FTPRECV? #FTPRECV: 3000</p> <p>OK</p> <p><i>Read required part of the buffered data:</i></p> <p>AT#FTPRECV=400 #FTPRECV:400</p>



## 80407ST10116A Rev.14.1 - 2017-05-14

## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

	<p>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 <code>&lt;greater_than&gt;&lt;space&gt;</code> and waits for the data to send. When <code>&lt;bytertosend&gt;</code> bytes have been sent, operation is automatically completed. If (all or part of the) data are successfully sent, then the response is: <code>#FTPAPPEXT:&lt;sentbytes&gt; OK</code></p> <p>Where <code>&lt;sentbytes&gt;</code> are the number of sent bytes. Note: <code>&lt;sentbytes&gt;</code> could be less than <code>&lt;bytertosend&gt;</code> If data sending fails for some reason, an error code is reported.</p>
<b>AT#FTPAPPEXT=?</b>	<p>Test command reports the supported range of values for parameters <code>&lt;bytertosend&gt;</code> and <code>&lt;eof&gt;</code></p>
<b>Example</b>	<p><code>AT#FTPOPEN="IP",username,password</code> OK</p> <p><code>AT#FTPPUT=&lt;filename&gt;,1</code> <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><code>AT#FTPAPPEXT=Size</code> <i>&gt;... write here the binary data. As soon Size byte are written, data are sent and OK is returned</i> <code>#FTPAPPEXT:&lt;SentBytes&gt; OK</code></p> <p>.....</p> <p><i>Last #FTPAPPEXT will close the data socket, because second (optional) parameter has this meaning:</i></p> <p><code>AT#FTPAPPEXT=Size,1</code> <i>&gt;... write here the binary data. As soon Size byte are written, data are sent and OK is returned</i> <code>#FTPAPPEXT:&lt;SentBytes&gt; OK</code></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 indicate 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 FTPPUT and so on...(same sequence)</i></p>
--	--

#### 3.4.7.4.18 *FTP Read Message - #FTPMSG*

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

### 3.4.7.5 AT Commands

#### 3.4.7.5.1 *Authentication User ID - #USERID*

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

#### 3.4.7.5.2 *Authentication Password - #PASSW*

#PASSW - Authentication Password	
<b>AT#PASSW=</b>	Set command sets the user password string used during the authentication step.



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

### 3.4.7.5.3 Packet Size - #PKTSZ

#PKTSZ - Packet Size	
<b>AT#PKTSZ=</b> [<size>]	Set command sets the default packet size used by the TCP/UDP/IP stack for data sending. Used for online data mode only.  <b>Parameter:</b> <size> - packet size in bytes 0 - automatically chosen by the device 1..1500 - packet size in bytes (factory default is 300)
<b>AT#PKTSZ?</b>	Read command reports the current packet size value.  <b>Note:</b> after issuing command <b>AT#PKTSZ=0</b> , the Read command reports the value automatically chosen by the device.
<b>AT#PKTSZ=?</b>	Test command returns the allowed values for the parameter <size>.
<b>Example</b>	AT#PKTSZ=100 OK AT#PKTSZ? #PKTSZ: 100  OK AT#PKTSZ=0 OK AT#PKTSZ? #PKTSZ: 300  OK ->value automatically chosen by device

### 3.4.7.5.4 Data Sending Time-Out - #DSTO



#DSTO -Data Sending Time-Out	
AT#DSTO= [<tout>]	<p>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.</p> <p><b>Parameter:</b>            &lt;tout&gt; - packet sending time-out in 100ms units (factory default is 50)            0 - no time-out, wait forever for packets completed before send.            1..255 hundreds of ms</p> <p><b>Note:</b> In order to avoid low performance issues, suggested to set the data sending time-out to a value greater than 5.</p> <p><b>Note:</b> This time-out applies to data whose size is less than packet size and whose sending might be delay for an undefined time until new data to be sent had been received and full packet size reached.</p>
AT#DSTO?	Read command reports the current data sending time-out value.
AT#DSTO=?	Test command returns the allowed values for the parameter <tout>.
Example	AT#DSTO=10 ->1 sec. time-out OK AT#DSTO? #DSTO: 10 OK

#### 3.4.7.5.5 Socket Inactivity Time-Out - #SKTTO

#SKTTO - Socket Inactivity Time-Out	
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><b>Parameter:</b>            &lt;tout&gt; - socket inactivity time-out in seconds units            0 - no time-out.            1..65535 - time-out in sec.            units (factory default is 90).</p> <p><b>Note:</b> this time-out applies when no data exchanged in the socket for a long time and therefore the socket connection 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	AT#SKTTO=30 OK ->(30 sec. time-out) AT#SKTTO?



<b>#SKTTO - Socket Inactivity Time-Out</b>	
	#SKTTO: 30
	OK

#### 3.4.7.5.6 *Socket Definition - #SKTSET*

#SKTSET - Socket Definition	
<b>AT#SKTSET=</b> <b>[&lt;socket type&gt;,</b> <b>&lt;remote port&gt;,</b> <b>&lt;remote addr&gt;,</b> <b>[&lt;closure type&gt;],</b> <b>[&lt;local port&gt;],</b> <b>[&lt;userIpType&gt;]]</b>	<p>Set command sets the socket parameters values.</p> <p><b>Parameters:</b></p> <p><b>&lt;socket type&gt;</b> - socket protocol type  0 - TCP (factory default)  1 - UDP</p> <p><b>&lt;remote port&gt;</b> - remote host port to be opened  0..65535 - port number (factory default is 0)</p> <p><b>&lt;remote addr&gt;</b> - address of the remote host, string type. This parameter can be either:  - any valid IP address in the format: xxx.xxx.xxx.xxx  - any valid IPv6 address in the format:  xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx or  xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx  - any host name to be solved with a DNS query in the format: <b>&lt;host name&gt;</b>  (factory default is the empty string "")</p> <p><b>&lt;closure type&gt;</b> - 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><b>&lt;local port&gt;</b> - local host port to be used on UDP socket  0..65535 - port number</p> <p><b>&lt;userIpType&gt;</b> - ip type for socket to open  0 – no ip type chosen;[default]  1 – ipv4.  2 – ipv6.</p> <p><b>Note:</b> <b>&lt;closure type&gt;</b> parameter is valid only for TCP socket type. For UDP sockets will be unused.</p> <p><b>Note:</b> <b>&lt;local port&gt;</b> parameter is valid only for UDP socket type. For TCP sockets will be unused.</p> <p><b>Note:</b> The resolution of the host name is over when opening the socket. Therefore, if an invalid host name given to the <b>#SKTSET</b> command an error message issued.</p> <p><b>Note:</b> the DNS Query to be successful requests that:  - the GPRS context 1 is correctly set with <b>+CGDCONT</b>  - the authentication parameters are set (<b>#USERID</b>, <b>#PASSW</b>)</p>



#SKTSET - Socket Definition	
	- the GPRS coverage is enough to permit a connection.
<b>AT#SKTSET?</b>	Read command reports the socket parameters values, in the format: <b>AT#SKTSET: &lt;socket type&gt;,&lt;remote port&gt;,&lt;remote addr&gt;,&lt;closure type&gt;,&lt;local port&gt;,&lt;userIpType&gt;</b>
<b>AT#SKTSET=?</b>	Test command returns the allowed values for the parameters.
<b>Example</b>	AT#SKTSET=0,1024,"www.telit.net" OK
<b>Note</b>	Issuing command #QDNS will overwrite <remote addr> setting.

### 3.4.7.5.7 Socket Open - #SKTOP

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

### 3.4.7.5.8 Query DNS - #QDNS

#QDNS - Query DNS	
<b>AT#QDNS=</b> <b>[&lt;host name&gt;</b> <b>[,&lt;userIpType&gt;]]</b>	Execution command executes a DNS query to solve the host name into an IP address.  <b>Parameter:</b> <b>&lt;host name&gt;</b> - host name, string type.  If the DNS query is successful then the IP address will be reported in the result code:  <b>#QDNS:"&lt;host name&gt;",&lt;IP address&gt;</b> <b>&lt;userIpType&gt;</b> - in dual stack case the user can choose the ip type to get IP address. According to this parameter DNS request will be sent.



#QDNS - Query DNS	
	<p>1 – ipv4. 2 – ipv6.</p> <p><b>Note:</b> the command has to activate the GPRS context if it not previously activated. In this case, the context deactivated after the DNS query.</p> <p><b>Note:</b> &lt;IP address&gt; is in the format: xxx.xxx.xxx.xxx</p> <p><b>Note:</b> &lt;userIpType&gt; is only usable when AT+CGDCONT is ipv4v6.</p> <p><b>Note:</b> when &lt;userSockType&gt; is “no ip type chosen” ipv6 will be requested firstly. When ipv6 DNS server doesn’t support so ipv4 will be requested.</p>
AT#QDNS=?	<p>Test command returns the allowed values for parameter), in the format:</p> <p><b>#QDNS: &lt;host name&gt;,&lt; userIpType&gt;</b></p>
Note	<p>This command requires that the authentication parameters are correctly set and that the GPRS network is present.</p>

### 3.4.7.5.9 DNS Response Caching - #CACHEDNS

#CACHEDNS - DNS Response Caching	
AT#CACHEDNS=[<mode>]	<p>Set command enables caching a mapping of domain names to IP addresses, as does a resolver library.</p> <p><b>Parameter:</b> &lt;mode&gt; 0 - caching disabled; it cleans the cache too 1 - caching enabled</p> <p><b>Note:</b> the validity period of each cached entry (i.e. how long a DNS response remains valid) is determined by a value called the <b>Time To Live (TTL)</b>, set by the administrator of the DNS server handing out the response.</p> <p><b>Note:</b> it is recommended to clean the cache, if command +CCLK had 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:</p> <p><b>#CACHEDNS: &lt;mode&gt;</b></p>
AT#CACHEDNS=?	<p>Test command returns the currently cached mapping along with the range of available values for parameter &lt;mode&gt;, in the format:</p> <p><b>#CACHEDNS: [&lt;hostnI&gt;,&lt;IPaddrI&gt;,[...,&lt;hostnn&gt;,&lt;IPaddrn&gt;],]](0,1)</b></p> <p><b>where:</b> &lt;hostnn&gt; - hostname, string type &lt;IPaddrn&gt; - IP address, string type, in the format “xxx.xxx.xxx.xxx”</p>



### 3.4.7.5.10 *Manual DNS Selection - #DNS*

#DNS – Manual DNS Selection	
<b>AT#DNS=&lt;cid&gt;,&lt;primary&gt;,&lt;secondary&gt;</b>	<p>Set command allows to manually set primary and secondary DNS servers for a PDP context defined by +CGDCONT.</p> <p><b>Parameters:</b>            &lt;cid&gt; - context identifier            1..5 - numeric parameter which specifies a particular PDP context definition            &lt;primary&gt;  <b>Ipv4- manual primary DNS server</b>, string type, in the format “xxx.xxx.xxx.xxx” used for the specified cid; we’re using this value instead of the <b>primary DNS server</b> come from the network (default is “0.0.0.0”)  <b>Ipv6- manual primary DNS server</b>, string type, in the format “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 <b>primary DNS server</b> come from the network (default is “0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0”).            Ipv6 can also be in HEX format:            “xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx”</p> <p>&lt;secondary&gt;  <b>Ipv4- manual primary DNS server</b>, string type, in the format “xxx.xxx.xxx.xxx” used for the specified cid; we’re using this value instead of the <b>primary DNS server</b> come from the network (default is “0.0.0.0”)  <b>Ipv6- manual primary DNS server</b>, string type, in the format “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 <b>primary DNS server</b> come from the network (default is “0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0”).            Ipv6 can also be in HEX format:            “xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx”</p> <p><b>Note:</b> if &lt;primary&gt; is ”0.0.0.0” and &lt;secondary&gt; is not “0.0.0.0”, then issuing AT#DNS=... raises an error.</p> <p><b>Note:</b> if &lt;primary&gt; is ”0.0.0.0” were using the <b>primary DNS server</b> come from the network as consequence of a context activation.</p> <p><b>Note:</b> if &lt;primary&gt; is not ”0.0.0.0” and &lt;secondary&gt; is “0.0.0.0”, then were using only the <b>manual primary DNS server</b>.</p> <p><b>Note:</b> the context identified by &lt;cid&gt; has to be previously defined, elsewhere issuing AT#DNS=... raises an error.  <b>Note:</b> the context identified by &lt;cid&gt; has to be not activated yet, elsewhere issuing AT#DNS=... raises an error.</p>



#DNS – Manual DNS Selection	
AT#DNS?	Read command returns the manual DNS servers set either for every defined PDP context and for the single GSM context (only if defined), in the format: <b>[#DNS: &lt;cid&gt;,&lt;primary&gt;,&lt;secondary&gt;[&lt;CR&gt;&lt;LF&gt;</b> <b>#DNS: &lt;cid&gt;,&lt;primary&gt;,&lt;secondary&gt;]]</b> <b>In case +cgdcont determined as ipv4v6 the format is</b> <b>[#DNS: &lt;cid&gt;,&lt;primary ip4&gt;,&lt;primary ip6&gt;,&lt;secondary ip4&gt;,&lt;secondary ip6&gt;[&lt;CR&gt;&lt;LF&gt;</b> <b>#DNS: &lt;cid&gt;,&lt;primary ip4&gt;,&lt;primary ip6&gt;,&lt;secondary ip4&gt;,&lt;secondary ip6&gt;]]</b>
AT#DNS=?	Test command reports the supported range of values for the <cid> parameter only, in the format: <b>#DNS: (1-5),,</b>

#### 3.4.7.5.11 Socket TCP Connection Time-Out - #SKTCT

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

#### 3.4.7.5.12 Socket Parameters save - #SKTSAV



#SKTSAV - Socket Parameters Save	
<b>AT#SKTSAV</b>	Execution command saves the actual socket parameters in the NVM of the device.  The socket parameters to store are: <ul style="list-style-type: none"> <li>- User ID</li> <li>- Password</li> <li>- Packet Size</li> <li>- Socket Inactivity Time-Out</li> <li>- Data Sending Time-Out</li> <li>- Socket Type (UDP/TCP)</li> <li>- Remote Port</li> <li>- Remote Address</li> <li>- TCP Connection Time-Out</li> </ul>
<b>AT#SKTSAV=?</b>	Test command returns the <b>OK</b> result code.
<b>Example</b>	AT#SKTSAV OK <i>socket parameters have been saved in NVM</i>
<b>Note</b>	If some parameters have not been previously specified then a default value will be stored.

#### 3.4.7.5.13 Socket Parameters Reset - #SKTRST

#SKTRST - Socket Parameters Reset	
<b>AT#SKTRST</b>	Execution command resets the actual socket parameters in the NVM of the device to the default ones.  The socket parameters to reset are: <ul style="list-style-type: none"> <li>- User ID</li> <li>- Password</li> <li>- Packet Size</li> <li>- Socket Inactivity Time-Out</li> <li>- Data Sending Time-Out</li> <li>- Socket Type</li> <li>- Remote Port</li> <li>- Remote Address</li> <li>- TCP Connection Time-Out</li> </ul>
<b>AT#SKTRST=?</b>	Test command returns the <b>OK</b> result code.
<b>Example</b>	AT#SKTRST OK <i>socket parameters have been reset</i>

#### 3.4.7.5.14 GPRS Context Activation - #GPRS



#GPRS - GPRS Context Activation	
AT#GPRS= [<mode>]	<p>Execution command deactivates/activates the GPRS context, eventually proceeding with the authentication with the parameters given with #PASSW and #USERID.</p> <p><b>Parameter:</b>            &lt;mode&gt; - 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 <b>OK</b> is preceded by the intermediate result code:            If IP or IPV6 PDP context:  <b>+IP: &lt;ip_address_obtained&gt;</b></p> <p>For DUAL STACK IPV4V6 PDP context:  <b>+IP: [&lt;ipAddrV4&gt;],[&lt;ipAddrV6&gt;]</b></p> <p>Where:            &lt;ipAddrV4&gt; - ip address ipv4(if v4 PDP context activated)            &lt;ipAddrV6&gt; - ip address ipv6(if v6 PDP context activated)</p> <p>Reporting the local IP address obtained from the network.</p> <p>Note : This command is valid only for <i>Context 1</i></p>
AT#GPRS?	<p>Read command reports the current status of the GPRS context, in the format:</p> <p><b>#GPRS: &lt;status&gt;</b></p> <p><b>where:</b>            &lt;status&gt;            0 - GPRS context deactivated            1 - GPRS context activated</p>
AT#GPRS=?	Test command returns the allowed values for parameter <mode>.
Example	<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>

### 3.4.7.5.15 PPP Configuration - #PPPCFG

#PPPCFG - PPP Configuration	
AT#PPPCFG= <mode>	Set command for PPP



#PPPCFG - PPP Configuration	
	<b>Parameters:</b> <b>&lt;mode&gt;</b>  0- Set the ppp mode to be passive mode 1- Set the ppp mode to be active mode(Default)  <b>Note:</b> The setting are save at NVM
<b>AT#PPPCFG?</b>	Read command returns the current MODE, in the format: <b>#PPPCFG: &lt;mode&gt;</b>
<b>AT#PPPCFG =?</b>	Test command returns the range of available values for parameters <b>&lt;mode&gt;</b>

## 3.4.7.5.16

**Socket Dial - #SKTD**

#SKTD - Socket Dial	
<b>AT#SKTD=</b> <b>[&lt;socket type&gt;</b> <b>&lt;remote port&gt;</b> <b>&lt;remote addr&gt;</b> <b>[&lt;closure type&gt;],</b> <b>[&lt;local port&gt;]]</b>	Set command opens the socket towards the peer specified in the parameters.  <b>Parameters:</b> <b>&lt;socket type&gt;</b> - socket protocol type 0 - TCP (factory default) 1 - UDP <b>&lt;remote port&gt;</b> - remote host port to be opened 0..65535 - port number (factory default is 0) <b>&lt;remote addr&gt;</b> - address of the remote host, string type. This parameter can be either: - any valid IP address in the format: xxx.xxx.xxx.xxx - any valid IPv6 address in the format: xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx or xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx - any host name to be solved with a DNS query in the format: <b>&lt;host name&gt;</b> (factory default is the empty string "") <b>&lt;closure type&gt;</b> - socket closure behaviour for TCP 0 - local host closes immediately when remote host has closed (default) 255 - local host closes after an escape sequence (+++) <b>&lt;local port&gt;</b> - local host port to be used on UDP socket 0..65535 - port number <b>&lt;userIpType&gt;</b> - ip type for socket to open 0 - no ip type chosen;[default] 1 - ipv4. 2 - ipv6.



#SKTD - Socket Dial	
	<p><b>Note:</b> &lt;closure type&gt; parameter is valid only for TCP socket type, for UDP sockets left unused.</p> <p><b>Note:</b> &lt;local port&gt; parameter is valid only for UDP socket type, for TCP sockets left unused.</p> <p><b>Note:</b> the resolution of the host name is done when opening the socket, therefore if an invalid host name is given to the <b>#SKTD</b> command, then an error message will be issued.</p> <p><b>Note:</b> the command to be successful requests that:</p> <ul style="list-style-type: none"> <li>- the GPRS context 1 is correctly set with +CGDCONT</li> <li>- the authentication parameters are set (#USERID, #PASSW) the GPRS coverage is enough to permit a connection</li> <li>- the GPRS has been activated with <b>AT#GPRS=1</b></li> </ul> <p><b>Note:</b> If all parameters omitted then the behaviour of Set command is the same as Read command.</p>
<b>AT#SKTD?</b>	<p>Read command reports the socket dial parameters values, in the format:</p> <p><b>AT#SKTD:</b> &lt;socket type&gt;,&lt;remote port&gt;,&lt;remote addr&gt;,&lt;closure type&gt;,&lt;local port&gt;,&lt;userIpType&gt;</p>
<b>AT#SKTD=?</b>	Test command returns the allowed values for the parameters.
<b>Example</b>	<p>AT#SKTD=0,1024,"123.255.020.001",255 CONNECT</p> <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>
<b>Note</b>	<p>The main difference between this command and #SKTOP is that this command does not interact with the GPRS context status, leaving it <b>ON</b> or <b>OFF</b> according to the #GPRS setting, therefore when the connection made with <b>#SKTD</b> is closed the context (and hence the local IP address) is maintained.</p>

### 3.4.7.5.17 *Socket Listen Ring - #E2SLRI*



#E2SLRI - Socket Listen Ring Indicator #NVMUSR – Non Volatile Storage HSDPA Channel Quality Indication	
AT#E2SLRI=[<n>]	Set command enables/disables the Ring Indicator pin response to a Socket Listen connect and if enabled the duration of the negative going pulse generated on receipt of connect.  <b>Parameter:</b> <n> - RI enabling 0 - RI disabled for Socket Listen connect (factory default) 50..1150 - RI enabled for Socket Listen connect; a negative going pulse is generated on receipt of connect and <n> is the duration in ms of this pulse
AT#E2SLRI?	Read command reports whether the Ring Indicator pin response to a Socket Listen connect is currently enabled or not, in the format:  #E2SLRI: <n>
AT#E2SLRI=?	Test command returns the allowed values for parameter <status>.

## 3.4.7.5.18

**Socket Listen - #SKTL**

#SKTL - Socket Listen	
AT#SKTL=[<mode>, <socket type>, <input port>, [<closure type>]]	<p>Execution command opens/closes the socket listening for connection requests.</p> <p><b>Parameters:</b>            &lt;mode&gt; - socket mode                0 - closes socket listening                1 - starts socket listening            &lt;socket type&gt; - socket protocol type                0 – TCP                1 - UDP            &lt;input port&gt; - local host input port to be listened                0..65535 - port number            &lt;closure type&gt; - 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 <b>OK</b> result code if successful.</p> <p><b>Note:</b> the command to be successful requests that:            - the GPRS context 1 is correctly set with +CGDCONT            - the authentication parameters are set (#USERID, #PASSW)</p>



#SKTL - Socket Listen	
	<ul style="list-style-type: none"> <li>- the GPRS coverage is enough to permit a connection</li> <li>- the GPRS has been activated with <b>AT#GPRS=1</b></li> </ul> <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><b>+CONN FROM: &lt;remote addr&gt;</b></p> <p><b>Where:</b>  <b>&lt;remote addr&gt;</b> - host address of the remote machine that contacted the device.</p> <p>When the connection is established the <b>CONNECT</b> indication is given and the modem goes into data transfer mode.</p> <p>On connection close or when context is closed with <b>#GPRS=0</b> 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:  <b>#SKTL: ABORTED</b></p>
AT#SKTL?	<p>Read command returns the current socket listening <b>status</b> and the last settings of parameters <b>&lt;socket type&gt;</b>, <b>&lt;input port&gt;</b> and <b>&lt;closure type&gt;</b>, in the format:</p> <p><b>#SKTL: &lt;status&gt;,&lt;socket type&gt;,&lt;input port&gt;,&lt;closure type&gt;</b></p> <p>Where  <b>&lt;status&gt;</b> - socket listening status  0 - socket not listening  1 - socket listening</p>
AT#SKTL=?	<p>Test command returns the allowed values for parameters <b>&lt;mode&gt;</b>, <b>&lt;socket type&gt;</b>, <b>&lt;input port&gt;</b> and <b>&lt;closure type&gt;</b>.</p>
Example	<p><i>Activate GPRS</i>  AT#GPRS=1  +IP: ####.###.###.###</p> <p>OK  <i>Start listening</i>  AT#SKTL=1,0,1024  OK  or  AT#SKTL=1,0,1024,255  OK</p> <p><i>Receive connection requests</i>  +CONN FROM: 192.164.2.1  CONNECT</p>



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

#### 3.4.7.5.19 *Firewall Setup - #FRWL*

#FRWL - Firewall Setup	
<b>AT#FRWL=</b> <b>[&lt;action&gt;,</b> <b>&lt;ip_address&gt;,</b> <b>&lt;net_mask&gt;]</b>	<p>Execution command controls the internal firewall settings.</p> <p><b>Parameters:</b></p> <p><b>&lt;action&gt;</b> - command action</p> <ul style="list-style-type: none"> <li>0 - remove selected chain</li> <li>1 - add an <b>ACCEPT</b> chain</li> <li>2 - remove all chains (<b>DROP</b> everything); <b>&lt;ip_addr&gt;</b> and <b>&lt;net_mask&gt;</b> has no meaning in this case.</li> </ul> <p><b>&lt;ip_addr&gt;</b> - remote address to be added into the <b>ACCEPT</b> chain; string type, it can be any valid IP address in the format: xxx.xxx.xxx.xxx</p> <p><b>&lt;net_mask&gt;</b> - mask to be applied on the <b>&lt;ip_addr&gt;</b>; string type, it can be any valid IP address mask in the format: xxx.xxx.xxx.xxx</p> <p>Command returns <b>OK</b> result code if successful.</p> <p><b>Note:</b> the firewall applies for incoming (listening) connections only. Firewall general policy is <b>DROP</b>, therefore all packets that are not included into an <b>ACCEPT</b> chain rule will be silently discarded.</p> <p>When a packet comes from the IP address <b>incoming_IP</b>, the firewall chain rules will be scanned for matching with the following criteria:</p> <p><b>incoming_IP &amp; &lt;net_mask&gt; = &lt;ip_addr&gt; &amp; &lt;net_mask&gt;</b></p> <p>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>



#FRWL - Firewall Setup	
AT#FRWL?	Read command reports the list of all <b>ACCEPT</b> chain rules registered in the Firewall settings in the format:  #FRWL: <ip_addr>,<net_mask> #FRWL: <ip_addr>,<net_mask> .... <b>OK</b>
AT#FRWL=?	Test command returns the allowed values for parameter <action>.
Example	Let assume we want to accept connections only from our devices which are on the IP addresses ranging from 197.158.1.1 to 197.158.255.255  We need to add the following chain to the firewall: AT#FRWL=1,"197.158.1.1","255.255.0.0" <b>OK</b>
Note	For outgoing connections made with #SKTOP and #SKTD the remote host is dynamically inserted into the <b>ACCEPT</b> 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.  Rules not saved in NVM, at startup the rules list will be #FRWL: "000.000.000.000","000.000.000.000". Removing static <b>ACCEPT</b> chain don't guarantee removing of all dynamically added <b>ACCEPT</b> chains. To be sure all dynamic chains removed use AT#FRWL=2 as workaround.

### 3.4.7.5.20 GPRS Data Volume - #GDATAVOL

#GDATAVOL - GPRS Data Volume	
AT#GDATAVOL=[<mode>]	Execution command reports, for every active PDP context, the amount of data the last 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.  <b>Parameter:</b> <b>&lt;mode&gt;</b> 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:  #GDATAVOL: <cidn>,<totn>,<sentn>,<receivedn>[<CR><LF> #GDATAVOL: <cidm>,<totm>,<sentm>,<receivedm>[...]]



#GDATAVOL - GPRS Data Volume	
	<p><b>where:</b></p> <ul style="list-style-type: none"> <li><b>&lt;cidn&gt;</b> - PDP context identifier <ul style="list-style-type: none"> <li>1..16 - numeric parameter which specifies a particular PDP context definition</li> </ul> </li> <li><b>&lt;totn&gt;</b> - number of bytes either received or transmitted in the last GPRS session for <b>&lt;cidn&gt;</b> PDP context;</li> <li><b>&lt;sentn&gt;</b> - number of bytes transmitted in the last GPRS session for <b>&lt;cidn&gt;</b> PDP context;</li> <li><b>&lt;receivedn&gt;</b> - number of bytes received in the last GPRS session for <b>&lt;cidn&gt;</b> PDP context;</li> </ul> <p>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><b>#GDATAVOL: &lt;cidn&gt;,&lt;totn&gt;,&lt;sentn&gt;,&lt;receivedn&gt;[&lt;CR&gt;&lt;LF&gt;</b>  <b>#GDATAVOL: &lt;cidm&gt;,&lt;totm&gt;,&lt;sentm&gt;,&lt;receivedm&gt;[...]]</b></p> <p><b>where:</b></p> <ul style="list-style-type: none"> <li><b>&lt;cidn&gt;</b> - PDP context identifier <ul style="list-style-type: none"> <li>1..16 - numeric parameter which specifies a particular PDP context definition</li> </ul> </li> <li><b>&lt;totn&gt;</b> - number of bytes either received or transmitted, in every GPRS session since last reset, for <b>&lt;cidn&gt;</b> PDP context;</li> <li><b>&lt;sentn&gt;</b> - number of bytes transmitted, in every GPRS session since last reset, for <b>&lt;cidn&gt;</b> PDP context;</li> <li><b>&lt;receivedn&gt;</b> - number of bytes received, in every GPRS session since last reset, for <b>&lt;cidn&gt;</b> PDP context;</li> </ul> <p><b>Note:</b> last GPRS session counters not saved in NVM so they are loosen at power off.</p> <p><b>Note:</b> total GPRS session counters saved on NVM.</p>
AT#GDATAVOL=?	Test command returns the range of supported values for parameter <b>&lt;mode&gt;</b> .

### 3.4.7.5.21 ICMP Ping Support - #ICMP

#ICMP – ICMP Ping Support	
AT#ICMP=<mode>	<p>Set command enables/disables the ICMP Ping support.</p> <p><b>Parameter:</b></p> <p><b>&lt;mode&gt;</b></p> <ul style="list-style-type: none"> <li>0 - disable ICMP Ping support</li> <li>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.(default)</li> <li>2 - enable free ICMP Ping support; the module is sending a proper ECHO_REPLY</li> </ul>



#ICMP – ICMP Ping Support	
	to every IP Address pinging it.
<b>AT#ICMP?</b>	Read command returns whether the ICMP Ping support is currently enabled or not, in the format: <b>#ICMP: &lt;mode&gt;</b>
<b>AT#ICMP=?</b>	Test command reports the supported range of values for the <mode> parameter.

#### 3.4.7.5.22 *Send PING request - #PING*

#PING – Send PING request	
<b>AT#PING=</b> <b>&lt;IPaddr&gt;</b> <b>[,&lt;retryNum&gt;]</b> <b>[,&lt;len&gt;</b> <b>] [&lt;timeout</b> <b>&gt; [&lt;ttl&gt;</b> <b>[,&lt;pdpId&gt;]]]]]</b>	<p>This command is used to send Ping Echo Request messages and to receive the corresponding Echo Reply.</p> <p><b>Parameters:</b></p> <p><b>&lt;IPaddr&gt;</b> - address of the remote host, string type. This parameter can be either:</p> <ul style="list-style-type: none"> <li>- any valid IP address in the format: “xxx.xxx.xxx.xxx”</li> <li>- any host name to be solved with a DNS query</li> </ul> <p><b>&lt;retryNum&gt;</b> - the number of Ping Echo Request to send 1-64 (default 4)</p> <p><b>&lt;len&gt;</b> - the lenght of Ping Echo Request message 32-1460 (default 32)</p> <p><b>&lt;timeout&gt;</b> - the timeout, in 100 ms units, waiting a single Echo Reply 1-600 (default 50)</p> <p><b>&lt;ttl&gt;</b> - time to live 1-255 (default 128)</p> <p><b>&lt;pdpId&gt;</b> PDP context identifier 1..5 - numeric parameter which specifies a particular PDP context definition (<b>default 1</b>)</p> <p>Once the single Echo Reply message is receive a string like that is displayed: <b>#PING: &lt;replyId&gt;,&lt;Ip Address&gt;,&lt;replyTime&gt;,&lt;ttl&gt;</b></p> <p><b>Where:</b></p> <p><b>&lt;replyId&gt;</b> - Echo Reply number</p> <p><b>&lt;Ip Address&gt;</b> - IP address of the remote host</p> <p><b>&lt;replyTime&gt;</b> - time, in 100 ms units, required to receive the response</p> <p><b>&lt;ttl&gt;</b> - time to live of the Echo Reply message</p> <p><b>Note 1:</b> when the Echo Request timeout expires (no reply received on time) the response will contain &lt;replyTime&gt; set to 600 and &lt;ttl&gt; set to 255</p> <p><b>Note 2:</b> To receive the corresponding Echo Reply is not required to enable separately AT#ICMP</p> <p><b>Note 3:</b> Before send PING Request the GPRS context must have been activated by AT#SGACT=1,1</p> <p><b>Note 4:</b> <b>&lt;pdpId&gt; default value will be 3 in LE910 nvg/svg.</b></p>
<b>AT#PING=?</b>	Test command reports the supported range of values for the #PING command parameters
<b>Example</b>	<p>AT#PING=”www.telit.com”</p> <p>#PING: 01,"81.201.117.177",6,50</p>



	#PING: 02,"81.201.117.177",5,50 #PING: 03,"81.201.117.177",6,50 #PING: 04,"81.201.117.177",5,50 OK
--	---

### 3.4.7.5.23 *DNS from Network - #NWDNS*

#NWDNS – DNS from Network	SELINT 2
<b>AT#NWDNS=</b> [<cid>,<cid> [...]]]	<p>Execution command returns either the primary and secondary DNS addresses for the GSM context (if specified) and/or a list of primary and secondary DNS addresses for the specified PDP context identifiers.</p> <p><b>Parameters:</b>  &lt;cid&gt; - context identifier  0 - specifies the GSM context (see +GSMCONT).  1..5 - numeric parameter which specifies a particular PDP context definition (see +CGDCONT command).</p> <p><b>Note:</b> if no &lt;cid&gt; is specified, the DNS addresses for all defined contexts are returned.</p> <p><b>Note:</b> issuing the command with more than 6 parameters raises an error.</p> <p><b>Note:</b> the command returns only one row of information for every specified &lt;cid&gt;, even if the same &lt;cid&gt; is present more than once.</p> <p>The command returns a row of information for every specified &lt;cid&gt; whose context has been already defined. No row is returned for a &lt;cid&gt; whose context has not been defined yet. Response format is:  #NWDNS: &lt;cid&gt;,&lt;PDNSAddress&gt;,&lt;SDNSAddress&gt;[&lt;CR&gt;&lt;LF&gt;  #NWDNS: &lt;cid&gt;,&lt;PDNSAddress&gt;,&lt;SDNSAddress&gt; [...]]</p> <p><b>where:</b>  &lt;cid&gt; - context identifier, as before &lt;PDNSAddress&gt;,&lt;SDNSAddress&gt; - primary and secondary DNS addresses set through AT#DNS command. If not set, they are the primary and secondary DNS addresses assigned during the PDP (or GSM) context activation.</p>
<b>AT#NWDNS=?</b>	Test command returns a list of defined <cid>s.

### 3.4.7.5.24 *Maximum TCP Payload Size - #TCPMAXDAT*

#TCPMAXDAT – Maximum TCP Payload Size	
<b>AT#TCPMAXDAT=</b> <size>	<p>Set command allows setting the maximum TCP payload size in TCP header options.</p> <p><b>Parameter:</b>  &lt;size&gt; - 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).</p>



#TCPMAXDAT – Maximum TCP Payload Size	
	496..1420 - maximum TCP payload size
AT#TCPMAXDAT?	Read command reports the current maximum TCP payload size, in the format: <b>#TCPMAXDAT: &lt;size&gt;</b>
AT#TCPMAXDAT=?	Test command reports the supported range of values for parameter <size>

#### 3.4.7.5.25 TCP Reassembly - #TCPREASS

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

#### 3.4.7.5.26 Configure the TCP window size- #TCPMAXWIN

#TCPMAXWIN – Configure TCP window size	
AT#TCPMAXWIN=[<winSize>]	This command permits to configure the TCP window size. <b>Parameters:</b> <winSize> - TCP window size. 0 – TCP window size is handled automatically by the module (default) 536-65535 – TCP window size value  <b>Note:</b> command has to be set before opening socket connection (#SD, #SL/SA, #FTPOPE N/GET/PUT...) to take effect. <b>Note:</b> it permits to slow down TCP when application wants to retrieve data slowly (for instance: cmd mode), to avoid early RST from server. <b>Note:</b> the value set by command is directly stored in NVM.
AT#TCPMAXWIN?	Read command reports the currently selected <winSize> in the format: <b>#TCPMAXWIN: &lt;winSize&gt;</b>
AT#TCPMAXWIN=?	Test command reports the supported range of values for parameter <winSize>



### 3.4.7.5.27      *Ethernet Control Model setup - #ECM*

#ECM – Ethernet Control Model setup		SELINT 2
AT#ECM=<Cid>,<Did>[,<UserId>,<Pwd>,<DhcpServerEnable>]]]	<p>This command sets up an Ethernet Control Model (ECM) session.</p> <p>Parameters:</p> <p>&lt;Cid&gt; - Context id</p> <p>&lt;Did&gt; - Device id, currently limited to 0 (only one device)</p> <p>&lt;UserId&gt; - string type, used only if the context requires it</p> <p>&lt;Pwd&gt; - string type, used only if the context requires it</p> <p>&lt;DhcpServerEnable&gt; - dhcp server abilitation:</p> <p>0 – disabled</p> <p>1 – enabled (default)</p> <p>Note: this command activates a context, so all necessary setup has to be done before it (registration, APN).</p>	
AT#ECM?	<p>Read command returns the session state in the following format:</p> <p># ECM: &lt;Did&gt;,&lt;State&gt;</p> <p>...</p> <p>OK</p> <p>where &lt;Did&gt; is currently 0 and &lt;State&gt; can be:</p> <p>0 - disabled</p> <p>1 - enabled</p>	
AT#ECM=?	Test command returns the range of supported values for all the parameters.	

### 3.4.7.5.28      *Ethernet Control Model configure- #ECMC*

#ECMC – Ethernet Control Model configure	SELINT 2
--	----------



## 80407ST10116A Rev.14.1 - 2017-05-14

	Note: for each custom parameter, if not assigned by the user will return 0.0.0.0 Note: read command does not return the current address.
<b>AT#ECMC=?</b>	Test command returns the range of supported values for all the parameters.

### 3.4.7.5.29 *Ethernet Control Model shutdown- #ECMD*

#ECMD – Ethernet Control Model shutdown		SELINT 2
<b>AT#ECMD=&lt;Did&gt;</b>	<p>This command is used to shutdown an Ethernet Control Model (ECM) session.</p> <p>Parameters: &lt;Did&gt; - Device id, currently limited to 0 (only one device)</p> <p>Note: this command also deactivates the context.</p>	
<b>AT#ECMD?</b>	<p>Read command returns the session state in the following format:</p> <p># ECM: &lt;Did&gt;,&lt;State&gt; ... OK</p> <p>where &lt;Did&gt; is currently 0 and &lt;State&gt; can be: 0 - disabled 1 - enabled</p>	
<b>AT#ECMD=?</b>	Test command returns the range of supported values for all the parameters.	

### 3.4.7.6 Easy Scan® Extension AT Commands

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

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



List of ported AT Commands:

#CSURV (LTE Currently work only if module camped on LTE cell)  
 #CSURVC (LTE Currently work only if module camped on LTE cell)  
 #CSURVU (LTE Currently work only if module camped on LTE cell)  
 #CSURVUC (LTE Currently work only if module camped on LTE cell)  
 #CSURVB (not supported for LTE)  
 #CSURVBC (not supported for LTE)  
 #CSURVF (supported for LTE)  
 #CSURVNLf (supported for LTE)  
 #CSURVP (not supported for LTE)  
 #CSURVPC (not supported for LTE)

### 3.4.7.6.1 Network survey - #CSURV

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



	<p>&lt;mcc&gt; - hexadecimal 3-digits number; it is the mobile country code.</p> <p>&lt;mnc&gt; - hexadecimal 2-digits number; it is the mobile network code.</p> <p>&lt;lac&gt; - location area code; if #CSURVF last setting is 0, &lt;lac&gt; is a decimal number, else it is a 4-digits hexadecimal number.</p> <p>&lt;cellId&gt; - cell identifier; if #CSURVF last setting is 0, &lt;cellId&gt; is a decimal number, else it is a 4-digits hexadecimal number.</p> <p>&lt;cellStatus&gt; - 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 &lt;rxLev&gt; is low.</p> <p>CELL_OTHER - none of the above e.g. exclusion timer running, no BCCH available...etc.</p> <p>&lt;numArfcn&gt; - number of valid channels in the Cell Channel Description.</p> <p>&lt;arfcn&gt; - arfcn of a valid channel in the Cell Channel Description (<i>n</i> is in the range 1..&lt;numArfcn&gt;)</p> <p>&lt;numArfcn&gt; - decimal number; it is the number of valid channels in the Cell Channel Description.</p> <p>&lt;arfcn&gt; - decimal number; it is the arfcn of a valid channel in the Cell Channel Description (<i>n</i> is in the range 1..&lt;numArfcn&gt;).</p> <p>&lt;numChannels&gt; - 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>&lt;ban&gt; - decimal number; it is the arfcn of a valid channel in the BA list (<i>n</i> is in the range 1..&lt;numChannels&gt;); 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>&lt;pbcch&gt; - packet broadcast control channel</p> <p>0 - pbcch not activated on the cell</p> <p>1 - pbcch activated on the cell</p> <p>&lt;nom&gt; - network operation mode</p> <p>1</p> <p>2</p> <p>3</p> <p>&lt;rac&gt; - routing area code</p> <p>0..255 -</p>
--	---



	<p>&lt;spgc&gt; - 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          &lt;pat&gt; - priority access threshold          0 -          3..6 -          &lt;nco&gt; - network control order          0..2 -          &lt;t3168&gt; - timer 3168          &lt;t3192&gt; - timer 3192          &lt;drxmax&gt; - discontinuous reception max time (in seconds)          &lt;ctrlAck&gt; - packed control ack          &lt;bsCVmax&gt; - blocked sequenc countdown max value          &lt;alpha&gt; - alpha parameter for power control          &lt;pcMeasCh&gt; - type of channel which shall be used for downlink measurements for power control          0 - BCCH          1 - PDCH  <b>(For non BCCH-Carrier)</b>  <b>arfcn: &lt;arfcn&gt; rxLev: &lt;rxLev&gt;</b></p> <p><b>where:</b>          &lt;arfcn&gt; - decimal number; it is the RF channel          &lt;rxLev&gt; - decimal number; it is the reception level (in dBm)          In 3G  <b>uarfcn: &lt;uarfcn&gt; rxLev: &lt;rxLev&gt; mcc: &lt;mcc&gt; mnc: &lt;mnc&gt; scr code: &lt;scr code&gt; cellId: &lt;cellId&gt; lac: &lt;lac&gt; cellStatus: &lt;cellStatus&gt;</b>  <b>&lt;CR&gt;&lt;LF&gt;&lt;CR&gt;&lt;LF&gt;&lt;CR&gt;&lt;LF&gt;</b></p> <p><b>where:</b>          &lt;uarfcn&gt; - The carrier frequency is designated by the UTRA Absolute Radio Frequency Channel Number.          &lt;rxLev&gt; - decimal number; it is the reception level (in dBm).          &lt;mcc&gt; - hexadecimal 3-digits number; it is the mobile country code.          &lt;mnc&gt; - hexadecimal 2-digits number; it is the mobile network code.          &lt;scr code&gt; - decimal number; it is the scrambling code          &lt;cellId&gt; - cell identifier; if #CSURVF last setting is 0, &lt;cellId&gt; is a decimal number, else it is a 4-digits hexadecimal number.          &lt;lac&gt; - location area code; if #CSURVF last setting is 0, &lt;lac&gt; is a decimal number, else it is a 4-digits hexadecimal number.          &lt;cellStatus&gt; - string type; it is the cell status.  <b>CELL_SUITABLE</b> - C0 is a suitable cell.  <b>CELL_LOW_PRIORITY</b> - the cell is low priority based on the received system information.  <b>CELL_FORBIDDEN</b> - the cell is forbidden.</p>
--	---



	<p><b>CELL_BARRED</b> - the cell is barred based on the received system information.  <b>CELL_LOW_LEVEL</b> - the cell &lt;rxLev&gt; is low.  <b>CELL_OTHER</b> - none of the above e.g. exclusion timer running, no BCCH available...etc.</p> <p>In 4G (partly implemented)  Currently work only if module camped on LTE cell.  For serving cell:  earfcn: &lt;earfcn&gt; rxLev: &lt;rxLev&gt; mcc: &lt;mcc&gt; mnc: &lt;mnc&gt; cellId: &lt;cellId&gt; tac: &lt;tac&gt;  For neighbor cell:  earfcn: &lt;earfcn&gt; rxLev: &lt;rxLev&gt; cellId: &lt;cellId&gt;</p> <p><b>Where:</b>  &lt;earfcn&gt; - E-UTRA Assigned Radio Channel  &lt;tac&gt; - Tracking Area Code. if #CSURVF last setting is 0, &lt;cellId&gt; is a decimal number, else it is a 4-digits hexadecimal number</p> <p>Lastly, the #CSURV output ends in two ways, depending on the last #CSURVF setting:  if #CSURVF=0 or #CSURVF=1  The output ends with the string:  <b>Network survey ended</b>  if #CSURVF=2  the output ends with the string:  <b>Network survey ended (Carrier: &lt;NoARFCN&gt; BCCh: &lt;NoBCCh&gt;)</b></p> <p><b>Where:</b>  &lt;NoARFCN&gt; - number of scanned frequencies  &lt;NoBCCH&gt; - number of found BCCh</p>
<b>Example</b>	<p>(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</p>



	uarfcn: 10713 rxLev: -87 mcc: 450 mnc: 05 scr code: 1200 cellId: 2171648 lac: 8209 cellStatus: CELL_LOW_PRIORITY Network survey ended OK
<b>Note</b>	1. The command is executed within max. 2 minute.

### 3.4.7.6.2 Network Survey (Numeric Format) - #CSURVC

#CSURVC - Network Survey (Numeric Format)	
AT#CSURVC[= [<s>,<e>]]	<p>Execution command allows to perform a quick survey through channels belonging to the band selected by last #BND command issue, starting from channel &lt;s&gt; to channel &lt;e&gt;. Issuing AT#CSURVC&lt;CR&gt;, a full band scan is performed.</p> <p><b>Parameters:</b>            &lt;s&gt; - starting channel            &lt;e&gt; - ending channel            After issuing the command the device responds with the string:  <b>Network survey started...</b>            and, after a while, a list of informations, one for each received carrier, is reported, each of them in the format:            In 2G  <b>(For BCCH-Carrier)</b>            &lt;arfcn&gt;,&lt;bsic&gt;,&lt;rxLev&gt;,&lt;ber&gt;,&lt;mcc&gt;,&lt;mnc&gt;,&lt;lac&gt;,&lt;cellId&gt;,&lt;cellStatus&gt;,&lt;numArfcn&gt;[,&lt;arfcn1&gt; ..[ &lt;arfcn64&gt;]]            [,&lt;numChannels&gt;,&lt;ba1&gt; ..[&lt;ba32&gt;]][,&lt;pbcc&gt;[,&lt;nom&gt;,&lt;rac&gt;,&lt;spgc&gt; &lt;pat&gt;            &lt;nco&gt; &lt;t3168&gt; &lt;t3192&gt; &lt;drxmax&gt; &lt;ctrlAck&gt;            &lt;bsCVmax&gt;,&lt;alpha&gt;,&lt;pcMeasCh&gt;]]]            &lt;CR&gt;&lt;LF&gt;&lt;CR&gt;&lt;LF&gt;&lt;CR&gt;&lt;LF&gt;</p> <p><b>where:</b>            &lt;arfcn&gt; - C0 carrier assigned radio channel (BCCH - Broadcast Control Channel).            &lt;bsic&gt; - base station identification code; if #CSURVF last setting is 0. &lt;bsic&gt; is a decimal number, else it is a 2-digits octal number.            &lt;rxLev&gt; - decimal number; it is the reception level (in dBm).            &lt;ber&gt; - decimal number; it is the bit error rate (in %).            &lt;mcc&gt; - hexadecimal 3-digits number; it is the mobile country code.            &lt;mnc&gt; - hexadecimal 2-digits number; it is the mobile network code.            &lt;lac&gt; - location area code; if #CSURVF last setting is 0, &lt;lac&gt; is a decimal number, else it is a 4-digits hexadecimal number.            &lt;cellId&gt; - cell identifier; if #CSURVF last setting is 0, &lt;cellId&gt; is a decimal number, else it is a 4-digits hexadecimal number.            &lt;cellStatus&gt; - string type; it is the cell status</p>



	<p>..0 - C0 is a suitable cell (CELL_SUITABLE).</p> <p>1 - the cell is low priority based on the received system information (CELL_LOW_PRIORITY).</p> <p>2 - the cell is forbidden (CELL_FORBIDDEN).</p> <p>3 - the cell is barred based on the received system information (CELL_BARRED).</p> <p>4 - the cell &lt;rxLev&gt; is low (CELL_LOW_LEVEL).</p> <p>5 - none of the above e.g. exclusion timer running, no BCCH available...etc.. (CELL_OTHER).</p> <p>&lt;numArfcn&gt; - decimal number; it is the number of valid channels in the Cell Channel Description</p> <p>&lt;arfcn&gt; - decimal number; it is the arfcn of a valid channel in the Cell Channel Description (<i>n</i> is in the range 1..<b>&lt;numArfcn&gt;</b>)</p> <p>&lt;numChannels&gt; - 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>&lt;ban&gt; - decimal number; it is the arfcn of a valid channel in the BA list (<i>n</i> is in the range 1..<b>&lt;numChannels&gt;</b>); 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>&lt;pbcch&gt; - packet broadcast control channel</p> <p>0 - pbcch not activated on the cell</p> <p>1 - pbcch activated on the cell</p> <p>&lt;nom&gt; - network operation mode</p> <p>1</p> <p>2</p> <p>3</p> <p>&lt;rac&gt; - routing area code</p> <p>0..255</p> <p>&lt;spgc&gt; - 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>&lt;pat&gt; - priority access threshold.</p> <p>0</p> <p>3..6</p> <p>&lt;nco&gt; - network control order.</p> <p>0..2 -</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)  
 In 3G  
**<uarfcn>,<rxLev>,<mcc>,<mnc>,<scrcode>,<cellId>,<lac>,<cellStatus>**  
**<CR><LF><CR><LF><CR><LF>**  
**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.  
  
 In 4G (partly implemented)  
 Currently work only if module camped on LTE cell.  
 For serving cell:  
**<earfcn>,<rxLev>,<mcc>,<mnc>,<cellId>,<tac>**  
 For neighbor cell:



	<p>&lt;earfcn&gt;,&lt;rxLev&gt;,&lt;cellId&gt;</p> <p><b>Where:</b></p> <p>&lt;earfcn&gt; - E-UTRA Assigned Radio Channel</p> <p>&lt;tac&gt; - Tracking Area Code. if #CSURVF last setting is 0, &lt;cellId&gt; is a decimal number, else it is a 4-digits hexadecimal number</p> <p>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”</p> <p>when #CSURVF=2 the output ends with the string “Network survey ended (Carrier: &lt;NoARFCN&gt; BCCh: &lt;NoBCCh&gt;)</p> <p><b>Where:</b></p> <p>&lt;NoARFCN&gt; - number of scanned frequencies</p> <p>&lt;NoBCCH&gt; - number of found BCCh</p>
<b>Example</b>	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
<b>Note</b>	The command is executed within max. 2 minute. The information provided by #CSURVC is the same as that provided by #CSURV. The difference is that the output of #CSURVC is in numeric format only.

### 3.4.7.6.3 Network Survey of User Defined Channels - #CSURVU

#CSURVU - Network Survey Of User Defined Channels	
<b>AT#CSURVU=[  &lt;ch1&gt;[,&lt;ch2&gt;[,...  [,&lt;ch10&gt;]]]]</b>	<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.</p> <p>In 4G (partly implemented)</p> <p>Currently work only if module camped on LTE cell.</p> <p><b>Parameters:</b></p> <p>&lt;chn&gt; - channel number (ARFCN (in case of 2G), UARFCN (in case of 3G), EARFCN (in case of 4G))</p> <p><b>Note:</b> the &lt;chn&gt; must be selected in same RAT.</p>
<b>Example</b>	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
<b>Note</b>	The command is executed within max. 2 minute.

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

#CSURVUC - Network Survey Of User Defined Channels (Numeric Format)	
AT#CSURVUC=[ <ch1>[,<ch2>[,... [,<ch10>]]]]	<p>Execution command allows performing a quick survey through the given channels. The range of available channels depends on the last #BND issue.</p> <p>The result format is like command #CSURVC.</p> <p>In 4G (partly implemented)</p> <p>Currently work only if module camped on LTE cell.</p> <p><b>Parameters:</b></p> <p>&lt;chn&gt; - channel number (ARFCN (in case of 2G), UARFCN (in case of 3G), EARFCN (in case of 4G))</p> <p><b>Note:</b> the &lt;chn&gt; must be selected in same RAT.</p>
<b>Example</b>	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
<b>Note</b>	<p>The command is executed within max. 2 minute.</p> <p>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>

#### 3.4.7.6.5 BCCH Network Survey - #CSURVB

#CSURVB - BCCH Network Survey	
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 &lt;n&gt; BCCH carriers are found.</p> <p>The result format is like command #CSURV.</p> <p><b>Parameter:</b></p> <p>&lt;n&gt; - number of desired BCCH carriers</p> <p>1..M</p>
AT#CSURVB=?	<p>Test command reports the range of values for parameter &lt;n&gt; in the format:</p> <p>(1-M)</p> <p>where M is the maximum</p>



### 3.4.7.6.6 BCCH Network Survey (Numeric Format) - #CSURVBC

#CSURVBC - BCCH Network Survey (Numeric Format)	
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 &lt;n&gt; BCCH carriers are found.</p> <p>The result is given in numeric format and is like command #CSURVC.</p> <p><b>Parameter:</b>            &lt;n&gt; - number of desired BCCH carriers            1..M</p>
AT#CSURVBC=?	<p>Test command reports the range of values for parameter &lt;n&gt; in the format: (1-M)</p> <p>Where M is the maximum number of available frequencies depending on last selected band and RAT.</p>

### 3.4.7.6.7 Network Survey Format - #CSURVF

#CSURVF - Network Survey Format	
AT#CSURVF= [<format>]	<p>Set command controls the format of the numbers output by all the Easy Scan®.</p> <p><b>Parameter:</b>            &lt;format&gt; - 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: &lt;NoARFCN&gt; BCCh: &lt;NoBCCh&gt;)</p> <p><b>Where:</b>            &lt;NoARFCN&gt; - number of scanned frequencies            &lt;NoBCCH&gt; - number of found BCCh</p>
AT#CSURVF?	<p>Read command reports the current number format, as follows:            #CSURVF: &lt;format&gt;</p>
AT#CSURVF=?	<p>Test command reports the supported range of values for the parameter &lt;format&gt;.</p>

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

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



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

### 3.4.7.6.9 *PLMN Network Survey - #CSURVP*

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

### 3.4.7.6.10 *PLMN Network Survey (Numeric Format) - #CSURVPC*

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

### 3.4.7.6.11 *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><b>Note 1:</b> if module registered on VPLMN return error: "operation not supported"</p> <p><b>Note 2:</b> if previous powerup/periodic/manual CSG search didn't finished yet return error: "wrong state"</p> <p><b>Note 3:</b> if used inappropriate SIM or file EFCSGL empty return error: "SIM wrong"</p> <p><b>Note 4:</b> 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:&lt;CSG_search_state&gt;,&lt;CSG_registration_state&gt;</p> <p>&lt;CSG_search_state&gt;</p> <p>0 – No active CSG search</p> <p>1- power-up CSG search</p> <p>2 – periodic CSG search</p> <p>3 – manual CSG search</p> <p>&lt;CSG_registration_state&gt;</p> <p>0 – inactive CSG registration</p> <p>1 – active CSG registration</p>

### 3.4.7.7 SIM Toolkit AT Commands

#### 3.4.7.7.1 SIM Toolkit Interface Activation - #STIA

#STIA - SIM Toolkit Interface Activation	
AT#STIA= [<mode> [,<timeout>]]	<p>Set command is used to activate the SAT sending of unsolicited indications when a proactive command is received from SIM.</p> <p><b>Parameters:</b></p> <p>&lt;mode&gt;</p> <p>0 - disable SAT</p> <p>1 - enable SAT without unsolicited indication #STN</p> <p>2 - enable SAT and extended unsolicited indication #STN (see #STGI)</p> <p>3 - enable SAT and reduced unsolicited indication #STN (see #STGI)</p>



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

**<timeout>** - time-out for user responses  
 1..255 - time-out in minutes (default 10). Any ongoing (but unanswered) proactive command will be aborted automatically after <timeout> minutes. In this case, the terminal response is either “ME currently unable to process command”, or if applicable, “No response from user”. In addition an unsolicited indication will be sent to the external application:

**#STN: <cmdTerminateValue>**

**where:**  
**<cmdTerminateValue>** is defined as <cmdType> + terminate offset; the terminate offset equals 100.

Note: every time the SIM application issues a proactive command that requires user interaction an unsolicited code will be sent, if enabled with #STIA command, as follows:

- if <mode> parameter of #STIA command has been set to 3 (reduced unsolicited indication) an unsolicited indication will be sent, indicating the type of proactive command issued by the SIM:

**#STN: <cmdType>**

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

if **<cmdType>=1 (REFRESH)**  
 an unsolicited notification will be sent to the user:  
**#STN: <cmdType>,<refresh type>**

**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** 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).



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

	<p>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.</p> <p><b>Note:</b> The settings are saved on user profile and available on following reboot. SIM Toolkit activation/deactivation is only performed at power on.</p>
<b>AT#STIA?</b>	<p>Read command can be used to get information about the SAT interface in the format:</p> <p><b>#STIA: &lt;state&gt;,&lt;mode&gt;,&lt;timeout&gt;,&lt;SatProfile&gt;</b></p> <p><b>where:</b></p> <p><b>&lt;state&gt;</b> - 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)</p> <p><b>&lt;mode&gt;</b> - SAT and unsolicited indications enabling status (see above)</p> <p><b>&lt;timeout&gt;</b> - time-out for user responses (see above)</p> <p><b>&lt;SatProfile&gt;</b> - 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.</p> <p><b>Note:</b> 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.</p> <p>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>
<b>AT#STIA=?</b>	<p>Test command returns the range of available values for the parameters &lt;mode&gt; and &lt;timeout&gt;.</p>
<b>Note</b>	<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.</p> <p>After power cycle another instance can enable SAT.</p>
<b>Note</b>	<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>

### 3.4.7.7.2 SIM Toolkit Information - #STGI

#### #STGI - SIM Toolkit Information



<b>AT#STGI=</b> <b>[&lt;cmdType&gt;]</b>	<p>#STGI set command is used to request the parameters of a proactive command from the ME.</p> <p><b>Parameter:</b>  <b>&lt;cmdType&gt;</b> - 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"> <li>1 - REFRESH</li> <li>5 - SET UP EVENT LIST</li> <li>16 - SET UP CALL</li> <li>17 - SEND SS</li> <li>18 - SEND USSD</li> <li>19 - SEND SHORT MESSAGE</li> <li>20 - SEND DTMF</li> <li>32 - PLAY TONE</li> <li>33 - DISPLAY TEXT</li> <li>34 - GET INKEY</li> <li>35 - GET INPUT</li> <li>36 - SELECT ITEM</li> <li>37 - SET UP MENU</li> <li>40 - SET UP IDLE MODE TEXT</li> </ul> <p>Requested command parameters are sent using an #STGI indication:  <b>#STGI: &lt;parameters&gt;</b></p> <p><b>Where:</b> &lt;parameters&gt; depends upon the ongoing proactive command as follows:  if &lt;cmdType&gt;=1 (REFRESH)  #STGI: &lt;cmdType&gt;,&lt;refresh type&gt;</p> <p><b>where:</b>  <b>&lt;refresh type&gt;</b></p> <ul style="list-style-type: none"> <li>0 - SIM Initialization and Full File Change Notification;</li> <li>1 - File Change Notification;</li> <li>2 - SIM Initialization and File Change Notification;</li> <li>3 - SIM Initialization;</li> <li>4 - SIM Reset</li> </ul> <p>if &lt;cmdType&gt;=5 (SET UP EVENT LIST)  <b>#STGI: &lt;cmdType&gt;,&lt;event list mask&gt;</b></p> <p><b>where:</b>  <b>&lt;event list mask&gt;</b> - hexadecimal number representing the list of events to monitor (see GSM 11.14):  - '00' = MT call</p>
---	---



- '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).

if <cmdType>=16 (SET UP CALL)

#STGI: <cmdType>,<commandDetails>,<confirmationText>],<calledNumber>

**where:**

<commandDetails> - unsigned integer, used as an enumeration

- 0 - Set up call, but only if not currently busy on another call
- 1 - Set up call, but only if not currently busy on another call, with redial
- 2 - Set up call, putting all other calls (if any) on hold
- 3 - Set up call, putting all other calls (if any) on hold, with redial
- 4 - Set up call, disconnecting all other calls (if any)
- 5 - Set up call, disconnecting all other calls (if any), with redial

<confirmationText> - string for user confirmation stage

<calledNumber> - string containing called number

if <cmdType>=17 (SEND SS)

if <cmdType>=18 (SEND USSD)

if <cmdType>=19 (SEND SHORT MESSAGE)

if <cmdType>=20 (SEND DTMF)

if <cmdType>=32 (PLAY TONE)

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

#STGI: <cmdType>,<text>]

**where:**

<text> - text to be displayed to user

if <cmdType>=33 (DISPLAY TEXT)

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

**where:**

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

0..255 - used as a bit field:



	<p><b>bit 1:</b>  0 - normal priority  1 - high priority  <b>bits 2 to 7:</b> reserved for future use  <b>bit 8:</b>  0 - clear message after a delay  1 - wait for user to clear message  &lt;text&gt; - text to be displayed to user  &lt;duration&gt; - Time duration to be displayed to user  if &lt;cmdType&gt;=34 (GET INKEY)  #STGI: &lt;cmdType&gt;,&lt;commandDetails&gt;,&lt;text&gt;</p> <p><b>where:</b>  &lt;commandDetails&gt; - unsigned Integer used as a bit field.  0..255 - used as a bit field:</p> <p><b>bit 1:</b>  0 - Digits only (0-9, *, # and +)  1 - Alphabet set;</p> <p><b>bit 2:</b>  0 - SMS default alphabet (GSM character set)  1 - UCS2 alphabet</p> <p><b>bit 3:</b>  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><b>bits 4 to 7:</b>  0</p> <p><b>bit 8:</b>  0 - No help information available  1 - Help information available  &lt;text&gt; - String as prompt for text.</p> <p>if &lt;cmdType&gt;=35 (GET INPUT)  #STGI: &lt;cmdType&gt;,&lt;commandDetails&gt;,&lt;text&gt;,&lt;responseMin&gt;,&lt;responseMax&gt;[,&lt;defaultText&gt;]</p> <p><b>where:</b>  &lt;commandDetails&gt; - unsigned Integer used as a bit field.  0..255 - used as a bit field:</p> <p><b>bit 1:</b>  0 - Digits only (0-9, *, #, and +)  1 - Alphabet set</p> <p><b>bit 2:</b></p>
--	---



	<p>0 - SMS default alphabet (GSM character set) 1 - UCS2 alphabet</p> <p><b>bit 3:</b> 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> <p><b>bit 4:</b> 0 - User input to be in unpacked format 1 - User input to be in SMS packed format</p> <p><b>bits 5 to 7:</b> 0</p> <p><b>bit 8:</b> 0 - No help information available 1 - Help information available</p> <p>&lt;text&gt; - string as prompt for text &lt;responseMin&gt; - minimum length of user input 0..255 &lt;responseMax&gt; - maximum length of user input 0..255 &lt;defaultText&gt; - string supplied as default response text</p> <p>if &lt;cmdType&gt;=36 (SELECT ITEM) The first line of output is: #STGI: &lt;cmdType&gt;,&lt;commandDetails&gt;,&lt;numOfItems&gt;[,&lt;titleText&gt;] &lt;CR&gt;&lt;LF&gt;</p> <p>One line follows for every item, repeated for &lt;numOfItems&gt;: #STGI: &lt;cmdType&gt;,&lt;itemId&gt;,&lt;itemText&gt;[,&lt;nextActionId&gt;]</p> <p><b>where:</b> &lt;commandDetails&gt; - unsigned Integer used as a bitfield 0..255 - used as a bit field:</p> <p><b>bit 1:</b> 0 - Presentation type is not specified 1 - Presentation type is specified in bit 2</p> <p><b>bit 2:</b> 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><b>bit 3:</b> 0 - No selection preference 1 - Selection using soft key preferred</p> <p><b>bits 4 to 7:</b></p>
--	---



	<p>0</p> <p><b>bit 8:</b></p> <p>0 - No help information available</p> <p>1 - Help information available</p> <p>&lt;numOfItems&gt; - number of items in the list</p> <p>&lt;titleText&gt; - string giving menu title</p> <p>&lt;itemId&gt; - item identifier</p> <p>1..&lt;numOfItems&gt;</p> <p>&lt;itemText&gt; - title of item</p> <p>&lt;nextActionId&gt; - the next proactive command type to be issued upon execution of the menu item.</p> <p>0 - no next action information available.</p> <p>if &lt;cmdType&gt;=37 (SET UP MENU)</p> <p>The first line of output is:</p> <p>#STGI:&lt;cmdType&gt;,&lt;commandDetails&gt;,&lt;numOfItems&gt;,&lt;titleText&gt;</p> <p>&lt;CR&gt;&lt;LF&gt;</p> <p>One line follows for every item, repeated for &lt;numOfItems&gt;:</p> <p>#STGI: &lt;cmdType&gt;,&lt;itemId&gt;,&lt;itemText&gt;[,&lt;nextActionId&gt;]</p> <p><b>where:</b></p> <p>&lt;commandDetails&gt; - unsigned Integer used as a bitfield</p> <p>0..255 - used as a bit field:</p> <p><b>bit 1:</b></p> <p>0 - no selection preference</p> <p>1 - selection using soft key preferred</p> <p><b>bit 2 to 7:</b></p> <p>0</p> <p><b>bit 8:</b></p> <p>0 - no help information available</p> <p>1 - help information available</p> <p>&lt;numOfItems&gt; - number of items in the list</p> <p>&lt;titleText&gt; - string giving menu title</p> <p>&lt;itemId&gt; - item identifier</p> <p>1..&lt;numOfItems&gt;</p> <p>&lt;itemText&gt; - title of item</p> <p>&lt;nextActionId&gt; - the next proactive command type to be issued upon execution of the menu item.</p> <p>0 - no next action information available.</p>
--	---



	<b>Note:</b> 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.
<b>AT#STGI?</b>	<p>The read command can be used to request the currently ongoing proactive command and the SAT state in the format  <b>#STGI: &lt;state&gt;,cmdType&gt;</b></p> <p><b>where:</b>  &lt;state&gt; - SAT interface state (see #STIA)  &lt;cmdType&gt; - ongoing proactive command  An error message will be returned if there is no pending command.</p>
<b>AT#STGI=?</b>	Test command returns the range for the parameters <state> and <cmdType>.
<b>Note</b>	<p>The unsolicited notification sent to the user:  <b>#STN: 37</b>  Is an indication that the main menu of the SIM Application has been sent to the TA. It will be stored by the TA so that it can be displayed later at any time by issuing an AT#STGI=37 command.  A typical SAT session on AT interface starts after an <b>#STN: 37</b> 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:  <b>#STN:237</b>  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>

### 3.4.7.7.3 SIM Toolkit Send Response - #STSR

<b>#STSR - SIM Toolkit Send Response</b>	
<b>AT#STSR=</b> [<cmdType>, <userResponse> [,<data>]]	<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><b>Parameters:</b>  &lt;cmdType&gt; - integer type; proactive command ID according to GSM 11.14 (see #STGI)  &lt;userResponse&gt; - action performed by the user  0 - command performed successfully (call accepted in case of call setup)</p>



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

	<p>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</p> <p><b>&lt;data&gt;</b> - data entered by user, depending on &lt;cmdType&gt;, only required if &lt;Result&gt; is 0:</p> <p><i>Get Inkey</i></p> <p><b>&lt;data&gt;</b> contains the key pressed by the user, used character set should be the one selected with +CSCS.</p> <p><b>Note:</b> if, as a user response, a binary choice (Yes/No) is requested by the SIM application using bit 3 of the &lt;commandDetails&gt; parameter the valid content of the &lt;inputString&gt; is:</p> <p>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)</p> <p><i>Get Input</i></p> <p><b>&lt;data&gt;</b> - contains the string of characters entered by the user (see above)</p> <p><i>Select Item</i></p> <p><b>&lt;data&gt;</b> - contains the item identifier selected by the user</p> <p><b>Note:</b>  Use of icons is not supported. All icons related actions will respond with no icon available.</p>
<b>AT#STSR?</b>	<p>The read command can be used to request the currently ongoing proactive command and the SAT state in the format:</p> <p><b>#STSR: &lt;state&gt;,&lt;cmdType&gt;</b></p> <p><b>where:</b>  <b>&lt;state&gt;</b> - SAT interface state (see #STIA)  <b>&lt;cmdType&gt;</b> - ongoing proactive command</p> <p>An error message will be returned if there is no pending command.</p>
<b>AT#STSR=?</b>	<p>Test command returns the range for the parameters &lt;state&gt; and &lt;cmdType&gt;.</p>



### 3.4.7.8 Phonebook AT Commands Set

#### 3.4.7.8.1 Read Group Entries - #CPBGR

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

#### 3.4.7.8.2 Read Group Entries - #CPBGW

#CPBGW - Write Group Entry	
<b>AT#CPBGW=</b> <b>&lt;index&gt;,&lt;text&gt;</b>	<p>Execution command writes Grouping information Alpha String (GAS) USIM file entry in location number &lt;index&gt;.</p> <p><b>Parameters:</b>            &lt;index&gt; - integer type, value in the range of location numbers of the GAS file.            &lt;text&gt; - the text associated to the entry, string type</p>



#CPBGW - Write Group Entry	
	<b>Note:</b> If record number <index> already exists, it will be overwritten.
<b>AT#CPBGW=?</b>	<p>Test command returns location range supported by the current storage as a compound value, and maximum length of &lt;text&gt; field. The format is:</p> <p>+CPBGW: (list of supported &lt;index&gt;s),&lt;tlength&gt;</p> <p><b>where:</b>            &lt;tlength&gt; - integer type value indicating the maximum length of field &lt;text&gt; in bytes; actual maximum number of characters that can be stored depends upon &lt;text&gt; coding (see +CSCS)</p>

### 3.4.7.9 SAP AT Commands Set

#### 3.4.7.9.1 Remote SIM Enable - #RSEN

#RSEN - Remote SIM Enable	
<b>AT#RSEN=&lt;mode&gt;[,&lt;sapformat&gt;[,&lt;role&gt;[,&lt;muxch&gt;[,&lt;beacon&gt;]]]]</b>	<p>Set command used to enable/disable the Remote SIM feature. The command returns <b>ERROR</b> if requested on a non-multiplexed interface.</p> <p><b>Parameter:</b>            &lt;mode&gt;            0 - disable            1 - enable            &lt;sapformat&gt;            0 - X-SAP (unsupported)            1 - binary SAP (default)            &lt;role&gt;            0 - remote SIM Client (default)            1 - remote SIM Server (unsupported)            &lt;muxch&gt;- MUX Channel Number; mandatory if &lt;mode&gt;=1 and &lt;sapformat&gt;=1            1..3            &lt;beacon&gt;- retransmission timer of SAP Connection Request            0 - only one transmission (default)            1..100 - timer interval in seconds.</p> <p><b>Notes:</b>            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 &lt;sapformat&gt;=1(binary SAP): while RSEN is activate SAP connection status is signalled with following URC:</p>



#RSEN – Remote SIM Enable	
	<b>#RSEN: &lt;conn&gt;</b> <b>Where:</b> <conn>- connection status 0 - disconnected 1 - connected
<b>AT#RSEN?</b>	Read command returns the connection status of Remote SIM feature.
<b>AT#RSEN=?</b>	Test command returns all supported values of Remote SIM Enable command.

### 3.4.7.10 E-mail Management AT Commands

#### 3.4.7.10.1 E-mail SMTP Server - #ESMTP

#ESMTP - E-mail SMTP Server	
<b>AT#ESMTP=</b> <b>[&lt;smtp&gt;]</b>	Set command sets the SMTP server address, used for E-mail sending.  <b>Parameter:</b> <smtp> - SMTP server address, string type. This parameter can be either: - any valid IP address in the format: xxx.xxx.xxx.xxx - any host name to be solved with a DNS query in the format: <host name> (factory default is the empty string "") Note: the max length for <smtp> is the output of Test command.
<b>AT#ESMTP?</b>	SMTP server can be specified as IP address or as nick name.
<b>AT#ESMTP=?</b>	Read Command reports the current SMTP server address, in the format:  <b>#ESMTP: &lt;smtp&gt;</b>
<b>Example</b>	AT#ESMTP="smtp.mydomain.com" OK
<b>Note</b>	The SMTP server used shall be inside the APN space (the smtp server provided by the network operator) or it must allow the Relay, otherwise it will refuse to send the E-mail.

#### 3.4.7.10.2 E-mail sender address - #EADDR

#EADDR - E-mail Sender Address	
<b>AT#EADDR=</b> <b>[&lt;e-add&gt;]</b>	Set command sets the sender address string to be used for sending the e-mail.  <b>Parameter:</b> <e-add> - sender address, string type. - any string value up to max length reported in the Test command.(factory default is the empty string "")
<b>AT#EADDR?</b>	Read command reports the current sender address, in the format:



	<b>#EADDR: &lt;e-addr&gt;</b>
<b>AT#EADDR=?</b>	Test command returns the maximum allowed length of the string parameter <e-addr>.
<b>Example</b>	AT#EADDR=" <u>me@email.box.com</u> " OK AT#EADDR? #EADDR:" <u>me@email.box.com</u> "  OK

### 3.4.7.10.3 *E-mail Authentication Password - #EPASSW*

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

### 3.4.7.10.4 *E-mail Sending With GPRS Context Activation - #SEMAIL*

<b>#SEMAIL - E-mail Sending With GPRS Context Activation</b>	
<b>AT#SEMAIL=</b> <b>[&lt;da&gt;,&lt;subj&gt;]</b>	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.  <b>Parameter:</b> <da> - destination address, string type. <subj> - subject of the message, string type. (maximum length 100 characters)  The device responds to the command with the prompt '>' and awaits for the message body text.



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

	<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 e-mail message is successfully sent, then the response is OK.</p> <p>If message sending fails for some reason, an error code is reported</p> <p><b>Note:</b> Care must be taken to ensure that during the command execution, no other commands are issued.</p> <p>To avoid malfunctions is suggested to wait for the OK or ERROR / +CMS ERROR:&lt;err&gt; response before issuing further commands.</p>
<b>AT#SEMAIL=?</b>	Test command returns the OK result code.
<b>Example</b>	<p>AT#SEMAIL="me@myaddress.com","subject of the mail"</p> <p>&gt;message body... this is the text of the mail message...</p> <p>CTRL-Z</p> <p>..wait..</p> <p>OK</p> <p><i>Message has been sent.</i></p>
<b>Note</b>	<p>This command is obsolete. It's suggested to use the couple <u>#EMAILACT</u> and <u>#EMAILD</u> instead of it.</p> <p>When SMTP over SSL is enabled, this command will not activate a GPRS context. Instead, use #EMAILACT before.</p>

### 3.4.7.10.5 E-mail GPRS Context Ativation - #EMAILACT

#EMAILACT - E-mail GPRS Context Ativation	
<b>AT#EMAILACT=[&lt;mode&gt;]</b>	<p>Execution command deactivates/activates the GPRS context, eventually proceeding with the authentication with the parameters given with #PASSW and #USERID.</p> <p><b>Parameter:</b></p> <p>&lt;mode&gt; - GPRS context activation mode</p> <p>0 - GPRS context deactivation request</p> <p>1 - GPRS context activation request</p>
<b>AT#EMAILACT?</b>	<p>Read command reports the current status of the GPRS context for the e-mail, in the format:</p> <p><b>#EMAILACT: &lt;status&gt;</b></p> <p><b>where:</b></p> <p>&lt;status&gt;</p> <p>0 - GPRS context deactivated.</p>



	1 - GPRS context activated
<b>AT#EMAILACT=?</b>	Test command returns the allowed values for parameter <mode>.
<b>Example</b>	AT#EMAILACT=1 OK <ul style="list-style-type: none"> <li>Now GPRS Context has been activated</li> </ul> AT#EMAILACT=0 OK <ul style="list-style-type: none"> <li>Now GPRS context has been deactivated.</li> </ul>

### 3.4.7.10.6 *E-mail Sending - #EMAILD*

#EMAILD - E-mail Sending	
<b>AT#EMAILD=[&lt;da&gt;,&lt;subj&gt;]</b>	<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><b>Parameter:</b>            &lt;da&gt; - destination address, string type.            &lt;subj&gt; - subject of the message, string type. (maximum length 100 characters)</p> <p>The device responds to the command with the prompt '&gt;' 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><b>Note:</b> 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:&lt;err&gt; response before issuing further commands.            Note: maximum length for message body is 1500 trying to send more data will cause the surplus to be discarded and lost.</p>
<b>AT#EMAILD=?</b>	Test command returns the OK result code.
<b>Example</b>	AT#EMAILD="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>
<b>Note</b>	The only difference between this command and the #SEMAIL is that this command does not interact with the GPRS context status, leaving it ON or OFF according to the #EMAILACT setting, thus, when the connection made with #EMAILD is closed, the context status is maintained.

#### 3.4.7.10.7 *E-mail Parameters save - #ESAV*

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

#### 3.4.7.10.8 *E-mail Parameters Reset - #ERST*

#ERST - E-mail Parameters Reset	
<b>AT#ERST</b>	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
<b>AT#ERST=?</b>	Test command returns the OK result code.

#### 3.4.7.10.9 *SMTP Read Message - #EMAILMSG*

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



### 3.4.7.10.10 *Configure SMTP parameters - #SMTPCFG*

#SMTPCFG – configure SMTP parameters	
<b>AT#SMTPCFG=</b> <b>&lt;ssl_enabled&gt;[,</b> <b>&lt;port&gt;[,</b> <b>&lt;mode&gt;[,</b> <b>&lt;UNUSED_1&gt;[,</b> <b>&lt;UNUSED_2&gt;[,</b> <b>&lt;UNUSED_3&gt; ]]]]</b>	<p>This command sets the parameters needed to the SMTP connection</p> <p><b>Parameters:</b></p> <p><b>&lt;ssl_enabled&gt;</b> - Numeric parameter indicating if the SSL encryption is enabled.  <b>0</b> – SSL encryption disabled.  This is the only available option as far as &lt;ssl_enabled&gt; is not implemented.</p> <p><b>&lt;port&gt;</b> - SMTP port to contact (default 25)  1-65535.</p> <p><b>&lt;mode&gt;</b> - SMTP start session command  <b>0</b> – SMTP start session command HELO.  This is the only available option as far as &lt; mode&gt; is not implemented.</p> <p><b>Note:</b> some servers support an obsolete implementation of SMTPS on port 465. The module only supports the standard implementation of SMTP over SSL/TLS described in RFC 3207. So do not use port 465 on servers with an obsolete implementation of SMTPS: the module will not work properly. Use instead port 25 or port 587.</p> <p><b>Note:</b> &lt;mode&gt; not implemented and should be 0</p>
<b>AT#SMTPCFG?</b>	Read command returns the current settings in the format: #SMTPCFG: <ssl_enabled>,<port>,<mode>,0,0,0<CR><LF>
<b>AT#SMTPCFG=?</b>	Test command returns the supported range of parameters <ssl_enabled>, <port> and <mode> in the format: #SMTPCFG: (list of supported <ssl_enabled>s),(list of supported <port>s),(list of supported <mode>s),(0),(0),(0)

### 3.4.7.10.11 *Configure Email PDP Cid - #EMAILPDPCFG*



# EMAILPDPCFG – Configre Email PDP Cid	
<b>AT#EMAILPDPCFG=&lt;cid&gt;</b>	<p>This command sets the Cid that used for email PDP Context.</p> <p><b>Parameter:</b> &lt; Cid &gt; - Numeric parameter indicating the PDP Context Identifier. Range: (1-5). Default: 1 ( in VZN module default is 3)</p>
<b>AT#EMAILPDPCFG?</b>	<p>Read command returns the current used Cid in the format:</p> <p>AT#EMAILPDPCFG? #EMAILPDPCFG: 1</p> <p>OK</p>
<b>AT#EMAILPDPCFG=?</b>	<p>Test command returns the supported range :</p> <p>AT#EMAILPDPCFG=? #EMAILPDPCFG: (1-5)</p> <p>OK</p>

### 3.4.7.11 HTTP AT COMMANDS

#### 3.4.7.11.1 Configure HTTP parameters - #HTTPCFG

#HTTPCFG – configure HTTP parameters	
<b>AT#HTTPCFG=&lt;prof_id&gt;[,&lt;server_address&gt;[,&lt;server_port&gt;[,&lt;auth_type&gt;[,&lt;username&gt;[,&lt;password&gt;[,&lt;ssl_enabled&gt;[,&lt;timeout&gt;[,&lt;cid&gt;]]]]]]]</b>	<p>This command sets the parameters needed to the HTTP connection</p> <p><b>Parameters:</b>            &lt;prof_id&gt; - Numeric parameter indicating the profile identifier.            Range: 0-2            &lt;server_address&gt; - String parameter indicating the IP address of the HTTP server.            This parameter can be either:            - any valid IP address in the format: "xxx.xxx.xxx.xxx"            - any valid IPv6 address in the format:            "xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx.xxx"            Or "XXXX:XXXX:XXXX:XXXX:XXXX:XXXX:XXXX:XXXX"            - any host name to be solved with a DNS query</p> <p>Default: "" for first and second profile; "m2mlocate.telit.com" for third profile.</p>



#HTTPCFG – configure HTTP parameters	
	<p><b>&lt;server_port&gt;</b> - Numeric parameter indicating the TCP remote port of the HTTP server to connect to. Default: 80 for first and second profile; 9978 for third profile. Range 1...65535.</p> <p><b>&lt;auth_type&gt;</b> - Numeric parameter indicating the HTTP authentication type. 0 – no authentication (default) 1 – basic authentication</p> <p><b>&lt;username&gt;</b> - String parameter indicating authentication user identification string for HTTP.</p> <p><b>&lt;password&gt;</b> - String parameter indicating authentication password for HTTP.</p> <p><b>&lt;ssl_enabled&gt;</b> - Numeric parameter indicating if the SSL encryption is enabled. 0 – SSL encryption disabled (default) 1 – SSL encryption enabled (not yet implemented and not available for setting)</p> <p><b>&lt;timeout&gt;</b> - Numeric parameter indicating the time interval in seconds to wait for receiving data from HTTP server. Range: (1- 65535). Default: 120.</p> <p><b>&lt;cid&gt;</b> - Numeric parameter indicating the PDP Context Identifier. Range: (1-5). Default: 1</p> <p><b>Note:</b> a special form of the Set command, #HTTPCFG=&lt;prof_id&gt;, causes the values for profile number &lt;prof_id&gt; to reset to default values.  <b>Note:</b> if the SSL encryption is enabled, the &lt;cid&gt; parameter has to be set to 1.  <b>Note:</b> only one profile can use the SSL encryption.  <b>Note:</b> values are automatically saved in NVM.</p>
<b>AT#HTTPCFG?</b>	<p>Read command returns the current settings for each defined profile in the format: #HTTPCFG: &lt;prof_id&gt;,&lt;server_address&gt;,&lt;server_port&gt;,&lt;auth_type&gt;,&lt;username&gt;,&lt;password&gt;,&lt;ssl_enabled&gt;,&lt;timeout&gt;,&lt;cid&gt;&lt;CR&gt;&lt;LF&gt;[&lt;CR&gt;&lt;LF&gt;#HTTPCFG: &lt;prof_id&gt;,&lt;server_address&gt;,&lt;server_port&gt;,&lt;auth_type&gt;,&lt;username&gt;,&lt;password&gt;,&lt;ssl_enabled&gt;,&lt;timeout&gt;,&lt;cid&gt;]&lt;CR&gt;&lt;LF&gt;[...]]</p>
<b>AT#HTTPCFG=?</b>	<p>Test command returns the supported range of parameters &lt;prof_id&gt;, &lt;server_port&gt;, &lt;auth_type&gt;, &lt;ssl_enabled&gt;, &lt;timeout&gt; and &lt;cid&gt; and the maximum length of &lt;server_address&gt;, &lt;username&gt; and &lt;password&gt; parameters in the format:</p> <p>#HTTPCFG: (list of supported &lt;prof_id&gt;s),&lt;s_length&gt;,(list of supported &lt;server_port&gt;s), (list of supported &lt;auth_type&gt;s),&lt;u_length&gt;,&lt;p_length&gt;,(list of</p>



#HTTPCFG – configure HTTP parameters	
	<p>supported &lt;ssl_enabled&gt;s),(list of supported &lt;timeout&gt;s),(list of supported &lt;cid&gt;s)</p> <p><b>where:</b></p> <p>&lt;s_length&gt; - integer type value indicating the maximum length of parameter &lt;server_address&gt;.</p> <p>&lt;u_length&gt; - integer type value indicating the maximum length of parameter &lt;username&gt;.</p> <p>&lt;p_length&gt; - integer type value indicating the maximum length of parameter &lt;password&gt;.</p>

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

#HTTPQRY – send HTTP GET, HEAD or DELETE request	
<b>AT#HTTPQRY=</b> <b>&lt;prof_id&gt;,&lt;command&gt;,&lt;resource&gt;[,&lt;extra_header_line&gt;]</b>	<p>Execution command performs a GET, HEAD or DELETE request to HTTP server.</p> <p><b>Parameters:</b></p> <p>&lt;prof_id&gt; - Numeric parameter indicating the profile identifier - Range: 0-2</p> <p>&lt;command&gt; - Numeric parameter indicating the command requested to HTTP server:</p> <p>0 – GET</p> <p>1 – HEAD</p> <p>2 – DELETE</p> <p>&lt;resource&gt; - String parameter indicating the HTTP resource (uri), object of the request.</p> <p>&lt;extra_header_line&gt; - String parameter indicating optional HTTP header line.</p> <p>If sending ends successfully, the response is OK; otherwise an error code is reported.</p> <p><b>Note:</b> the HTTP request header sent with #HTTPQRY always contains the “Connection: close” line, and it cannot be removed.</p> <p>When the HTTP server answer is received, then the following URC is put on the serial port:</p> <p>#HTTTPRING: &lt;prof_id&gt;,&lt;http_status_code&gt;,&lt;content_type&gt;,&lt;data_size&gt;</p> <p><b>Where:</b></p> <p>&lt;prof_id&gt; is defined as above.</p> <p>&lt;http_status_code&gt; is the numeric status code, as received from the server (see <u>RFC 2616</u>).</p>



## 80407ST10116A Rev.14.1 - 2017-05-14

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

### 3.4.7.11.3 *Send HTTP POST or PUT request - #HTTPSND*

#HTTPSND – send HTTP POST or PUT request	
<b>AT#HTTPSND=</b> <b>&lt;prof_id&gt;,&lt;command&gt;,&lt;resource&gt;,&lt;data_len&gt;[,&lt;post_param&gt;[,&lt;extra_header_line&gt;]]</b>	<p>Execution command performs a POST or PUT request to HTTP server and starts sending data to the server.</p> <p>The device shall prompt a three character sequence            &lt;greater_than&gt;&lt;greater_than&gt;&lt;greater_than&gt;            (IRA 62, 62, 62)after command line is terminated with &lt;CR&gt;; after that the data can be entered from TE, sized &lt;data_len&gt; bytes.</p> <p><b>Parameters:</b></p> <p><b>&lt;prof_id&gt;</b> - Numeric parameter indicating the profile identifier.            Range: 0-2</p> <p><b>&lt;command&gt;</b> - Numeric parameter indicating the command requested to HTTP server:            0 – POST            1 – PUT</p> <p><b>&lt;resource&gt;</b> - String parameter indicating the HTTP resource (uri), object of the request</p>



**#HTTPSND – send HTTP POST or PUT request**

**<data\_len>** - Numeric parameter indicating the data length to input in bytes

**<post\_param>** - Numeric/string parameter indicating the HTTP Content-type identifier, used only for POST command, optionally followed by colon character (:) and a string that extends with sub-types the identifier:

**“0[:extension]”** – “application/x-www-form-urlencoded” with optional extension

**“1[:extension]”** – “text/plain” with optional extension

**“2[:extension]”** – “application/octet-stream” with optional extension

**“3[:extension]”** – “multipart/form-data” with optional extension

other content – free string corresponding to other content type and possible sub-types

**<extra\_header\_line>** - String parameter indicating optional HTTP header line

If sending ends successfully, the response is OK; otherwise an error code is reported.

**Note:** the HTTP request header sent with #HTTPSND always contains the “Connection: close” line, and it cannot be removed.

When the HTTP server answer is received, then the following URC is put on the serial port:

**#HTTTPRING:** <prof id>,<http status code>,<content type>,<data size>

**Where:**

**<prof id>** is defined as above

**<http\_status\_code>** is the numeric status code, as received from the server (see RFC 2616)

**<content\_type>** is a string reporting the “Content-Type” header line, as received from the server (see RFC 2616)

**<data\_size>** is the byte amount of data received from the server. If the server doesn't report the "Content-Length:" header line, the parameter value is 0.

**Note:** if there are no data from server or the server doesn't answer within the time interval specified in <timeout> parameter of #HTTPCFG command, then the URC #HTTPRING <http status code> parameter has value 0.

AT#HTTPSND=?

Test command returns the supported range of parameters <prof\_id>, <command> and <data\_len> and the maximum length of <resource>, <post\_param> and <extra\_header\_line> parameters in the format:

```
# HTTPSND: (list of supported <prof_id>s),(list of supported <command>s),
<r length>, (list of supported <data len>s),<p length>,<m length>
```

**where:**



#HTTPSND – send HTTP POST or PUT request	
	<p><b>&lt;r_length&gt;</b> - integer type value indicating the maximum length of parameter &lt;resource&gt;.</p> <p><b>&lt;p_length&gt;</b> - integer type value indicating the maximum length of parameter &lt;post_param&gt;.</p> <p><b>&lt;m_length&gt;</b> - integer type value indicating the maximum length of parameter &lt;extra_header_line&gt;</p>
<b>Example</b>	<p><i>Post 100 byte without “Content-type” header</i>  AT#HTTPSND=0,0,”/”,100  &gt;&gt;&gt;</p> <p><i>Post 100 byte with “application/x-www-form-urlencoded”</i>  AT#HTTPSND=0,0,”/”,100,0  &gt;&gt;&gt;</p> <p><i>Post 100 byte with “multipart/form-data” and extension</i>  AT#HTTPSND=0,0,”/”,100,”3:boundary=----FormBoundary”  &gt;&gt;&gt;</p>

#### 3.4.7.11.4 Receive HTTP server data - #HTTPTCV

#HTTPTCV – receive HTTP server data	
<b>AT#HTTPTCV=</b> <b>&lt;prof_id&gt;,[&lt;maxByte&gt;]</b>	<p>Execution command permits the user to read data from HTTP server in response to a previous HTTP module request. The module is notified of these data by the #HTTPTCV URC.</p> <p>The device shall prompt a three character sequence &lt;less_than&gt;&lt;less_than&gt;&lt;less_than&gt; (IRA 60, 60, 60) followed by the data.</p> <p>If reading ends successfully, the response is OK; otherwise an error code is reported.</p> <p><b>Parameters:</b></p> <p><b>&lt;prof_id&gt;</b> - Numeric parameter indicating the profile identifier.  Range: 0-2</p> <p><b>&lt;maxByte&gt;</b> - Max number of bytes to read at a time  Range:0,300-1500 (default is 0 which means infinite size)</p> <p><b>Note:</b> If unspecified for &lt;maxByte&gt;, server data will be transferred until it completes with once AT#HTTPTCV execution.</p> <p><b>Note:</b> If the data are not present or the #HTTPTCV &lt;http_status_code&gt; parameter has value 0, an error code is reported.</p>



#HTTPRCV – receive HTTP server data	
AT#HTTPRCV=?	Test command reports the supported range of values for <prof_id>,<maxbyte> parameter in the format:  #HTTPRCV: (list of supported <prof_id>s,<maxbyte>)

### 3.4.7.12 GPS AT Commands Set

#### 3.4.7.12.1 GPS Power Management - \$GPSP

\$GPSP – GPS Power Management	
AT\$GPSP= <status>	Set command allows to manage power-up or down of the GPS controller. <b>Parameter:</b> <status> 0 - GPS controller is powered down (default) 1 - GPS controller is powered up
AT\$GPSP?	Read command reports the current value of the <status> parameter, in the format: <b>\$GPSP: &lt;status&gt;</b>
AT\$GPSP=?	Test command reports the range of supported values for parameter <status>
Example	AT\$GPSP=0 OK
Note	<ul style="list-style-type: none"> <li>- Power up clears GPS memory and then starts the GPS receiver. GPS data cleaning is performed on the base of the current value of the &lt;reset_type&gt; parameter (see \$GPSR).</li> <li>- GPS operation mode is performed on the base of the current values of \$GPSSLSR configuration (see \$GPSSLSR).</li> <li>- &lt;status&gt; value is stored through \$GPSSAV command.</li> </ul>

#### 3.4.7.12.2 GPS Module Reset - \$GPSR

\$GPSR – GPS module Reset	
AT\$GPSR= <reset_type>	Execution command allows to reset the GPS controller. <b>Parameter:</b> <reset_type> <b>0 – Factory Reset:</b> this option clears all GPS memory including clock drift (See note). <b>1 - Coldstart (No Almanac, No Ephemeris):</b> this option clears all data that is currently stored in the internal memory of the GPS receiver including position, almanac, ephemeris, and time. The stored clock drift however, is retained.



<b>\$GPRSR – GPS module Reset</b>	
	<p><b>2 - Warmstart</b> (No ephemeris): this option clears all initialization data in the GPS receiver and subsequently reloads the data that is currently displayed in the Receiver Initialization Setup screen. The almanac is retained but the ephemeris is cleared.</p> <p><b>3 - Hotstart</b> (with stored Almanac and Ephemeris): the GPS receiver restarts by using the values stored in the internal memory of the GPS receiver; validated ephemeris and almanac.</p>
<b>AT\$GPRSR?</b>	Read command displays the current <b>&lt;reset_type&gt;</b> value (see note).
<b>AT\$GPRSR=?</b>	Test command reports the range of supported values for parameter <b>&lt;reset_type&gt;</b>
<b>Example</b>	AT\$GPRSR=0 OK
<b>Note</b>	<ul style="list-style-type: none"> <li>- <b>'Factory Reset'</b> performs the same operation as <b>'Coldstart'</b>.</li> <li>- The current setting is stored through \$GPSSAV command.</li> <li>- <b>&lt;reset_type&gt;</b> sets the kind of start when GPS is activated through \$GPSP or \$GPSSLSR commands.</li> <li>- Default value of <b>&lt;reset_type&gt;</b> is '3', 'hot start'.</li> </ul>

### 3.4.7.12.3 *Get Acquired Position - \$GPSACP*

<b>\$GPSACP - Get Acquired Position</b>	
<b>AT\$GPSACP</b>	<p>Execution command returns information about the last GPS position in the format:  <b>\$GPSACP:</b> &lt;UTC&gt;,&lt;latitude&gt;,&lt;longitude&gt;,&lt;hdop&gt;,&lt;altitude&gt;,&lt;fix&gt;,&lt;cog&gt;,&lt;spkm&gt;,&lt;spkn&gt;,&lt;date&gt;,&lt;nsat&gt;</p> <p><b>where:</b>  &lt;UTC&gt; - UTC time (hhmmss.sss) referred to GGA sentence  &lt;latitude&gt; - format is ddmm.mmmm N/S (referred to GGA sentence)  <b>where:</b>  dd – degrees - 00..90  mm.mmmm - minutes - 00.0000..59.9999  N/S: North / South  &lt;longitude&gt; - format is dddmm.mmmm E/W (referred to GGA sentence)  <b>where:</b>  ddd - degrees - 000..180  mm.mmmm - minutes - 00.0000..59.9999  E/W: East / West  &lt;hdop&gt; - x.x - Horizontal Dilution of Precision (referred to GGA sentence)  &lt;altitude&gt; - xxxx.x Altitude - mean-sea-level (geoid) in meters (referred to GGA sentence)  &lt;fix&gt; -  0 - Invalid Fix</p>



<b>\$GPSACP - Get Acquired Position</b>	
	<p>2 - 2D fix 3 - 3D fix &lt;cog&gt; - ddd.mm - Course over Ground (degrees, True) (referred to VTG sentence) <b>where:</b> ddd - degrees - 000..360 mm - minutes - 00..59 &lt;spkm&gt; - xxxx.x Speed over ground (Km/hr) (referred to VTG sentence) &lt;spkn&gt; - xxxx.x- Speed over ground (knots) (referred to VTG sentence) &lt;date&gt; - ddmmyy Date of Fix (referred to RMC sentence) <b>where:</b> dd - day - 01..31 mm - month - 01..12 yy - year - 00..99 - 2000 to 2099 &lt;nsat&gt; - nn - Total number of satellites in use (referred to GGA sentence) - 00..12</p>
<b>AT\$GPSACP?</b>	Read command has the same meaning as the Execution command.
<b>AT\$GPSACP=?</b>	Test command returns the OK result code.
<b>Example</b>	<pre>at\$gpsp? \$gpsp: 0  &lt;when module is down there no aquired position&gt;  at\$gpsacp \$GPSACP: 000000.000,,,,,0,,,,000000,00  OK  at\$gpsp=1 OK  &lt;Until first fix is received the command will display initial GPS position&gt;  at\$gpsacp \$GPSACP: 3124.6000N,03504.2000E,0.0,-18.0,0,0.0,0.0,0.0,060180,00  &lt;Once fix has been received the command will display actual GPS position&gt;  OK at\$gpsacp \$GPSACP: 3206.4020N,03450.2678E,1.1,3.3,0,0.0,0.0,0.0,030613,06  OK</pre>



\$GPSACP - Get Acquired Position	
Reference	NMEA 01803 Specifications.



3.4.7.12.4

**Unsolicited NMEA Data Configuration - \$GPSNMUN**

<b>\$GPSNMUN - Unsolicited NMEA Data Configuration</b>	
<b>AT\$GPSNMUN=</b> <b>&lt;enable&gt;</b> <b>[,&lt;GGA&gt;,&lt;GLL&gt;,&lt;GSA&gt;,&lt;GSV&gt;,&lt;RMC&gt;,&lt;VTG&gt;]</b>	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: <b>&lt;enable&gt;</b> 0 - NMEA data stream de-activated (default). 1 - NMEA data stream activated with the following unsolicited response syntax: <b>\$GPSNMUN: &lt;NMEA SENTENCE&gt;&lt;CR&gt;</b> 2 - NMEA data stream activated with the following unsolicited response syntax: <b>&lt;NMEA SENTENCE&gt;&lt;CR&gt;</b> 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: <b>&lt;NMEA SENTENCE&gt;&lt;CR&gt;</b> <b>&lt;GGA&gt;</b> - Global Positioning System Fix Data 0 - disable (default) 1 - enable <b>&lt;GLL&gt;</b> - Geographical Position - Latitude/Longitude 0 - disable (default) 1 - enable <b>&lt;GSA&gt;</b> - GPS DOP and Active Satellites 0 - disable (default) 1 - enable <b>&lt;GSV&gt;</b> - GPS Satellites in View 0 - disable (default) 1 - enable <b>&lt;RMC&gt;</b> - recommended Minimum Specific GPS Data 0 - disable (default) 1 - enable <b>&lt;VTG&gt;</b> - Course Over Ground and Ground Speed 0 - disable (default) 1 - enable
<b>AT\$GPSNMUN?</b>	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: <b>\$GPSNMUN:&lt;enable&gt;,&lt;GGA&gt;,&lt;GLL&gt;,&lt;GSA&gt;,&lt;GSV&gt;,&lt;RMC&gt;,&lt;VTG&gt;</b>
<b>AT\$GPSNMUN=?</b>	Test command returns the supported range of values for parameters <b>&lt;enable&gt;,&lt;GGA&gt;,&lt;GLL&gt;,&lt;GSA&gt;,&lt;GSV&gt;,&lt;RMC&gt;,&lt;VTG&gt;</b>
<b>Example</b>	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
<b>Reference</b>	NMEA 01803 Specifications

#### 3.4.7.12.5 *Save GPS Parameters Configuration - \$GPSSAV*

<b>\$GPSSAV - Save GPS Parameters Configuration</b>	
<b>AT\$GPSSAV</b>	Execution command stores the current GPS parameters in the NVM of the device.
<b>AT\$GPSSAV=?</b>	Test command returns the 'OK' result code
<b>Example</b>	AT\$GPSSAV OK
<b>Note</b>	The saved parameters are those of : \$GPSP, \$GPSR, \$GPSNMUN, \$GPSNMUNEX, \$GPSNVRAM, \$GPSQOS, \$GPSSLR, \$GPSSTOP and \$GPSAT commands.

#### 3.4.7.12.6 *Restore to Default GPS Parameters - \$GPSRST*

<b>\$GPSRST - Restore To Default GPS Parameters</b>	
<b>AT\$GPSRST</b>	Execution command resets the GPS parameters to "Factory Default" configuration and stores them in the NVM of the device.
<b>AT\$GPSRST=?</b>	Test command returns the 'OK' result code.
<b>Example</b>	AT\$GPSRST OK
<b>Note</b>	The restored parameters are those of : \$GPSP, \$GPSR, \$GPSNMUN, \$GPSNMUNEX, \$GPSNVRAM, \$GPSQOS, \$GPSSLR, \$GPSSTOP and \$GPSAT commands (see their default value at each command description) The module must be restarted to use the new configuration

#### 3.4.7.12.7 *GPS Antenna Supply Voltage Readout - \$GPSAV*

<b>\$GPSAV - GPS Antenna Supply Voltage Readout</b>	
<b>AT\$GPSAV</b>	Execution command returns the measured GPS antenna's supply voltage in Mv.



<b>AT\$GPSAV?</b>	Read command has the same meaning as the Execution command
<b>AT\$GPSAV=?</b>	Test command returns the OK result code
<b>Note</b>	In LE920, gps antenna is passive, so this command has no real meaning. It exists for backward compatibility.

### 3.4.7.12.8 *GPS Antenna Type Definition - \$GPSAT*

<b>\$GPSAT - GPS Antenna Type Definition</b>	
<b>AT\$GPSAT=&lt;type&gt;</b>	Set command selects the GPS antenna used. <b>Parameter &lt;type&gt; :</b> 0 - GPS Antenna not power supplied by the module 1 - GPS Antenna power supplied by the module (default)
<b>AT\$GPSAT?</b>	Read command returns the currently used antenna, in the format: <b>\$gpsat: &lt;type&gt;</b>
<b>AT\$GPSAT=?</b>	Test command returns the valid range values of <type> parameter.  <b>at\$gpsat=?</b> <b>\$gpsat: (0,1)</b>
<b>Note</b>	The current setting is stored through \$GPSSAV. This command has no real meaning. It exists for backward compatibility.

### 3.4.7.12.9 *Set the GNSS (or GLONASS) Capability - \$GPSGLO*

<b>\$GPSGLO – Set the GNSS (or GLONASS) Capability</b>	
<b>AT\$GPSGLO=&lt;type&gt;</b>	Set command selects the GNSS (or GLONASS) capability used. <b>Parameter:</b> <b>&lt;type&gt;</b> 0 – Disable GNSS(or GLONASS) 1 – Enable GNSS(or GLONASS) (default)
<b>AT\$GPSGLO?</b>	Read command returns the currently used GNSS(or GLONASS), in the format: <b>\$GPSGLO: &lt;type&gt;</b>
<b>AT\$GPSGLO=?</b>	Test command reports the range of supported values for parameter <type>



<b>\$GPSGLO – Set the GNSS (or GLONASS) Capability</b>	
<b>Note</b>	This command saved in NVM and has effect only at the next power cycle.
<b>Example</b>	AT\$GPSGLO=1 OK

### 3.4.7.12.10 *Unsolicited NMEA Extended Data Configuration - \$GPSNMUNEX*

<b>\$GPSNMUNEX - Unsolicited NMEA Extended Data Configuration</b>	
<b>AT\$GPSNMUNEX=&lt;GNGNS&gt;,&lt;GNGSA&gt;,&lt;GLGSV&gt;,&lt;GPGRS&gt;</b>	Set command permits to activate an Unsolicited streaming 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 of GNSS (or GLONASS) receivers. 0 - disable (default) 1 – enable <GNGSA> - DOP and active satellites of GNSS(or GLONASS) 0 - disable (default) 1 – enable <GLGSV> - GLONASS satellites in view 0 - disable (default) 1 – enable <GPGRS> - GPS Range Residuals 0 - disable (default) 1 – enable
<b>AT\$GPSNMUNEX?</b>	Read command returns the NMEA extended sentences availability status, in the format: \$GPSNMUNEX: <GNGNS>,<GNGSA>,<GLGSV>,<GPGRS>
<b>AT\$GPSNMUNEX=?</b>	Test command returns the supported range of values for parameters: <GNGNS>,<GNGSA>,<GLGSV>,<GPGRS>
<b>Note</b>	NMEA extended data is displayed on NMEA port depending on \$GPSNMUN <enable> parameter setting.
<b>Example</b>	AT\$GPSNMUN=1 OK AT\$GPSNMUNEX=1,0,0,0 OK These sets the GNGNS as available sentence in the unsolicited nmea sentences. AT\$GPSNMUNEX? \$GPSNMUNEX: 1,0,0,0 OK



\$GPSNMUNEX - Unsolicited NMEA Extended Data Configuration	
	<p>Give the current frame selected (GNGNS)</p> <p>The unsolicited message will be:</p> <p>\$GNGNS,080558.0,3731.306144,N,12655.784429,E,AN,09,1.0,68.0,18.0,,*5B</p>



### 3.4.7.12.11 *GPS Quality of Service - \$GPSQOS*

\$GPSQOS – GPS Quality Of Service	
<p><b>AT\$GPSQOS=</b>[&lt;horiz_accuracy&gt;[,&lt;vertical_accuracy&gt;[,&lt;rsp_time&gt;[,&lt;age_of_location_info&gt;[,&lt;location_type&gt;[,&lt;nav_profile&gt;[,&lt;velocity_request&gt;]]]]]]</p>	<p>Command used to set the location's quality of service (QoS). Parameter:</p> <p><b>&lt;horiz_accuracy&gt;</b> (horizontal accuracy): 0 – 1800000, where 0 is highest accuracy and 1800000 is lowest accuracy in meters. Default value is 1800000 in meters</p> <p><b>&lt;vertic_accuracy&gt;</b> (vertical accuracy): 0 – 990, where 0 is highest accuracy and 990 is lowest accuracy in meters. Default is 990 in meters</p> <p><b>&lt;rsp_time&gt;</b> (response time): 0-14400, where 0 is the low delay and 14400 is the highest delay in seconds. Default value is 14400 in seconds.</p> <p><b>&lt;age_of_location_info&gt;</b> (Maximum age of location): 0-1966020: Value 0 means that stored location information should not be used. Value 1966020 indicates the maximum tolerable age of the stored location information. The valid range of interval for SUPL (Transport protocol) is [0 - 65535] seconds &amp; [0 - 1966020] seconds for C-plane (Transport protocol).</p> <p><b>&lt;location_type&gt;</b> (type of location required): Used only in case of C-Plane. 0: Current Location (default) 1: Current or Last known location 2: Invalid Location, indicates that this parameter shall not be used</p> <p><b>&lt;nav_profile&gt;</b> (navigation profile): 0: Car navigation profile (default) 1: Personal profile 2: Low speed profile 3: Invalid profile, indicates that this parameter shall not be used</p> <p><b>&lt;velocity_request&gt;</b> (velocity information is needed): 0 FALSE 1 TRUE (default)</p>
<b>AT\$GPSQOS?</b>	<p>Read command returns the current QoS values, in the format:</p> <p><b>AT\$GPSQOS:</b></p>





## 3.4.7.12.12

SGPSSLSR – GPS Start Location Service Request	
<p>SGPSSLSR=&lt;transport_protocol&gt;[,&lt;pos_mode&gt;[,&lt;client_id&gt;,&lt;clientid_type&gt;[,&lt;mlc_number&gt;,&lt;mlcnumber_type&gt;[,&lt;interval&gt;[,&lt;service_type_id&gt;[,&lt;pseudonym_indicator&gt;],&lt;error_mask&gt;               ]</p>	<p>Command used to start the Receiver in Autonomous or A-GPS mode. Parameter:</p> <p><b>&lt;transport_protocol&gt;:</b></p> <p>0 - CPlane          1 - SUPL          2 – Invalid</p> <p>Note: If &lt;pos_mode&gt; is Autonomous the &lt;transport_protocol&gt; should be invalid.</p> <p>Note: If &lt;transport_protocol&gt; is CPlane and &lt;pos_mode&gt; is Pure MS Assisted, then &lt;interval&gt; should be 0 (or omitted).</p> <p><b>&lt;pos_mode&gt;:</b></p> <p>0: Pure MS Assisted - Location estimate from the network (MS Assisted mode).          1: MS Based - Assistance Data from the network (MS Based mode).          2: Not Supported.          3: Autonomous – Autonomous GPS mode of operation.</p> <p>Note: If &lt;pos_mode&gt; is Autonomous the &lt;transport_protocol&gt; should be invalid.</p> <p><b>&lt;client_id&gt;:</b></p> <p>String parameter containing the ID of the LCS-Client to which the location estimate is to be transferred.</p>



Note: Max length is 64 bytes.

Note: **<client\_id>** is mandatory in case of A-GPS and the **<transport\_protocol>** should be Cplane.

Note: LE920 don't support **<client\_id>** setting because of not supporting the 3rd Part Location Transfer.

**<clientid\_type>:**

0 – MSISDN

1 – Invalid (default)

Note: **<client\_id>** and **<clientid\_type>** are mandatory for A-GPS mode.

**<mlc\_number>:** String parameter containing the address of the GMLC through which the location estimate is to be sent to the LCS-Client.

Note: **<mlc\_number>** is mandatory in case of A-GPS.

**<mlcnumber\_type>:**

0 – MSISDN

1 – Invalid (default)

Note: **<mlc\_number>** and **<mlcnumber\_type>** are mandatory for A-GPS mode.

**<interval>:**

0 - 7200: GPS reporting period in seconds (will be sent unsolicited). if the value is 0 then a single shot NMEA Message will be provided. Any value different from 0 sets the period (in seconds) between each NMEA Sentence.

Note: If this value is not set, it is assumed to be 0.

Note: The Unsolicited NMEA sentences have to be enabled with the commands AT\$GPSNMUN.

**<service\_type\_id>:**

0 - 255 where 255 indicates that this parameter shall not be used.

Note: **<service\_type\_id>** is mandatory in case of A-GPS.

**<pseudonym\_indicator>:**

0 FALSE (default) : display user name at the external client.

1 TRUE : display user name as anonymous at the external client

**<error\_mask>:**

0 - 4294967295: If certain bit is set, respective error code becomes non-abortable.

Note: If this value is not set, it is assumed to be 0.

If C-plane or Supl session is not successfully completed, it will be stopped and unsolicited indication reports the error cause in the following formats:

**\$GPSSLSR: SUPL/C-PLANE ERROR,<error\_code>**



where

<error\_code>

0 - Phone Offline

1 - No service

2 - No connection with PDE

3 - No data available

4 - Session Manager Busy

5 - Phone is CDMA locked

6 - Phone is GPS locked

7 - Connection failure with PDE

8 - PDSM Ended session because of Error condition

9 - User ended the session

10 - End key pressed from UI

11 - Network Session was ended

12 - Timeout (viz., for GPS Search)

13 - Conflicting request for session and level of privacy

14 - Could not connect to the Network

15 - Error in Fix

16 - Reject from PDE

17 - Ending session due to TC exit

18 - Ending session due to E911 call

19 - Added protocol specific error type

20 - Ending because BS info is stale

21 - VX lcs agent auth fail

22 - Unknown System Error

23 - Unsupported Service

24 - Subscription Violation

25 - The desired fix method failed

26 - Antenna switch

27 - No fix reported due to no tx confirmation rcvd

28 - Network indicated a Normal ending of the session

29 - No error specified by the network

30 - No resources left on the network

31 - Position server not available

32 - Network reported an unsupported version of protocol

33 - MOLR System failure

34 - MOLR Unexpected data value

35 - MOLR Data missing

36 - MOLR Facility Not Supported

37 - MOLR Subscription Violation

38 - MOLR Position Method Failure

39 - MOLR Undefined

**NOTE:** Errors [1-32] can be marked as non – abortable, using <error\_mask>, so session will continue until stopped manually by user.



	<b>EXCEPTIONS:</b> Errors [9-12] are non – abortable by default, and error mask does not affect them.
<b>AT\$GPSSLR?</b>	Read command returns the current settings, in the format: <b>\$GPSSLR:</b> <transport_protocol>[,<pos_mode>[,<client_id>,<clientid_type>] >[,<mlc_number>,<mlcnumber_type>[,<interval> [,<service_type_id> [,<pseudonym_indicator>][,<error_mask>]]]]]
<b>AT\$GPSSLR=?</b>	<b>\$GPSSLR:</b> (0-2),(0-3),(64),(0,1),(64),(0,1),(0-7200),(0-255),(0,1) , (0-4294967295)
Example	<b>AT\$GPSSLR= 2,3,,,,,1</b> <b>OK</b>
Note	<ul style="list-style-type: none"> <li>- The current setting is stored through \$GPSSAV</li> <li>- Power up clears GPS memory and then starts the GPS receiver. GPS data cleaning is performed on the base of the current value of the &lt;reset_type&gt; parameter (see \$GPSR).</li> </ul>

### 3.4.7.12.13 *GPS Stop Location Service Request - \$GPSSTOP*

<b>\$GPSSTOP – GPS Stop Location Service Request</b>		
<b>\$GPSSTOP=</b> [<abort_cause>]	Command used to stop the Receiver in Autonomous or A-GPS mode initiated through \$GPSSLR set command. Parameter: <abort_cause> 0: User denies the request 1: Unspecified cause for abort 2: Cause Invalid	
<b>AT\$GPSSTOP?</b>	Read command returns the current value of parameter <abort_cause>.	
<b>\$GPSSTOP=?</b>	OK	
Example	<b>AT\$GPSSTOP=1</b> <b>OK</b>	
Note	The current setting is stored through \$GPSSAV.	



	The default factory value is '1', it can be recovered by \$GPSRST.	
--	--	--

#### 3.4.7.12.14 *Update SLP address - \$SLP*

<b>\$SLP - Update SLP address</b>	
<b>AT\$SLP=&lt;slp_address_type&gt;[,&lt;slp_address:slp_port&gt;]</b>	Set command allows updating the SLP address and SLP port number. Parameters: <b>&lt;slp_address_type&gt;</b> : SLP address type 0 - IPv4 1 - FQDN 3 - IPv6 <b>&lt;slp_address&gt;</b> : SLP address in FQDN format, IPv4 or IPv6 format <b>&lt;slp_port_number&gt;</b> : SLP Port number integer parameter. Default value is 7275. Note: If <b>&lt;slp_address&gt;</b> is omitted, chosen <b>&lt;slp_address_type&gt;</b> will be deleted. Note: The current setting is stored in NVM. <b>Note:</b> IPv6 is passed in the following format (example): AT\$SLP=3,"[2001:db8:255::8:7]:7275"
<b>AT\$SLP?</b>	Read command returns the current SLP address.
<b>AT\$SLP=?</b>	Test command returns the range of values for parameter <b>\$SLP: (0-1,3),("IP,URL,IPv6")</b>

#### 3.4.7.12.15 *Update SLP address - \$LCSSLP*

<b>\$LCSSLP - Update SLP address</b>	
<b>AT\$LCSSLP=&lt;slp_address_type&gt;[,&lt;slp_address&gt;[,&lt;slp_port_number&gt;]]</b>	Set command allows updating the SLP address and SLP port number. Parameters: <b>&lt;slp_address_type&gt;</b> : SLP address type 0 - IPv4 1 - FQDN 2 - Delete SLP address 3 - IPv6



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

	<p><b>&lt;slp_address&gt;</b>: SLP address in FQDN format or IPv4 format</p> <p><b>&lt;slp_port_number&gt;</b> : Slp Port number integer parameter. Default value is 7275.</p> <p>Note: If <b>&lt;slp_address_type&gt;</b> is 0,1 or 3, then <b>&lt;slp_address&gt;</b> is a mandatory parameter.</p> <p>Note: Other types of address are erased during set command.</p> <p>Note: The current setting is stored in NVM.</p>
<b>AT\$LCSSLP?</b>	Read command returns the current SLP address.
<b>AT\$LCSSLP=?</b>	<p>Test command returns the range of values for parameter</p> <p><b>&lt;slp_address_type&gt; (0-3)</b></p>

### 3.4.7.12.16 *Update SLP address type - \$SLPTYPE*

<b>\$SLPTYPE - Update SLP address</b>	
<b>AT\$SLPTYPE=&lt;slp_address_type&gt;</b>	<p>Set command allows updating the SLP address type to be chosen.</p> <p><b>&lt;slp_address_type&gt;</b>: SLP address type</p> <p>0 - IPv4</p> <p>1 - FQDN</p> <p>3 - IPv6</p> <p><b>&lt;slp_address&gt;</b>: SLP address in FQDN format, IPv4 or IPv6 format</p> <p>Note: The current setting is stored in NVM.</p> <p><b>Note:</b> This parameter also update during AT\$SLP set command</p>
<b>AT\$SLPTYPE?</b>	Read command returns the current SLP address type.
<b>AT\$SLPTYPE=?</b>	<p>Test command returns the range of values for parameter</p> <p><b>\$SLPTYPE: (0-1, 3)</b></p>

### 3.4.7.12.17 *Set the User Plane Secure Transport - \$SUPLSEC*

<b>\$SUPLSEC – Set the User Plane Secure Transport</b>		
<b>AT\$SUPLSEC=&lt;option&gt;</b>	<p>Set command configures the User Plane Secure Transport</p> <p><b>Parameter:</b></p> <p><b>&lt;option &gt;</b>: Integer type</p> <p>0 - Disable User Plane Secure Transport(UPL)</p> <p>1 - Enable User Plane Secure Transport(SUPL)</p>	



<b>\$SUPLSEC – Set the User Plane Secure Transport</b>	
<b>AT\$SUPLSEC?</b>	Read command returns the currently used values, in the format: <b>\$SUPLSEC: &lt; option &gt;</b>
<b>AT\$SUPLSEC=?</b>	Test command returns the supported range of values of parameters <b>&lt; option &gt;</b> <b>\$SUPLSEC: (0-1)</b>
<b>Example</b>	AT\$SUPLSEC =1 OK AT\$SUPLSEC? \$SUPLSEC:1 OK

#### 3.4.7.12.18 *Configure SUPL TLS and Hash - \$SUPLCFG*

<b>\$SUPLCFG – Configure SUPL TLS and Hash</b>	
<b>AT\$SUPLCFG =[&lt;tls&gt;],[&lt;hash&gt;]</b>	This command permits to configure the SUPL TLS and Hash algorithm version. <b>Parameters:</b>  <b>&lt;tls&gt;:</b> 0 – Use TLS v.1.0 (default) 1 – Use TLS v.1.1  <b>&lt;hash&gt;:</b> 0 – Use SHA-1 (default) 1 – Use SHA-256
<b>AT\$SUPLCFG ?</b>	Read command reports the currently selected <tls> and <hash> in the format: <b>\$SUPLCFG: &lt;tls&gt;,&lt;hash&gt;</b>
<b>AT\$SUPLCFG =?</b>	Test command reports the supported range of values for parameters <b>&lt;tls&gt;</b> and <b>&lt;hash&gt;</b>

#### 3.4.7.12.19 *Set the version of supported SUPL - \$SUPLV*

<b>\$SUPLV – Set the version of supported SUPL.</b>	
<b>AT\$SUPLV= &lt;version&gt;</b>	Set command configures the version of supported SUPL.  <b>Parameter:</b> <b>&lt;version&gt;:</b> Integer type 0 : N/S SUPL 1 : SUPL 1.0 2 : SUPL 2.0



<b>\$SUPLV – Set the version of supported SUPL.</b>	
<b>AT\$SUPLV?</b>	Read command returns the currently used values, in the format: \$SUPLV: < <b>version</b> >
<b>AT\$SUPLV=?</b>	Test command returns the supported range of values of parameters < <b>version</b> > \$SUPLV: (0-2)
<b>Example</b>	AT\$SUPLV =1 OK AT\$SUPLV? \$SUPLV:1.0 OK

#### 3.4.7.12.20 *Update location information - \$LCSLUI*

<b>\$LCSLUI - Update location information</b>	
<b>AT\$LCSLUI=&lt;update_type&gt;</b>	Set command allows updating the Location information. Parameters: < <b>update_type</b> > : the current access technology 0 - GSM 1 - WCDMA Note: the current access technology can be read with AT+COPS?
<b>AT\$LCSLUI=?</b>	Test command returns the range of values for parameter < <b>update_type</b> >.

#### 3.4.7.12.21 *Update terminal information - \$LCSTER*

<b>\$LCSTER - Update terminal information</b>	
<b>AT\$LCSTER=&lt;id_type&gt;[,&lt;id_value&gt;[,&lt;pref_pos_mode&gt;[,&lt;tls_mode&gt;]]]</b>	Set command updates the terminal information like IMSI, MSISDN or IPv4 address. Parameters: < <b>id_type</b> > : is a number which can have any of the following values 0 - MSISDN 1 - IMSI (default value) 2 - IPv4 address 3 - Invalid < <b>id_value</b> > : is a string , as defined in < <b>id_type</b> > < <b>pref_pos_mode</b> > : preferred position mode,





## 3.4.7.12.22

<b>\$LICLS – Enable/Disable unsolicited response</b>	
<b>AT\$LICLS =&lt;mode&gt;</b>	<p>Set command is used to enable/disable unsolicited \$LICLS response. Parameter:  <b>&lt;mode&gt;</b>            0 – disable unsolicited            1 – enable unsolicited (default value)</p> <p>The unsolicited result code is in the format:  <b>\$LICLS: &lt;request_type&gt;[,&lt;cid&gt;]</b>            Where  <b>&lt;request_type&gt;</b>            0 – Setup Request to setup the control link            1 – Release Request to release the control link  <b>&lt;cid&gt;</b> : id associated to the context that shall be deactivated (see +CGDCONT)</p> <p>If the <b>&lt;request_type&gt;</b> is a setup request, the unsolicited indication is sent/used to request the client to define, setup, activate and prepare the pdp-context.            If <b>&lt;request_type&gt;</b> is a release request, the unsolicited indication is sent/used to inform the client that the pdp-context (associated with this command type) including the associated terminal is not used any more, and shall be deactivated.</p> <p>Note: The current setting is stored in NVM.</p>
<b>AT\$LICLS?</b>	Read command returns the current value of parameter <b>&lt;mode&gt;</b> .
<b>AT\$LICLS=?</b>	Test command returns the range of values for parameter <b>&lt;mode&gt;</b> .



### 3.4.7.12.23 *LCS certificate - \$LTC*

<b>\$LTC – LCS certificate</b>	
<b>AT\$LTC=&lt;string&gt;,&lt;total_message_length&gt;,&lt;seq_no&gt;,&lt;Security_Object_Type&gt;</b>	Set command is used to pass the security objects (e.g. certificate, key) to the Transport Layer Security Protocol (binary string). The certificate shall be in hexadecimal format (each octet of the certificate is given as two IRA character long hexadecimal number). Parameter: <string> - the string certificate segment (max 300 characters per segment) <total_message_length> - The total size of the certificate to be received 1-4096 <seq_no> - The sequence number of the segment. 1-13 <Security_Object_Type> 0: Root Certificate NOTE: The last two certificates are stored in NVM.
<b>AT\$LTC</b>	Execution command deletes the certificates stored in NVM.
<b>AT\$LTC?</b>	Read command provides the first 300 characters of each valid certificate stored in NVM in the format: <b>\$LTC: &lt;string&gt;,&lt;total_message_length&gt;,1,&lt;Security_Object_Type&gt;</b> If no certificate is stored the read command provides: <b>\$LTC: “”,0,1,&lt;Security_Object_Type&gt;</b>
<b>AT\$LTC=?</b>	Test command returns the range of values for parameters <total_message_length>,<seq_no> and <Security_Object_Type>

### 3.4.7.12.24 *Lock context for LCS use - \$LCSLK*

<b>\$LCSLK – Lock context for LCS use</b>
---



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

<b>AT\$LCSLK=&lt;mode&gt;[,&lt;cid&gt;]</b>	<p>Set command is used to reserve a cid for LCS.</p> <p>Parameters:</p> <p><b>&lt;mode&gt;</b>  0 – unlock the current cid available for LCS use  NOTE: No CID should be specified. Locked one will be released automatically.  1 – lock the specified cid in order to setup a control link for LCS use only</p> <p><b>&lt;cid&gt;</b> - PDP context identifier  1..5 - numeric parameter which specifies a particular PDP context definition  Note: <b>&lt;cid&gt;</b> is mandatory if <b>&lt;mode&gt;</b> is set to lock, otherwise shall be omitted.  Note: the set command returns ERROR if the current cid and/or the previously set are in use.  Note: The current setting is stored in NVM.</p>
<b>AT\$LCSLK?</b>	<p>Read command returns the current value of parameters <b>&lt;mode&gt;</b> and <b>&lt;cid&gt;</b> (if <b>&lt;mode&gt;</b> is lock).</p>
<b>AT\$LCSLK=?</b>	<p>Test command returns the range of values for parameters <b>&lt;mode&gt;</b> and <b>&lt;cid&gt;</b></p>

### 3.4.7.12.25 *Clear GPS Data - \$GPSCLR*

<b>\$GPSCLR – Clear GPS Data</b>	
<b>AT\$GPSCLR</b>	<p>This command resets all of the parameters related with GPS</p> <p>Resets all parameters related with GPS as following:</p> <ul style="list-style-type: none"> <li>-GPS Almanac Data</li> <li>-GPS Ephemeris Data</li> <li>-LBS User Plane PDE IP Address</li> <li>-LBS User Plane PDE IP Port</li> </ul> <p>Note: This command is global and cannot clear individual pieces of data.</p>
<b>AT\$GPSCLR=?</b>	<p>Test command returns the OK result code</p>
<b>Example</b>	<p>AT\$GPSCLR=?  OK  AT\$GPSCLR  OK</p>



### 3.4.7.13 E-mail Management AT Commands

#### 3.4.7.13.1 *Move Short Message to other memory - #SMSMOVE*

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



### #SMSMOVE – Move Short Message to other

```

AT+CMGL=ALL
+CMGL: 1,"STO UNSENT","32XXXXXXXXX","",
test 1
+CMGL: 2,"STO UNSENT","32XXXXXXXXX","",
test 2
+CMGL: 3,"STO UNSENT","32XXXXXXXXX","",
test 3

OK
//list the SMs to discover the memory index

AT#SMSMOVE=1
OK
//move the SM in the first position of ME to SIM

AT#SMSMOVE?
#SMSMOVE: "ME",2,100,"SM",1,50

OK
//now we have 2 SMs in ME and 1 in SIM

```

### 3.4.7.13.2 SMS Commnads Operation Mode - #SMSMODE

#### #SMSMODE - SMS Commands Operation Mode

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



## 3.5 Custom AT Commands

### 3.5.1.1.1 Dormant Control Command - #CDORM

#CDORM – Dormant control command	
<b>AT#CDORM=</b> <b>&lt;action&gt;</b> <b>[,&lt;cal_id&gt;]</b>	<p>Set command used to:</p> <ol style="list-style-type: none"> <li>1. Enable/Disable the indication of dormant mode.</li> <li>2. Fast dormancy</li> <li>3. Exit from dormancy.</li> </ol> <p>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.</p> <p><b>Parameters:</b></p> <p><b>&lt;action&gt;</b> -</p> <ul style="list-style-type: none"> <li>0 - Disable the dormant status unsolicited result code (default).</li> <li>1 - Enable the dormant status unsolicited result code :</li> </ul> <p><b>#CDORM: &lt;call_id&gt;,&lt;dormant_status&gt;</b></p> <p>Where: <b>&lt;dormant_status&gt;</b> -</p> <ul style="list-style-type: none"> <li>0 – call is in dormant mode</li> <li>1 – call is in active mode</li> </ul> <ul style="list-style-type: none"> <li>2 - Go to dormant(fast dormancy)</li> <li>3 - Exit dormant for <b>&lt;call_id&gt;</b> or first found call id if no <b>&lt;call_id&gt;</b> mentioned.</li> </ul> <p><b>&lt;call_id&gt;</b> - Integer type, call identification number. Range from 0 to 17. (only for Exit dormancy action)</p>
<b>AT#CDORM?</b>	<p>The read command returns the current settings and status.</p> <p><b>#CDORM:&lt;unsolicited_status&gt;,&lt;call_id&gt;,&lt;dormant_status&gt;[&lt;CR&gt;&lt;LF&gt;</b>  <b>#CDORM:&lt;unsolicited_status&gt;,&lt;call_id&gt;,&lt;dormant_status&gt;[...]]</b>  <b>OK</b></p> <p><b>Where: &lt;unsolicited_status&gt;</b></p> <ul style="list-style-type: none"> <li>0 - Disabled unsolicited indication</li> <li>1 – Enabled unsolicited indication</li> </ul> <p>The default value is 0.</p>
<b>AT#CDORM=?</b>	<p>The test command returns the possible ranges of <b>&lt;action&gt;</b> and <b>&lt;call_id&gt;</b></p>
<b>Reference</b>	



### 3.5.1.1.2 Network Emergency Number Update - #NWEN

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

### 3.5.1.1.3 Delete All Phonebook Entries - #CPBD

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

### 3.5.1.1.4 Enhanced call tone disable - #ECTD

#ECTD - Enhanced call tone disable	
AT#ECTD=[<type>]	<p>Set command sets to disable related with call tone according to &lt;type&gt; parameter.</p> <p><b>Parameter:</b>            &lt;type&gt; - representing a type of call tones which the command refers to            0 - Not disable call tones            1 - Call end tone</p>
AT#ECTD?	<p>Read command returns the current type of disabled call tone:</p> <p><b>#ECTD: &lt;type&gt;</b></p>
AT#ECTD=?	Test command reports the range for the parameter <type>



### 3.5.1.1.5 *SIM Presence Status - #SIMPR*

#SIMPR – SIM Presence Status	
<b>AT#SIMPR=</b> <b>[&lt;mode&gt;]</b>	<p>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).</p> <p><b>Parameter:</b>  <b>&lt;mode&gt;</b> - 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: &lt;SIM&gt;,&lt;status&gt;</p> <p><b>where:</b>  <b>&lt;SIM&gt;</b> - local or remote SIM            0 – local SIM            1 – remote SIM  <b>&lt;status&gt;</b> - current SIM status            0 - SIM NOT INSERTED            1 - SIM INSERTED</p>
<b>AT#SIMPR?</b>	<p>Read command reports whether the unsolicited indication #SIMPR is currently enabled or not, along with the local SIM status, in the format:            #SIMPR: &lt;mode&gt;,0,&lt;status&gt;[&lt;CR&gt;&lt;LF&gt;            #SIMPR: &lt;mode&gt;,1,&lt;status&gt;]            (&lt;mode&gt;, &lt;SIM&gt; and &lt;status&gt; are described above)</p>
<b>AT#SIMPR=?</b>	Test command returns the supported range of values for parameter <mode>.
<b>Example</b>	AT#SIMPR? #SIMPR: 0,0,1 #SIMPR: 0,1,1 OK

### 3.5.1.1.6 *New Operator Names - #PLMNMODE*

#PLMNMODE – Apply to New Operator Names	
<b>AT#PLMNMODE=</b> <b>&lt;mode&gt;</b>	<p>Set command apply's to new operator names depending on the parameter &lt;mode&gt;.</p> <p><b>Parameter:</b>  <b>&lt;mode&gt;</b>            0 – previous operator names(factory default)            1 – new operator names</p> <p><b>Note:</b> if &lt;mode&gt;=1, AT+COPN command shows new operator names.</p>



<b>#PLMNMODE – Apply to New Operator Names</b>	
	<b>Note:</b> <mode> is saved in NVM.
<b>AT#PLMNMODE?</b>	Read command returns current value of the parameter <mode>.
<b>AT#PLMNMODE=?</b>	Test command returns supported values of the parameter <mode>.

### 3.5.1.1.7 Network Scan Timer - #NWSCANTMR

<b>#NWSCANTMR – Network Scan Timer</b>	
<b>AT#NWSCANTMR=&lt;tmr&gt;</b>	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).  <b>Parameter:</b> <tmr> - timer value in units of seconds 5-3600 - time in seconds (default 5 secs.)
<b>AT#NWSCANTMR</b>	Execution command reports time, in seconds, when the next scan activity will be executed. The format is:  <b>#NWSCANTMREXP: &lt;time&gt;</b>  Note: if <time> is zero it means that the timer is not running
<b>AT#NWSCANTMR?</b>	Read command reports the current parameter setting for #NWSCANTMR command in the format:  <b>#NWSCANTMR: &lt;tmr&gt;</b>
<b>AT#NWSCANTMR=</b>	Test command reports the supported range of values for parameter <tmr>
<b>Note</b>	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)

## 3.5.2 AT Run Commands

### 3.5.2.1.1 Enable SMS AT Run service - #SMSATRUN

<b>#SMSATRUN – Enable SMS AT Run service</b>	
<b>AT#SMSATRUN=</b>	Set command enables/disables the SMS AT RUN service.



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

<b>&lt;mod&gt;</b>	<b>Parameter:</b> <b>&lt;mod&gt;</b> 0 - Service Disabled 1 - Service Enabled <b>Note1:</b> 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. <b>Note2:</b> the current settings are stored in NVM
<b>AT#SMSATRUN?</b>	Read command returns the current settings of <mode> and the value of <stat> in the format: <b># SMSATRUN: &lt;mod&gt;,&lt;stat&gt;</b> <b>where:</b> <stat> - service status 0 – not active 1 - active
<b>AT#SMSATRUN=?</b>	Test command returns the supported values for the SMSATRUN parameters
<b>Notes</b>	By default the SMS ATRUN service is disabled It can be activated by the command AT#SMSATRUN.

### 3.5.2.1.2 Set SMS AT Run Parameters - #SMSATRUNCFG

#SMSATRUNCFG – Set SMS AT Run Parameters	
<b>AT#SMSATRUNCFG=</b> <b>&lt;instance&gt;</b> <b>[,&lt;urcmod&gt;</b> <b>[,&lt;timeout&gt;]]</b>	Set command configures the SMS AT RUN service. <b>Parameter:</b> <b>&lt;instance&gt;:</b> 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 <b>&lt;urcmod&gt;:</b> 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: <b>#SMSATRUN: &lt;Text&gt;</b> e.g.: <b>#SMSATRUN: AT+CGMR;+CGSN;+GSN;+CCLK</b> Unsolicited is dumped on the instance that requested the service activation. <b>&lt;timeout&gt;:</b>



	<p>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><b>Note 1:</b> the current settings are stored in NVM.</p> <p><b>Note 2:</b> the instance used for the SMS AT RUN service is the same used for the EvMoni service. Therefore, when the #SMSATRUNCFG sets the &lt;instance&gt; parameter, the change is reflected also in the &lt;instance&gt; parameter of the #ENAEVMONICFG command, and viceversa.</p> <p><b>Note 3:</b> the set command returns ERROR if the command AT#ENAEVMONI? returns 1 as &lt;mod&gt; parameter or the command AT#SMSATRUN? returns 1 as &lt;mod&gt; parameter</p>
AT#SMSATRUNCFG?	Read command returns the current settings of parameters in the format: <b>#SMSATRUNCFG:</b> <instance>,<urcmod>,<timeout>
AT#SMSATRUNCFG=?	Test command returns the supported values for the SMSATRUNCFG parameters

### 3.5.2.1.3 SMS AT Run White List - #SMSATWL

#SMSATWL – SMS AT Run White List	
<b>AT#SMSATWL=</b> <b>&lt;action&gt;</b> <b>,&lt;index&gt;</b> <b>[,&lt;entryType&gt;</b> <b>[,&lt;string&gt;]]</b>	<p>Set command to handle the white list.</p> <p><b>&lt;action&gt;:</b></p> <p>0 – Add an element to the WhiteList</p> <p>1 – Delete an element from the WhiteList</p> <p>2 – Print an element of the WhiteList</p> <p><b>&lt;index&gt;:</b> Index of the WhiteList. Range 1-8</p> <p><b>&lt;entryType&gt;:</b></p> <p>0 – Phone Number</p> <p>1 – Password</p> <p><b>Note:</b> A maximum of two Passwords entry, can be present at same time in the white List.</p> <p><b>&lt;string&gt;:</b> string parameter enclosed between double quotes containing or the phone number or the password.</p> <p>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.</p> <p>Password shall be 16 characters length.</p> <p><b>Note:</b> 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><b>E.g.</b></p> <p>“+39*” All Italian users can ask to run AT Command via SMS</p>



	“+39349*” All vodafone users can ask to run AT Command via SMS.
<b>AT#SMSATWL?</b>	Read command returns the list elements in the format: #SMSATWL: [<entryType>,<string>]
<b>AT#SMSATWL=?</b>	Test command returns the supported values for the parameter <action>, <index> and <entryType>

#### 3.5.2.1.4 Set TCP AT Run Service Parameters - #TCPATRUNCFG

#TCPATRUNCFG – Set TCP AT Run Service Parameters	
<b>AT#TCPATRUNCFG</b> = <connId> ,<instance> ,<tcpPort> ,<tcpHostPort> ,<tcpHost> [,<urcmod> [,<timeout> [,<authMode> [,<retryCnt> [,<retryDelay>]]]]	Set command configures the TCP AT RUN service <b>Parameters</b> : <b>&lt;connId&gt;</b> socket connection identifier. Default 1. Range 1..6. This parameter is mandatory. <b>&lt;instance&gt;</b> AT instance that will be used by the service to run the AT Command. Command. Range 1 - 3, default 2. <b>[,&lt;urcmod&gt;</b> 1 – UART 2 – USB1 3 – USB2 <b>&lt;tcpPort&gt;</b> Tcp Listen port for the connection to the service in server mode. Default 1024. Range 1...65535. This parameter is mandatory.  <b>&lt;tcpHostPort&gt;</b> Tcp remote port of the Host to connect to, in client mode. Default 1024. Range 1...65535. This parameter is mandatory. <b>&lt;tcpHost&gt;</b> 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 “”. <b>&lt;urcmod&gt;</b> 0 – disable unsolicited messages 1 - enable an unsolicited message when the TCP socket is connected or disconnect (default).  When unsolicited is enabled, an asynchronous TCP Socket connection is indicated to TE with unsolicited result code: <b>#TCPATRUN: &lt;iphostaddress&gt;</b>



	<p>When unsolicited is enabled, the TCP socket disconnection is indicated to TE with unsolicited result code:  <b>#TCPATRUN: &lt;DISCONNECT&gt;</b>  Unsolicited is dumped on the instance that requested the service activation.</p> <p><b>&lt;timeout&gt;</b>  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><b>&lt;authMode&gt;</b>  determines the authentication procedure in server mode:  0 – (default) when connection is up, username and password (in this order and each of them followed by a Carriage Return) have to be sent to the module before the first AT command.  1 – when connection is up, the user receives a request for username and, if username is correct, a request for password. Then the message "Login successful" will close authentication phase.</p> <p><b>Note 1:</b> if username and/or password are not allowed (see AT#TCPATRUNAUTH) the connection will close immediately.</p> <p><b>&lt;retryCnt&gt;</b>  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><b>&lt;retryDelay&gt;</b>  In client mode, delay between one attempt and the other. In minutes. Default: 2. Range 1...3600.</p> <p><b>Note 2:</b> the current settings are stored in NVM.</p> <p><b>Note 3:</b> 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><b>Note 4:</b> the set command returns ERROR if the command AT#TCPATRUNL? returns 1 as &lt;mod&gt; parameter or the command AT# TCPATRUND? returns 1 as &lt;mod&gt; parameter</p>
<b>AT#TCPATRUNCFG ?</b>	<p>Read command returns the current settings of parameters in the format:  <b>#TCPATRUNCFG:</b>  &lt;connId&gt;,&lt;instance&gt;,&lt;tcpPort&gt;,&lt;tcpHostPort&gt;,&lt;tcpHost&gt;,&lt;urcmod&gt;,&lt;timeout&gt;,&lt;authMode&gt;,&lt;retryCnt&gt;,&lt;retryDelay&gt;</p>



AT#TCPATRUNCFG=?	Test command returns the supported values for the TCPATRUNCFG parameters
------------------	--

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

#TCPATRNL – Enables TCP AT Run Service in listen (server) mode	
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><b>Parameter:</b>            &lt;mod&gt;            0 - Service Disabled            1 - Service Enabled</p> <p><b>Note 1:</b> If SMSATRNL is active on the same instance (see AT#TCPATRUNCFG) the command will return ERROR.</p> <p><b>Note 2:</b> 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><b>Note 3:</b> the current settings are stored in NVM.</p> <p><b>Note 4:</b> 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 &lt;mode&gt; and the value of &lt;stat&gt; in the format:</p> <p>#TCPATRNL: &lt;mod&gt;,&lt;stat&gt;</p> <p><b>where:</b>            &lt;stat&gt; - connection status            0 – not in listen            1 - in listen or active</p>
AT#TCPATRNL=?	Test command returns the supported values for the TCPATRNL parameters

### 3.5.2.1.6 TCP AT Run Firewall List - #TCPATRNLFRWL

#TCPATRNLFRWL – TCP AT Run Firewall List	
AT#TCPATRNLFRWL=<action>,<ip_addr>,<port>	<p>Set command controls the internal firewall settings for the TCPATRNL connection.</p> <p><b>Parameters:</b></p>



<b>&lt;net_mask&gt;</b>	<p><b>&lt;action&gt;</b> - command action  0 - remove selected chain  1 - add an ACCEPT chain  2 - Remove all chains (DROP everything); <b>&lt;ip_addr&gt;</b> and <b>&lt;net_mask&gt;</b> has no meaning in this case.</p> <p><b>&lt;ip_addr&gt;</b> - 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</p> <p><b>&lt;net_mask&gt;</b> - mask to be applied on the <b>&lt;ip_addr&gt;</b>; 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>Firewall general policy is DROP, therefore all packets that are not included into an ACCEPT chain rule will be silently discarded.</p> <p>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><b>incoming_IP &amp; &lt;net_mask&gt; = &lt;ip_addr&gt; &amp; &lt;net_mask&gt;</b></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><b>Note 1:</b> A maximum of 5 firewalls can be present at same time in the List.</p> <p><b>Note 2:</b> the firewall list is saved in NVM</p>
<b>AT#TCPATRUNFRWL?</b>	<p>Read command reports the list of all ACCEPT chain rules registered in the</p> <p>Firewall settings in the format:</p> <p><b>#TCPATRUNFRWL:</b> &lt;ip_addr&gt;,&lt;net_mask&gt;  <b>#TCPATRUNFRWL:</b> &lt;ip_addr&gt;,&lt;net_mask&gt;  ...  OK &lt;stat&gt; - connection status  0 – not in listen  1 - in listen or active</p>
<b>AT#TCPATRUNFRWL=?</b>	<p>Test command returns the allowed values for parameter &lt;action&gt;.</p>

### 3.5.2.1.7 TCP AT Run Authentication Parameters List - #TCPATRUNAUTH

<b>#TCPATRUNAUTH – TCP AT Run Authentication Parameters List</b>	
<b>AT#TCPATRUNAUTH =</b> <b>&lt;action&gt;</b> , <b>&lt;userid&gt;</b> ,	<p>Execution command controls the authentication parameters for the TCPATRUN connection.</p>



<passw>	<p><b>Parameters:</b></p> <p>&lt;action&gt; - command action  0 - remove selected chain  1 - add an ACCEPT chain  2 - remove all chains (DROP everything); &lt;userid&gt; and &lt;passw&gt; has no meaning in this case.</p> <p>&lt;userid&gt; - user to be added into the ACCEPT chain; string type, maximum length 50</p> <p>&lt;passw&gt; - password of the user on the &lt;userid&gt;; string type, maximum length 50</p> <p>Command returns OK result code if successful.</p> <p><b>Note 1:</b> A maximum of 3 entries (password and userid) can be present at same time in the List.</p> <p><b>Note 2:</b> the Authentication Parameters List is saved in NVM.</p>
AT#TCPATRUNAUTH?	<p>Read command reports the list of all ACCEPT chain rules registered in the Authentication settings in the format:</p> <p>#TCPATRUNAUTH: &lt;user_id&gt;,&lt;passw&gt;  #TCPATRUNAUTH: &lt;user_id&gt;,&lt;passw&gt;  ....  OK</p>
AT#TCPATRUNAUTH=?	<p>Test command returns the allowed values for parameter &lt;action&gt;.</p>

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

#TCPATRUND – Enables TCP Run AT Service in dial (client) mode	
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><b>Parameter:</b></p> <p>&lt;mod&gt;  0 - Service Disabled  1 - Service Enabled</p> <p><b>Note 1:</b> If SMSATRUND is active on the same instance (see AT#TCPATRUNCFG) the command will return ERROR.</p> <p><b>Note 2:</b> 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>



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

	<p><b>Note 3:</b> the current setting are stored in NVM</p> <p><b>Note 4:</b> 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><b>Note5:</b> 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 &lt;mode&gt; and the value of &lt;stat&gt; in the format:</p> <p>#TCPATRUND: &lt;mod&gt;,&lt;stat&gt;</p> <p><b>where:</b></p> <ul style="list-style-type: none"> <li>&lt;stat&gt; - connection status</li> <li>0 - not connected</li> <li>1 - connected or connecting at socket level</li> <li>2 - not connected but still trying to connect, attempting every delay time (specified in AT#TCPATRUNCFG)</li> </ul>
AT#TCPATRUND=?	Test command returns the supported values for the TCPATRUND parameters

### 3.5.2.1.9 Closes TCP Run AT Socket - #TCPATRUNCLOSE

#TCPATRUNCLOSE – Closes TCP Run AT Socket	
AT#TCPATRUNCLOSE	<p>Closes the socket used by TCP ATRUN service.</p> <p><b>Note:</b> TCP ATRUN status is still enabled after this command, so the service re-starts automatically.</p>
AT#TCPATRUNCLOSE=?	Test command returns OK

### 3.5.2.1.10 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>	<p>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 '&gt;' to receive the message body text (e.g. “at+cmgs”, “at#semail”)</p> <p><b>Parameter:</b></p> <p>&lt;mod&gt;</p> <p>0 - Service Disabled (default)</p>



	1 - Service Enabled
<b>AT#TCPATCMDSEQ?</b>	Read command returns the current settings of parameters in the format: <b>#TCPATCMDSEQ:</b> <mod>
<b>AT#TCPATCMDSEQ=?</b>	Test command returns the supported values for the TCPATCMDSEQ parameters

### 3.5.2.1.11 *Connects the TCP Run AT service to a serial port - #TCPATCONSER*

<b>#TCPATCONSER – Connects the TCP Run AT service to a serial port</b>	
<b>AT#TCPATCONSER=</b> <b>&lt;port&gt;,&lt;rate&gt;</b>	<p>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.</p> <p>Parameter:</p> <p><b>&lt; port &gt;</b></p> <ul style="list-style-type: none"> <li>• 0 – UART</li> <li>• 1 – USB1</li> <li>• 2 – USB2</li> </ul> <p><b>&lt; rate &gt;</b> baud rate for data transfer. Allowed values are 300,1200, 2400,4800,9600,19200,38400,57600,115200.</p> <p>Note1: the command has to be issued from the TCP ATRUN instance</p> <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>
<b>AT#TCPATCONSER=?</b>	Test command returns the supported values for the TCPATCONSER parameters.

### 3.5.2.1.12 *Set the delay on Run AT command execution - #ATRUNDELAY*

<b>#ATRUNDELAY – Set the delay on Run AT command execution</b>	
<b>AT#ATRUNDELAY=</b> <b>&lt;srv&gt;,&lt;delay&gt;</b>	<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><b>&lt;srv&gt;</b></p> <p>0 – TCP Run AT service</p> <p>1 - SMS Run AT service</p>



	<p><b>&lt;delay&gt;</b> Value of the delay, in seconds. Range 0..30. Default value 0 for both services (TCP and SMS). <b>Note 1:</b> 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. <b>Note 2:</b> The delay is valid till a new AT#ATRUNDELAY is set.</p>
<b>AT#ATRUNDELAY?</b>	<p>Read command returns the current settings of parameters in the format: <b>#ATRUNDELAY:</b> 0, &lt;delayTCP&gt; <b>#ATRUNDELAY:</b> 1, &lt;delaySMS&gt; OK</p>
<b>AT#ATRUNDELAY=?</b>	<p>Test command returns the supported values for the ATRUNDELAY parameters</p>

## 3.6 Event Monitor Commands

### 3.6.1.1.1 Enable EvMoni Service - #ENAEVMONI

<b>#ENAEVMONI – Enable EvMoni Service</b>	
<b>AT#ENAEVMONI= &lt;mod&gt;</b>	<p>Set command enables/disables the EvMoni service.</p> <p>Parameter: <b>&lt;mod&gt;</b> 0 – Service Disabled (default) 1 – Service Enabled</p> <p>Note: The current settings are stored in NVM.</p>
<b>AT#ENAEVMONI?</b>	<p>Read command returns the current settings of &lt;mode&gt; and the value of &lt;stat&gt; in the format:</p> <p><b>#ENAEVMONI: &lt;mod&gt;,&lt;stat&gt;</b></p> <p>where: <b>&lt;stat&gt;</b> - service status 0 – not active (default) 1 – active</p>
<b>AT#ENAEVMONI=?</b>	<p>Test command returns the supported values for the <b>ENAEVMONI</b> parameters</p>

### 3.6.1.1.2 EvMoni Service parameter - #ENAEVMONICFG



#ENAEVMONICFG – Set EvMoni Service Parameters	
<b>AT#ENAEVMONICFG=</b> <b>&lt;instance&gt;</b> <b>[,&lt;urcmode&gt;</b> <b>[,&lt;timeout&gt;]]</b>	<p>Set command configures the EvMoni service.</p> <p>Parameters:</p> <p><b>&lt;instance&gt;</b>  AT instance that will be used by the service to run the AT Command.  Range 1-3. (Default: 3)</p> <p>Note: In Qualcomm platform, <b>&lt;instance&gt;</b> parameter is not supported and EvMoni service share the same channel with SMS Run AT service. This parameter is dummy for unified policy.</p> <p><b>&lt;urcmode&gt;</b>  0 – disable unsolicited message  1 – enable an unsolicited message when an AT command is executed after an event is occurred (default)</p> <p>When unsolicited is enabled, the AT Command is indicated to TE with unsolicited result code:</p> <p><b>#EVMONI: &lt;TEXT&gt;</b></p> <p>e.g.:  <b>#EVMONI: AT+CGMRI+CGSN;+GSN;+CCLK</b></p> <p>Unsolicited is dumped on the instance that requested the service activation.</p> <p><b>&lt;timeout&gt;</b>  It defines in minutes the maximum time for a command execution. If timeout Expires the module will be rebooted. (Default: 5)</p> <p>Note: The current settings are stored in NVM.</p> <p>Note: EvMoni service and SMS Run AT service share the same channel. For the unified policy, when the <b>#ENAEVMONICFG</b> sets the <b>&lt;instance&gt;</b> parameter, the change is reflected also in the <b>&lt;instance&gt;</b> parameter of the <b>#SMSATRUNCFG</b> command, and viceversa.</p> <p>Note: The set command returns ERROR if the command <b>AT#ENAEVMONI?</b> Returns 1 as <b>&lt;mod&gt;</b> parameter or the command <b>AT#SMSATRUN?</b> Returns 1 as <b>&lt;mod&gt;</b> parameter.</p>
<b>AT#ENAEVMONICFG?</b>	<p>Read command returns the current settings of parameters in the format:</p> <p><b>#ENAEVMONICFG: &lt;instance&gt;,&lt;urcmode&gt;,&lt;timeout&gt;</b></p>
<b>AT#ENAEVMONICFG=?</b>	<p>Test command returns the supported values for the <b>ENAEVMONICFG</b> parameters</p>



### 3.6.1.1.3 Event Monitoring - #EVMONI

#EVMONI – Set the single Event Monitoring	
<b>AT#EVMONI=</b> <b>&lt;label&gt;</b> <b>,&lt;mode&gt;</b> <b>[,&lt;paramType&gt;</b> <b>,&lt;param&gt;]</b>	<p>Set command enables/disables the single event monitoring, configures the related parameter and associates the AT command</p> <p><b>&lt;label&gt;</b> String parameter (that has to be enclosed between double quotes) indicating the event under monitoring. It can assume the following values:</p> <ul style="list-style-type: none"> <li>• VBATT - battery voltage monitoring</li> <li>• DTR - DTR monitoring</li> <li>• ROAM - roaming monitoring</li> <li>• CONTDEACT - context deactivation monitoring</li> <li>• RING - call ringing monitoring</li> <li>• STARTUP – module start-up monitoring</li> <li>• REGISTERED – network registration monitoring</li> <li>• GPIO1 – monitoring on a selected GPIO in the GPIO range</li> <li>• GPIO2 – monitoring on a selected GPIO in the GPIO range</li> <li>• GPIO3 – monitoring on a selected GPIO in the GPIO range</li> <li>• GPIO4 – monitoring on a selected GPIO in the GPIO range</li> <li>• GPIO5 – monitoring on a selected GPIO in the GPIO range</li> <li>• ADCH1 – ADC High Voltage monitoring</li> <li>• ADCL1 – ADC Low Voltage monitoring</li> <li>• DTMF1 – monitoring on user defined DTMF string</li> <li>• DTMF2 – monitoring on user defined DTMF string</li> <li>• DTMF3 – monitoring on user defined DTMF string</li> <li>• DTMF4 – monitoring on user defined DTMF string</li> <li>• SMSIN – monitoring on incoming SMS</li> </ul> <p><b>&lt;mode&gt;</b>  0 – disable the single event monitoring (default)  1 – enable the single event monitoring</p> <p><b>&lt; paramType &gt;</b>  Numeric parameter indicating the type of parameter contained in <b>&lt;param&gt;</b>. The 0 value indicates that <b>&lt;param&gt;</b> contains the AT command string to execute when the related event has occurred. Other values depend from the type of event.</p> <p><b>&lt;param&gt;</b>  It can be a numeric or string value depending on the value of <b>&lt;paramType&gt;</b></p>



	<p>and on the type of event.</p> <p>If <b>&lt;paramType&gt;</b> is 0, then <b>&lt;param&gt;</b> is a string containing the AT command:</p> <ul style="list-style-type: none"> <li>• It has to be enclosed between double quotes</li> <li>• It has to start with the 2 chars AT (or at)</li> <li>• If the string contains the character ", then it has to be replaced with the 3 characters \22</li> <li>• the max string length is 96 characters</li> <li>• if it is an empty string, then the AT command is erased</li> </ul> <ul style="list-style-type: none"> <li>• If <b>&lt;label&gt;</b> is VBATT, <b>&lt;paramType&gt;</b> can assume values in the range 0 - 2. <ul style="list-style-type: none"> <li>o if <b>&lt;paramType&gt;</b> = 1, <b>&lt;param&gt;</b> indicates the battery voltage threshold in the range 0 – 500, where one unit corresponds to 10 mV (therefore 500 corresponds to 5 V). (Default: 0)</li> <li>o if <b>&lt;paramType&gt;</b> = 2, <b>&lt;param&gt;</b> indicates the time interval in seconds after that the voltage battery under the value specified with <b>&lt;paramType&gt;</b> = 1 causes the event. The range is 0 – 255. (Default: 0)</li> </ul> </li> <li>• If <b>&lt;label&gt;</b> is DTR, <b>&lt;paramType&gt;</b> can assume values in the range 0 - 2. <ul style="list-style-type: none"> <li>o if <b>&lt;paramType&gt;</b> = 1, <b>&lt;param&gt;</b> indicates the status high or low under monitoring. The values are 0 (low) and 1 (high). (Default: 0)</li> <li>o if <b>&lt;paramType&gt;</b> = 2, <b>&lt;param&gt;</b> indicates the time interval in seconds after that the DTR in the status specified with <b>&lt;paramType&gt;</b> = 1 causes the event. The range is 0 – 255. (Default: 0)</li> </ul> </li> <li>• If <b>&lt;label&gt;</b> is ROAM, <b>&lt;paramType&gt;</b> can assume only the value 0. The event under monitoring is the roaming state.</li> <li>• If <b>&lt;label&gt;</b> is CONTDEACT, <b>&lt;paramType&gt;</b> can assume only the value 0. The event under monitoring is the context deactivation.</li> <li>• If <b>&lt;label&gt;</b> is RING, <b>&lt;paramType&gt;</b> can assume values in the range 0 - 1. <ul style="list-style-type: none"> <li>o if <b>&lt;paramType&gt;</b> = 1, <b>&lt;param&gt;</b> indicates the numbers of call rings After that the event occurs. The range is 1-50. (Default: 1)</li> </ul> </li> <li>• If <b>&lt;label&gt;</b> is STARTUP, <b>&lt;paramType&gt;</b> can assume only the value 0. The event under monitoring is the module start-up.</li> <li>• If <b>&lt;label&gt;</b> is REGISTERED, <b>&lt;paramType&gt;</b> can assume only the value 0. The event under monitoring is the network registration (to home network or in roaming) after the start-up and the SMS ordening.</li> <li>• If <b>&lt;label&gt;</b> is GPIOX, <b>&lt;paramType&gt;</b> can assume values in the range 0 - 3. <ul style="list-style-type: none"> <li>o if <b>&lt;paramType&gt;</b> = 1, <b>&lt;param&gt;</b> indicates the GPIO pin number; supported range is from 1 to a value that depends on the hardware. (Default: 1)</li> <li>o if <b>&lt;paramType&gt;</b> = 2, <b>&lt;param&gt;</b> indicates the status high or low under monitoring. The values are 0 (low) and 1 (high) . (Default: 0)</li> <li>o if <b>&lt;paramType&gt;</b> = 3, <b>&lt;param&gt;</b> indicates the time interval in</li> </ul> </li> </ul>
--	---



	<p>seconds after that the selected GPIO pin in the status specified with <b>&lt;paramType&gt; = 1</b> causes the event. The range is 0 – 255. (Default: 0)</p> <ul style="list-style-type: none"> <li>• If <b>&lt;label&gt;</b> is ADCH1, <b>&lt;paramType&gt;</b> can assume values in the range 0 - 3. <ul style="list-style-type: none"> <li>o if <b>&lt;paramType&gt; = 1</b>, <b>&lt;param&gt;</b> indicates the ADC pin number; supported range is from 1 to a value that depends on the hardware. (Default: 1)</li> <li>o if <b>&lt;paramType&gt; = 2</b>, <b>&lt;param&gt;</b> indicates the ADC High voltage threshold in the range 0 – 2000 mV. (Default: 0)</li> <li>o if <b>&lt;paramType&gt; = 3</b>, <b>&lt;param&gt;</b> indicates the time interval in seconds after that the selected ADC pin above the value specified with <b>&lt;paramType&gt; = 1</b> causes the event. The range is 0 – 255. (Default: 0)</li> </ul> </li> <li>• If <b>&lt;label&gt;</b> is ADCL1, <b>&lt;paramType&gt;</b> can assume values in the range 0 - 3. <ul style="list-style-type: none"> <li>o if <b>&lt;paramType&gt; = 1</b>, <b>&lt;param&gt;</b> indicates the ADC pin number; supported range is from 1 to a value that depends on the hardware. (Default: 1)</li> <li>o if <b>&lt;paramType&gt; = 2</b>, <b>&lt;param&gt;</b> indicates the ADC Low voltage threshold in the range 0 – 2000 mV. (Default: 0)</li> <li>o if <b>&lt;paramType&gt; = 3</b>, <b>&lt;param&gt;</b> indicates the time interval in seconds after that the selected ADC pin under the value specified with <b>&lt;paramType&gt; = 1</b> causes the event. The range is 0 – 255. (Default: 0)</li> </ul> </li> <li>• If <b>&lt;label&gt;</b> is DTMFX, <b>&lt;paramType&gt;</b> can assume values in the range 0 - 2. <ul style="list-style-type: none"> <li>o if <b>&lt;paramType&gt; = 1</b>, <b>&lt;param&gt;</b> indicates the DTMF string; the single DTMF characters have to belong to the range ((0-9),#,*,(A-D)); the maximum number of characters in the string is 15</li> <li>o if <b>&lt;paramType&gt; = 2</b>, <b>&lt;param&gt;</b> indicates the timeout in milliseconds. It is the maximum time interval within which a DTMF tone must be detected after detecting the previous one, to be considered as belonging to the DTMF string. The range is (500 – 5000). (Default: 1000)</li> </ul> </li> <li>• If <b>&lt;label&gt;</b> is SMSIN, <b>&lt;paramType&gt;</b> can assume values in the range 0 - 1. <ul style="list-style-type: none"> <li>o if <b>&lt;paramType&gt; = 1</b>, <b>&lt;param&gt;</b> indicates the text that must be received in incoming SMS to trigger AT command execution rings after that the event occurs; the maximum number of characters in the SMS text string is 15</li> </ul> </li> </ul> <p>Note: the DTMF string monitoring is available only if the DTMF decode has been enabled (see <b>#DTMF</b> command)</p>
<b>AT#EVMONI?</b>	Read command returns the current settings for each event in the format:



	<b>#EVMONI:</b> <code>&lt;label&gt;,&lt;mode&gt;,&lt;param0&gt;[,&lt;param1&gt;[,&lt;param2&gt;[,&lt;param3&gt;]]]</code>  Where <b>&lt;param0&gt;</b> , <b>&lt;param1&gt;</b> , <b>&lt;param2&gt;</b> and <b>&lt;param3&gt;</b> are defined as before for <b>&lt;param&gt;</b> depending on <b>&lt;label&gt;</b> value
<b>AT#EVMONI=?</b>	Test command returns values supported as a compound value

#### 3.6.1.1.4 *Send Message - #CMGS*

<b>#CMGS - Send Message</b>	
<b>(PDU Mode)</b> <b>AT#CMGS=</b> <b>&lt;length&gt;,&lt;pdu&gt;</b>	<b>(PDU Mode)</b> <p>Execution command sends to the network a message.</p> <p>Parameter:</p> <p><b>&lt;length&gt;</b> - length of the PDU to be sent in bytes (excluding the SMSC address octets). 7..164</p> <p><b>&lt;pdu&gt;</b> - PDU in hexadecimal format (each octet of the PDU is given as two IRA character long hexadecimal number) and given in one line.</p> <p>Note: when the length octet of the SMSC address (given in the <b>&lt;pdu&gt;</b>) equals zero, the SMSC address set with command <b>+CSCA</b> is used; in this case the SMSC Type-of-Address octet shall not be present in the <b>&lt;pdu&gt;</b>.</p> <p>If message is successfully sent to the network, then the result is sent in the format:</p> <p><b>#CMGS: &lt;mr&gt;</b></p> <p>where</p> <p><b>&lt;mr&gt;</b> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format.</p> <p>Note: if message sending fails for some reason, an error code is reported.</p>
<b>(Text Mode)</b> <b>AT#CMGS=&lt;da&gt;</b> <b>,&lt;text&gt;</b>	<b>(Text Mode)</b> <p>Execution command sends to the network a message.</p> <p>Parameters:</p>



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

	<p><b>&lt;da&gt;</b> - destination address, string type represented in the currently selected character set (see +CSCS).</p> <p><b>&lt;text&gt;</b> - text to send</p> <p>The entered text should be enclosed between double quotes and formatted as follows:</p> <ul style="list-style-type: none"> <li>- if current <b>&lt;dc&gt;</b> (see +CSMP) indicates that GSM03.38 default alphabet is used and current <b>&lt;fo&gt;</b> (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.</li> <li>- if current <b>&lt;dc&gt;</b> (see +CSMP) indicates that 8-bit or UCS2 data coding scheme is used or current <b>&lt;fo&gt;</b> (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 <b>2A (IRA50 and IRA65)</b> and this will be converted to an octet with integer value <b>0x2A</b>)</li> </ul> <p>If message is successfully sent to the network, then the result is sent in the format:</p> <p><b>#CMGS: &lt;mr&gt;</b></p> <p>where</p> <p><b>&lt;mr&gt;</b> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format.</p> <p>Note: if message sending fails for some reason, an error code is reported.</p>
<b>AT#CMGS=?</b>	Test command returns the <b>OK</b> result code.
Note	<p>To avoid malfunctions is suggested to wait for the <b>#CMGS: &lt;mr&gt;</b> or <b>#CMS ERROR: &lt;err&gt;</b> response before issuing further commands.</p> <p>The command maximum length is 560 including the AT command itself. For example: AT#CMGS="1234567","SMS text" the length is 26.</p>
Reference	GSM 27.005

### 3.6.1.1.5 Write Message To Memory - #CMGW



#CMGW - Write Message To Memory	
<p><i>(PDU Mode)</i>  <b>AT#CMGW=</b>  <b>&lt;length&gt;,&lt;pdu&gt;</b></p>	<p><b>(PDU Mode)</b>            Execution command writes in the <b>&lt;memw&gt;</b> memory storage a new message.</p> <p>Parameter:  <b>&lt;length&gt;</b> - length in bytes of the PDU to be written.            7..164  <b>&lt;pdu&gt;</b> - PDU in hexadecimal format (each octet of the PDU is given as two IRA character long hexadecimal number) and given in one line.</p> <p>If message is successfully written in the memory, then the result is sent in the format:</p> <p><b>#CMGW: &lt;index&gt;</b></p> <p>where:  <b>&lt;index&gt;</b> - message location index in the memory <b>&lt;memw&gt;</b>.</p> <p>If message storing fails for some reason, an error code is reported.</p>
<p><i>(Text Mode)</i>  <b>AT#CMGW=&lt;da&gt;</b>  <b>,&lt;text&gt;</b></p>	<p><b>(Text Mode)</b>            Execution command writes in the <b>&lt;memw&gt;</b> memory storage a new message.</p> <p>Parameters:  <b>&lt;da&gt;</b> - destination address, string type represented in the currently selected character set (see +CSCS).  <b>&lt;text&gt;</b> - text to write</p> <p>The entered text should be enclosed between double quotes and formatted as follows:</p> <ul style="list-style-type: none"> <li>- if current <b>&lt;dc&gt;</b> (see +CSMP) indicates that GSM03.38 default alphabet is used and current <b>&lt;fo&gt;</b> (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.</li> <li>- if current <b>&lt;dc&gt;</b> (see +CSMP) indicates that 8-bit or UCS2 data coding scheme is used or current <b>&lt;fo&gt;</b> (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 <b>'asterisk'</b> will be entered as <b>2A (IRA50 and IRA65)</b> and this will be converted to an octet with integer value <b>0x2A</b>)</li> </ul> <p>If message is successfully written in the memory, then the result is sent in the format:</p>



#CMGW - Write Message To Memory	
	<b>#CMGW: &lt;index&gt;</b> where: <index> - message location index in the memory <memw>.  If message storing fails for some reason, an error code is reported.
<b>AT#CMGW=?</b>	Test command returns the <b>OK</b> result code.
Reference	GSM 27.005
Note	To avoid malfunctions is suggested to wait for the <b>#CMGW: &lt;index&gt;</b> or <b>+CMS ERROR: &lt;err&gt;</b> response before issuing further commands.  The command maximum length is 560 including the AT command itself. For example: AT#CMGW="1234567","SMS text" the length is 26.

## 3.7 Emergency Call and ECall Management

### 3.7.1.1.1 *IVS push mode activation - #MSDPUSH*

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

### 3.7.1.1.2 *Sending MSD data to IVS - #MSDSEND*

#MSDSEND – Sending MSD data to IVS	
<b>AT#MSDSEND</b>	Execution command allows to send 140 bytes of MSD data to the IVS embedded while modem is in command mode.  The device responds to the command with the prompt '>' and waits for the MSD to send. To complete the operation send <b>Ctrl-Z</b> char ( <b>0x12A</b> hex); to exit without writing the message send <b>ESC</b> char ( <b>0x1B</b> hex).



	<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><b>Note:</b> 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 <b>OK</b> result code

### 3.7.1.1.3 *Initiate eCall - +CECALL*

<b>+CECALL – Initiate eCall</b>	
AT+CECALL= <type of eCall>	<p>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.</p> <p><b>Parameters:</b> <b>&lt;type of eCall&gt;:</b> 0 – test call 1 – reconfiguration call 2 – manually initiated eCall 3 – automatically initiated eCall</p>
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>.

### 3.7.1.1.4 *Embedded IVS inband modem enabling - #ECALL*

<b>#ECALL – Embedded IVS inband modem enabling</b>	
AT#ECALL=<mode>	<p>Set command enables/disables the embedded IVS modem.</p> <p><b>Parameters:</b> <b>&lt;mode&gt;:</b> 0 – disable IVS (default) 1 – enables IVS</p> <p><b>Note:</b> the sending of a MSD is pointed out with an unsolicited message through AT interface that can report the HL-ACK data bits or an error code in the following format: <b>#ECALLEV:</b> &lt;prim&gt;,&lt;data&gt;</p> <p><b>&lt;prim&gt;:</b> 0 – Pull-IND 1 – Data_CNF</p>



#ECALL – Embedded IVS inband modem enabling	
	<p>2 – AL-Ack 16 – sync loss</p> <p><b>&lt;data&gt;:</b> Data content of Application Layer message (only with AL-Ack)</p> <p><b>Note:</b> 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.</p> <p><b>Note:</b> When IVS modem is enabled PCM playing, PCM recording and DTMF decoding are automatically disabled (AT#SPCM or AT#DTMF will return error).</p> <p><b>Note:</b> +CECALL command supersedes this command because it enables automatically eCall functionality.</p>
AT#ECALL?	<p>Read command reports the currently selected &lt;prim&gt; in the format: <b>#ECALL:</b> &lt;mode&gt;</p> <p><b>&lt;mode&gt;:</b> 0 – IVS disabled 1 – IVS enabled</p>
AT#ECALL=?	Test command reports supported range of values for all parameters.

### 3.7.1.1.5 Determine Encoding Rule - #ECALLTYPE

#ECALLTYPE – Determine encoding rule	
AT#ECALLTYPE= <rule>	<p>Set method to encode MSD data</p> <p>Parameters: <b>&lt;rule&gt;:</b> 0 – Qaulcomm encoding rule. 1 – Unified AT command rule(Default). 2 – ASN.1 Packed encoding rule (PER unaligned).</p> <p><b>Note:</b> the main difference of &lt;rule&gt; is which rule make codified MSD. if &lt;rule&gt; is set to 1, need to set codified MSD via <b>#MSDSEND</b> command before sending MSD to PSAP. if set to 0 or 2, need to set the parameters of MSD via <b>#MSDVI</b> and <b>#MSDGI</b> commands before sending MSD to PSAP.</p>



	<p>Note: when <b>&lt;rule&gt;</b> set to 0, data present of MSD is encoded with Qualcomm own method</p> <p>Note: when <b>&lt;rule&gt;</b> set to 1, MSD data uses data received to <b>#MSDSEND</b></p> <p>Note: the below table indicate to applicable AT command following each selected value of <b>&lt; rule &gt;</b></p> <table><tr><th>AT Command</th><th>#ECALLTYPE=1</th><th># ECALLTYPE =0 or 2</th></tr><tr><td><b>+CECALL</b></td><td>O</td><td>O</td></tr><tr><td><b>#TESTNUM</b></td><td>O</td><td>O</td></tr><tr><td><b>#MSDSEND</b></td><td>O</td><td>X</td></tr><tr><td><b>#MSDPUSH</b></td><td>O</td><td>X</td></tr><tr><td><b>#MSDVI</b></td><td>X</td><td>O</td></tr><tr><td><b>#MSDGI</b></td><td>X</td><td>O</td></tr></table> <p>Note: #ECALLTYPE=0,2 isn't possible to redo a PUSH by the application. Note: The setting is saved in NVM and available on following reboot.</p>	AT Command	#ECALLTYPE=1	# ECALLTYPE =0 or 2	<b>+CECALL</b>	O	O	<b>#TESTNUM</b>	O	O	<b>#MSDSEND</b>	O	X	<b>#MSDPUSH</b>	O	X	<b>#MSDVI</b>	X	O	<b>#MSDGI</b>	X	O
AT Command	#ECALLTYPE=1	# ECALLTYPE =0 or 2																				
<b>+CECALL</b>	O	O																				
<b>#TESTNUM</b>	O	O																				
<b>#MSDSEND</b>	O	X																				
<b>#MSDPUSH</b>	O	X																				
<b>#MSDVI</b>	X	O																				
<b>#MSDGI</b>	X	O																				
<b>AT#ECALLTYPE?</b>	Read command reports the current values of parameter <b>&lt;rule&gt;</b> .																					
<b>AT#ECALLTYPE=?</b>	Test command reports the supported range of values for parameter <b>&lt;rule&gt;</b> .																					

### 3.7.1.1.6

#### *MSD of Vehicle Information - #MSDVI*

<b>#MSDVI – MSD of Vehicle Information</b>	
<b>AT#MSDVI=</b> <b>&lt;type&gt;, &lt;VIN&gt;, &lt;storage type&gt;, [&lt;Nb of passengers&gt;]</b>	<p>This command sets the contents of MSD which is related vehicle information stored on EF system.</p> <p><b>Parameters:</b>  <b>&lt;type&gt;</b>- indicates the type of vehicle  1 – passenger vehicle (class M1)  2 – buses and coaches (class M2)  3 – buses and coaches (class M3)  4 – light commercial vehicles (class N1)  5 – heavy duty vehicles (class N2)  6 – heavy duty vehicles (class N3)  7 – motorcycles (class L1e)  9 – motorcycles (class L1e)  10 – motorcycles (class L1e)  11 – motorcycles (class L1e)  12 – motorcycles (class L1e)  13 – motorcycles (class L1e)</p>



#MSDVI – MSD of Vehicle Information	
	<p>&lt;VIN&gt;- string type; vehicle Identification number according to ISO 3779</p> <p>&lt;storage type&gt;- sum of integer each representing the vehicle propulsion storage type</p> <ul style="list-style-type: none"> <li>1 – gasoline tank</li> <li>2 – diesel tank</li> <li>4 – compressed natural gas (CNG)</li> <li>8 – liquid propane gas (LPG)</li> <li>16 – electric energy storage (with more than 42V and 100Ah)</li> <li>32 – hydrogen storage</li> </ul> <p>&lt;Nb of passenger&gt;- Minimum known number of fastened seatbelts</p> <ul style="list-style-type: none"> <li>1..254 – number of passenger</li> <li>255 – no information available</li> </ul> <p><b>Note:</b> #MSDVI is applicable only if the current selected eCall mode (see #ECALLTYPE) is set to 0 or 2</p> <p><b>Note:</b> The setting is saved in NVM .</p>
AT#MSDVI?	Read command reports the values of vehicle information which is stored on NVM in the format: #MSDVI: <type>,<VIN>,<storage type>,<Nb of passengers>
AT#MSDVI=?	Test command returns the allowed values for parameters

### 3.7.1.1.7 MSD of GPS Information and Vehicle - #MSDGI

#MSDGI – MSD of GPS and Vehicle Information	
AT#MSDGI =<GPS mode>,<message identifier>,<confidence>,<passengers>,<time stamp>,<current latitude>,<current longitude>,<current direction>[,<recent latitude n- 1>,<recent longitude n- 1>[,<recent attitude n- 2>,<recent longitude n-2>]]	<p>This command sets the contents of MSD which is related vehicle incident information such as GPS information, number of passenger and so on, stored on EF system.</p> <p><b>Parameters:</b></p> <p>&lt;GPS mode&gt; - GPS mode number of fastened seatbelts</p> <ul style="list-style-type: none"> <li>0 – use embedded GPS data</li> <li>1 – use external GPS data which is stored on EF system</li> </ul> <p>&lt;message identifier&gt; - Message identifier, starting with 1 for each new eCall session and to be incremented with every application layer MSD retransmission following a new 'Send MSD' request after the incident event</p> <p>Range is 1..255</p>



## #MSDGI – MSD of GPS and Vehicle Information

**<confidence>** - The position confidence should be set to "Low confidence in position" if the position is not within the limits of  $\pm 150$  m with 95 % confidence.

0 – low confidence in position

1 – Position can be trusted

**<passengers>** - Minimum known number of fastened seatbelts

0..254 – number of passenger

255 – no information available

**Note:** followed parameters <time stamp>, <current latitude>, <current longitude>, <current direction>, <recent latitude n-1>, <recent longitude n-1>, <recent latitude n-2> and <recent longitude n-2> applicable only for <GPS mode> is set to 1 otherwise used internal embedded GPS data.

In case of <GPS mode> is set to 1, must be populated with the external GPS data, and used as time stamp and gps position for MSD contents.

In case of <GPS mode> is set to 0, populated with a default time stamp and gps position to be used in case of no gps fix.

**<time stamp>** - integer of timestamp of incident event base on UTC sec. As seconds elapsed since midnight Jan. 1<sup>st</sup>, 1970 UTC

**<current latitude>** - position latitude of current vehicle location (WGS84). range is "-324000000 to 324000000"

**<current longitude>** - position longitude of current vehicle location(WGS84). range is "-648000000 to 648000000"

**<current direction>** - Direction of travel in 2° degrees steps from magnetic north (0 – 358, clockwise)

**<recent latitude n-1>** - latitude delta (+ for North and – for South) with respect to <current latitude>. range is "-512 to 511"

**<recent longitude n-1>** - longitude delta (+ for East and – for West) with respect to <current longitude>. range is "-512 to 511"

**<recent latitude n-2>** - latitude delta (+ for North and – for South) with respect to <recent latitude n-1>. range is "-512 to 511"

**<recent longitude n-2>** - longitude delta (+ for East and – for West) with respect to <recent longitude n-1>. range is "-512 to 511"

**Note:** if time stamp is set to "0" it's means failure value of time stamp.

**Note:** the unit of latitude delta and longitude delta is 1 Unit = 100 milli-arcseconds (WGS84) which is approximately 3m.

**Note:** #MSDGI is applicable only if the current selected eCall mode (see #ECALLTYPE) is set to 0.

**Note:** When use internal GPS, should set a default time stamp and gps position to be used in case of no gps fix.

**Note:** if GPS Mode is changed 0 to 1 or 1 to 0, should reboot module.



#MSDGI – MSD of GPS and Vehicle Information	
AT#MSDGI?	Read command reports the values of GPS information which is stored on EF in the format: <b>#MSDGI:</b> <GPS mode>,<message identifier>,<confidence>,<Nb of passengers>,<time stamp>,<current latitude>,<current longitude>,<current direction>,<recent latitude n-1>,<recent longitude n-1>,<recent latitude n-2>,<recent longitude n-2>
AT#MSDGI=?	Test command returns the allowed values for parameters

### 3.7.1.1.8 Dial an Emergency Call - #EMRGD

#EMRGD – dial an emergency call	
AT#EMRGD=<par>	<p>This command initiates an emergency call.</p> <p><b>Parameters:</b>  &lt;par&gt;  0 – initiates an emergency call without specifying the Service Category.(default value)  1..31 - sum of integers each representing a specific Emergency Service</p> <p><b>Category:</b>  1 - Police  2 - Ambulance  4 - Fire Brigade  8 – Marine Guard  16 - Mountain Rescue  32 - Manually Initiated eCall (if eCall is supported – Rel8 feature)  64 - Automatically Initiated eCall (if eCall is supported– Rel8 feature)</p> <p>When the emergency call can initiate, an indication of the Service Categories selected is shown before the OK in the following format:  #EMRGD: &lt;serv&gt;[,&lt;serv&gt;..[,&lt;serv&gt;]]</p> <p><b>Where:</b>  &lt;serv&gt;  “Police”  “Ambul”  “FireBrig”  “MarineGuard”  “MountRescue”  “MIeC”  “AleC”</p> <p><b>Example:</b></p>



#EMRGD – dial an emergency call	
	AT#EMRGD=17 #EMRGD: "Police","MountRescue" OK
AT#EMRGD	The execution command initiates an emergency call without specifying the Service Category.
AT#EMRGD?	<p>The read command reports the emergency numbers received from the network (Rel5 feature) and the associated service categories in the format:</p> <p>[#EMRGD: &lt;num1&gt;[,&lt;par1&gt;,&lt;serv&gt;[,&lt;serv&gt;..[,&lt;serv&gt;]]]            [#EMRGD: &lt;numn&gt;[,&lt;parn&gt;,&lt;serv&gt;[,&lt;serv&gt;..[,&lt;serv&gt;]]]</p> <p><b>Where:</b>            &lt;numn&gt;            Is the emergency number (that can be dialed with ATD command).            &lt;parn&gt;            1..31 - sum of integers each representing a specific Emergency Service Category:            1 - Police            2 - Ambulance            4 - Fire Brigade            8 - Marine Guard            16 - Mountain Rescue            32 - Manually Initiated eCall (if eCall is supported – Rel8 feature)            64 - Automatically Initiated eCall (if eCall is supported – Rel8 feature)            Example:            AT#EMRGD?            #EMRGD: 123,2,"Ambul"            #EMRGD: 910,5,"Police","FireBrig"            OK</p>
AT#EMRGD=?	<p>Test command reports the supported range of values for parameter &lt;par&gt;.</p> <p>If eCall is supported:            0-32,64            If eCall is not supported:            0-31</p>

### 3.7.1.1.9 #MSDREAD – Read current MSD

AT#MSDREAD?	This command returns the last MSD set by #MSDSEND or #MSDGLMSDI
Example	AT#ECALLTYPE=0 OK



## 80407ST10116A Rev.14.1 - 2017-05-14

[illegible]

## 80407ST10116A Rev.14.1 - 2017-05-14

[illegible]

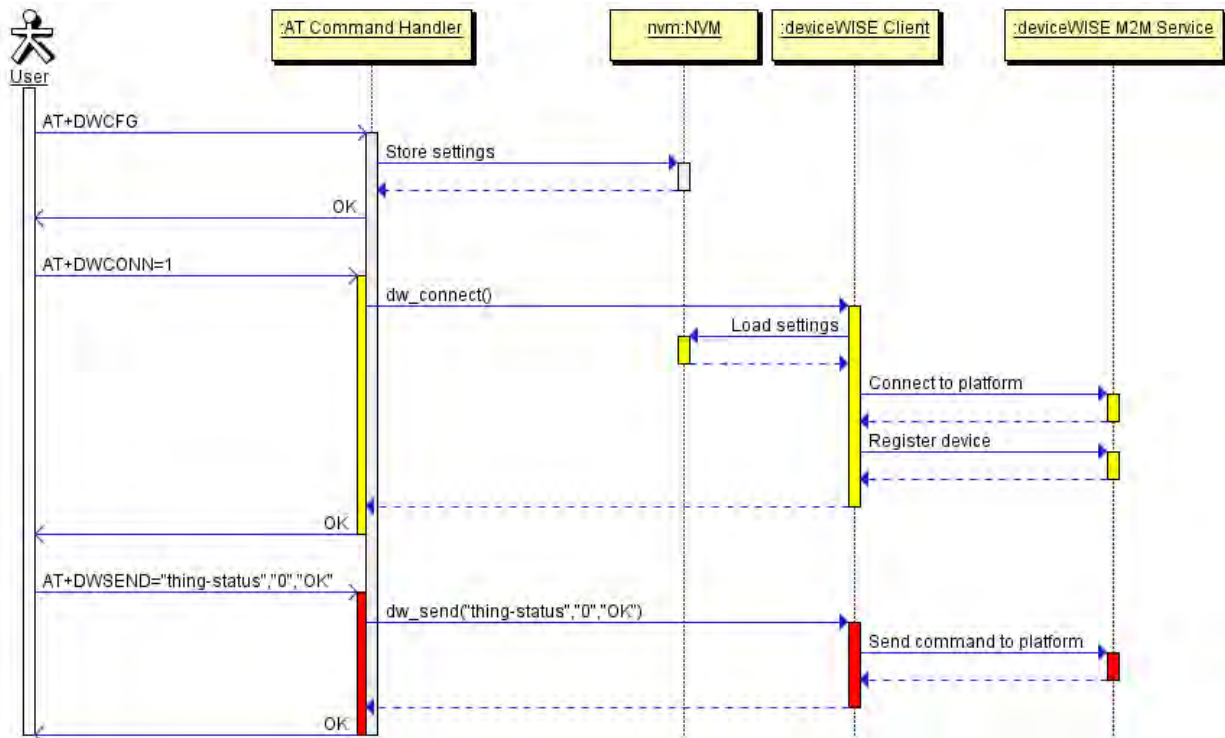
### 3.8 m2mAIR Cloud Commands

The following AT commands Regard the deviceWISE functionality  
Here is a basic interaction diagram:.



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14



### 3.8.1.1.1 Configure deviceWISE parameters - #DWCFG

#### #DWCFG –configure deviceWISE parameters

AT#DWCFG=[<serverUrl>,<deviceIDSelector>,<appToken>,<security>,<heartbeat>,<autoReconnect>,<overflowHandling>,<atrunkInstanceID>,<serviceTimeout>,<contextID>,<unused\_2>,<unused\_3>]|||||||

This command sets the parameters related to the deviceWISE functionality

Parameters:

<serverUrl> - String parameter indicating the URL of the M2M Service instance in address:port form.

<deviceIDSelector> 0 – 1 (0=IMEI 1=CCID/ESN), basically 0 if not SIM card or CDMA ID installed

<appToken> - The secure application token provided in the Management Portal, typically a string of 16 characters..

<security> - Flag indicating if the SSL encryption is enabled.

0 – SSL encryption disabled (default)

1 – SSL encryption enabled

If SSL encryption enabling is required, some initial settings have to be done as follows. For further details, refer to “SSL/TLS User Guide”.

SSL channel has to be enabled as follows:

AT#SSLEN=1,1

OK

If server authentication is needed, #SSLSECCFG has to be set as follows:

#DWCFG –configure deviceWISE parameters	
	<p>AT#SSLSECCFG=1,0,1,0 OK Then, CA Certificate(DER format) has to be stored as follows: AT#SSLSECDATA=1,1,1,&lt;size&gt; &gt; ..... // store CA Certificate OK Note: Only the configuration SSL commands listed above are admitted. DW connection in secure mode cannot be used contemporarily to any command starting an SSL connection (including SSL sockets, FTPS, secure SMTP and HTTPS).</p> <p><b>&lt;heartBeat&gt;</b> - If no packets are received in the number of seconds specified in the heartbeat field, a heartbeat message will be sent to keep the connection alive. Default: 60 Range: 10 – 86400</p> <p><b>&lt;autoReconnect&gt;</b> - Flag indicating if the connection manager should automatically reconnect to the service. 0 – auto-reconnect disabled 1 – auto-reconnect lazy - reconnect on next send and every 3600 seconds. 2 – auto-reconnect moderate (default) - reconnect 120 seconds, then every 3600 seconds after the first day. 3 – auto-reconnect aggressive - reconnect every 120 seconds.</p> <p><b>&lt;overflowHandling&gt;</b> - Flag indicating if the way to handle overflows in data management. 0 – FIFO (default) 1 – LIFO</p> <p><b>&lt;atrunInstanceId&gt;</b> - AT instance that will be used by the service to run the AT Command. Default 2 Range 0 – 4 Note: This parm is not in use just for backward capability</p> <p><b>&lt;serviceTimeout&gt;</b> - It defines in seconds the maximum time interval for a service request to the server. Default 5 Range 1 – 120</p> <p><b>&lt;contextID&gt;</b> - PDP context identifier (see +CGDCONT command) 1..5 - numeric parameter which specifies a particular PDP context definition Default 1 Note: For Verizon default 3</p>
AT# DWCFG?	<p>Read command returns the current settings in the format: <b>#DWCFG:</b> <b>&lt;serverUrl&gt;,&lt;deviceIDSelector&gt;,&lt;appToken&gt;,&lt;security&gt;,&lt;heartBeat&gt;,&lt;autoReconnect&gt;,&lt;overflowHandling&gt;,&lt;atrunInstanceId&gt;,&lt;serviceTimeout&gt;,0,0,0</b></p>
AT#DWCFG=?	<p>Test command returns the supported range of parameters <b>&lt;deviceIDSelector&gt;</b>,</p>



#DWCFG –configure deviceWISE parameters	
	<p>&lt;security&gt;, &lt;heartBeat&gt;, &lt;AutoReconnect&gt;, &lt;overflowHandling&gt;, &lt;atrunInstanceId&gt; and &lt;serviceTimeout&gt; and the maximum length of &lt;serverUrl&gt; and &lt;appToken&gt; parameters.</p>

### 3.8.1.1.2 Connect to M2M Service - #DWCONN

#DWCONN – connect to M2M Service	
AT#DWCONN=<connect>	<p>Set command connects/disconnects to the M2M Service.</p> <p>Parameters:</p> <p>&lt;connect&gt; - flag to connect/disconnect to the M2M Service</p> <p>0 – disconnect (default)</p> <p>1 – connect</p> <p>Note: AT#DWCONN=1 performs the socket connection and the MQTT connection. AT#DWCONN=0 performs the socket disconnection.</p> <p>Note: the PDP Context used for the network connection is the first (&lt;cid&gt;=1 has to be previously defined with AT+CGDCONT command and activated with AT#SGACT command)</p> <p>Note: if the secure mode connection has been enabled, it cannot be used contemporarily to any command starting an SSL connection (including SSL sockets, FTPS, secure SMTP and HTTPS).</p>
AT#DWCONN?	<p>Read command returns the current settings for all parameters in the format:</p> <p>#DWCONN: &lt;connect&gt;,&lt;status&gt;</p> <p>Where:</p> <p>&lt;connect&gt; is defined as above</p> <p>&lt;status&gt; is the real connection status. Values:</p> <p>0 = disconnected</p> <p>1 = trying to connect</p> <p>2 = connected</p> <p>3 = waiting to connect</p>
AT#DWCONN=?	Test command reports the supported range of values for all parameters

### 3.8.1.1.3 Query connection status - #DWSTATUS

#DWSTATUS.– Query connection status	
AT#DWSTATUS	<p>Execution command returns the status of the connection, including some runtime statistics. Note, all statistics should be stored in RAM, not NVM.</p> <p>The Cloud will return a generic structure</p> <p>#DWSTATUS:</p> <p>&lt;connected&gt;&lt;lastErrorCode&gt;,&lt;latency&gt;,&lt;pktsIn&gt;,&lt;pktsOut&gt;,&lt;bytesIn&gt;,&lt;bytesOut&gt;</p> <p>&lt;connected&gt; : 3 = waiting to connect, 2 = connected, 1 = trying to connect, 0 = disconnected</p> <p>&lt;lastErrorCode&gt;: last error code encountered by the client</p>



#DWSTATUS.– Query connection status	
	<p>&lt;latency&gt; : milliseconds measured between last request and reply.</p> <p>&lt;pktsIn&gt; : number of packets received, tracked by the server</p> <p>&lt;pktsOut&gt; : number of packets sent.</p> <p>&lt;bytesIn&gt; : number of bytes received, TCP/IP payload</p> <p>&lt;bytesOut&gt; : number of bytes sent.</p>
AT#DWSTATUS=?	Test command reports <b>OK</b> result code

#### 3.8.1.1.4 *Send data to M2M Service - #DWSEND*

<b>#DWSEND – Send data to M2M Service</b>	
<b>AT#DWSEND=&lt;type&gt;,&lt;param_1&gt;,&lt;param_2&gt;,...,&lt;param_n&gt;]</b> <b> </b>	<p>Execution command permits to send formatted data to the M2M Service.</p> <p>Parameters:</p> <p><b>&lt;type&gt;</b> - type code for the type of message to send. (0 for normal request; 1 for method request; 2 for method update; 3 for method ack)</p> <p><b>Type 0 message format:</b></p> <p><b>&lt;param_i&gt;</b> - string parameter indicating the i-th parameter, with i=1,...,24.</p> <p><b>Type 1 message format:</b></p> <p><b>&lt;param_1&gt;</b> - “thingKey” – the key of a thing to execute.</p> <p><b>&lt;param_2&gt;</b> - timeout – time to wait in seconds before returning an error for the request.</p> <p><b>&lt;param_3&gt;</b> - method – the method key of a thing to execute.</p> <p><b>&lt;param_4&gt;</b> - is singleton – 0 or 1. 1 if no more than one of these instances can exist.</p> <p><b>&lt;param_5+&gt;</b> - parameters for the method. String parameter indicating the i-th parameter, with i=1,...,20.</p> <p><b>Type 2 message format:</b></p> <p><b>&lt;param_1&gt;</b> - id – the identification of the method instance.</p> <p><b>&lt;param_2&gt;</b> - message – a message represents the current status of the method.</p> <p><b>Type 3 message format:</b></p> <p><b>&lt;param_1&gt;</b> - id – the identification of the method instance.</p> <p><b>&lt;param_2&gt;</b> - status – the integer result status for the execution.  0 is reserved for OK.</p> <p><b>&lt;param_3 when status is set to non-zero&gt;</b> - error message associated with the status.</p> <p><b>&lt;param_3 when status is set to zero&gt;</b> - return parameters for the method. Key value pair should be used. <b>param_i</b> should be the name of the element and <b>param_i+1</b> should be the value of the element.</p> <p>Note: there is no limit on the length of the single <b>&lt;param_i&gt;</b>, but there is a limit in the total length of the AT command string, that cannot exceed 400 characters. If this threshold is exceeded, then an ERROR is raised.</p> <p>There is also a limit of 20 messages on the receive queue. If the queue is full, the consequent send will still succeed but the response for that particular request will be dropped until an item is removed from this queue (See command AT#DWRCV and AT#DWRCVR).</p>



#DWSEND – Send data to M2M Service	
	<p>Note: the response to the <b>AT#DWSEND</b> command reports the <b>&lt;msgId&gt;</b> value that identifies the sending.</p> <p>Note: 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 <b>AT#DWSEND</b> only if the connection has been opened with <b>AT#DWCONN</b></p>
<b>AT#DWSEND=?</b>	Test command reports the maximum length of <b>&lt;type&gt;</b> parameter.

### 3.8.1.1.5 *Send raw data to M2M Service - #DWSENDR*

#DWSENDR – Send data to M2M Service	
<b>AT#DWSENDR=&lt;dataLen&gt;</b>	<p>Execution command permits to send raw data to the M2M Service. Content must be valid JSON.</p> <p>Parameters:</p> <p><b>&lt;dataLen&gt;</b> - number of bytes to be sent</p> <p>Range: 1 - 1500</p> <p>The module responds to the command with the prompt <b>&lt;greater_than&gt;&lt;space&gt;</b> and waits for the data to send.</p> <p>When <b>&lt;dataLen&gt;</b> 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: the response to the <b>AT#DWSENDR</b> command reports the <b>&lt;msgId&gt;</b> value that identifies the sending.</p> <p>There is also a limit of 20 messages on the receive queue. If the queue is full, the consequent send will still succeed but the response for that particular request will be dropped until an item is removed from this queue (See command <b>AT#DWRCV</b> and <b>AT#DWRCVR</b>).</p> <p>Note: it's possible to use <b>AT#DWSENDR</b> only if the connection has been opened with <b>AT#DWCONN</b></p>
<b>AT#DWSENDR=?</b>	Test command reports the supported range of values for <b>&lt;dataLen&gt;</b> parameter

### 3.8.1.1.6 *Receive data from M2M Service - #DWRCV*

#DWRCV – Receive data from M2M Service	
<b>AT#DWRCV=&lt;msgId&gt;</b>	<p>Execution command permits the user to read formatted data arriving from M2M Service; the module is notified of these data by the URC <b>#DWRING</b>.</p> <p>Parameters:</p> <p><b>&lt;msgId&gt;</b> - index of the data message to receive, as indicated in the URC <b>#DWRING</b></p>



#DWRCV – Receive data from M2M Service	
	<p>Range: &gt;=1</p> <p>If the received data are the consequence of a previous data sending issued by <b>AT#DSEND</b>, then the <b>&lt;msgId&gt;</b> value is the same of the <b>&lt;msgId&gt;</b> value reported in the answer of <b>AT#DSEND</b>.</p> <p>The incoming Server data are notified by the URC <b>#DWRING</b> with the following format:</p> <p><b>#DWRING: &lt;type&gt;,&lt;msgId&gt;,&lt;len&gt;</b></p> <p>where:</p> <p><b>&lt;type&gt;</b> - type of message to receive</p> <p><b>&lt;msgId&gt;</b> - index of the data message to receive</p> <p><b>&lt;len&gt;</b> - length of data message to receive</p> <p>If the incoming data are accepted with <b>AT#DWRCV</b>, then the formatted data are received and showed with the following URC:</p> <p><b>#DWDATA:</b></p> <p><b>&lt;msgId&gt;,&lt;error&gt;,&lt;len&gt;,&lt;param_1&gt;[,&lt;param_2&gt;[,...[,&lt;param_n&gt;]]]</b></p> <p>where:</p> <p><b>&lt;msgId&gt;</b> - defined as above</p> <p><b>&lt;error&gt;</b> - error code of the message to receive, 0 if there is no error.</p> <p><b>&lt;len&gt;</b> - defined as above</p> <p><b>&lt;param_i&gt;</b> - string parameter indicating the i-th parameter associated to the type specified</p> <p>Note: it is possible to use <b>AT#DWRCV</b> only if the connection has been opened with <b>AT#DWCONN</b>, else the ME is raising an error.</p> <p>If the data received are the consequence of a previous data sending issued by <b>AT#DSEND</b>, then they can be read only using <b>AT#DWRCV</b> command and not <b>AT#DWRCVR</b> command (i.e.: <b>AT#DWRCV</b> and <b>AT#DWRCVR</b> are not interchangeable).</p>
<b>AT#DWRCV=?</b>	Test command reports the supported range of values for all parameters.

### 3.8.1.1.7 Receive raw data from M2M Service - #DWRCVR

#DWRCVR – Receive raw data from M2M Service	
<b>AT#DWRCVR=&lt;msgId&gt;</b>	<p>Execution command permits the user to read raw data arriving from M2M Service; the module is notified of these data by the URC <b>#DWRING</b>.</p> <p>Parameters:</p> <p><b>&lt;msgId&gt;</b> - index of the data message to receive, as indicated in the URC</p> <p><b>#DWRING</b></p> <p>Range: &gt;=1</p> <p>If the data received are the consequence of a previous data sending (issued by <b>AT#DSENDNR</b>), then the <b>&lt;msgId&gt;</b> value is the same of the <b>&lt;msgId&gt;</b> value reported in the answer of <b>AT#DSENDNR</b>.</p> <p>The incoming Server data are notified by the URC <b>#DWRING</b> with the following format:</p>



#DWRCVR – Receive raw data from M2M Service	
	<p><b>#DWRING: &lt;type&gt;,&lt;msgId&gt;,&lt;len&gt;</b>            where:            &lt;type&gt; - type of the data message to receive            &lt;msgId&gt; - index of the data message to receive            &lt;len&gt; - length of data message to receive            If the incoming data are accepted with <b>AT#DWRCVR</b>, then the data are received and showed with the following URC:  <b>#DWRDATA: &lt;msgId&gt;,&lt;error&gt;,&lt;len&gt;,&lt;data&gt;</b>            where:            &lt;msgId&gt; - defined as above            &lt;error&gt; - error code of the message to receive, 0 if there is no error.            &lt;len&gt; - defined as above            &lt;data&gt; - M2M Service data            Note: it is possible to use <b>AT#DWRCVR</b> only if the connection has been opened with <b>AT#DWCONN</b>, else the ME is raising an error.            If the data received are the consequence of a previous data sending issued by <b>AT#DWSEND</b>, then they can be read only using <b>AT#DWRCVR</b> command and not <b>AT#DWRCV</b> command (i.e.: <b>AT#DWRCV</b> and <b>AT#DWRCVR</b> are not interchangeable).</p>
<b>AT#DWRCVR=?</b>	Test command reports the supported range of values for all parameters.

#### 3.8.1.1.8 List information on messages pending from M2M Service - #DWLRCV

#DWLRCV – List information on messages pending from M2M Service	
<b>AT#DWLRCV</b>	<p>Execution command permits the user to obtain information regarding the messages pending from M2M Service in the following format:  <b>#DWLRCV:</b>            &lt;msg_number&gt;[,&lt;msgId_1&gt;,&lt;msg_1_len&gt;[,&lt;msgId_2&gt;,&lt;msg_2_len&gt;[,...&lt;msgId_n&gt;,&lt;msg_n_len&gt;]]]            where:            &lt;msg_number&gt; - number of messages pending from M2M Service            Range: &gt;=0            &lt;msgId_i&gt; - index of the i-th data message to receive            &lt;msg_i_len&gt; - length of the i-th data message to receive            Note: it is possible to use <b>AT#DWLRCV</b> only if the connection has been opened with <b>AT#DWCONN</b>, else the ME is raising an error.</p>
<b>AT#DWLRCV=?</b>	Test command reports <b>OK</b> result code

#### 3.8.1.1.9 Enable Agent Features - #DWEN



#DWEN- Enable Agent Features.	
AT#DWEN=<feat>,<en>[,<option1>,<option2>,<option3>,<option4>,<option5>][    ]	<p>Set command permits to enable/disable up to 8 different deviceWISE features.</p> <p>Parameters:</p> <p>&lt;feat&gt; - feature to enable or disable; range (0-7)  0 – remote at commands  1 ... 7 – reserved for future use.</p> <p>&lt;en&gt; - <b>enable or disable the features</b>  0 – disable the feature  1 – enable the feature</p> <p>&lt;optionX&gt; where X=1,...,5 - optional parameters depending on the feature (string)  Note: feature 0 (Remote AT commands) has no option.  Note: the &lt;en&gt; value is considered only at the very first connection to M2M Service (<b>AT#DWCONN=1</b>) after a device power on or reboot</p>
AT#DWEN?	<p>Read command returns the current settings for each feature in the format:</p> <p><b>#DWEN: &lt;feat&gt;,&lt;en&gt;,&lt;option1&gt;,&lt;option2&gt;,&lt;option3&gt;,&lt;option4&gt;,&lt;option5&gt;</b></p>
AT#DWEN=?	<p>Test command reports the supported range of values for parameters &lt;feat&gt; and &lt;en&gt; and the maximum length of &lt;optionX&gt; (where X=1,...,5) parameters</p>

## 3.9 OTA commands

### 3.9.1.1.1 #OTAEN command

#OTAEN – OTA Enable	
AT#OTAEN=[<enable>,<discard>],[<automatic_dm_session>]	<p>Set command enables/disables OTA operations.</p> <p>Parameters:</p> <p>&lt;enable&gt; - numeric parameter which enables/disables the OTA operations  0 – disable  1 – enable (default)</p> <p>&lt;discard&gt; - numeric parameter which enables/disables the OTA SMS erasing. (Not supported by LE920).  0 – disable  1 – enable (default)</p>



#OTAEN – OTA Enable	
	<p><b>&lt;automatic_dm_session&gt;</b> - enables to set the DM session as Automatic/Non-Automatic (i.e. Transparent/Non-Transparent).</p> <p>0 - Non automatic DM session 1 - Automatic DM session (default)</p> <p>Note: the <b>&lt;enable&gt;</b> parameter setting is saved in NVM Note2: "Automatic DM Session" enables the network to contact and establish a secure connection with the modem without direct user interaction.</p>
AT#OTAEN?	Read command reports the current settings of the OTA enable flag:
AT#OTAEN=?	Test command returns values supported as a compound value
Example	<pre>AT#OTAEN=1,0,1 OK AT#OTAEN? #OTAEN: 1,0,1 OK AT#OTAEN=? #OTAEN: (0,1),(0,1),(0,1) OK</pre>

### 3.9.1.1.2 *OTAUIDM Command*



#OTAUIDM – OTA check and start update	
AT#OTAUIDM=[<ID>]	<p>Execution command triggers the selected (per ID) provisioned DM clients for a user initiated session.</p> <p>Parameter &lt;ID&gt;</p> <ul style="list-style-type: none"> <li>0 – VZW DM client</li> <li>1 – (reserved)</li> <li>2 – Telit SWM (FUMO client)</li> <li>3 – (reserved)</li> <li>4 – All provisioned clients</li> </ul> <p>NOTE: Each model is provisioned with different DM clients and hence the command will only work on the devices provisioned DM clients.</p>
AT# OTAUIDM=?	Test command returns OK

### 3.9.1.1.3 #OTASUAN command

#OTASUAN – OTA Set User Answer	
AT#OTASUAN=[<response>][,<mode>][,<bfr>]	<p>Set command:</p> <ul style="list-style-type: none"> <li>a) Enables or disables sending of unsolicited result code #OTAEV that asks the TE to accept or reject the Management Server request to download a firmware</li> <li>b) Allows the TE to accept or reject the request</li> </ul> <p>Parameters:</p> <p>&lt;response&gt; - numeric parameter used to accept or reject the download request</p> <ul style="list-style-type: none"> <li>0 – the request is rejected</li> <li>1 – the request is accepted</li> <li>2 – the request is delayed indefinitely: the URC is prompted indefinitely until the request is accepted or reject. Not supported by LE920.</li> </ul> <p>&lt;mode&gt; - numeric parameter that controls the processing of unsolicited result code #OTAEV</p> <ul style="list-style-type: none"> <li>0 –buffer unsolicited result codes in the MT; if MT result code buffers is full, the oldest ones can be discarded. No codes are forwarded to the TE.</li> <li>1 –discard unsolicited result codes when MT-TE link is reserved (e.g. in on-line data mode); otherwise forward them directly to the TE</li> <li>2 –buffer unsolicited result codes in the MT when MT-TE link is reserved (e.g. in on-line data mode) and flush them to the TE when MT-TE link becomes available; otherwise forward them directly to the TE</li> </ul>



#OTASUAN – OTA Set User Answer	
	<p>&lt;bfr&gt; - numeric parameter that controls the effect on buffered codes when &lt;mode&gt; 1 or 2 is entered</p> <p>0 – MT buffer of unsolicited result codes #OTAEV is cleared when &lt;mode&gt; 1 or 2 is entered</p> <p>1 – MT buffer of unsolicited result codes #OTAEV is flushed to TE when &lt;mode&gt; 1 or 2 is entered</p> <p>Note: the following unsolicited result codes and the corresponding events are defined:</p> <p><b>Example of server initiated FOTA when using Non automatic DM session:</b></p> <p><b>at#otaen?</b> #OTAEN: 1,1,0</p> <p>OK</p> <p><b>Success Case</b></p> <p><b>#OTAEV: #900</b> Do you want to start firmware update download? A management server request to start the firmware delta downloads. The user answer is expected.</p> <p><b>at#otasuan=1</b> OK</p> <p><b>#OTAEV: #907</b> Start Firmware Download.</p> <p><b>#OTAEV: #921</b> &lt;Total firmware size&gt; Firmware size get from the OMA-DM server (byte)</p> <p><b>#OTAEV: #920</b> &lt;Percent Firmware Download&gt; The progress bar of firmware downloads.</p> <p><b>#OTAEV: #919</b> Firmware Download Complete.</p> <p><b>#OTAEV: #DREL</b> Data session release.</p> <p><b>After The Unit Reboot:</b></p> <p><b>#OTAEV: #000</b> Device is ready after power up</p>



#OTASUAN – OTA Set User Answer	
	<p><b>#OTAEV: #906</b> FUMO result report DM session start</p> <p><b>#OTAEV: #924</b> FUMO result report DM session end</p> <p><b>#OTAEV: #DREL</b> Data session release.</p> <p><b>Fail Case</b></p> <p><b>#OTAEV: #900</b> Do you want to start firmware update download? A management server request to start the firmware delta downloads. The user answer is expected.</p> <p><b>at#otasuan=1</b> OK</p> <p><b>#OTAEV: #907</b> Start Firmware Download.</p> <p><b>Errors:</b>  <b>#OTAEV: #911</b> - credential error  <b>#OTAEV: #912</b> - unreachable server  <b>#OTAEV: #913</b> - network error  <b>#OTAEV: #915</b> –update fails with other reasons  <b>#OTAEV: #916</b> –done, No firmware update (Only in CI)  <b>#OTAEV: #DREL</b>  Data session release.</p> <p>Note: The User answer option is allowed only when #OTAEN AT command &lt;enable&gt; parameter is set to enable and &lt;automatic_dm_session&gt; parameter is set to “Non automatic DM session”. In case the &lt;automatic_dm_session&gt; parameter is set to “Automatic DM session” those unsolicited messages are for notification only.</p>
<b>AT# OTASUAN?</b>	Read command reports the current settings in the format:  <b>#OTASUAN: ,&lt;mode&gt;,&lt;bfr&gt;</b>
<b>AT#OTASUAN =?</b>	Test command returns values supported as a compound value
Example	AT#OTASUAN=,2,1 OK AT#OTASUAN? #OTASUAN: ,2,1 OK



#OTASUAN – OTA Set User Answer	
	AT#OTASUAN=? #OTASUAN: (0-2),(0-2),(0,1) OK

#### 3.9.1.1.4 #OTACFG command

#OTACFG - OTA PDP configuration	
<b>AT#OTACFG=&lt;ID&gt;,&lt;cid&gt;</b>	Set command allows changing the PDP context ID for each DM client  <b>Parameters:</b> <b>&lt;ID&gt;</b> - The selected client ID: 0 – VZW DM client 1 – (reserved) 2 – Telit SWM (FUMO client) 3 – (reserved) 4 – All provisioned clients <b>&lt;CID&gt;</b> - The pdp context cid
<b>at#otacfg=&lt;ID&gt;</b>	Read command reports the currently configured pdp_cid for the given client ID. If -1 is returned, the cid for the requested client ID is not defined.
<b>at#otacfg=?</b>	Test command reports the supported range of values of the command parameters.
<b>Example</b>	at#otacfg=2 #OTACFG: 1  OK  at#otacfg=0,2 #OTACFG: 2  OK

#### 3.9.1.1.5 #OTASS- Switches FOTA update server address to test or production

#OTASS – Switches FOTA update server address to test or production	
<b>AT#OTASS=&lt;ID&gt;,&lt;mode&gt;</b>	Guides the FOTA to use test or production server for update for the given client ID.  <b>Parameter:</b>



<b>#OTASS</b>	Switches FOTA update server address to test or production
	<p><b>&lt;ID&gt;</b>  0 – VZW DM client  1 – (reserved)  2 – Telit SWM (FUMO client)  3 – (reserved)  4 – All provisioned clients</p> <p><b>&lt;mode&gt;</b>  0 – Use test server  1 – Use production server</p>
<b>AT#OTASS=?</b>	Test command reports the supported range of values of the command parameters.
<b>At#otass=&lt;ID&gt;</b>	Read command reports the currently configured server type for the given client ID. If -1 is returned, the server type for the requested client ID is not defined.
<b>Example</b>	<pre>at#otass=2,1 OK at#otass=2 #OTASS: 1  OK AT#OTASS=? #OTASS:(0-4),(0-1)  OK</pre>

#### 3.9.1.1.6 *Terminal Notifications*

## Device Configuration

DC Process – Success Case		
Seq	Terminal	Description
1	AT#OTAUIDM=0	AT Command Check And Start Update (Only in CI)
2	#OTAEV: #906	Notification – DC DM Session Started
3	#OTAEV: #918	Notification – DC Done
4	#OTAEV: #924	Notification – <u>Only If</u> No Profile Was Updated in CI mode
5	#OTAEV: #DREL	Notification – Data session release



DC Process – Fail Case		
Seq	Terminal	Description
1	AT#OTAUIDM=0	AT Command Check And Start Update (Only in CI)
2	#OTAEV: #906	Notification – DC DM Session Started
3	#OTAEV: <Error_Noti>	Notification – Error happened One of the following notifications will be displayed: #911 - credential error #912 - unreachable server #913 - network error #915 - update fails with other reasons
4	#OTAEV: #DREL	Notification – Data session release

## FUMO

FUMO Process – Success Case		
Seq	Terminal	Description
1	AT#OTAUIDM=0	AT Command Check And Start Update (Only in CI)
2	#OTAEV: #907	Notification – FUMO DM Session Started
3	#OTAEV: #921 <fw_total_size>	Notification – Firmware size get from the OMA-DM server (byte)
4	#OTAEV: #920 <dl_progress>	Notification – Firmware download progress (downloaded bytes)
5	#OTAEV: #919	Done, Firmware downloaded
6	#OTAEV: #DREL	Notification – Data session release





FUMO Process – Fail Case		
Seq	Terminal	Description
1	AT#OTAUIDM=0	AT Command Check And Start Update (Only in CI)
2	#OTAEV: #907	Notification – FUMO DM Session Started
3	#OTAEV: <Error_Noti>	Notification – Error happened while FUMO. One of the following notifications will Be displayed: #911 - credential error #912 - unreachable server #913 - network error #915 –update fails with other reasons #916 –done, No firmware update (Only in CI)
4	#OTAEV: #DREL	Notification – Data session release

### 3.10 WLAN commands

#### 3.10.1.1.1 *Enable/disable WLAN - #WLANSTART*

#WLANSTART – enable/disable WLAN	
AT#WLANSTART=[<mode>]	<p>Set command enable/disable WLAN</p> <p><b>Parameter:</b></p> <p>&lt;mode&gt; - int type,status mode.</p>



## 80407ST10116A Rev.14.1 - 2017-05-14

<b>#WLANBROADCAST – enable/disable broadcast</b>	
<b>AT#WLANBROADCAST ST=[&lt;mode&gt;]</b>	<p>Set command enable/disable broadcast</p> <p><b>Parameter:</b></p> <p>&lt;mode&gt; - int type,status mode.  0 – enable broadcast  1 – disable broadcast</p>
<b>AT#WLANBROADCAST ?</b>	<p>Read command returns the currently broadcast status in the format:</p> <p>#WLANBROADCAST: &lt;mode&gt;</p> <p><b>Where:</b></p>

	<b>&lt;mode&gt;</b> 0 – enable broadcast 1 – disable broadcast
<b>AT#WLANBROADCAST=?</b>	Test command returns the supported range of values for parameter <b>&lt;mode&gt;</b> .

### 3.10.1.1.3 *Change the SSID name - #WLANSSID*

<b>#WLANSSID – change the SSID name</b>	
<b>AT#WLANSSID=[&lt;ssid&gt;]</b>	Set command change the SSID name  <b>Parameter:</b>  <b>&lt;ssid&gt;</b> - string type,ssid.
<b>AT#WLANSSID?</b>	Read command returns the currently ssid in the format:  #WLANSSID: <ssid>
<b>AT#WLANSSID=?</b>	Test command returns <b>OK</b> result code.

### 3.10.1.1.4 *Change WLAN mode - #WLANMODE*

<b>#WLANMODE – change mode: access point/client</b>	
<b>AT#WLANMODE=[&lt;mode&gt;]</b>	Set command change WLAN mode  <b>Parameter:</b>  <b>&lt;mode&gt;</b> - int type,status mode. 0 – Access point mode 1 – Client mode
<b>AT#WLANMODE?</b>	Read command returns the currently mode status in the format:  #WLANMODE: <mode>  <b>Where:</b> <b>&lt;mode&gt;</b> 0 – Access point mode 1 – Client mode



<b>AT#WLANMODE=?</b>	Test command returns the supported range of values for parameter <b>&lt;mode&gt;</b> .

#### 3.10.1.1.5 *Return assigned IP address - # WLANIP*

<b>#WLANIP</b> – Return assigned ip address	
<b>AT#WLANIP</b>	Execute return the assigned ip address
<b>AT#WLANIP=?</b>	Test command returns OK

#### 3.10.1.1.6 *Return signal strength of the network - # WLANSIGNAL*

<b>#WLANSIGNAL</b> – return the signal strength of the network we connected to	
<b>AT#WLANSIGNAL</b>	Execute return the signal strength of the network we connected to
<b>AT# WLANSIGNAL =?</b>	Test command returns OK

#### 3.10.1.1.7 *Scanning wifi networks - #WLANSKAN*

<b>#WLANSKAN</b> – scan wifi network	
<b>AT#WLANSKAN=[&lt;mode&gt;]</b>	Set command for client mode only for scanning for wifi networks.  <b>Parameter:</b>  <b>&lt;mode&gt;</b> - int type, mode. 0 – normal result 1 – extend result
<b>AT#WLANSKAN=?</b>	Test command returns the supported range of values for parameter <b>&lt;mode&gt;</b> .

#### 3.10.1.1.8 *Connect to SSID - #WLANCONNECT*



#WLANCONNECT – connect to ssid	
AT#WLANCONNECT =[<ssid>],[<security>], [<type>],[<key>]]	Set command for client mode only, to connect to a given SSID  <b>Parameter:</b>  <ssid> - string type, ssid. <security> - int type 0 – wep 1 – wpaX <type> - int type 0 – hexadecimal 1 – ascii <key> - string type, key.
AT#WLANCONNECT ?	Read command returns the currently ssid it connect to in the format:  # WLANCONNECT: <ssid>
AT#WLANCONNECT =?	Test command reports supported values for the parameter < type >. #WLANCONNECT:(0-1)

### 3.10.1.1.9      *Disconnect from the network - #WLANDISCONNECT*

#WLANDISCONNECT – disconnect from ssid	
AT#WLANDISCONNECT	Execution command will disconnect from the network. Relevant for client mode only.
AT#WLANDISCONNECT=?	Test command returns <b>OK</b> result code.

### 3.10.1.1.10      *Use to add or change the hostapd.conf. - #WLANCONFIG*

#WLANCONFIG – use to add hostapd.conf file.	
AT#WLANCONFIG=[ <size>]	Set command allows to add or change the hostapd.conf. Hostapd configuration file controls many options with regards to AP mode only, in which not all are supported by the current WIFI chip.



	<b>Parameter:</b> int type, size. <size> - file size
<b>AT#WLANCONFIG=?</b>	Test command returns <b>OK</b> result code.

### 3.10.1.1.11 *Use to changing wlan security parameters - #WLANSECURITY*

<b>#WLANSECURITY – use to add hostapd.conf file.</b>	
<b>AT#WLANSECURITY=[&lt;wpa&gt;],[&lt;pairwise&gt;,&lt;key&gt;]</b>	Set command allows changing wlan security parameters. Relevant for AP mode only.  <b>Parameter:</b>  <wpa> - security type <b>0 – disable</b> <b>1 – wpa1</b> <b>2 – wpa2</b> <b>3 – wpa1 + wpa2</b> <pairwise> - This controls wpa's data encryption <b>0 – TKIP</b> <b>1 – CCMP</b> <b>2 - TKIP and CCMP</b> <key> - string type, the network's password
<b>AT#WLANSECURITY?</b>	Read command reports the current value of the parameters
<b>AT#WLANSECURITY=?</b>	Test command returns the supported range of values for parameters <wpa>,<key_mgmt>,<key> in the format:  <b>#WLANSECURITY: (0-3),(0-2),""</b>

### 3.10.1.1.12 *Use to change the channel number and the wlan protocol- #WLANPC*



#WLANPC – use to change the channel number and the protocol.	
AT#WLANPC=<mode>,<num>	<p>Set command allow to change the AP channel number. Relevant for AP mode only.</p> <p><b>Parameter:</b>            &lt;mode&gt; - protocol type            0 – 'b'            1 – 'g'            2 – 'n'            3 – 'a'</p> <p>&lt;num&gt; - channel number</p> <p>NOTE: protocols b,g,n support channels under 36.            For channels &gt;= 36, protocol 'a' should be choose,</p>
AT# WLANPC ?	<p>Read command returns the currently channel number and protocol in the format:</p> <p>#WLANPC : &lt;mode&gt; ,&lt;num&gt;</p>
AT#WLANPC=?	Test command returns the supported range of values for parameter <mode>.code.

#### 3.10.1.1.13 *Display last error in detailed form. - #WLANCFGERROR*

#WLANCFGERROR – display hostapd.conf output error	
AT#WLANCFGERR OR	Execution command will display last error in detailed form.
AT#WLANCFGERR OR=?	Test command returns <b>OK</b> result code.

#### 3.10.1.1.14 *Enable/disable MAC address filter- # WLANMACMODE*

#WLANMACMODE – enable/disable MAC address filtering	
AT# WLANMACMODE =<mode>	<p>Set command allow to enable/disable the MAC address filter. Relevant for AP mode only.</p> <p><b>Parameter:</b>            &lt;mode&gt; - int type            1 – disable</p>



	<p>2 = accept unless in deny list  3 = deny unless in accept list  4 = use external RADIUS server (accept/deny lists are searched first)</p>
<b>AT#WLANMACMODE ?</b>	<p>Read command returns the currently mode in the format:</p> <p><b>#WLANMACMODE</b> : &lt;num&gt;</p> <p><b>Example:</b>  at#wlanmacmode?  #WLANMACMODE: 1</p>
<b>AT#WLANMACMODE =?</b>	<p>Test command returns the supported range of values for parameter &lt;mode&gt;.</p>

### 3.10.1.1.15 Use to add/ remove MAC address to/from accept list - #WLANMACACCEPT

<b>#WLANMACACCEPT</b> – use to add/ remove MAC address to/from accept list	
<b>AT#WLANMACACCEPT=&lt;mode&gt;,&lt;mac_address&gt;</b>	<p>Set command allow to add/ remove MAC address to/from accept list. Relevant for AP mode only.</p> <p><b>Parameter:</b></p> <p>&lt;mode&gt; - int type  <b>0 – remove from accept list</b>  <b>1 – add to accept list</b></p> <p>&lt; mac_address &gt; - string type, mac address</p> <p>NOTE: mac address should be write with ':' between each Hexa number.  Example  00:A0:C6:00:00:17</p>
<b>AT#WLANMACACCEPT?</b>	<p>Read command returns the accept list:</p>
<b>AT#WLANMACACCEPT =?</b>	<p>Test command returns the supported range of values for parameters</p>

### 3.10.1.1.16 Use to add/ remove MAC address to/from deny list - #WLANMACDENY

<b>#WLANMACDENY</b> – use to add/ remove MAC address to/from deny list	
<b>AT#WLANMACDENY=&lt;mode&gt;,&lt;mac_address&gt;</b>	<p>Set command allow to add/ remove MAC address to/from deny list. Relevant for AP mode only.</p>



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

	<b>Parameter:</b>  <b>&lt;mode&gt;</b> - int type <b>0</b> – remove from deny list <b>1</b> – add to deny list  <b>&lt; mac_address &gt;</b> - string type, mac address  NOTE: mac address should be write with ':' between each Hexa number. Example 00:A0:C6:00:00:17
<b>AT#WLANMACDENY ?</b>	Read command returns the deny list:
<b>AT#WLANMACDENY =?</b>	Test command returns the supported range of values for parameters

### 3.10.1.1.17 Use to set the regulatory domain - #WLANCOUNTRYCODE

<b>#WLANCOUNTRYCODE</b> – use to set the regulatory domain	
<b>AT#WLANCOUNTRYCODE=&lt;country_code&gt;</b>	Set command allow to change the country code. Relevant for AP mode only.  <b>Parameter:</b>  <b>&lt;country_code&gt;</b> - string type  NOTE: This can limit available channels and transmit power. Default: US
<b>AT#WLANCOUNTRYCODE ?</b>	Read command returns the currently country code in the format:  #WLANCOUNTRYCODE: <string>  <b>Example:</b> at#wlancountrycode? #WLANCOUNTRYCODE: US  OK
<b>AT#WLANCOUNTRYCODE =?</b>	Test command return OK

### 3.10.1.1.18 Use to change the WLAN clock size - #WLANCLOCK



#WLANCLOCK – use to change the WLAN clock size.	
<b>AT#WLANCLOCK=&lt;clock&gt;</b>	<p>Set command allow changing the WLAN clock size.</p> <p><b>Parameter:</b></p> <p>&lt;clock&gt; - clock size 0 – 12.5MB 1 – 25MB 2 – 50MB (factory default)</p> <p>Note: The command can be use only when #wlanstart=0 Need to be save on profiles</p>
<b>AT#WLANCLOCK?</b>	<p>Read command returns the currently clock size in the format:</p> <p>#WLANCLOCK: &lt;clock&gt;</p>
<b>AT#WLANCLOCK=?</b>	Test command returns the supported range of values for parameters

### 3.10.1.1.19     *Enable/disable WLAN unsolicited message - #WLANINDI*

#WLANINDI – enable/disable WLAN unsolicited message	
<b>AT#WLANINDI=[&lt;state&gt;]</b>	<p>Set command enable/disable WLAN unsolicited message</p> <p><b>Parameter:</b></p> <p>&lt;state&gt; - int type,status mode. 0 – disable (factory default) 1 – enable</p> <p>Note: need to be save on profiles</p>
<b>AT#WLANINDI?</b>	<p>Read command returns the currently WLAN status in the format:</p> <p>#WLANINDI: &lt;state&gt;</p> <p><b>Where:</b> &lt;state&gt; 0 – off 1 – on</p>
<b>AT#WLANINDI=?</b>	Test command returns the supported range of values for parameter <state>.



## 3.11 AT parser abort

The following AT Command list can be aborted, while executing the AT Command

**ATD**  
**ATA**  
**+FRS**  
**+FRH**  
**+FRM**  
**+CLCK**  
**+CLCC**  
**+COPN**  
**+CPOL**  
**+CLIP**  
**+CLIR**

**NOTE:** If DTE transmit any character before receiving the response to the issued AT Command. This causes current AT Command to be aborted.



## 4 List of acronyms

<b>ARFCN</b>	Absolute Radio Frequency Channel Number
<b>AT</b>	Attention command
<b>BA</b>	BCCH Allocation
<b>BCCH</b>	Broadcast Control Channel
<b>CA</b>	Cell Allocation
<b>CBM</b>	Cell Broadcast Message
<b>CBS</b>	Cell Broadcast Service
<b>CCM</b>	Current Call Meter
<b>CLIR</b>	Calling Line Identification Restriction
<b>CTS</b>	Clear To Send
<b>CUG</b>	Closed User Group
<b>DCD</b>	Data Carrier Detect
<b>DCE</b>	Data Communication Equipment
<b>DCS</b>	Digital Cellular System
<b>DNS</b>	Domain Name System Server
<b>DSR</b>	Data Set Ready
<b>DTE</b>	Data Terminal Equipment
<b>DTMF</b>	Dual Tone Multi Frequency
<b>DTR</b>	Data Terminal Ready
<b>GPRS</b>	Global Packet Radio Service
<b>IMEI</b>	International Mobile Equipment Identity
<b>IMSI</b>	International Mobile Subscriber Identity
<b>IP</b>	Internet Protocol
<b>IRA</b>	International Reference Alphabet
<b>IWF</b>	Interworking Function
<b>MO</b>	Mobile Originated
<b>MT</b>	Mobile Terminal
<b>NVM</b>	Non Volatile Memory
<b>PCS</b>	Personal Communication Service
<b>PDP</b>	Packet Data Protocol
<b>PDU</b>	Packet Data Unit
<b>PIN</b>	Personal Identification Number
<b>PPP</b>	Point to Point Protocol
<b>PUK</b>	Pin Unblocking Code
<b>RLP</b>	Radio Link Protocol
<b>RMC</b>	Recommended minimum Specific data
<b>RTS</b>	Request To Send
<b>SAP</b>	SIM Access Profile
<b>SCA</b>	Service Center Address
<b>SMS</b>	Short Message Service
<b>SMSC</b>	Short Message Service Center
<b>SMTP</b>	Simple Mail Transport Protocol



## AT Commands Reference Guide

80407ST10116A Rev.14.1 - 2017-05-14

<b>TA</b>	Terminal Adapter
<b>TCP</b>	Transmission Control Protocol
<b>TE</b>	Terminal Equipment
<b>UDP</b>	User Datagram Protocol
<b>USSD</b>	Unstructured Supplementary Service Data
<b>UTC</b>	Coordinated Universal Time
<b>VDOP</b>	Vertical dilution of precision
<b>VTG</b>	Course over ground and ground speed

