



L506 AT Command User Guide

LTE Module Series

Version: V2.1

Date: 2016-12-06



Notice

Some features of the product and its accessories described herein rely on the software installed, capacities and settings of local network, and therefore may not be activated or may be limited by local network operators or network service providers.

Thus, the descriptions herein may not exactly match the product or its accessories which you purchase. Shanghai Mobiletek Communication Ltd reserves the right to change or modify any information or specifications contained in this manual without prior notice and without any liability.

Copyright

This document contains proprietary technical information which is the property of Shanghai Mobiletek Communication Ltd. copying of this document and giving it to others and the using or communication of the contents thereof, are forbidden without express authority. Offenders are liable to the payment of damages. All rights reserved in the event of grant of patent or the registration of a utility model or design. All specification supplied herein are subject to change without notice at any time.

DISCLAIMER

ALL CONTENTS OF THIS MANUAL ARE PROVIDED "AS IS". EXCEPT AS REQUIRED BY APPLICABLE LAWS, NO WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE MADE IN RELATION TO THE ACCURACY, RELIABILITY OR CONTENTS OF THIS MANUAL.

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL SHANGHAI MOBILETEK COMMUNICATION LTD BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, OR LOSS OF PROFITS, BUSINESS, REVENUE, DATA, GOODWILL SAVINGS OR ANTICIPATED SAVINGS REGARDLESS OF WHETHER SUCH LOSSES ARE FORSEEABLE OR NOT.

Version History

| Date | Version | Description of change | Author |
|------------|---------|---|-------------|
| 2016-03-01 | V1.0 | Release | KuangPeng |
| 2016-07-19 | V1.1 | Add extend atcmd about sms,gps,network and general | KuangPeng |
| 2016-07-27 | V1.2 | Add at^sysinfo | KuangPeng |
| 2016-09-09 | V1.3 | Add AT cmd for GPIO | KuangPeng |
| 2016-09-12 | V1.4 | Add AT for lock band,lock cell,get cell information | LiuBin |
| 2016-10-10 | V1.5 | Add AT cmd for LYNQ FTP | KuangPeng |
| 2016-11-01 | V1.6 | Add GPS extenrd cmd | Yangguodong |
| 2016-11-03 | V1.7 | Add IS-707 related CMD | KuangPeng |
| 2016-11-08 | V1.8 | Modify CMD for CDMA | KuangPeng |
| 2016-11-10 | V1.9 | Add AT cmd for LYNQ TCP/IP | Wuyuanwei |
| 2016-11-28 | V2.0 | Add AT cmd for WIFI | LiuBin |
| 2016-12-06 | V2.1 | Correct WIFI AT | Robin |

CONTENT

| | | |
|------------|---|-----------|
| 1 | | 0 |
| | CONTENT | 3 |
| 2 | Introduction | 11 |
| 2.1 | Scope | 11 |
| 2.2 | Audience | 11 |
| 2.3 | Document Organization..... | 11 |
| 2.4 | Related Documents..... | 11 |
| 3 | Overview | 12 |
| 3.1 | About the document..... | 12 |
| 4 | AT COMMANDS | 13 |
| 4.1 | Definitions..... | 13 |
| 4.2 | AT Command Syntax..... | 14 |
| 4.2.1 | String Type Parameters | 14 |
| 4.2.2 | Command Lines | 15 |
| 4.2.3 | Information Responses and Result Codes | 16 |
| 4.2.4 | Command Response Time-Out | 17 |
| 4.2.5 | Command Issue Timing..... | 19 |
| 4.3 | AT Commands Set..... | 20 |
| 4.3.1 | Command Line General Format..... | 20 |
| 4.3.1.1 | Command LinePrefixes | 20 |
| 4.3.1.1.1 | Starting a Command Line – AT..... | 20 |
| 4.3.1.1.2 | Last Command Automatic Repetition – A/ | 20 |
| 4.3.2 | Hayes Compliant AT Commands..... | 21 |
| 4.3.2.1 | Generic Modem Control..... | 21 |
| 4.3.2.1.1 | Set To Factory-Defined Configuration -&F | 21 |
| 4.3.2.1.2 | Soft Reset – Z..... | 21 |
| 4.3.2.1.3 | Select Active Service Class - +FCLASS | 22 |
| 4.3.2.1.4 | Store Current Configuration -&W..... | 22 |
| 4.3.2.1.5 | Manufacturer Identification - +GMI..... | 22 |
| 4.3.2.1.6 | Model Identification - +GMM..... | 22 |
| 4.3.2.1.7 | Revision Identification - +GMR..... | 22 |
| 4.3.2.1.8 | Capabilities List - +GCAP | 23 |
| 4.3.2.1.9 | Serial Number - +GSN..... | 23 |
| 4.3.2.1.10 | Display Current Base Configuration and Profile -&V..... | 23 |
| 4.3.2.1.11 | Single Line Connect Message - \V..... | 23 |
| 4.3.2.1.12 | Speaker Loudness - L..... | 24 |
| 4.3.2.1.13 | Speaker Mode - M | 24 |
| 4.3.2.2 | DTE - Modem Interface Control | 25 |

| | | |
|------------|--|----|
| 4.3.2.2.1 | Command Echo - E..... | 25 |
| 4.3.2.2.2 | Quiet Result Codes - Q..... | 25 |
| 4.3.2.2.3 | Response Format - V..... | 26 |
| 4.3.2.2.4 | Extended Result Codes - X..... | 27 |
| 4.3.2.2.5 | Identification Information - I..... | 27 |
| 4.3.2.2.6 | Data Carrier Detect (DCD) Control - &C..... | 28 |
| 4.3.2.2.7 | Data Terminal Ready (DTR) Control - &D..... | 28 |
| 4.3.2.2.8 | Standard Flow Control - \Q..... | 29 |
| 4.3.2.2.9 | Data Set Ready (DSR) Control - &S..... | 29 |
| 4.3.2.2.10 | Fixed DTE Interface Rate - +IPR..... | 30 |
| 4.3.2.2.11 | DTE-Modem Local Flow Control - +IFC..... | 31 |
| 4.3.2.2.12 | DTE-Modem Character Framing - +ICF..... | 31 |
| 4.3.2.3 | Call Control..... | 32 |
| 4.3.2.3.1 | Dial - D..... | 32 |
| 4.3.2.3.2 | Tone Dial - T..... | 36 |
| 4.3.2.3.3 | Pulse Dial - P..... | 36 |
| 4.3.2.3.4 | Answer - A..... | 36 |
| 4.3.2.3.5 | Disconnect - H..... | 36 |
| 4.3.2.3.6 | Return To On Line Mode - O..... | 37 |
| 4.3.2.4 | Compression Control..... | 38 |
| 4.3.2.4.1 | Data Compression - +DS..... | 38 |
| 4.3.2.4.2 | Data Compression Reporting - +DR..... | 38 |
| 4.3.2.5 | S Parameters..... | 39 |
| 4.3.2.5.1 | Number of Rings to Auto Answer - S0..... | 39 |
| 4.3.2.5.2 | Escape Character - S2..... | 40 |
| 4.3.2.5.3 | Command Line Termination Character - S3..... | 40 |
| 4.3.2.5.4 | Response Formatting Character - S4..... | 41 |
| 4.3.2.5.5 | Command Line Editing Character - S5..... | 41 |
| 4.3.2.5.6 | Connection Completion Time-Out - S7..... | 42 |
| 4.3.2.5.7 | Carrier Off With Firm Time - S10..... | 42 |
| 4.3.2.5.8 | Disconnect Inactivity Timer - S30..... | 42 |
| 4.3.3 | 3GPP TS 27.007 AT Commands..... | 43 |
| 4.3.3.1 | General..... | 43 |
| 4.3.3.1.1 | Request Manufacturer Identification - +CGMI..... | 43 |
| 4.3.3.1.2 | Request Model Identification - +CGMM..... | 43 |
| 4.3.3.1.3 | Request Revision Identification - +CGMR..... | 43 |
| 4.3.3.1.4 | Request Product Serial Number Identification - +CGSN..... | 43 |
| 4.3.3.1.5 | Select TE Character Set - +CSCS..... | 44 |
| 4.3.3.1.6 | Request International Mobile Subscriber Identity (IMSI) - +CIMI..... | 44 |
| 4.3.3.1.7 | PCCA STD-101 Select Wireless Network - +WS46..... | 45 |
| 4.3.3.2 | Call Control..... | 46 |
| 4.3.3.2.1 | Call mode - +CMOD..... | 46 |
| 4.3.3.2.2 | Hang Up Call - +CHUP..... | 46 |
| 4.3.3.2.3 | Select type of address - +CSTA..... | 47 |
| 4.3.3.2.4 | Select Bearer Service Type - +CBST..... | 47 |
| 4.3.3.2.5 | Radio Link Protocol - +CRLP..... | 49 |
| 4.3.3.2.6 | Service Reporting Control - +CR..... | 50 |
| 4.3.3.2.7 | Extended Error Report - +CEER..... | 50 |
| 4.3.3.2.8 | Cellular Result Codes - +CRC..... | 51 |
| 4.3.3.2.9 | HSCSD non-transparent call configuration +CHSN..... | 52 |
| 4.3.3.2.10 | Voice Hang Up Control - +CVHU..... | 53 |
| 4.3.3.2.11 | Setting Time Format - +CSTF..... | 53 |
| 4.3.3.2.12 | Setting Date Format - +CSDF..... | 54 |
| 4.3.3.3 | Network Service Handling..... | 55 |
| 4.3.3.3.1 | Subscriber Number - +CNUM..... | 55 |

| | | |
|------------|--|-----|
| 4.3.3.3.2 | Read Operator Names - +COPN..... | 55 |
| 4.3.3.3.3 | Network Registration Report - +CREG..... | 56 |
| 4.3.3.3.4 | Operator Selection - +COPS..... | 58 |
| 4.3.3.3.5 | Facility Lock/Unlock - +CLCK..... | 60 |
| 4.3.3.3.6 | Change Facility Password - +CPWD..... | 62 |
| 4.3.3.3.7 | Calling Line Identification Presentation - +CLIP..... | 62 |
| 4.3.3.3.8 | Calling Line Identification Restriction - +CLIR..... | 64 |
| 4.3.3.3.9 | Connected line identification presentation - COLP..... | 65 |
| 4.3.3.3.10 | Called line identification presentation - +CDIP..... | 65 |
| 4.3.3.3.11 | Call Forwarding Number and Conditions - +CCFC..... | 67 |
| 4.3.3.3.12 | Call Waiting - +CCWA..... | 68 |
| 4.3.3.3.13 | Call Holding Services - +CHLD..... | 70 |
| 4.3.3.3.14 | Call deflection - +CTFR..... | 71 |
| 4.3.3.3.15 | Unstructured Supplementary Service Data - +CUSD..... | 71 |
| 4.3.3.3.16 | Advice of Charge - +CAOC..... | 72 |
| 4.3.3.3.17 | List Current Calls - +CLCC..... | 73 |
| 4.3.3.3.18 | SS Notification - +CSSN..... | 74 |
| 4.3.3.3.19 | Closed User Group Supplementary Service Control - +CCUG..... | 76 |
| 4.3.3.3.20 | Preferred Operator List - +CPOL..... | 77 |
| 4.3.3.3.21 | Selection of preferred PLMN list - +CPLS..... | 78 |
| 4.3.3.4 | Mobile Equipment Control..... | 79 |
| 4.3.3.4.1 | Phone Activity Status - +CPAS..... | 79 |
| 4.3.3.4.2 | Set Phone Functionality - +CFUN..... | 80 |
| 4.3.3.4.3 | Enter PIN - +CPIN..... | 81 |
| 4.3.3.4.4 | Signal Quality - +CSQ..... | 83 |
| 4.3.3.4.5 | Indicator Control - +CIND..... | 84 |
| 4.3.3.4.6 | Mobile Equipment Event Reporting - +CMER..... | 87 |
| 4.3.3.4.7 | Select Phonebook Memory Storage - +CPBS..... | 88 |
| 4.3.3.4.8 | Read Phonebook Entries - +CPBR..... | 89 |
| 4.3.3.4.9 | Find Phonebook Entries - +CPBF..... | 91 |
| 4.3.3.4.10 | Write Phonebook Entry - +CPBW..... | 93 |
| 4.3.3.4.11 | Clock Management - +CCLK..... | 94 |
| 4.3.3.4.12 | Restricted SIM Access - +CRSM..... | 95 |
| 4.3.3.4.13 | Accumulated Call Meter - +CACM..... | 96 |
| 4.3.3.4.14 | Accumulated Call Meter Maximum - +CAMM..... | 96 |
| 4.3.3.4.15 | Available AT Commands - +CLAC..... | 97 |
| 4.3.3.4.16 | Automatic Time Zone update - +CTZU..... | 97 |
| 4.3.3.5 | Mobile Equipment Errors..... | 98 |
| 4.3.3.5.1 | Report Mobile Equipment Error - +CMEE..... | 98 |
| 4.3.3.6 | Voice Control..... | 98 |
| 4.3.3.6.1 | DTMF Tones Transmission - +VTS..... | 98 |
| 4.3.3.7 | Commands for Package Domain..... | 99 |
| 4.3.3.7.1 | GPRS Mobile Station Class - +CGCLASS..... | 99 |
| 4.3.3.7.2 | GPRS Attach or Detach - +CGATT..... | 100 |
| 4.3.3.7.3 | GPRS Event Reporting - +CGEREP..... | 100 |
| 4.3.3.7.4 | EPS Network Registration Status - +CEREG..... | 102 |
| 4.3.3.7.5 | GPRS Network Registration Status - +CGREG..... | 105 |
| 4.3.3.7.6 | Printing IP Address Format - +CGPIAF..... | 106 |
| 4.3.3.7.7 | Define PDP Context - +CGDCONT..... | 107 |
| 4.3.3.7.8 | Define Secondary PDP Context - +CGDSCONT..... | 109 |
| 4.3.3.7.9 | Traffic Flow Template +CGTFT..... | 110 |
| 4.3.3.7.10 | Quality of Service Profile (Minimum Acceptable) - +CGQMIN..... | 113 |
| 4.3.3.7.11 | 3G Quality of Service Profile (Minimum Acceptable) - +CGEQMIN..... | 114 |
| 4.3.3.7.12 | Quality of Service Profile (Requested) - +CGQREQ..... | 117 |
| 4.3.3.7.13 | 3G Quality of Service Profile (Requested) - +CGEQREQ..... | 118 |

| | |
|--|-----|
| 4.3.3.7.14 PDP Context Activate or Deactivate - +CGACT | 121 |
| 4.3.3.7.15 PDP Context Modify - +CGCMOD | 122 |
| 4.3.3.7.16 Show PDP Address - +CGPADDR | 122 |
| 4.3.3.7.17 Set Mode of Operator for EPS - +CEMODE | 123 |
| 4.3.3.7.18 Enter Data State - +CGDATA | 124 |
| 4.3.3.7.19 PDP Context Read Dynamic Parameters - +CGCONTRDP | 124 |
| 4.3.3.7.20 Secondary PDP Context Read Dynamic Parameters - +CGSCONTRDP | 126 |
| 4.3.3.7.21 Traffic Flow Template Read Dynamic Parameters - +CGTFTRDP | 127 |
| 4.3.3.7.22 Define EPS Quality of Service +CGEQOS | 129 |
| 4.3.3.7.23 EPS Quality of Service Read Dynamic Parameters - +CGEQOSRDP | 130 |
| 4.3.3.8 Commands for Battery Charger | 131 |
| 4.3.3.8.1 Battery Charge - +CBC | 131 |
| 4.3.4 3GPP TS 27.005 AT Commands for SMS and CBS | 132 |
| 4.3.4.1 General Configuration | 132 |
| 4.3.4.1.1 Select Message Service - +CSMS | 132 |
| 4.3.4.1.2 Preferred Message Storage - +CPMS | 133 |
| 4.3.4.1.3 Message Format - +CMGF | 134 |
| 4.3.4.2 Message Configuration | 135 |
| 4.3.4.2.1 Service Center Address - +CSCA | 135 |
| 4.3.4.2.2 Select service for MO SMS services - +CGSMS | 136 |
| 4.3.4.2.3 Set Text Mode Parameters - +CSMP | 136 |
| 4.3.4.2.4 Show Text Mode Parameters - +CSDH | 137 |
| 4.3.4.2.5 Select Cell Broadcast Message Types - +CSCB | 138 |
| 4.3.4.2.6 Save Settings - +CSAS | 138 |
| 4.3.4.2.7 Restore Settings - +CRES | 139 |
| 4.3.4.3 Message Receiving and Reading | 140 |
| 4.3.4.3.1 New Message Indications to Terminal Equipment - +CNMI | 140 |
| 4.3.4.3.2 List Messages - +CMGL | 144 |
| 4.3.4.3.3 Read Message - +CMGR | 147 |
| 4.3.4.3.4 New Message Acknowledgement to ME/TA - +CNMA | 149 |
| 4.3.4.4 Message Sending and Writing | 150 |
| 4.3.4.4.1 Send Message - +CMGS | 150 |
| 4.3.4.4.2 Send Message from Storage - +CMSS | 153 |
| 4.3.4.4.3 Write Message to Memory - +CMGW | 154 |
| 4.3.4.4.4 Delete Message - +CMGD | 157 |
| 4.3.4.4.5 More Message to Send - +CMMS | 157 |
| 4.3.4.4.6 More Message to Send - +CMGC | 158 |
| 4.3.5 Mobiletek extended AT Commands | 162 |
| 4.3.5.1 General | 162 |
| 4.3.5.1.1 System config - ^SYSCONFIG | 162 |
| 4.3.5.1.2 Setup RmNet call - \$QCRMCALL | 163 |
| 4.3.5.1.3 Inquires the current system message - ^SYSINFO | 164 |
| 4.3.5.1.4 SIM Card HotSwap Control - +ESIMS | 165 |
| 4.3.5.2 AT Commands for FTP | 166 |
| 4.3.5.2.1 Set FTP parameters - +FTPSRV | 166 |
| 4.3.5.2.2 Set FTP mode - +FTPMODE | 166 |
| 4.3.5.2.3 Set FTP upload file name - +FTPPUTNAME | 167 |
| 4.3.5.2.4 Set FTP upload file path - +FTPPUTPATH | 167 |
| 4.3.5.2.5 Set FTP load file name - +FTPGETNAME | 168 |
| 4.3.5.2.6 Set FTP load file path - +FTPGETPATH | 168 |
| 4.3.5.2.7 Active PDP setup load link - +FTPGET | 169 |
| 4.3.5.2.8 Active PDP setup upload link - +FTPPUT | 170 |
| 4.3.5.2.9 Close FTP connection - +FTPQUIT | 171 |
| 4.3.5.2.10 Manage FTP file - +FTPLOCAL | 171 |
| 4.3.5.3 TCP/IP TOOLKIT | 172 |

| | | |
|------------|---|-----|
| 4.3.5.3.1 | Crear network connect - \$ZIPCALL..... | 172 |
| 4.3.5.3.2 | Crear socket and connect to sever - \$ZIPOPEN | 172 |
| 4.3.5.3.3 | Send data to sever - \$ZIPSSEND | 173 |
| 4.3.5.3.4 | Auto receive, this not a command - \$ZIPRECV | 173 |
| 4.3.5.3.5 | Query the socket stat - \$ZIPSTAT | 173 |
| 4.3.5.3.6 | Close connect and release resource - \$ZIPCLOSE..... | 174 |
| 4.3.5.4 | HTTP AT Commands..... | 175 |
| 4.3.5.4.1 | Open HTTP Service - \$HTTPOPEN | 175 |
| 4.3.5.4.2 | Close HTTP Service - \$HTTPCLOSE | 176 |
| 4.3.5.4.3 | Set HTTP Header Fields - \$HTTPRQH | 177 |
| 4.3.5.4.4 | Set HTTP Request URL And Port- \$HTTTPARA | 178 |
| 4.3.5.4.5 | Clear HTTP Related Parameters - \$HTTTPCLEAR..... | 179 |
| 4.3.5.4.6 | Send HTTP Request - \$HTTTPACTION..... | 180 |
| 4.3.5.4.7 | Set HTTP Post Request's Data - \$HTTTPDATA | 183 |
| 4.3.5.4.8 | Send HTTP Post Content Data - \$HTTTPSEND..... | 184 |
| 4.3.5.4.9 | HTTP Error Code..... | 185 |
| 4.3.5.5 | HTTPS AT Commands | 186 |
| 4.3.5.5.1 | Acquire HTTPS protocol stack - +CHTTPSSTART | 186 |
| 4.3.5.5.2 | Stop HTTPS protocol stack - +CHTTPSSTOP..... | 186 |
| 4.3.5.5.3 | Open HTTPS session - +CHTTPSOPSE..... | 187 |
| 4.3.5.5.4 | Close HTTPS session - +CHTTPSCLSE..... | 188 |
| 4.3.5.5.5 | Send HTTPS request - +CHTTPSEND | 189 |
| 4.3.5.5.6 | Receive HTTPS response - +CHTTPSRECV | 191 |
| 4.3.5.5.7 | Get the state of HTTPS request - +CHTTPSSTATE..... | 193 |
| 4.3.5.6 | EMAIL AT Command | 194 |
| 4.3.5.6.1 | Set SMTP server address and port number - +SMTPSRV..... | 194 |
| 4.3.5.6.2 | SMTP server authentication - +SMTPAUTH..... | 195 |
| 4.3.5.6.3 | Set sender address and name - +SMTPFROM | 196 |
| 4.3.5.6.4 | Set recipient type(TO/CC/BCC), address and name - +SMTPRCPT..... | 197 |
| 4.3.5.6.5 | Set Email subject -+SMTPSUB | 198 |
| 4.3.5.6.6 | Set Email body - +SMTPBODY..... | 199 |
| 4.3.5.6.7 | Set Email body character set - +SMTPBCH..... | 199 |
| 4.3.5.6.8 | Add Email attachment file - +SMTPFILE..... | 200 |
| 4.3.5.6.9 | Send an Email - +SMTPSEND..... | 201 |
| 4.3.5.6.10 | Close SMTP connection - SMTPSTOP..... | 201 |
| 4.3.5.6.11 | Set POP3 server address, username, password, port - +POP3SRV..... | 202 |
| 4.3.5.6.12 | Login POP3 server - +POP3IN | 203 |
| 4.3.5.6.13 | Get Email number and total size - +POP3NUM..... | 203 |
| 4.3.5.6.14 | List Email ID and size - +POP3LIST..... | 204 |
| 4.3.5.6.15 | Get an Email header - +POP3HDR..... | 205 |
| 4.3.5.6.16 | Get an Email - +POP3GET | 206 |
| 4.3.5.6.17 | Mark an e-mail to delete from POP3 server - +POP3DEL..... | 206 |
| 4.3.5.6.18 | Logout POP3 server - +POP3OUT..... | 207 |
| 4.3.5.6.19 | Force to stop POP3 session - +POP3STOP | 207 |
| 4.3.5.6.20 | Read an e-mail from file system - +POP3READ..... | 208 |
| 4.3.5.6.21 | Translate input string to base64 character - +EMAILENC..... | 209 |
| 4.3.5.6.22 | EMAIL AT Command Response Code Definition..... | 209 |
| 4.3.5.7 | Network AT Command | 210 |
| 4.3.5.7.1 | Preferred mode selection - +CNMP..... | 210 |
| 4.3.5.7.2 | Preferred band selection - +CNBP | 213 |
| 4.3.5.7.3 | Acquisition order preference - +CNAOP..... | 216 |
| 4.3.5.7.4 | Preferred service domain selection - +CNSDP | 217 |
| 4.3.5.7.5 | Inquiring UE system information - +CPSI..... | 218 |
| 4.3.5.7.6 | Show network system mode - +CNSMOD..... | 222 |
| 4.3.5.7.7 | Show cell system information - +CCINFO..... | 224 |

| | |
|--|-----|
| 4.3.5.7.8 Inquiring mobile phone system information - +CMGSI..... | 227 |
| 4.3.5.7.9 Gets the neighbor measurement information - +CMGRMI | 231 |
| 4.3.5.7.10 Show cell system information - +MONI..... | 242 |
| 4.3.5.8 GPS AT command..... | 247 |
| 4.3.5.8.1 Start/Stop GPS position session - +CGPS | 247 |
| 4.3.5.8.2 Get current GPS position information - +CGPSINFO | 248 |
| 4.3.5.8.3 Cold Start GPS - + CGPSCOLD..... | 249 |
| 4.3.5.8.4 Hot Start GPS - + CGPSHOT..... | 250 |
| 4.3.5.8.5 Set AGPS default server URL - +CGPSURL | 251 |
| 4.3.5.8.6 Select Transport Security - + CGPSSSL | 252 |
| 4.3.5.8.7 Auto Start GPS When Module Powers On - +CGPSATUO..... | 253 |
| 4.3.5.8.8 Used to Configure NMEA Output Sentences - +CGPSNMEA | 254 |
| 4.3.5.8.9 Specifies GPS Session - + CGPSMD | 256 |
| 4.3.5.8.10 Delete the GPS Information - +CGPSDEL..... | 257 |
| 4.3.5.8.11 Enable/Disable GPS XTRA Function - +CGPSXE | 257 |
| 4.3.5.8.12 Download XTRA Assistant file - +CGPSXD | 258 |
| 4.3.5.8.13 Download XTRA Assistant File Auto - +CGPSXDAUTO..... | 259 |
| 4.3.5.8.14 Report NMEA-0183 Sentence - +CGPSINFOCFG..... | 260 |
| 4.3.5.8.15 Configure Positioning Mode - +CGPSPMD..... | 261 |
| 4.3.5.8.16 Based Mode Switch to Standalone - +CGPSMSB..... | 263 |
| 4.3.5.8.17 Configure Positioning Desired Accuracy - +CGPSHOR..... | 264 |
| 4.3.5.8.18 LCS Respond Positioning Request - +CGPSNOTIFY..... | 264 |
| 4.3.5.8.19 Get Station Positioning - +GTPOS..... | 265 |
| 4.3.5.8.20 Set gps output port and position system- +cgpsnmeatype..... | 266 |
| 4.3.5.8.21 Xtra File Download Error Code | 267 |
| 4.3.5.9 SMS extended AT commands | 268 |
| 4.3.5.9.1 Read Message Only - +CMGRO..... | 268 |
| 4.3.5.9.2 Change Message Status - +CMGMT..... | 268 |
| 4.3.5.9.3 Set Message Valid Period - +CMVP..... | 269 |
| 4.3.5.9.4 Read and Delete Message - +CMGRD | 270 |
| 4.3.5.9.5 Send Message Quickly - +CMGSO..... | 271 |
| 4.3.5.9.6 Write Message to Memory Quickly - +CMGWO | 272 |
| 4.3.5.9.7 Send message - +CMGSEX..... | 273 |
| 4.3.5.9.8 Generate a New Message Reference - +CMGENREF..... | 274 |
| 4.3.5.9.9 Send Multi Messages from Storage - +CMSSEX | 274 |
| 4.3.5.9.10 Send Message from Storage to Multi DA - +CMSSEXM | 275 |
| 4.3.5.9.11 SMS CMS error code enum:..... | 276 |
| 4.3.5.10 AT Commands for Status Control | 277 |
| 4.3.5.10.1 Read ICCID from SIM card - +CICCID..... | 277 |
| 4.3.5.10.2 Times remain to input SIM PIN/PUK - +SPIC | 278 |
| 4.3.5.10.3 Get service provider name from SIM - +CSPN..... | 279 |
| 4.3.5.10.4 Set CSQ report - +AUTOCSQ..... | 280 |
| 4.3.5.10.5 Power down the module- +CPOF..... | 281 |
| 4.3.5.10.6 Reset the module - +CRESET..... | 281 |
| 4.3.5.10.7 Set IMEI for the module - +SIMEI..... | 282 |
| 4.3.5.10.8 Set RSSI delta change threshold - +CSQDELTA | 283 |
| 4.3.5.11 AT Commands for Heartbeat | 284 |
| 4.3.5.11.1 Set server net config - \$HTARG | 284 |
| 4.3.5.11.2 Set timer and connect server - \$HEART..... | 285 |
| 4.3.5.12 GPIO Control..... | 286 |
| 4.3.5.12.1 Set the direction of specified GPIO - +CGDRT | 286 |
| 4.3.5.12.2 Set the value of specified GPIO - +CGSETV..... | 287 |
| 4.3.5.12.3 Get the value of specified GPIO - +CGGETV..... | 288 |
| 4.3.5.12.4 Flight mode control - +CGFLY..... | 289 |
| 4.3.5.12.5 Network LED control - +CGNETLED | 290 |

| | | |
|-------------|--|-----|
| 4.3.5.13 | Lock band and cell..... | 291 |
| 4.3.5.13.1 | Lock to specified band - +CBAND..... | 291 |
| 4.3.5.13.2 | Lock to specified cell - +CBCCH..... | 292 |
| 4.3.5.13.3 | Get nearby cell information - +CELLINFO..... | 297 |
| 4.3.5.14 | AT Commands for LYNQ FTP..... | 298 |
| 4.3.5.14.1 | Set FTP server port - +CFTPPORT..... | 298 |
| 4.3.5.14.2 | Set FTP mode - +CFTPMODE..... | 298 |
| 4.3.5.14.3 | Set FTP type - +CFTPTYPE..... | 299 |
| 4.3.5.14.4 | Set FTP server domain name or IP address - +CFTPSERV..... | 300 |
| 4.3.5.14.5 | Set user name for FTP access - +CFTPUN..... | 301 |
| 4.3.5.14.6 | Set user password for FTP access - +CFTPPW..... | 302 |
| 4.3.5.14.7 | Get a file from FTP server to EFS - +CFTPGETFILE..... | 303 |
| 4.3.5.14.8 | Upload a file from module EFS to FTP server - +CFTPPUTFILE..... | 304 |
| 4.3.5.14.9 | Get a file from FTP server and output it to SIO - +CFTPGET..... | 305 |
| 4.3.5.14.10 | Upload the DATA from SIO to FTP server - +CFTPPUT..... | 306 |
| 4.3.5.14.11 | List the items in the directory on FTP server - +CFTPLIST..... | 307 |
| 4.3.5.14.12 | Create a new directory on FTP server - +CFTPMKD..... | 308 |
| 4.3.5.14.13 | Delete a directory on FTP server - +CFTPRMD..... | 308 |
| 4.3.5.14.14 | Delete a file on FTP server - +CFTPDELE..... | 309 |
| 4.3.5.14.15 | Read file from local file to SIO - + CFTPRLF..... | 310 |
| 4.3.5.14.16 | Unsolicited FTP Codes (Summary of CME ERROR codes)..... | 311 |
| 4.3.5.15 | AT Commands for LYNQ TCP/IP..... | 312 |
| 4.3.5.15.1 | Select TCP/IP timeout value - + CIPTIMEOUT..... | 312 |
| 4.3.5.15.2 | Select TCP/IP application mode - + CIPMODE..... | 313 |
| 4.3.5.15.3 | Open network - + NETOPEN..... | 314 |
| 4.3.5.15.4 | Close Network - + NETCLOSE..... | 315 |
| 4.3.5.15.5 | Inquire socket PDP address - + IPADDR..... | 315 |
| 4.3.5.15.6 | Startup TCP server - + SERVERSTART..... | 316 |
| 4.3.5.15.7 | Stop TCP server - + SERVERSTOP..... | 317 |
| 4.3.5.15.8 | Establish connection in multi-socket mode - + CIPOPEN..... | 318 |
| 4.3.5.15.9 | Send data through TCP or UDP connection- + CIPSEND..... | 319 |
| 4.3.5.15.10 | Get the network data manually- + CIPRXGET..... | 320 |
| 4.3.5.15.11 | Close TCP or UDP socket - + CIPCLOSE..... | 322 |
| 4.3.5.15.12 | Inquire the total size of data sent or received recently- + CIPSTAT..... | 323 |
| 4.3.5.16 | AT Commands for WIFI..... | 324 |
| 4.3.5.16.1 | Open/Close WIFI - \$MWIFI..... | 324 |
| 4.3.5.16.2 | Set/Get AP's SSID - \$MWIFISSID..... | 325 |
| 4.3.5.16.3 | Set/Get AP's Password - \$MWIFIPASS..... | 326 |
| 4.3.5.16.4 | Open or Close AP's broadcast - \$MWIFIBCAST..... | 327 |
| 4.3.5.16.5 | Set AP's NAT type - \$MWIFINAT..... | 328 |
| 4.3.5.16.6 | Set WIFI Mode - \$MWIFIMODE..... | 329 |
| 4.3.5.16.7 | Get WIFI client number - \$MWIFICLICNT..... | 330 |
| 4.3.5.16.8 | Reset WIFI setting - \$MWIFIRSTD..... | 330 |
| 4.3.5.16.9 | Enable Or Unable Network For WIFI - \$MNETSWITCH..... | 331 |
| 4.3.6 | AT Commands for IS-707..... | 332 |
| 4.3.6.1 | IS-707 vendor Specific AT command table..... | 332 |
| 4.3.6.1.1 | Answer incoming voice call - \$QCCAV..... | 332 |
| 4.3.6.1.2 | Hangs up incoming voice call - \$QCCHV..... | 332 |
| 4.3.6.1.3 | sends to the ME a password - ^CPIN..... | 332 |
| 4.3.6.1.4 | Sends to the ME a password - +QCPIN..... | 333 |
| 4.3.6.1.5 | Query received signal quality - AT+CCSQ..... | 333 |
| 4.3.6.1.6 | Originated voice call - AT+CDV..... | 333 |
| 4.3.6.1.7 | Compiles the IMSI number - +QCIMI..... | 334 |
| 4.3.6.2 | IS-707 Sms related AT command table..... | 335 |
| 4.3.6.2.1 | Set how receiving new message - \$QCNMI..... | 335 |

| | | |
|------------|--|------------|
| 4.3.6.2.2 | Set parameters for sending messages - \$QCSMP | 335 |
| 4.3.6.2.3 | Select preferred memory storage - \$QCPMS..... | 336 |
| 4.3.6.2.4 | Read a sms message - \$QCMGR..... | 336 |
| 4.3.6.2.5 | Send a message from TE to the network - \$QCMGS..... | 336 |
| 4.3.6.2.6 | Send a message already stored from Memory - \$QCMSS..... | 336 |
| 4.3.6.2.7 | Delete sms messages - \$QCMGD..... | 337 |
| 4.3.6.2.8 | Lists all the SMS saved in the loaction - \$QCMGL..... | 337 |
| 4.3.6.2.9 | Message Format - \$QCMGF..... | 338 |
| 4.3.6.2.10 | Store message to memory - \$QCMGW..... | 338 |
| 5 | List of acronyms | 339 |
| 6 | Error Code | 341 |
| 6.1 | ME Error Result Code - +CME ERROR: <err>..... | 341 |
| 6.2 | Message Service Failure Result Code - +CMS ERROR: <err>..... | 344 |

2 INTRODUCTION

2.1 Scope

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

2.2 Audience

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

2.3 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.

2.4 Related Documents

ETSI GSM 07.07 specification and rules

http://www.3gpp.org/ftp/Specs/archive/07_series/07.07/

ETSI GSM 07.05 specification and rules

http://www.3gpp.org/ftp/Specs/archive/07_series/07.05/

Hayes standard AT command set

3 OVERVIEW

3.1 About the document

This document describes all AT commands implemented in the Mobiletek wireless module L506

Note: In this document, the '*' character before parameter mean this parameter support in special version.

LYNQ
CONFIDENTIAL

4 AT COMMANDS

The Mobiletek wireless module family can be controlled via the serial interface using the standard AT commands^[1]. The Mobiletek wireless module family is compliant with: Hayes standard AT command set, in order to maintain the compatibility with existing SW programs.

ETSI GSM 07.07 specific AT command and GPRS specific commands.

ETSI GSM 07.05 specific AT commands for SMS (Short Message Service) and CBS (Cell Broadcast Service)

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

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

4.1 Definitions

The following syntactical definitions apply:

- <CR> Carriage return character, is the command line and result code terminator character, which value, in decimal ASCII between 0 and 255, is specified within parameter S3. The default value is 13.
- <LF> Linefeed character, is the character recognised as line feed character. Its value, in decimal ASCII between 0 and 255, is specified within parameter S4. The default value is 10. The line feed character is output after carriage return character if verbose result codes are used (V1 option used) otherwise, if numeric format result codes are used (V0 option used) it will not appear in the result codes.
- <...> Name enclosed in angle brackets is a syntactical element. They do not appear in the command line.

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

[...] Optional subparameter of a command or an optional part of TA information response is enclosed in square brackets. Brackets themselves do not appear in the command line. When subparameter is not given in AT commands which have a Read command, new value equals to its previous value. In AT commands which do not store the values of any of their subparameters, and so have not a Read command, which are called action type commands, action should be done on the basis of the recommended default setting of the subparameter.

4.2 AT Command Syntax

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

Parameter type commands. This type of commands may be "set" (to store a value or values for later use), "read" (to determine the current value or values stored), or "tested" (to determine ranges of values supported). Each of them has a test command (trailing =?) to give information about the type of its subparameters; they also have a Read command (trailing?) to check the current values of subparameters.

Action type commands. This type of command may be "executed" or "tested".

"executed" to invoke a particular function of the equipment, which generally involves more than the simple storage of a value for later use

"tested" to determine:

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 Mobiletek to allow the description of new values/functionalities.

If all the subparameters of a parameter type command +CMD are optional, issuing AT+CMD=<CR> causes the OK result code to be returned and the previous values of the omitted subparameters to be retained.

4.2.1 String Type Parameters

A string is either enclosed between quotes or not considered a valid string type parameter input. According to V25.ter space characters are ignored on the command line and may be used freely for formatting purposes, unless they are embedded in numeric or quoted string constants.

Therefore a string containing a space character has to be enclosed between quotes to be considered a valid string type parameter (e.g. typing AT+COPS=1,0,"A1" is the same as typing AT+COPS=1,0,A1; typing AT+COPS=1,0,"A BB" is different from typing AT+COPS=1,0,A BB).

A small set of commands requires always writing the input string parameters within quotes. This is explicitly reported in the specific descriptions.

4.2.2 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 "+"^[2]).

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>.

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

4.2.3 Information Responses and Result Codes

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

Information response to +CMD1?:

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

Information response to +CMD1=?

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

Final result code:

```
<CR><LF>OK<CR><LF>
```

Moreover, there are other two types of result codes:

Result 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

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

4.2.4 Command Response Time-Out

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

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

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

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

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

| | |
|--------|---|
| +CACM | 5 |
| +CAMM | 5 |
| +CPUC | 180 |
| +VTS | 20 (transmission of full "1234567890*#ABCD" string with no delay between tones, default duration) |
| +CSCA | 5 (read and set commands) |
| +CSAS | 5 |
| +CMGS | 120 after CTRL-Z; 1 to get '>' prompt |
| +CMSS | 120 after CTRL-Z; 1 to get '>' prompt |
| +CMGW | 5 after CTRL-Z; 1 to get '>' prompt 5 (single SMS cancellation) |
| +CMGD | 25 (cancellation of 50 SMS) |
| +CNMA | 120 after CTRL-Z; 1 to get '>' prompt |
| +CMGR | 5 |
| +CMGL | 100 |
| +CGACT | 150 |
| +CGATT | 140 120 (voice call) |
| D | Timeout set with ATS7 (data call) 60 (voice call) |
| A | Timeout set with ATS7 (data call) |
| H | 30 |
| +CHUP | 60 |
| +COPN | 10 |
| +COPL | 180 |
| +CRSM | 180 |
| +FRH | Timeout set with ATS7 |
| +FTH | Timeout set with ATS7 |
| +FRM | Timeout set with ATS7 |
| +FTM | Timeout set with ATS7 |
| +FRS | Timeout set with the command itself |
| +FTS | Timeout set with the command itself |
| +WS46 | 10 |

4.2.5 Command Issue Timing

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

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

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

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

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

4.3 AT Commands Set

4.3.1 Command Line General Format

4.3.1.1 Command Line Prefixes

4.3.1.1.1 Starting a Command Line – AT

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

4.3.1.1.2 Last Command Automatic Repetition – A/

| A/ - Last Command Automatic | |
|-----------------------------|---|
| A/ | <p>If the prefix A/ or a/ is issued, the MODULE immediately executes once again the body of the preceding command line. No editing is possible and no termination character is necessary. A command line may be repeated multiple times through this mechanism, if desired.</p> <p>If A/ is issued before any command line has been executed, the preceding command line is assumed to have been empty (that results in an OK result code).</p> <p>Note: this command works only at fixed IPR.</p> <p>*Note: the custom command #/ has been defined, it causes the last command to be executed again too; but it does not need a fixed IPR.</p> |
| Reference | V.25ter |

4.3.2 Hayes Compliant AT Commands

4.3.2.1 Generic Modem Control

4.3.2.1.1 Set To Factory-Defined Configuration -&F

| &F – Set To Factory-Defined | |
|-----------------------------|--|
| AT&F[<value>] | <p>The execution command sets the configuration parameters to default values specified by manufacturer; it takes into consideration hardware configuration switches and other manufacturer-defined criteria.</p> <p>Parameter: <value>: 0 - just factory profile's base section parameters are considered. *1 - Both the factory profile base section and the extended section are considered (full factory profile).</p> <p>Note: if parameter <value> is omitted, the command has the same behaviour as AT&F0</p> |
| Reference | V.25ter. |

4.3.2.1.2 Soft Reset – Z

| Z - Soft Reset | |
|----------------|--|
| ATZ[<n>] | <p>The execution command loads the base section of the specified user profile and the extended section of the default factory profile.</p> <p>Parameter: <n> 0..1 - user profile number</p> <p>Note: any call in progress will terminated.</p> <p>Note: if parameter <n> is omitted, the command has the same behaviour as ATZ0.</p> |
| Reference | V.25ter. |

4.3.2.1.3 Select Active Service Class - +FCLASS

| +FCLASS – Select Active Service Class | |
|---------------------------------------|---|
| AT+FCLASS=<n> | The set command sets the wireless module into the specified connection mode (data, fax, voice). Hence, all the calls done afterwards will be data or voice. Parameter: <n> 0 – data 1 –fax class *2.0– fax class *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 and ITU-T T.32[12] and TIA-592 and TIA-578-A(3GPP Only) |

4.3.2.1.4 Store Current Configuration -&W

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

4.3.2.1.5 Manufacturer Identification - +GMI

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

4.3.2.1.6 Model Identification - +GMM

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

4.3.2.1.7 Revision Identification - +GMR

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

4.3.2.1.8 Capabilities List - +GCAP

| +GCAP – Capabilities List | |
|---------------------------|--|
| AT+GCAP | Execution command returns the equipment supported command set list. Where: +CGSM: 3GPP TS command set +FCLASS: Fax command set +DS: Data Service common modem command set +MS: Mobile Specific command set |
| Reference | V.25ter |

4.3.2.1.9 Serial Number - +GSN

| +GSN – Serial Number | |
|----------------------|---|
| AT+GSN | Execution command returns the device board serial number. |
| Reference | V.25ter |

4.3.2.1.10 Display Current Base Configuration and Profile -&V

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

4.3.2.1.11 Single Line Connect Message - \V

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

4.3.2.1.12 Speaker Loudness - L

| | |
|----------------------|--|
| L – Speaker Loudness | |
| ATL<n> | <p>Execution command set speaker loudness.</p> <p>Parameter:</p> <p><n></p> <p>0 – low speaker volume</p> <p>1 – middle low speaker volume</p> <p>2 – middle speaker volume</p> <p>3 – high speaker volume</p> |

4.3.2.1.13 Speaker Mode - M

| | |
|------------------|--|
| M – Speaker Mode | |
| ATM<n> | <p>Execution command set the speaker mode.</p> <p>Parameter:</p> <p><n></p> <p>0 – always turn off the loudspeaker</p> <p>1 – open the speaker until TA notifies the TE carrier detect</p> <p>2 – when the TA hook, open the speaker</p> |

4.3.2.2 DTE - Modem Interface Control

4.3.2.2.1 Command Echo - E

| E – Command Echo | |
|------------------|--|
| ATE[<n>] | <p>The set command enables/disables the command echo.</p> <p>Parameter:</p> <p><n></p> <p>0 - Disables command echo</p> <p>1 - Enables command echo (factory default), hence command sent to the device are echoed back to the DTE before the response is given.</p> |
| Reference | V25ter |

4.3.2.2.2 Quiet Result Codes - Q

| Q – Quiet Result Codes | |
|------------------------|--|
| ATQ[<n>] | <p>Set command enables or disables the result codes.</p> <p>Parameter:</p> <p><n></p> <p>0 - enables result codes (factory default)</p> <p>1 - disables result codes</p> <p>*2 - disables result codes (only for backward compatibility)</p> <p>Note: After issuing either ATQ1 or ATQ2 every information text transmitted in response to commands is not affected</p> |
| Example | <p>After issuing ATQ1 or ATQ2</p> <p>AT+CGACT=?</p> |
| Reference | V25ter |

4.3.2.2.4 Extended Result Codes – X

| X – Extended Result Codes | |
|---------------------------|---|
| ATX[<n>] | <p>Set command selects the result code messages subset used by the modem to inform the DTE of the result of the commands.</p> <p>Parameter: <n></p> <p>0 - send only OK, CONNECT, RING, NO CARRIER, ERROR, NO ANSWER</p> <p>Results. 1...4 - reports all messages (factory default is 1).</p> <p>Note: If parameter is omitted, the command has the same behaviour of ATX0 Note: Current value is returned by AT&V</p> <p>Parameter: <n></p> <p>0 - EXTENDED MESSAGES : X0=NO 1..4 - EXTENDED MESSAGES : X1=YES</p> |
| Note | For complete control on CONNECT response message see also +DR command. |
| Reference | V.25ter |

4.3.2.2.5 Identification Information - I

| I – Identification Information | |
|--------------------------------|---|
| ATI[<n>] | <p>Execution command returns one or more lines of information text followed by a result code.</p> <p>Execution command returns one or more lines of information for manufacturer model number and software version , followed by a result code.</p> |
| Reference | V25ter |

4.3.2.2.6 Data Carrier Detect (DCD) Control - &C

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

4.3.2.2.7 Data Terminal Ready (DTR) Control - &D

| &D – Data Terminal Reday (DTR) Control | |
|--|---|
| AT&D[<n>] | <p>The set command controls the Module behaviour for RS232 DTR transitions.</p> <p>Parameter:</p> <p><n></p> <p>0 - DTR transitions are ignored</p> <p>1 - When the MODULE is connected, the High to Low transition of DTR pin sets the device in command mode and the current connection is NOT closed.</p> <p>2 - When the MODULE is connected, the High to Low transition of DTR pin sets the device in command mode and the current connection is closed. (factory default)</p> |
| | <p>Note: if AT&D2 been issued and the DTR has been tied Low, autoanswering is inhibited and it is possible to answer only by issuing command ATA.</p> <p>Note: if parameter is omitted, the command has the same behaviour of AT&D0</p> |
| Reference | V.25ter |

4.3.2.2.8 Standard Flow Control - \Q

| \Q – Standard Flow Control | |
|----------------------------|--|
| AT\Q[<n>] | <p>Set command controls the RS232 flow control behaviour.</p> <p>Parameter:</p> <p><n></p> <p>0 - no flow control</p> <p>1 - software bi-directional with filtering (XON/XOFF)</p> <p>*2 - hardware mono-directional flow control (only CTS active)</p> <p>3 - hardware bi-directional flow control (both RTS/CTS active) (factory default)</p> <p>Note: if parameter is omitted, the command has the same behaviour as AT\Q0</p> <p>Note: \Q's settings are functionally a subset of &K's ones.</p> |
| Reference | V.25ter |

4.3.2.2.9 Data Set Ready (DSR) Control - &S

| &S – Data Set Ready (DSR) Control | |
|-----------------------------------|---|
| AT&S[<n>] | <p>The set command controls the RS232 DSR pin behaviour. Parameter:</p> <p><n></p> <p>0 - always High (factory default)</p> <p>1 - Follows the GSM traffic channel indication</p> <p>*2 - High when connected</p> <p>*3 - High when device is ready to receive commands (factory default).</p> <p>Note: if option 1 selected, then DSR is tied High when the device receives from the network the UMTS traffic channel indication.</p> <p>Note: in power saving mode the DSR pin is always tied Low & USB_VBUS pin is always tied Low.</p> <p>Note: if parameter is omitted, the command has the same behaviour as AT&S0</p> <p>Note: If option 1 or 2 active, DSR will not be tied High in case of GSM voice connection.</p> |

4.3.2.2.10 Fixed DTE Interface Rate - +IPR

| | |
|--|---|
| +IPR – Fixed DTE Interface Rate | |
| AT+IPR=<rate> | The set command specifies the DTE speed (UART only) at which the device accepts commands during command mode operations. The command could be used to fix the DTE-DCE interface speed. |
| | <p>Note: DTE speed of USB does not change.</p> <p>Parameter:</p> <p><rate> 300 600 1200 2400 4800 9600 19200 38400 57600 115200 (default) 230400 460800 921600</p> |
| AT+IPR? | Read command returns the current value of +IPR parameter. |
| AT+IPR=? | <p>Test command returns the list of supported autodetectable <rate> values and the list of fixed-only <rate> values in the format:</p> <p>+IPR:(list of supported autodetectable <rate> values), (list of fixed-only <rate> values)</p> |
| Reference | V.25ter |

4.3.2.2.11 DTE-Modem Local Flow Control - +IFC

| +IFC – DTE-Modem Local Flow Control | |
|-------------------------------------|--|
| AT+IFC=<by_te>, <by_ta> | The set command selects the flow control behaviour of the serial port in both directions: from DTE to modem (<by_ta> option) and from modem to DTE (<by_te>) Parameters: <by_te> - flow control option for the data received by DTE. 0 - flow control None 2 - C105 (RTS) (factory default) <by_ta> - flow control option for the data sent by modem 0 - flow control None 2 - C106 (CTS) (factory default) Note: only possible commands are AT+IFC=0,0 and AT+IFC=2,2. |
| AT+IFC? | Read command returns active flow control settings. |
| AT+IFC=? | Test command returns all supported values of the parameters <by te> and<by ta>. |
| Reference | V25ter |

4.3.2.2.12 DTE-Modem Character Framing - +ICF

| +ICF – DTE-Modem Character Framing | |
|------------------------------------|---|
| AT+ICF= <format> [,<parity>] | Set command defines the asynchronous character framing used when autobauding is disabled. The L506 family supports only the 8 Data, 1 Stop setting. Parameters: <format> - determines the number of bits in the data bits, the presence of a parity bit, and the number of stop bits in the start-stop frame. 3 - 8 Data, 1 Stop (default) <parity> - determines how the parity bit is generated and checked, if present; setting this subparameter has no meaning. 0 - Odd (not supported) 1 - Even (not supported) |
| AT+ICF? | Read command returns current settings for subparameters <format> and <parity>. The current setting of subparameter <parity> will always be presented as 0. |
| AT+ICF=? | Test command returns the ranges of values for the parameters <format> and <parity> |
| Reference | V25ter |

4.3.2.3 Call Control

4.3.2.3.1 Dial - D

| D - Dial | |
|-----------------|---|
| ATD<number>[:] | <p>The execution command starts a call to the phone number given as parameter.</p> <p>If ";" is present, a voice call to the given number is performed, regardless of the current value of the connection mode set by +FCLASS command.</p> <p>Parameter:</p> <p><number> - phone number to be dialed</p> <p>Note: type of call (data, fax or voice) depends on last +FCLASS setting. Note: the characters accepted are 0-9 and *,#,"A","B","C","+".</p> <p>Note: for backwards compatibility with landline modems modifiers "T", "P","R", ",", "W", "!", "@" are accepted but have no effect.</p> |
| ATD<<str>[:] | <p>Issues a call to phone number whose corresponding alphanumeric field is <str>; all available memories will be searched for the correct entry. If ";" is present a voice call is performed.</p> <p>Parameter:</p> <p><str> - alphanumeric field corresponding to phone number. It must be enclosed in quotation marks.</p> <p>Note: parameter <str> is case sensitive.</p> |
| ATD<<mem><n>[:] | <p>Issues a call to phone number in phonebook memory storage <mem>, entry location <n> (available memories may be queried with AT+CPBS=?). If ";" is present a voice call is performed.</p> <p>Parameters:</p> <p><mem> - phonebook memory storage;</p> <p>"SM" - SIM/UICC phonebook</p> <p>"FD" - SIM/USIM fixed dialing phonebook "LD" - SIM/UICC last dialled phonebook</p> <p>"MC" - Missed calls list</p> <p>"RC" - Received calls list "DC" - MT dialled calls list "ME" - MT phonebook</p> <p>"EN" - SIM/USIM (or MT) emergency number(+CPBW is not be applicable f</p> |
| | <p>or this storage)</p> <p>"ON" - SIM (or MT) own numbers (MSI storage may be available through + CNUM also).</p> <p>"MB" - Mailbox numbers stored on SIM.(If this service is provided by the SIM).</p> <p><n> - entry location should be in the range of locations available in the memory used.</p> |

| D - Dial | |
|-----------------|--|
| ATD<number>[;] | <p>The execution command starts a call to the phone number given as parameter.</p> <p>If ";" is present, a voice call to the given number is performed, regardless of the current value of the connection mode set by +FCLASS command.</p> <p>Parameter:</p> <p><number> - phone number to be dialed</p> <p>Note: type of call (data, fax or voice) depends on last +FCLASS setting. Note: the characters accepted are 0-9 and *,#, "A", "B", "C", "+".</p> <p>Note: for backwards compatibility with landline modems modifiers "T", "P", "R", " ", "W", "!", "@" are accepted but have no effect.</p> |
| ATD<<str>[;] | <p>Issues a call to phone number whose corresponding alphanumeric field is <str>; all available memories will be searched for the correct entry. If ";" is present a voice call is performed.</p> <p>Parameter:</p> <p><str> - alphanumeric field corresponding to phone number. It must be enclosed in quotation marks.</p> <p>Note: parameter <str> is case sensitive.</p> |
| ATD<<mem><n>[;] | <p>Issues a call to phone number in phonebook memory storage <mem>, entry location <n> (available memories may be queried with AT+CPBS=?). If ";" is present a voice call is performed.</p> <p>Parameters:</p> <p><mem> - phonebook memory storage;</p> <p>"SM" - SIM/UICC phonebook</p> <p>"FD" - SIM/USIM fixed dialing phonebook "LD" - SIM/UICC last dialed phonebook</p> <p>"MC" - Missed calls list</p> <p>"RC" - Received calls list "DC" - MT dialed calls list "ME" - MT phonebook</p> <p>"EN" - SIM/USIM (or MT) emergency number(+CPBW is not be applicable f</p> |
| ATD<<n>[;] | <p>Issue a call to a phone number on entry location <n> of the active phonebook memory storage (see +CPBS).</p> <p>If ";" is present a voice call is performed.</p> <p>Parameter:</p> <p><n> - active phonebook memory storage entry location; it should be in the range of locations available in the active phonebook memory storage.</p> |
| ATDL; | Issues a call to the last number dialed. |

| D - Dial | |
|------------------------------------|--|
| ATD<number>[;] | <p>The execution command starts a call to the phone number given as parameter.</p> <p>If ";" is present, a voice call to the given number is performed, regardless of the current value of the connection mode set by +FCLASS command.</p> <p>Parameter:</p> <p><number> - phone number to be dialed</p> <p>Note: type of call (data, fax or voice) depends on last +FCLASS setting. Note: the characters accepted are 0-9 and *,#, "A", "B", "C", "+".</p> <p>Note: for backwards compatibility with landline modems modifiers "T", "P", "R", " ", "W", "!", "@" are accepted but have no effect.</p> |
| ATD<<str>[;] | <p>Issues a call to phone number whose corresponding alphanumeric field is <str>; all available memories will be searched for the correct entry. If ";" is present a voice call is performed.</p> <p>Parameter:</p> <p><str> - alphanumeric field corresponding to phone number. It must be enclosed in quotation marks.</p> <p>Note: parameter <str> is case sensitive.</p> |
| ATD<<mem><n>[;] | <p>Issues a call to phone number in phonebook memory storage <mem>, entry location <n> (available memories may be queried with AT+CPBS=?). If ";" is present a voice call is performed.</p> <p>Parameters:</p> <p><mem> - phonebook memory storage;</p> <p>"SM" - SIM/UICC phonebook</p> <p>"FD" - SIM/USIM fixed dialing phonebook "LD" - SIM/UICC last dialled phonebook</p> <p>"MC" - Missed calls list</p> <p>"RC" - Received calls list "DC" - MT dialled calls list "ME" - MT phonebook</p> <p>"EN" - SIM/USIM (or MT) emergency number(+CPBW is not be applicable f</p> |
| ATD<number>I[;] ATD<number>i[;] | <p>Issues a call suppressing the CLIR supplementary service subscription default value for this call</p> <p>If ";" is present a voice call is performed. I - invocation, restrict CLI presentation i - suppression, allow CLI presentation</p> |
| ATD<number>G[;] ATD<number>g[;] | <p>Issues a call checking the CUG supplementary service information for the current call. Refer to +CCUG command.</p> <p>If ";" is present a voice call is performed.</p> |

| D - Dial | |
|---|--|
| ATD<number>[;] | <p>The execution command starts a call to the phone number given as parameter.</p> <p>If ";" is present, a voice call to the given number is performed, regardless of the current value of the connection mode set by +FCLASS command.</p> <p>Parameter:</p> <p><number> - phone number to be dialed</p> <p>Note: type of call (data, fax or voice) depends on last +FCLASS setting. Note: the characters accepted are 0-9 and *,#, "A", "B", "C", "+".</p> <p>Note: for backwards compatibility with landline modems modifiers "T", "P", "R", " ", "W", "!", "@" are accepted but have no effect.</p> |
| ATD<<str>[;] | <p>Issues a call to phone number whose corresponding alphanumeric field is <str>; all available memories will be searched for the correct entry. If ";" is present a voice call is performed.</p> <p>Parameter:</p> <p><str> - alphanumeric field corresponding to phone number. It must be enclosed in quotation marks.</p> <p>Note: parameter <str> is case sensitive.</p> |
| ATD<<mem><n>[;] | <p>Issues a call to phone number in phonebook memory storage <mem>, entry location <n> (available memories may be queried with AT+CPBS=?). If ";" is present a voice call is performed.</p> <p>Parameters:</p> <p><mem> - phonebook memory storage;</p> <p>"SM" - SIM/UICC phonebook</p> <p>"FD" - SIM/USIM fixed dialing phonebook "LD" - SIM/UICC last dialed phonebook</p> <p>"MC" - Missed calls list</p> <p>"RC" - Received calls list "DC" - MT dialed calls list "ME" - MT phonebook</p> <p>"EN" - SIM/USIM (or MT) emergency number(+CPBW is not be applicable f</p> |
| ATD* <gprs_sc> [*<addr>] [*<L2P>] [*<cid>]]]# | <p>This command is specific to GPRS functionality and causes the MT to perform whatever actions are necessary to establish communication between the TE and the external PDN.</p> <p>Parameters:</p> <p><gprs_sc> - GPRS Service Code, a digit string (value 99) which identifies a request to use the GPRS</p> <p><addr> - string that identifies the called party in the address space applicable to the PDP.</p> <p><L2P> - a string which indicates the layer 2 protocol to be used (see +CGDATA command). For communications software that does not support arbitrary</p> |

| | |
|-----------|---|
| D - Dial | |
| | numeric equivalents shall be used: 1 - PPP <cid> - a digit which specifies a particular PDP context definition (see +CGDCONT command). |
| Reference | V.25ter.(3GPP Only) |

4.3.2.3.2 Tone Dial - T

| | |
|---------------|---|
| T - Tone Dial | |
| ATT | The set command has no effect and is included only for backward compatibility with landline modems. |
| Reference | V.25ter. |

4.3.2.3.3 Pulse Dial - P

| | |
|----------------|-----------------------|
| P – Pulse Dial | |
| ATP | Select pulse dialing. |
| Reference | V.25ter. GSM invalid |

4.3.2.3.4 Answer - A

| | |
|------------|--|
| A - Answer | |
| ATA | Execution command answers an incoming call if automatic answer is disabled. Note: This command MUST be the last in the command line and followed immediately by a <CR> character. |
| Reference | V.25ter.(3GPP Only) |

4.3.2.3.5 Disconnect - H

| | |
|----------------|--|
| H - Disconnect | |
| ATH | The execution command is used to close the current conversation (voice, data or fax). Note: this command issued only in command mode. When a data conversation is active the device is in on-line mode (commands are not sensed and characters are sent to the other party), hence escape sequence (see register S2) is required before issuing this command, otherwise if &D1 option is active, DTR pin has to be tied Low to return in command mode. |
| Reference | V.25ter.(3GPP Only) |

4.3.2.3.6 Return To On Line Mode - O

| O – Return To On Line Mode | |
|----------------------------|---|
| ATO | <p>The execution command used to return to on-line mode from command mode. If there is no active connection, it returns NO CARRIER.</p> <p>Note: After issuing this command and if the device is in conversation, to send other commands to the device you must return to command mode by issuing the escape sequence (see register S2) or tying low DTR pin if &D1 option is active.</p> |
| Reference | V.25ter.(3GPP Only) |

LYNQ
CONFIDENTIAL

4.3.2.4 Compression Control

4.3.2.4.1 Data Compression - +DS

| +DS – Data Compression | |
|--------------------------------------|--|
| AT+DS=[<dir>[,<neg>][,<P1>][,<P2>]]] | <p>Set command sets the V42 compression parameter.</p> <p>Parameter:</p> <p><dir> : desired direction of operations</p> <p>0 - no compression (factory default)</p> <p>1 - Transmit only.</p> <p>2 - Receive only.</p> <p>3 - Both directions, accept any direction</p> <p><neg> : whether the DCE should continue to operate if the desired result is not obtained.</p> <p>0 - Do not disconnect if V.42 bis is not negotiated by the remote DCE as specified in <dir>.</p> <p><P1> : maximum number of dictionary entries 512-2048 (Factory default is 2048)</p> |
| AT+DS? | Read command returns current value of the data compression parameter. |
| AT+DS=? | Test command returns all supported values of the parameter <n> |
| Reference | V.25ter(3GPP Only) |

4.3.2.4.2 Data Compression Reporting - +DR

| +DR – Data Compression Reporting | |
|----------------------------------|---|
| AT+DR=<n> | <p>Set command enables/disables the data compression reporting upon connection.</p> <p>Parameter:</p> <p><n></p> <p>0 - data compression reporting disabled</p> <p>1 - data compression reporting enabled upon connection</p> <p>Note: if enabled, the following intermediate result code is transmitted before the</p> |
| +DR – Data Compression Reporting | |
| | final result code: |
| | +DR: <compression> |
| AT+DR? | Read command returns current value of <n>. |
| AT+DR=? | Test command returns all supported values of the parameter <n> |
| Reference | V25ter(3GPP Only) |

4.3.2.5 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) ATSn<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 Sn 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 AT=<value><CR> set the contents of the selected S-parameter

Example:

ATS7<CR> establishes S7 as last selected parameter.

Reference: V25ter and RC56D/RC336D

4.3.2.5.1 Number of Rings to Auto Answer - S0

| S0 – Number Of Rings To Auto Answer | |
|-------------------------------------|--|
| ATS0=[<n>] | Set command sets the number of rings required before device automatically answers an incoming call. Parameter: <n> - number of rings 0 - auto answer disabled (factory default) |
| ATS0? | Read command returns the current value of S0 parameter. |
| Reference | V.25ter |

4.3.2.5.2 Escape Character - S2

| S2 – Escape Character | |
|-----------------------|--|
| ATS2=[<char>] | <p>Set command sets the ASCII character used as escape characters. -</p> <p>Parameter:</p> <p><char> - escape character decimal ASCII 0..127 - factory default value is 43 (+).</p> <p>Note: the escape sequence consists of three escape characters preceded and followed by n ms of idle (see S12 to set n)</p> |
| S2 – Escape Character | |
| ATS2? | <p>Read command returns the current value of S2 parameter.</p> <p>Note: the format of the numbers in output is always 3 digits, left-filled with 0s</p> |

4.3.2.5.3 Command Line Termination Character - S3

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

4.3.2.5.4 Response Formatting Character - S4

| S4 – Response Formatting Character | |
|------------------------------------|--|
| ATS4=[<char>] | <p>Set command sets the value of the character generated by the device as part of the header, trailer, and terminator for result codes and information text, along with the S3 parameter.</p> <p>Parameter: <char> - response formatting character (decimal ASCII) 0..127 - factory default value is 10 (ASCII <LF>)</p> <p>Note: if the value of S4 changed in a command line, the result code issued in response</p> |
| ATS4? | <p>Read command returns the current value of S4 parameter.</p> <p>Note: the format of the numbers in output is always 3 digits, left-filled with 0s</p> |
| Reference | V25ter |

4.3.2.5.5 Command Line Editing Character - S5

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

4.3.2.5.6 Connection Completion Time-Out - S7

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

4.3.2.5.7 Carrier Off With Firm Time - S10

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

4.3.2.5.8 Disconnect Inactivity Timer - S30

| S30 – Disconnect Inactivity Timer | |
|-----------------------------------|--|
| 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 <tout> minutes.</p> <p>Parameter: <tout> - expressed in minutes 0 - disabled, disconnection due to inactivity is disabled (factory default). 1..255 - inactivity time-out value</p> |
| ATS30? | <p>Read command returns the current value of S30 parameter.</p> <p>Note: the format of the numbers in output is always 3 digits, left-filled with 0s</p> |

4.3.3 3GPP TS 27.007 AT Commands

4.3.3.1 General

4.3.3.1.1 Request Manufacturer Identification - +CGMI

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

4.3.3.1.2 Request Model Identification - +CGMM

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

4.3.3.1.3 Request Revision Identification - +CGMR

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

4.3.3.1.4 Request Product Serial Number Identification - +CGSN

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

4.3.3.1.5 Select TE Character Set - +CSCS

| +CSCS – Select TE Character | |
|-----------------------------|---|
| AT+CSCS= [<chset>] | Set command sets the current character set used by the device. Parameter: <chset> - character set "GSM" - GSM default alphabet (3GPP T S 03.38/23.008). "IRA" - international Reference alphabet (ITU-T T.50) "UCS2" - 16-bit universal multiple-octet coded character set (ISO/IEC10646). |
| AT+CSCS? | Read command returns the current value of the active character set. |
| AT+CSCS=? | Test command returns the supported values for parameter <chset>. |
| Example | AT+CSCS="IRA" OK AT+CPBR=1 +CPBR: 1,"13845763000",129,"Lin Wang" OK |
| Reference | 3GPP TS 27.007 |

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

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

4.3.3.1.7 PCCA STD-101 Select Wireless Network - +WS46

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

4.3.3.2 Call Control

4.3.3.2.1 Call mode - +CMOD

| CMOD – Parameter Command Syntax | |
|---------------------------------|--|
| +CMOD= [<mode>] | <p>Set command selects the call mode of further dialling commands (D) or for next answering command (A). Mode can be either single or alternating (in the present document, terms "alternating mode" and "alternating call" refer to all GSM/UMTS bearer and teleservices that incorporate more than one basic service (voice, data, fax) within one call).</p> <p>When single mode is selected the call originating and hangup procedures are similar to procedures specified in ITU-T Recommendations V.250 [14], T.31 [11] and T.32 [12].</p> <p>NOTE: +CMOD shall be set to zero after a successfully completed alternating mode call. It shall be set to zero also after a failed answering. The power-up, factory (&F) and user resets (Z) shall also set the value to zero.</p> <p>This reduces the possibility that alternating mode calls are originated or answered accidentally.</p> <p>Defined values <mode>: 0 - single mode (default mode)</p> |
| +CMOD? | <p>Test command returns values supported as a compound value.</p> <p>+CMOD: <mode></p> |
| +CMOD=? | +CMOD: (list of supported <mode>s) |
| Reference | 3GPP Only |

4.3.3.2.2 Hang Up Call - +CHUP

| +CHUP - Hang Up Call | |
|----------------------|--|
| AT+CHUP | Execution command cancels all active and held calls, also if a multi-party session is running. |
| AT+CHUP=? | Test command returns the OK result code |
| Reference | GSM 07.07(3GPP Only) |

4.3.3.2.3 Select type of address - +CSTA

| +CSTA – Select type of address | |
|--------------------------------|---|
| AT+CSTA=[<type>] | Set command selects the type of number for further dialling commands (D) according to GSM/UMTS specifications. Parameter: <type>: type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7). default 145 when dialling string includes international access code character "+", otherwise 120. |
| AT+CSTA? | Read command returns selected <type> |
| AT+CSTA=? | Test command returns supported <type>s |
| Reference | 3GPP TS 27.007 |

4.3.3.2.4 Select Bearer Service Type - +CBST

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

| +CBST – Select Bearer Service Type | |
|------------------------------------|---|
| | <p>84 - 64000 bps (X.31 flag stuffing) 116 - 64000 bps (bit transparent) 134 – 64000 bps (multimedia) <name> - bearer service name 0 - data circuit asynchronous (UDI or 3.1 kHz modem) 1 - data circuit synchronous(UDI or 3.1 kHz modem) 4 - data circuit asynchronous(RDI) <ce> - connection element 0 - transparent 1 - non transparent (default)</p> <p>The bearer service on L506 family only has support for the following combinations:</p> <p><GSM network> AT+CBST= 0,0,1 (Autobaud 9.6k, non transparent) AT+CBST= 7,0,1 (V.32 9.6k, non transparent) AT+CBST=12,0,1 (V.34 9.6k, non transparent)) AT+CBST=14,0,1 (V.34 14.4k, non transparent) AT+CBST=39,0,1 (V.120 9.6k, non transparent) AT+CBST=43,0,1 (V.120 14.4k, non transparent) AT+CBST=71,0,1 (V.110 9.6k, non transparent) AT+CBST=75,0,1 (V.110 14.4k, non transparent) AT+CBST= 7,0,0 (V32 9.6k, transparent) AT+CBST=12,0,0 (V34 9.6k, transparent) AT+CBST=14,0,0 (V34 14.4k, transparent)</p> <p><WCDMA network> AT+CBST= 0,0,1 (Autobaud 57.6k, non transparent) AT+CBST=14,0,1 (V.34 14.4k, non transparent) AT+CBST=16,0,1 (V.34 28.8k, non transparent) AT+CBST=17,0,1 (V.34 33.6k, non transparent) AT+CBST=43,0,1 (V.120 14.4k, non transparent) AT+CBST=48,0,1 (V.120 28.8k, non transparent) AT+CBST=51,0,1 (V.120 56k, non transparent) AT+CBST=75,0,1 (V.110 14.4k, non transparent) AT+CBST=80,0,1 (V.110 28.8k, non transparent)</p> |
| AT+CBST? | Read command returns current value of the parameters <speed>, <name> |

| | |
|------------------------------------|--|
| +CBST – Select Bearer Service Type | |
| | and <ce> |
| AT+CBST=? | Test command returns the supported range of values for the parameters. |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.2.5 Radio Link Protocol - +CRLP

| | |
|--|---|
| +CRLP – Radio Link Protocol | |
| AT+CRLP=[<iws>[,<mws>[,<T1>[,<N2> [,<ver>]]]]] | <p>Set command sets Radio Link Protocol (RLP) parameters used when non-transparent data calls originated.</p> <p>Parameters:</p> <p><iws> - IWF window Dimension 0..61 - factory default value is 61 (ver 0/1) 0..488 - factory default value is 240 (ver 2)</p> <p><mws> - MS window Dimension 0..61 - default value is 61 (ver 0/1) 0..488 - factory default value is 240 (ver 2)</p> <p><T1> - acknowledge timer (10 ms units). 38..255 - default value is 78 (ver 0 or 1) 42..255 deaefault value is 52 (ver 2)</p> <p><N2> - retransmission attempts</p> |
| AT+CRLP? | <p>Read command returns current settings for each supported RLP version <ver>.</p> <p>+CRLP: <iws>,<mws>,<T1>,<N2></p> <p>+CRLP: <iws>,<mws>,<T1>,<N2>,<ver></p> |
| AT+CRLP=? | Test command returns the range of setting value for each supported RLP version <ver>. |
| Reference | 3GPP TS 27.007(3GPP Only) |
| Note | Versions 0 and 1 share the same parameter set. Read and Test commands shall return only one line for this set (where <ver> is not present) |

4.3.3.2.6 Service Reporting Control - +CR

| +CR – Service Reporting Control | |
|---------------------------------|---|
| AT+CR=[<mode>] | <p>Set command controls whether or not the intermediate result code +CR is returned from TA to TE.</p> <p>Parameter:</p> <p><mode></p> <p>0 - disables +CR reporting (factory default)</p> <p>1 - enables +CR reporting: the intermediate result code is transmitted at the point during connect negotiation at which the TA has determined which speed and quality of service will be used, before any error control or data compression reports are transmitted, and before the intermediate result code CONNECT is transmitted.</p> <p>Note: After power off/on in L506 the value returns to "0". Its format is:</p> <p>+CR: <serv></p> <p>where:</p> <p><serv></p> <p>ASYNC - asynchronous transparent</p> <p>SYNC - synchronous transparent</p> <p>RELASYNC - asynchronous non-transparent</p> <p>RELSYNC - synchronous non-transparent.</p> |
| AT+CR? | <p>Read command returns whether or not intermediate result code +CR is enabled, in the format:</p> <p>+CR: <mode></p> |
| AT+CR=? | Test command returns the supported range of values of parameter <mode>. |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.2.7 Extended Error Report - +CEER

| +CEER – Extended Error Report | |
|-------------------------------|--|
| AT+CEER | <p>Execution command returns one or more lines of information text <report> offering the TA user an extended error report, in the format:</p> <p>+CEER: <report></p> |

| +CEER – Extended Error Report | |
|-------------------------------|---|
| | <p>the failure in the last unsuccessful call setup (originating or answering)</p> <p>the last call release</p> <p>the last unsuccessful GPRS attach or unsuccessful PDP context activation</p> <p>the last GPRS detach or PDP context deactivation</p> <p>Note: if none of these conditions have occurred since power up then</p> |
| AT+CEER=? | Test command returns OK result code. |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.2.8 Cellular Result Codes - +CRC

| +CRC – Cellular Result Codes | |
|------------------------------|--|
| AT+CRC= [<mode>] | <p>Set command controls whether or not the extended format of incoming call indication is used.</p> <p>Parameter:</p> <p><mode></p> <p>0 - disables extended format reporting (factory default)</p> <p>1 - enables extended format reporting:</p> <p>When enabled, an incoming call is indicated to the TE with unsolicited result code +CRING: <type> Instead of the normal RING.</p> <p>Where:</p> <p><type> - call type:</p> <p>ASYNC - asynchronous transparent data</p> |
| AT+CRC? | Read command returns current value of the parameter <mode>. |
| AT+CRC=? | Test command returns supported values of the parameter <mode>. |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.2.9 HSCSD non-transparent call configuration +CHSN

| +CHSN parameter command syntax | |
|---|---|
| AT+CHSN =[<wAiur> [<wRx> [,<topRx> [<codings >]]]] | <p>Set command controls parameters for originating non-transparent HSCSD calls. Values may also be used during mobile terminated data call setup. In GERAN, changing <topRx> or <codings> value during a call does not affect the current call. In GERAN, changing of <wAiur> or <wRx> affects the current call only if <topRx> was non- zero when call was established.</p> <p>Defined values</p> <p><wAiur>: integer type; wanted air interface user rate. Default value 0 indicates that TA shall calculate a proper value from currently selected fixed network user rate (<speed> subparameter from +CBST command), <codings>, and <wRx> (or <maxRx> from +CHSD command if <wRx>=0). Other values:</p> <p>1 - 9600 bps 2 - 14400 bps 3 - 19200 bps 4 - 28800 bps 5 - 38400 bps 6 - 43200 bps 7 - 57600 bps</p> <p>Note: only support 0-2,4,7</p> <p><wRx>: integer type; wanted amount of receive timeslots. Default value 0 indicates that TA shall calculate a proper value from currently selected <wAiur> and <codings>.</p> <p>This parameter is not applicable to UTRAN or EUTRAN UEs.</p> <p><topRx>: integer type; top value for <wRx> that user is going to request during the next established nontransparent HSCSD call. Default value 0 indicates that user is not going to change <wAiur>/<wRx> during the next call. This parameter is not applicable to UTRAN or E-UTRAN UEs.</p> |
| AT+CHSN | +CHSN: <wAiur>,<wRx>,<topRx>,<codings> |
| ? | |
| AT+CHSN=? | +CHSN: (list of supported <wAiur>s), (list of supported <wRx>s),(list of supported <topRx>),(list of supported <codings>s) |
| Reference | 3GPP Only |

4.3.3.2.10 Voice Hang Up Control - +CVHU

| +CVHU – Voice Hang Up Control | |
|-------------------------------|---|
| AT+CVHU= [<mode>] | Set command selects whether ATH or "drop DTR" shall cause a voice connection to disconnect or not. Parameter: <mode> 0 - "Drop DTR" ignored but OK result code given. ATH disconnects. 1- "Drop DTR" and ATH ignored but OK result code given. (factory default). *2 - "Drop DTR" behaviour according to &D setting. ATH disconnects |
| AT+CVHU? | Read command reports the current value of the <mode> parameter, in the format: +CVHU: <mode> |
| AT+CVHU=? | Test command reports the range of supported values for parameter <mode> |
| Reference | 3GPP Only |

4.3.3.2.11 Setting Time Format - +CSTF

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

4.3.3.2.12 Setting Date Format - + CSDF

| +CSDF – Setting Date Format | |
|--------------------------------|--|
| AT+CSDF=[[<mode>],[<auxmode>]] | <p>This command sets the date format via MMI of the date information presented to the user, which is specified by use of the <mode> parameter. The <mode> affects the date format on the phone display and doesn't affect the date format of the AT command serial interface. The command also sets the date format of the TE-TA interface, which is specified by use of the <auxmode> parameter (e.g. the <auxmode> affects the <time> of +CCLK and +CALA). If the parameter is omitted (" +CSDF=", "+CSDF=<mode>", "+CSDF=,<auxmode>"), then this sets the default value.</p> <p>Refer to subclause 9.2 for possible <err> values.</p> <p>Possible Response(s):</p> <p>+CME ERROR: <err></p> <p>Defined values:</p> <p><mode>: integer type</p> <p>Note 1:</p> <p>It is manufacturer specific which modes are supported.</p> <p>1 - DD-MMM-YYYY</p> <p>Note 2:</p> <p>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><auxmode>: integer type</p> <p>1 - yy/MM/dd</p> |
| AT+CSDF? | <p>Read command reads the current setting. Possible Response(s):</p> <p>+CSDF: <mode>[,<auxmode>]</p> <p>+CME ERROR: <err></p> |
| AT+CSDF=? | <p>Test command reads the supported <mode>s as a compound value.</p> <p>+CSDF: (list of supported <mode>s) [(list of supported <auxmode>s)]</p> |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.3 Network Service Handling

4.3.3.3.1 Subscriber Number - +CNUM

| +CNUM – Subscriber Number | |
|---------------------------|---|
| AT+CNUM | <p>Execution command returns the MSISDN (if the phone number of the device has been stored in the SIM card) in the format:</p> <p>+CNUM: <alpha>,<number>,<type>[<CR><LF> +CNUM: <alpha>,<number>,<type>[...]]</p> <p>where:</p> <p><alpha> - alphanumeric string associated to <number>; used character set should be the one selected with +CSCS.</p> <p><number> - string containing the phone number in the format <type></p> <p><type> - type of number:</p> |
| AT+CNUM=? | Test command returns the OK result code |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.3.2 Read Operator Names - +COPN

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

4.3.3.3.3 Network Registration Report - +CREG

| +CREG – Network Registration Report | |
|-------------------------------------|---|
| AT+CREG= [<mode>] | <p>Set command enables/disables network registration reports depending on the parameter <mode>.</p> <p>Parameter: <mode></p> <p>0 - disable network registration unsolicited result code (factory default) 1 - enable network registration unsolicited result code 2 - enable network registration unsolicited result code with network Cell identification data</p> <p>If <mode>=1, network registration result code reports: +CREG: <stat></p> <p>Where: <stat></p> <p>0 - not registered, ME is not currently searching for a new operator to register to 1 - registered, home network 2 - not registered, but ME is currently searching for a new operator to register to 3 - registration denied 4 - unknown 5 - registered, roaming</p> <p>If <mode>=2, network registration result code reports: +CREG: <stat>[, [<lac>], [<ci>], [<AcT>]]</p> <p>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</p> |

| | |
|--|---|
| +CREG – Network Registration Report | |
| | <p>1 - GSM Compact 2 - UTRAN 3 - GSM w/EGPRS 4 - UTRAN w/HSDPA 5 - UTRAN w/HSUPA 6 - UTRAN w/HSDPA and HSUPA 7 - E-UTRAN</p> |
| AT+CREG? | <p>Read command reports the <mode> and <stat> parameter values in the format:</p> <p>+CREG: <mode>,<stat>[,<Lac>,<Ci>,<Act>]</p> <p>Note: <Lac>,<Ci> and <Act> are reported only if <mode>=2 and the mobile is registered on some network cell.</p> |
| AT+CREG=? | Test command returns the range of supported <mode> |
| Example | <p>AT OK at+creg? +CREG: 0,2</p> <p>OK (the MODULE is in network searching state) at+creg? +CREG: 0,2</p> <p>OK at+creg? +CREG: 0,2</p> <p>OK at+creg? +CREG: 0,2 OK</p> <p>at+creg? +CREG: 0,1</p> |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.3.4 Operator Selection - +COPS

| +COPS – Operator Selection | |
|--|--|
| AT+COPS=[<mode> [,<format>,<oper>]]] AcT>]]] | <p>Set command forces an attempt to select and register the GSM\UMTS network operator.</p> <p><Mode> parameter defines whether the operator selection is automatic or forced by this command to operator <oper>.</p> <p>The operator <oper> given in format <format>.</p> <p>Parameters:</p> <p><mode></p> <p>0 - automatic choice (the parameter <oper> will be ignored) (factory default)</p> <p>1 - manual choice (<oper> field shall be present)</p> <p>2 - deregister from the network; the MODULE is kept unregistered until a +COPS with <mode>=0, 1 or 4 is issued</p> <p>3 - set only <format> parameter (the parameter <oper> will be ignored)</p> <p>4 - manual/automatic (<oper> field shall be present); if manual selection fails, automatic mode (<mode>=0) is entered</p> <p><format></p> <p>0 - alphanumeric long form (max length 16 digits)</p> <p>1 - short format alphanumeric <oper></p> <p>2 - numeric <oper></p> <p><Oper>: string type <format> indicates if the format is alphanumeric or numeric. Long alphanumeric format can be up to 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 <oper> shall not be in BCD format, but in IRA characters converted from BCD. Hence, the number has the structure: (country code digit 3) (country code digit 2) (country code digit 1) (network code digit 3) (network code digit 2) (network code digit 1).</p> <p>Note: <mode> parameter setting is stored in NVM and available at next reboot, if it is not 3 (i.e.: set only <format> parameter).</p> <p>Note: if <mode>=1 or 4, the selected network is stored in NVM too and is available at next reboot (this will happen even with a new SIM inserted)</p> |

| +COPS – Operator Selection | |
|----------------------------|---|
| | <p><stat>:</p> <ul style="list-style-type: none"> 0 - unknown 1 - available 2 - current 3 - forbidden <p><AcT>: access technology selected</p> <ul style="list-style-type: none"> 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 |
| AT+COPS? | <p>Read command returns current value of <mode>,<format> and <oper> in format <format>; if no operator is selected, <format> and <oper> are omitted</p> <p>+COPS: <mode>[,<format>,<oper>,< AcT>]</p> |
| AT+COPS=? | <p>Test command returns a list of quintuplets, each representing an operator present in the network.</p> <p>The quintuplets in the list are separated by commas:</p> <p>+COPS: [list of supported (<stat>,long alphanumeric <oper>,short alphanumeric <oper>,numeric <oper>,<AcT>)]</p> <p>[,,(list of supported <mode>s),(list of supported <format>s)]</p> <p>where:</p> <p><stat> - operator availability</p> <ul style="list-style-type: none"> 0 - unknown 1 - available 2 - current 3 - forbidden |

| | |
|----------------------------|--|
| +COPS – Operator Selection | |
| | 1 - GSM Compact 2 - UTRAN Note: if the command options require a network scan, this command may require some |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.3.5 Facility Lock/Unlock - +CLCK

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

| | |
|--------------------------------------|--|
| +CLCK – Facility Lock /Unlock | |
| | <p>"PC" - Corporate Personalization (refer 3GPP TS 22.022 [33])</p> <p>"PF" - lock Phone to the very First inserted SIM/UICC card (also referred in the present document as PH-FSIM) (MT requests password when any other than the first SIM/UICC card is inserted)</p> <p><mode> - defines the operation to be done on the facility</p> <p>0 - unlock facility</p> <p>1 - lock facility</p> <p>2 - query status</p> <p><passwd> - shall be the same as password specified for the facility from the DTE user interface or with command Change Password +CPWD</p> <p><class> - sum of integers each representing a class of information (default is 7)</p> <p>1 - voice (telephony)</p> <p>2 - data (refers to all bearer services)</p> <p>4 - fax (facsimile services)</p> <p>8 - short message service 6 - data circuit sync</p> <p>32 - data circuit async</p> <p>64 - dedicated packet access 128 - dedicated PAD access</p> <p>Note: when <mode>=2 and command successful, it returns:</p> <p>+CLCK: <status>[,<class1>[<CR><LF>]+CLCK: <status>,<class2></p> <p>[...]]</p> |
| AT+CLCK=? | Test command reports all the facilities supported by the device. |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.3.6 Change Facility Password - +CPWD

| +CPWD – Change Facility Password | |
|--|---|
| AT+CPWD= <fac>, <oldpwd>, <newpwd> | <p>Execution command changes the password for the facility lock function defined by command Facility Lock +CLCK.</p> <p>Parameters:</p> <p><fac> - facility</p> <p>SC -SIM (PIN request)</p> <p>AB - All barring services</p> <p>P2 - SIM PIN2</p> <p>AC - All Incoming barring services</p> <p>AG – All outgoing barring services</p> <p>AI - BAIC (Barr All Incoming Calls)</p> <p>AO - BAO (Barr All Outgoing Calls)</p> <p>IR - BIC-Roam (Barr Incoming Calls when Roaming outside the home country)</p> <p>OI - BOIC (Barr Outgoing International Calls)</p> <p>OX - BOIC-exHC (Barr Outgoing International Calls except to Home Country)</p> <p><oldpwd> - string type, it shall be the same as password specified for the facility from the ME user interface or with command +CPWD.</p> <p><newpwd> - string type, it is the new password</p> |
| AT+CPWD=? | Test command returns a list of pairs (<fac>,<pwdlength>) which presents the available facilities and the maximum length of their password (<pwdlength>) |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.3.7 Calling Line Identification Presentation - +CLIP

| +CLIP – Calling Line Identification Presentation | |
|--|---|
| AT+CLIP=[<n>] | Set command enables/disables the presentation of the CLI (Calling Line Identity) at the TE. This command refers to the 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. |

| +CLIP – Calling Line Identification Presentation | |
|--|--|
| | <p>Parameters:</p> <p><n></p> <p>0 - disables CLI indication (factory default)</p> <p>1 - enables CLI indication</p> <p>If enabled the device reports after each RING the response:</p> <p>+CLIP:<number>,<type>,"",128,<alpha>,<CLI_validity></p> <p>where:</p> <p><number> - string type phone number of format specified by <type></p> <p><type> - type of address octet in integer format</p> <p>128 - both the type of number and the numbering plan are unknown 129 – 129 -unknown type of number and ISDN/Telephony numbering plan</p> <p>145 - international type of number and ISDN/Telephony numbering plan (contains the character "+")</p> <p><alpha> - string type; alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command Select TE character set</p> <p>+CSCS.</p> <p><CLI_validity></p> <p>0 - CLI valid</p> <p>1 - CLI has been withheld by the originator.</p> <p>2 - CLI is not available due to interworking problems or limitation of originating network.</p> |
| AT+CLIP? | <p>Read command returns the presentation status of the CLI in the format:</p> <p>+CLIP: <n>,<m></p> <p>where:</p> <p><n></p> <p>0 - CLI presentation disabled</p> <p>1 - CLI presentation enabled</p> <p><m> - status of the CLIP service on the network</p> <p>0 - CLIP not provisioned</p> |

| +CLIP – Calling Line Identification Presentation | |
|--|--|
| | <ul style="list-style-type: none"> - CLIP provisioned - unknown (e.g. no network is present) <p>Note: This command issues a status request to the network. Hence, it may take a few seconds to give the answer due to the time needed to exchange data.</p> |
| AT+CLIP=? | Test command returns the supported values of parameter <n> |
| Reference | 3GPP TS 27.007(3GPP Only) |
| Note | The command changes only the report behaviour of the device. It does not change CLI supplementary service setting on the network. |

4.3.3.3.8 Calling Line Identification Restriction - +CLIR

| +CLIR – Calling Line Identification Restriction | |
|---|--|
| AT+CLIR=[<n>] | <p>Set command overrides the CLIR subscription set in the network. The value becomes the default setting for all following outgoing calls. This adjustment can be revoke by using the opposite command. This command refers to CLIR- service (3GPP TS 02.81/21.081) that allows a calling subscriber to enable or disable the presentation of the CLI to the called party when originating a call.</p> <p>Parameter:</p> <ul style="list-style-type: none"> <n> - facility status on the Mobile 0 - CLIR facility according to CLIR service network status 1 - CLIR facility active (CLI not sent) |
| AT+CLIR? | <p>Read command gives the default adjustment for all outgoing calls (<n>) and also triggers an interrogation of the provision status of the CLIR service (<m>), where</p> <ul style="list-style-type: none"> <n> - facility status on the Mobile 0 - CLIR facility according to CLIR service network status 1 - CLIR facility active (CLI not sent) 2 - CLIR facility not active (CLI sent) <m> - facility status on the Network 0 - CLIR service not provisioned 1 - CLIR service provisioned permanently 2 - Unknown (e.g. no network present, etc.) |
| AT+CLIR=? | Test command reports the supported values of parameter <n>. |
| Reference | 3GPP TS 27.007(3GPP Only) |
| Note | This command sets the default behaviour of the device for outgoing calls. |

4.3.3.3.9 Connected line identification presentation - COLP

| +COLP – Connected Line Identification Presentation | |
|--|--|
| AT+COLP=[<n>] | <p>Set command enables or disables the presentation of the COL at the TE</p> <p>Parameter:</p> <p><n></p> <p>0 disable (factory default)</p> <p>1 enable</p> <p>Note: When enabled (and the called subscriber allows it), +COLP: <number>,<type>[,<subaddr>,<satype> [,<alpha>]] intermediate res ult code is returned from TA to TE before any +CR or V.25ter [14] responses. It is manufacturer specific if this response is used when normal voice call is established.</p> |
| AT+COLP? | <p>Read command gives the status of <n> and triggers an interrogation of the pro vision status of the COLP service according 3GPP TS 22.081 [3] (given in <m>).</p> <p>+COLP: <n>,<m></p> <p>Where:</p> <p><n></p> <p>0 disable</p> <p>1 enable</p> <p><m></p> <p>0 - COLP not provisioned 1 - COLP provisioned</p> |
| AT+COLP=? | Test command returns supported parameters <n> |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.3.10 Called line identification presentation - +CDIP

| +CDIP – Parameter Command Syntax | |
|----------------------------------|--|
| AT+CDIP=[<n>] | <p>This command relates to a network service that provides "multiple called numbers (called line identifications) service" to an MT. This command enables a called subscriber to get the called line identification of the called party when receiving a mobile terminated call. Set command enables or disables the</p> |

| +CDIP – Parameter Command Syntax | |
|----------------------------------|--|
| | <p>presentation of the called line identifications at the TE.</p> <p>When the presentation of the called line identification at the TE is enabled, +CDIP:<number>,<type>[,<subaddr>,<satype>] response is returned after every RING (or +CRING:</p> <p><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.</p> <p><n> (parameter sets/shows the result code presentation status to the TE):</p> <p>0 - disable 1 - enable</p> <p><number> string type phone number of format specified by <type></p> <p><type> type of address octet in integer format (refer 3GPP TS 24.008 [8] subclause 10.5.4.7)</p> <p><subaddr> string type subaddress of format specified by <satype></p> <p><satype> type of subaddress octet in integer format (refer 3GPP TS 24.008 [8] subclause 10.5.4.8)</p> |
| AT+CDIP? | <p>+CDIP: <n>,<m></p> <p>Read command gives the status of <n> and triggers an interrogation of the provision status of the "multiple called numbers" service. Test command returns values supported as a compound value.</p> <p>Defined values <n> (parameter sets/shows the result code presentation status to the TE):</p> <p>0 - disable 1 - enable</p> <p><m> (parameter shows the subscriber "multiple called numbers" service status in the network):</p> <p>0 - "multiple called numbers service" is not provisioned 1 - "multiple called numbers service" is provisioned</p> |
| AT+CDIP=? | +CDIP: (list of supported <n>s) |
| Reference | 3GPP Only |

4.3.3.3.11 Call Forwarding Number and Conditions - +CCFC

| +CCFC – Call Forwarding Number And Condition | |
|---|--|
| <p>AT+CCFC= <reason>, <cmd>[,<number> [,<type> [,<class> [,,<time>]]]</p> | <p>Execution command controls the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported.</p> <p>Parameters:</p> <p><reason></p> <ul style="list-style-type: none"> 0 - unconditional 1 - mobile busy 2 - no reply 3 - not reachable 4 - all calls (not with query command) 5 - all conditional calls (not with query command) <p><cmd></p> <ul style="list-style-type: none"> 0 - disable 1 - enable 2 - query status 3 - registration 4 - erasure <p><number> - string type phone number of forwarding address in format specified by <type> parameter</p> <p><type> - type of address octet in integer format : 129 - national numbering scheme 145 - international numbering scheme (contains the character "+")</p> <p><class> - sum of integers each representing a class of information which the command refers to; default 7 (voice + data + fax)</p> <ul style="list-style-type: none"> 1 - voice (telephony) 2 - data 4 - fax (facsimile service) 8 - short message service 16 - data circuit sync 32 - data circuit async 64 - dedicated packet access 128 - dedicated PAD access <p><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)</p> <p>1..30 - automatically rounded to a multiple of 5 seconds (default is 20) Note: when <cmd>=2 and command successful, it returns:</p> <p>+CCFC: <status>,<class1>[,<number>,<type>[,,<time>]]<CR><LF></p> |

| +CCFC – Call Forwarding Number And Condition | |
|--|---|
| | <p>where:</p> <p><status> - current status of the network service</p> <p>0 - not active</p> <p>1 - active</p> <p><class> - same as <class></p> <p><time> - it is returned only when <reason> <cmd>=2.</p> <p>The other parameters are as seen before.</p> |
| AT+CCFC=? | Test command reports supported values for the parameter <reason>. |
| Reference | 3GPP TS 27.007(3GPP Only) |
| Note | When querying the status of a network service (<cmd>=2) the response line for 'not active' case (<status>=0) should be returned only if service is not active for any <class>. |

4.3.3.12 Call Waiting - +CCWA

| +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 are supported.</p> <p>Parameters:</p> <p><n> - enables/disables the presentation of an unsolicited result code: 0 – disable</p> <p>1 – enable</p> <p><cmd> - enables/disables or queries the service at network level:</p> <p>0 - disable</p> <p>1 - enable</p> <p>2 - query status</p> <p><class> - is a sum of integers each representing a class of information which the command refers to; default is 7 (voice + data + fax)</p> <p>1 - voice (telephony)</p> <p>2 - data</p> <p>4 - fax (facsimile services)</p> <p>8 - short message service</p> <p>16 - data circuit sync</p> <p>32 - data circuit async</p> |

| | |
|-----------------------------|--|
| +CCWA – Call Waiting | |
| | <p><status> represents the status of the service: 0 - inactive 1 - active <classn> - same as <class></p> <p>Note: the unsolicited result code enabled by parameter <n> is in the format: +CCWA: <number>,<type>,<class>,[<alpha>][,<cli_validity>] where: <number> - string type phone number of calling address in format specified by <type> <type> - type of address in integer format <class> - see before <alpha> - string type; alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with +CSCS. <cli_validity> 0 - CLI valid 1 - CLI has been withheld by the originator 2 - CLI is not available due to interworking problems or limitations of originating network.</p> <p>Note: if parameter <cmd> omitted then the network is not interrogated. Note: On the query command, the class parameter must not be issued.</p> <p>Note: the difference between call waiting report disabling (AT+CCWA = 0,1,7) and call waiting service disabling (AT+CCWA = 0,0,7) is that in the first case the call waiting indication is sent to the device by network but the device does not report it to the DTE. Instead, in the second case the, call waiting indication is not generated by the network. Hence, the device returns busy to the third party in the 2nd case while in the 1st case a ringing indication is sent to the third party.</p> |
| AT+CCWA? | Read command reports the current value of the parameter <n>. |
| AT+CCWA=? | Test command reports the supported values for the parameter <n>. |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.3.13 Call Holding Services - +CHLD

| +CHLD – Call Holding Service | |
|------------------------------|--|
| AT+CHLD=[<n>] | <p>Execution command controls the network call holding services. With this service, it is possible to temporarily disconnect a call and keep it suspended while the network retains it and in parallel, it is possible to connect another party or make a multiparty connection.</p> <p>Parameter:</p> <p><n></p> <p>0 - releases all held calls, or sets the UDUB (User Determined User Busy) indication for a waiting call. (only from version D)</p> <p>1 - releases all active calls (if any exist), and accepts the other (held or waiting) call</p> <p>1X - releases a specific active call X.</p> <p>2 - Places all active calls (if any exist) on hold and accepts the other (held or waiting) call.</p> <p>2X - places all active calls on hold except call X with which communication shall be resumed (only from version D).</p> <p>3 - adds a held call to the conversation</p> <p>4 - Connects the two calls and disconnects the subscriber from both calls (ECT).</p> <p>Note: "X" is the numbering (starting with 1) of the call given by the sequence of setting up or receiving the calls (active, held or waiting) as seen by the served subscriber. Calls hold their number until released. New calls take the lowest available number.</p> <p>Note: where both a held and a waiting call exist, the above procedures apply to the waiting call (i.e. not to the held call) in conflicting situation.</p> |
| AT+CHLD=? | <p>Test command returns the list of supported <n>s.</p> <p>+CHLD: (0,1,1X,2,2X,3,4)</p> |
| Reference | 3GPP TS 27.007(3GPP Only) |
| Note | ONLY for VOICE calls |

4.3.3.3.14 Call deflection - +CTFR

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

4.3.3.3.15 Unstructured Supplementary Service Data - +CUSD

| +CUSD – Unstructured Supplementary Service | |
|--|--|
| AT+CUSD= [<n>[,<str> [,<dcs>]]] | <p>Set command allows control of the Unstructured Supplementary Service Data (USSD [3GPP TS 02.90/22.090]).</p> <p>Parameters:</p> <p><n> - used to disable/enable the presentation of an unsolicited result code.</p> <p>0 - disable the result code presentation in the DTA</p> <p>1 - enable the result code presentation in the DTA</p> <p>2 - cancel an ongoing USSD session (not applicable to read command response)</p> <p><str> - USSD-string (when <str> parameter is not given, network is not interrogated)</p> <p>If <dcs> indicates that 3GPP TS 3.38/23.038 default alphabet is used ME/TA converts GSM alphabet into current TE character set (see +CSCS).</p> <p>If <dcs> indicates that 8-bit data coding scheme is used: ME/TA converts</p> |

| | |
|---|--|
| +CUSD – Unstructured Supplementary Service | |
| | <p>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).</p> <p><dc> - 3GPP TS 3.38/23.038 Cell Broadcast Data Coding Scheme in integer format (default is 0).</p> <p>Note: the unsolicited result code enabled by parameter <n> is in the format: +CUSD: <m>[,<str>,<dc>] to the TE where: <m>: 0 - no further user action required (network initiated USSD-Notify, or no further information needed after mobile initiated operation). 1 - further user action required (network initiated USSD-Request, or further information needed after mobile initiated operation) 2 -USSD terminated by the network 3 - other local client has responded</p> |
| AT+CUSD? | Read command reports the current value of the parameter <n> |
| AT+CUSD=? | Test command reports the supported values for the parameter <n> |
| Reference | 3GPP TS 27.007(3GPP Only) |
| Note | Only mobile initiated operations are supported |

4.3.3.3.16 Advice of Charge - +CAOC

| | |
|---------------------------------|---|
| +CAOC – Advice Of Charge | |
| AT+CAOC= <mode> | <p>Set command refers to the Advice of Charge supplementary services that enable subscriber to get information about the cost of calls; the command also includes the possibility to enable an unsolicited event reporting of the Current Call Meter (CCM) information.</p> <p>Parameter: <mode> 0 - query CCM value 1 - disables unsolicited CCM reporting 2 - enables unsolicited CCM reporting</p> |

| +CAOC – Advice Of Charge | |
|--------------------------|---|
| | <p>Note: the unsolicited result code enabled by parameter <mode> is in the format:</p> <p>+CCCM: <ccm></p> <p>where:</p> <p><ccm> - current call meter in home units, string type: three bytes of the CCM Value in hexadecimal format [e.g. "00001E" indicates decimal value 30]</p> <p>Note: the unsolicited result code +CCCM sent when the CCM value changes, but not more</p> |
| AT+CAOC? | <p>Read command reports the value of parameter <mode> in the format:</p> <p>+CAOC: <mode></p> |
| AT+CAOC=? | Test command reports the supported values for <mode> parameter. |
| Reference | 3GPP TS 27.007(3GPP Only) |
| Note | +CAOC command returns an estimate of the cost of the current call only, produced by the MS and based on the information provided by either AoCI or AOCC supplementary services; it is not stored in the SIM. |

4.3.3.17 List Current Calls - +CLCC

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

| +CLCC – List Current Calls | |
|----------------------------|--|
| | <p>3 - alerting (MO call) 4 - incoming (MT call) 5 - waiting (MT call)</p> <p><mode> - call type 0 - voice 1 - data 2 - fax 9 - unknown</p> <p><mpty> - multiparty call flag 0 - call is not one of multiparty (conference) call parties 1 - call is one of multiparty (conference) call parties</p> <p><number> - string type phone number in format specified by <type></p> <p><type> - type of phone number octet in integer format 129 - national numbering scheme 145 - international numbering scheme (contains the character "+")</p> |
| AT+CLCC=? | Test command returns the OK result code |
| Reference | 3GPP TS 27.007 |

4.3.3.3.18 SS Notification - +CSSN

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

| +CSSN –SS Notification | |
|------------------------|--|
| | <p>When $\langle n \rangle = 1$ and a supplementary service notification is received after a mobile originated call setup, an unsolicited code:</p> <p>+CSSI: $\langle \text{code1} \rangle$</p> <p>is sent to TE before any other MO call setup result codes, where:</p> <p>$\langle \text{code1} \rangle$:</p> <ul style="list-style-type: none"> 0 - unconditional call forwarding is active 1 - some of the conditional call forwardings are active 2 - call has been forwarded 3 - call is waiting 5 - outgoing calls are barred 6 - incoming calls are barred <p>When $\langle m \rangle = 1$ and a supplementary service notification is received during a mobile terminated call setup or during a call, an unsolicited result code:</p> <p>+CSSU: $\langle \text{code2} \rangle$</p> <p>is sent to TE, where:</p> <p>$\langle \text{code2} \rangle$:</p> <ul style="list-style-type: none"> 0 - this is a forwarded call (MT call setup) 2 - call has been put on hold (during a voice call) 3 - call has been retrieved (during a voice call). 4 - multiparty call entered (during a voice call) 5 - call on hold has been released (this is not a SS notification) (during a voice call) |
| AT+CSSN? | Read command reports the current value of the parameters. |
| AT+CSSN=? | Test command reports the supported range of values for parameters $\langle n \rangle$, $\langle m \rangle$. |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.3.19 Closed User Group Supplementary Service Control - +CCUG

| +CCUG – Closed User Group Supplementary Service Control | |
|---|---|
| AT+CCUG= [<n> [,<index> [,<info>]]] | <p>Set command allows control of the Closed User Group supplementary service [3GPP TS 02.85/22.085].</p> <p>Parameters:</p> <p><n></p> <p>0 - disable CUG temporary mode (factory default).</p> <p>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.</p> <p><index></p> <p>0..9 - CUG index</p> <p>10 not an index (preferential CUG taken from subscriber data) (default)</p> <p><info></p> <p>0 - no information (default)</p> <p>1 - suppress Outgoing Access (OA)</p> |
| AT+CCUG? | Read command reports the current value of the parameters |
| AT+CCUG=? | Test command returns the OK result code |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.3.20 Preferred Operator List - +CPOL

| +CPOL – Preferred Operator | |
|--|--|
| AT+CPOL= [<index>] [<format> [<oper>] [<GSM_AcT>, <GSM_Compact_ AcT>, <UTRAN_AcT>, <EUTRAN_AcT>]] | Execution command writes an entry in the SIM list of preferred operators. Parameters: <index> - integer type; the order number of operator in the SIM preferred operator list 1..n <format> 0 long format alphanumeric <oper> 1 short format alphanumeric <oper> 2 - numeric <oper> <oper> - string type <GSM_AcT> - GSM access technology 0 access technology not selected 1 access technology selected <GSM_Compact_AcT> - GSM compact access technology 0 access technology not selected 1 access technology selected <UTRA_AcT> - UTRA access technology 0 access technology not selected 1 access technology selected <E-UTRAN_AcTn> - E-UTRAN access technology: 0 - access technology not selected 1 - access technology selected |
| AT+CPOL? | Read command returns all used entries from the SIM list of preferred operators. |
| AT+CPOL=? | Test command returns the whole <index> range supported by the SIM and the range for the parameter <format> |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.21 Selection of preferred PLMN list - +CPLS

| +CPLS – Selection OF Preferred PLMN List +CPLS | |
|--|---|
| AT+CPLS=<list> | <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>Parameter: <list>:</p> <p>0 - User controlled PLMN selected from Access Technology EFPLMNwAcT, if not found in the SIM/UICC, then use PLMN preferred list EFPLMNsel (this file is only available in SIM card or GSM application selected in UICC) (Default)</p> <p>1 - Operator controlled PLMN selector with Access Technology EFOPLMNwAcT</p> <p>2 - HPLMN selector with Access Technology EFHPLMNwAcT</p> |
| AT+CPLS? | <p>Read command returns the selected PLMN selector list from the SIM/USIM</p> <p>+CPLS: <list></p> |
| AT+CPLS=? | <p>Test command returns the whole index range supported by the SIM/USIM</p> |
| Reference | <p>3GPP TS 27.007(3GPP Only)</p> |

4.3.3.4 Mobile Equipment Control

4.3.3.4.1 Phone Activity Status - +CPAS

| +CPAS – Phone Activity Status | |
|-------------------------------|---|
| AT+CPAS | <p>Execution command reports the device status in the form:</p> <p>+CPAS: <pas></p> <p>Where:</p> <p><pas> - phone activity status</p> <p>0 - ready (device allows commands from TA/TE)</p> <p>3 - ringing (device is ready for commands from TA/TE, but the ringer is active)</p> <p>4 - call in progress (device is ready for commands from TA/TE, but a call is in progress)</p> |
| AT+CPAS=? | <p>Test command reports the supported range of values for <pas>.</p> <p>Note: although +CPAS is an execution command, 3gpp TS 27.007 requires the Test command to be defined.</p> |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.4.2 Set Phone Functionality - +CFUN

| +CFUN – Set Phone Functionality | |
|---------------------------------|---|
| AT+CFUN= [<fun> [,<rst>]] | <p>Set command selects the level of functionality in the ME. Parameters: -</p> <p><fun> - is the power saving function mode</p> <p>0 - minimum functionality, NON-CYCLIC SLEEP mode: in this mode, the AT interface is not accessible by UART. Consequently, once you have set <fun> level 0, do not send further characters. Otherwise these characters remain in the input buffer and may delay the output of an unsolicited result code. The first wake-up event stops power saving and takes the ME back to full functionality level <fun>=1.</p> <p>1 - mobile full functionality with power saving disabled (factory default)</p> <p>4 - disable phone both transmit and receive RF circuits</p> <p>5 - factory test mode</p> <p>6 - reset</p> <p>7 - offline mode</p> <p><rst> - reset flag</p> <p>0 - do not reset the ME before setting it to <fun> functionality level.</p> <p>1 - reset the ME before setting it to <fun> functionality level. This option works only with <fun> =1, with other values it will return an error.</p> <p>Note: AT+CFUN=2 is not supported.</p> <p>Note: Issuing AT+CFUN=4[,0] in fact causes the module to perform both a network deregistration and a SIM deactivation.</p> <p>Note: If power saving is enabled, most modes reduce power consumption during idle time, thus allowing a longer standby time with a given battery capacity.</p> <p>Note: To place the module in power saving mode, set the <fun> parameter to value = 5 and the line DTR (RS232) must be set to OFF. Once in power saving, the CTS line switches to the OFF status to signal that the module is really in power saving condition.</p> <p>During the power saving condition, before sending any AT command on the serial line, first enable DTR, then wait for the CTS (RS232) line to go to ON status.</p> <p>Until the DTR line is ON, the module will not return back from the power saving condition.</p> <p>Note: The power saving function does not affect the network behavior of the module.</p> |

| +CFUN – Set Phone Functionality | |
|---------------------------------|---|
| | Even during the power save condition the module remains registered on the network and reachable for incoming calls or SMS. If a call comes in during power saving, then the module will wake up and proceed normally with the unsolicited incoming call code. |
| AT+CFUN? | Read command reports the current setting of <fun>. |
| AT+CFUN=? | Test command returns the list of supported values for <fun> and <rst>. |
| Reference | 3GPP TS 27.007 |

4.3.3.4.3 Enter PIN - +CPIN

| +CPIN – Enter PIN | |
|-------------------------------|--|
| AT+CPIN= <pin> [,<newpin>] | <p>Set command sends the device one of the necessary passwords 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 <newpin> is required. This second pin, <newpin> 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 <pin> and <newpin> when PIN request is pending; if no PIN request is pending the command will return an error code. To change the PIN the command +CPWD must be used instead.</p> <p>Parameters: <pin> - string type value <newpin> - string type value.</p> <p>To check the status of the PIN request use the command AT+CPIN?</p> |
| AT+CPIN? | <p>Read command reports the PIN/PUK/PUK2 request status of the device in the form: +CPIN: <code> where: <code> - PIN/PUK/PUK2 request status code READY - ME is not awaiting any password SIM PIN - ME is awaiting SIM PIN SIM PUK - ME is awaiting SIM PUK PH-SIM PIN - ME is awaiting phone-to-SIM card password. PH-FSIM PIN - ME is awaiting phone-to-very-first-SIM card password. PH-FSIM PUK - ME is awaiting phone-to-very-first-SIM card unblocking</p> |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------|---|---------|-------|---------|-------|---|----|-------|------|---|----|------|-------|---|----|------|-------|---|----|------|-------|---|----|-------|-------|---|----|------|--|---|----|-------|--|
| <p>+CPIN – Enter PIN</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <p>password.</p> <p>SIM PIN2 - ME is awaiting SIM PIN2; this <code> is returned only when the last executed command resulted in PIN2 authentication failure (i.e. +CME ERROR: 17)</p> <p>SIM PUK2 - ME is awaiting SIM PUK2; this <code> is returned only when the last executed command resulted in PUK2 authentication failure (i.e. +CME ERROR: 18)</p> <p>PH-NET PIN – ME is awaiting network personalization password</p> <p>PH-NET PUK - ME is awaiting network personalization unblocking password</p> <p>PH-NETSUB PIN - ME is awaiting network subset personalization password</p> <p>PH-NETSUB PUK - ME is awaiting network subset personalization unblocking password</p> <p>PH-SP PIN - ME is awaiting service provider personalization password PH-SP PUK - ME is awaiting service provider personalization unblocking password</p> <p>PH-CORP PIN - ME is awaiting corporate personalization password</p> <p>PH-CORP PUK - ME is awaiting corporate personalization unblocking password</p> <p>Note: Pin pending status at startup depends on PIN facility setting, to change or query the default power up setting use the command AT+CLCK=SC,<mode>,<pin></p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Example</p> | <p>AT+CMEE=1 OK AT+CPIN?</p> <p>+CME ERROR: 10 error: you have to insert the SIM</p> <p>AT+CPIN?</p> <p>+CPIN: READY you inserted the SIM and device is not waiting for PIN to be given</p> <p>OK</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Note</p> | <p>What follows is a list of the commands which are accepted when ME is pending SIM PIN or SIM PUK</p> <table border="1"> <tr> <td>A</td> <td>&K</td> <td>+FCLASS</td> <td>+CPIN</td> </tr> <tr> <td>D</td> <td>&N</td> <td>+GCAP</td> <td>+CSQ</td> </tr> <tr> <td>H</td> <td>&P</td> <td>+GCI</td> <td>+CIND</td> </tr> <tr> <td>O</td> <td>&S</td> <td>+IPR</td> <td>+CMER</td> </tr> <tr> <td>E</td> <td>&V</td> <td>+IFC</td> <td>+CCLK</td> </tr> <tr> <td>I</td> <td>&W</td> <td>+ILRR</td> <td>+CALA</td> </tr> <tr> <td>L</td> <td>&Y</td> <td>+ICF</td> <td></td> </tr> <tr> <td>M</td> <td>&Z</td> <td>+CRSM</td> <td></td> </tr> </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 | |
| 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| +CPIN – Enter PIN | | | |
|-------------------|-------|-------|--------|
| P | +DS | | |
| Q | %L | +DR | |
| %Q | +CGMI | | |
| T | \Q | +CGMM | |
| V | +CGMR | +CLAC | |
| X | \V | +GMI | +CMEE |
| Z | +CRC | +GMM | +CGREG |
| &C | +CRLP | +GMR | +CBC |
| &D | +CREG | +CGSN | +CSDH |
| &F | +CFUN | +GSN | +CNMI |
| +COPS | +CHUP | +CR | |
| +CLIP | +CPAS | | |

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

| | |
|-----------|---------------------------|
| Reference | 3GPP TS 27.007(3GPP Only) |
|-----------|---------------------------|

4.3.3.4.4 Signal Quality - +CSQ

| +CSQ – Signal Quality | |
|-----------------------|--|
| AT+CSQ | <p>Execution command reports received signal quality indicators in the form:</p> <p>+CSQ: <rssi>,<ber> Where:</p> <p><rssi> - received signal strength indication</p> <p>0 - (-113) dBm or less</p> <p>1 - (-111) dBm</p> <p>2..30 - (-109)dBm..(-53)dBm / 2 dBm per step</p> <p>31 - (-51)dBm or greater</p> <p>99 - not known or not detectable</p> <p><ber> - bit error rate (in percent)</p> <p>0 - less than 0.2%</p> <p>1 - 0.2% to 0.4%</p> <p>2 - 0.4% to 0.8%</p> |

| | |
|------------------------------|--|
| +CSQ – Signal Quality | |
| | <p>5 - 3.2% to 6.4%</p> <p>6 - 6.4% to 12.8%</p> <p>7 - more than 12.8%</p> <p>99 - not known or not detectable</p> <p>Note: this command should be used instead of the %Q and %L commands, since the relevant parameters refer to the radio link and no line is present, hence %Q and %L have no meaning.</p> |
| AT+CSQ=? | <p>Test command returns the supported range of values of the parameters <rsqi> and <ber>.</p> <p>Note: although +CSQ is an execution command without parameters, 3GPP TS 27.007 requires the Test command to be defined.</p> |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.4.5 Indicator Control - +CIND

| | |
|--|--|
| +CIND – Indicator Control | |
| <p>AT+CIND=</p> <p>[<state> [,<state></p> <p>[...]]]</p> | <p>Set command is used to control the registration state of ME indicators, in order to automatically send the +CIEV URC whenever the value of the associated indicator changes. The supported indicators (<descr>) and their order are shown in the test command AT+CIND=?</p> <p>Parameter:</p> <p><state> - registration state</p> <p>0 - The indicator is deregistered; no unsolicited result code (+CIEV URC) is automatically sent by the ME to the application whenever the value of the associated indicator changes.</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> |
| AT+CIND? | <p>Read command returns the current value of ME indicators, in the format:</p> <p>+CIND: <ind>,<ind ind></p> <p>Note: the order of the values for <ind> is the same as that in which the associated indicators appear from test command AT+CIND=?</p> |
| AT+CIND=? | <p>Test command returns pairs, where string value <descr> is a description (max. 16 chars) of the indicator and compound value is the supported values for the</p> |
| +CIND – Indicator Control | |

| | |
|--|--|
| | <p>indicator, in the format:</p> <p>+CIND: (<descr>, (list of supported <ind>s)),(<descr>, (list of supported <ind>s)) (<descr>, (list of supported <ind>s))</p> <p>where:</p> <p><descr> - indicator names as follows (along with their <ind> ranges). battchg - battery charge level.</p> <p><ind>- battery charge level indicator range 0..5 - battery levels.</p> <p>signal - signal quality. <ind> - signal quality indicator range 0..5 - signal levels.</p> <p>service - service availability. <ind> - service availability indicator range 0 - not registered to any network. 1 - Registered.</p> <p>call - call in progress. <ind> - call in progress indicator range. 0 - there are no calls in progress 1 - at least one call has been established.</p> <p>roam - roaming. <ind> - roaming indicator range. 0 - registered to home network or not registered.</p> |
|--|--|

| +CIND – Indicator Control | |
|---------------------------|---|
| | <p>1 - registered to other network.</p> <p>smsfull - a short message memory storage in the MT has become full (1), or memory locations are available (0).</p> <p><ind> - short message memory storage indicator range. 0 - memory locations are available.</p> <p>1 - a short message memory storage in the MT has become full.</p> <p>"GPRS coverage" there is packet service coverage.</p> <p>0 no packet service.</p> <p>1 module is attached to a packet service.</p> <p>"callsetup" call setup status indicator.</p> <p>0 - No active call setup.</p> <p>1 - MT call is waiting or ringing.</p> <p>2 - MO call was initiated.</p> <p>3 - MO call ringing at B-party.</p> |
| Note | See command +CMER |
| Reference | 3GPP TS 27.007 |

4.3.3.4.6 Mobile Equipment Event Reporting - +CMER

| +CMER – Mobile Equipment Event Reporting | |
|--|--|
| AT+CMER= [<mode> [,<keyp> [,<disp> [,<ind> [,<bfr>]]]]] | Set command enables/disables sending of unsolicited result codes from TA to TE in the case of indicator state changes (NOTE : sending URCs in the case of key presses or display changes is currently not implemented). Parameters: <mode> - controls the processing of unsolicited result codes 0 - discard +CIEV Unsolicited Result Codes. 1- discard +CIEV Unsolicited Result Codes when TA-TE link is reserved (e.g. on- line data mode); otherwise forward them directly to the TE. 2- buffer +CIEV Unsolicited Result Codes in the TA when TA-TE link is reserved (e.g. on-line data mode) and flush them to the TE after reservation; otherwise forward them directly to the TE. 3- forward +CIEV Unsolicited Result Codes directly to the TE; when TA is in on- line data mode each +CIEV URC is replaced with a Break (100 ms), and is stored in a buffer; once the ME goes into command mode (after +++ was entered), all URCs stored in the buffer will be output. <keyp> - keypad event reporting 0 - no keypad event reporting <disp> - display event reporting 0 - no display event reporting <ind> - indicator event reporting 0 - no indicator event reporting 1 - indicator event reporting <bfr> - TA buffer clearing 0 TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1...3 is entered |
| AT+CMER? | Read command returns the current setting of parameters, in the format: +CMER: <mode>,<keyp>,<disp>,<ind>,<bfr> |
| AT+CMER=? | Test command returns the range of supported values for parameters <mode>,<keyp>,<disp>,<ind>,<bfr>, in the format: +CMER: (list of supported <mode>s),(list of supported <keyp>s),(list of supported <disp>s),(list of supported <ind>s),(list of supported <bfr>s) |
| Reference | 3GPP TS 27.007 |

4.3.3.4.7 Select Phonebook Memory Storage - +CPBS

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

4.3.3.4.8 Read Phonebook Entries - +CPBR

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

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

4.3.3.4.9 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) whose alphanumeric field starts with string <findtext>.</p> <p>Parameter:</p> <p><findtext> - string type, used character set should be as selected with command +CSCS.</p> <p>The command returns a report in the form:</p> <pre>[+CPBF: <index1>,<number>,<type>,<text>[<CR><LF> +CPBF: <index2>,<number>,<type>,<text>[...]]]</pre> <p>where:</p> <p><index n> - the location number of the phonebook entry <number> - string type phone number of format <type> <type> - type of phone number octet in integer format 129 - national numbering scheme 145 - international numbering scheme (contains the character "+") <text> - the alphanumeric text associated to the number; used character set should be as selected with command +CSCS. <secondtext> - secondary text <email> - email text Either "MC", either "RC" or "LD" or "DC"</p> <p>Note: +CPBF is not applicable if the current selected storage (see +CPBS) is</p> |
| AT+CPBF=? | <p>Test command returns the supported range of values for parameters <indexn> and the maximum lengths of <number> and <text> fields, in the format:</p> <pre>+CPBR: <nlength>,<tlength>,<glength>,<slength>,<elength></pre> <p>where:</p> <p><nlength> - maximum <number> field length, integer type</p> |

| +CPBF – Find Phonebook Entries | |
|--------------------------------|---|
| | <p><tlength> - maximum <name> field length, integer type</p> <p><glength> group name length for example AND group, FDN group.</p> <p><slength> Secondary text length associate with the number</p> <p><elength> <email> length</p> <p>Note: the value of <nlength> could vary depending on the availability of Extension service, in the following situations:</p> <ol style="list-style-type: none"> 1. If "SM" memory storage has been selected [see +CPBS] and the SIM supports the Extension1 service 2. If "FD" memory storage has been selected [see +CPBS] and the SIM supports the Extension2 service |
| Note | Remember to select the PB storage with +CPBS command before issuing PB commands. |
| Reference | 3GPP TS 27.007 |

4.3.3.4.10 Write Phonebook Entry - +CPBW

| +CPBW – Write Phonebook Entry | |
|---|--|
| AT+CPBW= [<index> [,<number> [,<type> [,<text> [,<group> [,<adnumber> [,<adtype> [,<secondtext>[,< email]]]]]]]]]] | Execution command writes phonebook entry in location number <index> in the current phonebook memory storage selected with +CPBS. Parameters: <index> - integer type, value in the range of location numbers of the currently selected phonebook memory storage (see +CPBS). <number> - string type, phone number in the format <type> <type> - the type of number 129 - national numbering scheme 145 - international numbering scheme (contains the character "+") <text> - the text associated to the number, string type; used character set should be the one selected with command +CSCS. <group> - group name the entry may belong to; used character set should be the one selected with command +CSCS. <adnumber> - additional string type phone number of format <adtype>. <adtype> - additional type number octet in integer format. 129 - national numbering scheme 145 - international numbering scheme (contains the character "+") <secondtext> - the alphanumeric text associated with secondary text; used character set should be the one selected with command +CSCS. <email> - The alphanumeric text associated with email address; used character set should be the one selected with command +CSCS. Note: If record number <index> already exists, it will be overwritten. Note: if either <number>, <type>, <text>, <group>, <adnumber>, <adtype>, <secondtext> and <email> are omitted the phonebook entry in location <index> is deleted. Note: if <index> is omitted or <index>=0, the number <number> is stored in the first free phonebook location. |
| AT+CPBW=? | Test command returns location range supported by the current storage as a compound value, the maximum length of <number> field, supported number format of the storage and maximum length of <text> field. The format is: +CPBW: (list of supported <index>s),<nlength>, |

4.3.3.4.11 Clock Management - +CCLK

| +CCLK – Clock Management | |
|--------------------------|--|
| AT+CCLK= <time> | <p>Set command sets the real-time clock of the ME.</p> <p>Parameter:</p> <p><time> - current time as quoted string in the format: "yy/MM/dd,hh:mm:ss±zz"</p> <p>yy - year (two digits are mandatory). range is (00..99)</p> <p>MM - month (two digits are mandatory). range is (01..12)</p> <p>dd - day (two digits are mandatory). available ranges are:</p> <p>(01..28)</p> <p>(01..29)</p> <p>(01..30)</p> <p>(01..31)</p> <p>hh - hour (two digits are mandatory). range is (00..23)</p> <p>mm - minute (two digits are mandatory). range is (00..59)</p> <p>ss - Seconds (two digits are mandatory). range is (00..59)</p> <p>±zz - time zone (indicates the difference, expressed in quarter of an hour, between the local time and GMT; two digits are mandatory), range is - 96..+96</p> |
| AT+CCLK? | <p>Read command returns the current setting of the real-time clock, in the format <time>.</p> |
| AT+CCLK=? | <p>Test command returns the OK result code.</p> |
| Reference | 3GPP TS 27.007 |

4.3.3.4.12 Restricted SIM Access - +CRSM

| +CRSM – Restricted SIM Access | |
|---|--|
| AT+CRSM= <command> [,<fileid> [,<P1>,<P2>, <P3>[,<data>]]] | <p>Execution command transmits to the ME the SIM <command> and its required parameters. ME handles internally all SIM-ME interface locking and file selection routines. As a response to the command, ME sends the current SIM information parameters and response data.</p> <p>Parameters:</p> <p><command> - command passed on by the ME to the SIM 176 - READ BINARY 178 - READ RECORD 192 - GET RESPONSE 214 - UPDATE BINARY 220 - UPDATE RECORD 242 - STATUS</p> <p><Fileid> - identifier of an elementary data file on SIM. Mandatory for every command except STATUS.</p> <p><P1>,<P2>,<P3> - parameter passed on by the ME to the SIM; they are mandatory for every command except GET RESPONSE and STATUS 0..255</p> <p><Data> - information to be read/written to the SIM (hexadecimal character format).</p> <p>The response of the command is in the format: +CRSM: <sw1>,<sw2>[,<response>] where: <sw1>,<sw2> - information from the SIM about the execution of the current command both on successful or failed execution. <response> - on a successful completion of the command previously issued it returns the requested data (hexadecimal character format). It is not returned after a successful UPDATE, BINARY or UPDATE RECORD command.</p> <p>Note: this command requires PIN authentication. However commands READ BINARY and READ RECORD can be issued before PIN authentication and if the SIM is blocked (after three failed PIN authentication attempts) to access the contents of the Elementary Files.</p> |
| | Note: use only decimal numbers for parameters <command>, <fileid>, <P1>, <P2> and <P3>. |
| AT+CRSM=? | Test command returns the OK result code |
| Reference | 3GPP TS 27.007, 3GPP TS 11.11/51.011(3GPP Only) |

4.3.3.4.13 Accumulated Call Meter - +CACM

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

4.3.3.4.14 Accumulated Call Meter Maximum - +CAMM

| +CAMM – Accumulated Call Meter Maximum | |
|--|--|
| AT+CAMM= [<acmmax> [,<pwd>]] | Set command sets the Advice of Charge related Accumulated Call Meter Maximum Value stored in SIM (ACMmax). This value represents the maximum number of home units allowed to be consumed by the subscriber. When ACM reaches <acmmax> value further calls are prohibited. Parameter: <acmmax> - ACM max value, integer type: it is the maximum number of home units allowed to be consumed by the subscriber. <pwd> - PIN2; if PIN2 has been already input once after startup, it is required no more Note: <acmmax> = 0 value disables the feature. |
| AT+CAMM? | Read command reports the ACMmax value stored in SIM in the format: +CAMM : <acmm> where: <acmm> - ACMmax value in home units, string type: three bytes of the ACMmax value in hexadecimal format (e.g. "00001E" indicates |
| AT+CAMM=? | Test command returns the OK result code |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.4.15 Available AT Commands - +CLAC

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

4.3.3.4.16 Automatic Time Zone update - +CTZU

| +CTZU Automatic Time Zone Update | |
|----------------------------------|--|
| AT+CTZU=<onoff> | <p>This command enables and disables automatic time zone update via NITZ. Parameters:</p> <p><onoff>:</p> <p>0 - Disable automatic time zone update via NITZ (default)</p> <p>1 - Enable automatic time zone update via NITZ</p> <p>Note: despite 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.</p> |
| AT+CTZU? | Read command reports the currently selected <onoff> in the format: +CTZU: <onoff> |
| AT+CTZU=? | Test command reports the supported range of values for parameter <onoff> |
| Reference | 3GPP Only |

4.3.3.5 Mobile Equipment Errors

4.3.3.5.1 Report Mobile Equipment Error - +CMEE

| +CMEE – Report Mobile Equipment | |
|---------------------------------|---|
| AT+CMEE=[<n>] | <p>Set command enables/disables the reporting of result codes:</p> <p>+CME ERROR: <err></p> <p>It is an indication of an error relating to the +Cxxx commands issued.</p> <p>When enabled, device related errors cause the +CME ERROR <err> result code instead of the default ERROR result code. ERROR will still be returned normally when the error message relates to syntax, invalid parameters, or DTE functionality.</p> <p>Parameter:</p> <p><n> - enable flag</p> <p>0 - disable +CME ERROR:<err> reports, use only ERROR report. (default)</p> <p>1 - enable +CME ERROR:<err> reports, with <err> in numeric format</p> |
| AT+CMEE? | <p>Read command returns the current value of subparameter <n>:</p> <p>+CMEE: <n></p> |
| AT+CMEE=? | Test command returns the range of values for subparameter <n> |
| Note | +CMEE has no effect on the final result code +CMS |
| Reference | 3GPP TS 27.007 |

4.3.3.6 Voice Control

4.3.3.6.1 DTMF Tones Transmission - +VTS

| +VTS – DTMF Tones Transmission | |
|--|---|
| AT+VTS= <dtmfstring> [,duration] | <p>Execution command allows the transmission of DTMF tones.</p> <p>Parameters:</p> <p><dtmfstring> - string of <dtmf>s, i.e. ASCII characters in the set (0-9), #,*,(A-D); the string can be at most 255 <dtmf>s long; it allows the user to send a sequence of DTMF tones, each of them with a duration that was</p> |

| +VTS – DTMF Tones Transmission | |
|--------------------------------|--|
| | <p>defined through +VTD command.</p> <p><duration> - duration of a tone in 1/100 sec.; this parameter can be specified only if the length of first parameter is just one ASCII character.</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>1..255 - a single DTMF tone will be transmitted for a time <duration> (in 10 ms multiples), no matter what the current +VTD setting is.</p> <p>Note: This command operates in voice mode only (see +FCLASS).</p> |
| AT+VTS=? | <p>Test command provides the list of supported <dtmf>s and the list of supported <duration>s in the format:</p> <p>(list of supported <dtmf>s)[,(list of supported <duration>s)]</p> |
| Reference | 3GPP TS 27.007 and TIA IS-101 (3GPP Only) |

4.3.3.7 Commands for Package Domain

4.3.3.7.1 GPRS Mobile Station Class - +CGCLASS

| +CGCLASS – GPRS Mobile Station Class | |
|--------------------------------------|---|
| AT+CGCLASS= [<class>] | <p>Set command sets the GPRS class according to <class> parameter.</p> <p>Parameter:</p> <p><class> - GPRS class</p> <p>- WCDMA (factory default)</p> <p>Note: the setting is saved in NVM (and available on following reboot).</p> |
| AT+CGCLASS? | <p>Read command returns the current value of the GPRS class in the format:</p> <p>+CGCLASS: <class></p> |
| AT+CGCLASS=? | Test command reports the range for the parameter <class> |
| Reference | 3GPP Only |

4.3.3.7.2 GPRS Attach or Detach - +CGATT

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

4.3.3.7.3 GPRS Event Reporting - +CGEREP

| +CGEREP – GPRS Event Reporting | |
|---------------------------------|---|
| AT+CGEREP= [<mode> [,<bfr>]] | Set command enables or disables sending of unsolicited result codes +CGEV: XXX (see below) from TA to TE in the case of certain events occurring in the TA or the network regarding GPRS events. Parameters: <mode> - controls the processing of URCs specified with this command. 0 - Buffer unsolicited result codes in the TA. If TA result code buffer is full, the oldest one may be discarded. No codes are forwarded to the TE. 1 - Discard unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode); otherwise forward them directly to the TE. 2 - Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE when TA-TE link becomes available, otherwise forward them directly to the TE. |

| +CGEREP – GPRS Event Reporting | |
|--------------------------------|--|
| | <p><bfr> - controls the effect on buffered codes when <mode> 1 or 2 is entered:</p> <p>0 - TA buffer of unsolicited result codes defined within this command is cleared when <mode>=1 or 2 is entered.</p> <p>1 - TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode>=1 or 2 is entered (OK response shall be given before flushing the codes).</p> <p>Unsolicited Result Codes</p> <p>The following unsolicited result codes and the corresponding events are defined:</p> <p>+CGEV: REJECT <PDP_type>, <PDP_addr></p> <p>A network request for PDP context activation occurred when the TA was unable to report it to the TE with a +CRING unsolicited result code and was automatically rejected.</p> <p>+CGEV: NW REACT <PDP_type>, <PDP_addr>, [<cid>]</p> <p>The network has requested a context reactivation. The <cid> that was used to reactivate the context is provided if known to TA.</p> <p>+CGEV: NW DEACT <PDP_type>, <PDP_addr>, [<cid>]</p> <p>The network has forced a context deactivation. The <cid> that was used to activate the context is provided if known to TA.</p> <p>+CGEV: ME DEACT <PDP_type>, <PDP_addr>, [<cid>]</p> <p>The mobile equipment has forced a context deactivation. The <cid> that was used to activate the context is provided if known to TA.</p> <p>+CGEV: NW DETACH</p> <p>The network has forced a GPRS detach. This implies that all active contexts have been deactivated. These are not reported separately.</p> <p>+CGEV: ME DETACH</p> <p>The mobile equipment has forced a GPRS detach. This implies that all active contexts have been deactivated. These are not reported separately.</p> <p>+CGEV: ME CLASS <class></p> <p>The mobile equipment has forced a change of MS class. The highest available class is reported (see +CGCLASS)</p> |
| AT+CGEREP? | <p>Read command returns the current <mode> and <bfr> settings, in the format:</p> <p>+CGEREP: <mode>,<bfr></p> |

| | |
|---------------------------------------|--|
| +CGEREP – GPRS Event Reporting | |
| AT+CGEREP=? | Test command reports the supported range of values for the +CGEREP command parameters. |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.7.4 EPS Network Registration Status - +CEREG

| | |
|---|---|
| +CEREG EPS Network Registration Status | |
| +CEREG=[<n>] | <p>The set command controls the presentation of an unsolicited result code +CEREG: <stat> when <n>=1 and there is a change in the MT's EPS network registration status in E-UTRAN, or unsolicited result code.</p> <p>+CEREG: <stat>[, [<tac>], [<ci>], [<AcT>]] when <n>=2 and there is a change of the network cell in E-UTRAN. The parameters <AcT>, <tac> and <ci> are sent only if available.</p> <p>The value <n>=3 further extends the unsolicited result code with [<cause_type>, <reject_cause>], when available, when the value of <stat> changes. Refer subclause 9.2 for possible <err> values. Current version cannot support <n>=3.</p> <p>Note:</p> <p>If the EPS MT in GERAN/UTRAN/E-UTRAN also supports circuit mode services and/or GPRS services, the +CREG command and +CREG: result codes and/or the +CGREG command and +CGREG: result codes apply to the registration status and location information for those services.</p> <p>Possible response(s):</p> <p>+CME ERROR: <err></p> |

| +CEREG | EPS | Network Registration Status |
|---------|-----|---|
| +CEREG? | | <p>Defined values:</p> <p><n>: integer type</p> <p>0 - disable network registration unsolicited result code</p> <p>1 - enable network registration unsolicited result code +CEREG: <stat></p> <p>2 - enable network registration and location information unsolicited result code +CEREG: <stat>,[<tac>],[<ci>],[<AcT>]]</p> <p>*3 - enable network registration, location information and EMM cause value information unsolicited result code. Current version cannot support <n>=3.</p> <p>+CEREG: <stat>,[<tac>],[<ci>],[<AcT>][,<cause_type>,<reject_cause>]]</p> <p><stat>: integer type; indicates the EPS registration status</p> <p>0 - not registered, MT is not currently searching an operator to register to. 1 - registered, home network.</p> <p>2 - not registered, but MT is currently trying to attach or searching an operator to register to.</p> <p>3 - registration denied.</p> <p>4 - unknown (e.g. out of E-UTRAN coverage).</p> <p>5 - registered, roaming.</p> <p>6 - registered for "SMS only", home network (not applicable)</p> <p>7 - registered for "SMS only", roaming (not applicable).</p> <p>8 - attached for emergency bearer services only (See NOTE 2).</p> <p>9 - registered for "CSFB not preferred", home network (not applicable).</p> <p>10- registered for "CSFB not preferred", roaming (not applicable).</p> <p>Note 2: 3GPP TS 24.008 [8] and 3GPP TS 24.301 [83] specify the condition when the MS is considered as attached for emergency bearer services.</p> <p><tac>: string type; two byte tracking area code in hexadecimal format (e.g. "00C3" equals 195 in decimal).</p> <p><ci>: string type; four byte E-UTRAN cell ID in hexadecimal format.</p> <p><AcT>: integer type; indicates the access technology of the serving cell.</p> <p>0 - GSM (not applicable)</p> <p>1 - GSM Compact (not applicable)</p> <p>2 - UTRAN (not applicable)</p> <p>3 - GSM w/EGPRS (see NOTE 3) (not applicable)</p> |

| | |
|-----------|--|
| +CEREG | EPS Network Registration Status |
| | <p>the information about whether the serving cell supports EGPRS.</p> <p>Note 4: 3GPP TS 25.331 [74] specifies the System Information blocks which give the information about whether the serving cell supports HSDPA or HSUPA.</p> <p><cause_type>: integer type; indicates the type of <reject_cause>.</p> <p>0 - Indicates that <reject_cause> contains an EMM cause value, see 3GPP TS 24.301 [83] Annex A.</p> <p>1 - Indicates that <reject_cause> contains a manufacturer-specific cause.</p> <p><reject_cause>: integer type; contains the cause of the failed registration. The value is of type as defined by <cause_type>.</p> <p>+CEREG: <n>,<stat>[,<tac>],[<ci>],[<AcT>[,<cause_type>,<reject_cause>]]</p> |
| +CEREG=? | <p>Test command returns values supported as a compound value.</p> <p>+CEREG: (list of supported <n>s)</p> |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.7.5 GPRS Network Registration Status - +CGREG

| +CGREG – GPRS Network Registration | |
|------------------------------------|--|
| AT+CGREG= [<n>] | <p>Set command controls the presentation of an unsolicited result code regarding GPRS network registration state</p> <p>+CGREG: (see format below).</p> <p>Parameter:</p> <p><n> - result code presentation mode</p> <p>0 - disable network registration unsolicited result code</p> <p>1 - enable network registration unsolicited result code; if there is a change in the terminal GPRS network registration status the unsolicited result code is issued</p> <p>2 - enable network registration and location information unsolicited result code</p> <p>+CGREG: <stat></p> <p>where:</p> <p><stat> - registration status</p> <p>0 - not registered, terminal is not currently searching a new operator to register to</p> <p>1 - registered, home network</p> <p>2 - not registered, but terminal is currently searching a new operator to register to</p> <p>3 - registration denied</p> <p>4 - unknown</p> <p>5 - registered, roaming</p> <p>If <n>=2 - enable network registration and location information unsolicited result code. if there is a change of the network cell, it is issued the unsolicited result code</p> <p>+CGREG: <stat>[,<lac>,<ci>,<Act>,<rac>] where:</p> <p><stat> - registration status (see above for values)</p> <p><lac> - location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)</p> <p><ci> - cell ID in hexadecimal format.</p> <p><AcT>: integer type; access technology of the serving cell</p> |

| | |
|---|--|
| +CGREG – GPRS Network Registration | |
| | <p>3 - GSM w/EGPRS 4 - UTRAN w/HSDPA 5 - UTRAN w/HSUPA 6 - UTRAN w/HSDPA and HSUPA 7 - E-UTRAN</p> <p><rac> - string type; one byte routing area code in hexadecimal format.</p> |
| AT+CGREG? | <p>Read command returns the status of result code presentation mode <n> and the integer <stat> which shows whether the network has currently indicated the registration of the terminal in the format:</p> <p>+CGREG: <n>,<stat></p> |
| AT+CGREG=? | <p>Test command returns supported values for parameter <n></p> |
| Reference | <p>3GPP TS 27.007(3GPP Only)</p> |

4.3.3.7.6 Printing IP Address Format - +CGPIAF

| | |
|---|--|
| +CGPIAF – Printing IP Address Format | |
| <p>AT+CGPIAF= [<IPv6_AddressFormat> [,<IPv6_SubnetNotation> [,<IPv6_leadingZeros> [,<IPv6_compressZeros>]]]</p> | <p>Set command decides what the format to print IPv6 address parameter.</p> <p>Parameters:</p> <p><IPv6_AddressFormat> - decides the IPv6 address format. Relevant for all AT command parameters, that can hold an IPv6 address.</p> <p>0 Use IPv4-like dot-notation. IP addresses, and subnetwork mask if applicable, are dot-separated.</p> <p>1 Use IPv6-like colon-notation. IP address, and subnetwork mask if applicable and when given explicitly, are separated by a space.</p> <p><IPv6_SubnetNotation> - decides the subnet-notation for <remote address and subnet mask> Setting does not apply if IPv6 address format <IPv6_AddressFormat> = 0.</p> <p>0 Both IP address and subnet mask are stated explicitly, separated by a space.</p> <p>1 The printout format applies /(forward slash) subnet-prefix Classless Inter-Domain Routing (CIDR) notation.</p> <p><IPv6_LeadingZeros> - decides whether leading zeros are omitted or not. Setting does not apply for IPv6 address format <IPv6_AddressFormat> = 0.</p> <p>0 Leading zeros are omitted.</p> <p>1 Leading zeros are included.</p> |

| +CGPIAF – Printing IP Address Format | |
|--------------------------------------|---|
| | <p><IPv6_CompressZeros>: integer type, decides whether 1-n instances of 16-bit zero-values are replaced by only '::'. This applies only once. Setting does not apply if <IPv6_AddressFormat> = 0.</p> <p>0 No zero compression. 1 Use zero compression.</p> |
| AT+CGPIAF? | Read command returns the current parameter setting. |
| AT+CGPIAF=? | Test command returns values supported as compound parameter setting. |
| Example | <pre>AT+CGPIAF=0,0,0,0 OK at+CGPIAF=1,0,0,0 OK</pre> |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.7.7 Define PDP Context - +CGDCONT

| +CGDCONT – Define PDP | |
|--|---|
| AT+CGDCONT= [<cid> [<PDP_type> [<APN> [<PDP_addr> [<d_comp> [<h_comp> [<pd1> [... [<pdN>]]]]]]]]]] | <p>Set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter <cid>.</p> <p>Parameters:</p> <p><cid> - (PDP Context Identifier) numeric parameter which specifies a particular PDP context definition.</p> <p>1..max - where the value of max is returned by the Test command.</p> <p><PDP_type> - (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol.</p> <p>"IP" - Internet Protocol "PPP" - Point to Point Protocol "IPV6" - Internet Protocol, Version 6 "IPV4V6" - Virtual <PDP_type> introduced to handle dual IP stack UE capability.</p> |

| +CGDCONT – Define PDP | |
|-----------------------|---|
| | <p><APN> - (Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested.</p> <p><PDP_addr> - a string parameter that identifies the terminal in the address space applicable to the PDP. The allocated address may be read using the +CGPADDR command.</p> <p><d_comp> - 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>Other values are reserved</p> <p><h_comp> - 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 SNDCP only)</p> <p>3 - RFC2507</p> <p>4 - RFC3095 (applicable for PDCP only)</p> <p><pd1> <pdN> - zero to N string parameters whose meanings are specific to the <PDP_type></p> <p>Note: a special form of the Set command, +CGDCONT=<cid>, causes the values for context number <cid> to become undefined.</p> |
| AT+CGDCONT? | <p>Read command returns the current settings for each defined context in the format:</p> <pre>+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>[,<pd1>[,...[,<pdN>]]][<CR><LF>+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>[,<pd1>[,...[,<pdN>]]][...]</pre> |
| AT+CGDCONT=? | Test command returns values supported as a compound value |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.7.8 Define Secondary PDP Context - +CGDSCONT

| +CGDSCONT Parameter Command Syntax | |
|--|--|
| AT+CGDSCONT= [<cid> ,<p_cid> [,<d_comp> [,<h_comp>]]] | <p>Possible response(s): OK</p> <p>ERROR</p> <p>Description:</p> <p>The set command specifies the PDP context parameter values for a Secondary PDP context identified by the (local) context Identification parameter, <cid>.</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= <cid> causes the values for context number <cid> to become undefined.</p> <p>The read command returns the current settings for each defined context.</p> <p>Defined values:</p> <p><cid>: a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value = 1) is returned by the test form of the command.</p> <p><p_cid>: 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><d_comp>: a numeric parameter that controls PDP data compression (applicable for SMDCP only) (refer 3GPP TS 44.065 [61])</p> <p>0 - off (default if value is omitted)</p> <p>1 - on (manufacturer preferred compression)</p> <p>2 - V.42bis</p> <p>3 - V.44</p> <p>Other values are reserved.</p> |

| +CGDSCONT Parameter Command Syntax | |
|------------------------------------|--|
| | <p><h_comp>: a numeric parameter that controls PDP header compression (refer 3GPP TS 44.065 [61] and 3GPP TS 25.323 [62])</p> <p>0 - off (default if value is omitted)</p> <p>1 - on (manufacturer preferred compression)</p> <p>2 - RFC1144 (applicable for SMDCP only)</p> <p>3 - RFC2507</p> <p>4 - RFC3095 (applicable for PDCP only) Other values are reserved.</p> |
| AT+CGDSCONT? | AT+CGDSCONT: <cid>, <p_cid>, <d_comp>, <h_comp>[<CR><LF>+CGDSCONT: <cid>, <p_cid>, <d_comp>, <h_comp> [...]] |
| AT+CGDSCONT=? | AT+CGDSCONT: (range of supported <cid>s), (list of <cid>s for active primary contexts), (list of supported <d_comp>s), (list of supported <h_comp>s) |
| Reference | 3GPP Only |

4.3.3.7.9 Traffic Flow Template +CGTFT

| +CGTFT Parameter Command Syntax | |
|--|---|
| <p>AT+CGTFT=</p> <p>[<cid>,</p> <p><packet filter</p> <p>identifier>,</p> <p><evaluation precedence</p> <p>index>[,<source address</p> <p>and subnet mask></p> <p>[,<protocol number</p> <p>(ipv4) /</p> <p>next header (ipv6)></p> <p>[,<destination port</p> <p>range> [,<source port</p> <p>range> [,<ipsec</p> <p>security parameter</p> <p>index (spi)> [,<type of</p> <p>service (tos) (ipv4) and</p> <p>mask / traffic class (ipv6)</p> <p>and mask> [,<flow</p> | <p>Possible Response(s): OK</p> <p>ERROR</p> <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. The concept further described in the 3GPP TS 23.060 [47].</p> <p>A TFT consists of one to 16 Packet Filters, each identified by a unique <packet filter identifier>. A Packet Filter also has an <evaluation precedence index> that is unique within all TFTs associated with all PDP contexts that are associated with the same PDP address.</p> <p>The set command specifies a Packet Filter that is added to the TFT stored in the MT and used for the context identified by the (local) context identification parameter, <cid>. The specified TFT will be stored in the GGSN in UMTS/GPRS and Packet GW in EPS only at activation or MS-initiated modification of the related context. Since this is the same parameter that is used in the +CGDCONT and +CGDSCONT commands, the +CGTFT command is effectively an extension to these commands. The Packet Filters consist of</p> |

| +CGTFT Parameter Command Syntax | |
|---------------------------------|--|
| | <p>in the form "t.m".</p> <p><flow label (ipv6)>: numeric value in hexadecimal format. The value range is from 00000 to FFFFF. Valid for IPv6 only.</p> <p><direction>: a numeric parameter which specifies the transmission direction in which the packet filter shall be applied.</p> <p>0 - Pre-Release 7 TFT filter (see 3GPP TS 24.008 [8], table 10.5.162)</p> <ul style="list-style-type: none"> - Uplink - Downlink - Birectional (Up & Downlink) (default if omitted) <p>Some of the above listed attributes may coexist in a Packet Filter while others mutually exclude each other, the possible combinations are shown in 3GPP TS 23.060 [47].</p> |
| AT+CGTFT? | <p>The read command returns the current settings for all Packet Filters for each defined context.</p> <p>AT+CGTFT: <cid>, <packet filter identifier>, <evaluation precedence index>, <source address and subnet mask>, <protocol number (ipv4) / next header (ipv6)>, <destination port range>, <source port range>, <ipsec security parameter index (spi)>, <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>, <flow label (ipv6)>, <direction> [<cr><lf>+cgtft: <cid>,="" <destination="" <evaluation="" <flow="" <ipsec="" <packet="" <protocol="" <source="" <type="" (ipv4)="" (ipv6)="" (ipv6)>,="" (ipv6)>,<direction>[...]]<="" (spi)>,="" (tos)="" address="" and="" class="" filter="" header="" identifier>,="" index="" index>,="" label="" mask="" mask>,="" next="" number="" of="" p="" parameter="" port="" precedence="" range>,="" security="" service="" subnet="" traffic=""> </cr><lf>+cgtft:></p> |
| AT+CGTFT=? | <p>The test command returns values supported as a compound value. If the MT supports several PDP types, the parameter value ranges for each PDP type returned on a separate line. TFTs shall be used for PDP-type IP and PPP only. For PDP-type PPP a TFT is applicable only when IP traffic is carried over PPP. If PPP carries header-compressed IP packets, then a TFT cannot be used.</p> <p>AT+CGTFT: <PDP_type>, (list of supported <packet filter identifier>s), (list of supported <evaluation precedence index>s), (list of supported <source address and subnet mask>s), (list of supported <protocol number (ipv4) / next header (ipv6)>s), (list of supported <destination port range>s), (list of</p> |

| +CGTFT Parameter Command Syntax | |
|---------------------------------|--|
| | <p>supported <source port range>s), (list of supported <ipsec security parameter index (spi)>s), (list of supported <type of service (tos) (ipv4) and mask / traffic class(ipv6) and mask>s), (list of supported <flow label (ipv6)>s), (list of supported <direction>s) [<CR><LF></p> <p>AT+CGTFT: <PDP_type>, (list of supported <packet filter identifier>s), (list of supported <evaluation precedence index>s), (list of supported <source address and subnet mask>s), (list of supported <protocol number (ipv4) / next header (ipv6)>s), (list of supported <destination port range>s), (list of supported <source port range>s), (list of supported <ipsec security parameter index (spi)>s), (list of supported <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>s), (list of supported <flow label (ipv6)>s), (list of support <direction>s)[...]]</p> |
| Reference | 3GPP Only |

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

| +CGQMIN – Quality Of Service Profile (minimum Acceptable) | |
|--|--|
| <p>AT+CGQMIN= [<cid> [,<precedence> [,<delay> [,<reliability> [,<peak> [,<mean>]]]]]]]</p> | <p>Set command allows to specify a minimum acceptable profile, checked by the terminal against the negotiated profile returned in the Activate PDP Context Accept message.</p> <p>Parameters:</p> <ul style="list-style-type: none"> <cid> - PDP context identification (see +CGDCONT command). <precedence> - precedence class <delay> - delay class <reliability> - reliability class <peak> - peak throughput class <mean> - mean throughput class <p>If a value omitted for a particular class then this class is not checked. Note: a special form of the Set command, +CGQMIN=<cid> causes the requested profile for context number <cid> to become undefined.</p> |
| AT+CGQMIN? | <p>Read command returns the current settings for each defined context in the format:</p> <p>+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>[<CR><LF></p> <p>+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>[...]]</p> <p>If no PDP context is defined, it has no effect and OK result code returned.</p> |

| +CGQMIN – Quality Of Service Profile (Minimum Acceptable) | |
|--|--|
| AT+CGQMIN=? - | Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format: +CGQMIN: <PDP_Type>,(list of supported <precedence>s), (list of supported <delay>s),(list of supported <reliability>s),(list of supported <peak>s),(list of supported <mean>s) Note: only the "IP" PDP_Type currently supported. |
| Example | AT+CGQMIN=1,0,0,3,0,0 OK AT+CGQMIN? +CGQMIN: 1,0,0,5,0,0 OK AT+CGQMIN=? +CGQMIN: "IP",(0-3),(0-4),(0-5),(0-9),(0-18,31) +CGQMIN: "PPP",(0-3),(0-4),(0-5),(0-9),(0-18,31) +CGQMIN: "IPV6",(0-3),(0-4),(0-5),(0-9),(0-18,31) OK |
| Reference | 3GPP TS 27.007; 3GPP TS 03.60/23.060(3GPP Only) |

4.3.3.7.11 3G Quality of Service Profile (Minimum Acceptable) - +CGEQMIN

| +CGEQMIN 3G Quality Of Service Profile (Minimum Acceptable) | |
|--|--|
| AT+CGEQMIN= [<cid> [,<Traffic class> [,<Maximum bitrate UL> [,<Maximum bitrate DL> [,<Guaranteed bitrate UL> [,<Guaranteed bitrate DL> [,<Delivery order> [,<Maximum SDU size> | Set command allows specify a 3G quality of service profile for the context identified by the (local) context identification parameter <cid> that is checked by the MT against the negotiated profile returned in the Activate/Modify PDP Context Accept Message. Parameters: <cid> - PDP context identification (see +CGDCONT command). <Traffic class> - Traffic class 0 - conversational 1 - streaming 2 - interactive 3 - background 4 - subscribed value <Maximum bitrate UL> - Maximum bitrate Up Link (kbits/s) |

| | |
|---------------------|--|
| | <p><Delivery of erroneous SDUs> Delivery of erroneous SDUs 0 - no 1 - yes 2 - no detect 3 - subscribed value</p> <p><Transfer delay> Transfer delay (milliseconds) 0 - subscribed value 100...4000</p> <p><Traffic handling priority > Traffic handling priority 00 - subscribed value 1...3</p> <p>Note: a special form of the Set command, +CGEQMIN=<cid> causes the requested profile for context number <cid> to become undefined.</p> |
| <p>AT+CGEQMIN?</p> | <p>Read command returns the current settings for each defined context in the format:</p> <p>[+CGEQMIN: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic handling><CR><LF>] [+CGEQMIN:...]</p> <p>If no PDP context defined, it has no effect and OK result code returned.</p> |
| <p>AT+CGEQMIN=?</p> | <p>Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format:</p> <p>+CGEQMIN: <PDP_Type>,(list of supported <Traffic class>s), (list of supported <Maximum bitrate UL>s),(list of supported <Maximum bitrate DL>s),(list of supported <Guaranteed bitrate UL>s),(list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s),(list of supported <Maximum SDU size>s),(list of supported <SDU error ratio>s),(list of supported <Residual bit error ratio>s),(list of supported <Delivery of erroneous SDUs>s),(list of supported <Transfer delay>s),(list of supported <Traffic handling priority>s</p> |
| <p>Reference</p> | <p>3GPP Only</p> |

4.3.3.7.12 Quality of Service Profile (Requested) - +CGQREQ

| +CGQREQ – Quality Of Service Profile (Requested) | |
|--|--|
| AT+CGQREQ= [<cid>[, <precedence> [,<delay>[,<reliability>[,<peak> [,<mean>]]]]]] | Set command allows to specify a Quality of Service Profile that is used when the terminal sends an Activate PDP Context Request message to the network. It specifies a profile for the context identified by the (local) context identification parameter, <cid>. Parameters: <cid> - PDP context identification (see +CGDCONT command). <precedence> - precedence class <delay> - delay class <reliability> - reliability class <peak> - peak throughput class <mean> - mean throughput class If a value is omitted for a particular class then this class is not checked. |
| | Note: a special form of the Set command, +CGQREQ=<cid> causes the requested profile for context number <cid> to become undefined. |
| AT+CGQREQ? | Read command returns the current settings for each defined context in the format: +CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>, <mean>[<CR><LF>+CGQREQ: <cid>,<precedence>, <delay>,<reliability>,<peak>,<mean>[...]] If no PDP context defined, it has no effect and OK result code returned. |
| AT+CGQREQ=? | Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format: +CGQREQ: <PDP_Type>,(list of supported <precedence>s), (list of supported <delay>s),(list of supported <reliability>s),(list of supported <peak>s),(list of supported <mean>s) Note: is supported. |
| Example | AT+CGQREQ? +CGQREQ: 1,0,0,3,0,0 OK AT+CGQREQ=1,0,0,3,0,0 OK AT+CGQREQ=? +CGQREQ: "IP",(0-3),(0-4),(0-5),(0-9),(0-18,31) +CGQREQ: "PPP",(0-3),(0-4),(0-5),(0-9),(0-18,31) +CGQREQ: "IPV6",(0-3),(0-4),(0-5),(0-9),(0-18,31) OK |
| Reference | 3GPP TS 27.007; 3GPP TS 03.60/23.060(3GPP Only) |

4.3.3.7.13 3G Quality of Service Profile (Requested) - +CGEQREQ

| +CGEQREQ 3G Quality Of Service Profile (Requested) | |
|--|---|
| AT+CGEQREQ=[<cid>[,<Traffic class>[,<Maximum bitrate UL> | Set command allows to specify a 3G quality of service profile for the context identified by the(local) context identification parameter <cid> which is used when the MT sends an Activate PDP Context Request message to the network. |
| [,<Maximum bitrate DL> [,<Guaranteed bitrate UL> [,<Guaranteed bitrate DL> [,<Delivery order> [,<Maximum SDU size> [,<SDU error ratio> [,<Residual bit error ratio> [,<Delivery of erroneous SDUs> [,<Transfer delay> [,<Traffic handling priority>]]]]]]]]]]] | <p>Parameters:</p> <p><cid>-PDPcontextidentification(see+CGDCONTcommand).</p> <p><Traffic class> - Traffic class 0 - conversational 1 - streaming 2 - interactive 3 - background 4 - subscribed value</p> <p><Maximum bitrate UL> - Maximum bitrate UpLink (kbits/s) 0 - subscribed value 1...11520</p> <p><Maximum bitrate DL> - Maximum bitrate down link (kbits/s) 0 0 - subscribed value 1...42200</p> <p><Guaranteed bitrate UL> - the guaranteed bitrate up link(kbits/s) 0 - subscribed value 1...11520</p> <p><Guaranteed bitrate DL> - the guaranteed bitrate down link(kbits/s) 0 0 - subscribed value 1...42200</p> <p><Delivery order> SDU Delivery order 0 - no 1 - yes 2 - subscribed value</p> <p><Maximum SDU size> MaximumSDU size in ctets 0 - subscribed value 1...1520</p> <p><SDU error ratio> SDU error ratio- mEe mean m*10-e, for example 1E2 mean 1*10-2 "0E0" "1E1" "1E1" "7E3" "1E1" "1E1" "1E1" "1E1"</p> <p><Residual bit error ratio> Residual bitt error ratio</p> |

| +CGEQREQ 3G Quality Of Service Profile (Requested) | |
|--|---|
| | <p>- mEe mean m*10-e , for example 1E2 mean 1*10-2</p> <p>"0E0" "5E2" "1E1" "5E2" "4E3" "1E1" "1E1" "1E1" "1E1" "6E8"</p> <p><Delivery of erroneous SDUs> Delivery of erroneous SDUs 0 - no - yes - no detect - subscribed value</p> <p><Transfer delay > Transfer delay (milliseconds) 0 - subscribed value 100...4000</p> <p><Traffic handling priority > Traffic handling priority 0 1 - subscribed value 1...3</p> <p><Source Statistics Descriptor> 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 unknown (default value) 1 - Characteristics of SDUs corresponds to a speech source</p> <p><Signalling Indication> 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> |

| | |
|---|---|
| +CGEQREQ 3G Quality Of Service Profile (Requested) | |
| | Note: aspecial form of the Set command, +CGEQREQ=<cid> causes the requested profile for context number <cid> to become undefined. |
| AT+CGEQREQ? | <p>Read command returns the current settings for each defined context in the format:</p> <p>[+CGEQREQ: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic handling>,<Source Statistics Descriptor> ,<Signalling Indication><CR><LF>]</p> <p>[...]</p> <p>If no PDP context defined, it has no effect and OK result code returned.</p> |
| AT+CGEQREQ=? | <p>Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format:</p> <p>+CGQREQ: <PDP_Type>,(list of supported <Traffic class>s), (list of supported <Maximum bitrate UL>s),(list of supported <Maximum bitrate DL>s),(list of supported <Guaranteed bitrate UL>s),(list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s),(list of supported <Maximum SDU size>s),(list of supported <SDU error ratio>s),(list of supported <Residual bit error ratio>s),(list of supported <Delivery of erroneous SDUs>s),(list of supported <Transfer delay>s),(list of supported <Traffic handling priority>s ,(list of supported <Source statistics descriptor>s) ,(list of supported <Signalling indication>s)</p> <p>E3", "4E3", "1E3", "1E4", "1E5", "1E6", "6E8"),(0-3),(0,100-4000),(0-3),(0,1),(0,1)</p> <p>+CGEQREQ: "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> <p>+CGEQREQ: "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)</p> <p>OK</p> |
| Reference | 3GPP TS 27.007; 3GPP TS 03.60/23.060; 3GPP TS 24.008(3GPP Only) |

4.3.3.7.14 PDP Context Activate or Deactivate - +CGACT

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

4.3.3.7.15 PDP Context Modify - +CGCMOD

| +CGCMOD Action Command Syntax | |
|--|---|
| AT+CGCMOD= [<cid> [,<cid> [...]]] | Possible Response(s): OK ERROR The execution command used to modify the specified PDP context (s) with respect to QoS profiles and TFTs. After the 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. For EPS, the modification request for an EPS bearer resource will be answered by the network by an EPS bearer modification request. A request must be accepted by the MT, before the PDP context is effectively changed. If no <cid> is specified an activation form of the command modifies all active contexts. The test command returns a list of <cid>s associated with active contexts. Defined Values <cid>: a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands). |
| AT+CGCMOD=? | +CGCMOD: (list of <cid>s associated with active contexts) |
| Reference | 3GPP Only |

4.3.3.7.16 Show PDP Address - +CGPADDR

| +CGPADDR – Show PDP Address | |
|---|---|
| AT+CGPADDR= [<cid>[,<cid> [...]]] | Execution command returns a list of PDP addresses for the specified context identifiers in the format: +CGPADDR: <cid>,<PDP_addr>[<CR><LF>+CGPADDR: <cid>,<PDP_addr>[...]] |
| | Parameters: <cid> - a numeric parameter which specifies a particular PDP context definition (see +CGDCONT command). If no <cid> is specified, the addresses for all defined contexts are returned. <PDP_addr> - a string that identifies the terminal in 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 <cid>;<PDP_addr> is omitted if none is available |
| AT+CGPADDR=? | Test command returns a list of defined <cid>s. |

| +CGPADDR – Show PDP Address | |
|-----------------------------|---|
| Example | AT#GPRS=1 +IP: xxx.yyy.zzz.www OK AT+CGPADDR=1 OK AT+CGPADDR=? +CGPADDR: (1) OK |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.3.7.17 Set Mode of Operator for EPS - +CEMODE

| +CEMODE Set Mode Of Operation For EPS | |
|---------------------------------------|---|
| AT+CEMODE=<mode> | Set command configures the mode of operation for EPS Parameter: <mode>: a numeric parameter which indicates the mode of operation 0 - PS mode 2 of operation 1 - CS/PS mode 1 of operation 2 - CS/PS mode 2 of operation 3 - PS mode 1 of operation Note: the definition for UE modes of operation can be found in 3GPP TS 24.301 [83] Other values are reserved and will result in an ERROR response to the set command. |
| AT+CEMODE? | Read command returns the currently configured values, in the format: +CEMODE: < mode > Note: The read command will return correct values after the set command. But effectively the mode of operation changes after each power cycle. |
| AT+CEMODE=? | Test command returns the supported range of values of parameters < mode > +CEMODE: (0-3) |
| Note | Command supported in multimode or LTE-enabled targets. CS/PS mode is supported only when CSFB feature is present; only query and test command supported |
| Example | AT+CEMODE=1 OK AT+CEMODE? +CEMODE: 1 OK |
| Reference | 3GPP Only |

4.3.3.7.18 Enter Data State - +CGDATA

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

4.3.3.7.19 PDP Context Read Dynamic Parameters - +CGCONTRDP

| +CGCONTRDP Parameter Command Syntax | |
|-------------------------------------|---|
| AT+CGCONTRDP= [<p_cid>] | <p>Possible response(s):</p> <pre>+CGCONTRDP: <p_cid>,<bearer_id>,<apn>[,<ip_addr>,<subnet_mask>[,<gw_addr>[,<DNS_prim_addr>[,<DNS_sec_addr>[,<P-CSCF_prim_addr>[,<P-CSCF_sec_addr>]]]]][<CR><LF> +CGCONTRDP: <p_cid>,<bearer_id>,<apn>[,<ip_addr>,<subnet_mask>[,<gw_addr>[,<DNS_prim_addr>[,<DNS_sec_addr>[,<PCSCF_prim_addr>[,<PCS</pre> <p>Description:</p> <p>The execution command returns the relevant information: <bearer_id>, <apn>, <ip_addr>, <subnet_mask>, <gw_addr>, <DNS_prim_addr>, <DNS_sec_addr>, <P-CSCF_prim_addr> and <P-CSCF_sec_addr> for a non-secondary PDP Context established by the network with the primary context identifier <p_cid>. If the context can't be found an ERROR response is returned. If the parameter <p_cid> omitted, the relevant information for all established PDP contexts returned.</p> <p>NOTE: The dynamic part of the PDP context will only exist if established by the network.</p> <p>The test command returns a list of <p_cid>s associated with active contexts.</p> |

+CGCONTRDP Parameter Command Syntax

| | |
|--|--|
| | <p>Defined values:</p> <p><p_cid> - a numeric parameter specifies a particular non secondary PDP context definition. The parameter is local to the TE-MT interface and used in other PDP context-related commands.</p> <p><bearer_id> - a numeric parameter identifies the bearer, EPS Bearer in EPS and NSAPI in UMTS/GPRS.</p> <p><APN> - a string parameter which is a logical name that was used to select the GGSN or the external packet data network.</p> <p><ip_addr> - a string parameter shows the IP Address of the MT. The string is given as dot-separated numeric (0-255) parameters in the form: "a1.a2.a3.a4" for IPv4 or "a1.a2.a3.a4.a5.a6.a7.a8" for IPv6.</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 one space: "a1.a2.a3.a4 a1:a2:a3:a4:a5:a6:a7:a8"</p> <p><subnet_mask> - a string parameter shows the subnet mask for the IP Address of the MT. The string is given as dot-separated numeric (0-255) parameters.</p> <p>If the MT has dual stack capabilities the string shows the dot separated IPV4 subnet mask followed by the dot separated IPV6 subnet mask. The subnet masks are separated by space.</p> <p><gw_addr> - a string parameter shows the Gateway Address of the MT. The string is given as dot-separated numeric (0-255) parameters.</p> <p>If the MT has dual stack capabilities the parameter shows first the dot separated IPV4 Gateway address followed by the dot separated IPV6 Gateway Address. The gateway addresses are separated by one space.</p> <p><DNS_prim_addr> - a string parameter which shows the IP Address of the primary DNS Server. If the MT has dual stack capabilities the parameter shows first the dot separated IPV4 Address, followed by the dot separated IPV6 Address of DNS Server.</p> <p><DNS_sec_addr> - a string parameter which shows the IP address of the secondary DNS Server. If the MT has dual stack capabilities the parameter shows first the dot separated IPV4 Address, followed by the dot separated IPV6 Address of DNS Server.</p> <p><P_CSCF_prim_addr> - a string parameter which shows the IP Address of the primary P-CSCF Server. If the MT has dual stack capabilities the parameter shows first the dot separated IPV4 Address, followed by the dot separated IPV6</p> |
|--|--|

| +CGCONTRDP Parameter Command Syntax | |
|-------------------------------------|--|
| | <p>primary Address of P-CSCF Server.</p> <p><P_CSCF_sec_addr> - a string parameter which shows the IP Address of the secondary P-CSCF Server. If the MT has dual stack capabilities the parameter shows first the dot separated IPV4 Address, followed by the dot separated IPV6 Address of P-CSCF Server.</p> |
| +CGCONTRDP=? | +CGCONTRDP: (list of <p_cid>s associated with active contexts) |
| Reference | 3GPP Only |

4.3.3.7.20 Secondary PDP Context Read Dynamic Parameters - +CGSCONTRDP

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

4.3.3.7.21 Traffic Flow Template Read Dynamic Parameters - +CGTFTRDP

| +CGTFTRDP - Parameter Command Syntax | |
|--------------------------------------|---|
| AT+CGTFTRDP=[<cid>] | <p>Possible Response(s):</p> <p>+CGTFTRDP: <cid>, <packet filter identifier>, <evaluation precedence index>,<source address and subnet mask>, <protocol number (ipv4) / next header(ipv6)>,<destination port range>, <source port range>, <ipsec security parameter index (spi)>, <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>, <flow label ipv6>, <direction>, <NW packet filter Identifier>[<CR><LF></p> <p>+CGTFTRDP: <cid>, <packet filter identifier>, <evaluation precedence index>,<source address and subnet mask>, <protocol number (ipv4) / next header (ipv6)>, <destination port range>, <source port range>, <ipsec security parameter index (spi)>, <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>, <flow label (ipv6)>, <direction>,<NW packet filter Identifier></p> <p>[...]</p> <p>The execution command returns the relevant information about Traffic Flow.Template of <cid> together with the additional network assigned values when established by the network. If the context can't be found, an ERROR response is returned.</p> <p>If the parameter <cid> 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><cid>: 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><packet filter identifier>: a numeric parameter. The value range is from 1 to 16.</p> <p><evaluation precedence index>: a numeric parameter. The value range is from 0 to 255.</p> <p><source address and subnet mask>: string type. The string is given as dot-separated numeric (0-255) parameters on the form: "a1.a2.a3.a4.m1.m2.m3.m4" for IPv4 or "a1.a2.a3.a4.a5.a6.a7.a8.a9.a10.a11.a12.a13.a14.a15.a16.m1.m2.m3.m4.m5.m6.m7.m8.m9.m10.m11.m12.m13.m14.m15.m16" for IPv6.</p> <p><protocol number (ipv4) / next header (ipv6)>: a numeric parameter, value range from 0 to 255.</p> <p><destination port range>: string type. The string is given as dot-separated numeric (0-65535) parameters in the form "f.t".</p> |

| +CGTFTRDP - Parameter Command Syntax | |
|--------------------------------------|---|
| | <p><source port range>: string type. The string is given as dot-separated numeric (0-65535) parameters on the form "f.t".</p> <p><ipsec security parameter index (spi)>: numeric value in hexadecimal format. The value range is from 00000000 to FFFFFFFF.</p> <p><type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>: string type. The string is given as dot-separated numeric (0-255) parameters in the form "t.m".</p> <p><flow label (ipv6)>: numeric value in hexadecimal format. The value range is from 00000 to FFFFF. Valid for IPv6 only.</p> <p><direction> a numeric parameter which specifies the transmission direction in which the Packet Filter shall be applied.</p> <p>0 Pre Release 7 TFT Filter (see 3GPP TS 24.008 [8], table 10.5.162)</p> <ul style="list-style-type: none"> - Uplink - Downlink - Bidirectional (Used for Uplink and Downlink) <p><NW packet filter Identifier> a numeric parameter. The value range is from 1 to 16. In EPS the value is assigned by the network when established</p> <p>NOTE: Some of the above listed attributes can coexist in a Packet Filter while others mutually exclude each other. The possible combinations listed on 3GPP TS 23.060 [47].</p> |
| AT+CGTFTR=? | +CGTFTRDP: (list of <cid>s associated with active contexts) The test command returns a list of <cid>s associated with active contexts. |
| Reference | 3GPP Only |

4.3.3.7.22 Define EPS Quality of Service +CGEQOS

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

4.3.3.7.23 EPS Quality of Service Read Dynamic Parameters - +CGEQOSRDP

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

4.3.3.8 Commands for Battery Charger

4.3.3.8.1 Battery Charge - +CBC

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

4.3.4 3GPP TS 27.005 AT Commands for SMS and CBS

4.3.4.1 General Configuration

4.3.4.1.1 Select Message Service - +CSMS

| +CSMS – Select Message Service | |
|--------------------------------|---|
| AT+CSMS= <service> | <p>Set command selects messaging service <service>. It returns the types of messages supported by the ME:</p> <p>Parameter: <service></p> <p>0 - The syntax of SMS AT commands is compatible with 3GPP TS 27.005 Phase 2 version 4.7.0 (factory default)</p> <p>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>+CSMS: <mt>,<mo>,<bm> where:</p> <p><mt> - mobile terminated messages support 0 - type not supported 1 - type supported</p> <p><mo> - mobile originated messages support 0 - type not supported 1 - type supported</p> <p><bm> - broadcast type messages support 0 - type not supported 1 - type supported</p> |
| AT+CSMS? | <p>Read command reports current service setting along with supported message types in the format:</p> <p>+CSMS: <service>,<mt>,<mo>,<bm> where:</p> <p><service> - messaging service (see above)</p> <p><mt> - mobile terminated messages support (see above)</p> <p><mo> - mobile originated messages support (see above)</p> <p><bm> - broadcast type messages support (see above)</p> |
| AT+CSMS=? Example | <p>Test command reports the supported value of the parameter <service>.</p> <p>AT+CSMS=1 +CSMS: 1,1,1 OK AT+CSMS? +CSMS: 1,1,1,1 OK</p> |
| Reference | 3GPP TS 27.005; 3GPP TS 03.40/23.040; 3GPP TS 03.41/23.041(3GPP Only) |

4.3.4.1.2 Preferred Message Storage - +CPMS

| +CPMS – Preferred Message Storage | |
|--|--|
| AT+CPMS= <memr>[,<memw > [,<mems>]] | Set command selects memory storages <memr>, <memw> and <mems> to be used for reading, writing, sending and storing SMS. Parameters: <memr> - memory from which messages are read and deleted SMS memory storage in Flash "ME" - SMS memory storage in Flash "SM" - SMS memory storage (default) "SR" - Status Report message storage (in SIM EF-SMSR file exists otherwise in the RAM volatile memory) Note: "SR" non volatile memory is cleared when another SIM card is inserted. It is kept, even after a reset, when the same SIM card is inserted. <memw> - memory to which writing and sending operations are made "ME" - SMS memory storage in Flash "SM" - SIM SMS memory storage (default) <mems> - memory to which received SMS are preferred to be stored "ME" - SMS memory storage in Flash "SM" - SIM SMS memory storage (default) The command returns the memory storage status in the format: +CPMS: <usedr>,<totalr>,<usedw>,<totalw>,<useds>,<totals> <usedr> - number of SMS stored into <memr> <totalr> - max number of SMS that <memr> can contain <usedw> - number of SMS stored into <memw> <totalw> max number of SMS that <memw> can contain <totals> - max number of SMS that <mems> can contain |
| AT+CPMS? | Read command reports the message storage status in the format: +CPMS: <memr>,<usedr>,<totalr>,<memw>,<usedw>,<totalw>,<mems>,<useds>,<totals> Where: <memr>, <memw> and <mems> are the selected storage memories for reading, writing and storing respectively. |
| AT+CPMS=? | Test command reports the supported values for parameters <memr>, <memw> and <mems> |
| Reference | 3GPP TS 27.005(3GPP Only) |

4.3.4.1.3 Message Format - +CMGF

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

4.3.4.2 Message Configuration

4.3.4.2.1 Service Center Address - +CSCA

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

4.3.4.2.2 Select service for MO SMS services - +CGSMS

| +CGSMS Select Service For MO SMS Services | |
|---|--|
| AT+CGSMS= [<service>] | The set command used to specify the service or service preference that the MT will use to send MO SMS messages. |
| | Parameters: <service> -a numeric parameter which indicates the service or service preference to be used. 0 - Packet Domain 1 - Circuit switched 2 - Packet Domain preferred (use circuit switched if GRPS is not available) (factory default) 3 - Circuit switched preferred (use Packet Domain if circuit switched not available) Note: If SMS transfer via Packet Domain fails, <service> parameter automatically reset to Circuit switched. |
| AT+CGSMS? | Read command reports the currently selected service or service preference : +CGSMS: <service> |
| AT+CGSMS=? | Test command reports the supported range of values for parameter <service> |
| Reference | 3GPP TS 27.007(3GPP Only) |

4.3.4.2.3 Set Text Mode Parameters - +CSMP

| +CSMP – Set Text Mode Parameters | |
|--|--|
| AT+CSMP= [<fo> [,<vp> [,<pid> [,<dc>]]]] | Set command is used to select values for additional parameters for storing and sending SMs when the text mode is used (AT+CMGF=1) Parameters: <fo> - depending on the command or result code: first octet of 3GPP TS 03.40/23.040 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format. <vp> - depending on SMS-SUBMIT <fo> setting: 3GPP TS 03.40/23.040 TP-Validity-Period either in integer format (default 167) or in quoted time-string format. <pid> - 3GPP TS 03.40/23.040 TP-Protocol-Identifier in integer format. <dc> - depending on the command or result code: 3GPP TS 03.38/23.038 SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme. Note: the current settings are stored through +CSAS |

| +CSMP – Set Text Mode Parameters | |
|----------------------------------|---|
| AT+CSMP? | Read command reports the current setting in the format: +CSMP: <fo>,<vp>,<pid>,<dc> |
| AT+CSMP=? | Test command returns the OK result code. |
| Example | Set the parameters for an outgoing message with 24 hours of validity period and default properties: AT+CSMP=17,167,0,0 OK |
| Reference | 3GPP TS 27.005; 3GPP TS 03.40/23.040; 3GPP TS 03.38/23.038(3GPP Only) |

4.3.4.2.4 Show Text Mode Parameters - +CSDH

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

4.3.4.2.5 Select Cell Broadcast Message Types - +CSCB

| +CSCB – Select Cell Broadcast Message Types | |
|--|--|
| AT+CSCB= [<mode> [,<mids> [,<dcss>]]] | <p>Set command selects which types of Cell Broadcast Messages received by the device.</p> <p>Parameters:</p> <p><mode></p> <p>0 - the message types defined by <mids> and <dcss> are accepted (factory default) 1 - the message types defined by <mids> and <dcss> are rejected</p> <p><mids> - Message Identifiers, string type: all different possible combinations of the CBM message identifiers; default is empty string ("")</p> <p><dcss> - Data Coding Schemes, string type: all different possible combinations of CBM data coding schemes; default is empty string ("")</p> <p>Note: the current settings are stored through +CSAS</p> |
| AT+CSCB? | Read command reports the current value of parameters <mode>, <mids> and <dcss>. |
| AT+CSCB=? | Test command returns the range of values for parameter <mode>. |
| Reference | 3GPP TS 27.005, 3GPP TS 03.41/23.041, 3GPP TS 03.38/23.038.(3GPP Only) |

4.3.4.2.6 Save Settings - +CSAS

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

4.3.4.2.7 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>Parameter: <profile></p> <p>0 - message service settings are restored from NVM.</p> <p>1..n - message service settings are restored from SIM. The value of n depends on the SIM (L506 allows to store up to 5).</p> <p>Note: certain settings may not be support by the SIM and therefore they are always restored from NVM, regardless the value of <profile>.</p> <p>Note: If parameter is omitted the command restores message service settings from NVM.</p> |
| AT+CRES=? | <p>Test command returns the possible range of values for the parameter <profile>.</p> |
| Reference | 3GPP TS 27.005(3GPP Only) |

4.3.4.3 Message Receiving and Reading

4.3.4.3.1 New Message Indications to Terminal Equipment - +CNMI

| +CNMI – New Message Indications To Terminal Equipment | |
|--|--|
| AT+CNMI= [<mode> [,<mt>[,<bm> [,<ds> [,<bfr>]]]]] | <p>Set command selects the behaviour of the device on how the receiving of new messages from the network is indicated to the DTE.</p> <p>Parameter:</p> <p><mode> - unsolicited result codes buffering option</p> <p>0 - Buffer unsolicited result codes in the TA. If TA 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.</p> <p>1 - Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved, otherwise forward them directly to the TE.</p> <p>2 - Buffer unsolicited result codes in the TA in case the DTE is busy and flush them to the TE after reservation. Otherwise, forward them directly to the TE.</p> <p>3 - if <mt> is set to 1 an indication by means of a 100 ms break is issued when an SMS is received while the module is in GPRS online mode. It enables the hardware ring line for 1 s. too.</p> <p>Note: In <mode>field, "3" not supported.</p> <p><mt> - result code indication reporting for SMS-DELIVER</p> <p>0 - No SMS-DELIVER indications are routed to the TE and message is stored.</p> <p>1 - If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using the following unsolicited result code:</p> <p>+CMTI: <memr>,<index> where:</p> <p><memr> - memory storage where the new message is Stored: "SM" , "ME"</p> <p><index> - location on the memory where SMS is stored.</p> <p>*2 - SMS-DELIVERs (except class 2 messages and messages in the message waiting indication group) are routed directly to the TE using the following unsolicited result code:</p> <p>(PDU Mode)</p> <p>+CMT: <alpha>,<length><CR><LF><pdu></p> |

+CNMI - New Message Indications To Terminal Equipment

where:

<alpha> - alphanumeric representation of originator/destination number corresponding to the entry found in MT phonebook. Used character set should be the one selected with command +CSCS.

<length> - PDU length

<pdu> - PDU message

(TEXT Mode)

+CMT:<oa>,<alpha>,<scts>[,<tooa>,<fo>,<pid>,<dc>,<sc>,<tosca>,<length>]<CR><LF><data> (the information written in italics will be present depending on +CSDH last setting)

where:

<oa> - originating address, string type converted in the currently selected character set (see +CSCS)

<alpha> - alphanumeric representation of <oa>, used character set should be the one selected with command +CSCS.

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

<tooa>, <tosca> - type of number <oa> or <sc>:

129 - number in national format

145 - number in international format(contains the "+")

<fo> - first octet of 3GPP TS 03.40/23.040

<pid> - Protocol Identifier

<dc> - Data Coding Scheme

<sc> - Service Centre address, string type, converted in the currently selected character set (see +CSCS)

<tosca> - text length

<length> - text length

<data> - TP-User-Data

If <dc> indicates that GSM03.38/23.038 default alphabet is used and <fo> indicates that GSM03.40/23.040 TP-User-Data-Header- Indication is not set (bit 6 of <fo> is 0), each character of GSM/WCDMA alphabet will be converted into current TE character set (see +CSCS)

If <dc> indicates that 8-bit or UCS2 data coding scheme is used or

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

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

| | |
|--|--|
| +CNMI - New Message Indications To Terminal Equipment | |
|--|--|

| | |
|--|--|
| | <p>Acknowledge for the received SMS-DELIVER SM is sent to network immediately when +CSMS <service> is set to '0' or when +CSMS <service> is set to '1'. Acknowledge is sent via +CNMA command during predefine time-out, an error is sent to network in case timeout expire, Next +CMT response depends on acknowledge of current received +CMT response in case +CSMS</p> |
|--|--|

| | |
|--|--|
| | <p><service> parameter set to '1'.</p> |
|--|--|

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

| | |
|--|--|
| | <p><bm> - broadcast reporting option</p> |
|--|--|

| | |
|--|--|
| | <p>0 - Cell Broadcast Messages are not sent to the DTE</p> |
|--|--|

| | |
|--|--|
| | <p>2 - New Cell Broadcast Messages are sent to the DTE with the unsolicited result code:</p> |
|--|--|

| | |
|--|-------------------|
| | <p>(PDU Mode)</p> |
|--|-------------------|

| | |
|--|--|
| | <p>+CBM: <length><CR><LF><PDU></p> |
|--|--|

| | |
|--|---------------|
| | <p>where:</p> |
|--|---------------|

| | |
|--|------------------------------------|
| | <p><length> - PDU length</p> |
|--|------------------------------------|

| | |
|--|----------------------------------|
| | <p><PDU> - message PDU</p> |
|--|----------------------------------|

| | |
|--|--------------------|
| | <p>(TEXT Mode)</p> |
|--|--------------------|

| | |
|--|--|
| | <p>+CBM:<sn>,<mid>,<dcs>,<pag>,<pags><CR><LF><data> where:</p> |
|--|--|

| | |
|--|---|
| | <p><sn> - message serial number</p> |
|--|---|

| | |
|--|---------------------------------|
| | <p><mid> - message ID</p> |
|--|---------------------------------|

| | |
|--|---|
| | <p><dcs> - Data Coding Scheme</p> |
|--|---|

| | |
|--|----------------------------------|
| | <p><pag> - page number</p> |
|--|----------------------------------|

| | |
|--|--|
| | <p><pags> - total number of pages of the message</p> |
|--|--|

| | |
|--|--|
| | <p><data> - CBM Content of Message</p> |
|--|--|

| | |
|--|---|
| | <p>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)</p> |
|--|---|

| | |
|--|--|
| | <p>If <dcs> indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41)</p> |
|--|--|

| | |
|--|---|
| | <p><ds> - SMS-STATUS-REPORTs reporting option</p> |
|--|---|

| | |
|--|---|
| | <p>0 - status report receiving is not reported to the DTE and messages are stored</p> |
|--|---|

| | |
|--|---|
| | <p>1 - the status report is sent to the DTE with the following unsolicited result</p> |
|--|---|

| +CNMI - New Message Indications To Terminal Equipment | |
|---|--|
| | <p>code:</p> <p>(PDU Mode)</p> <p>+CDS: <length><CR><LF><PDU></p> <p>where:</p> <p><length> - PDU length</p> <p><PDU> - message PDU</p> <p>(TEXT Mode)</p> <p>+CDS: <fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st> where:</p> <p><fo> - first octet of the message PDU</p> <p><mr> - message Reference number</p> <p><ra> - recipient address, string type, represented in the currently selected character set (see +CSCS)</p> <p><tora> - type of number <ra></p> <p><scts> - arrival time of the message to the SC</p> <p><dt> - sending time of the message</p> <p><st> - message status as coded in the PDU</p> <p>Acknowledge for the received SMS-STATUS-REPORT SM is sent to network immediately when +CSMS <service> is set to '0' or when +CSMS <service> 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 depends on acknowledge of current received +CDS response in case</p> <p>+CSMS <service> parameter set to '1'.</p> <p>*2 - if a status report is stored, then the following unsolicited result code is sent:</p> <p>+CDSI: <memr>,<index></p> <p>where:</p> <p><memr> - memory storage where the new message is stored "SR"</p> <p><index> - location on the memory where SMS is stored</p> <p><bfr> - buffered result codes handling method:</p> <p>0 - TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode>=1..3 is entered (OK response shall be given before flushing the codes)</p> <p>1 - TA buffer of unsolicited result codes defined within this command is cleared when <mode>=1..3 is entered.</p> |
| AT+CNMI? | Read command returns the current parameter settings for +CNMI command |
| +CNMI - New Message Indications To Terminal Equipment | |

| | |
|-----------|---|
| | in the form: +CNMI: <mode>,<mt>,<bm>,<ds>,<bfr> |
| AT+CNMI=? | Test command reports the supported range of values for the +CNMI command parameters. |
| Reference | 3GPP TS 27.005(3GPP Only) |
| Note | DTR signal is ignored, hence the indication is sent even if the DTE is inactive (DTR signal is Low). In this case the unsolicited result code may be lost so if MODULE remains active while DTE is not, at DTE startup it is suggested to check whether new messages have reached the device meanwhile with command AT+CMGL=0 that lists the new messages received. |

4.3.4.3.2 List Messages - +CMGL

| | |
|-----------------------|--|
| +CMGL - List Messages | |
| AT+CMGL [=<stat>] | <p>Execution command reports the list of all the messages with status value <stat> stored into <memr> message storage (<memr> is the message storage for read and deleted 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>(PDU Mode)</p> <p>Parameter: <stat></p> <ul style="list-style-type: none"> 0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent 4 - all messages. <p>Each message to be listed is represented in the format:</p> |

+CMGL - List Messages

+CMGL: <index>,<stat>,<alpha>,<length><CR><LF><pdu>

where:

<index> - message position in the memory storage list.

<stat> - status of the message

<alpha> - string type alphanumeric representation of <da> or <oa>, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS.

<length> - length of the PDU in bytes

<pdu> - message in PDU format according to 3GPP TS 3.40/23.040

(Text Mode) Parameter:

<stat>

"REC UNREAD" - new message

"REC READ" - read message

"STO UNSENT" - stored message not yet sent

"STO SENT" - stored message already sent

"ALL" - all messages.

Each message to be listed is represented in the format (the information written in italics will be present depending on +CSDH last setting):

+CMGL: <index>,<stat>,<oa/da>,<alpha>,<scts>[,<tooa/toda>,<length>]<CR><LF> <data>

Where:

<index> - message position in the storage

<stat> - message status

<oa/da> - originator/destination address, string type, represented in the currently selected character set (see +CSCS)

<alpha> - string type alphanumeric representation of <da> or <oa>, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS.

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

<tooa/toda> - type of number <oa/da>

129 - number in national format

145 - number in international format (contains the "+")

<length> - text length

<data> - TP-User-Data

If <dcs> indicates that GSM03.38/23.038 default alphabet is used , each character of GSM/WCDMA alphabet will be converted into current TE

| | |
|------------------------------|---|
| +CMGL – List Messages | |
| | <p>character set (see +CSCS)</p> <p>If <dc> indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41)</p> <p>Each message delivery confirm is represented in the format: +CMGL: <index>,<stat>,<fo>,<mr>,,,<scts>,<dt>,<st> Where:</p> <p><index> - message position in the storage <stat> - message status <fo> - first octet of the message PDU <mr> - message Reference number <scts> - arrival time of the message to the SC <dt> - sending time of the message <st> - message status as coded in the PDU</p> |
| AT+CMGL=? | Test command returns a list of supported <stat>s |
| Reference | 3GPP TS 27.005(3GPP Only) |

4.3.4.3.3 Read Message - +CMGR

| +CMGR - Read Message | |
|----------------------|--|
| AT+CMGR= <index> | <p>Execution command reports the message with location value <index> from <memr> message storage (<memr> is the message storage for read and delete SMS as last settings of command +CPMS).</p> <p>Parameter: <index> - message index.</p> <p>The output depends on the last settings of command +CMGF (message format to be used)</p> <p>(PDU Mode)</p> <p>The output has the following format: +CMGR: <stat>,<alpha>,<length><CR><LF><pdu> Where:</p> <p><stat> - status of the message 0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent</p> <p><alpha> - string type alphanumeric representation of <da> or <oa>, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS.</p> <p><length> - length of the PDU in bytes. <pdu> - message in PDU format according to 3GPP TS 3.40/23.040.</p> <p>The status of the message and entire message data unit <pdu> returned.</p> |

+CMGR - Read Message

(Text Mode)

Output format for received messages (the information written in italics will be present depending on +CSDH last setting):

```
+CMGR: <stat>,<oa>,<alpha>,<scts>[,<toa>,<fo>,<pid>,<dc>,<sca>,<tosca>,<length>]<CR><LF><data>
```

Output format for sent messages:

```
+CMGR: <stat>,<da>,<alpha>[,<toda>,<fo>,<pid>,<dc>,,<sca>,<tosca>,<length>]<CR><LF><data>
```

Output format for message delivery confirm:

```
+CMGR: <stat>,<fo>,<mr>,,<scts>,<dt>,<st>
```

where:

<stat> - status of the message

"REC UNREAD" - new received message unread

"REC READ" - received message read

"STO UNSENT" - message stored not yet sent

"STO SENT" - message stored already sent

<fo> - first octet of the message PDU

<mr> - message Reference number

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

<dt> - sending time of the message

<st> - message status as coded in the PDU

<pid> - Protocol Identifier

<dc> - Data Coding Scheme

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

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

<alpha> - string type alphanumeric representation of <da> or <oa>, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS.

<sca> - Service Centre number

<toa>,<toda>,<tosca> - type of number <oa>,<da>,<sca>

129 - number in national format

145 - number in international format (contains the "+")

<length> - text length

<data> - TP-User_data

| | |
|-----------------------------|---|
| +CMGR - Read Message | |
| - | <p>If <dc> 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)</p> <p>If <dc> indicates that 8-bit or L506 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41)</p> <p>Note: in both cases if status of the message is 'received unread', status in the storage changes to 'received read'.</p> |
| AT+CMGR=? | Test command returns the OK result code |
| Reference | 3GPP TS 27.005(3GPP Only) |

4.3.4.3.4 New Message Acknowledgement to ME/TA - +CNMA

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

4.3.4.4 Message Sending and Writing

4.3.4.4.1 Send Message - +CMGS

| +CMGS - Send Message | |
|----------------------|--|
| (PDU Mode) | (PDU Mode) |
| AT+CMGS= <length> | <p>Execution command sends to the network a message.</p> <p>Parameter:</p> <p><length> - length of the PDU to be sent in bytes (excluding the SMSC address octets) 7..164</p> <p>After command line is terminated with <CR>, the device responds sending a four character sequence prompt: <CR><LF><greater_than><space> (IRA 13, 10, 62, 32) and waits for the specified number of bytes.</p> <p>Note: the DCD signal shall be in ON state while PDU is given.</p> <p>Note: the echoing of received characters back to the TA is controlled by echo command E</p> <p>Note: the PDU shall be hexadecimal format (each octet of the PDU is given as two IRA character long hexadecimal number) and given in one line. 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 Ctrl-Z char (0x1A hex).</p> <p>To exit without sending the message issue ESC char (0x1B hex).</p> <p>If message is successfully sent to the network, then the result is sent in the format: Note: Optionally (when +CSMS <service> value is 1 and network supports) <scts> is returned: +CMGS: <mr>[, <scts>]</p> <p>Where:</p> <p><mr> - message Reference number. <scts> - TP-Service Centre Time Stamp in Time String Format.</p> <p>Note: if message sending fails for some reason, an error code reported. Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.</p> |

| +CMGS - Send Message | |
|----------------------|---|
| (Text Mode) | (Text Mode) |
| AT+CMGS= | Execution command sends to the network a message. Parameters: |
| <da> [,<tda>] | <p><da> - destination address, string type represented in the currently selected character set (see +CSCS).</p> <p><tda> - type of destination address 129 - number in national format 145 - number in international format(contains the "+")</p> <p>After command line is terminated with <CR>, the device responds sending a four character sequence prompt:</p> <p><CR><LF><greater_than><space> (IRA 13, 10, 62, 32)</p> <p>After this prompt text can be entered; the entered text should be formatted as follows:</p> <p>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.</p> <p>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 will be entered as 2A (IRA50 and IRA65) and this will be converted to an octet with integer value 0x2A)</p> <p>Note: the DCD signal shall be in ON state while text entered.</p> <p>Note: the echoing of entered characters back from the TA is controlled by echo command E</p> <p>To send the message issue Ctrl-Z char (0x1A hex).</p> <p>To exit without sending the message issue ESC char (0x1B hex).</p> <p>If message is successfully sent to the network, then the result is sent in the format:</p> |

| | |
|-----------------------------|--|
| +CMGS - Send Message | |
| | <p>Note : Optionally (when +CSMS <service> value is 1 and network supports) <scts> is returned: +CMGS: <mr>[, <scts>]</p> <p>Where: <mr> - message Reference number. <scts> - TP-Service Centre Time Stamp in Time String Format.</p> <p>Note: if message sending fails for some reason, an error code reported. Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.</p> <p>Note: it is possible to send a concatenation of at most 10 SMs; the maximum number of chars depends on the <dc>: 1530 chars if 3GPP TS 03.38/23.038 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used</p> |
| AT+CMGS=? | Test command returns the OK result code. |
| Note | To avoid malfunctions is suggested to wait for the +CMGS: <mr> or +CMS ERROR: <err> response before issuing further commands. |
| Reference | 3GPP TS 27.005(3GPP Only) |

4.3.4.4.2 Send Message from Storage - +CMSS

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

4.3.4.4.3 Write Message to Memory - +CMGW

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

| +CMGW - Write Message To Memory | |
|--|--|
| (Text Mode) AT+CMGW[=<da> [,<toda> [,<stat>]]] | <p>(Text Mode)</p> <p>Execution command writes in the <memw> memory storage a new message.</p> <p>Parameters:</p> <p><da> - destination address, string type represented in the currently selected character set (see +CSCS).</p> <p><toda> - type of destination address.</p> <p>129 - number in national format</p> <p>145 - number in international format (contains the "+")</p> <p><stat> - message status.</p> <p>"REC UNREAD" - new received message unread</p> <p>"REC READ" - received message read</p> <p>"STO UNSENT" - message stored not yet sent (default)</p> <p>"STO SENT" - message stored already sent</p> <p>After command line is terminated with <CR>, the device responds by sending a four character sequence prompt:</p> <p><CR><LF><greater_than><space> (IRA 13, 10, 62, 32)</p> <p>After this prompt, text can be entered; the entered text should be formatted as follows:</p> <p>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.</p> <p>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)</p> <p>Note: the DCD signal shall be in ON state while text entered.</p> |

| +CMGW – Write Message To Memory | |
|---------------------------------|--|
| | <p>To write the message issue Ctrl-Z char (0x1A hex).</p> <p>To exit without writing the message issue ESC char (0x1B hex).</p> <p>If message is successfully written in the memory, then the result is sent in the format:</p> <p>+CMGW: <index> where: <index> - message location index in the memory <memw>.</p> <p>If message storing fails for some reason, an error code is reported.</p> <p>Note: care must taken to ensure that during the command execution, no other SIM interacting commands are issued.</p> <p>Note: it is possible to save a concatenation of at most 10 SMS; the maximum number of chars depends on the <dc>: 1530 chars if 3GPP TS 03.38/23.038 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used</p> |
| AT+CMGW=? | Test command returns the OK result code. |
| Reference | 3GPP TS 27.005(3GPP Only) |
| Note | To avoid malfunctions is suggested to wait for the +CMGW: <index> or +CMS ERROR: <err> response before issuing further commands. |

4.3.4.4.4 Delete Message - +CMGD

| +CMGD - Delete Message | |
|----------------------------------|---|
| AT+CMGD= <index> [,<delflag>] | <p>Execution command deletes from memory <memr> the message(s). _</p> <p>Parameter:</p> <p><index> - message index in the selected storage <memr></p> <p><delflag> - an integer indicating multiple message deletion request. 0 (or omitted) - delete message specified in <index></p> <p>1 - delete all read messages from <memr> storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched</p> <p>2 - delete all read messages from <memr> storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched</p> <p>3 - delete all read messages from <memr> storage, sent and unsent mobile originated messages, leaving unread messages untouched</p> <p>4 - Delete all messages from <memr> storage.</p> <p>Note: if <delflag> is present and not set to 0 then <index> is ignored and ME shall follow the rules for <delflag> shown above.</p> <p>if the location to be deleted is empty, an error message is reported.</p> |
| AT+CMGD=? | <p>Test command shows the valid memory locations and optionally the supported values of <delflag>.</p> <p>+CMGD: (supported <index>s list)[,(supported <delflag>s list)]</p> |
| Reference | 3GPP TS 27.005(3GPP Only) |

4.3.4.4.5 More Message to Send - +CMMS

| +CMMS More Message to Send | |
|----------------------------|---|
| AT+CMMS=[<n>] | <p>Set command controls the continuity of SMS relay protocol link. Multiple messages can be sent much faster when the link is kept open.</p> <p>Parameter:</p> <p><n></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 <n> 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 <n> remains set to 2 - the feature is still enabled.</p> |
| AT+CMMS? | Read command reports the current value of the parameter <n>. |
| AT+CMMS=? | Test command reports the supported value of <n> parameter. |
| Reference | 3GPP TS 27.005(3GPP Only) |

4.3.4.4.6 More Message to Send - +CMGC

| | | | |
|--|--|---|---|
| +CMGC - Send SMS command | | | |
| (PDU Mode) | (PDU Mode) | | |
| AT+CMGC= <length><CR> PDU is given <Ctrl-Z/ESC> | Execution command sends command message from a TE to the network (SMS-COMMAND). | | |
| | Parameter: <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 Reference | | |
| | Reference | Description | Length |
| | <SCA> | Service Center address: 1 BYTE: length (number of followed | 1, 3-12 BYTES |
| + CMGC | | octets). Mandatory 1 BYTE: <tosca> - value between 128-255 | (When length is 1, length BYTE = 0) |
| | <FO> | First Octet. | 1 BYTE |
| | 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 |

| +CMGC - Send SMS command | | | |
|---|----------|---|-------------|
| | <TP-MR> | Message Reference. An integer representation of a reference number of the SM submitted to the SC by the MS. Values between 0-255. | 1 BYTE |
| | <TP-PID> | Protocol-Identifier. Values between 0- 255. | 1 BYTE |
| | <TP-CT> | Command Type | 1 BYTE |
| | <TP-MN> | Message Number | 1 BYTE |
| | <TP-DA> | Destination address formatted according to the | 2-12 BYTES |
| | <TP-CDL> | Command data length | 1 BYTE |
| | <TP-CD> | Command data | 0-156 BYTES |
| After command line is terminated with <CR>, the device responds sending a | | | |

CONFIDENTIAL

| +CMGC - Send SMS command | |
|---|---|
| | <p>four character sequence prompt: <CR><LF><greater_than><space> (IRA 13, 10, 62, 32) and waits for the specified number of bytes.</p> <p>Note: the DCD signal shall be in ON state while PDU is given.</p> <p>Note: echoing given characters back from the TA is controlled by echo command E</p> <p>Note: the PDU shall be hexadecimal format (each octet of the PDU is given as two IRA character long hexadecimal number) and given in one line.</p> <p>Note: when the length octet of the SMSC address (given in the PDU) equals zero, the SMSC address set with command +CSCA is used; in this case the SMSC Type-of-Address octet shall not be present in the PDU.</p> <p>To send the message issue Ctrl-Z char (0x1A hex).</p> <p>To exit without sending the message issue ESC char (0x1B hex).</p> <p>Note : Optionally (when +CSMS <service> value is 1 and network supports it) <scts> is returned:</p> <p>If message is successfully sent to the network, then the result is sent in the format: +CMGC: <mr>[, <ackpdu>] Where: <mr> - TP-Message-Reference in integer format. <ackpdu> - RP-User-Data element of RP-ACK PDU (When +CSMS <service> value is 1 and network supports).</p> <p>Note: if message sending fails for some reason, an error code reported.</p> <p>Note: 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>(Text Mode) AT+CMGC= <fo>,<ct>[, <pid>[,<mn>[, <da>[,<toda>]]]]><C R>Text can be</p> | <p>(Text Mode) Execution command sends to the network a message.</p> <p>Parameters: <fo> - First octet of 3GPP TS 23.040 SMS-COMMAND in integer format. <ct> - TP-Command-Type in integer format specified in 3GPP TS 23.040.</p> |

| | |
|----------------------|---|
| entered<ctrl- Z/ESC> | <p>Default value is 0.</p> <p><pid> - TP-Protocol-Identifier in integer format. Range 0-255. Default value is 0.</p> <p><mn> - TP-Message-Number in integer format.</p> <p><da> - TP-Destination-Address-Value field in string format represented in the currently selected character set (see +CSCS).</p> <p><toda> - TP-Destination-Address Type-of-Address octet: 129 - number in national format 145 - number in international format (contains the "+")</p> <p>After command line is terminated with <CR>, the device responds sending a four character sequence prompt:</p> <p><CR><LF><greater_than><space> (IRA 13, 10, 62, 32) Note: the DCD signal shall be in ON state while text entered.</p> <p>Note: echoing entered characters back from the TA is controlled by echo command E</p> <p>To send the message issue Ctrl-Z char (0x1A hex).</p> <p>To exit without sending the message issue ESC char (0x1B hex).</p> <p>Note: Optionally (when +CSMS <service> value is 1 and network supports it) <scts> is returned:</p> <p>If message is successfully sent to the network, then the result is sent in the format: +CMGC: <mr>[, <scts>] Where:</p> <p><mr> - TP-Message-Reference in integer format.</p> <p><scts> - TP-Service Centre Time Stamp in Time String Format.</p> <p>Note: if message sending fails for some reason, an error code reported.</p> |
| AT+CMGC=? | Test command returns the OK result code. |
| Note | To avoid malfunctions is suggested to wait for the +CMGC: <mr> or +CMS ERROR: <err> response before issuing further commands. |
| Reference | 3GPP TS 27.005(3GPP Only) |

4.3.5 Mobiletek extended AT Commands

4.3.5.1 General

4.3.5.1.1 System config - ^SYSCONFIG

| ^SYSCONFIG - System configuration command | |
|---|---|
| AT^SYSCONFIG =<mode>, <acqorder>, <roam>, <srvdomain> | This command set system configuration. <input type="checkbox"/> <mode> system mode reference: <input type="checkbox"/> 2- Automatically select <input type="checkbox"/> 13 - GSM ONLY <input type="checkbox"/> 14 - WCDMA only <input type="checkbox"/> 15 - TD-SCDMA only <input type="checkbox"/> 16 - No change <input type="checkbox"/> 18 - LTE only <input type="checkbox"/> <acqorder> - network accessing order reference <input type="checkbox"/> 0 - Automatically <input type="checkbox"/> 1 - GSM first, UTRAN second <input type="checkbox"/> 2 - UTRAN first, GSM second <input type="checkbox"/> 3 - No change <input type="checkbox"/> <roam> - roaming support <input type="checkbox"/> 0 - Not support <input type="checkbox"/> 1 - Can roam <input type="checkbox"/> 2 - No change <input type="checkbox"/> <srvdomain> - Domain configuration <input type="checkbox"/> 0 - CS_ONLY <input type="checkbox"/> 1 - PS_ONLY <input type="checkbox"/> 2 - CS_PS <input type="checkbox"/> 3 - ANY <input type="checkbox"/> 4 - No change |
| AT^SYSCONFIG? | Read the system config. <input type="checkbox"/> <mode> system mode reference: <input type="checkbox"/> 2- Automatically select <input type="checkbox"/> 13 - GSM ONLY <input type="checkbox"/> 14 - WCDMA only <input type="checkbox"/> 15 - TD-SCDMA only <input type="checkbox"/> 16 - No change <input type="checkbox"/> 17 - Mode unknown <input type="checkbox"/> 18 - LTE only <input type="checkbox"/> <acqorder> - network accessing order reference <input type="checkbox"/> 0 - Automatically <input type="checkbox"/> 1 - GSM first, UTRAN second <input type="checkbox"/> 2 - UTRAN first, GSM second <input type="checkbox"/> 3 - No change <input type="checkbox"/> 4 - Order unknown <input type="checkbox"/> <roam> - roaming support <input type="checkbox"/> 0 - Not support <input type="checkbox"/> 1 - Can roam <input type="checkbox"/> 2 - No change <input type="checkbox"/> 3 - Roam unknown <input type="checkbox"/> <srvdomain> - Domain configuration <input type="checkbox"/> 0 - CS_ONLY <input type="checkbox"/> 1 - PS_ONLY <input type="checkbox"/> 2 - CS_PS <input type="checkbox"/> 3 - ANY <input type="checkbox"/> 4 - No change <input type="checkbox"/> 5 - Domain unknown |
| AT^SYSCONFIG =? | Test command returns supported values of <reporting> parameter. |

4.3.5.1.2 Setup RmNet call - \$QCRMCall

| | |
|--|---|
| AT\$QCRMCall | |
| AT\$QCRMCall L=<Action> <Instance> [,<IP Type> [,<Tech Pref> [,<umts profile number> [,<cdma profile number> > [,<APN>]]]]] | <p>Command triggers an RmNet call based on <Action> parameter which is typically a start of an RmNet Call or stop of a RmNet call.</p> <p>< Action ></p> <p><input type="checkbox"/> 0 – Stop</p> <p><input type="checkbox"/> 1 – Start</p> <p><Instance></p> <p>1 to 8</p> <p><IP Type></p> <p><input type="checkbox"/> 1 – Ipv4</p> <p><input type="checkbox"/> 2 – Ipv6</p> <p><input type="checkbox"/> 3 – Ipv4v6</p> <p><Tech Pref></p> <p><input type="checkbox"/> 1 – 3GPP2</p> <p><input type="checkbox"/> 2 – 3GPP</p> <p><umts_profile> 1 to 24</p> <p>*<cdma profile> 100 to 179</p> <p><APN ></p> <p>String type, maximum length is 100</p> |
| AT\$QCRMCall L? | Read the current RmNet type. |
| Example | AT\$QCRMCall=1,1,1,2,1,, OK |

4.3.5.1.3 Inquires the current system message - ^SYSINFO

| AT^SYSINFO | |
|------------|--|
| AT^SYSINFO | <p>The command inquires the current system message. Such as system service status, domain, roam, system mode, UIM card status, etc.</p> <p><srv_status> system service status, values as follows:</p> <ul style="list-style-type: none"> 0 no service 1 limited service 2 service available 3 limited area service 4 power saving and dormancy status. <p><srv_domain> system service, values as follows:</p> <ul style="list-style-type: none"> 0 no service 1 only CS service 2 only PS service 3 PS+CS service 4 CS and PS don't register and are in the status of serching. 255 CDMA doesn't support. <p><roam_status> roaming status, values as follows:</p> <ul style="list-style-type: none"> 0 non-roaming status. 1 roaming status. <p><sys_mode> system mode, values as follows:</p> <ul style="list-style-type: none"> 0 no service 1 AMPS mode (not use provisionally) 2 CDMA mode 3 GSM/GPRS mode 4 HDR mode 5 WCDMA mode 6 GPS mode 7 GSM/WCDMA 8 CDMA/HDR HYBRID 9 LTE mode 10 GSM, WCDMA, and LTE mode |

| | |
|------------|---|
| AT^SYSINFO | |
| | <p><sim_stat> UIM card status, values as follows:</p> <p>1 UIM card status available</p> <p>240 ROMSIM version</p> <p>255 UIM card doesn't exist</p> <p>Execution command responses:</p> <p>^SYSINFO:< srv_status>,< srv_domain>,<roam_status>,<sys_mode>,<sim_state></p> |
| Example | <p>AT^SYSINFO</p> <p>^SYSINFO: 2,1,0,3,1</p> |
| Reference | Vendor |

4.3.5.1.4 SIM Card HotSwap Control - +ESIMS

| | |
|---|--|
| +ESIMS - SIM Card HotSwap Control command | |
| AT+ESIMS=<Action> | <p>This command is used to control SIM card hotswap effective or not.</p> <p>Parameter:</p> <p>Action = 0 --> SIM card hotswap is not effective.</p> <p>Action = 1 --> SIM card hotswap is effective.</p> <p>Note:</p> <p>After execute this command, must reboot device, then SIM card hotswap take effect.</p> |
| AT+ESIMS? | Read command is used to query SIM card hotswap status. |
| AT+ESIMS=? | Query command is used to query SIM card hotswap range. |
| Example | <p>AT+ESIMS?</p> <p>+ESIMS:0</p> <p>OK</p> <p>AT+ESIMS=1</p> <p>OK</p> <p>AT+ESIMS?</p> <p>+ESIMS:1</p> <p>OK</p> <p>AT+ESIMS=?</p> <p>+ESIMS:(0-1)</p> <p>OK</p> |

4.3.5.2 AT Commands for FTP

4.3.5.2.1 Set FTP parameters - +FTPSRV

| | |
|--|--|
| +FTPSRV set FTP parameters | |
| +FTPSRV=<username>,<password>,<ip>,<port>,<type> | <p>The command is used to set the FTP username、password of the user and the server address、server port、transfer mode of FTP server:</p> <p>Parameter:</p> <p><username>: string</p> <p><password>:string</p> <p><ip>:string</p> <p><port>: numeric parameter 1~65535</p> <p><type>: numeric parameter 0:ASCII 1:binary</p> |
| AT+FTPSRV? | <p>Read command:</p> <p>+FTPSRV: (username), (password),(ip),(port),(type)</p> |
| AT+FTPSRV=? | Return OK, Support this command |
| Example | <p>AT+FTPSRV="mobiletek","123456","198.1.1.50",2112,1</p> <p>OK</p> |

4.3.5.2.2 Set FTP mode - +FTPMODE

| | |
|---|--|
| + FTPMODE set the FTP transmission mode | |
| +FTPMODE=<mode> | <p>The command is used to set the FTP mode:</p> <p>Parameter:</p> <p><mode>: numeric parameter 0: non-transparent transmission 1: transparent transmission</p> |
| AT+FTPMODE? | <p>Read command:</p> <p>+ FTPMODE: mode</p> |
| AT+FTPMODE=? | Return OK, Support this command |
| Example | <p>AT+FTPMODE=1</p> <p>OK</p> |

4.3.5.2.3 Set FTP upload file name - +FTPPUTNAME

| | |
|--------------------------------------|--|
| +FTPPUTNAME set FTP upload file name | |
| +FTPPUTNAME= < filename > | set the FTP upload file name, the file must exist in the modem, length should not exceed 100: Parameter: <filename>: string (Length should not exceed 100) |
| AT+FTPPUTNAME? | Read command: +FTPPUTNAME: filename |
| AT+FTPPUTNAME=? | Return OK, Support this command |
| Example | AT+FTPPUTNAME="test.txt" OK |

4.3.5.2.4 Set FTP upload file path - +FTPPUTPATH

| | |
|--------------------------------------|---|
| +FTPPUTPATH set FTP upload file path | |
| +FTPPUTPATH = < filepath> | The command is used to set the FTP upload file path, the path is in the modem, the path must start with "/" and end with "/", length should not exceed 100: Parameter: <filepath>: string |
| AT+FTPPUTPATH? | Read command: +FTPPUTPATH: filepath |
| AT+FTPPUTPATH=? | Return OK, Support this command |
| Example | AT+FTPPUTPATH ="/test/test1/" OK |

4.3.5.2.5 Set FTP load file name - +FTPGETNAME

| | |
|--------------------------------------|---|
| +FTPGETNAME set FTP upload file name | |
| +FTPGETNAME= < filename > | set the FTP load file name, the file must exist in the server, length should not exceed 100: Parameter: <filename>: string (Length should not exceed 100) |
| AT+FTPGETNAME? | Read command: + FTPGETNAME: filename |
| AT+FTPGETNAME=? | Return OK, Support this command |
| Example | AT+ FTPGETNAME ="test.txt" OK |

4.3.5.2.6 Set FTP load file path - +FTPGETPATH

| | |
|------------------------------------|--|
| +FTPGETPATH set FTP load file path | |
| +FTPGETPATH= < fileptah> | The command is used to set the FTP load file path, the path is in the server, the path must start with "/" and end with "/", length should not exceed 100: Parameter: <filepath>: string |
| AT+FTPGETPATH? | Read command: + FTPPUTPATH: filepath |
| AT+FTPGETPATH=? | Return OK, Support this command |
| Example | AT+ FTPGETPATH ="/test/test1/" OK |

4.3.5.2.9 Close FTP connection - + FTPQUIT

| | |
|-------------------------------|---|
| +FTPQUIT close FTP connection | |
| +FTPQUIT=<num> | The command is used to close the ftp socket connection: < num >: numeric parameter |
| AT+FTPQUIT? | Read command: + FTPQUIT: num |
| AT+FTPQUIT=? | + FTPQUIT: (1-1) OK |
| Example | AT+FTPQUIT=1 OK |

4.3.5.2.10 Manage FTP file - + FTPLOCAL

| | |
|--------------------------------|--|
| +FTPLOCAL close FTP connection | |
| +FTPLOCAL =<num> | The command is used to manase FTP file: < num >: numeric parameter <0>:get the mode system store information <1>:find the file in the modem <2>:delete the file in the modem |
| AT+FTPLOCAL? | Read command: +FTPLOCAL: num |
| AT+FTPLOCAL =? | +FTPLOCAL: (0-2) OK |
| Example | AT+FTPLOCAL =0 SerialNumber:xxxxx TotalClusters:xxx FreeClusters:xxx FreeChains:x OK |

4.3.5.3 TCP/IP TOOLKIT

4.3.5.3.1 Creat network connect - \$ZIPCALL

| AT\$ZIPCALL | |
|-------------------------|---|
| AT\$ZIPCALL= <State> | <p>The set command activate or deactivate PS call.</p> <p>< State ></p> <p><input type="checkbox"/> 0 –deactivate</p> <p><input type="checkbox"/> 1 –activate</p> <p>AT +ZIPCALL =<State> + ZIPCALL:[SP]< State > ERROR</p> |
| AT\$ZIPCALL? | Read the current State value |
| Example | AT\$ZIPCALL=1 + ZIPCALL:1 |

4.3.5.3.2 Creat socket and connect to sever - \$ZIPOPEN

| AT\$ZIPOPEN | |
|--|--|
| AT\$ZIPOPEN= <Socketid>,<R emoteIP>,<Re moteport>,<Fa mily>,<Type> | <p>The set command create TCP/UDP socket connection.</p> <p>Family: Address Family 1~2:valid address family type 1: Address Family – Internet 2: Address Family - Internet v6</p> <p>Type: Socket types 0~1:valid socket type 0: TCP - streaming socket 1: UDP - datagram socket</p> |
| AT+ZIPOPEN ? | +ZIPOPEN: <Socket id>,<Connect state> |
| Example | AT\$ZIPOPEN=1," 182.150.28.206",6800,1,0 +ZIPOPEN: socketindex= 1, socket state= 1 |

4.3.5.3.3 Send data to sever - \$ZIPSEND

| | |
|----------------------------------|---|
| AT\$ZIPSEND | |
| AT\$ZIPSEND =<socket id>, <data> | This command used to TCP/UDP data send <Socket id>: Socket Connection indication 0: Invalid Socket id 1~5: Valid Socket id |
| AT\$ZIPSEND? | Read the send data size and which socket used to send data |
| Example | Command: AT\$ZIPSEND=1,32302D46696C Response: \$ZIPSEND: socketid=1, data_size=12 |

4.3.5.3.4 Auto receive, this not a command - \$ZIPRCV

| | |
|--|--|
| \$ZIPRCV | |
| \$ZIPRCV: <Socketid>, <RemoteIP>, <Remoteport>, <Data len>, <Data> | TCP/UDP data receive auto <Socket id>: Socket Connection indication 0: Invalid Socket id 1~5: Valid Socket id <Remote ip>: Server IP of Remote server < Remote port>: Remote port, range: 1-65535 <Data len>: The length of received data, should less than 1024Bytes. |
| Example | \$ZIPRCV:socketid=1,remote_ip=182.150.28.206, remote_port=6969, data_len=3, data=abc |

4.3.5.3.5 Query the socket stat - \$ZIPSTAT

| | |
|-------------------------|---|
| AT\$ZIPSTAT | |
| AT\$ZIPSTAT= <Socketid> | This command get the socket stat <Socket id>: Socket Connection indication 0: Invalid Socket id |
| AT\$ZIPSTAT=? | Query the range of stat Status>: State of Socket Connection 0: Socket connection closed. |
| Example | Command: AT\$ZIPSTAT=1 Response: \$ZIPSTAT: socketid=1, STAT=1 |

4.3.5.3.6 Close connect and release resource - \$ZIPCLOSE

| | |
|-----------------------------|---|
| AT\$ZIPCLOSE | |
| AT\$ZIPCLOSE= <Socketid> | This command close TCP/UDP connect and update stat <Socket id>: Socket Connection indication 0: Invalid Socket id |
| AT\$ZIPCLOSE? | Query all the socket stat |
| AT\$ZIPCLOSE=? | Query range of valid socket |
| Example | Command: AT\$ZIPCLOSE=1 Response: \$ZIPCLOSE: socketid=1, STAT=1 |

CONFIDENTIAL

4.3.5.4 HTTP AT Commands

4.3.5.4.1 Open HTTP Service - \$HTTPOPEN

| \$HTTPOPEN Open HTTP Service | |
|------------------------------|---|
| \$HTTPOPEN | The command is used to open HTTP service. To use HTTP, you must execute the command in the first. In the last, execute \$HTTPCLOSE to close HTTP service. |
| AT\$HTTPOPEN? | Response: \$HTTPOPEN:<opened_or_not> OK Return HTTP service is open or not. 1: HTTP service is opened. 0: HTTP service is not opened. |
| Example | Example 1: AT\$HTTPOPEN OK Example 2: AT\$HTTPOPEN \$HTTPERROR:<errno> ERROR |

4.3.5.4.2 Close HTTP Service - \$HTTPCLOSE

| | |
|--------------------------------|---|
| \$HTTPCLOSE Close HTTP Service | |
| \$HTTPCLOSE | The command is used to close HTTP service. After execute this command,HTTP will unavailable. |
| AT\$HTTPCLOSE? | Response: \$HTTPCLOSE:<closed_or_not> OK Return HTTP service is closed or not. 1: HTTP service is closed. 0: HTTP service is not closed. |
| Example | Example 1: AT\$HTTPCLOSE OK Example 2: AT\$HTTPCLOSE \$HTTPEERROR:<errno> ERROR |

4.3.5.4.3 Set HTTP Header Fields - \$HTTPRQH

| \$HTTPRQH Set HTTP header fields | |
|-----------------------------------|--|
| \$HTTPRQH=<ParamKey>,<ParamValue> | <p>The command is used to set HTTP request header fielder and entity header fielder.</p> <p>Parameter:</p> <p><ParamKey>: HTTP request or entity header fielder's Key. If there are special characters, please add quotes.</p> <p><ParamValue>: HTTP request or entity header fielder's Value. If there are special characters, please add quotes.</p> <p>Refer to : " IETP-RFC 2616 "</p> |
| AT\$HTTPRQH=? | <p>Response:</p> <p>\$HTTPRQH=<ParamKey>,<ParamValue></p> <p>OK</p> |
| AT\$HTTPRQH? | Return current HTTP request header fielder and entity header fielder. |
| Example | <p>Example 1:</p> <pre>AT\$HTTPRQH=Host,182.150.28.206 OK AT\$HTTPRQH=Connection,keep-alive OK</pre> <p>Example 2:</p> <pre>AT\$HTTPRQH? Host:182.150.28.206 Connection :keep-alive OK</pre> <p>Example 3:</p> <pre>AT\$HTTPRQH=User-Agent,"Mozilla/5.0 (X11;Ubuntu; Linux x86_64; rv:38.0) Gecko/20100101 Firefox/38.0" OK</pre> |

4.3.5.4.4 Set HTTP Request URL And Port- \$HTTTPARA

| \$HTTTPARA Set HTTP Request URL And Port | |
|--|---|
| \$HTTTPARA=<url>,<port> | The command is used to set HTTP request url and port. Parameter: <url>:The HTTP request's url, such as "http://182.150.28.206:8182/ httpdemo/http". <port>:The HTTP request's port.The default port is 80. |
| AT\$HTTTPARA=? | Response: \$HTTTPARA=<url>,<port> OK |
| AT\$HTTTPARA? | Return current HTTP request's host,uri,and port,such as: AT\$HTTTPARA? Host : "182.150.28.206" URI : "/httpdemo/http" Port : 8182 |
| Example | Example 1: AT\$HTTTPARA=http://182.150.28.206:8182/httpdemo/http,8182 OK Example 2: AT\$HTTTPARA=www.baidu.com,80 OK Example 3: AT\$HTTTPARA=www.baidu.com, OK Example 4: AT\$HTTTPARA=http://182.150.28.206:8182/httpdemo/http?name=mobiletek&pass=123456,8182 OK |

4.3.5.4.5 Clear HTTP Related Parameters - \$HTTPCLEAR

| | |
|---|---|
| \$HTTPCLEAR Clear HTTP Related parameters | |
| \$HTTPCLEAR | The command is used to clear HTTP parameters. Such as HTTP header fielder ,URL and port. |
| AT\$HTTPCLEAR? | <p>Response:</p> <p>\$HTTPCLEAR:<cleared_or_not></p> <p>OK</p> <p>Return HTTP parameters is cleared or not.</p> <p>1: HTTP parameters is cleared.</p> <p>0: HTTP parameters is not cleared.</p> |
| Example | <p>Example 1:</p> <pre>AT\$HTTPCLEAR OK</pre> <p>Example 2:</p> <pre>AT\$HTTPCLEAR \$HTTPELORR:<errno> ERROR</pre> |

4.3.5.4.6 Send HTTP Request - \$HTTPACTION

| | |
|---|--|
| <p>\$HTTPACTION Send HTTP Request</p> <p>\$HTTPACTION=<request></p> | <p>The command is used to send HTTP Request. Support request include GET, POST and GET.</p> <p>Parameter:</p> <p><request>:HTTP request type ,available data include 0,1,2.</p> <p>0: GET request</p> <p>1: POST request</p> <p>2: HEAD request</p> <p>Return:</p> <p>\$HTTPRCV:DATA,<len></p> <p>.....</p> <p>\$HTTPRCV:DATA,2</p> <p><\r><\n></p> <p>\$HTTPRCV:DATA,<len></p> <p>.....</p> <p>\$HTTPRCV:DATA,<len></p> <p>.....</p> <p>This command will return HTTP response header fielder and file path which storage HTML text or download file if request success. If request fail ,this command just return response header fielder. Specially, the HEAD request only return response header fielder. For POST,must set Conten-Length header item and POST's content data.</p> |
| <p>AT\$HTTPACTION?</p> | <p>Read command:</p> <p>Usage: AT\$HTTPACTION=<[0,1,2]></p> |
| <p>AT\$HTTPACTION=?</p> | <p>Unavailable</p> |
| <p>Example</p> | <p>Example 1:</p> <pre> AT\$HTTPACTION=0 \$HTTPRCV:DATA,153 HTTP/1.1 200 OK Server: Apache-Coyote/1.1 Content-Type: text/html;charset=ISO-8859-1 Transfer-Encoding: chunked Date: Tue, 20 Sep 2016 05:27:29 GMT \$HTTPRCV:DATA,2 \$HTTPRCV:DATA,178 </pre> |

| \$HTTPACTION | Send HTTP Request |
|--------------|--|
| | <pre> ac <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"> <HTML> <HEAD><TITLE>A Servlet</TITLE></HEAD> <BODY> GET:Name or pass is wrong. </BODY> </HTML> \$HTTPRECV:DATA,5 0 OK Example 2: AT\$HTTPACTION=1 OK AT\$HTTPDATA=13 >> name=mobilete OK AT\$HTTPSEND OK AT\$HTTPDATA=13 >> k&pass=123456 OK AT\$HTTPSEND OK AT\$HTTPDATA=0 OK AT\$HTTPSEND \$HTTPRECV:DATA,153 HTTP/1.1 200 OK Server: Apache-Coyote/1.1 Content-Type: text/html;charset=ISO-8859-1 Transfer-Encoding: chunked Date: Tue, 20 Sep 2016 05:37:48 GMT \$HTTPRECV:DATA,2 </pre> |

| \$HTTPACTION | Send HTTP Request |
|--------------|--|
| | <pre>\$HTTPRECV:DATA,195 b8 <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"> <HTML> <HEAD><TITLE>A Servlet</TITLE></HEAD> <BODY> POST: Name is mobiletek,pass is 123456 </BODY> </HTML> 0 OK Example 3: AT\$HTTPACTION=2 HTTP/1.1 200 OK Server: Apache-Coyote/1.1 Content-Type: text/html Content-Length: 172 Date: Tue, 20 Sep 2016 05:29:33 GMT OK</pre> |

4.3.5.4.7 Set HTTP Post Request's Data - \$HTTPDATA

| \$HTTPDATA Set HTTP Post Request's Data | |
|---|--|
| \$HTTPDATA=<data_len> | <p>The command is used to set HTTP post request's content. This command effective only to POST.</p> <p>Parameter:</p> <p><data_len>:The post request's content length.The length between 0 and 1024.</p> <p>0 mean data write end. The data end with Ctrl+Z. After this,must use \$HTTPSEND to send data every time.</p> |
| AT\$HTTPDATA? | <p>Response :</p> <p>\$HTTPDATA:<data_len></p> <p>OK</p> |
| AT\$HTTPDATA=? | <p>Response :</p> <p>\$HTTPDATA:(0-1024)</p> <p>OK</p> |

4.3.5.4.8 Send HTTP Post Content Data - \$HTTSEND

| | |
|---------------------------------------|--|
| \$HTTSEND Send HTTP Post Content Data | |
| \$HTTSEND | The command is used to send HTTP post request's content. This command effective only to POST.After data send complete,will receive response. |
| Example | <pre> AT\$HTTPACTION=1 OK AT\$HTTTPDATA=13 >> name=mobilete OK AT\$HTTSEND OK AT\$HTTTPDATA=13 >> k&pass=123456 OK AT\$HTTSEND OK AT\$HTTTPDATA=0 OK AT\$HTTSEND \$HTTTPRCV:DATA,153 \$HTTTPRCV:DATA,2 \$HTTTPRCV:DATA,195 b8 <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"> <HTML> <HEAD><TITLE>A Servlet</TITLE></HEAD> <BODY> POST: Name is mobiletek,pass is 123456 </BODY> </HTML> 0 OK </pre> |

4.3.5.4.9 HTTP Error Code

Numeric Format Verbose Format General errors:

| | |
|-----|---|
| 200 | Subsystem established and available |
| 201 | Subsystem establishment in progress. |
| 202 | Network subsystem unavailable. |
| 203 | PPP is closing. |
| 204 | Existing net subsystem resources. |
| 205 | Physlink going dormant. |
| 300 | HTTP service is not opened. |
| 301 | HTTP service has opened. |
| 302 | AT parameter error. |
| 303 | DNS error. |
| 304 | Action error. |
| 305 | Request timeout. |
| 306 | Downloading file. |
| 307 | URL not set. |
| 308 | Header fielder's number exceeds the limit.. |
| 309 | Unsupported header fielder. |
| 310 | Header response error(Exception). |
| 311 | Is sending post data. |
| 350 | Unknown HTTP error |

4.3.5.5 HTTPS AT Commands

4.3.5.5.1 Acquire HTTPS protocol stack - +CHTTPSSTART

| | |
|--------------|---|
| +CHTTPSSTART | This command is used to acquire HTTPS protocol stack. |
| +CHTTPSSTART | This command is used to acquire HTTPS protocol stack. Response: OK ERROR |
| Example | Example 1: AT+CHTTPSSTART OK Example 2: AT+CHTTPSSTART ERROR |

4.3.5.5.2 Stop HTTPS protocol stack - +CHTTPSSTOP

| | |
|-------------|--|
| +CHTTPSSTOP | This command is used to stop HTTPS protocol stack. |
| +CHTTPSSTOP | This command is used to stop HTTPS protocol stack. Response: OK ERROR |
| Example | Example 1: AT+CHTTPSSTOP OK Example 2: AT+CHTTPSSTOP ERROR |

4.3.5.5.3 Open HTTPS session - +CHTTPSOPSE

| | |
|---|---|
| +CHTTPSOPSE Open HTTPS session. | |
| +CHTTPSOPSE= <host>,<port>,<server _type> | <p>This command is used to open a new HTTPS session. Every time, AT+CHTTPSSTART command must be executed before executing AT+CHTTPSOPSE command.</p> <p>Parameter:</p> <p><host> : The host address.</p> <p><port> : The host listening port for SSL. For HTTPS, the default is 443; For HTTP, the default is 80.</p> <p><server_type> : The type of server: 1 : HTTP server. 2 : HTTPS server with SSL3.0/TLS1.0 supported.</p> <p>Response:</p> <p>OK ERROR</p> |
| Example | <p>Example 1: AT+CHTTPSOPSE=www.baidu.com,443,2 OK</p> <p>Example 2: AT+CHTTPSOPSE=www.baidu.com,0,1 OK</p> <p>Example 3: AT+CHTTPSOPSE= www.baidu.com,80,2 ERROR</p> |

4.3.5.5.4 Close HTTPS session - +CHTTPSCLSE

| | |
|-------------|---|
| +CHTTPSCLSE | This command is used to close the opened HTTPS session. |
| +CHTTPSCLSE | This command is used to close the opened HTTPS session. Response: OK ERROR |
| Example | Example 1: AT+CHTTPSCLSE OK Example 2: AT+ CHTTPSCLSE ERROR |

4.3.5.5.5 Send HTTPS request - +CHTTPSSEND

| | |
|---------------------------------|---|
| +CHTTPSSEND Send HTTPS request. | |
| +CHTTPSSEND=<max_len> | <p>This command is used to send HTTPS request. The AT+CHTTPSSEND=<len> is used to download the data to be sent. The AT+CHTTPSSEND is used to wait the result of sending.</p> <p>Parameter:</p> <p>< max_len > : The max length of the data to send.</p> <p>Response :</p> <p>>></p> <p>OK</p> <p>ERROR</p> <p>The data end with Ctrl+Z.</p> |
| AT+CHTTPSSEND? | <p>Response :</p> <p>+CHTTPSSEND: <unsent_len></p> <p>OK</p> <p>Parameter:</p> <p>< unsent_len > : The length of the data in the sending buffer which is waiting to be sent.</p> |
| AT+CHTTPSSEND=? | <p>Response :</p> <p>+CHTTPSSEND: (1-4096)</p> <p>OK</p> |

| | |
|---------------------|---|
| <p>AT+CHTTPSEND</p> | <p>Response :</p> <p>+CHTTPSEND: <result></p> <p>OK</p> <p>ERROR</p> <p>Parameter:</p> <p>< result > :</p> <p> The final result of the sending.</p> <p> 0 : Success</p> <p> 1 : Unknown error</p> <p> 2 : Network error</p> <p> 3 : DNS query error</p> <p> 4 : Socket connection error</p> <p> 5 : SSL error</p> <p> 6 : Response header error</p> <p> 7 : Network is down</p> <p> 8 : HTTP response authentication mismatch</p> |
| <p>Example</p> | <p>Example 1:</p> <p>AT+CHTTPSEND=1000</p> <p>>> GET / HTTP/1.1</p> <p>Host: www.baidu.com</p> <p><CTRL+Z></p> <p>OK</p> <p>AT+CHTTPSEND?</p> <p>+CHTTPSEND: 36</p> <p>OK</p> <p>AT+CHTTPSEND</p> <p>+CHTTPSEND: 0</p> <p>OK</p> <p>Example 2:</p> <p>AT+CHTTPSEND=10</p> <p>>> GET / HTTP/1.1</p> <p>Host:www.baidu.com</p> <p>ERROR</p> |

4.3.5.5.6 Receive HTTPS response - +CHTTPSRECV

| | |
|----------------------------|---|
| +CHTTPSRECV | This command is used to receive HTTPS response after sending HTTPS request. |
| +CHTTPSRECV=<max_recv_len> | <p>This command is used to receive HTTPS response after sending HTTPS request.</p> <p>Response:</p> <p>+CHTTPSRECV: DATA,<len></p> <p>...</p> <p>+CHTTPSRECV:<result></p> <p>OK</p> <p>ERROR</p> <p>Parameter:</p> <p>< max_recv_len>:</p> <p>Maximum bytes of data to receive in the current AT+CHTTPSRECV calling. Minimum is 1.</p> <p><len>:</p> <p>The length of the data received.</p> <p><result>:</p> <p>The final result of the receiving.</p> <ul style="list-style-type: none"> 0 : Success 1 : Unknown error 2 : Network error 3 : DNS query error 4 : Socket connection error 5 : SSL error 6 : Response header error 7 : Network is down 8 : HTTP response authentication mismatch |
| +CHTTPSRECV? | <p>Response:</p> <p>+CHTTPSRECV: LEN, <cache_len></p> <p>OK</p> <p>ERROR</p> <p>Parameter:</p> <p><cache_len>: The cache length.</p> |

| | |
|---------|---|
| Example | <pre>Example 1: AT+CHTTPSRECV? +CHTTPSRECV: LEN, 903 OK AT+CHTTPSRECV=2000 +CHTTPSRECV: DATA,903 HTTP/1.1 200 /https/temp +CHTTPSRECV: 0 OK</pre> |
|---------|---|

4.3.5.5.7 Get the state of HTTPS request - +CHTTPSSTATE

| | |
|--------------|---|
| +CHTTPSSTATE | This command is used to get the state of HTTPS request. |
| +CHTTPSSTATE | <p>This command is used to get the state of HTTPS request.</p> <p>Response:</p> <p>+CHTTPSSTATE: <state></p> <p>OK</p> <p>ERROR</p> <p>Parameter:</p> <p><state>: The state of HTTPS request.</p> <ul style="list-style-type: none"> 0 : OK 1 : AT command error. 2 : HTTPS stack has started. 3 : HTTPS stack has stoped. 4 : Session has closed. 5 : Request type error. 6 : Open session error. 7 : Request data error. 8 : Request header error. |
| Example | <p>Example 1:</p> <pre>AT+CHTTPSSTATE</pre> <p>+CHTTPSSTATE:0</p> <p>OK</p> |

4.3.5.6 EMAIL AT Command

4.3.5.6.1 Set SMTP server address and port number - +SMTPSRV

| | |
|--|---|
| AT+SMTPSRV - Set SMTP server address and port number | |
| AT+SMTPSRV=<s_addr>,<n_port>,[n_type] | <p>+SMTPSRV command is used to set SMTP server address and port number, then make DNS parse and connect to SMTP server. SMTP server address and port number will not be cleared until execute AT+SMTPSRV command with empty parameter.</p> <p>Parameters:</p> <p><s_addr>- Mandatory parameter. SMTP server address, non empty string with double quotes, ASCII text string up to 128 characters.</p> <p><n_port>- Mandatory parameter. Port number of SMTP server in decimal format, from 1 to 65535, and default port is 25 for SMTP.</p> <p><n_type>- Optional parameter. SMTP connect type.</p> <p>SMTP server: n_type=1</p> <p>SMTP server with SSL/TLS: n_type=2</p> <p>SMTP server with STARTTLS: n_type=3</p> |
| AT+SMTPSRV? | Read command returns the current configuration value of the parameter |
| AT+SMTPSRV=? | Test command returns range of the parameters. |
| AT+SMTPSRV | Execute command will set SMTP server address and port number to default value. |
| Example | <pre> AT+SMTPSRV=? +SMTPSRV:","",(1-65535),(1-3) OK AT+SMTPSRV="smtp.126.com",25,1 250-mail 250-PIPELINING 250-AUTH LOGIN PLAIN 250-AUTH=LOGIN PLAIN 250-coremail 1Uxr2xKj7kG0xkI17xGrU7I0s8FY2U3Uj8Cz28x1UUUUU7Ic2I0Y2UFwxJ3zUCa0xD r UUUUj 250-STARTTLS 250 8BITMIME OK AT+SMTPSRV? +SMTPSRV:"smtp.126.com",25,1 OK </pre> |
| Reference | RFC821 SIMPLE MAIL TRANSFER PROTOCOL |

4.3.5.6.2 SMTP server authentication - +SMTPAUTH

| | |
|--|--|
| AT+SMTPAUTH - SMTP server authentication | |
| AT+SMTPAUTH=<n_type>,<s_name>,<s_pass> | <p>+SMTPAUTH command is used to authenticate with SMTP server by correct authentication type, username, password. Authentication type, username, password will not be cleared until execute AT+SMTPAUTH command with empty parameter.</p> <p>Parameters:</p> <p><n_type>- Mandatory parameter. SMTP server authentication type, currently support below authentication types:</p> <p>AUTH LOGIN: n_type=0</p> <p>AUTH PLAIN: n_type=1</p> <p>AUTH NTLM: n_type=2</p> <p>AUTH CRAM_MD5: n_type=3</p> <p><s_name>- Mandatory parameter. Username to be used for SMTP authentication, non empty string with double quotes and up to 128 characters.</p> <p><s_pass>- Mandatory parameter. Password to be used for SMTP authentication, string with double quotes and up to 128 characters.</p> <p>Note: If you want to change another type to authenticate with SMTP server, need to do the following:</p> <ol style="list-style-type: none"> 1. AT+SMTPSTOP 2. AT+SMTPSRV=<s_addr>[,<n_port>] 3. AT+SMTPAUTH=<n_type>,<s_name>,<s_pass> |
| AT+SMTPAUTH? | Read command returns the current configuration value of the parameter |
| AT+SMTPAUTH=? | Test command returns range of the parameters. |
| AT+SMTPAUTH | Execute command will set SMTP server address and port number to default value. |
| Example | <pre>AT+SMTPAUTH=? +SMTPAUTH:(0-3),"", "" OK AT+SMTPAUTH=0,"mobileTest2016","MT123456" OK AT+SMTPAUTH? +SMTPAUTH:0,"mobileTest2016","MT123456" OK</pre> |
| Reference | RFC821 SIMPLE MAIL TRANSFER PROTOCOL |

4.3.5.6.3 Set sender address and name - +SMTPFROM

| AT+SMTPFROM - Set sender address and name | |
|---|--|
| AT+SMTPFROM=<s_addr>[,<s_name>] | <p>+SMTPFROM command is used to set sender's address and name, which are used to construct e-mail header. Sender address and name will not be cleared until execute AT+SMTPFROM command with empty parameter.</p> <p>Parameters:</p> <p><s_addr>- Mandatory parameter. E-mail sender address, non empty string with double quotes, ASCII text up to 128 characters.</p> <p><s_name>- Optional parameter. E-mail sender name, string with double quotes, and alphanumeric ASCII text up to 64 characters.</p> |
| AT+SMTPFROM? | Read command returns the current configuration value of the parameter |
| AT+SMTPFROM=? | Test command returns range of the parameters. |
| AT+SMTPFROM | Execute command will set sender address and sender name to default value. |
| Example | <pre>AT+SMTPFROM=? +SMTPFROM:"","" OK AT+SMTPFROM="mobileTest2016@126.com","mobileTest" OK AT+SMTPFROM? +SMTPFROM:"mobileTest2016@126.com","mobileTest" OK</pre> |
| Reference | RFC821 SIMPLE MAIL TRANSFER PROTOCOL |

4.3.5.6.4 Set recipient type(TO/CC/BCC), address and name - +SMTPRCPT

| | |
|--|--|
| AT+SMTPRCPT - Set recipient type(TO/CC/BCC), address and name. | |
| AT+SMTPRCPT=<n_type>,<s_addr>[,<s_name>] | <p>+SMTPRCPT command is used to set recipient address/name and type (TO/CC/BCC). After an Email is sent, all recipient list will be cleared, or execute AT+SMTPRCPT with empty parameter can clear all recipient list.</p> <p>Parameters:</p> <p><n_type>- Mandatory parameter. Recipient type: TO: n_type=0 CC: n_type=1 BCC: n_type=2</p> <p><s_addr>- Mandatory parameter. Recipient address, non empty string with double quotes, ASCII text up to 128 characters.</p> <p><s_name>- Optional parameter. Recipient name, string with double quotes, and alphanumeric ASCII text up to 64 characters.</p> |
| AT+SMTPRCPT? | Read command returns the current configuration value of the parameter |
| AT+SMTPRCPT=? | Test command returns range of the parameters. |
| AT+SMTPRCPT | Execute command will clear all recipient list. |
| Example | <pre>AT+SMTPRCPT=? +SMTPRCPT:(0-2),"", "" OK AT+SMTPRCPT=0,"hp.li@mobiletek.cn","tester_to" OK AT+SMTPRCPT=1,"dg.yang@mobiletek.cn","tester_cc" OK AT+SMTPRCPT=2,"xt.qin@mobiletek.cn","tester1_bcc" OK AT+SMTPRCPT? +SMTPRCPT:0,"hp.li@mobiletek.cn","tester_to" +SMTPRCPT:1,"dg.yang@mobiletek.cn","tester_cc" +SMTPRCPT:2,"xt.qin@mobiletek.cn","tester1_bcc" OK</pre> |
| Reference | RFC821 SIMPLE MAIL TRANSFER PROTOCOL |

4.3.5.6.5 Set Email subject -+SMTPSUB

| | |
|---------------------------------|--|
| AT+SMTPSUB - Set Email subject. | |
| AT+SMTPSUB=<s_ subject> | +SMTPSUB command is used to set the subject of e-mail, which is used to construct e-mail header. After an Email is sent, Email subject will be cleared, or execute AT+SMTPSUB with empty parameter can clear Email subject. Parameters: <s_subject>- Mandatory parameter. Email subject, string with double quotes, and ASCII text up to 512 characters. Currently, it only support ASCII code characters. |
| AT+SMTPSUB? | Read command returns the current configuration value of the parameter |
| AT+SMTPSUB=? | Test command returns range of the parameters. |
| AT+SMTPSUB | Execute command will clear Email subject. |
| Example | AT+SMTPSUB=? +SMTPSUB:"" OK AT+SMTPSUB="smtp email test 0412" OK AT+SMTPSUB? +SMTPSUB:"smtp email test 0412" OK |
| Reference | RFC821 SIMPLE MAIL TRANSFER PROTOCOL |

4.3.5.6.6 Set Email body - +SMTPBODY

| | |
|-------------------------------|--|
| AT+SMTPBODY - Set Email body. | |
| AT+SMTPBODY=<s_body> | <p>+SMTPBODY command is used to set the body of e-mail, After an Email is sent, Email body will be cleared, or execute AT+SMTPBODY with empty parameter can clear Email body.</p> <p>Parameters:</p> <p><s_body>- Mandatory parameter. E-mail body, string with double quotes, and ASCII text up to 5120 characters. Currently, it only support ASCII code characters.</p> |
| AT+SMTPBODY? | Read command returns the current configuration value of the parameter |
| AT+SMTPBODY=? | Test command returns range of the parameters. |
| AT+SMTPBODY | Execute command can input non-ASCII character string. |
| Example | <pre>AT+SMTPBODY=? +SMTPBODY:"" OK AT+SMTPBODY="this is an email test body" OK AT+SMTPBODY? +SMTPBODY:"this is an email test body" OK AT+SMTPBODY >> 邮件内容中文测试 OK</pre> |
| Reference | RFC821 SIMPLE MAIL TRANSFER PROTOCOL |

4.3.5.6.7 Set Email body character set - +SMTPBCH

| | |
|--|--|
| AT+SMTPBCH - Set Email body character set. | |
| AT+SMTPBCH=<s_bch> | <p>+SMTPBCH command is used to set the body character set of e-mail.</p> <p>Parameters:</p> <p><s_bch>- Mandatory parameter. Email body character set, string with double quotes. By default, it is "utf-8". The maximum length is 32 bytes.</p> |
| AT+SMTPBCH? | Read command returns the current configuration value of the parameter |
| AT+SMTPBCH=? | Test command returns range of the parameters. |
| AT+SMTPBCH | Execute command will set Email body character set to default |
| Example | Current this command is not supported as SMTP can only support ASCII code. |
| Reference | RFC821 SIMPLE MAIL TRANSFER PROTOCOL |

4.3.5.6.8 Add Email attachment file - +SMTPFILE

| | |
|--|---|
| AT+SMTPFILE - Add Email attachment file. | |
| AT+SMTPFILE=<n_index>,<s_filename> | <p>+SMTPFILE command is used to add Email attachment files. After an Email is sent, all attachment files will be cleared, or clear all attachment file list by execute AT+SMTPFILE with empty parameter.</p> <p>Parameters:</p> <p><n_index>- Mandatory parameter. Index for attachment files, from 1 to 10.</p> <p><s_filename>- Mandatory parameter. String type with double quotes, the name of a file which is under current directory. SMTP client doesn't allow two attachments with the same file name. The total size of all attachments can't exceed 10MB.</p> |
| AT+SMTPFILE? | Read command returns the current configuration value of the parameter |
| AT+SMTPFILE=? | Test command returns range of the parameters. |
| AT+SMTPFILE | Execute command will clear all attachment file list. |
| Example | <pre>AT+SMTPFILE=? +SMTPFILE:(1-10),"" OK AT+SMTPFILE=1,"/email/parsed/Email20160412030509000.txt" OK AT+SMTPFILE=2,"/email/parsed/Email20160412030539000.txt" OK AT+SMTPFILE? +SMTPFILE:"/email/parsed/Email20160412030509000.txt" +SMTPFILE:"/email/parsed/Email20160412030539000.txt" OK</pre> |
| Reference | RFC821 SIMPLE MAIL TRANSFER PROTOCOL |

4.3.5.6.9 Send an Email - +SMTPSEND

| | |
|------------------------------|---|
| AT+SMTPSEND - Send an Email. | |
| AT+SMTPSEND | +SMTPSEND command is used to initiate TCP session with SMTP server and send an Email after all mandatory parameters have been set correctly. Parameters: NONE |
| Example | AT+SMTPSEND OK |
| Reference | RFC821 SIMPLE MAIL TRANSFER PROTOCOL |

4.3.5.6.10 Close SMTP connection - SMTPSTOP

| | |
|--------------------------------------|--|
| AT+SMTPSTOP - Close SMTP connection. | |
| AT+SMTPSTOP | +SMTPSTOP command is used to close SMTP connection. Parameters: NONE |
| Example | AT+SMTPSTOP OK |
| Reference | RFC821 SIMPLE MAIL TRANSFER PROTOCOL |

4.3.5.6.11 Set POP3 server address, username, password, port - +POP3SRV

| | |
|---|---|
| AT+POP3SRV - Set POP3 server address, username, password, port. | |
| AT+POP3SRV=<s_server>,<s_username>,<s_password>[,<n_port>] | <p>+POP3SRV command is used to set POP3 server address, username, password, port number. All parameters will not be cleared until execute AT+POP3SRV command with empty parameter.</p> <p>Parameters:</p> <p><s_server>- Mandatory parameter. POP3 server address, non empty string with double quotes, ASCII text string up to 128 characters.</p> <p><s_username>- Mandatory parameter. Username to log in POP3 server, non empty string with double quotes, and up to 128 characters.</p> <p><s_password>- Mandatory parameter. Password to log in POP3 server, string with double quotes, and up to 128 characters.</p> <p><n_port>- Optional parameter. Port number of POP3 server in decimal format, from 1 to 65535, and default port is 110 for POP3.</p> |
| AT+POP3SRV? | Read command returns the current configuration value of the parameter |
| AT+POP3SRV=? | Test command returns range of the parameters. |
| AT+POP3SRV | Execute command will set POP3 server address, username, password, port number to default value. |
| Example | <pre>AT+POP3SRV=? +POP3SRV:"","","",(1-65535) OK AT+POP3SRV="pop3.126.com","mobileTest2016","MT123456",110 OK AT+POP3SRV? +POP3SRV:"pop3.126.com","mobileTest2016","MT123456",110 OK</pre> |
| Reference | RFC1939 Post Office Protocol - Version 3 |

4.3.5.6.12 Login POP3 server - +POP3IN

| | |
|--------------------------------|---|
| AT+POP3IN - Login POP3 server. | |
| AT+POP3IN | +POP3IN command is used to login POP3 server and establish a session after POP3 server and account information are set rightly. Parameters: NONE |
| Example | AT+POP3IN OK |
| Reference | RFC1939 Post Office Protocol - Version 3 |

4.3.5.6.13 Get Email number and total size - +POP3NUM

| | |
|---|---|
| AT+POP3NUM - Get Email number and total size. | |
| AT+POP3NUM | +POP3NUM command is used to get e-mail number and total size on the specified POP3 server after the POP3 client logs in POP3 server successfully. Parameters: NONE |
| Example | AT+POP3NUM +OK 7 127120 OK |
| Reference | RFC1939 Post Office Protocol - Version 3 |

4.3.5.6.14 List Email ID and size - +POP3LIST

| | |
|---------------------------------------|---|
| AT+POP3LIST - List Email ID and size. | |
| AT+POP3LIST=[<n_msgID>] | +POP3LIST command is used to get e-mail number and size on the specified POP3 server after the POP3 client logs in POP3 server successfully. Parameters: <n_msgID>- Optional parameter. The Email ID. |
| AT+POP3LIST | Execute command will list all Email ID and size. |
| Example | <pre> AT+POP3LIST=? +POP3LIST: (1-65535) OK AT+POP3LIST +OK 5 127120 1 1812 2 3053 3 13257 4 3577 5 44833 OK AT+POP3LIST=1 +OK 1 1812 OK </pre> |
| Reference | RFC1939 Post Office Protocol - Version 3 |

4.3.5.6.15 Get an Email header - +POP3HDR

| | |
|-----------------------------------|--|
| AT+POP3HDR - Get an Email header. | |
| AT+POP3HDR=<n_ msgID> | +POP3HDR command is used to retrieve e-mail's sender address, date and sender address, which are present in the mail's header. Parameters: <n_msgID>- Mandatory parameter. The Email ID. |
| AT+POP3HDR? | Read command returns the current configuration value of the parameter |
| Example | <pre>AT+POP3HDR=? +POP3HDR: (1-65535) OK AT+POP3HDR=1 from: Huapinglee <huapinglee@163.com> subject: Re: this is a test email from lihuaping in r1523 date: Tue, 15 Mar 2016 14:50:01 +0800 OK</pre> |
| Reference | RFC1939 Post Office Protocol - Version 3 |

4.3.5.6.16 Get an Email - +POP3GET

| | |
|-------------------------------------|--|
| AT+POP3GET - Get an Email. | |
| AT+POP3GET=<n_msgID>[,<n_gettype>]> | <p>+POP3GET command is used to retrieve an Email from server and save it to local file system.</p> <p>Parameters:</p> <p><n_msgID>- Mandatory parameter. The Email ID.</p> <p><n_gettype>- Optional parameter. The type to save when getting message from POP3 server:</p> <p>-Save parsed body file and attachments: n_gettype=1</p> <p>-Save the whole message as a ".eml" file: n_gettype=2</p> |
| AT+POP3GET? | Read command returns the current configuration value of the parameter |
| Example | <pre>AT+POP3GET=? +POP3GET: (1-65535),(1-2) OK AT+POP3GET=1 from: Huapinglee <huapinglee@163.com> subject: Re: this is a test email from lihuaping in r1523 date: Tue, 15 Mar 2016 14:50:01 +0800 /email/received/Email20160412014342.txt /email/parsed/Email20160412014342000.txt OK</pre> |
| Reference | RFC1939 Post Office Protocol - Version 3 |

4.3.5.6.17 Mark an e-mail to delete from POP3 server - +POP3DEL

| | |
|---|--|
| AT+POP3DEL - Mark an e-mail to delete from POP3 server. | |
| AT+POP3DEL=<n_msgID> | <p>+POP3DEL command is used to mark an e-mail to delete from POP3 server. The operation only marks an e-mail on the server to delete it, and after POP3 client logs out POP3 server and closes the session normally, the marked e-mail is deleted on the server.</p> <p>Parameters:</p> <p><n_msgID>- Mandatory parameter. The Email ID.</p> |
| AT+POP3DEL? | Read command returns the current configuration value of the parameter |

| | |
|-----------|---|
| Example | AT+POP3DEL=? +POP3DEL: (1-65535) OK AT+POP3DEL=5 OK |
| Reference | RFC1939 Post Office Protocol - Version 3 |

4.3.5.6.18 Logout POP3 server - +POP3OUT

| | |
|----------------------------------|--|
| AT+POP3OUT - Logout POP3 server. | |
| AT+POP3OUT | +POP3OUT command is used to log out the POP3 server and close the session, and if there are some e-mails which are marked to delete, it also informs POP3 server to delete the marked e-mails. Parameters: NONE |
| Example | AT+POP3OUT OK |
| Reference | RFC1939 Post Office Protocol - Version 3 |

4.3.5.6.19 Force to stop POP3 session - +POP3STOP

| | |
|---|---|
| AT+POP3STOP - Force to stop POP3 session. | |
| AT+POP3STOP | +POP3STOP command is used to force to close the session Parameters: NONE |
| Example | AT+POP3STOP OK |
| Reference | RFC1939 Post Office Protocol - Version 3 |

4.3.5.6.20 Read an e-mail from file system - +POP3READ

| | |
|---|--|
| AT+POP3READ - Read an e-mail from file system. | |
| AT+POP3READ=<n_location>,<s_filename>[,<n_startpos>,<n_size>] | <p>+POP3READ command is used to read an e-mail from file system.</p> <p>Parameters:</p> <p><n_location>- Mandatory parameter. The location from which TE reads an e-mail. Currently, only support Local system.</p> <p>-Local system: n_location=0</p> <p>-SD card:n_location=1</p> <p><s_filename>- Mandatory parameter. The Email file name, string type with double quotes and including a directory name and a text file name separated by the list separator "/".</p> <p><n_startpos>- Optional parameter. The start position of the file to read.</p> <p><n_size>- Optional parameter. The num of bytes to read from file.</p> |
| AT+POP3READ? | Read command returns the current configuration value of the parameter |
| AT+POP3READ=? | Test command returns range of the parameters. |
| AT+POP3READ | Execute command will read all contents of an Email, but now can only display 256 characters. |
| Example | <pre>AT+POP3READ=? +POP3READ:(0-1),"",(0-65535),(1-65535) OK AT+POP3READ=0,"/email/received/Email20160412015207.txt",0,512 +OK 4204 octets Received: from m97135.qiye.163.com (unknown [220.181.97.135]) by mx6 (Coremail) with SMTP id JMmowABnXha4XAtXt3GaAA--.1945S2; Mon, 11 Apr 2016 16:13:44 +0800 (CST) Received: from Windows-Build3 (unknown [182.150.28.206]) by smtp1 (C OK AT+POP3READ? +POP3READ:"0","/email/received/Email20160412015207.txt",0,512 OK</pre> |
| Reference | RFC1939 Post Office Protocol - Version 3 |

4.3.5.6.21 Translate input string to base64 character - +EMAILENC

| | |
|---|---|
| AT+ EMAILENC - Read an e-mail from file system. | |
| AT+EMAILENC=<s_ charset> | +EMAILENC command is used to translate input string(specially non-ASCII character string) to BASE64 character string. Parameters: <s_ charset >- Mandatory parameter. Input string charset. |
| Example | AT+EMAILENC="GB2312" >> 中文测试邮件 =?GB2312?B?1tDOxLLiytTTyrz+?=? |
| Reference | RFC1939 Post Office Protocol - Version 3 |

4.3.5.6.22 EMAIL AT Command Response Code Definition

| | |
|-----|------------------------------|
| 0 | Email operation succeeded. |
| 1 | System busy. |
| 2 | Email over size. |
| 3 | Attachment duplicate file. |
| 4 | Email operation time out. |
| 5 | Email transfer failed. |
| 6 | Memory error. |
| 7 | Email invalid parameter. |
| 8 | Network error. |
| 9 | EFS operation error. |
| 10 | Email server error. |
| 11 | Email authentication failed. |
| 255 | Unknown error. |

4.3.5.7 Network AT Command

4.3.5.7.1 Preferred mode selection - +CNMP

| | |
|---|--|
| AT+CNMP - This command is used to select or set the state of the mode preference. | |
| AT+CNMP=<mode> | Parameters: <mode>- Mandatory parameter. The defined value refer this table end Write command responses: OK <i>If <mode> not supported by module, this command will return ERROR:</i> ERROR |
| AT+CNMP? | Read command responses: +CNMP: <mode> OK |
| AT+CNMP=? | Test command responses: +CNMP: (list of supported <mode>s) |
| Example | AT+CNMP=62 OK AT+CNMP? +CNMP:62 OK AT+CNMP=? +CNMP: (2,9-14,17,19-20,22-23,25-70,73-93) OK |
| Reference | Vendor |

AT+CNMP=<mode> Defined mode values:

- 2 – Automatic
- 9 – CDMA only
- 10 – EVDO only
- 11 – CDMA and AMPS only
- 12 – GPS only
- 13 – GSM Only
- 14 – WCDMA Only
- 17 – Any modes but HDR
- 19 – GSM+WCDMA Only

AT+CNMP=<mode> Defined mode values:

- 20 – CDMA, GSM, or WCDMA
- 22 – CDMA+EVDO Only
- 23 – CDMA or AMPS or HDR only
- 25 – WLAN only
- 26 – CDMA and WLAN only
- 27 – HDR and WLAN only
- 28 – CDMA, HDR, and WLAN only
- 29 – GSM and WLAN only
- 30 – WCDMA and WLAN only
- 31 – GSM/WCDMA and WLAN only
- 32 – GSM and WLAN only
- 34 – CDMA, AMPS, HDR and WLAN only
- 35 – CDMA, AMPS and WLAN only
- 37 – Except HDR and WLAN
- 38 – LTE Only
- 39 – GSM, WCDMA or LTE
- 40 – HDR or LTE only
- 41 – CDMA, HDR or LTE only
- 42 – CDMA, HDR, GSM or WCDMA only
- 43 – CDMA, GSM or WCDMA only
- 44 – Except WLAN
- 45 – WLAN, GSM or WCDMA, and LTE
- 46 – CDMA and LTE
- 47 – Except HDR and LTE
- 48 – Any modes but LTE
- 49 – Non-LTE mode
- 50 – Non-LTE,HDR mode
- 51 – GSM and LTE only
- 52 – CDMA, GSM and LTE only
- 53 – HDR, GSM and LTE only
- 54 – WCDMA and LTE only
- 55 – CDMA, WCDMA and LTE only
- 56 – HDR, WCDMA and LTE only
- 57 – CDMA, HDR and GSM
- 58 – CDMA and GSM
- 59 – TDS-CDMA Only

AT+CNMP=<mode> Defined mode values:

- 60 – GSM+TDSCDMA Only
- 61 – TD-SCDMA, GSM or LTE Only
- 62 – TD-SCDMA, GSM, WCDMA or LTE only
- 63 – GSM+WCDMA+TDSCDMA Only
- 64 – Except HDR,WLAN & LTE
- 65 – TD-SCDMA and LTE
- 66 – CDMA,GSM,WCDMA&TD-SCDMA
- 67 – CDMA+EVDO+GSM+WCDMA+TDSCDMA Only
- 68 – CDMA, HDR, GSM, WCDMA and LTE
- 69 – CDMA, GSM, WCDMA and LTE
- 70 – TD-SCDMA and WCDMA
- 73 – TD-SCDMA,WCDMA and LTE
- 74 – Except TD-SCDMA
- 75 – Except HDR and TDS(TD-SCDMA)
- 76 – Except LTE and TDS
- 77 – Except HDR, LTE and TDS
- 78 – CDMA, HDR, GSM, AMPS
- 79 – CDMA, GSM, AMPS
- 80 – CDMA, HDR, GSM, GPS, AMPS
- 81 – CDMA, GSM, GPS, AMPS
- 82 – CDMA, GSM, TDS, HDR, LTE
- 83 – GSM, GPS
- 84 – WCDMA, GPS
- 85 – GSM, WCDMA, GPS
- 86 – HDR, GPS
- 87 – Except for CDMA and HDR
- 88 – GSM, TDS, GPS
- 89 – GSM, TDS, WCDMA, GPS
- 90 – GSM, TDS, WCDMA, AMPS
- 91 – GSM, WCDMA, LTE, AMPS
- 92 – GSM, WCDMA, AMPS
- 93 – GSM, TDS, WCDMA, GPS

4.3.5.7.2 Preferred band selection - +CNBP

| | |
|---|---|
| AT+CNBP - This command is used to select or set the state of the band preference. | |
| AT+CNBP=<mode>[,<lte_mode>][,<tds_mode>] | <p>Parameters:</p> <p><mode>- Mandatory parameter. 64bit number, the value is "1" << "<pos>"(see Defined < pos > values for details), then or by bit. Some special mode value declared below: 0x40000000 BAND_PREF_NO_CHANGE</p> <p><lte_mode>- Optional parameter. 64bit number, the value is "1" << "<lte_pos>" (see Defined < lte_pos > values for details), then or by bit.</p> <p><tds_mode>- Optional parameter. 64bit number, the value is "1" << "<tds_pos>" (see Defined < tds_pos > values for details), then or by bit.</p> <p>Write command responses: OK</p> |
| AT+CNBP? | <p>Read command responses: +CNBP: <mode>[,<lte_mode>][,<tds_mode>] OK</p> |
| Example | <p>AT+CNBP? +CNBP:0x0002000000400180,0x000007ff5bdf3fff,0x0000000000000003f OK</p> <p>AT+CNBP=0xFFFFFFFF7FFFFFFF OK</p> <p>AT+CNBP=0x380 +CME ERROR: operation not allowed</p> |
| Reference | Vendor |

Defined < pos > values:

- 0xFFFFFFFF7FFFFFFF Any (any value)
- 7 GSM_DCS_1800
- 8 GSM_EGSM_900
- 9 GSM_PGSM_900
- 16 GSM_450
- 17 GSM_480
- 18 GSM_750
- 19 GSM_850

20 GSM_RGSM_900
21 GSM_PCS_1900
22 WCDMA_IMT_2000
23 WCDMA_PCS_1900

Defined < pos > values:

24 WCDMA_III_1700
25 WCDMA_IV_1700
26 WCDMA_850
27 WCDMA_800
48 WCDMA_VII_2600
49 WCDMA_VIII_900
50 WCDMA_IX_1700

Defined < lte_pos > values:

0x000007FF3FDF3FFF Any (any value)

0 EUTRAN_BAND1(UL:1920-1980; DL:2110-2170)
1 EUTRAN_BAND2(UL:1850-1910; DL:1930-1990)
2 EUTRAN_BAND3(UL:1710-1785; DL:1805-1880)
3 EUTRAN_BAND4(UL:1710-1755; DL:2110-2155)
4 EUTRAN_BAND5(UL: 824-849; DL: 869-894)
5 EUTRAN_BAND6(UL: 830-840; DL: 875-885)
6 EUTRAN_BAND7(UL:2500-2570; DL:2620-2690)
7 EUTRAN_BAND8(UL: 880-915; DL: 925-960)
8 EUTRAN_BAND9(UL:1749.9-1784.9; DL:1844.9-1879.9)
9 EUTRAN_BAND10(UL:1710-1770; DL:2110-2170)
10 EUTRAN_BAND11(UL:1427.9-1452.9; DL:1475.9-1500.9)
11 EUTRAN_BAND12(UL:698-716; DL:728-746)
12 EUTRAN_BAND13(UL: 777-787; DL: 746-756)
13 EUTRAN_BAND14(UL: 788-798; DL: 758-768)
16 EUTRAN_BAND17(UL: 704-716; DL: 734-746)
17 EUTRAN_BAND18(UL: 815-830; DL: 860-875)
18 EUTRAN_BAND19(UL: 830-845; DL: 875-890)
19 EUTRAN_BAND20(UL: 832-862; DL: 791-821)
20 EUTRAN_BAND21(UL: 1447.9-1462.9; DL: 1495.9-1510.9)
22 EUTRAN_BAND23(UL: 2000-2020; DL: 2180-2200)
23 EUTRAN_BAND24(UL: 1626.5-1660.5; DL: 1525 -1559)
24 EUTRAN_BAND25(UL: 1850-1915; DL: 1930 -1995)

Defined < tds_pos > values:

| | |
|---------------------|---|
| 0x0000000000000003F | Any (any value) |
| 0 | TDS Band A (1900-1920 MHz, 2010-2020 MHz) |
| 1 | TDS Band B (1850-1910 MHz, 1930-1990 MHz) |
| 2 | TDS Band C (1910-1930 MHz) |
| 4 | TDS Band E (2300-2400 MHz) |
| 3 | TDS Band D (2570-2620 MHz) |
| 5 | TDS Band F (1880-1920 MHz) |

LYNQ
CONFIDENTIAL

4.3.5.7.3 Acquisition order preference - +CNAOP

| | |
|--|--|
| AT+CNAOP - This command is used to reset the state of acquisitions order preference. | |
| AT+CNAOP=<mode>[,<sys_mode1>[,<sys_mode2>[...[,<sys_mode10>]]]] | <p>Parameters:</p> <p><mode>- Mandatory parameter.</p> <p>Defined mode values:</p> <ul style="list-style-type: none"> 0 – Automatic 1 – GSM,WCDMA 2 – WCDMA,GSM 7 – Acquisition by priority order list <sys_moden>s. <p><sys_moden>- Optional parameter,n belongs to 1 ~ 7</p> <p>Defined sys_mode values:</p> <ul style="list-style-type: none"> 2 – CDMA 3 – GSM 4 – HDR 5 – WCDMA 9 – LTE 10 – GWL(GSM, WCDMA, and LTE) 11 – TDSCDMA |
| AT+CNAOP? | <p>Read command responses:</p> <p>+CNAOP:<mode>[,<sys_mode1>[,<sys_mode2>[...[,<sys_mode10>]]]]</p> <p>OK</p> |
| AT+CNAOP=? | <p>Test command responses:</p> <p>+CNAOP: (list of supported <mode>s)</p> <p>OK</p> |
| Example | <pre>AT+CNAOP=? +CNAOP: (0-2,7),(2-5,9-11),(2-5,9-11),(2-5,9-11),(2-5,9-11),(2-5,9-11), (2-5,9-11),(2-5,9-11) OK AT+CNAOP=7,9,5,11,3 OK AT+CNAOP? +CNAOP:7,9,5,11,3,2,4 OK AT+CNAOP=2 OK AT+CNAOP? +CNAOP:2 OK</pre> |
| Reference | Vendor |

4.3.5.7.4 Preferred service domain selection - +CNSDP

| | |
|--|---|
| AT+CNSDP - This command is used to reset the state of the service domain preference. | |
| AT+CNSDP=<mode> > | <p>Parameters:</p> <p><mode>- Mandatory parameter.</p> <p>Defined mode values:</p> <p>0 – CS Only</p> <p>1 – PS Only</p> <p>2 – CS + PS</p> <p>Write command responses:</p> <p>OK</p> |
| AT+CNSDP? | <p>Read command responses:</p> <p>+CNSDP:<mode></p> <p>OK</p> |
| AT+CNSDP=? | <p>Test command responses:</p> <p>+CNSDP: (list of supported <mode>s)</p> <p>OK</p> |
| Example | <p>AT+CNSDP=?</p> <p>+CNSDP: (0-2)</p> <p>OK</p> <p>AT+CNSDP?</p> <p>+CNSDP:2</p> <p>OK</p> <p>AT+CNSDP=2</p> <p>OK</p> |
| Reference | Vendor |

4.3.5.7.5 Inquiring UE system information - +CPSI

| | |
|---|--|
| AT+CPSI - This command is used to return the UE system information. | |
| AT+CPSI=<time> | <p>Parameters:</p> <p><time>- Mandatory parameter.</p> <p>The range is 0-255, unit is second, after set <time> will report the system information every the seconds.</p> <p>Write command responses:</p> <p>OK</p> <p>Other:</p> <p>ERROR</p> |
| AT+CPSI=? | <p>Test command responses:</p> <p>+CPSI:(scope of <time>)</p> <p>OK</p> |
| AT+CPSI? | <p>Read command responses:</p> <p><i>If camping on a GSM cell:</i></p> <p>+CPSI:<System Mode>,<Operation Mode>,<MCC>-<MNC>,<LAC>,<Cell ID>,<Absolute RF Ch Num>,<RxLev>,<Track LO Adjust >,<C1-C2></p> <p>OK</p> <p><i>If camping on a WCDMA cell:</i></p> <p>+CPSI:<System Mode>,<Operation Mode>,<MCC>-<MNC>,<LAC>,<CellID>,<FrequencyBand>,<PSC>,<Freq>,<SSC>,<EC/IO>,<RSCP>,<Qual>,<RxLev>,<TXPWR></p> <p>OK</p> <p><i>If camping on a TDS-CDMA cell:</i></p> <p>+CPSI:<System Mode>,<Operation Mode>,<MCC>-<MNC>,<LAC>,<Cell ID>,<Frequency Band>,<Uarfcn>,<Cpid>,<RSCP>,<Pathloss>,<TimingAdvance></p> <p>OK</p> <p><i>If camping on a LTE cell:</i></p> <p>+CPSI:<System Mode>,<Operation ode>,<MCC>-<MNC>,<TAC>,<SCellID>,<PCellID>,<Frequency Band>,<earfcn>,<dlbw>,<ulbw>,<RSRQ>,<RSRP>,<RSSI>,<RSSNR></p> <p>OK</p> |

| | |
|---|--|
| | <i>If camping on a cdma cell:</i> +CPsi: CDMA,<Operation Mode>[,<MCC>-<MNC>,<CDMA ch num>, <CDMA pilot PN>,<CDMA RX Chain 0 AGC>,<CDMA RX Chain 1 AGC>, <CDMA TX AGC>,<SID>,<NID>,<CDMA EC/IO>] OK |
| Example | AT+CPsi=? +CPsi: (0-255) OK |
| AT+CPsi - This command is used to return the UE system information. | |
| | AT+CPsi=5 OK AT+CPsi? +CPsi:LTE,Online,460-00,0x8109,3494130972,45472,159,2208741240,0,0,-31360,235 20,-31094,0 OK |
| Reference | Vendor |

AT+CPsi? Defined values:

| |
|---|
| <System Mode> |
| System mode, values: "NO SERVICE", "GSM", "WCDMA", "LTE", "TDS" ... |
| <Operation Mode> |
| UE operation mode, values: "Online", "Offline", "Factory Test Mode", "Reset", "Low Power Mode". |
| <MCC> |
| Mobile Country Code (first part of the PLMN code) |
| <MNC> |
| Mobile Network Code (second part of the PLMN code) |
| <LAC> |
| Location Area Code (hexadecimal digits) |
| <Cell ID> |
| Service-cell ID. |
| <Absolute RF Ch Num> |
| AFRCN for service-cell. |
| <Track LO Adjust> |
| Track LO Adjust |
| <C1> |
| Coefficient for base station selection |
| <C2> |

| |
|--|
| Coefficient for Cell re-selection |
| <Frequency Band> |
| Frequency Band of active set |
| <PSC> |
| Primary synchronization code of active set. |
| <Freq> |
| Downlink frequency of active set. |
| <SSC> |
| Secondary synchronization code of active set |
| <EC/IO> |
| Ec/Io value |
| <RSCP> |
| Received Signal Code Power |
| <Qual> |
| Quality value for base station selection |
| <RxLev> |
| RX level value for base station selection |
| <TXPWR> |
| UE TX power in dBm. If no TX, the value is 500. |
| <Cpid> |
| Cell Parameter ID |
| <Pathloss> |
| Path loss |
| <TimingAdvance> |
| Timing advance |
| <TAC> |
| Tracing Area Code |
| <PCellID> |
| Physical Cell ID |
| <earfcn> |
| E-UTRA absolute radio frequency channel number for searching LTE cells |
| <dlbw> |
| Transmission bandwidth configuration of the serving cell on the downlink |
| <ulbw> |
| Transmission bandwidth configuration of the serving cell on the uplink |
| <RSRP> |

| |
|---|
| Current reference signal received power in -1/10 dBm. Available for LTE |
| <RSRQ> |
| Current reference signal receive quality as measured by L1. |
| <RSSNR> |
| Average reference signal signal-to-noise ratio of the serving cell |

LYNQ
CONFIDENTIAL

4.3.5.7.6 Show network system mode - +CNSMOD

| | |
|---|---|
| AT+CNSMOD - This command is used to return the current network system mode. | |
| AT+CNSMOD=<n> | <p>Parameters:</p> <p><n>- Mandatory parameter.</p> <p>0 – disable auto report the network system mode information</p> <p>1 – auto report the network system mode information,</p> <p>command: +CNSMOD:<stat></p> <p>Write command responses:</p> <p>OK</p> <p>Other:</p> <p>ERROR</p> <p>or</p> <p>+CME ERROR: <err></p> |
| AT+CNSMOD=? | <p>Test command responses:</p> <p>+CNSMOD:(list of supported <n>s)</p> <p>OK</p> |
| AT+ CNSMOD? | <p>Read command responses:</p> <p>+CNSMOD: <n>,<stat></p> <p>OK</p> <p>Other:</p> <p>ERROR</p> <p>or</p> <p>+CME ERROR: <err></p> |
| Example | <p>AT+CNSMOD=?</p> <p>+CNSMOD: (0-1)</p> <p>OK</p> <p>AT+CNSMOD?</p> <p>+CNSMOD: 0,8</p> <p>OK</p> <p>AT+CNSMOD=1</p> <p>OK</p> |
| Reference | Vendor |

AT+ CNSMOD? Defined < stat > values

0 – No service

1 – GSM

- 2 – GPRS
- 3 – EGPRS (EDGE)
- 4 – WCDMA
- 5 – HSDPA only(WCDMA)
- 6 – HSUPA only(WCDMA)
- 7 – HSPA (HSDPA and HSUPA, WCDMA)
- 8 – LTE
- 9 – TDS-CDMA
- 10 – TDS-HSDPA only
- 11 – TDS-HSUP only
- 12 – TDS-HSPA(HSDPA and HSUPA)
- 13 – CDMA
- 14 – EVDO
- 15 – HYBRID(CDMA and EVDO)

LYNQ
CONFIDENTIAL

4.3.5.7.7 Show cell system information - +CCINFO

| | |
|---|--|
| AT+CCINFO - This command is used to inquire serving cell and neighbors cell system information for GSM. | |
| AT+CCINFO=? | <p>Test command responses:</p> <p>OK</p> <p>Other:</p> <p>+CCINFO: NOT IN GSM</p> |
| AT+ CCINFO | <p>Execution command responses:</p> <p><i>When ME in idle mode for GSM:</i></p> <p>+CCINFO: [<SCELL>],ARFCN: <arfcn>,MCC: <mcc>,MNC: <mnc>,LAC: <lac>,ID: <id>,BSIC: <bsic>,RXLev: <rxlev>,C1: <c1>,C2: <c2>,TA: <TA>,TXPWR: <TXPWR></p> <p>+CCINFO: [<NCELLn>],ARFCN: <arfcn>,MCC: <mcc>,MNC:<mnc>,LAC: <lac>,ID:<d>,BSIC: <bsic>,RXLev: <rxlev>,C1: <c1>,C2: <c2> [...]]</p> <p>OK</p> <p><i>When ME in dedicated mode for GSM:</i></p> <p>+CCINFO: [<SCELL>],ARFCN: <arfcn>,MCC: <mcc>,MNC: <mnc>,LAC: <lac>,ID: <id>,BSIC: <bsic>,RXLev: <rxlev>,C1: <c1>,C2: <c2>,TA: <TA>,TXPWR: <TXPWR></p> <p>+CCINFO: [<NCELLn>],ARFCN: <arfcn>,BSIC: <bsic>,RXLev: <rxlev> [...]]</p> <p>OK</p> <p><i>When ME in CDMA/HDR mode for modem:</i></p> <p>+CCINFO: [<SCELL>], MCC: <mcc>,MNC: <mnc>,SID:<sid>,NID:<nid>,BID:<bid>,SCYC:<scyc>,PREV:<prev>,BC:<band class>,CH:<CDMA ch num>,PN:<CDMA pilot PN>, ECIO:<CDMA EC/IO>,RXAGC:<CDMA RX Chain 0 AGC>dbm,<CDMA RX Chain 1 AGC>dbm, TXAGC:<CDMA TX AGC>dbm<CR><LF></p> <p>[<CR><LF></p> <p>+CCINFO:[<NCelln>]BC:<band class>,CH:<CDMA ch num>,PN:<CDMA pilot PN><CR><LF>[...]]</p> <p>OK</p> <p><i>When not in GSM or CDMA/HDR for modem:</i></p> <p>+CCINFO: NOT IN GSM or CDMA</p> <p>OK</p> <p>Other:</p> <p>ERROR</p> |

| | |
|-----------|---|
| Example | <pre>AT+CCINFO=? OK AT+CCINFO +CCINFO: NOT IN GSM OK AT+CCINFO +CCINFO: [SCELL],ARFCN: 53,MCC: 460,MNC: 00,LAC: 8109, ID: 183,BSIC: 0,RXLev: -67dBm,C1: 30,C2: 140,TA: 4294967295, TXPWR: 33</pre> |
| | <pre>+CCINFO: [NCELL1],ARFCN: 49,MCC: 000,MNC: 000,LAC: 0,ID: 4294967295,BSIC: 0,RXLev: -73dBm,C1: 0,C2: 0 +CCINFO: [NCELL2],ARFCN: 47,MCC: 000,MNC: 000,LAC: 0,ID: 4294967295,BSIC: 50,RXLev: -88dBm,C1: 0,C2: 0 +CCINFO: [NCELL3],ARFCN: 44,MCC: 000,MNC: 000,LAC: 0,ID: 4294967295,BSIC: 30,RXLev: -103dBm,C1: 0,C2: 0 +CCINFO: [NCELL4],ARFCN: 46,MCC: 000,MNC: 000,LAC: 0,ID: 4294967295,BSIC: 8,RXLev: -105dBm,C1: 0,C2: 0 OK</pre> |
| Reference | Vendor |

AT+ CCINFO Defined values

| |
|--------------------------------|
| <SCELL> |
| indicate serving cell |
| <NCELLn> |
| available neighbour cell index |
| <arfcn> |
| assigned radio channel |
| <mcc> |
| mobile country code |
| <mnc> |
| mobile network code |
| <lac> |
| localization area code |
| <id> |
| cell identifier |
| <bsic> |

| |
|---|
| base station identification code |
| <rxlev> |
| received signal strength in dBm |
| <TA> |
| timing advance |
| <c1> |
| Coefficient for base station selection |
| <c2> |
| Coefficient for Cell re-selection |
| <TXPWR> |
| UE TX power in dBm. If no TX, the value is 0. |
| <sid> |
| Current system ID |
| <nid> |
| Current network ID |
| <bid> |
| Current base ID |
| <scyc> |
| Slot cycle index. |
| <prev> |
| Protocol revision number of the mobile station. |
| <band class> |
| CDMA band class |
| <CDMA ch num> |
| CDMA channel number |
| <CDMA pilot PN> |
| CDMA pilot PN offset |
| <CDMA EC/IO> |
| CDMA EC/IO in dB |
| <CDMA RX Chain 0 AGC> |
| CDMA RX Chain 0 AGC dBm |
| <CDMA RX Chain 1 AGC> |
| CDMA RX Chain 1 AGC dBm |
| <CDMA TX AGC> |
| CDMA TX AGC dBm |

4.3.5.7.8 Inquiring mobile phone system information - +CMGSI

| | |
|---|--|
| AT+CMGSI - This command is used to inquire mobile phone system information. | |
| AT+CMGSI=? | <p>Test command responses:</p> <p>+CMGSI: (list of supported <mode>s)</p> <p>***</p> |
| AT+CMGSI=<mode> | <p>Parameters:</p> <p><mode>- Mandatory parameter.</p> <p>2 – GSM</p> <p>3 – WCDMA</p> <p>4 – LTE</p> <p>5 – TDS</p> <p>Write command responses:</p> <p><i>If <mode>=2, get GSM signal info:</i></p> <p>+CMGSI:Main_Info,<mode>,<service_available>,<band>, <channel></p> <p>+CMGSI:RX_Power,0x<rx_div_ind>,RX_Chain0,<is_radio_tuned>,<rx_pwr>,RX_Chain1,<is_radio_tuned>,<rx_pwr></p> <p>+CMGSI: TX_Power,Not Supported</p> <p>+CMGSI: Phy_Cellid,<cellid_valid>,<cellid></p> <p>+CMGSI: Log_Sinr10xdb,<sinr_valid>,<sinr></p> <p>OK</p> <p><i>If <mode>=3, get WCDMA signal info:</i></p> <p>+CMGSI:Main_Info,<mode>,<service_available>,<band>, <channel></p> <p>+CMGSI:RX_Power,0x<rx_div_ind>,RX_Chain0,<is_radio_tuned>,<rx_pwr>,<ecio>,<rscp>,RX_Chain1,<is_radio_tuned>,<rx_pwr>,<ecio>,<rscp></p> <p>+CMGSI: TX_Power,<is_in_traffic>,<tx_pwr>,<pa_gain_state></p> <p>+CMGSI: Phy_Cellid,<cellid_valid>,<cellid></p> <p>+CMGSI: Log_Sinr10xdb,<sinr_valid>,<sinr></p> <p>OK</p> <p><i>If <mode>=4, get LTE signal info:</i></p> <p>+CMGSI:Main_Info,<mode>,<service_available>,<band>, <channel></p> <p>+CMGSI:RX_Power,0x<rx_div_ind>,RX_Chain0,<is_radio_tuned>,<rx_pwr>,<ecio>,<rsrp>,<phase>,RX_Chain1,<is_radio_tuned>,<rx_pwr>,<ecio>,<rsrp>,<phase></p> |

| |
|---|
| <pre> +CMGSI: TX_Power,<is_in_traffic>,<tx_pwr>,<pa_gain_state> +CMGSI: Phy_Cellid,<cellid_valid>,<cellid> +CMGSI: Log_Sinr10xdb,<sinr_valid>,<sinr> OK If <mode>=5, get TDS-CDMA signal info: +CMGSI:Main_Info,<mode>,<service_available>,<band>, <channel> +CMGSI:RX_Power,0x<rx_div_ind>,RX_Chain0,<is_radio_tuned>, <rx_pwr>,<ecio>,<rscp>,RX_Chain1,<is_radio_tuned>,<rx_pwr>, <ecio>,<rscp> +CMGSI: TX_Power,<is_in_traffic>,<tx_pwr>,<pa_gain_state> +CMGSI: Phy_Cellid,<cellid_valid>,<cellid> +CMGSI: Log_Sinr10xdb,<sinr_valid>,<sinr> +CMGSI:Freq_DwPTSRSsi,<pri_freq>,<scell_pri_freq_rssi_ch0>, <scell_pri_freq_rssi_ch1> +CMGSI:TX_Pwr_Info,<ul_tx_pwr0>,<ul_tx_pwr1>,<ul_tx_pwr2>, <ul_tx_pwr3>,<ul_tx_pwr4>,<ul_tx_pwr5> OK Oher: ERROR +CME ERROR: no network service </pre> |
|---|

| | |
|-----------|--|
| Example | <pre> AT+CMGSI=? +CMGSI: (2-5) OK AT+CMGSI=2 +CMGSI: Main_Info,2,1,0,53 +CMGSI: RX_Power,0x081,RX_Chain0,1,-659 +CMGSI: TX_Power,Not Supported +CMGSI: Phy_Cellid,0,65535 +CMGSI: Log_Sinr10xdb,0,-1 OK AT+CMGSI=4 +CMGSI: Main_Info,4,1,40,38950 +CMGSI:RX_Power,0x083,RX_Chain0,1,-481,-32,-712,0,RX_Chain1,1,-826,-75,-1100, 0 </pre> |
| Reference | Vendor |

AT+CMGSI Defined values

| | |
|---------------------|--|
| <service_available> | 0 – service not available 1 – service is available |
| <band> | Active band of the current system |
| <channel> | Active channel of the current system. |
| <rx_div_ind> | Diversity bitmask to show which Rx chain has valid signal information. 0x00000000 – NO Rx chain available 0x00000001 – Rx chain 0 available 0x00000002 – Rx chain 1 available 0x00000003 – Rx chain 0 and Rx chain 1 available |
| < is_radio_tuned > | Indicates whether the Rx is tuned to a channel 0 – radio is not tuned, delayed or invalid values are set depending on each technology 1 – radio is tuned, instantaneous values are set for the signal information fields |
| < rx_pwr > | Rx power value in 1/10 dBm resolution |
| < ecio > | Ec/Io in -1/10 dBm |
| < is_in_traffic > | Indicates whether the device is in traffic |
| < tx_pwr > | Tx power value in 1/10 dBm. only meaningful when the device is in traffic. When there is no traffic, tx_pwr is invalid |

| |
|--|
| < pa_gain_state > |
| Power amplifier gain state |
| < cellid_valid > |
| Serving cell physical ID is valid 0 – cell ID is invalid 1 – cell ID is valid |
| < cellid > |
| Serving cell physical ID |
| < sinr_valid > |
| Serving cell SINR information measured in decibels 0 – SINR is invalid 1 – SINR is valid |
| < sinr > |
| Serving cell SINR information |
| < rscp > |
| Received signal code power in -1/10 dBm. Available for WCDMA |
| < rsrp > |
| Current reference signal received power in -1/10 dBm. Available for LTE |
| < phase > |
| Current phase in 1/100 degrees. Range: 0.00 to 360.00. Available for LTE only |

4.3.5.7.9 Gets the neighbor measurement information - +CMGRMI

| | |
|---|---|
| AT+CMGRMI - This command is used to select or set the state of the mode preference. | |
| AT+ CMGRMI =? | <p>Test command responses:</p> <p>+CMGRMI: (list of supported <mode>s)</p> <p>OK</p> |
| AT+CMGRMI=<mode>,[<info_type>] | <p>Parameters:</p> <p><mode>- Mandatory parameter.</p> <p>3 – WCDMA</p> <p>4 – LTE</p> <p>5 – TDS</p> <p><info_type>- Optional parameter.</p> <p>32bit number, the value is "1" << "<pos>"(see subclause 1.9.1 for details),then or by bit. If <mode> is TDS, returned into will be as WCDMA.</p> <p>Write command responses:</p> <p><i>If <mode>=4, get LTE signal info:</i></p> <p>[+CMGRMI:Main_Info,<mode>,<service_available>,<valid>,<idle>,<ra_rnti>,<c_rnti>,<cqi_wb>,<enb_num_tx_antenna>]</p> <p>[+CMGRMI:Serving_Cell,<earfcn>,<mcc>,<mnc>,<tac>,<num_mnc_digits>,<-serving_cell_id>,<freq_band_ind>,<dl_bandwidth>,<ul_bandwidth>,<serv_rssnr>,<cell_pci>,<cell_rsrq>,<cell_rsrp>,<cell_rssi>,<cell_idle_srxlev>]</p> <p>[+CMGRMI:LTE_Intra,<sib3_received>,<earfcn>,<-serving_cell_id>,<num_lte_cells>]</p> <p>[+CMGRMI:LTE_Intra_Cell1,<cell_pci>,<cell_rsrq>,<cell_rsrp>,<cell_rssi>,<cell_idle_srxlev>]</p> <p>[+CMGRMI:LTE_Intra_Cell2,<cell_pci>,<cell_rsrq>,<cell_rsrp>,<cell_rssi>,<cell_idle_srxlev>]</p> <p>[...]</p> <p>[+CMGRMI:LTE_Intra_Cell8,<cell_pci>,<cell_rsrq>,<cell_rsrp>,<cell_rssi>,<cell_idle_srxlev>]</p> <p>]]]]</p> <p>[+CMGRMI:LTE_Inter,<num_freqs>,<Freq1>,<earfcn>,<num_lte_cells>,<idle_threshX_low>,<idle_threshX_high>,<idle_cell_resele_priority>,<Freq2>,<earfcn>,<num_lte_cells>,<idle_threshX_low>,<idle_threshX_high>,<idle_cell_resele_priority>]</p> <p>[+CMGRMI:LTE_InterFreq1_Cell1,<cell_pci>,<cell_rsrq>,<cell_rsrp>,<cell_rssi>,<cell_idle_srxlev>]</p> |

```
[...
[+CMGRMI:LTE_InterFreq2_Cell8,<cell_pci>,<cell_rsrq>,<cell_rsrp>,
<cell_rssi>,<cell_idle_srxlev>
]]]]]
[+CMGRMI: GSM_Info, <num_freq_groups>,Freq_Group1,
<num_gsm_arfcn>,<idle_cell_resele_priority>,
<idle_thresh_gsm_high>,<idle_thresh_gsm_low>,
<idle_ncc_permitted>,<num_gsm_arfcn>,
<idle_cell_resele_priority>,<idle_thresh_gsm_high>,
<idle_thresh_gsm_low>,<idle_ncc_permitted>
[+CMGRMI: GSM_InfoFreq1_Cell1,<cell_arfcn>,<cell_band_1900>,
<cell_id_valid>,<cell_bsic_id>,<cell_rssi>,<cell_idle_srxlev >
[+CMGRMI: GSM_InfoFreq1_Cell2,<cell_arfcn>,<cell_band_1900>,
<cell_id_valid>,<cell_bsic_id>,<cell_rssi>,<cell_idle_srxlev >
[...
[+CMGRMI: GSM_InfoFreq1_Cell8,<cell_arfcn>,<cell_band_1900>,
<cell_id_valid>,<cell_bsic_id>,<cell_rssi>,<cell_idle_srxlev >
]]]]]
[+CMGRMI: GSM_InfoFreq2_Cell1,<cell_arfcn>,<cell_band_1900>,
<cell_id_valid>,<cell_bsic_id>,<cell_rssi>,<cell_idle_srxlev >
[+CMGRMI: GSM_InfoFreq2_Cell2,<cell_arfcn>,<cell_band_1900>,
<cell_id_valid>,<cell_bsic_id>,<cell_rssi>,<cell_idle_srxlev >
[...
[+CMGRMI: GSM_InfoFreq2_Cell8,<cell_arfcn>,<cell_band_1900>,
<cell_id_valid>,<cell_bsic_id>,<cell_rssi>,<cell_idle_srxlev >
]]]]]
[+CMGRMI: WCDMA_Info,<num_wcdma_freqs>,Freq1,<uarfcn>,
<num_wcdma_cells>,<idle_cell_resele_priority>,
<idle_thresh_Xhigh>,<idle_thresh_Xlow>,Freq2,<uarfcn>,
<num_wcdma_cells>,<idle_cell_resele_priority>,
<idle_thresh_Xhigh>,<idle_thresh_Xlow>
[+CMGRMI: WCDMA_InfoFreq1_Cell1,<cell_psc>,<cell_cpich_rscp>,
<cell_cpich_ecno>,<cell_idle_srxlev>
[+CMGRMI: WCDMA_InfoFreq1_Cell2,<cell_psc>,<cell_cpich_rscp>,
<cell_cpich_ecno>,<cell_idle_srxlev>
[...
[+CMGRMI: WCDMA_InfoFreq1_Cell8,<cell_psc>,<cell_cpich_rscp>,
<cell_cpich_ecno>,<cell_idle_srxlev>
```

| |
|--|
| <pre>[... [+CMGRMI: CDMA1x_InfoFreq1_Cell8,<pilot_pn_offset>, <pilot_pn_phase>,<pilot_strength>]]]] [+CMGRMI: CDMA1x_InfoFreq2_Cell1,<pilot_pn_offset>, <pilot_pn_phase>,<pilot_strength> [+CMGRMI: CDMA1x_InfoFreq2_Cell2,<pilot_pn_offset>, <pilot_pn_phase>,<pilot_strength> [... [+CMGRMI: CDMA1x_InfoFreq2_Cell8,<pilot_pn_offset>, <pilot_pn_phase>,<pilot_strength>]]]]] [+CMGRMI:CDMAprpd_Info,<num_cdma_freqs>,Freq1, <channel_num>,<band_class>,<num_cdma_cells>,Freq2, <channel_num>,<band_class>,<num_cdma_cells> [+CMGRMI: CDMAprpd_InfoFreq1_Cell1,<pilot_pn_offset>, <pilot_pn_phase>,<pilot_strength> [+CMGRMI: CDMAprpd_InfoFreq1_Cell2,<pilot_pn_offset>, <pilot_pn_phase>,<pilot_strength> [... [+CMGRMI: CDMAprpd_InfoFreq1_Cell8,<pilot_pn_offset>, <pilot_pn_phase>,<pilot_strength>]]]] [+CMGRMI: CDMAprpd_InfoFreq2_Cell1,<pilot_pn_offset>, <pilot_pn_phase>,<pilot_strength> [+CMGRMI: CDMAprpd_InfoFreq2_Cell2,<pilot_pn_offset>, <pilot_pn_phase>,<pilot_strength> [... [+CMGRMI: CDMAprpd_InfoFreq2_Cell8,<pilot_pn_offset>, <pilot_pn_phase>,<pilot_strength>]]]]] [+CMGRMI: CDrx_Cfg,<drx_enable>,<on_duration_timer>, <inactivity_timer>,<retx_timer>,<long_drx_cycle>, <long_drx_cycle_offset>,<short_drx_cycle_enable>, <short_drx_cycle>,<short_drx_cycle_timer>] [+CMGRMI: Cqi_Cfg,<cqi_enable>, <cqi_reporting_mode_aperiodic_enable>, <cqi_reporting_mode_aperiodic>,<nom_pdsch_rs_epre_offset>,</pre> |
|--|

```

If <mode>=3 or 5, get WCDMA signal info:
[+CMGRMI:Main_Info,<mode>,<service_available>,<valid>,
  <s_intra_search >,<s_inter_search >,< s_search_RAT>]
[+CMGRMI: WCDMA_Intra,< freq>,<rxagc>,<num_nbr_cells>,
  <num_serv_cells >]
[+CMGRMI: WCDMA_Intra_Nbr1,<cell_psc>,<cell_ecio>,
  < cell_rscp>,<cell_set>,< cell_rank>]
[...]
[+CMGRMI: WCDMA_Intra_Nbr8,<cell_psc>,<cell_ecio>,
  < cell_rscp>,<cell_set>,< cell_rank>]
]]
[+CMGRMI: WCDMA_Intra_Serv1,<cell_psc>,<cell_ecio>,
  < cell_rscp>,<cell_set>,< cell_rank>]
[...]
[+CMGRMI: WCDMA_Intra_Serv6,<cell_psc>,<cell_ecio>,
  < cell_rscp>,<cell_set>,< cell_rank>]
]]
[+CMGRMI: WCDMA_Inter, Freq1,< freq >,< rxagc >,< num_cells >,
  Freq2,< freq >,< rxagc >,< num_cells >]
[+CMGRMI: WCDMA_InterFreq1_Cell1,<cell_psc>,<cell_ecio>,
  < cell_rscp>,<cell_set>,< cell_rank>,< cell_s_rxlev>]
[...]
[+CMGRMI: WCDMA_InterFreq1_Cell8,<cell_psc>,<cell_ecio>,
  < cell_rscp>,<cell_set>,< cell_rank>,< cell_s_rxlev>]
]]
[+CMGRMI: WCDMA_InterFreq2_Cell1,<cell_psc>,<cell_ecio>,
  < cell_rscp>,<cell_set>,< cell_rank>,< cell_s_rxlev>]
[...]
[+CMGRMI: WCDMA_InterFreq2_Cell8,<cell_psc>,<cell_ecio>,
  < cell_rscp>,<cell_set>,< cell_rank>,< cell_s_rxlev>]
]]
[+CMGRMI: GSM_Info,< num_cells >]
[+CMGRMI: GSM_Info_Cell1,< cell_arfcn>,<cell_bsid>,
  < cell_rssi>,< cell_rank>,< cell_s_rxlev>]
[...]
[+CMGRMI: GSM_Info_Cell8,< cell_arfcn>,<cell_bsid>,
  < cell_rssi>,< cell_rank>,< cell_s_rxlev>]
]]
[+CMGRMI: LTE_Info,< num_carfcn > Freq1,< carfcn >,< num_cells >

```

| | |
|-----------|--|
| Example | <pre> AT+CMGRMI=? +CMGRMI: (3-5), OK AT+CMGRMI=4 +CMGRMI: Main_Info,4,1,1,1,3,25978,15,1 +CMGRMI: Serving_Cell,38950,1120,15,33033,2,136335367,40,5,5,27,305,-47,-715,-468,56 +CMGRMI: LTE_Intra,1,38950,305,1 +CMGRMI: LTE_Intra_Cell1: LTE_Intra,305,-47,-715,-468,56 +CMGRMI: LTE_Inter,2,Freq1,37900,0,0,22,6,Freq2,38098,0,0,22,6 +CMGRMI: GSM_Info,1,Freq_Group1,8,1,14,26,255 +CMGRMI: GSM_InfoFreq1_Cell1: 1,0,0,0,-1920,0 +CMGRMI: GSM_InfoFreq1_Cell2: 598,0,0,0,-1920,0 +CMGRMI: GSM_InfoFreq1_Cell3: 595,0,0,0,-1920,0 +CMGRMI: GSM_InfoFreq1_Cell4: 592,0,0,0,-1920,0 +CMGRMI: GSM_InfoFreq1_Cell5: 589,0,0,0,-1920,0 +CMGRMI: GSM_InfoFreq1_Cell6: 586,0,0,0,-1920,0 +CMGRMI: GSM_InfoFreq1_Cell7: 580,0,0,0,-1920,0 +CMGRMI: GSM_InfoFreq1_Cell8: 576,0,0,0,-1920,0 +CMGRMI: WCDMA_Info,0 +CMGRMI: CDMA1x_Info,0 +CMGRMI: CDMAprpd_Info,0 +CMGRMI: CDrx_Cfg,0,0,0,0,0,0,0,0,0 +CMGRMI: Cqi_Cfg,1,1,3,0,1,1,0,138,0,0,0,0,0,0,0 </pre> |
| Reference | Vendor |

AT+CMGRMI Defined values

| |
|---|
| <pre> <pos> Value: 0xFFFFFFFF Any (any value) 0 Main info for WCDMA/LTE, if this bit set, the related info returned as "+ CMGRMI: Main_Info, ..." 1 Main info for WCDMA mode, if this bit set, the related info returned as "+ CMGRMI: WCDMA_Intra, ..." "+ CMGRMI: WCDMA_Intra_Nbr1, ..." "+ CMGRMI: WCDMA_Intra_Serv1, ..." 2 WCDMA inter info for WCDMA mode, if this bit set, the related info returned as "+ CMGRMI: WCDMA_Inter, ..." "+ CMGRMI: WCDMA_InterFreq1_Cell1, ..." 3 GSM info for WCDMA mode, if this bit set, the related info returned as "+ CMGRMI: GSM_Info, ..." "+ CMGRMI: GSM_Info_Cell1, ..." </pre> |
|---|

| |
|--|
| 4 LTE info for WCDMA mode, if this bit set, the related info returned as "+ CMGRMI: LTE_Info, ..." "+ CMGRMI: LTE_InfoFreq1_Cell1, ..." |
| 5 Serving cell info for LTE mode, if this bit set, the related info returned as "+ CMGRMI: Serving_Cell, ..." |
| 7 LTE intra info for LTE mode, if this bit set, the related info returned as "+ CMGRMI: LTE_Intra, ..." "+ CMGRMI: LTE_Intra_Cell1, ..." |
| 8 LTE inter info for LTE mode, if this bit set, the related info returned as "+ CMGRMI: LTE_Inter, ..." "+ CMGRMI: LTE_InterFreq1_Cell1, ..." |
| 9 GSM info for LTE mode, if this bit set, the related info returned as "+ CMGRMI: GSM_Info, ..." "+ CMGRMI: GSM_InfoFreq1_Cell1, ..." |
| 10 WCDMA info for LTE mode, if this bit set, the related info returned as "+ CMGRMI: WCDMA_Info, ..." "+ CMGRMI: WCDMA_InfoFreq1_Cell1, ..." |
| 11 CDMA1x info for LTE mode, if this bit set, the related info returned as "+ CMGRMI: CDMA1x_Info, ..." "+ CMGRMI: CDMA1x_InfoFreq1_Cell1, ..." |
| 12 CDMA high-rate packet data cell info for LTE mode, if this bit set, the related info returned as "+ CMGRMI: CDMAprpd_Info, ..." "+ CMGRMI: CDMAprpd_InfoFreq1_Cell1, ..." |
| 13 Connected DRX configuration info for LTE mode, if this bit set, the related info returned as "+ CMGRMI: CDrx_Cfg, ..." |
| 14 Channel quality indication configuration info for LTE mode, if this bit set, the related info returned as "+ CMGRMI: Cqi_Cfg, ..." |
| 15 Antenna configuration info for LTE mode, if this bit set, the related info returned as "+ CMGRMI: Ant_Cfg, ..." |
| 16 Idle DRX info for LTE mode, if this bit set, the related info returned as "+ CMGRMI: Idle_Drx_Cfg, ..." |

| |
|---|
| <service_available> |
| 0 – service not available 1 – service is available |
| <is_data_valid > |
| Indicates whether the fields in the following are valid 0 – None of the fields are valid 1 – One or more of the fields is valid |
| <s_intra_search > |
| Cell selection parameter for the intrafrequency cell |
| <s_inter_search > |
| Cell selection parameter for the interfrequency cell |
| < s_search_RAT > |
| Cell selection parameter for the GSM cell |
| < freq > |
| Camped cell frequency |
| < rxagc > |
| Receiver automatic gain control on the camped frequency |
| < num_nbr_cells > |
| Number of intrafrequency neighbor cells reported |
| <num_serv_cells > |

| |
|---|
| Number of serving cells (cells when in a soft handover) reported |
| < cell_psc > |
| Primary scrambling code |
| < cell_ecio > |
| Instantaneous cell received energy per chip and interference level |
| < cell_rscp > |
| Instantaneous cell received signal code power |
| < cell_set > |
| Intrafrequency cell type |
| < cell_rank > |
| Intrafrequency cell ranking |
| < num_freq > |
| Number of frequencies |
| < num_cells > |
| Number of cells to report per frequency |
| < cell_arfcn > |
| Absolute radio frequency channel number. Range: 0 to 1023 |
| < cell_bsic_id > |
| Base station identity code. Base station color code in least significant bit (or byte). Network color code in most significant bit (or byte) |
| < cell_rssi > |
| Received signal strength indicator. Range: 0 to -120 |
| < cell_s_rxlev > |
| cell suitable receive level |
| < num_earfcn > |
| Number of LTE EARFCNs |
| < earfcn > |
| E-UTRA absolute radio frequency channel number for searching LTE cells |
| < priority > |
| Priority information. Invalid priority is -1 |
| < cell_id > |
| Physical cell ID of the detected cell |
| < cell_rsrp > |
| Maximum reference signal received power combined across Tx-Rx pairs. In linear scale |
| < cell_rsrq > |
| Maximum reference signal received quality value combined across Tx-Rx pairs. In linear scale |
| < valid > |
| Indicates the validity of the structure fields 0 – None of the fields are valid 1 – One or more of the fields is valid |
| < idle > |
| Indicates whether the UE is in Idle mode 0 – All Idle mode substructs are considered invalid, except for serving cell information 1 – UE is in Idle mode. All Idle mode substructs are considered valid |
| < ra_rnti > |
| Random access radio network temporary ID |

| | |
|------------------------------|---|
| < c_rnti > | Connected state, common, and UE-specific search space radio network temporary identification |
| < cqi_wb > | Wideband CQI information |
| <enb_num_tx_antenna> | Number of Tx antenna on an LTE base station |
| < mcc > | Mobile country code |
| < mnc > | Mobile network code |
| < tac > | Total access communication |
| <num_mnc_digits > | Number of digits in mobile network code |
| < serving_cell_id > | LTE serving cell ID. This is the cell ID of the serving cell and can be found in the cell list. Range: 0 to 503 |
| < freq_band_ind > | Operating band of the serving cell. Range: 1 to 64 |
| < dl_bandwidth > | Transmission bandwidth configuration of the serving cell on the downlink. Range: 0 to 5 |
| < ul_bandwidth > | Transmission bandwidth configuration of the serving cell on the uplink. Range: 0 to 5 |
| < serv_rssnr > | Average reference signal signal-to-noise ratio of the serving cell over the last measurement period in decibels. Range: -10 to 30 |
| <cell_pci> | Physical cell ID |
| <cell_idle_srxlev> | Suitable receive level |
| < scell_deact_timer > | SCell deactivation timer |
| < serving_cell_id > | LTE serving cell ID |
| < num_lte_cells > | Number of LTE cells |
| < idle_threshX_low > | To be considered for reselection, the suitable receive level value of an evaluated lower priority cell must be greater than this value |
| < idle_threshX_high > | To be considered for reselection, the suitable receive level value of an evaluated higher priority cell must be greater than this value |
| < idle_cell_resel_priority > | Cell reselection priority |
| < num_freq_groups > | Number of GSM frequency groups and the size of the frequency group array |

| |
|---|
| < num_gsm_arfcn > |
| Number of GSM ARFCNs indicated, and the size of the GSM array |
| < idle_thresh_gsm_high > |
| Reselection threshold for high priority layers |
| <idle_thresh_gsm_low> |
| Reselection threshold for low priority layers |
| <idle_ncc_permitted> |
| Bitmask that specifies whether a neighbor with a particular network color code is to be reported. Bit n set to 1 means that a neighbor with NCC n is to be included in the report |
| < num_wcdma_freqs > |
| Number of WCDMA frequencies and the size of the freq array |
| < uarfcn > |
| WCDMA layer frequency |
| < num_wcdma_cells > |
| Number of WCDMA cells indicated and the size of the WCDMA array |
| < idle_thresh_Xhigh > |
| Cell reselection priority. Range: 0 to 7 |
| < idle_thresh_Xlow > |
| Reselection threshold for high priority layers |
| < num_cdma_freqs > |
| Number of CDMA frequencies and the size of the freq array |
| < channel_num > |
| Channel number |
| < band_class > |
| Band class |
| < num_cdma_cells > |
| Number of CDMA cells indicated and the size of the CDMA array |
| < pilot_pn_offset > |
| Neighbor cell pilot PN offset. Range: 0 to 511 |
| < pilot_pn_phase > |
| Neighbor cell pilot PN phase. Range: 0 to 32767 |
| < pilot_strength > |
| Neighbor cell pilot Ec/Io. Range: 1 to 63 |
| < drx_enable > |
| Indicates whether to enable the Dedicate mode DRX 0 – drx is not enabled 1 – drx is enabled |
| < on_duration_timer > |
| On Duration timer. The value is the number of PDCCH subframes. The psf1 value corresponds to one PDCCH subframe, psf2 corresponds to two PDCCH subframes, etc. Default: FFS |
| < inactivity_timer > |
| DRX Inactivity timer. The value is the number of PDCCH subframes. The psf1 value corresponds to one PDCCH subframe, psf2 corresponds to two PDCCH subframes, etc. Default: FFS |
| < retx_timer > |
| DRX Retransmission timer. The value is the number of PDCCH subframes |
| < long_drx_cycle > |

| |
|---|
| DRX cycle |
| < long_drx_cycle_offset > |
| DRX start offset |
| < short_drx_cycle_enable > |
| Indicates whether short_drx_cycle is enabled |
| < short_drx_cycle > |
| Short DRX cycle. |
| < short_drx_cycle_timer > |
| DRX short cycle timer. The value is in multiples of short_drx_cycle. A value of 1 corresponds to one short_drx_cycle value, 2 corresponds to two short_drx_cycle values, etc. |
| < cqi_enable > |
| Indicates whether CQI reporting is enabled 0 – cqi is not enabled 1 – cqi is enabled |
| < cqi_reporting_mode_aperiodic_enable > |
| Indicates whether the CQI aperiodic reporting mode is enabled 0 – cqi aperiodic is not enabled 1 – cqi aperiodic is enabled |
| < cqi_reporting_mode_aperiodic > |
| CQI aperiodic reporting mode |
| < nom_pdsch_rs_epre_offset > |
| Provides the nominal measurement offset in dB between the physical downlink shared channel and the reference signal energy per resource block used by the UE when computing CQI |
| < cqi_reporting_periodic_present > |
| Indicates whether the reporting periodic information is present |
| <cqi_periodic_enable> |
| Indicates whether periodic reporting is enabled |
| < cqi_periodic_pucch_resource_index > |
| Physical uplink control channel resource index. Range: 0 to 767. |
| < cqi_periodic_cqi_pmi_cfg_index > |
| CQI/PMI periodicity and offset configuration index. Range: 0 to 511 |
| < cqi_periodic_format_indicator > |
| PUCCH CQI feedback type |
| < cqi_periodic_subband_cqi_k > |
| Parameter K. Used only if the CQI format indicator is set to CMAPI_LTE_L1_CQI_FORMAT_INDICATOR_PERIODIC_SUBBAND. Range: 1 to 4 |
| <cqi_periodic_ri_cfg_index_enable> |
| Indicates whether the rank indicator configuration index is enabled |
| < cqi_periodic_ri_cfg_index > |
| Rank indicator configuration index. |
| < cqi_periodic_sim_ack_nak_cqi > |
| Indicates whether the simultaneous transmission of ACK/NACK and CQI is allowed |
| < cqi_rel9_param_present > |
| Indicates whether the CQI Release 9 parameters are present |
| < cqi_rel9_param_cqi_mask_enable > |
| Indicates whether the CQI mask is enabled |
| < cqi_rel9_param_pmi_ri_report_configured > |

| |
|--|
| Indicates whether the Precoding Matrix Indicator and Rank Indicator report is configured |
| < transmission_mode > |
| Antenna transmission mode for the PDSCH |
| < codebook_subset_restriction > |
| Bitmask of the codebook restriction. The bitmask is placed in the lower order bits The number of bits are: 2 – n2TxAntenna-tm3 4 – n4TxAntenna-tm3 6 – n2TxAntenna-tm4 64 – n4TxAntenna-tm4 4 – n2TxAntenna-tm5 16 – n4TxAntenna-tm5 4 – n2TxAntenna-tm6 16 – n4TxAntenna-tm6 |
| < tx_antenna_selection_enabled > |
| Indicates whether the UE transmit antenna selection is enabled |
| < tx_antenna_selection_ctrl > |
| Indicates whether the UE transmit antenna selection control is closed loop or open loop |
| < paging_cycle > |
| UE paging cycle in milliseconds |
| < nb > |
| Used to derive the number of paging groups |
| < ue_id > |
| UE identity (IMSI) mod 1024 |

4.3.5.7.10 Show cell system information - +MONI

| | |
|---|--|
| AT+MONI - This command is used to inquiring serving cell and neighbour cell system information in GSM . | |
| AT+MONI=? | <p>Test command responses:</p> <p>+MONI: <CellNo>, <CellSet></p> <p>OK</p> <p>Other:</p> <p>+MONI: Not in GSM mode</p> |
| AT+MONI? | <p>Read command responses:</p> <p><i>When extracting data for the serving cell and the network name is known:</i></p> <p>+MONI:<netname>,BSIC:<bsic>,RxQual:<qual>,LAC:<lac>,Id:<id>, ARFCN:<arfcn>,PWR:<dBm>dBm,C1: <C1>-C2: <C2></p> <p><i>When extracting data for an adjacent cell:</i></p> <p>+MONI:Adj Cell<n>,[LAC:<lac>,Id:<id>],ARFCN:<arfcn>, PWR: <dBm>dBm, C1: <C1>-C2: <C2></p> <p>[...]</p> <p>OK</p> <p><i>When the network name is unknown:</i></p> <p>+MONI:Cc:<cc>,Nc<nc>,BSIC:<bsic>,RxQual:<qual>,LAC:<lac>, Id:<id>, ARFCN:<arfcn>,PWR:<dBm>dBm,C1: <C1>-C2: <C2></p> <p><i>When extracting data for an adjacent cell:</i></p> <p>+MONI:Adj Cell<n>,[LAC:<lac>,Id:<id>],ARFCN:<arfcn>, PWR: <dBm>dBm, C1: <C1>-C2: <C2></p> <p>[...]</p> <p>OK</p> <p><i>When not in GSM mode</i></p> <p>OK</p> |

| | |
|---|--|
| <p>AT+MONI=<CellSet> ></p> | <p>Parameters: < CellSet >- Mandatory parameter. range is 0-7</p> <p>Write command responses: When CellSet = 0: +MONI:<netname>,BSIC:<bsic>,RxQual:<qual>,LAC:<lac>,Id:<id>, ARFCN:<arfcn>,PWR:<dBm>dBm,C1: <C1>-C2: <C2> OK</p> <p>When chosen in the range 1-6: +MONI:Adj Cell<n>,[LAC:<lac>,Id:<id>],ARFCN:<arfcn>, PWR: <dBm>dBm, C1: <C1>-C2: <C2> [...] OK</p> <p>When = 7: it is a special request to obtain information from the whole set of cells, just like AT+MONI? When requested cell number less than actual existed: +MONI: no cell OK</p> <p>When not in GSM mode: OK</p> |
| <p>AT+MONI</p> | <p>Execution command responses is the same as read command.</p> |

| | |
|---------|--|
| Example | <pre> AT+MONI=? +MONI: Not in GSM mode AT+MONI=? +MONI: 4,0 OK AT+MONI? +MONI:CMCC,BSIC:0,RxQual:0,LAC:33033,Id:183,ARFCN:53, PWR:-6 7dBm,C1:30-C2:140 +MONI:Adj Cell1,[LAC:33033,Id:182],ARFCN:49,PWR:-73dBm, C1:23-C2:133 +MONI: Adj Cell2,[LAC:33033,Id:181],ARFCN:47,PWR:-90dBm, C1:6-C2:116 +MONI: Adj Cell3,[LAC:33033,Id:40581],ARFCN:44,PWR:-102dBm, C1:-3-C2:107 +MONI: Adj Cell4,[LAC:33033,Id:36193],ARFCN:46,PWR:-104dBm, C1:-3-C2:107 OK AT+MONI=0 +MONI: CMCC,BSIC:0,RxQual:0,LAC:33033,Id:183,ARFCN:53, PWR:-65dBm,C1:32-C2:142 OK AT+MONI=3 +MONI: Adj Cell3,[LAC:33033,Id:40581],ARFCN:44,PWR:-104dBm, C1:-5-C2:105 OK </pre> |
|---------|--|

| | |
|-----------|---|
| | <p>AT+MONI</p> <p>+MONI: CMCC,BSIC:0,RxQual:0,LAC:33033,Id:183,ARFCN:53, PWR:-67dBm,C1:30-C2:140</p> <p>+MONI: Adj Cell1,[LAC:33033,Id:182],ARFCN:49,PWR:-74dBm, C1:22-C2:132</p> <p>+MONI: Adj Cell2,[LAC:33033,Id:181],ARFCN:47,PWR:-90dBm, C1:6-C2:116</p> <p>+MONI: Adj Cell3,[LAC:33033,Id:40581],ARFCN:44,PWR:-103dBm, C1:-4-C2:106</p> <p>+MONI: Adj Cell4,[LAC:33033,Id:36193],ARFCN:46,PWR:-104dBm, C1:-3-C2:107</p> <p>OK</p> |
| Reference | Vendor |

AT+MONI Execution command responses:

| |
|---|
| <CellNo > |
| available neighbour cells number currently received |
| < CellSet > |
| the last setting done with command, range is 0-7 |
| <netname> |
| name of network operator |
| <cc> |
| country code |
| <nc> |
| network operator code |
| <n> |
| progressive number of adjacent cell |
| <bsic> |
| base station identification code |
| <qual> |
| quality of reception |
| <lac> |
| localization area code |
| <id> |
| cell identifier |
| <arfcn> |
| assigned radio channel |
| <dBm> |
| received signal strength in dBm |

4.3.5.8 GPS AT command

4.3.5.8.1 Start/Stop GPS position session - +CGPS

| +CGPS – start/stop GPS position session | |
|---|---|
| AT+ CGPS= <on/off>[,<mode>] | start/stop GPS position session. parameters: <on/off>: 0 – stop GPS session 1 – start GPS session <mode>: ignore - Standalone mode 1 – standalone mode 2 – UE-based mode 3 – UE-assisted mode attention: UE-based and UE-assisted mode depend on URL (AT+CGPSURL) and certificate (AT+CGPSSSL). when UE-based mode failed, will switch to Standalone mode. return: when position success, output +CGPS:<lat>,<lon>,<alt>,<date>,<time> Among: <lat> Latitude of current position. Unit is in 10 ⁸ degree <lon> Longitude of current position. Unit is in 10 ⁸ degree <alt> MSL Altitude. Unit is meters. <date> UTC Date. Output format is ddmmyyyy <time> UTC Time. Output format is hhmmss |
| AT+ CGPS? | Get current GPS status and current mode return: +CGPS: <on/off>,<mode> OK |

| | |
|------------|--|
| AT+ CGPS=? | Test command return value range + cgps: <0,1>[,<1-3>] |
| Examples | AT+CGPS? OK AT+CGPS=1,1 OK |

4.3.5.8.2 Get current GPS position information - +CGPSINFO

| | |
|--|---|
| +CGPSINFO – Get current GPS position information | |
| AT+ CGPSINFO = <time> | <p>Get current GPS position information.</p> <p>parameters:</p> <p><time>: Range is (0-255) seconds, report the GPS information every time seconds. When time is 0, cancel reporting.</p> <p>return: OK ERROR</p> <p>Information report every time seconds is: +CGPSINFO:[<lat>],[<N/S>],[<log>],[<E/W>],[<date>],[<UTC time>],[<alt>],[<speed>],[<course>] OK</p> <p>Among:</p> <p><lat> Latitude of current position.</p> <p><log> Longitude of current position.</p> <p><alt> MSL Altitude. Unit is meters</p> <p><date> Date. Output format is ddmmyy</p> <p><UTC time> UTC Time. Output format is hhmmss</p> <p><Speed> Speed Over Ground. Unit is knots</p> <p><course></p> |

| | |
|-----------------|--|
| | <p>Course. Degrees</p> <p><N/S></p> <p>N/S Indicator, N=north or S=south</p> <p><E/W></p> <p>E/W Indicator, E=east or W=west</p> |
| AT+ CGPSINFO? | <p>Get GPS current information report time.</p> <p>return:</p> <p>+ CGPSINFO: <time></p> |
| AT+ CGPSINFO =? | <p>Test command return value range</p> <p>+ CGPSINFO: <0,255></p> |
| AT+ CGPSINFO | <p>Get current GPS position information directly</p> <p>+CGPSINFO:[<lat>],[<N/S>],[<log>],[<E/W>],[<date>],[<UTC time>],[<alt>],[<speed>],[<course>]</p> <p>OK</p> |
| Examples | <p>AT+ CGPSINFO?</p> <p>+ CGPSINFO:5</p> <p>OK</p> <p>AT+ CGPSINFO =3</p> <p>OK</p> |

4.3.5.8.3 Cold Start GPS - + CGPSCOLD

| | |
|----------------------------|---|
| + CGPSCOLD– cold start GPS | |
| AT+ CGPSCOLD | <p>cold start GPS</p> <p>return:</p> <p>OK</p> <p>ERROR</p> |
| AT+ CGPSCOLD=? | <p>Get command value range</p> <p>return:</p> <p>OK</p> |
| Examples | <p>AT+ CGPSCOLD=?</p> <p>OK</p> <p>AT+ CGPSCOLD</p> <p>OK</p> |

4.3.5.8.4 Hot Start GPS - + CGPSHOT

| | |
|--------------------------|--|
| + CGPSHOT- hot start GPS | |
| AT+ CGPSHOT | hot start GPS return: OK ERROR |
| AT+ CGPSHOT =? | Get command value range return: OK |
| Examples | AT+ CGPSHOT =? OK AT+ CGPSHOT OK |

4.3.5.8.5 Set AGPS default server URL - +CGPSURL

| | |
|--|--|
| +CGPSURL –This command is used to set AGPS default server URL. It will take effect only after restarting | |
| AT+ CGPSURL = <URL> | <p>This command is used to set AGPS default server URL. It will take effect only after restarting.</p> <p>parameters: <URL>: default server URL. It needs double quotation marks</p> <p>return: OK ERROR</p> |
| AT+ CGPSURL? | <p>Get current AGPS default URL</p> <p>return: + CGPSURL: <url> OK</p> |
| AT+ CGPSURL=? | <p>Test command return value range</p> <p>OK</p> |
| Examples | <p>AT+ CGPSURL=? OK AT+ CGPSURL = 211.151.53.216:7275 OK</p> |

4.3.5.8.6 Select Transport Security - + CGPSSSL

| | |
|--|---|
| +CGPSSSL –This command is used to select transport security, used certificate or not. The certificate gets from local carrier. If the AGPS server doesn't need certificate, execute AT+CGPSSSL=0 | |
| AT+ CGPSSSL = <SSL> | <p>This command is used to select transport security, used certificate or not. The certificate gets from local carrier. If the AGPS server doesn't need certificate, execute AT+CGPSSSL=0</p> <p>parameters:</p> <p><SSL>:</p> <p>0 disable SSL 1 enable SSL</p> <p>return:</p> <p>OK ERROR</p> |
| AT+ CGPSSSL? | <p>Get current AGPS default SSL</p> <p>return:</p> <p>+ CGPSSSL: <SSL> OK</p> |
| AT+ CGPSSSL =? | <p>Test command return value range</p> <p>+ CGPSSSL: <0-1> OK</p> |
| Examples | <p>AT+ CGPSSSL =0 OK</p> |

4.3.5.8.7 Auto Start GPS When Module Powers On - +CGPSATUO

| | |
|---|--|
| <p>+CGPSATUO –This command is used to start GPS automaticly when module powers on, GPS is closed defaultly. It will take effect only after restarting</p> | |
| <p>AT+ CGPSATUO = <auto></p> | <p>This command is used to start GPS automaticly when module powers on.</p> <p>parameters:</p> <p>< auto >:</p> <p>0 disable 1 enable</p> <p>return:</p> <p>OK ERROR</p> |
| <p>AT+ CGPSATUO?</p> | <p>Get current AGPS defalut auto value</p> <p>return:</p> <p>+ CGPSATUO: <auto> OK</p> |
| <p>AT+ CGPSATUO =?</p> | <p>Test command return value range</p> <p>+ CGPSATUO: <0-1> OK</p> |
| <p>Examples</p> | <p>AT+ CGPSATUO =0 OK</p> |

4.3.5.8.8 Used to Configure NMEA Output Sentences - +CGPSNMEA

| | |
|---|--|
| +CGPSNMEA – This command is used to configure NMEA output sentences which are generated by the gpsOne engine when position data is available. | |
| AT+ CGPSNMEA = <nmea> | <p>This command is used to configure NMEA output sentences which are generated by the gpsOne engine when position data is available.</p> <p>parameters:</p> <p>< nmea >:</p> <p>Each bit enables an NMEA sentence output as follows:</p> <p>Bit 0 – GPGGA (global positioning system fix data)</p> <p>Bit 1 – GPRMC (recommended minimum specific GPS/TRANSIT data)</p> <p>Bit 2 – GPGSV (GPS satellites in view)</p> <p>Bit 3 – GPGSA (GPS DOP and active satellites)</p> <p>Bit 4 – GPVTG (track made good and ground speed)</p> <p>Bit 5 – PQXFI (Global Positioning System Extended Fix Data.)</p> <p>Bit 6 – GLGSV (GLONASS satellites in view GLONASS fixes only)</p> <p>Bit 7 – GNGSA (DOP and GLONASS satellites; GPS+GLONASS or GLONASS-only fixes. Contains DOP information for all active satellites, but other information is GLONASS-only)</p> <p>Bit 8 – GNGNS (fix data for GNSS receivers; output for GPS-only, GLONASS-only, hybrid GLONASS+GPS fixes, or even AFLT fixes)</p> <p>Bit 9 - PQGSA (bds qzss DOP and active satellites)</p> <p>Bit 10 - PQGSV (bds qzss satellites in view)</p> <p>Bit 11 - GPGLL (Geographic Position – Latitude/Longitude)</p> <p>Bit 12 - GPZDA (Time & Date – UTC, Day, Month, Year and Local Time Zone)</p> <p>return:</p> <p>OK</p> <p>ERROR</p> |

| | |
|------------------------|---|
| <p>AT+ CGPSNMEA?</p> | <p>Get current AGPS default nmea value</p> <p>return:</p> <p>+ CGPSNMEA: <nmea></p> <p>OK</p> |
| <p>AT+ CGPSNMEA =?</p> | <p>Test command return value range</p> <p>+ CGPSNMEA: <0- 8191></p> <p>OK</p> |
| <p>Examples</p> | <p>AT+ CGPSNMEA = 8191</p> <p>OK</p> |

CONFIDENTIAL

4.3.5.8.9 Specifies GPS Session - + CGPSMD

| | |
|---|---|
| +CGPSMD –This command specifies if the Mobile-Originated (MO) GPS session should use the control plane session or user plane session. | |
| AT+ CGPSMD = <mo> | This command specifies if the Mobile-Originated (MO) GPS session should use the control plane session or user plane session. parameters: < mo >: 0 - control plane 1 - user plane return: OK ERROR |
| AT+ CGPSMD? | Get current AGPS default mo value Return: + CGPSNMEA: <mo> OK |
| AT+ CGPSMD=? | Test command return value range + CGPSMD: <0-1> OK |
| Examples | AT+ CGPSMD =1 OK |

4.3.5.8.10 Delete the GPS Information - +CGPSDEL

| | |
|---|---|
| +CGPSDEL –This command is used to delete the GPS information. After executing the command, GPS start is cold start. | |
| AT+ CGPSDEL | This command is used to delete the GPS information. After executing the command, GPS start is cold start. return: OK ERROR |
| AT+ CGPSDEL? | return: OK |
| Examples | AT+ CGPSDEL=? OK AT+ CGPSDEL OK |

4.3.5.8.11 Enable/Disable GPS XTRA Function - +CGPSXE

| | |
|--|--|
| +CGPSXE –Enable/Disable GPS XTRA function, It will take effect only after restarting | |
| AT+ CGPSXE = <on/off> | Enable/Disable GPS XTRA function parameters: < on/off >: on - Enable GPS XTRA off - Disable GPS XTRA return: OK ERROR |
| AT+ CGPSXE? | Get current value return: + CGPSXE: <on/off> OK |
| AT+ CGPSXE=? | Test command return value range + CGPSXE: <0-1> OK |
| Examples | AT+ CGPSXE=1 OK |

4.3.5.8.12 Download XTRA Assistant file - +CGPSXD

| | |
|--|--|
| +CGPSXD –Download XTRA assistant file | |
| AT+ CGPSXD=<server> | <p>This command is used to download the GPS XTRA assistant file from network through http protocol. Module will download the latest assistant file form server and write the file into module.</p> <p>parameters:</p> <p>< server>:</p> <p>0 - xtra server 1</p> <p>1 - xtra server 2</p> <p>2 - xtra server 3</p> <p>return:</p> <p>OK</p> <p>ERROR</p> |
| AT+ CGPSXD? | <p>Get current value</p> <p>return:</p> <p>+ CGPSXD: <0-2></p> |
| AT+ CGPSXD =? | <p>Test command return value range</p> <p>OK</p> |
| Examples | <p>AT+ CGPSXD</p> <p>OK</p> |

4.3.5.8.13 Download XTRA Assistant File Auto - +CGPSXDAUTO

| | |
|--|--|
| +CGPSXDAUTO –Download XTRA assistant file automatically, It will take effect only after restarting | |
| AT+ CGPSXDAUTO= =<on/off> | <p>This command is used to control download assistant file automatically or not when GPS start.</p> <p>XTRA function must enable for using this command. If assistant file doesn't exist or check error, the module will download and inject the assistant file automatically.</p> <p>parameters:</p> <p>< on/off >:</p> <p>on - enable</p> <p>off - disable</p> <p>return:</p> <p>OK</p> <p>ERROR</p> |
| AT+ CGPSXDAUTO? | <p>Get current value</p> <p>return:</p> <p>+ CGPSXDAUTO: <on/off></p> |
| AT+ CGPSXDAUTO= =? | <p>Test command return value range</p> <p>+ CGPSXDAUTO: <0-1></p> <p>OK</p> |
| Examples | <p>AT+ CGPSXDAUTO =1</p> <p>OK</p> |

4.3.5.8.14 Report NMEA-0183 Sentence - +CGPSINFOCFG

| | |
|--|--|
| +CGPSINFOCFG –This command is used to report NMEA-0183 sentence. | |
| AT+ CGPSINFOCFG =<time>[,<nmea>] | <p>This command is used to report NMEA-0183 sentence.</p> <p>parameters:</p> <p>< time >:</p> <p>Range is 0-255, after set <time> will report the GPS NMEA sentence every the seconds, If <time>=0, or nmea =0 module stop reporting the NMEA sentence</p> <p>< nmea >:</p> <p>Each bit enables an NMEA sentence output as follows:</p> <ul style="list-style-type: none"> Bit 0 – GPGGA (global positioning system fix data) Bit 1 – GPRMC (recommended minimum specific GPS/TRANSIT data) Bit 2 – GPGSV (GPS satellites in view) Bit 3 – GPGSA (GPS DOP and active satellites) Bit 4 – GPVTG (track made good and ground speed) Bit 5 –PQXFI (Global Positioning System Extended Fix Data.) Bit 6 –GLGSV (GLONASS satellites in view GLONASS fixes only) Bit 7 – GNGSA (DOP and GLONASS satellites; GPS+GLONASS or GLONASS-only fixes. Contains DOP information for all active satellites, but other information is GLONASS-only) Bit 8 –GNGNS (fix data for GNSS receivers; output for GPS-only, GLONASS-only, hybrid GLONASS+GPS fixes, or even AFLT fixes) Bit 9 - PQGSA (bds qzss DOP and active satellites) Bit 10 - PQGSV (bds qzss satellites in view) Bit 11 - GPGLL (Geographic Position – Latitude/Longitude) Bit 12 - GPZDA (Time & Date – UTC, Day, Month, Year and Local Time Zone) <p>Range is 0- 8191</p> <p>Return :</p> <p>OK</p> <p>ERROR</p> <p>(NMEA-0183 Sentence)</p> |

| | |
|---|--|
| AT+ CGPSINFOCFG? | <p>Get current value</p> <p>Return :</p> <p>+ CGPSINFOCFG: <time>, <nmea></p> <p>OK</p> |
| AT+ CGPSINFOCFG=? | <p>Test command return value range</p> <p>+ CGPSINFOCFG: <0-255>,<0-8191></p> <p>OK</p> |
| <p>+CGPSINFOCFG –This command is used to report NMEA-0183 sentence.</p> | |
| Examples | <p>AT+ CGPSINFOCFG =5,63</p> <p>OK</p> <p><i>\$GPGSV,4,1,16,04,53,057,44,02,55,334,44,10,61,023,44,05,45,253,43*7D</i></p> <p><i>\$GPGSV,4,2,16,25,10,300,40,17,25,147,40,12,22,271,38,13,28,053,38*77</i></p> <p><i>\$GPGSV,4,3,16,26,09,187,35,23,06,036,34,24,,,27,,,*7A</i></p> <p><i>\$GPGSV,4,4,16,09,,,31,,,30,,,29,,,*7D</i></p> <p><i>\$GPGGA,051147.0,3113.320991,N,12121.248076,E,1,10,0.8,47.5,M,0,M,,*45</i></p> <p><i>\$GPVTG,NaN,T,,M,0.0,N,0.0,K,A*42</i></p> <p><i>\$GPRMC,051147.0,A,3113.320991,N,12121.248076,E,0.0,0.0,211211,,,A*66</i></p> <p><i>\$GPGSA,A,3,02,04,05,10,12,13,17,23,25,26,,,1.4,0.8,1.2*3B</i></p> |

4.3.5.8.15 Configure Positioning Mode - +CGPSPMD

+CGPSPMD –Configure positioning mode

| | |
|------------------------------------|--|
| <p>AT+CGSPMD =<mode></p> | <p>This command is used to configure the positioning modes support.</p> <p>parameters:</p> <p>< mode >:</p> <p>Bit 0 – Standalone Bit 1 – UP MS-based Bit 2 – UP MS-assisted Bit 3 – CP MS-based (2G) Bit 4 – CP MS-assisted (2G) Bit 5 – CP UE-based (3G) Bit 6 – CP UE-assisted (3G) Bit 7 – NOT USED Bit 8 – UP MS-based (4G) Bit 9 – UP MS-assisted(4G) Bit 10 – CP MS-based (4G) Bit 11 – CP MS-assisted (4G) Range is 0-65535(bit12-bit15 reserve)</p> <p>return:</p> <p>OK ERROR</p> |
| <p>AT+ CGSPMD?</p> | <p>Get current value</p> <p>return:</p> <p>+ CGSPMD: <mode> OK</p> |
| <p>AT+ CGSPMD =?</p> | <p>Test command return value range</p> <p>+ CGSPMD: <0-65535> OK</p> |
| <p>Examples</p> | <p>AT+ CGSPMD = 65535 OK</p> |

4.3.5.8.16 Based Mode Switch to Standalone - +CGPSMSB

| | |
|---|---|
| +CGPSMSB –Configure based mode switch to standalone | |
| AT+CGPSMSB =<mode> | <p>This command is used to configure AGPS based mode switching to standalone mode automatically or not.</p> <p>parameters:</p> <p>< mode >:</p> <p>0 - Don't switch to standalone mode automatically 1 - switch to standalone mode automatically</p> <p>return:</p> <p>OK ERROR</p> |
| AT+ CGPSMSB? | <p>Get current value</p> <p>return:</p> <p>+ CGPSMSB: <mode> OK</p> |
| AT+ CGPSMSB =? | <p>Test command return value range</p> <p>+ CGPSMSB: <0-1> OK</p> |
| Examples | <p>AT+ CGPSMSB = 1 OK</p> |

4.3.5.8.17 Configure Positioning Desired Accuracy - +CGPSHOR

| | |
|--|---|
| +CGPSHOR –Configure positioning desired accuracy | |
| AT+CGPSHOR =<acc> | Configure positioning desired accuracy parameters: < acc >: positioning desired accuracy Range is 0-1800000, default is 50 return: OK ERROR |
| AT+ CGPSHOR? | Get current value return: + CGPSHOR: <acc> OK |
| AT+ CGPSHOR =? | Test command return value range + CGPSHOR: <0-1800000> OK |
| Examples | AT+ CGPSHOR = 60 OK |

4.3.5.8.18 LCS Respond Positioning Request - +CGPSNOTIFY

| | |
|--|--|
| +CGPSNOTIFY –LCS respond positioning request | |
| AT+CGPSNOTIFY =<resp> | This command is used to respond to the incoming request for positioning request message. parameters: < resp >: 0 –LCS notify verify accept 1 –LCS notify verify deny 2 –LCS notify verify no response return: OK ERROR |
| AT+CGPSNOTIFY =? | Test command return value range: + CGPSNOTIFY: <0-2> OK |
| Examples | AT+ CGPSNOTIFY = 0 OK |

4.3.5.8.19 Get Station Positioning - +GTPOS

| | |
|-----------------------------------|---|
| AT+GTPOS get station positioning. | |
| AT+ GTPOS = <mode> | The command is used to retrieve information base station positioning the command is used to retrieve information base station positioning.(not support CDMA network) <mode> 0 - Close the base station positioning function 1 - Open the base station positioning function 2 - Get the base station positioning function Responses OK CONNECT OK CONNECT FAILED ERROR |
| AT+ GTPOS? | + GTPOS: <mode> OK |
| AT+ GTPOS =? | + GTPOS: (list of supported <mode>s) OK |
| Example | at+gtpos=1 OK CONNECT OK at+gtpos=2 +GTPOS:104.0553231,30.5497824 OK at+gtpos=0 OK |

4.3.5.8.20 Set gps output port and position system- +cpgsnmeatype

| | |
|--------------------------------------|---|
| AT+cpgsnmeatype | Set gps output port and position system. It will take effect only after restarting |
| AT+cpgsnmeatype =<port>, <system> | <p>The command is used to retrieve information base station positioning the command is used to retrieve information base station positioning.</p> <p><port></p> <p>0 - output gps data from at port 1 - output gps data from uart1 port 2 - output gps data from all active port</p> <p><system></p> <p>0. gps 和 glo 1. gps、 glo、 bds 2. gps、 bds、 gal 3. gps、 glo、 bds、 gal 4. gps、 glo、 gal 5. gps、 gal 6. gps、 glo、 qzss 7. gps、 glo、 bds、 qzss</p> <p>Responses</p> <p>OK ERROR</p> |
| AT+ cpgsnmeatype ? | + cpgsnmeatype : <port>,<system> OK |
| AT+ cpgsnmeatype =? | + cpgsnmeatype: (0-2),(0-7) OK |
| Example | <p>at+ cpgsnmeatype =1 OK</p> <p>at+ cpgsnmeatype =2,2 OK</p> |

4.3.5.8.21 Xtra File Download Error Code

Numeric Format Verbose Format General errors:

| | |
|-----|---|
| -2 | Phone is no network |
| 201 | Subsystem establishment in progress. |
| 202 | Network subsystem unavailable. |
| 203 | PPP is closing. |
| 204 | Existing net subsystem resources. |
| 205 | Physlink going dormant. |
| 300 | HTTP service is not opened. |
| 301 | HTTP service has opened. |
| 302 | AT parameter error. |
| 303 | DNS error. |
| 304 | Action error. |
| 305 | Request timeout. |
| 306 | Downloading file. |
| 307 | URL not set. |
| 308 | Header fielder's number exceeds the limit.. |
| 309 | Unsupported header fielder. |
| 350 | Unknown HTTP error |

4.3.5.9 SMS extended AT commands

4.3.5.9.1 Read Message Only - +CMGRO

| | |
|------------------------------|---|
| AT+CMGRO - Read message only | |
| AT+CMGRO=<index> | +CMGRO command is used to return message with location value <index> from message storage <mem1> to the TE, but the message's status does not change. Parameters: <index>- Mandatory parameter. Integer type; value in the range of location numbers supported by the associated memory and start with zero. Refer to command AT+CMGR. |
| AT+CMGRO=? | Test command returns range of the parameters. |
| Example | AT+CMGRO=3 +CMGRO: "REC UNREAD", "10086", "16/07/12,11:14:19+32" This a test SMS OK AT+CMGRO=? OK |
| Reference | |

4.3.5.9.2 Change Message Status - +CMGMT

| | |
|----------------------------------|--|
| AT+CMGMT - Change message status | |
| AT+CMGMT=<index> | +CMGMT command is used to change the message status. If the status is unread, it will be changed read. Other statuses don't change. Parameters: <index>- Mandatory parameter. Integer type; value in the range of location numbers supported by the associated memory and start with zero. |
| AT+CMGMT=? | Test command returns range of the parameters. |
| Example | AT+CMGMT=3 OK AT+CMGMT=? OK |
| Reference | |

4.3.5.9.3 Set Message Valid Period - +CMVP

| | |
|------------------------------------|---|
| AT+CMVP - Set message valid period | |
| AT+CMVP=<vp> | <p>+CMVP command is used to set valid period for sending short message.</p> <p>Parameters:</p> <p><vp>- Mandatory parameter. Integer type,</p> <p>Validity period value:</p> <p>0 to 143 (<vp>+1) x 5 minutes (up to 12 hours)</p> <p>144 to 167 12 hours + (<vp>-143) x 30 minutes</p> <p>168 to 196 (<vp>-166) x 1 day</p> <p>197 to 255 (<vp>-192) x 1 week</p> <p>Note: parameter vp can only be set when <fo> value is SMS-SUBMIT.</p> |
| AT+CMVP=? | Test command returns range of the parameters. |
| AT+CMVP? | Read command returns the current configuration value of the parameter |
| Example | <pre> AT+CSMP? +CSMP: ,,0,0 OK AT+CMVP=167 ERROR AT+CSMP=17 OK AT+CSMP? +CSMP: 17,,0,0 OK AT+CMVP=167 OK AT+CMVP? +CMVP:167 OK AT+CMVP=? +CMVP:(0-255) OK </pre> |
| Reference | |

4.3.5.9.4 Read and Delete Message - +CMGRD

| | |
|------------------------------------|---|
| AT+CMGRD - Read and delete message | |
| AT+CMGRD=<index> | <p>+CMGRD command is used to read message, and delete the message at the same time. It integrate AT+CMGR and AT+CMGD, but it doesn't change the message status.</p> <p>Parameters:</p> <p><index>- Mandatory parameter. Integer type; value in the range of location numbers supported by the associated memory and start with zero.</p> <p>Refer to command AT+CMGR and AT+CMGD.</p> |
| AT+CMGRD=? | Test command returns range of the parameters. |
| Example | <pre>AT+CMGRD=3 +CMGRD: "REC READ","10086",,"16/07/12,11:14:19+32" This a test SMS OK AT+CMGRD=? OK</pre> |
| Reference | |

4.3.5.9.5 Send Message Quickly - +CMGSO

| AT+CMGSO - Send message quickly | |
|---|---|
| <p>If text mode: (AT+CMGF=1) AT+CMGSO=<da>, <text> [,<toda>]</p> <p>If pdu mode: (AT+CMGF=0) AT+CMGSO=<length>,<pducontent></p> | <p>+CMGSO command is used to send message from a TE to the network (SMS-SUBMIT). But it's different from AT+CMGS. This command only need one time input, and wait for ">" needless.</p> <p>Parameters: <da>- Mandatory parameter. Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <toda>.</p> <p><text>- Mandatory parameter. Content of message.</p> <p><toda>- Optional parameter. TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129). The range of value is from 128 to 255.</p> <p><length>- Mandatory parameter. Integer type value indicating in PDU mode (AT+CMGF=0), the length of the actual TP data unit in octets.</p> <p><pducontent>- Mandatory parameter. Content of message.</p> <p>NOTE: In text mode, the maximum length of an SMS depends on the used coding scheme: It is 160 characters if the 7 bit GSM coding scheme is used.</p> |
| AT+CMGSO=? | Test command returns range of the parameters. |
| Example | <pre>AT+CMGSO="10086","CMGSO TEST" +CMGSO: 122 OK AT+CMGSO=? OK</pre> |
| Reference | |

4.3.5.9.6 Write Message to Memory Quickly - +CMGWO

| | |
|---|---|
| AT+CMGWO - Write message to memory quickly | |
| <p>If text mode: (AT+CMGF=1) AT+CMGWO=<da>,<text>[,<toda>]</p> <p>If pdu mode: (AT+CMGF=0) AT+CMGWO=<length>,<pducontent></p> | <p>+CMGWO command stores message (either SMS-DELIVER or SMS-SUBMIT) to memory storage <mem2>. But it's different from AT+CMGW. This command only need one time input, and wait for ">" needless.</p> <p>Parameters:</p> <p><da>- Mandatory parameter. Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <toda>.</p> <p><text>- Mandatory parameter. Content of message.</p> <p><toda>- Optional parameter. TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129). The range of value is from 128 to 255.</p> <p><length>- Mandatory parameter. Integer type value indicating in PDU mode (AT+CMGF=0), the length of the actual TP data unit in octets.</p> <p><pducontent>- Mandatory parameter. Content of message.</p> |
| AT+CMGWO=? | Test command returns range of the parameters. |
| Example | <pre>AT+CMGWO="10086","CMGWO TEST" +CMGWO: 0 OK AT+CMGWO=? OK</pre> |
| Reference | |

4.3.5.9.7 Send message - +CMGSEX

| | |
|--|--|
| AT+CMGSEX - Send message | |
| <p>If text mode: (AT+CMGF=1) AT+CMGSEX=<da> [,<tda>][,<mr>,<msg_seg>,<msg_total>] <CR> Text is entered. <CTRL-Z/ESC></p> <p>If pdu mode: (AT+CMGF=0) AT+CMGSEX=<len gth><CR> PDU is entered <CTRL-Z/ESC></p> | <p>+CMGSEX is used to send message from a TE to the network (SMS-SUBMIT).</p> <p>Parameters: <da>- Mandatory parameter. Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <tda>. <tda>- Optional parameter. TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129). The range of value is from 128 to 255. <mr>- Optional parameter. Message Reference. GSM 03.40 TP-Message-Reference in integer format. <msg_seg>- Optional parameter. The segment number for long sms. <msg_total>- Optional parameter. The total number of the segments for long sms. Its range is from 2 to 255. <length>- Mandatory parameter. Integer type value indicating in PDU mode (AT+CMGF=0), the length of the actual TP data unit in octets. NOTE: In text mode, the maximum length of an SMS depends on the used coding scheme: For single SMS, it is 160 characters if the 7 bit GSM coding scheme is used; For multiple long sms, it is 153 characters if the 7 bit GSM coding scheme is used.</p> |
| AT+CMGSEX=? | Test command returns range of the parameters. |
| Example | <pre>AT+CMGSEX="10086",123,1,2<CR>(TEXT MODE) > CMGSEX part1<ctrl-Z/ESC> +CMGSEX: 123 OK AT+CMGSEX="10086",123,2,2<CR>(TEXT MODE) > CMGSEX part2<ctrl-Z/ESC> +CMGSEX: 123 OK AT+CMGSEX=? OK</pre> |
| Reference | |

4.3.5.9.8 Generate a New Message Reference - +CMGENREF

| | |
|--|--|
| AT+CMGENREF - Generate a new message reference | |
| AT+CMGENREF | +CMGENREF command is used to generate a new message reference which can be used by AT+CMGSEX. Parameters: NONE Note : Message Reference. GSM 03.40 TP-Message-Reference in integer format. |
| AT+CMGENREF=? | Test command returns range of the parameters. |
| Example | AT+CMGENREF +CMGENREF:123 OK AT+CMGENREF=? OK |
| Reference | |

4.3.5.9.9 Send Multi Messages from Storage - +CMSSEX

| | |
|--|---|
| AT+CMSSEX - Send multi messages from storage | |
| AT+CMSSEX= <index> [,<index>[,...]] | +CMSSEX command is used to send messages with location value <index1>,<index2>,<index3>... from preferred message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND).The max count of index is 10 one time. Parameters: <index>- Mandatory parameter. Integer type; value in the range of location numbers supported by the associated memory and start with zero. |
| AT+CMSSEX=? | Test command returns range of the parameters. |
| Example | AT+CMGL="ALL" +CMGL: 1,"STO UNSENT","10086",, SMS info 1 +CMGL: 2,"STO UNSENT","10086",, SMS info 2 OK AT+CMSSEX=1,2,3 +CMSSEX: 124 +CMSSEX: 125 +CMS ERROR: 321 OK |
| Reference | |

4.3.5.9.10 Send Message from Storage to Multi DA - +CMSSEXM

| | |
|--|--|
| AT+CMSSEXM - Send message from storage to multi DA | |
| <p>AT+CMSSEXM= <index>, <storage>,<pb_index 1> [,<pb_index2>[,<...>]]</p> | <p>+CMSSEXM command is used to send message with location value <index> from preferred message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND).The DA is the PB index in the specified PB storage max to 10.</p> <p>Parameters:</p> <p><index>- Mandatory parameter. Integer type; value in the range of location numbers supported by the associated memory and start with zero.</p> <p><storage>- Mandatory parameter. Values reserved by the present document: "DC" -> ME dialed calls list. Capacity: 100 entries max. "MC" -> ME missed calls list. Capacity: 100 entries max. "RC" -> ME received calls list. Capacity: 100 entries max. "SM" -> SIM phonebook. Capacity: depending on SIM card "ME" -> Mobile Equipment phonebook. Capacity: 500 entries max.</p> <p><pb_index>- Mandatory parameter. Integer type value in the range of location numbers of phonebook memory.</p> |
| AT+CMSSEXM=? | Test command returns range of the parameters. |
| Example | <pre>AT+CMGL="ALL" +CMGL: 0,"STO UNSENT","10086",, CMGW0 TEST OK AT+CPBS="DC" OK AT+CPBR=1,50 +CPBR: 2,"*99#",129,"",,"0,, +CPBR: 3,"",129,"",,"0,, +CPBR: 4,"*99#",129,"",,"0,, +CPBR: 5,"10086",129,"",,"0,, OK AT+CMSSEXM=0,"DC",5,6 +CMSSEXM: 126 +CMS ERROR: 313 OK</pre> |
| Reference | |

4.3.5.9.11 SMS CMS error code enum:

SMS CMS error code enum:

| Error Code | Error information |
|------------|---------------------------------|
| 107 | DSAT_CMS_OTHER_GENERAL_PROBLEMS |
| 300 | DSAT_CMS_ME_FAILURE |
| 301 | DSAT_CMS_SERVICE_RESERVED |
| 302 | DSAT_CMS_OP_NOT_ALLOWED |
| 303 | DSAT_CMS_OP_NOT_SUPPORTED |
| 304 | DSAT_CMS_INVALID_PDU_PARAM |
| 305 | DSAT_CMS_INVALID_TXT_PARAM |
| 310 | DSAT_CMS_SIM_NOT_INSERTED |
| 311 | DSAT_CMS_SIM_PIN_REQ |
| 312 | DSAT_CMS_PHSIM_PIN_REQ |
| 313 | DSAT_CMS_SIM_FAILURE |
| 314 | DSAT_CMS_SIM_BUSY |
| 315 | DSAT_CMS_SIM_WRONG |
| 316 | DSAT_CMS_SIM_PUK_REQ |
| 317 | DSAT_CMS_SIM_PIN2_REQ |
| 318 | DSAT_CMS_SIM_PUK2_REQ |
| 320 | DSAT_CMS_MEM_FAILURE |
| 321 | DSAT_CMS_INVALID_INDEX |
| 322 | DSAT_CMS_MEM_FULL |
| 330 | DSAT_CMS_SCA_ADDR_UNKNOWN |
| 331 | DSAT_CMS_NO_SERVICE |
| 332 | DSAT_CMS_NETWORK_TIMEOUT |
| 500 | DSAT_CMS_UNKNOWN_ERR |
| 510 | DSAT_CMS_MSG_BLOCKED |

4.3.5.10 AT Commands for Status Control

4.3.5.10.1 Read ICCID from SIM card - +CICCID

| +CICCID - Read ICCID from SIM card | |
|------------------------------------|--|
| AT+CICCID | <p>This command is used to Read the ICCID from SIM card</p> <p>Responses +ICCID: <ICCID> OK</p> <p>ERROR +CME ERROR: <err></p> <p>Defined values <ICCID> Integrate circuit card identity, a standard ICCID is a 20-digit serial number of the SIM card, it presents the publish state, network code, publish area, publish date, publish manufacture and press serial number of the SIM card.</p> |
| AT+CICCID=? | <p>Test Command :</p> <p>OK</p> |
| Example | <pre>AT+CICCID +ICCID: 898600700907A6019125 OK AT+CICCID=? OK AT+CICCID ? (not support read command) ERROR AT+CICCID = (not support write command) ERROR</pre> |

4.3.5.10.2 Times remain to input SIM PIN/PUK - +SPIC

| +SPIC - Times remain to input SIM PIN/PUK | |
|---|--|
| AT+SPIC | <p>This command is used to inquire times remain to input SIM PIN/PUK.</p> <p>Responses +SPIC: <pin1>,<puk1>,<pin2>,<puk2> OK</p> <p>Defined values <pin1> Times remain to input PIN1 code. <puk1> Times remain to input PUK1 code. <pin2> Times remain to input PIN2 code. <puk2> Times remain to input PUK2 code.</p> |
| AT+SPIC=? | <p>Test Command :</p> <p>OK</p> |
| Example | <p><i>AT+SPIC</i> <i>+SPIC: 3,10,0,10</i> <i>OK</i></p> <p><i>AT+SPIC=?</i> <i>OK</i></p> <p><i>AT+SPIC?</i> (not support read command) <i>ERROR</i></p> <p><i>AT+SPIC=0,0,0,0</i> (not support write command) <i>ERROR</i></p> |

4.3.5.10.3 Get service provider name from SIM - +CSPN

| +CSPN - Get service provider name from SIM | |
|--|---|
| AT+CSPN? | <p>This command is used to get service provider name from SIM card.</p> <p>Responses +CSPN: <spn>,<display mode> OK</p> <p>ERROR +CME ERROR: <err></p> <p>Defined values <spn> String type; service provider name on SIM <display mode> 0 – doesn't display PLMN. Already registered on PLMN. 2 – display PLMN</p> <p>Note: not support in CDMA only mode</p> |
| AT+CSPN=? | <p>Test Command :</p> <p>OK</p> |
| Example | <pre> AT+CSPN? +CSPN: "CMCC",0 OK AT+CSPN=? OK AT+CSPN (not support Execution command) ERROR AT+CSPN=" ",0 (not support write command) ERROR </pre> |

4.3.5.10.4 Set CSQ report - +AUTOCSQ

| +AUTOCSQ - Set CSQ report | |
|-------------------------------|---|
| AT+AUTOCSQ= <auto> ,<mode> | <p>This command is used to enable or disable automatic report CSQ information, when automatic report enabled, the module reports CSQ information every five seconds or only after <rssi> or <ber> is changed, the format of automatic report is "+CSQ:<rssi>,<ber>".</p> <p>Responses OK</p> <p>Defined values <auto> 0 – disable automatic report 1 – enable automatic report <mode> 0 – CSQ automatic report every five seconds 1 – CSQ automatic report only after <rssi> or <ber> is changed</p> <p>NOTE: If the parameter of <mode> is omitted when executing write command, <mode> will be set to default value.</p> |
| AT+AUTOCSQ? | <p>Read command:</p> <p>+AUTOCSQ: 1,1 OK</p> |
| AT+AUTOCSQ=? | <p>Test command reports the the range of setting values for the parameter <auto> and <mode></p> <p>+AUTOCSQ: (list of supported<auto>s),(list of supported<mode>s) OK</p> |
| Example | <p>AT+AUTOCSQ=1,1 OK +CSQ: 23,0 (when <rssi> or <ber> changing)</p> <p>AT+AUTOCSQ? +AUTOCSQ: 1,1 OK</p> <p>AT+AUTOCSQ=? +AUTOCSQ: (0-1),(0-1) OK</p> <p>AT+AUTOCSQ OK</p> |

4.3.5.10.5 Power down the module- +CPOF

| | |
|--------------------------------------|--|
| +CPOF - Power down the module | |
| AT+CPOF | This command is used to power off the module. Once the AT+CPOF command is executed, The module will store user data and deactivate from network, and then shutdown. Responses OK |
| AT+CPOF=? | Test Command : OK |
| Example | <p><i>AT+CPOF</i> <i>OK</i></p> <p><i>AT+CPOF=?</i> <i>OK</i></p> <p><i>AT+CPOF?</i> (not support read command) <i>ERROE</i></p> <p><i>AT+CPOF=</i> (not support write command) <i>ERROE</i></p> |

4.3.5.10.6 Reset the module - +CRESET

| | |
|-----------------------------------|--|
| +CRESET - Reset the module | |
| AT+ CRESET | This command is used to reset the module. Responses OK |
| AT+ CRESET=? | Test Command : OK |
| Example | <p><i>AT+ CRESET</i> <i>OK</i></p> <p><i>AT+ CRESET = ?</i> <i>OK</i></p> <p><i>AT+ CRESET?</i> (not support read command) <i>ERROE</i></p> <p><i>AT+ CRESET=</i> (not support write command) <i>ERROE</i></p> |

4.3.5.10.7 Set IMEI for the module - +SIMEI

| +SIMEI - Set IMEI for the module | |
|----------------------------------|--|
| AT+SIMEI=<imei> | <p>This command is used to set the module's IMEI value.</p> <p>Responses</p> <p>OK</p> <p>ERROR</p> <p>+CME ERROR: <err></p> <p>Defined values</p> <p><imei></p> <p>The 15-digit IMEI value.</p> <p>NOTE: IMEI can be written only once</p> |
| AT+SIMEI? | <p>Read command:</p> <p>+SIMEI: <imei></p> <p>OK</p> |
| AT+SIMEI=? | <p>Test Command :</p> <p>OK</p> |
| Example | <p><i>AT+SIMEI=357396012183170</i></p> <p><i>OK</i></p> <p><i>AT+SIMEI?</i></p> <p><i>+SIMEI: 357396012183170</i></p> <p><i>OK</i></p> <p><i>AT+SIMEI=?</i></p> <p><i>OK</i></p> <p><i>AT+SIMEI (not support Execution command)</i></p> <p><i>ERROE</i></p> |

4.3.5.10.8 Set RSSI delta change threshold - +CSQDELTA

| +CSQDELTA - Set RSSI delta change threshold | |
|---|---|
| AT+CSQDELTA =<delta> | <p>This command is used to set RSSI delta threshold for signal strength reporting.</p> <p>Responses OK</p> <p>Defined values <delta> Range: from 0 to 5.</p> <p>Note: not support in CDMA only</p> |
| AT+CSQDELTA? | <p>Read command:</p> <p>+CSQDELTA: <delta> OK</p> |
| AT+CSQDELTA=? | <p>Test Command :</p> <p>+CSQDELTA: (list of supported <delta>s) OK</p> |
| AT+CSQDELTA | <p>Execution Command :</p> <p>Set default value (<delta>=5) : OK</p> |
| Example | <p>AT+CSQDELTA=3 OK</p> <p>AT+CSQDELTA? +CSQDELTA: 3 OK</p> <p>AT+CSQDELTA=? +CSQDELTA: (0-5) OK</p> <p>AT+CSQDELTA OK</p> |

4.3.5.11 AT Commands for Heartbeat

4.3.5.11.1 Set server net config - \$HTARG

| | |
|--|--|
| <p>\$HTARG- Set heartbeat server net ip address and port</p> | |
| <p>AT\$HTARG =<ip>,<port>,<type>,<data> sendData></p> | <p>This command is used to set server's ip address ,port number, network type, and send sendData></p> <p>Responses OK</p> <p>Defined values <ip> Range: ipv4 address <port> Range:1-65536 <type> 0:tcp 1:udp <sendData> string max length:64, no quote, Can only contain hexadecimal Numbers 00200241014cbbbd3138316666353532343539633535386268656c6c6f2105</p> |
| <p>AT\$HTARG?</p> | <p>Read command: HTARG: <ip>,<port>, <type>,<sendData> OK</p> |
| <p>Example</p> | <p>AT\$HTARG = "182.150.28.206",6800, 1, 00200241014cbbbd3 OK AT\$HTARG? \$HTARG: (182.150.28.206),(6800) ,(1),(00200241014cbbbd3) OK</p> |

4.3.5.11.2 Set timer and connect server - \$HEART

| | |
|--|--|
| \$HEART - Set heartbeat server net ip address and port | |
| AT\$HEART=<P1>,<P2> | <p>This command is used to set server's ip address and port number.</p> <p>Responses OK</p> <p>Defined values <P1> Range: 0-3 0---close heartbeat 1---send heartbeat always 2---send heartbeat only sleep <port> Range:1-10 Send the heartbeat's timer interval</p> |
| AT\$HEART=? | <p>Test command: \$HEART:P1(0-2) P2(1-10)</p> |
| AT\$HEART? | <p>Read command: \$HEART: <P1>,<P2> OK</p> |
| Example | <pre>AT\$HTARG = "182.150.28.206",6800, 1, 00200241014cbbbdac3 OK AT\$HEART=1,4 OK</pre> |

4.3.5.12 GPIO Control

4.3.5.12.1 Set the direction of specified GPIO - +CGDRT

| +CGDRT - Set the direction of specified GPIO | |
|---|---|
| <p>AT+CGDRT= <gpio_num> , <gpio_io></p> | <p>This command is used to set the specified GPIO to input or output state. If setting to input state, then this GPIO can not be set to high or low value.</p> <p>Responses OK</p> <p>Defined values <gpio_num> 0 - 80 < gpio_io > 0 - in 1 - out</p> |
| <p>AT+ CGDRT =?</p> | <p>Test Command : + CGDRT: (list of supported< gpio_num >s),(list of supported< gpio_io >s) OK</p> |
| <p>Example</p> | <p>AT+ CGDRT =25, 1 OK</p> <p>AT+ CGDRT = ? +CGDRT: (0-80),(0-1) OK</p> <p>AT+ CGDRT? + CGDRT:25, 1 OK</p> <p>AT+ CGDRT OK</p> |

4.3.5.12.2 Set the value of specified GPIO - +CGSETV

| +CGSETV - Set the value of specified GPIO | |
|--|--|
| AT+ CGSETV = <gpio_num> , < gpio_hl > | This command is used to set the value of the specified GPIO to high or low. Responses OK Defined values <gpio_num> 0-80 <gpio_hl> 0 – low 1 – high |
| AT+ CGSETV =? | Test Command : + CGSETV: (list of supported< gpio_num >s),(list of supported< gpio_ hl >s) OK |
| Example | <pre> AT+ CGSETV=25,1 OK AT+ CGSETV = ? +CGSETV: (0-80),(0-1) OK AT+ CGSETV ? +CGSETV: 25,1 ERROE AT+ CGSETV OK </pre> |

4.3.5.12.3 Get the value of specified GPIO - +CGGETV

| + CGGETV - Get the value of specified GPIO | |
|--|--|
| AT+CGGETV = <gpio_num> | <p>This command is used to get the value (high or low) of the specified GPIO.</p> <p>Responses +CGGETV: <gpio_num>,<gpio_hl> OK</p> <p>Defined values <gpio_num> 0-80 <gpio_hl> 0 – low 1 – high</p> |
| AT+ CGGETV =? | <p>Test Command :</p> <p>+ CGDRT: list of supported< gpio_num >s OK</p> |
| Example | <p><i>AT+CGGETV=25</i> <i>+CGGETV: 25,0</i> <i>OK</i></p> <p><i>AT+ CGGETV?</i> <i>+CGGETV: 25</i> <i>OK</i></p> <p><i>AT+ CGGETV =?</i> <i>+CGGETV: (0-80)</i> <i>OK</i></p> <p><i>AT+ CGGETV</i> <i>OK</i></p> |

4.3.5.12.4 Flight mode control - +CGFLY

| +CGFLY - Flight mode control | |
|------------------------------|--|
| AT+ CGFLY =<mode> | <p>This command is used to set Flight mode state to enable or disable</p> <p>Responses OK</p> <p>Defined values < mode > 0 – disable 1 – enable</p> |
| AT+ CGFLY? | <p>Read command:</p> <p>+ CGFLY: < mode > OK</p> |
| AT+ CGFLY =? | <p>Test Command :</p> <p>+ CGFLY: (list of supported < mode >s) OK</p> |
| Example | <pre>AT+CGFLY=1 OK AT+ CGFLY? + CGFLY: 1 OK AT+ CGFLY=? + CGFLY: (0-1) OK AT+ CGFLY OK</pre> |

4.3.5.12.5 Network LED control - +CGNETLED

| + CGNETLED - Network LED control | |
|--------------------------------------|--|
| <p>AT+CGNETLED =<mode></p> | <p>This command is used to set the Network LED state to enable or disable</p> <p>Responses OK</p> <p>Defined values < mode > 0 – disable 1 – enable</p> |
| <p>AT+CGNETLED?</p> | <p>Read command:</p> <p>+ CGNETLED: < mode > OK</p> |
| <p>AT+ CGNETLED =?</p> | <p>Test Command :</p> <p>+ CGNETLED: (list of supported < mode >s) OK</p> |
| <p>Example</p> | <p><i>AT+ CGNETLED =1</i> <i>OK</i></p> <p><i>AT+ CGNETLED?</i> <i>+ CGNETLED: 1</i> <i>OK</i></p> <p><i>AT+ CGNETLED =?</i> <i>+ CGNETLED: (0-1)</i> <i>OK</i></p> <p><i>AT+ CGNETLED</i> <i>OK</i></p> |

4.3.5.13 Lock band and cell

4.3.5.13.1 Lock to specified band - +CBAND

| | |
|--------------------------------------|--|
| +CBAND - Set current available band. | |
| +CBAND= <net_mode>,<value> | <p>This command is used to set current available band.</p> <p>Responses OK ERROR</p> <p>Defined values < net_mode > 0 - POS 1 - LTE 2 - TDS-CDMA</p> <p><value> 0 - Unlock specified network's band other - Available band</p> <p>Available bands for POS :</p> <ul style="list-style-type: none"> 1 GSM_DCS_1800 2 GSM_EGSM_900 3 GSM_PGSM_900 4 GSM_450 5 GSM_480 6 GSM_750 7 GSM_850 8 GSM_RGSM_900 9 GSM_PCS_1900 10 WCDMA_IMT_2000 11 WCDMA_PCS_1900 12 WCDMA_III_1700 13 WCDMA_IV_1700 14 WCDMA_850 15 WCDMA_800 16 WCDMA_VII_2600 17 WCDMA_VIII_900 18 WCDMA_IX_1700 <p>Available bands for LTE :</p> <ul style="list-style-type: none"> 1 BAND_1 2 BAND_3 3 BAND_7 4 BAND_8 5 BAND_20 6 BAND_38 7 BAND_39 8 BAND_40 9 BAND_41 <p>Available bands for TDS :</p> <ul style="list-style-type: none"> 1 BAND_A 2 BAND_B 3 BAND_C 4 BAND_D 5 BAND_E 6 BAND_F |

| | |
|-----------|---|
| AT+CBAND? | Read command: + CBAND: <pos>,<lte>,<tds> OK |
|-----------|---|

4.3.5.13.2 Lock to specified cell - +CBCCH

| | |
|---|---|
| +CBCCH - Set current available cell.. Effective after reboot. | |
| AT+CBCCH=<mode1>,<arfcn> or AT+CBCCH=<net_type>,<mode2> | This command is used to lock or unlock current available cell.This only for GSM. (Unsupport now) Responses OK ERROR Defined values <mode1> 1 Lock cell to arfcn. <arfcn> Arfcn for GSM.The arfcn must available. <net_type> 0 GSM <mode2> 0 Unlock cell Example: Lock GSM to arfcn(850): AT+CBCCH=1,850 OK AT+CBCCH? +CBCCH:0,1,850 OK Unlock GSM cell: AT+CBCCH=0,0 OK AT+CBCCH? +CBCCH:0,0 OK |

| | |
|---|---|
| <pre>AT+CBCCH=<mode1>,<uarfcn> or AT+CBCCH=<net_type>,<mode2>]</pre> | <p>This command is used to lock or unlock current available cell.This only for WCDMA.</p> <p>Responses OK ERROR</p> <p>Defined values <mode1> 1 Lock cell to uarfcn. <uarfcn> Uarfcn for WCDMA.The uarfcn must available. <net_type> 1 WCDMA <mode2> 0 Unlock cell</p> <p>Example: Lock WCDMA to uarfcn(850): AT+CBCCH=1,850 OK AT+CBCCH? +CBCCH:1,1,850 OK</p> <p>Unlock WCDMA cell: AT+CBCCH=1,0 OK AT+CBCCH? +CBCCH:1,0 OK</p> |
|---|---|

| | |
|---|--|
| <pre>AT+CBCCH=<mode1>,<earfcn>,<pci> or AT+CBCCH=<net_type>,<mode2>]</pre> | <p>This command is used to lock or unlock current available cell. This only for GSM. This must be LTE only mode.</p> <p>Responses OK ERROR</p> <p>Defined values <mode1> 1 Lock cell to earfcn and pci. <earfcn> Earfcn for LTE. <pci> Pci for LTE. <net_type> 2 LTE <mode2> 0 Unlock cell</p> <p>Example: Lock LTE to earfcn(850) and pci(430): AT+CBCCH=1,850,430 OK AT+CBCCH? +CBCCH:2,1,850,430 OK</p> <p>Unlock LTE cell: AT+CBCCH=2,0 OK AT+CBCCH? +CBCCH:2,0 OK</p> |
|---|--|

| | |
|---|--|
| <pre>AT+CBCCH=<mode1>,<lock_type>,<freq_or_cpid> or AT+CBCCH=<net_type>,<mode2></pre> | <p>This command is used to lock or unlock current available cell. This only for TDS-CDMA.</p> <p>Responses OK ERROR</p> <p>Defined values <mode1> 1 Lock cell to freq or cpid. <lock_type> 0 : Lock to freq. 1 : Lock to cpid. <freq_or_cpid> Freq or cpid for TDS-CDMA. <net_type> 3 TDS-CDMA <mode2> 0 Unlock cell</p> <p>Example: Lock TDS-CDMA to freq(850) : AT+CBCCH=1,0,850 OK AT+CBCCH? +CBCCH:3,1,850,0 OK Lock TDS-CDMA to cpid(430) : AT+CBCCH=1,1,430 OK AT+CBCCH? +CBCCH:3,1,0,430 OK Unlock TDS-CDMA cell: AT+CBCCH=3,0 OK AT+CBCCH? +CBCCH:3,0 OK</p> |
|---|--|

| | |
|-------------------|--|
| <p>AT+CBCCH=?</p> | <p>Test command:</p> <pre>+CBCCH:<net>,<net_word> <nmr_1>,<nmr_2>...<nmr_n> <nmr_1>,<nmr_2>...<nmr_n> Responses OK Responses</pre> <p>Defined values</p> <pre><net> Current net mode 0 GSM 1 WCDMA 2 LTE 3 TDS-CDMA</pre> <p>Nearby cell information for GSM</p> <pre><arfcn>,<mcc_mnc>,<lac>,<cell_id></pre> <p>Nearby cell information for WCDMA</p> <pre><uarfcn></pre> <p>Nearby cell information for LTE</p> <pre><earfcn>,<pci>,<rssi></pre> <p>Nearby cell information for TDS-CDMA</p> <pre><uarfcn>,<cell_parameter_id>,<rscp></pre> |
| <p>AT+CBCCH?</p> | <p>Read Command :</p> <pre>+CBCCH:<net><mode>,<arg1>,...<argn> OK</pre> <pre><net> Current network mode 0 GSM 1 WCDMA 2 LTE 3 TDS-CDMA</pre> <pre><mode> lock mode 0 unlock 1 lock</pre> <pre><arg> Only for lock arg for WCDMA <uarfcn> Current lock uarfcn arg for LTE <earfcn> Current lock earfcn <pci> Current lock pci arg for TDS <freq> Current lock freq <cpid> Current lock cpid</pre> |

4.3.5.13.3 Get nearby cell information - +CELLINFO

| +CELLINFO - Get nearby cell information | |
|---|--|
| AT+CELLINFO? | <p>Read command:</p> <p>+CELLINFO:<net_mode>,<net> <n timer_1>...<n timer_n> <n timer_1>...<n timer_n> </p> <p>OK</p> <p><net_mode> Current network mode 0 GSM 1 TDS-CDMA 2 WCDMA 3 CDMA 4 LTE</p> <p>Nearby cell information for GSM For current and nearby cell <lac>,<cell_id>,<rsqi></p> <p>Nearby cell information for TDS-CDMA For current cell: <lac>,<cell_id>,<rsqi> For nearby cell: <uarfcn>,<cpid>,<rsqi></p> <p>Nearby cell information for WCDMA For current cell: <lac>,<cell_id>,<rsqi>,<ecio> For nearby cell: <uarfcn>,<psc>,<rsqi>,<ecio></p> <p>Nearby cell information for CDMA Only for current cell <sid>,<n timer_n>,<bid>,<refpn></p> <p>Nearby cell information for LTE For current cell: <tac>,<cell_id>,<rsqi> For nearby cell: <earfcn>,<pci>,<rsqi></p> |

4.3.5.14 AT Commands for LYNQ FTP

4.3.5.14.1 Set FTP server port - +CFTPPORT

| | |
|----------------------------------|--|
| AT+CFTPPORT Set FTP server port. | |
| AT+CFTPPORT= <port> | This command is used to set FTP server port. <port> The FTP server port, from 1 to 65535, and default value is 21. Responses OK ERROR |
| AT+ CFTPPORT? | +CFTPPORT: <port> OK |
| AT+ CFTPPORT =? | +CFTPPORT: (list of supported <port>s) OK |
| Example | AT+CFTPPORT=21 OK AT+CFTPPORT? +CFTPPORT:21 OK AT+CFTPPORT=? +CFTPPORT: (1-65535) OK |

4.3.5.14.2 Set FTP mode - +CFTPMode

| | |
|---------------------------|--|
| AT+CFTPMode Set FTP mode. | |
| AT+CFTPMode= <mode> | This command is used to set FTP passive/proactive mode. Default is passive mode. <mode> The FTP access mode:(now only support 0 – passive mode) 0 – passive mode. 1 – proactive mode. Responses OK +CME ERROR |
| AT+ CFTPMode? | +CFTPMode: <mode> OK |

| | |
|---------------|--|
| AT+CFTPMODE=? | +CFTPMODE: (list of supported <mode>s) OK |
| Example | AT+CFTPMODE=1 OK AT+CFTPMODE? +CFTPMODE: 1 OK AT+CFTPMODE=? +CFTPMODE: (0,1) OK |

4.3.5.14.3 Set FTP type - +CFTPTYPE

| | |
|--------------------------|--|
| AT+CFTPTYPE Set FTP type | |
| AT+CFTPTYPE= <type> | This command is used to set FTP type. Default is binary type. <type> The FTP type: I – binary type. A – ASCII type. Responses OK +CME ERROR |
| AT+ CFTPTYPE? | +CFTPPORT: < type > OK |
| AT+ CFTPTYPE =? | +CFTPPORT: (list of supported < type >s) OK |
| Example | AT+CFTPTYPE="A" OK AT+CFTPTYPE? +CFTPTYPE: A OK AT+CFTPTYPE=? +CFTPTYPE: (A,I) OK |

4.3.5.14.4 Set FTP server domain name or IP address - +CFTPSERV

| | |
|--|---|
| AT+CFTPSERV Set FTP server domain name or IP address | |
| AT+ CFTPSERV = < address > | <p>This command is used to set FTP server domain name or IP address.</p> <p><address></p> <p>The FTP server domain name or IP address. The maximum length is 100.</p> <p>Responses</p> <p>OK</p> <p>ERROR</p> |
| AT+ CFTPSERV? | + CFTPSERV: < address > OK |
| AT+ CFTPSERV =? | +CFTPSERV: "<address>" OK |
| Example | <p>AT+CFTPSERV="www.mydomain.com"</p> <p>OK</p> <p>AT+CFTPSERV?</p> <p>+CFTPSERV: "www.mydomain.com"</p> <p>OK</p> <p>AT+CFTPSERV=?</p> <p>+CFTPSERV: "ADDRESS"</p> <p>OK</p> <p>AT+CFTPSERV="10.0.0.127"</p> <p>OK</p> |

4.3.5.14.5 Set user name for FTP access - +CFTPUN

| | |
|--|---|
| AT+CFTPUN Set user name for FTP access | |
| AT+CFTPUN= “<name>” | <p>This command is used to set user name for FTP server access.</p> <p><name></p> <p>The user name for FTP server access. The maximum length is 30.</p> <p>Responses</p> <p>OK</p> <p>ERROR</p> |
| AT+ CFTPUN? | +CFTPUN: “NAME” OK |
| AT+ CFTPUN =? | OK |
| Example | <p>AT+CFTPUN=”myname”</p> <p>OK</p> <p>AT+CFTPUN=”anonymous”</p> <p>OK</p> <p>AT+CFTPUN?</p> <p>+CFTPUN: “myname”</p> <p>OK</p> <p>AT+CFTPUN=?</p> <p>+CFTPUN: ”NAME”</p> <p>OK</p> |

4.3.5.14.6 Set user password for FTP access - +CFTPPW

| | |
|---|--|
| AT+ CFTPPW Set user password for FTP access | |
| AT+CFTPPW= “< password>” | <p>This command is used to set user password for FTP server access.</p> <p>< password></p> <p>The user password for FTP server access. The maximum length is 40.</p> <p>Responses</p> <p>OK</p> <p>ERROR</p> |
| AT+ CFTPPW? | + CFTPPW: “password” OK |
| AT+ CFTPPW =? | OK |
| Example | <p>AT+CFTPPW=”mypass”</p> <p>OK</p> <p>AT+CFTPPW?</p> <p>+CFTPPW: “mypass”</p> <p>OK</p> <p>AT+CFTPPW=?</p> <p>+CFTPPW: ”mypass”</p> <p>OK</p> |

4.3.5.14.7 Get a file from FTP server to EFS - +CFTPGETFILE

| | |
|---|---|
| AT+CFTPGETFILE Get a file from FTP server to EFS | |
| AT+CFTPGETFILE= "<remote_path>"," <local_path>" [,<rest_size>] | <p>This command is used to download a file from FTP server to module EFS.</p> <p><remote_path > The remote file path. The maximum length is 512.</p> <p><local_path > The esf file path. The maximum length is 512.</p> <p><rest_size> The value for FTP "REST" command which is used for broken transfer when transferring failed last time. The range is from 0 to 2147483647.</p> <p><err> The error code of FTP operation.</p> <p><length> The size of the download file</p> <p>Responses OK +CFTPGETFILE: SUCCESS,<length> ERROR +CFTPGETFILE: FAIL, <err></p> |
| AT+CFTPGETFILE? | +CFTPGETFILE:"remote_path", "local_path", <rest_size> OK |
| AT+CFTPGETFILE=? | OK |
| Example | <pre>AT+CFTPGETFILE="/pub/mydir/test1.txt", "/mydir/test1.txt" OK ... +CFTPGETFILE: SUCCESS,10245 AT+CFTPGETFILE="/pub/mydir/test1.txt", "/mydir/test1.txt",10 OK ... +CFTPGETFILE: SUCCESS,10235</pre> |

4.3.5.14.8 Upload a file from module EFS to FTP server - +CFTPPUTFILE

| | |
|---|--|
| AT+CFTPPUTFILE Upload a file from module EFS to FTP server | |
| AT+ CFTPPUTFILE = "<remote_path>"," <local_path>" [,<rest_size>] | <p>This command is used to upload a file from module EFS to FTP server.</p> <p><remote_path > The remote file path. The maximum length is 512.</p> <p><local_path > The esf file path. The maximum length is 512.</p> <p><rest_size> The value for FTP "REST" command which is used for broken transfer when transferring failed last time. The range is from 0 to 2147483647.</p> <p><err> The error code of FTP operation.</p> <p>Responses + CFTPPUTFILE: SUCCESS ERROR OK + CFTPPUTFILE: FAIL ,<err></p> |
| AT+CFTPPUTFILE? | +CFTPGETFILE:"remote_path", "local_path", <rest_size> OK |
| AT+CFTPPUTFILE=? | OK |
| Example | <p>AT+ CFTPPUTFILE ="/pub/mydir/test1.txt", "/mydir/test1.txt" OK ... + CFTPPUTFILE: SUCCESS</p> <p>AT+ CFTPPUTFILE ="/pub/mydir/test1.txt", "/mydir/test1.txt",10 OK ... + CFTPPUTFILE: SUCCESS</p> |

4.3.5.14.9 Get a file from FTP server and output it to SIO - +CFTPGET

| AT+CFTPGET Get a file from FTP server and output it to SIO | |
|--|--|
| AT+ CFTPGET = "<remote_path>" [,<rest_size>] | This command is used to get a file from FTP server and output it to serial port. <remote_path > The remote file path. The maximum length is 512. <rest_size> The value for FTP "REST" command which is used for broken transfer when transferring failed last time. The range is from 0 to 2147483647. <err> The error code of FTP operation. <len> Every time the length of the read from the server <length> The size of the download file Responses OK +CFTPGET: DATA,<len> ... +CFTPGET: DATA, <len> ... +CFTPGET: SUCCESS, <length> +CFTPGET:FAIL, <err> ERROR |
| AT+ CFTPGET? | +CFTPGETFILE:"remote_path", <rest_size> OK |
| AT+ CFTPGET=? | OK |
| Example | AT+CFTPGET="/pub/mydir/test1.txt", 10 OK +CFTPGET: DATA, 1020 ... +CFTPGET: DATA, 1058 +CFTPGET: SUCCESS,1246792 |

4.3.5.14.10 Upload the DATA from SIO to FTP server - +CFTPPUT

| AT+CFTPPUT Upload the DATA from SIO to FTP server | |
|--|---|
| AT+ CFTPPUT = "<remote_path>" [,<rest_size>] | <p>This command is used to upload the DATA from serial port to FTP server as a file . Single <Ctrl+Z> means end of the FTP data. <Ctrl+Z> is 0x1A.</p> <p>< remote_path > The remote file path. The maximum length is 512.</p> <p><rest_size> The value for FTP “REST” command which is used for broken transfer when transferring failed last time. The range is from 0 to 2147483647.</p> <p><err> The error code of FTP operation.</p> <p>Responses</p> <p>+CFTPPUT: BEGIN OK +CME ERROR [+CFTPPUT: BEGIN] +CFTPPUT: FAIL,<err_code> ERROR</p> |
| AT+ CFTPPUT? | + CFTPPUT:“remote_path”, <rest_size> OK |
| AT+ CFTPPUT =? | OK |
| Example | AT+CFTPPUT="/pub/mydir/test1.txt", 20 +CFTPPUT: BEGIN<Ctrl+Z> OK |

4.3.5.14.11 List the items in the directory on FTP server - +CFTPLIST

| | |
|---|--|
| AT+CFTPLIST List the items in the directory on FTP server | |
| AT+CFTPLIST= "<dir>" | <p>This command is used to list the items in the specified directory on FTP server</p> <p><dir></p> <p>The length of data reported</p> <p><err></p> <p>The result code of the listing</p> <p>Responses</p> <p>OK</p> <p>+CFTPLIST:</p> <p>...]</p> <p>+CFTPLIST: SUCCESS</p> <p>CFTPLIST:FAIL,<err></p> <p>ERROR</p> |
| AT+ CFTPLIST? | +CFTPGETFILE:"<dir>" OK |
| AT+ CFTPGET=? | OK |
| Example | <p>AT+CFTPLIST="/testd"</p> <p>OK</p> <p>+CFTPLIST: DATA,193</p> <p>drw-rw-rw- 1 user group 0 Sep 1 18:01 .</p> <p>drw-rw-rw- 1 user group 0 Sep 1 18:01 ..</p> <p>-rw-rw-rw- 1 user group 2017 Sep 1 17:24 19800106_000128.jpg</p> <p>+CFTPLIST: SUCCESS</p> |

4.3.5.14.12 Create a new directory on FTP server - +CFTPMKD

| | |
|---|--|
| AT+CFTPMKD Create a new directory on FTP server | |
| AT+ CFTPMKD = ”<dir>” | <p>This command is used to create a new directory on the FTP server. The maximum length of the full path name is 256.</p> <p><dir></p> <p>The directory to be created.</p> <p><err></p> <p>The result code of the listing</p> <p>Responses</p> <p>OK</p> <p>+CFTPMKD:FAIL,<err></p> <p>ERROR</p> |
| AT+ CFTPMKD? | + CFTPMKD:”<dir> |
| AT+ CFTPMKD =? | OK |
| Example | AT+CFTPMKD=”/testdir” OK |

4.3.5.14.13 Delete a directory on FTP server - +CFTPRMD

| | |
|---|--|
| AT+CFTPRMD Delete a directory on FTP server | |
| AT+ CFTPRMD = ”<dir>” | <p>This command is used to delete directory on the FTP server.</p> <p><dir></p> <p>The directory to be deleted.</p> <p><err></p> <p>The result code of the listing</p> <p>Responses</p> <p>OK</p> <p>+ CFTPRMD:FAIL,<err></p> <p>ERROR</p> |
| AT+ CFTPRMD? | + CFTPRMD:”<dir> |
| AT+ CFTPRMD =? | OK |
| Example | AT+ CFTPRMD =”/testdir” OK |

4.3.5.14.14 Delete a file on FTP server - +CFTPDELE

| | |
|---|--|
| AT+CFTPDELE Delete a file on FTP server | |
| AT+ CFTPDELE = ”<filename>” | <p>This command is used to delete file on the FTP server.</p> <p>< filename > The file to be deleted.</p> <p><err> The result code of the listing</p> <p>Responses</p> <p>OK</p> <p>+ CFTPDELE:FAIL,<err></p> <p>ERROR</p> |
| AT+ CFTPDELE? | + CFTPDELE:“filename” OK |
| AT+ CFTPDELE =? | OK |
| Example | AT+ CFTPDELE =”/testdir/test.txt” OK |

4.3.5.14.15 Read file from local file to SIO - + CFTPRDFILE

| | |
|---|---|
| AT+CFTPRDFILE read file from local file to SIO | |
| AT+ CFTPRDFILE = "<local_file>" ,<read_pos>,<read_len> | <p>This command is used to read file from local file to SIO.</p> <p>< local_file > The local file name. The maximum length is 512.</p> <p><read_pos > Start read file position,The range is from 0 to 2147483647.</p> <p><read_len> Read file length,The range is from 0 to 2147483647.</p> <p><len> Every time the length of the read from the server</p> <p><length> The size of the download file</p> <p>Responses + CFTPRDFILE:DATA,<len> + CFTPRDFILE:SUCCESS,<length> + CFTPRDFILE: FAIL,<err_code></p> |
| AT+ CFTPRDFILE? | +CFTPRDFILE: "local_file",read_pos,read_len |
| AT+ CFTPRDFILE=? | +CFTPRDFILE: ,(0-2147483647),(0-2147483647) OK |
| Example | <pre>at+CFTPRDFILE="/p.txt",10,100 +CFTPRDFILE:DATA,100 aa aaaaa aaaaaaaaaaaaaaaa +CFTPRDFILE:SUCCESS,100</pre> |

4.3.5.14.16 Unsolicited FTP Codes (Summary of CME ERROR codes)

| Code of <err> | Description |
|---------------|---|
| 201 | Unknown error for FTP |
| 202 | FTP task is busy |
| 203 | Failed to resolve server address |
| 204 | FTP timeout |
| 205 | Failed to read file |
| 206 | Failed to write file |
| 207 | Not allowed in current state |
| 208 | Failed to login |
| 209 | Failed to logout |
| 210 | Failed to transfer data |
| 211 | FTP command rejected by server |
| 212 | Memory error |
| 213 | Invalid parameter |
| 214 | Network error |
| 215 | Failed to connect socket |
| 216 | Failed to send data using socket |
| 217 | Failed to receive data using socket |
| 218 | Failed to verify user name and password |
| 219 | Socket connect timeout |
| 220 | File does not exist |

4.3.5.15 AT Commands for LYNQ TCP/IP

4.3.5.15.1 Select TCP/IP timeout value - + CIPTIMEOUT

| | |
|--|---|
| AT+ CIPTIMEOUT Select TCP/IP timeout value | |
| <p>AT+CIPTIMEOUT= < netopen_timeout >, < cipopen_timeout >, < cipsend_timeout ></p> | <p>This command is used to set timeout value for AT+NETOPEN/AT+CIPOPEN/AT+CIPSEND, before execute all of them.</p> <p>< netopen_timeout > Timeout value for AT+NETOPEN, from 3000 to 120000 milliseconds, and default value is 120000.</p> <p>< cipopen_timeout > Timeout value for AT+CIPOPEN, from 3000 to 120000 milliseconds, and default value is 120000.</p> <p>< cipsend_timeout > Timeout value for AT+CIPSEND, from 3000 to 120000 milliseconds, and default value is 120000.</p> <p>Responses OK ERROR</p> |
| AT+CIPTIMEOUT? | +CIPTIMEOUT: <netopen_timeout>, <cipopen_timeout>, <cipsend_timeout> OK |
| AT+CIPTIMEOUT=? | + CIPTIMEOUT: (list of supported < netopen_timeout >),(list of supported < cipopen_timeout >),(list of supported < cipsend_timeout >) OK |
| Example | AT+CIPTIMEOUT=30000,20000,40000 OK AT+CIPTIMEOUT? +CIPTIMEOUT: 30000,20000,40000 OK AT+CIPTIMEOUT=? +CIPTIMEOUT: (3000-120000),(3000-120000),(3000-120000) OK |

4.3.5.15.2 Select TCP/IP application mode - + CIPMODE

| AT+CIPMODE Select TCP/IP application mode | |
|---|--|
| AT+CIPMODE= <mode> | <p>This command is used to select transparent mode (data mode) or non-transparent mode (command mode).</p> <p><mode></p> <p>Indicates to select transparent mode or non-transparent mode. from 0 to 1, and default value is 0.</p> <p>0: non-transparent mode 1: transparent mode</p> <p>Responses OK ERROR</p> |
| AT+CIPMODE? | <p>+ CIPMODE: <mode></p> <p>OK</p> |
| AT+CIPMODE=? | <p>+ CIPMODE: (list of supported<mode>s)</p> <p>OK</p> |
| Example | <p>AT+CIPMODE=1 OK AT+CIPMODE? + CIPMODE: 1 OK AT+CIPMODE=? + CIPMODE: (0-1) OK</p> |

4.3.5.15.3 Open network - + NETOPEN

| | |
|--------------------------------|---|
| AT+NETOPEN Open packet network | |
| AT+NETOPEN | <p>This command is used to open packet network, before execute this command we have to execute AT+CIPTIMEOUT command first.</p> <p><err></p> <p>Indicate the result of operation.</p> <p> SUCCESS: is success</p> <p> FAIL: is failure</p> <p>Responses</p> <p>OK</p> <p>+NETOPEN: <err></p> <p>ERROR</p> |
| AT+NETOPEN? | <p><net_state></p> <p>Indicate the current network state</p> <p> 0: network close (deactivated)</p> <p> 1: network open(activated)</p> <p>Responses</p> <p>+ NETOPEN: <net_state></p> <p>OK</p> |
| Example | <p>AT+NETOPEN</p> <p>OK</p> <p>+NETOPEN: SUCCESS</p> <p>AT+ NETOPEN?</p> <p>+NETOPEN:1</p> <p>OK</p> |

4.3.5.15.4 Close Network - + NETCLOSE

| | |
|----------------------------------|---|
| AT+NETCLOSE Close packet network | |
| AT+NETCLOSE | <p>This command closes network. Before calling this command, all opened sockets must be closed first.</p> <p><err></p> <p>Indicate the result of operation.</p> <p>SUCCESS: is success</p> <p>FAIL: is failure</p> <p>Responses</p> <p>OK</p> <p>+NETCLOSE: <err></p> |
| AT+ NETCLOSE? | <p>OK</p> <p>ERROR</p> |
| Example | <p>AT+NETCLOSE</p> <p>OK</p> <p>+NETCLOSE: SUCCESS</p> <p>AT+NETCLOSE?</p> <p>OK</p> |

4.3.5.15.5 Inquire socket PDP address - + IPADDR

| | |
|--------------------------------------|--|
| AT+IPADDR Inquire socket PDP address | |
| AT+IPADDR | <p>This command inquires the IP address of current active socket PDP . Before calling this command, AT+NETOPEN have been execute first.</p> <p><err></p> <p>Indicate the result of operation.</p> <p>SUCCESS: is success</p> <p>FAIL: is failure</p> <p><ip_address></p> <p>This command inquires the IP address of current active socket PDP.</p> <p>Responses</p> <p>+IPADDR:<err>,<ip_address></p> <p>OK</p> <p>ERROR</p> |
| AT+IPADDR? | <p>OK</p> <p>ERROR</p> |
| Example | AT+IPADDR |

| | |
|--|---|
| | <pre>+IPADDR: SUCCESS ,10.97.210.19 OK AT+ IPADDR? OK</pre> |
|--|---|

4.3.5.15.6 Startup TCP server - + SERVERSTART

| | |
|---|---|
| AT+ SERVERSTART Startup TCP server | |
| <pre>AT+SERVERSTART= < port>, < server_index>, < backlog></pre> | <p>This command starts up TCP server, and the server can receive the request of TCP client. After the command executes successfully, an unsolicited result code is returned when a client tries to connect with module and module accepts request. The unsolicited result code is +CLIENT: < link_num >,<server_index>,<client_IP>:<port>..</p> <p><port> The server port, from 1 to 65535, and default value is 1.</p> <p>< server_index > The TCP server index, from 0 to 2, and default value is 0.</p> <p>< backlog > The maximum connections can be queued in listen queue, from 1 to 3, and default value is 3.</p> <p><err> Indicate the result of operation. SUCCESS: is success FAIL: is failure</p> <p>Responses OK +SERVERSTART:<err>,< server_index > ERROR</p> |
| AT+SERVERSTART? | + SERVERSTART: < server_index >, <port> OK |
| AT+SERVERSTART=? | +SERVERSTART: (list of supported <port>),(list of supported < server_index >),(list of supported < backlog >) OK |
| Example | <pre>AT+SERVERSTART=80,2,3 OK +SERVERSTART: SUCCESS,2 AT+SERVERSTART? +SERVERSTART:2,80 OK AT+SERVERSTART=? +SERVERSTART: (0-65535),(0-2),(1-3) OK</pre> |

4.3.5.15.7 Stop TCP server - + SERVERSTOP

| | |
|----------------------------------|---|
| AT+SERVERSTOP Stop TCP server | |
| AT+SERVERSTOP= <server_index> | <p>This command stops TCP server. Before stopping a TCP server, all sockets with <server_index> equals to the closing TCP server index must be closed and the TCP server have been started first.</p> <p><server_index></p> <p>Indicates the TCP server index, from 0 to 2, and default value is 0.</p> <p><err></p> <p>Indicate the result of operation.</p> <p> SUCCESS: is success</p> <p> FAIL: is failure</p> <p>Responses</p> <p>+SERVERSTOP: <err>,<server_index></p> <p>OK</p> <p>ERROR</p> |
| AT+SERVERSTOP=? | +SERVERSTOP: (list of supported <server_index>), OK |
| Example | <p>AT+SERVERSTOP=0</p> <p>OK</p> <p>+SERVERSTOP: SUCCESS,0</p> <p>AT+SERVERSTOP=?</p> <p>+SERVERSTOP: (0-2)</p> <p>OK</p> |

4.3.5.15.8 Establish connection in multi-socket mode - + CIOPEN

| AT+ CIOPEN Establish connection in multi-socket mode | |
|--|---|
| AT+CIOPEN= < link_num>, <type>, < serverIP>, <serverPort>, < localPort> | This command is used to establish a connection with TCP server and UDP server, The sum of all of connections is 10. <link_num> Identifies a connection , from 0 to 9, and default value is 0. If AT+CIPMODE=1 is set, the <link_num> is restricted to be only 0. < type > Identifies the type of transmission protocol. TCP: Transfer Control Protocol UDP: User Datagram Protocol If AT+CIPMODE=1 is set, the <type> is restricted to be only "TCP". < serverIP > Identifies the IP address of server. If type is UDP serverIP set to empty <serverPort> Identifies the port of TCP server, from 0 to 65535, and default value is 0. If type is UDP serverPort set to empty < localPort> Identifies the port of local socket, from 0 to 65535, and default value is 0. <err> Indicate the result of operation. SUCCESS: is success FAIL: is failure Responses OK +CIOPEN: <err>,<link_num> ERROR |
| AT+CIOPEN? | <index> Identifies the server index that the client linked when as a TCP server. -1: Not as a TCP server 0-2: TCP server index +CIOPEN: <link_num> [,<type>,<serverIP>,<serverPort>,<index>] OK ERROR |
| AT+CIOPEN=? | +CIOPEN: (list of supported <link_num>s), (list of supported <type>s) OK |
| Example | AT+CIOPEN=1,"TCP","182.150.28.206",6988,0 OK +CIOPEN: SUCCESS ,1 AT+CIOPEN=2,"UDP",,,8080 OK +CIOPEN: SUCCESS,2 AT+CIOPEN? |

| | |
|--|--|
| | +CIOPEN:0, "TCP",0,-1 +CIOPEN:1, "TCP",182.150.28.206,6988,-1 +CIOPEN:2, "UDP",0,-1 +CIOPEN:3, "TCP",0,-1 +CIOPEN:4, "TCP",0,-1 +CIOPEN:5, "TCP",0,-1 +CIOPEN:6, "TCP",0,-1 +CIOPEN:7, "TCP",0,-1 +CIOPEN:8, "TCP",0,-1 +CIOPEN:9, "TCP",0,-1 OK AT+CIOPEN=? +CIOPEN:(0-9), (TCP, UDP) OK |
|--|--|

4.3.5.15.9 Send data through TCP or UDP connection- + CIPSEND

| | |
|--|--|
| AT+ CIPSEND Send data through TCP or UDP connection | |
| AT+CIPSEND= < link_num>, [<length>] (This format is for TCP connect) | This command is used to send data to remote side. Single <Ctrl+Z> means end of the input data. Single <ESC> is used to cancel the sending. Single<Ctrl+D>means exit the transparent mode. <Ctrl+Z> is 0x1A, <ESC> is 0x1B, <Ctrl+D> is x04. <link_num> Identifies a connection , from 0 to 9, and default value is 0. |
| AT+CIPSEND= < link_num>, [<length>], <serverIP>, <serverPort> (This format is for UDP connect) | <length> Indicates the length of sending data, from 1 to 1500, and default value is 0. TCP: Transfer Control Protocol UDP: User Datagram Protocol If AT+CIPMODE=1 is set, the <type> is restricted to be only "TCP". < serverIP > Identifies the IP address of server.The IP address format consists of 4 octets,separated by decimal point:"AAA.BBB.CCC.DDD". <serverPort> Identifies the port of UDP server, from 0 to 65535, and default value is 0. <err> Indicate the result of operation. SUCCESS: is success FAIL: is failure NOTE In transparent mode <length> will be ignore; when input data length reach to 1500 will |
| AT+CIPSEND? | OK ERROR |
| AT+CIPSEND=? | +CIPSEND: (list of supported <link_num>s), (list of supported <length>s) OK |

| | |
|---------|---|
| Example | <pre> AT+CIPSEND=1,20 >2233 OK +CIPSEND: SUCCESS ,1,20,4 AT+CIPSEND=2,5,"182.150.28.206",6988 >33 OK +CIPSEND: SUCCESS ,2,5,2 AT+CIPSEND? OK AT+CIPSEND=? +CIPSEND:(0-9),(1-1500) OK </pre> |
|---------|---|

4.3.5.15.10 Get the network data manually- + CIPRXGET

| | |
|---|---|
| AT+CIPRXGET Get the network data manually | |
| <pre> AT+CIPRXGET= <mode >, <cid>, <len> </pre> | <p><mode > Indicate how to get the network data , from 0 to 4, and default value is 0.</p> <ul style="list-style-type: none"> 0: set the way to get the network data automatically. 1: set the way to get the network data manually. 2: read data, the max read length is 1500. 3: remain. 4: get the rest data length. <p><cid> Identifies a connection, from 0 to 9, and default value is 0.</p> <p>< len > The data length to be read.</p> <p><read_len> The length of the data that have read.</p> <p><rest_len > The data length which not read in the buffer.</p> <p><data> The read data.</p> <p><err> Indicate the result of operation.</p> <ul style="list-style-type: none"> SUCCESS: is success FAIL: is failure <p>NOTE: When <mode> is set to 1 and the 2-4 mode will take effect. AT+CIPRXGET=1,<cid>, it will report +CIPRXGET: <err>,1,<cid>. when received data. AT+CIPRXGET=2,<cid>,<read_len> it will report +CIPRXGET: <err>,2,<cid>,<read_len>,<rest_len></p> |

| | |
|----------------------|---|
| | <p>when read data. AT+CIPRXGET=4,<cid> it will report +CIPRXGET: <err>,4,<cid>,<rest_len> When read remain data. AT+CIPRXGET=0,<cid>, it will report +CIPRXGET:<err>,0,<cid>,<len>,<data>.when received. When AT+CIOPEN success the correspond link is enabled auto receive mode</p> <p>Responses OK ERROR</p> |
| <p>AT+CIPRXGET?</p> | <p>+CIPRXGET: <mode>,<cid> OK ERROR</p> |
| <p>AT+CIPRXGET=?</p> | <p>+CIPRXGET: (list of supported <mode >s), (list of supported <cid>s), (list of supported<len>s) OK</p> |
| <p>Example</p> | <p>AT+CIPRXGET=0,1 OK +CIPRXGET: SUCCESS,0,1,11,dddddddddd</p> <p>AT+CIPRXGET=1,9 OK +CIPRXGET: SUCCESS,1,9</p> <p>AT+CIPRXGET=2,9,3 +CIPRXGET: SUCCESS,2,9,3,7, 333 OK</p> <p>AT+CIPRXGET=4,9 +CIPRXGET: SUCCESS,4,9,7, 3333333 OK</p> |

4.3.5.15.11 Close TCP or UDP socket - + CIPCLOSE

| AT+CIPCLOSE Close TCP or UDP socket | |
|-------------------------------------|---|
| AT+ CIPCLOSE= <link_num> | <p>This command is used to close TCP or UDP socket .</p> <p><link_num></p> <p>Identifies a connection . from 0 to 9, and default value is 0.</p> <p>Indicate the result of operation.</p> <p> SUCCESS: is success</p> <p> FAIL: is failure</p> <p>Responses</p> <p>OK</p> <p>+CIPCLOSE: <err>,<link_num></p> <p>ERROR</p> |
| AT+CIPCLOSE? | <p><linkx_state></p> <p>Identifies state of <link_num>. the range of permitted values is 0 and 2.</p> <p> 0:disconnected</p> <p> 2:connected</p> <p>+CIPCLOSE:<link0_state>,<link1_state>,<link2_state>,<link3_state>,<link4_state>,<link5_state>,<link6_state>,<link7_state>,<link8_state>,<link9_state></p> <p>OK</p> |
| AT+CIPCLOSE=? | <p>+CIPCLOSE: (list of supported <link_num>s)</p> <p>OK</p> |
| Example | <p>AT+CIPCLOSE=1</p> <p>OK</p> <p>+CIPCLOSE: SUCCESS,1</p> <p>AT+CIPCLOSE?</p> <p>+CIPCLOSE:link0_0,_link1_2,link2_0,link3_0,link4_0,link5_0,link6_0,link7_0,link8_0,link9_2</p> <p>OK</p> <p>AT+CIPCLOSE=?</p> <p>+CIPCLOSE: (0-9)</p> <p>OK</p> |

4.3.5.15.12 Inquire the total size of data sent or received recently- + CIPSTAT

| | |
|--|--|
| AT+CIPSTAT Inquire the total size of data sent or received | |
| AT+CIPSTAT=<link_num> | <p>This command is used to inquire the total size of data sent or received for a socket in multiple socket modes(Only valid for client TCP socket mode).</p> <p><link_num ></p> <p>Identifies a connection. The range of permitted values is 0 to 9.</p> <p><sent_size></p> <p>Total size of sent data.</p> <p><recv_size ></p> <p>Total size of received data.</p> <p>Responses</p> <p>+CIPSTAT: <sent_size>, <recv_size></p> <p>OK</p> <p>ERROR</p> |
| AT+CIPSTAT=? | +CIPSTAT: (list of supported <link_num>s) OK |
| Example | <p>AT+CIPSTAT=1</p> <p>OK</p> <p>+CIPSTAT:1,0</p> <p>AT+CIPSTAT=?</p> <p>+CIPSTAT: (0-9)</p> <p>OK</p> |

4.3.5.16 AT Commands for WIFI

4.3.5.16.1 Open/Close WIFI - \$MWIFI

| | |
|-------------------------------|--|
| AT\$MWIFI Open or close WIFI. | |
| AT\$MWIFI =<enable> | <p>This command is used to open or close wifi. This command must be execute in the first.</p> <p>< enable > Open or close wifi.</p> <p>0 Close Wifi</p> <p>1 Open Wifi</p> <p>Responses</p> <p>OK</p> <p>ERROR</p> |
| AT\$MWIFI? | <p>AT\$MWIFI?</p> <p>\$MWIFI:<state></p> <p>OK</p> |
| AT\$MWIFI=? | <p>AT\$MWIFI=?</p> <p>\$MWIFI:(0-1)</p> <p>OK</p> |
| Example | <p>AT\$MWIFI?</p> <p>\$MWIFI: 0 //Wifi is closed.</p> <p>OK</p> <p>AT\$MWIFI=1 //Open wifi.</p> <p>OK</p> |

4.3.5.16.2 Set/Get AP's SSID - \$MWIFISSID

| AT\$MWIFISSID Set WIFI SSID | |
|--------------------------------|---|
| AT\$MWIFISSID=<AP_NUM>, <SSID> | <p>This command is used to set/get AP's SSID. The max length is 32.</p> <p><AP_NUM> The AP's ID. 0 The master AP. 1 The Guest AP.</p> <p><SSID> Specific AP's SSID.</p> <p>Responses OK ERROR</p> |
| AT\$MWIFISSID? | <p>\$MWIFISSID?</p> <p>\$MWIFISSID:<master_ssid >, <guest_ssid></p> <p>OK</p> |
| AT\$MWIFISSID=? | <p>\$MWIFISSID: <0-1>, <" "></p> <p>OK</p> |
| Example | <pre>AT\$MWIFISSID=0, "L506WIFI" //Set master AP's SSID to "abc". OK AT\$MWIFISSID? \$MWIFISSID:"L506WIFI", "123" OK // Master AP's SSID is "L506WIFI", Guest AP's SSID is "123".</pre> |

4.3.5.16.3 Set/Get AP's Password - \$MWIFIPASS

| | |
|---|--|
| AT\$MWIFIPASS Set or get AP's password. | |
| AT\$MWIFIPASS=<A P_NUM>,<PASS> | <p>This command is used to set/get AP's password. The max length is 63, min length is 8.</p> <p><AP_NUM> The AP's ID. 0 The master AP. 1 The Guest AP.</p> <p><PASS> Specific AP's PASS.</p> <p>Responses OK ERROR</p> |
| AT\$MWIFIPASS? | <p>\$MWIFIPASS?</p> <p>\$MWIFIPASS:<master_pass>,<guest_pass></p> <p>OK</p> |
| AT\$MWIFIPASS=? | <p>\$MWIFIPASS: <0-1>,<""></p> <p>OK</p> |
| Example | <pre>AT\$MWIFIPASS=0, "12345678" //Set master AP's password to "12345678". OK AT\$MWIFIPASS? \$MWIFIPASS:"12345678", "87654321" OK // Master AP's PASS is "12345678", Guest AP's PASS is "87654321".</pre> |

4.3.5.16.4 Open or Close AP's broadcast - \$MWIFIBCAST

| | |
|--|--|
| AT\$MWIFIBCAST Open or close AP's broadcast. | |
| AT\$MWIFIBCAST=<AP_NUM>,<broadcast> < > | <p>This command is used to open or close specific AP's broadcast. While the broadcast is closed, will not receive AP's signal.</p> <p><AP_NUM> The AP' s ID. 0 The master AP. 1 The Guest AP.</p> <p><broadcast> Open or close specific AP' s broadcast.. 0 The broadcast is off. 1 The broadcast is on.</p> <p>Responses OK ERROR</p> |
| AT\$MWIFIBCAST=? | \$MWIFIBCAST:<0-1>,<0-1> OK |
| AT\$MWIFIBCAST? | \$MWIFIBCAST: <master_broadcast >,<guest_broadcast> OK |
| Example | <pre>AT\$MWIFIBCAST? \$MWIFIBCAST:1,0 // Master AP' s broadcast is on, Guest AP' s AP is off. OK AT\$MWIFIBCAST=1,0 // Close Guest AP' s broadcast. OK AT\$MWIFIBCAST=0,1 // Open Master AP' s broadcast. OK</pre> |

4.3.5.16.5 Set AP's NAT type - \$MWIFINAT

| | |
|---------------------------------|---|
| AT\$MWIFINAT Set AP's NAT type. | |
| AT\$MWIFINAT=<nat> > | <p>This command is used to set AP's NAT type.</p> <p><nat> NAT type</p> <ul style="list-style-type: none"> 0 Symmetric NAT 1 Port Restricted Cone NAT 2 Full Cone NAT 3 Address Restricted Cone NAT <p>Responses</p> <p>OK</p> <p>ERROR</p> |
| AT\$MWIFINAT=? | <p>\$MWIFINAT:<0-3></p> <p>OK</p> |
| AT\$MWIFINAT? | <p>\$MWIFINAT:<nat_type></p> <p>OK</p> |
| Example | <p>AT\$MWIFINAT?</p> <p>\$MWIFINAT:0 // Current is Symmetric NAT</p> <p>OK</p> |

4.3.5.16.6 Set WIFI Mode - \$MWIFIMODE

| | |
|------------------------------|--|
| AT\$MWIFIMODE Set WIFI mode. | |
| AT\$MWIFIMODE =<mode> | <p>This command is used to set WIFI mode.</p> <p><mode> WIFI mode.</p> <p>0 AP-only mode.</p> <p>1 AP-AP mode.</p> <p>Responses</p> <p>OK</p> <p>ERROR</p> |
| AT\$MWIFIMODE=? | \$MWIFIMODE:<0-1> OK |
| AT\$MWIFIMODE? | \$MWIFIMODE:<mode> OK |
| Example | <p>AT\$MWIFIMODE?</p> <p>\$MWIFIMODE:1 //Current mode is AP-AP.</p> <p>OK</p> <p>AT\$MWIFIMODE=0 //Set wifi mode to AP-only.</p> <p>OK</p> |

4.3.5.16.7 Get WIFI client number - \$MWIFICLICNT

| | |
|--------------------------------|--|
| AT\$MWIFICLICNT Set WIFI mode. | |
| AT\$MWIFICLICNT? | This command is used to get client number. Responses OK ERROR |
| Example | AT\$MWIFICLICNT? \$MWIFICLICNT:1,0 OK // Master AP's client number is 1,Guest AP's client number is 0 |

4.3.5.16.8 Reset WIFI setting - \$MWIFIRSTD

| | |
|------------------------------------|---|
| AT\$MWIFIRSTD Reset WIFI settings. | |
| AT\$MWIFIRSTD | This command is used to reset WIFI settings.After this command,the devices will reboot. Responses OK ERROR |
| Example | AT\$MWIFIRSTD OK |

4.3.5.16.9 Enable Or Unable Network For WIFI - \$MNETSWITCH

| | |
|---------------------------|---|
| AT\$MNETSWITCH | Set WIFI surf the Internet or not. |
| AT\$MNETSWITCH= <open> | <p>This command is used to enable or unable network for WIFI.If enable this.the modem will not access Internet.</p> <p><open></p> <p>0 WIFI can not surf the Internet.</p> <p>1 WIFI can surf the Internet.</p> <p>Responses</p> <p>OK</p> <p>ERROR</p> |
| AT\$MNETSWITCH =? | <p>\$MNETSWITCH:<0-1></p> <p>OK</p> |
| AT\$MNETSWITCH? | <p>\$MNETSWITCH:<open></p> <p>OK</p> |
| Example | <p>AT\$MNETSWITCH?</p> <p>\$MNETSWITCH:0 // Prohibit WIFI Internet access.</p> <p>OK</p> <p>AT\$MNETSWITCH=1 // Allows WIFI Internet access.</p> <p>OK</p> |

4.3.6 AT Commands for IS-707

4.3.6.1 IS-707 vendor Specific AT command table

4.3.6.1.1 Answer incoming voice call - \$QCCAV

| | |
|---------------------------------------|-----------------------------|
| \$QCCAV - Answer incoming voice call. | |
| AT\$QCCAV | Answer incoming voice call. |
| Reference | 3GPP2 |

4.3.6.1.2 Hangs up incoming voice call - \$QCCHV

| | |
|---|-------------------------------|
| \$QCCHV - Hangs up incoming voice call. | |
| AT\$QCCHV | Hangs up incoming voice call. |
| Reference | 3GPP2 |

4.3.6.1.3 sends to the ME a password - ^CPIN

| | |
|------------------------------------|---|
| ^CPIN - Sends to the ME a password | |
| AT ^CPIN= | This set commands sends to the ME a password which is necessary before operation. |
| AT ^CPIN? | ^CPIN:<code>,,<SIMPUKretries>,<SIM PIN retries>,<SIM PUK2 retries>,<SIM PIN2 retries> OK <code> -- describes the current pin state <XXX retries> -- it defines the number of retries left for each PIN's |
| AT ^CPIN=? | Return OK |
| Reference | 3GPP2 |

4.3.6.1.4 Sends to the ME a password - +QCPIN

| +QCPIN - Sends to the ME a password | |
|-------------------------------------|---|
| AT+QCPIN = | This set commands sends to the ME a password which is necessary before operation. |
| AT+QCPIN? | +QCPIN:<code> <code> -- describes the current pin state |
| AT+QCPIN =? | Return OK |
| Reference | 3GPP2 |

4.3.6.1.5 Query received signal quality - AT+CCSQ

| +CCSQ - Query received signal quality | |
|---------------------------------------|---|
| AT+CCSQ | Query received signal quality. Returns the signal quality measure <SQM> and the frame error rate <FER> as follows: <SQM>: 0-31 - <SQM> 99 - <SQM> not known or is detectable. <FER>: 0 - <0.01% 1 - 0.01 to < 0.1% 2 - 0.1 to < 0.5% 3 - 0.5 to < 1.0% 4 - 1.0 to < 2.0% 5 - 2.0 to < 4.0% 6 - 4.0 to < 8.0% 7 - >= 8.0% 99 - <FER> is not known or is not detectable. |
| AT+CCSQ=? | Response: +CCSQ: (0-31,99),(99) OK |
| Reference | 3GPP2 |

4.3.6.1.6 Originated voice call - AT+CDV

| +CDV - Originated voice call | |
|------------------------------|---|
| AT+CDV<num> | originated voice call <num> - phone number |
| Reference | 3GPP2 |

4.3.6.1.7 Compiles the IMSI number - +QCIMI

| | |
|-----------------------------------|---|
| +QCIMI - Compiles the IMSI number | |
| AT+QCIMI | This command compiles the International Mobile Subscriber Identity (IMSI) number of the device from the relevant NV items or the RUIIM card and prints out the information. |
| AT+QCIMI=? | Response: OK |
| Reference | 3GPP2 |

LYNQ
CONFIDENTIAL

4.3.6.2 IS-707 Sms related AT command table

4.3.6.2.1 Set how receiving new message - \$QCNMI

| \$QCNMI - Set how receiving new message | |
|---|---|
| AT\$QCNMI= <mode>,<mt>, <bfr> | <p>select the procedure of how receiving new messages from the network is indicated to TE.</p> <p><input type="checkbox"/> <mode> = 0,1,2 <input type="checkbox"/> <mt> = 0,1,2,3 <input type="checkbox"/> <bfr> = 0,1</p> <p>Similar to +CNMI, except that <ds> and <bm> are not supported in CDMA</p> |
| AT\$QCNMI? | <p>Response: \$QCNMI: x,x,x</p> <p>OK</p> |
| AT\$QCNMI=? | <p>Response: \$QCNMI: (0,1,2),(0,1,2,3),(0,1)</p> <p>OK</p> |
| Reference | 3GPP2 |

4.3.6.2.2 Set parameters for sending messages - \$QCSMP

| \$QCSMP - Set parameters for sending messages | |
|---|--|
| AT\$QCSMP= tid,vpf,vp,ddtf,ddt; | <p>set parameters for sending text sms messages.</p> <p><tid> = 4095 - 4102 <vpf> = 0 - 1 (0 Absolute, 1 Relative) <vp>=string[22] <ddtf> = 0 - 1 (0 Absolute, 1 Relative) <ddt> = string[22]</p> <p>Similar to +CSMP but with a different parameters</p> <p><input type="checkbox"/> tid – Teleservice ID <input type="checkbox"/> vpf – Validity Period Format <input type="checkbox"/> vp – Validity Period <input type="checkbox"/> ddtf – Deferred Delivery Time Format <input type="checkbox"/> ddt – Deferred Delivery Time</p> |
| AT\$QCSMP? | Read current value |
| AT\$QCSMP=? | <p>Response: OK</p> |
| Reference | 3GPP2 |

4.3.6.2.3 Select preferred memory storage - \$QCPMS

| | |
|---|---|
| \$QCPMS - Select preferred memory storage | |
| AT\$QCPMS= <mem1>,<mem2>, <mem3> | select preferred memory storage for reading, writing etc. <mem> is any of ME or MT or SM Similar to +CPMS |
| AT\$QCPMS? | Read current value |
| AT\$QCPMS=? | Response: \$QCPMS:("ME","MT","SM"),("ME","MT","SM"),("ME","MT","SM") OK |
| Reference | 3GPP2 |

4.3.6.2.4 Read a sms message - \$QCMGR

| | |
|------------------------------|---|
| \$QCMGR - Read a sms message | |
| AT\$QCMGR= <index> | read a sms message. Similar to +CMGR |
| AT\$QCMGR=? | Response: OK |
| Reference | 3GPP2 |

4.3.6.2.5 Send a message from TE to the network - \$QCMGS

| | |
|---|--|
| AT\$QCMGS - Send a message from TE to the network | |
| AT\$QCMGS= <da> , <tda> | send a message from TE to the network. Similar to +CMGS |
| AT\$QCMGS=? | Response: OK |
| Reference | 3GPP2 |

4.3.6.2.6 Send a message already stored from Memory - \$QCMSS

| | |
|---|---|
| \$QCMSS - Send a message already stored from Memory | |
| AT\$QCMSS= <index>[,<da>[, <tda>]] | send a message already stored from Memory to the network. Similar to +CMSS |
| AT\$QCMSS=? | Response: OK |
| 3GPP2 | 3GPP2 |

4.3.6.2.7 Delete sms messages - \$QCMGD

| | |
|-------------------------------|--|
| \$QCMGD - Delete sms messages | |
| AT\$QCMGD= <index> | delete sms messages from <mem1>. Similar to +CMGD |
| AT\$QCMGD=? | Response: \$QCMGD: (0),(0-4) OK |
| Reference | 3GPP2 |

4.3.6.2.8 Lists all the SMS saved in the loaction - \$QCMGL

| | |
|---|---|
| AT\$QCMGL - Lists all the SMS saved in the loaction | |
| AT\$QCMGL= <stat> | Lists all the SMS saved in the loaction. Similar to +CMGL |
| AT\$QCMGL=? | Response: \$QCMGL: ("REC UNREAD","REC READ","STO UNSENT","STO SENT","ALL") OK |
| Reference | 3GPP2 |

4.3.6.2.9 Message Format - \$QCMGF

| \$QCMGF - Message Format | |
|--------------------------|---|
| AT\$QCMGF= <mode> | Similar to +CMGF but only Text mode is supported in CDMA <mode> 1 |
| AT\$QCMGF? | Response: \$QCMGF: 1 OK |
| AT\$QCMGF=? | Response: \$QCMGF: (1) OK |
| Reference | 3GPP2 |

4.3.6.2.10 Store message to memory - \$QCMGW

| \$QCMGW - Store message to memory | |
|-----------------------------------|--|
| AT\$QCMGW= <da> , <tda> | store message to memory storage <mem2> Similar to +CMGW |
| AT\$QCMGW | |
| AT\$QCMGW=? | Response: OK |
| Reference | 3GPP2 |

5 LIST OF ACRONYMS

| | | | |
|-------|--|----|-------------------|
| ARFCN | Absolute Radio Frequency Channel Number | AT | Attention command |
| BA | BCCH Allocation | | |
| BCCH | Broadcast Control Channel | | |
| CA | Cell Allocation | | |
| CBM | Cell Broadcast Message | | |
| CBS | Cell Broadcast Service | | |
| CCM | Current Call Meter | | |
| CLIR | Calling Line Identification Restriction | | |
| CTS | Clear To Send | | |
| CUG | Closed User Group | | |
| DCD | Data Carrier Detect | | |
| DCE | Data Communication Equipment | | |
| DCS | Digital Cellular System | | |
| DNS | Domain Name System Server | | |
| DSR | Data Set Ready | | |
| DTE | Data Terminal Equipment | | |
| DTMF | Dual Tone Multi Frequency | | |
| DTR | Data Terminal Ready | | |
| GPRS | Global Packet Radio Service | | |
| IMEI | International Mobile Equipment Identity | | |
| IMSI | International Mobile Subscriber Identity | | |
| IP | Internet Protocol | | |
| IRA | International Reference Alphabet | | |
| IWF | Interworking Function | | |
| MO | Mobile Originated | | |
| MT | Mobile Terminal | | |
| NVM | Non Volatile Memory | | |
| PCS | Personal Communication Service | | |
| PDP | Packet Data Protocol | | |
| PDU | Packet Data Unit | | |
| PIN | Personal Identification Number | | |
| PPP | Point to Point Protocol | | |
| PUK | Pin Unblocking Code | | |
| RLP | Radio Link Protocol | | |

| | |
|------|---|
| RMC | Recommended minimum Specific data |
| RTS | Request To Send |
| SAP | SIM Access Profile |
| SCA | Service Center Address |
| SMS | Short Message Service |
| SMSC | Short Message Service Center |
| SMTP | Simple Mail Transport Protocol |
| TA | Terminal Adapter |
| TCP | Transmission Control Protocol |
| TE | Terminal Equipment |
| UDP | User Datagram Protocol |
| USSD | Unstructured Supplementary Service Data |
| UTC | Coordinated Universal Time |
| VDOP | Vertical dilution of precision |
| VTG | Course over ground and ground speed |

6 ERROR CODE

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

This is NOT a command; it is the error response to Cxxx 3gpp TS 27.007 commands. Syntax: +CME ERROR: <err>

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

| Numeric Format | Verbose Format | General errors: |
|----------------|--|-----------------|
| 0 | phone failure | |
| 1 | No connection to phone | |
| 2 | phone-adaptor link reserved | |
| 3 | operation not allowed | |
| 4 | operation not supported | |
| 5 | PH-SIM PIN required | |
| 10 | SIM not inserted | |
| 11 | SIM PIN required | |
| 12 | SIM PUK required | |
| 13 | SIM failure | |
| 14 | SIM busy | |
| 15 | SIM wrong | |
| 16 | incorrect password | |
| 17 | SIM PIN2 required | |
| 18 | SIM PUK2 required | |
| 20 | memory full | |
| 21 | invalid index | |
| 22 | not found | |
| 23 | memory failure | |
| 24 | text string too long | |
| 25 | invalid characters in text string | |
| 26 | dial string too long | |
| 27 | invalid characters in dial string | |
| 30 | no network service | |
| 31 | network time-out | |
| 32 | network not allowed - emergency calls only | |
| 40 | network personalization PIN required | |
| 41 | network personalization PUK required | |

| | |
|-----|---|
| 42 | network subset personalization PIN required |
| 43 | network subset personalization PUK required |
| 44 | service provider personalization PIN required |
| 45 | Service provider personalization PUK required |
| 46 | corporate personalization PIN required |
| 47 | corporate personalization PUK required General purpose error: |
| 100 | unknown |
| 770 | SIM invalid |

GPRS related errors to a failure to perform an Attach:

| | |
|----------------|---|
| 103 | Illegal MS (#3)* |
| 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)* GPRS related errors to a failure to Activate a Context and others: |
| 132 | service option not supported (#32)* |
| 133 | requested service option not subscribed (#33)* |
| 134 | service option temporarily out of order (#34)* |
| 148 | unspecified GPRS error |
| 149 | PDP authentication failure |
| 150 | invalid mobile class Easy GPRS® related errors |
| 550 | generic undocumented error |
| 551 | wrong state |
| 552 | wrong mode |
| 553 | context already activated |
| 554 | stack already active |
| 555 | activation failed |
| 556 | context not opened |
| 557 | cannot setup socket |
| 558 | cannot resolve DN |
| 559 | time-out in opening socket |
| 560 | cannot open socket |
| 561 | remote disconnected or time-out |
| 562 | connection failed |
| 563 | tx error |
| 564 | already listening Network survey errors |

| | |
|-----|---|
| 657 | Network survey error (No Carrier)* |
| 658 | Network survey error (Busy)* |
| 659 | Network survey error (Wrong request)* |
| 660 | Network survey error (Aborted)* Supplementary service related error |
| 257 | network rejected request |
| 258 | retry operation |
| 259 | invalid deflected to number |
| 260 | deflected to own number |
| 261 | unknown subscriber |
| 262 | service not available |
| 263 | unknown class specified |
| 264 | unknown network message AT+COPS test command related error |
| 680 | LU processing |
| 681 | Network search aborted |
| 682 | PTM mode AT+WS46 test command related error |
| 683 | Active call state |
| 684 | RR connection Established |

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

This is NOT a command; it is the error response to +Cxxx 3gpp TS 27.005 commands. Syntax: +CMS ERROR: <err>

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

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