



EC200U&EG800G&EG91xU&EG915G Series AT Commands Manual

LTE Standard Module Series

Version: 1.2

Date: 2024-07-29

Status: Released



At Quectel, our aim is to provide timely and comprehensive services to our customers. If you require any assistance, please contact our headquarters:

Quectel Wireless Solutions Co., Ltd.

Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China

Tel: +86 21 5108 6236

Email: info@quectel.com

Or our local offices. For more information, please visit:

<http://www.quectel.com/support/sales.htm>.

For technical support, or to report documentation errors, please visit:

<http://www.quectel.com/support/technical.htm>.

Or email us at: support@quectel.com.

Legal Notices

We offer information as a service to you. The provided information is based on your requirements and we make every effort to ensure its quality. You agree that you are responsible for using independent analysis and evaluation in designing intended products, and we provide reference designs for illustrative purposes only. Before using any hardware, software or service guided by this document, please read this notice carefully. Even though we employ commercially reasonable efforts to provide the best possible experience, you hereby acknowledge and agree that this document and related services hereunder are provided to you on an “as available” basis. We may revise or restate this document from time to time at our sole discretion without any prior notice to you.

Use and Disclosure Restrictions

License Agreements

Documents and information provided by us shall be kept confidential, unless specific permission is granted. They shall not be accessed or used for any purpose except as expressly provided herein.

Copyright

Our and third-party products hereunder may contain copyrighted material. Such copyrighted material shall not be copied, reproduced, distributed, merged, published, translated, or modified without prior written consent. We and the third party have exclusive rights over copyrighted material. No license shall be granted or conveyed under any patents, copyrights, trademarks, or service mark rights. To avoid ambiguities, purchasing in any form cannot be deemed as granting a license other than the normal non-exclusive, royalty-free license to use the material. We reserve the right to take legal action for noncompliance with abovementioned requirements, unauthorized use, or other illegal or malicious use of the material.

Trademarks

Except as otherwise set forth herein, nothing in this document shall be construed as conferring any rights to use any trademark, trade name or name, abbreviation, or counterfeit product thereof owned by Quectel or any third party in advertising, publicity, or other aspects.

Third-Party Rights

This document may refer to hardware, software and/or documentation owned by one or more third parties (“third-party materials”). Use of such third-party materials shall be governed by all restrictions and obligations applicable thereto.

We make no warranty or representation, either express or implied, regarding the third-party materials, including but not limited to any implied or statutory, warranties of merchantability or fitness for a particular purpose, quiet enjoyment, system integration, information accuracy, and non-infringement of any third-party intellectual property rights with regard to the licensed technology or use thereof. Nothing herein constitutes a representation or warranty by us to either develop, enhance, modify, distribute, market, sell, offer for sale, or otherwise maintain production of any our products or any other hardware, software, device, tool, information, or product. We moreover disclaim any and all warranties arising from the course of dealing or usage of trade.

Privacy Policy

To implement module functionality, certain device data are uploaded to Quectel’s or third-party’s servers, including carriers, chipset suppliers or customer-designated servers. Quectel, strictly abiding by the relevant laws and regulations, shall retain, use, disclose or otherwise process relevant data for the purpose of performing the service only or as permitted by applicable laws. Before data interaction with third parties, please be informed of their privacy and data security policy.

Disclaimer

- a) We acknowledge no liability for any injury or damage arising from the reliance upon the information.
- b) We shall bear no liability resulting from any inaccuracies or omissions, or from the use of the information contained herein.
- c) While we have made every effort to ensure that the functions and features under development are free from errors, it is possible that they could contain errors, inaccuracies, and omissions. Unless otherwise provided by valid agreement, we make no warranties of any kind, either implied or express, and exclude all liability for any loss or damage suffered in connection with the use of features and functions under development, to the maximum extent permitted by law, regardless of whether such loss or damage may have been foreseeable.
- d) We are not responsible for the accessibility, safety, accuracy, availability, legality, or completeness of information, advertising, commercial offers, products, services, and materials on third-party websites and third-party resources.

Copyright © Quectel Wireless Solutions Co., Ltd. 2024. All rights reserved.

About the Document

Revision History

Version	Date	Author	Description
-	2021-03-08	Fei XUE/ Braden HE/ Marvin NING/ Kevin WANG/ Herry GENG	Creation of the document
1.0	2021-11-01	Fei XUE/ Braden HE/ Marvin NING/ Kevin WANG/ Herry GENG	First official release
1.1	2024-02-03	Reilly NIAN/ Dony ZHAO/ Ryan YI/ Joe TU/ Marvin NING/ Kevin WANG/	<ol style="list-style-type: none"> Added EG912U-GL and EG915G-EU module and related information. Added the note that preset files in the file system cannot be deleted at will (Chapter 1). Updated the reference for AT+GSN (Chapter 2.8). Deleted the command AT+QSCLK. Updated the note in AT+IFC (Chapter 3.3). Updated the note in AT+ICF (Chapter 3.4). Updated the values of <rate> of AT+IPR; Updated the notes (Chapter 3.5). Added the following UART control commands: AT+CBAUD (Chapter 3.6) AT+QIPR (Chapter 3.7) AT+QICF (Chapter 3.8) AT+QIFC (Chapter 3.9) Updated AT+CEER (Chapter 4.2). Updated the response to Test Command in AT+QINDCFG and added values of <URC_type>. (Chapter 4.3). Added the maximum response time of

- AT+QCFG="airplanecontrol" (Chapter 4.5.5).
 - 12. Added the following status control commands:
 - AT+QRDY (Chapter 4.4)
 - AT+QCFG="creg/emergency" (Chapter 4.5.3)
 - AT+QCFG="nat/subnet" (Chapter 4.5.8)
 - AT+QCFG="usbnetmac" (Chapter 4.5.9)
 - AT+QCFG="apready" (Chapter 4.5.16)
 - AT+QCFG="pkalive/ip" (Chapter 4.5.21)
 - AT+QCFG="led/sim" (Chapter 4.5.23)
 - AT+QCFG="sleepind/level" (Chapter 4.5.25)
 - AT+QCFG="wakeupin/level" (Chapter 4.5.26)
 - AT+QCFG="ntp" (Chapter 4.5.27)
 - AT+QCFG="esmfail/times" (Chapter 4.5.28)
 - AT+QCFG="rtc/cfg" (Chapter 4.5.29)
 - AT+QCFG="pdn/pco" (Chapter 4.5.30)
 - 13. Updated the reference for AT+CRSM (Chapter 5.6).
 - 14. Added the description of example in AT+QSIMSTAT (Chapter 5.10).
 - 15. Added the (U)SIM related command:
 - AT+QPINC (Chapter 5.14)
 - 16. Added the description of example in AT+CTZU (Chapter 6.6).
 - 17. Added the description of example in AT+CTZR (Chapter 6.7).
 - 18. Added the values of <AcT> and <band> in AT+QNWINFO (Chapter 6.9).
 - 19. Updated the parameter explanations and the notes in AT+QCSQ (Chapter 6.11).
 - 20. Deleted the description in response in Write Command and characteristics in AT+CMGF (Chapter 9.2)
 - 21. Updated the response to Write Command in AT+CSCA (Chapter 9.3)
 - 22. Added the parameter description of AT+CMMS (Chapter 9.9).
 - 23. Updated the reference of AT+CMGW (Chapter 9.10).
 - 24. Updated the maximum response time in AT+CMSS (Chapter 9.11).
 - 25. Updated the example of AT+CNMA (Chapter 9.12).
 - 26. Updated the parameter explanation in AT+CSMP (Chapter 9.15).
 - 27. Updated AT+CGATT=<state> response (Chapter 10.1).
-

- 28. Updated the example for AT+CGREG (Chapter 10.9).
- 29. Updated the parameter explanation of AT+CSSN (Chapter 11.7).
- 30. Added the following audio related commands:
 - AT+QAUDSTOP (Chapter 12.6)
 - AT+QDAI (Chapter 12.9)
 - AT+QWTTS (Chapter 12.13)
 - AT+QAUDCFG="urc" (Chapter 12.15)
 - AT+ QICMIC (Chapter 12.16)
 - AT+QRXGAIN (Chapter 12.17)
 - AT+QICSIDET (Chapter 12.18)
 - AT+QLDTMF (Chapter 12.19)
 - AT+QWDTMF (Chapter 12.20)
 - AT+VTS (Chapter 12.21)
 - AT+QLTONE (Chapter 12.22)
 - AT+QLTONEX (Chapter 12.23)
 - AT+QTONEDT (Chapter 12.24)
- 31. Updated the description of <mode> parameter values in AT+QAUDMOD (Chapter 12.7).
- 32. Updated the example for AT+QIIC (Chapter 12.8).
- 33. Added the notes for AT+QAUDSW (Chapter 12.10).
- 34. Updated AT+QTTS (Chapter 12.12).

1.2	2024-07-29	Reilly NIAN/ Dony ZHAO/ Ryan YI/ Joe TU/ Marvin NING/ Kevin WANG	Added the applicable module EG800G series.
-----	------------	---	--

Contents

About the Document.....	3
Contents.....	6
Table Index.....	12
1 Introduction	13
1.1. Applicable Modules.....	13
1.2. AT Command Syntax.....	14
1.2.1. Definitions.....	14
1.2.2. AT Command Syntax.....	14
1.3. Supported Character Sets	15
1.4. AT Command Interface.....	16
1.5. Unsolicited Result Code.....	16
1.6. Turn off Procedure	16
1.7. Declaration of AT Command Examples	16
2 General Commands	17
2.1. ATI Display MT Identification	17
2.2. AT+GMI Request Manufacturer Identification.....	18
2.3. AT+GMM Request MT Model Identification.....	18
2.4. AT+GMR Request TA Firmware Revision Identification.....	19
2.5. AT+CGMI Request Manufacturer Identification	19
2.6. AT+CGMM Request MT Model Identification	20
2.7. AT+CGMR Request TA Firmware Revision Identification	20
2.8. AT+GSN Request International Mobile Equipment Identity and Serial Number	21
2.9. AT+CGSN Request International Mobile Equipment Identity and Serial Number.....	22
2.10. AT&F Restore AT Command Settings to Factory Defaults	23
2.11. AT&V Display Current Configuration.....	24
2.12. AT&W Store Current Settings to User-defined Profile	25
2.13. ATZ Restore AT Command Setting from User-defined Profile.....	25
2.14. ATQ Set Result Code Echo Mode	26
2.15. ATV TA Response Format	26
2.16. ATE Set Command Echo Mode.....	28
2.17. A/ Repeat Previous Command Line.....	29
2.18. ATS3 Set Command Line Termination Character	29
2.19. ATS4 Set Response Formatting Character	30
2.20. ATS5 Set Command Line Editing Character	31
2.21. ATX Set CONNECT Result Code Format and Monitor Call Progress.....	31
2.22. AT+CFUN Set Function Mode	32
2.23. AT+CMEE Set Error Message Format.....	34
2.24. AT+CSCS Select TE Character Set.....	35
2.25. AT+QURCCFG Configure Output Port of URC	36
3 UART Control Commands.....	38

3.1.	AT&C	Set DCD Function Mode.....	38
3.2.	AT&D	Set DTR Function Mode	38
3.3.	AT+IFC	Set UART Flow Control	39
3.4.	AT+ICF	Set Frame Format and Parity of UART Communication.....	40
3.5.	AT+IPR	Set UART Fixed Baud Rate	41
3.6.	AT+CBAUD	Configure Main UART Baud Rate	43
3.7.	AT+QIPR	Configure UART2 (Auxiliary UART) / UART3 Baud Rate	44
3.8.	AT+QICF	Configure UART2 (Auxiliary UART)/UART3 Frame Format and Parity Algorithm	45
3.9.	AT+QIFC	Set Data Flow Control of UART2 (Auxiliary UART)/UART3.....	47
4	Status Control Commands	49
4.1.	AT+CPAS	Mobile Equipment Activity Status	49
4.2.	AT+CEER	Extended Error Report	50
4.3.	AT+QINDCFG	URC Indication Configuration	52
4.4.	AT+QRDY	Query Initialization Status	55
4.5.	AT+QCFG	Extended Settings	56
4.5.1.	AT+QCFG="nwscanmode"	Configure Network Search Mode.....	57
4.5.2.	AT+QCFG="band"	Configure Bands to Be Searched.....	58
4.5.3.	AT+QCFG="creg/emergency"	Configure Emergency Network Information Display.	60
4.5.4.	AT+QCFG="qoos"	Configure Network Search Timer Information in OOS State	61
4.5.5.	AT+QCFG="airplanecontrol"	Enable/Disable Airplane Mode Control	62
4.5.6.	AT+QCFG="usbnet"	Configure USB Network Port Protocol	64
4.5.7.	AT+QCFG="nat/cid"	Enable NAT of PDP Context	64
4.5.8.	AT+QCFG="nat/subnet"	Configure NAT Subnet Parameters of PDP Context	65
4.5.9.	AT+QCFG="usbnetmac"	Configure MAC Address of USBNet.....	66
4.5.10.	AT+QCFG="urc/ri/other"	Specify General URC RI Behavior.....	67
4.5.11.	AT+QCFG="urc/ri/smsincoming"	Specify SMS URC RI Behavior.....	68
4.5.12.	AT+QCFG="urc/ri/ring"	Specify Call Incoming URC RI Behavior.....	69
4.5.13.	AT+QCFG="urc/delay"	Specify Delay of URC Indication	70
4.5.14.	AT+QCFG="urc/cache"	Enable/Disable URC Cache	71
4.5.15.	AT+QCFG="risignaltpe"	RI Signal Output Carrier.....	71
4.5.16.	AT+QCFG="apready"	Configure AP_Ready Pin Behavior.....	72
4.5.17.	AT+QCFG="cmux/urcport"	Set Ways to Output URC for CMUX Port.....	74
4.5.18.	AT+QCFG="fota/cid"	Configure PDP Context ID in FOTA Download.....	74
4.5.19.	AT+QCFG="fota/times"	Configure HTTP FOTA Download Information.....	75
4.5.20.	AT+QCFG="fota/path"	Configure FOTA Target Firmware Package Storage Medium	76
4.5.21.	AT+QCFG="pkalive/ip"	Configure PDP Keepalive Parameter	77
4.5.22.	AT+QCFG="ledmode"	Configure Output Mode of Network Status Light (NET_STATUS).....	78
4.5.23.	AT+QCFG="led/sim"	Configure (U)SIM ID Pointed by the Network Status Light (NET_MODE/NET_STATUS) in Dual SIM Dual Standby	79
4.5.24.	AT+QCFG="tone/incoming"	Configure Ringtone of Incoming Call.....	80
4.5.25.	AT+QCFG="sleepind/level"	Configure the Output Level of the SLEEP_IND Pin.....	81

4.5.26.	AT+QCFG="wakeupin/level" Configure Wake-Up Behavior and Load/Unload USB Through WAKEUP_IN Pin.....	82
4.5.27.	AT+QCFG="ntp" Configure the Maximum Retransmission Counts and the Interval for NTP.....	83
4.5.28.	AT+QCFG="esmfail/times" Set the Maximum Number of Consecutive LTE Registration Failure and Fall Back to the GSM Network.....	84
4.5.29.	AT+QCFG="rtc/cfg" Set RTC Launch Configuration	85
4.5.30.	AT+QCFG="pdn/pco" Configure Whether the PCO in the PDN Request Carries Encrypted Cells When the Module Is Attached to the Network	86
5	(U)SIM Related Commands	88
5.1.	AT+CIMI Request International Mobile Subscriber Identity (IMSI).....	88
5.2.	AT+CLCK Facility Lock	89
5.3.	AT+CPIN Enter PIN.....	90
5.4.	AT+CPWD Change Password	92
5.5.	AT+CSIM Generic (U)SIM Access.....	93
5.6.	AT+CRSM Restricted (U)SIM Access.....	94
5.7.	AT+QCCID Show ICCID	96
5.8.	AT+QINISTAT Query Initialization Status of (U)SIM Card	97
5.9.	AT+QSIMDET (U)SIM Card Detection.....	97
5.10.	AT+QSIMSTAT (U)SIM Card Insertion Status Report.....	98
5.11.	AT+CCHO Open Logical Channel	100
5.12.	AT+CGLA UICC Logical Channel Access	101
5.13.	AT+CCHC Close Logical Channel	102
5.14.	AT+QPINC Get the Remaining Retries of PIN/PUK.....	103
6	Network Service Commands	104
6.1.	AT+COPS Operator Selection	104
6.2.	AT+CREG CS Domain Network Registration Status.....	106
6.3.	AT+CSQ Signal Quality Report.....	107
6.4.	AT+CPOL Preferred Operator List.....	109
6.5.	AT+COPN Read Operator Names.....	110
6.6.	AT+CTZU Automatic Time Zone Update	111
6.7.	AT+CTZR Time Zone Change Reporting	112
6.8.	AT+QLTS Obtain the Latest Time Synchronized Through Network.....	114
6.9.	AT+QNWINFO Query Network Information.....	115
6.10.	AT+QSPN Query Operator Name.....	117
6.11.	AT+QCSQ Query and Report Signal Strength	118
6.12.	AT+CIND Query Indicator State.....	120
7	Call Related Commands.....	122
7.1.	ATA Answer an Incoming Call	122
7.2.	ATD Mobile Originated Call to Dial a Number	123
7.3.	ATH Disconnect Existing Connection	124
7.4.	AT+CVHU Voice Hang up Control	125
7.5.	AT+CHUP Hang up Voice Call.....	125

7.6.	+++	Switch from Data Mode to Command Mode.....	126
7.7.	ATO	Switch from Command Mode to Data Mode	127
7.8.	ATS0	Set Number of Rings before Automatic Answering	128
7.9.	ATS7	Set Time to Wait for Connection Completion.....	129
7.10.	AT+CSTA	Select Type of Address.....	129
7.11.	AT+CLCC	List Current Calls of ME.....	130
7.12.	AT+CRC	Set the Extended Format for Incoming Call Indication.....	132
7.13.	AT+QECCNUM	Configure Emergency Call Numbers	133
7.14.	AT+QHUP	Hang up Call with a Specific Release Cause	135
7.15.	AT+QCHLDIPMPTY	Hang Up a Call in the VoLTE Conference	137
8	Phonebook Commands.....		139
8.1.	AT+CNUM	Subscriber Number.....	139
8.2.	AT+CPBF	Find Phonebook Entries	140
8.3.	AT+CPBR	Read Phonebook Entries	141
8.4.	AT+CPBS	Select Phonebook Memory Storage.....	142
8.5.	AT+CPBW	Write Phonebook Entry.....	143
9	Short Message Service Commands.....		145
9.1.	AT+CSMS	Select Message Service	145
9.2.	AT+CMGF	Message Format.....	146
9.3.	AT+CSCA	Service Center Address	147
9.4.	AT+CPMS	Preferred Message Storage.....	148
9.5.	AT+CMGD	Delete Message.....	150
9.6.	AT+CMGL	List Message	151
9.7.	AT+CMGR	Read Message	155
9.8.	AT+CMGS	Send Message.....	159
9.9.	AT+CMMS	More Messages to Send	160
9.10.	AT+CMGW	Write Message to Memory.....	161
9.11.	AT+CMSS	Send Message from Storage	163
9.12.	AT+CNMA	New Message Acknowledgement to UE/TE.....	165
9.13.	AT+CNMI	SMS Event Reporting Configuration	167
9.14.	AT+CSDH	Show SMS Text Mode Parameters.....	169
9.15.	AT+CSMP	Set SMS Text Mode Parameters	170
9.16.	AT+QCMGS	Send Concatenated Messages	171
9.17.	AT+QCMGR	Read Concatenated Messages.....	173
10	Packet Domain Commands		175
10.1.	AT+CGATT	Attachment or Detachment of PS	175
10.2.	AT+CGDCONT	Define PDP Context.....	176
10.3.	AT+CGQREQ	Quality of Service Profile (Requested).....	178
10.4.	AT+CGQMIN	Quality of Service Profile (Minimum Acceptable).....	181
10.5.	AT+CGACT	Activate or Deactivate PDP Context.....	183
10.6.	AT+CGDATA	Enter Data State.....	184
10.7.	AT+CGPADDR	Show PDP Address.....	185
10.8.	AT+CGCLASS	GPRS Mobile Station Class	187

10.9.	AT+CGREG	PS Domain Network Registration Status	188
10.10.	AT+CGEREP	Packet Domain Event Reporting.....	189
10.11.	AT+CGSMS	Select Service for MO SMS Messages.....	191
10.12.	AT+CEREG	EPS Network Registration Status.....	192
10.13.	AT+QGDCNT	Packet Data Counter	194
10.14.	AT+QAUGDCNT	Auto Save Packet Data Counter.....	195
10.15.	AT+CGCONTRDP	PDP Context Read Dynamic Parameters.....	196
10.16.	AT+QNETDEVCTL	Configure Network Adapter Data Call.....	198
11	Supplementary Service Commands		201
11.1.	AT+CCFC	Call Forwarding Number and Conditions Control	201
11.2.	AT+CCWA	Call Waiting Control.....	203
11.3.	AT+CHLD	Call Related Supplementary Services.....	205
11.4.	AT+CLIP	Calling Line Identification Presentation.....	207
11.5.	AT+CLIR	Calling Line Identification Restriction	209
11.6.	AT+COLP	Connected Line Identification Presentation.....	210
11.7.	AT+CSSN	Supplementary Service Notifications	212
11.8.	AT+CUSD	Unstructured Supplementary Service Data	213
12	Audio Commands		215
12.1.	AT+CLVL	Loudspeaker Volume Level Selection.....	215
12.2.	AT+QAUDLOOP	Enable/Disable Audio Loop Test	216
12.3.	AT+QAUDRD	Record Audio File	216
12.4.	AT+QPSND	Play Audio File to Uplink or Downlink.....	218
12.5.	AT+QAUDPLAY	Play Audio File to Downlink.....	220
12.6.	AT+QAUDSTOP	Stop Playing Audio File	221
12.7.	AT+QAUDMOD	Set Audio Mode	222
12.8.	AT+QIIC	IIC Read/Write.....	223
12.9.	AT+QDAI	Configure Digital Audio.....	224
12.10.	AT+QAUDSW	Codec Switch	225
12.11.	AT+QAUDPASW	Switch Audio PA Type.....	227
12.12.	AT+QTTS	Play Text	228
12.13.	AT+QWTTS	Play or Send Text to Far-end	230
12.14.	AT+QTTSETUP	Set Parameters for TTS	232
12.15.	AT+QAUDCFG="urc"	Enable/Disable Reporting Sample Rate Through URC	233
12.16.	AT+QICMIC	Set the Uplink Gain of Microphone	234
12.17.	AT+QRXGAIN	Set Downlink Gain	235
12.18.	AT+QICSIDET	Set the Sidetone Gain	236
12.19.	AT+QLDTMF	Play or Stop Local DTMF Tone Playing	237
12.20.	AT+QWDTMF	Play or Send DTMF Tone to Far-end.....	238
12.21.	AT+VTS	Send DTMF Tone to Remote Subscriber.....	240
12.22.	AT+QLTONE	Play Local Customized Tones.....	241
12.23.	AT+QLTONEX	Play Local Customized Tones	242
12.24.	AT+QTONEDET	Enable/Disable DTMF Detection.....	244
13	Hardware Related Commands.....		246

13.1. AT+QPOWD Power Off the Module.....	246
13.2. AT+CCLK Clock	247
13.3. AT+CBC Query Battery Charge Status and Quantity.....	248
13.4. AT+QADC Read ADC Value.....	249
13.5. AT+QWIFISCAN Synchronously Scan Wi-Fi AP (Hotspot) Information	250
13.6. AT+QWIFISCANEX Asynchronously Scan Wi-Fi AP (Hotspot) Information.....	252
14 Appendix and Reference.....	254
14.1. References.....	254
14.2. AT Command Settings Storable with AT&F	259
14.3. AT Command Settings Storable with AT&W	261
14.4. AT Command Settings Storable with ATZ.....	262
14.5. Summary of CME ERROR Codes	262
14.6. Summary of CMS ERROR Codes	264
14.7. Summary of URC	266
14.8. SMS Character Sets Conversions	269
14.9. Release Cause Text List of AT+CEER.....	275

Table Index

Table 1: Applicable Modules	13
Table 2: Types of AT Commands	15
Table 3: AT&V Response.....	24
Table 4: ATV0&ATV1 Result Codes Numeric Equivalents and Brief Description.....	28
Table 5: Signal Strength Type.....	119
Table 6: Delay Class	180
Table 7: The Description of <code> in URC +QAUDRIND: 0,<code>	218
Table 8: Related Documents.....	254
Table 9: Terms and Abbreviations	254
Table 10: AT Command Settings Storable with AT&F	259
Table 11: AT Command Settings Storable with AT&W	261
Table 12: AT Command Settings Storable with ATZ.....	262
Table 13: Different Coding Schemes of +CME ERROR: <err>	263
Table 14: Different Coding Schemes of +CMS ERROR: <err>	264
Table 15: Summary of URC	266
Table 16: The Way of SMS Text Input or Output.....	269
Table 17: The Input Conversions Table (DCS = GSM 7 bit and AT+CSCS="GSM")	269
Table 18: The Output Conversions Table (DCS = GSM 7-bit and AT+CSCS="GSM")	270
Table 19: GSM Extended Characters	271
Table 20: The Input Conversions Table (DCS = GSM 7-bit and AT+CSCS="IRA")	271
Table 21: IRA Extended Characters	272
Table 22: The Output Conversions Table (DCS = GSM 7-bit and AT+CSCS="IRA")	273
Table 23: GSM Extended Characters (ISO-8859-1/Unicode)	274
Table 24: List of Location ID List.....	275
Table 25: List of Cause	275

1 Introduction

This document presents the AT commands set for the following Quectel EC200U series, EG800G series, EG91xU family and EG915G-EU modules.

1.1. Applicable Modules

Table 1: Applicable Modules

Module Family	Module
-	EC200U Series
-	EG800G Series
EG91xU	EG912U Series
	EG915U Series
-	EG915G-EU

NOTE

Preset files for functions such as GNSS, BT and TTS in the file system cannot be deleted at will.

1.2. AT Command Syntax

1.2.1. Definitions

- **<CR>** Carriage return character.
- **<LF>** Line feed character.
- **<...>** Parameter name. Angle brackets do not appear on command line.
- **[...]** Optional parameter of a command or an optional part of TA information response. Square brackets do not appear on the command line. When an optional parameter is not given in a command, the new value equals its previous value or the default settings, unless otherwise specified.
- **Underline** Default setting of a parameter.

1.2.2. AT Command Syntax

All command lines must start with **AT** or **at** and end with **<CR>**. Information responses and result codes always start and end with a carriage return character and a line feed character: **<CR><LF><response><CR><LF>**. In tables presenting commands and responses throughout this document, only the commands and responses are presented, and **<CR>** and **<LF>** are deliberately omitted.

AT commands implemented by EC200U series, EG800G series, EG91xU family and EG915G-EU modules fall into three categories syntactically: “Basic”, “S Parameter” and “Extended”, as listed below:

- **Basic Command**

These AT commands have the format of **AT<x><n>**, or **AT&<x><n>**, where **<x>** is the command, and **<n>** is/are the argument(s) for that command. An example of this is **ATE<n>**, which tells the DCE (Data Circuit-terminating Equipment) whether received characters should be echoed back to the DTE (Data Terminal Equipment) according to the value of **<n>**. **<n>** is optional and a default will be used if it is omitted.

- **S Parameter Syntax**

These AT commands are in the format of **ATS<n>=<m>**, where **<n>** is the index of the **S** register to set, and **<m>** is the value to assign to it.

- **Extended Command**

These commands can be operated in several modes, as shown in the following table:

Table 2: Types of AT Commands

Command Type	Syntax	Description
Test Command	AT+<cmd>=?	Test the existence of corresponding Write Command and return information about the type, value, or range of its parameter.
Read Command	AT+<cmd>?	Check the current parameter value of a corresponding Write Command.
Write Command	AT+<cmd>=<p1>[,<p2>[,<p3>[...]]]	Set user-definable parameter value.
Execution Command	AT+<cmd>	Return a specific information parameter or perform a specific action.

Multiple commands can be placed on a single line using a semi-colon (;) between commands. In such cases, only the first command should have **AT** prefix. Commands can be in upper or lower case. Spaces should be ignored when you enter AT commands, except in the following cases:

- Within quoted strings, where spaces are preserved;
- Within an unquoted string or numeric parameter;
- Within an IP address;
- Within the AT command name up to and including a =, ? or =?.

On input, at least a carriage return is required. A newline character is ignored so it is permissible to use carriage return/line feed pairs on the input.

If no command is entered after the **AT** token, **OK** will be returned. If an invalid command is entered, **ERROR** will be returned.

Optional parameters, unless explicitly stated, need to be provided up to the last parameter being entered.

1.3. Supported Character Sets

The AT command interface of EC200U series, EG800G series, EG91xU family and EG915G-EU modules default to the **GSM** character set. The above modules support the following character sets:

- GSM format
- UCS2
- IRA

The character set can be configured and interrogated by using the **AT+CSCS** (3GPP TS 27.007) and it is defined in 3GPP TS 27.005. The character set affects transmission and reception of SMS and SMS Cell Broadcast Messages, as well as the entry and display of phonebook entries text field.

1.4. AT Command Interface

EC200U series, EG800G series, EG91xU family and EG915G-EU modules AT command interface includes two USB ports (USB MODEM port and USB AT port) and one main UART port. The main UART port and two USB ports support AT command communication and data transfer.

1.5. Unsolicited Result Code

As an Unsolicited Result Code and a report message, URC is not issued as part of the response related to an executed AT command. URC is issued by the modules without being requested by the TE and it is issued automatically when a certain event occurs. Typical events leading to URCs are incoming calls (**RING**), received short messages, etc.

1.6. Turn off Procedure

It is recommended to execute **AT+QPOWD** to turn off the module, as it is the safest and best way. This procedure is realized by letting the module log off from the network and allowing the software to enter into a secure and safe data state before disconnecting the power supply.

After sending **AT+QPOWD**, do not enter any other AT commands. The module outputs message, **POWERED DOWN** and sets the STATUS pin as low to enter into the shutdown state. In order to avoid data loss, it is suggested to wait for 1s to switch off the VBAT after the STATUS pin is set as low and the URC **POWERED DOWN** is outputted. If **POWERED DOWN** has not been received after 65s, the VBAT shall be switched off compulsorily.

1.7. Declaration of AT Command Examples

The AT command examples in this document are provided to help you learn about how to use the AT commands introduced herein. The examples, however, should not be taken as Quectel's recommendation or suggestions about how you should design a program flow or what status you should set the module into. Sometimes multiple examples may be provided for one AT command. However, this does not mean that there exists a correlation among these examples, or that they should be executed in a given sequence.

2 General Commands

2.1. ATI Display MT Identification Information

This command delivers the MT information text.

ATI Display MT Identification Information	
Execution Command ATI	Response Quectel <objectID> Revision: <revision> OK
Maximum Response Time	300 ms
Characteristics	/
Reference V.25ter	

Parameter

<objectID>	String type. Identifier of device type.
<revision>	String type. Identification text of product software version.

Example

```
ATI
Quectel
EC200U
Revision: EC200UCNAAR01A04M08

OK
```

2.2. AT+GMI Request Manufacturer Identification

This command returns the manufacturer identification text. It is identical with **AT+CGMI**.

AT+GMI Request Manufacturer Identification	
Test Command AT+GMI=?	Response OK
Execution Command AT+GMI	Response Quectel OK
Maximum Response Time	300 ms
Characteristics	/
Reference V.25ter	

2.3. AT+GMM Request MT Model Identification

This command returns a MT model identification text. It is identical with **AT+CGMM**.

AT+GMM Request TA Model Identification	
Test Command AT+GMM=?	Response OK
Execution Command AT+GMM	Response <objectID> OK
Maximum Response Time	300 ms
Characteristics	/
Reference V.25ter	

Parameter

<objectID>	String type. Identifier of device type.
-------------------------	---

2.4. AT+GMR Request TA Firmware Revision Identification

This command delivers the product firmware version identification text. It is identical with **AT+CGMR**.

AT+GMR Request TA Firmware Revision Identification	
Test Command AT+GMR=?	Response OK
Execution Command AT+GMR	Response <revision> OK
Maximum Response Time	300 ms
Characteristics	/
Reference V.25ter	

Parameter

<revision>	String type. Identification text of TA firmware version.
-------------------------	--

Example

```
AT+GMR
EC200UCNAAR01A04M08
OK
```

2.5. AT+CGMI Request Manufacturer Identification

This command returns the manufacturer identification text. It is identical with **AT+GMI**.

AT+CGMI Request Manufacturer Identification	
Test Command AT+CGMI=?	Response OK
Execution Command AT+CGMI	Response Quectel OK

Maximum Response Time	300 ms
Characteristics	/
Reference	
3GPP TS 27.007	

2.6. AT+CGMM Request MT Model Identification

This command returns the MT model identification text. It is identical with **AT+GMM**.

AT+CGMM Request MT Model Identification	
Test Command AT+CGMM=?	Response OK
Execution Command AT+CGMM	Response <objectID> OK
Maximum Response Time	300 ms
Characteristics	/
Reference	
3GPP TS 27.007	

Parameter

<objectID>	String type. Identification of the device type.
-------------------------	---

2.7. AT+CGMR Request TA Firmware Revision Identification

This command delivers the product firmware version identification text. It is identical with **AT+GMR**.

AT+CGMR Request TA Firmware Revision Identification	
Test Command AT+CGMR=?	Response OK
Execution Command AT+CGMR	Response <revision>

	OK
Maximum Response Time	300 ms
Characteristics	/
Reference	
3GPP TS 27.007	

Parameter

<revision>	String type. Identification text of TA firmware version.
-------------------------	--

2.8. AT+GSN Request International Mobile Equipment Identity and Serial Number

This command returns the International Mobile Equipment Identity (IMEI) number and Serial Number (SN) of ME. It is identical with **AT+CGSN**.

AT+GSN Request International Mobile Equipment Identity and Serial Number	
Test Command AT+GSN=?	Response +GSN: (list of supported <snt>s) OK
Write Command AT+GSN=<snt>	Response If <snt>=0 , query SN of the ME: +GSN: <SN> OK If <snt>=1 , query IMEI of the ME: +GSN: <IMEI> OK
Execution Command AT+GSN	Response <IMEI> OK Or ERROR

	If there is any error related to ME functionality: +CMS ERROR: <err>
Maximum Response Time	300 ms
Characteristics	/
Reference	
V.25ter	

Parameter

<snt>	Integer type. Control to query SN or IMEI of the ME. 0 Query SN of the ME 1 Query IMEI of the ME
<SN>	String type. SN of the ME.
<IMEI>	String type. IMEI of the ME.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

Each ME device has a unique SN number or IMEI number, which can be used to identify the ME.

2.9. AT+CGSN Request International Mobile Equipment Identity and Serial Number

This command returns the International Mobile Equipment Identity (IMEI) number and Serial Number (SN) of ME. It is identical with **AT+GSN**.

AT+CGSN Request International Mobile Equipment Identity and Serial Number	
Test Command AT+CGSN=?	Response +CGSN: (list of supported <snt>s) OK
Write Command AT+CGSN=<snt>	Response If <snt>=0 , query SN of the ME: +CGSN: <SN> OK If <snt>=1 , query IMEI of the ME:

	+CGSN: <IMEI>
	OK
Execution Command AT+CGSN	Response <IMEI> OK Or ERROR If there is any error related to ME functionality: +CMS ERROR: <err>
Maximum Response Time	300 ms
Characteristics	/
Reference 3GPP TS 27.007	

Parameter

<snt>	Integer type. Control to query SN or IMEI of the ME. 0 Query SN of the ME 1 Query IMEI of the ME
<SN>	String type. SN of the ME.
<IMEI>	String type. IMEI of the ME.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

Each ME device has a unique SN number or IMEI number, which can be used to identify the ME.

2.10. AT&F Restore AT Command Settings to Factory Defaults

This command restores AT command settings to the factory defaults (See **Table 10**).

AT&F Restore AT Command Settings to Factory Defaults	
Execution Command AT&F[<value>]	Response OK
Maximum Response Time	300 ms

Characteristics	/
Reference V.25ter	

Parameter

<value>	Integer type.
<u>0</u>	Set AT commands settings to factory defaults

2.11. AT&V Display Current Configuration

This command displays the current settings of several AT command parameters (See **Table 3**), including the single-letter AT command parameters which are not readable otherwise.

AT&V Display Current Configuration	
Execution Command AT&V	Response OK
Maximum Response Time	300 ms
Characteristics	/
Reference V.25ter	

Table 3: AT&V Response

AT&V
&C: 1
&D: 2
&F: 0
&W: 0
E: 1
Q: 0
V: 1
X: 4
Z: 0
S0: 0
S3: 13
S4: 10
S5: 8

S7: 0

OK

2.12. AT&W Store Current Settings to User-defined Profile

This command stores the current AT command settings to a user-defined profile in non-volatile memory (See **Table 11**).

AT&W Store Current Settings to User-defined Profile	
Execution Command AT&W[<n>]	Response OK
Maximum Response Time	300 ms
Characteristics	/
Reference V.25ter	

Parameter

<n>	Integer type. <u>0</u> Profile number to store current AT command settings
------------------	---

2.13. ATZ Restore AT Command Setting from User-defined Profile

This command restores the current AT command settings from the user-defined profile. The current AT command settings can be restored in user-defined profiles in NVW, if they have been stored in NVW with **AT&W** before (See **Table 12**). Any additional AT command on the same command line may be ignored.

ATZ Restore AT Command Setting from User-defined Profile	
Execution Command ATZ[<value>]	Response OK
Maximum Response Time	300 ms
Characteristics	/
Reference V.25ter	

Parameter

<value>	Integer type.
<u>0</u>	Profile number to restore

2.14. ATQ Set Result Code Echo Mode

This command controls whether the result code is transmitted to the TE. Other information text transmitted as response is not affected.

ATQ Set Result Code Echo Mode	
Execution Command ATQ<n>	Response If <n>=0: OK If <n>=1: (none)
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved only if you execute AT&W after this command.
Reference V.25ter	

Parameter

<n>	Integer type.
<u>0</u>	TA transmits result code
1	Result codes are suppressed and not transmitted

2.15. ATV TA Response Format

This command determines the contents of header and trailer transmitted with AT command result codes and information responses.

The result codes, their numeric equivalents and brief descriptions are listed in the following.

ATV TA Response Format	
Execution Command ATV<value>	Response When <value>=0 : 0 When <value>=1 : OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved only if you execute AT&W after this command.
Reference V.25ter	

Parameter

<value>	Integer type.
0	Information response: <text><CR><LF> Short result code format: <numeric code><CR>
1	Information response: <CR><LF><text><CR><LF> Long result code format: <CR><LF><verbose code><CR><LF>

Example

```

ATV1 //Set <value>=1.
OK
AT+CSQ
+CSQ: 30,99

OK //When <value>=1, the result code is OK.
ATV0 //Set <value>=0.
0
AT+CSQ
+CSQ: 30,99
0 //When <value>=0, the result code is 0.
    
```

Table 4: ATV0&ATV1 Result Codes Numeric Equivalent and Brief Description

ATV1	ATV0	Description
OK	0	Acknowledges execution of a command
CONNECT	1	A connection has been established; the DCE is moving from command mode to data mode
RING	2	The DCE has detected an incoming call signal from network
NO CARRIER	3	The connection has been terminated or the attempt to establish a connection failed
ERROR	4	Command not recognized, command line maximum length exceeded, parameter value invalid, or other problem with processing the command line
NO DIALTONE	6	No dial tone detected
BUSY	7	Engaged (busy) signal detected
NO ANSWER	8	"@" (Wait for Quiet Answer) dial modifier was used, but remote ringing followed by five seconds of silence was not detected before expiration of the connection timer (S7)

2.16. ATE Set Command Echo Mode

This command controls whether TA echoes characters received from TE or not in AT command mode.

ATE Set Command Echo Mode	
Execution Command ATE<value>	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved only if you execute AT&W after this command.
Reference V.25ter	

Parameter

<value>	Integer type. Whether TA echoes characters received from TE or not.
0	Echo mode OFF

1 Echo mode ON

2.17. A/ Repeat Previous Command Line

This command repeats previous AT command line, and "/" acts as the line feed character.

A/ Repeat Previous Command Line	
Execution Command	Response
A/	Repeat the previous command
Characteristics	/
Reference	
V.25ter	

Example

```

ATI
Quectel
EC200U
Revision: EC200UCNAAR01A04M08

OK
A/ //Repeat the previous command.
Quectel
EC200U
Revision: EC200UCNAAR01A04M08

OK
    
```

2.18. ATS3 Set Command Line Termination Character

This command determines the character recognized by the module to terminate an incoming command line. It is also generated for result codes and information text, along with character set via **ATS4**.

ATS3 Set Command Line Termination Character	
Read Command	Response
ATS3?	<n>
	OK
Write Command	Response

ATS3=<n>	OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved only if you execute AT&W after this command.
Reference V.25ter	

Parameter

<n> Integer type. Command line termination character. Range: 0–127. Default: 13.

2.19. ATS4 Set Response Formatting Character

This command determines the character generated by the module for result code and information text, along with the command line termination character set via **ATS3**.

ATS4 Set Response Formatting Character	
Read Command ATS4?	Response <n> OK
Write Command ATS4=<n>	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved only if you execute AT&W after this command.
Reference V.25ter	

Parameter

<n> Integer type. Response formatting character. Range: 0–127. Default: 10.

2.20. ATS5 Set Command Line Editing Character

This command determines the value of editing character used by TA to delete the immediately preceding character from the AT command line (i.e. equates to backspace key).

ATS5 Set Command Line Editing Character	
Read Command ATS5?	Response <n> OK
Write Command ATS5=<n>	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved only if you execute AT&W after this command.
Reference V.25ter	

Parameter

<n> Integer type. Response editing character. Range: 0–127. Default: 8.

2.21. ATX Set CONNECT Result Code Format and Monitor Call Progress

This command determines whether TA transmits particular result codes to the TE or not. It also controls whether TA detects the presence of a dial tone when it begins dialing and the engaged tone (busy signal) or not.

ATX Set CONNECT Result Code Format and Monitor Call Progress	
Execution Command ATX<value>	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved only if you execute AT&W after this command.

Reference
V.25ter

Parameter

- <value>** Integer type.
- 0 Only **CONNECT** result code returned, dial tone and busy detection are both disabled
 - 1 Only **CONNECT<text>** result code returned, dial tone and busy detection are both disabled
 - 2 **CONNECT<text>** result code returned, dial tone detection is enabled, and busy detection is disabled
 - 3 **CONNECT<text>** result code returned, dial tone detection is disabled, and busy detection is enabled
 - 4 **CONNECT<text>** result code returned, and dial tone and busy detection are both enabled

2.22. AT+CFUN Set Function Mode

This command controls the function mode. It can also be used to reset the UE.

AT+CFUN Set Function Mode	
Test Command AT+CFUN=?	Response +CFUN: (list of supported <fun>s),(list of supported <rst>s) OK
Read Command AT+CFUN?	Response +CFUN: <fun> OK
Write Command AT+CFUN=<fun>[,<rst>]	Response OK If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	15 s, determined by network.
Characteristics	The command takes effect immediately. The configurations are not saved.
Reference 3GPP TS 27.007	

Parameter

<fun>	Integer type. Function mode. 0 Minimum function mode <u>1</u> Full function mode 4 Disable the UE from both transmitting and receiving RF signals (airplane mode)
<rst>	Integer type. Whether to reset. <u>0</u> Do not trigger reset before setting it to <fun> function mode 1 Trigger reset. The device can be used normally after the reset. This value is available only for <fun>=1
<err>	Error codes. For more details, please refer to Chapter 14.5 .

Example

```

AT+CFUN=0 //Switch UE to minimum function mode.
OK
AT+COPS?
+COPS: 0 //No network.

OK
AT+CPIN?
+CME ERROR: 13 //Read (U)SIM failure.
AT+CFUN=1 //Switch UE to full function mode.
OK

+CPIN: SIM PIN
AT+CPIN="1234"
OK

+CPIN: READY

+QUSIM: 1

+QIND: SMS DONE
AT+CPIN?
+CPIN: READY

OK
AT+COPS?
+COPS: 0,0,"CHINA MOBILE",7 //Network is registered.

OK
    
```

2.23. AT+CMEE Set Error Message Format

This command disables or enables the use of final result code **+CME ERROR: <err>** as the indication of an error. After enabling, if an error occurs, the final result code of **+CME ERROR: <err>** is returned instead of **ERROR**.

AT+CMEE Set Error Message Format	
Test Command AT+CMEE=?	Response +CMEE: (range of supported <n>s) OK
Read Command AT+CMEE?	Response +CMEE: <n> OK
Write Command AT+CMEE=<n>	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved only if you execute AT&W after this command.
Reference	3GPP TS 27.007

Parameter

<n>	Integer type.
0	Disable result code and use ERROR instead
1	Enable result code and use numeric values
2	Enable result code and use verbose values

Example

```

AT+CMEE=0 //Disable result code.
OK
AT+CPIN?
ERROR //Only ERROR is displayed.

AT+CMEE=1 //Enable error result code with numeric values.
OK
AT+CPIN?
+CME ERROR: 10
    
```

```
AT+CMEE=2 //Enable error result code with verbose (string) values.
OK
AT+CPIN?
+CME ERROR: SIM not inserted
```

2.24. AT+CSCS Select TE Character Set

This command informs the MT which character set is used by the TE. This enables the MT to convert character strings correctly between TE and MT character sets.

AT+CSCS Select TE Character Set	
Test Command AT+CSCS=?	Response +CSCS: (list of supported <chset>s) OK
Read Command AT+CSCS?	Response +CSCS: <chset> OK
Write Command AT+CSCS=<chset>	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved only if you execute AT&W after this command.
Reference 3GPP TS 27.007	

Parameter

<chset>	String type.
"GSM"	GSM default alphabet
"HEX"	Character strings consist only of hexadecimal numbers from 00 to FF
"PCCP936"	PCCP936 character set
"IRA"	International reference character set
"UCS2"	UCS2 character set

Example

```

AT+CSCS? //Query the current character set.
+CSCS: "GSM" //The character set is GSM.

OK
AT+CSCS="UCS2" //Set the character set to UCS2.
OK
AT+CSCS?
+CSCS: "UCS2" //Query that the character set is UCS2 after the configuration.

OK
    
```

2.25. AT+QURCCFG Configure Output Port of URC

This command configures the output port of URC.

AT+QURCCFG Configure Output Port of URC	
Test Command AT+QURCCFG=?	Response +QURCCFG: "urcport",(list of supported <urc_port_value>s) OK
Write Command AT+QURCCFG="urcport"[,<urc_port_value>]	Response If the optional parameter is omitted, query the current setting: +QURCCFG: "urcport",<urc_port_value> OK If the optional parameter is specified, configure the output port of URC: OK Or ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved automatically.

Parameter

<urc_port_value>	String type. Set URC output port.	
"usbat"	USB AT port	
"usbmodem"	USB modem port	
"uart1"	Main UART	
"uart2"	UART2 (auxiliary UART)	
"uart3"	UART3 (Only valid when GNSS is not supported)	
"usbnmea"	USB Serial Port1	
"all"	All ports	

Example

```

AT+QURCCFG=?
+QURCCFG: "urcport",("usbat","usbmodem","uart1","uart2","uart3","usbnmea","all")

OK
AT+QURCCFG="urcport" //Query the current setting of URC output port.
+QURCCFG: "urcport","usbat"

OK
AT+QURCCFG="urcport","usbmodem" //Configure URC output port as USB modem port.
OK
AT+QURCCFG="urcport"
+QURCCFG: "urcport","usbmodem"

OK
    
```

3 UART Control Commands

3.1. AT&C Set DCD Function Mode

This command sets DCD (data carrier detection) function mode.

AT&C Set DCD Function Mode	
Execution Command AT&C[<value>]	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved only if you execute AT&W after this command.
Reference V.25ter	

Parameter

<value>	Integer type.
0	DCD line is always ON
1	DCD line is ON only in the presence of data carrier

3.2. AT&D Set DTR Function Mode

This command determines how the TA responds if DTR line is changed from low to high level during data mode.

AT&D Set DTR Function Mode	
Execution Command AT&D[<value>]	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately.

	The configuration is saved only if you execute AT&W after this command.
Reference V.25ter	

Parameter

<value>	Integer type.
0	TA ignores signal change on DTR pin
1	Low→High on DTR: Keep the connected call and change to command mode
2	Low→High on DTR: Disconnect data call, and change to command mode. When DTR is at high level, auto-answer function is disabled

3.3. AT+IFC Set UART Flow Control

This command determines the flow control behavior of the UART for data mode.

AT+IFC Set UART Flow Control	
Test Command AT+IFC=?	Response +IFC: (list of supported <dce_by_dte>s),(list of supported <dte_by_dce>s) OK
Read Command AT+IFC?	Response +IFC: <dce_by_dte> , <dte_by_dce> OK
Write Command In data mode, set flow control of UART. AT+IFC=<dce_by_dte> , <dte_by_dce>	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved only if you execute AT&W after this command.
Reference V.25ter	

Parameter

<dce_by_dte>	Integer type. Specify the method used by TE when receiving data from TA.
0	No flow control
2	RTS flow control
<dte_by_dce>	Integer type. Specify the method used by TA when receiving data from TE.
0	No flow control
2	CTS flow control

NOTE

Generally, flow control is used in massive data transmission.

Example

```

AT+IFC=2,2 //Enable the hardware flow control.
OK
AT+IFC?
+IFC: 2,2
OK
    
```

3.4. AT+ICF Set Frame Format and Parity of UART Communication

This command determines the frame format and parity of UART communication.

AT+ICF Set Frame Format and Parity of UART Communication

Test Command AT+ICF=?	Response +ICF: (list of supported <format>s),(list of supported <parity>s) OK
Read Command AT+ICF?	Response +ICF: <format>,<parity> OK
Write Command AT+ICF=[<format>],[<parity>]	Response OK Or ERROR

Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved only if you execute AT&W after this command.
Reference V.25ter	

Parameter

<format>	Integer type. Frame format. 1 8 data bits, 2 stop bits 2 8 data bits, 1 stop bit, 1 parity bit <u>3</u> 8 data bits, 1 stop bit, no parity bit
<parity>	Integer type. Parity. Valid only when <format>=2 . <u>0</u> Odd 1 Even

NOTE

1. The command is applied for command state.
2. **<parity>** is invalid if **<format>** is configured as 1 or 3.

3.5. AT+IPR Set UART Fixed Baud Rate

This command queries and sets the baud rate of the UART.

AT+IPR Set UART Fixed Baud Rate	
Test Command AT+IPR=?	Response +IPR: (list of supported auto detectable <rate>s),(list of supported fixed <rate>s) OK
Read Command AT+IPR?	Response +IPR: <rate> OK
Write Command AT+IPR=<rate>	Response OK
Maximum Response Time	300 ms

Characteristics	The command takes effect immediately. The configuration is saved only if you execute AT&W after this command.
Reference V.25ter	

Parameter

<rate>	Integer type. Baud rate per second. Unit: bps. 0 (Adaptive baud rate) For EC200U and EG91xU series, the supported baud rate are as follows: 1200, 2400, 4800, 9600, 14400, 19200, 28800, 33600, 38400, 57600, <u>115200</u> , 230400, 250000, 460800, 500000, 921600, 1000000, 1843200, 2100000 For EG800G series and EG915G-EU, the supported baud rate are as follows: 1200, 2400, 4800, 9600, 14400, 19200, 28800, 33600, 38400, 57600, <u>115200</u> , 230400, 250000, 460800, 500000, 921600, 1000000, 1843200, 2000000
---------------------	---

NOTE

1. If a fixed baud rate is set, make sure that both TE (DTE, usually external processor) and TA (DCE, Quectel module) are configured to the same rate.
2. In multiplexing mode, the baud rate cannot be changed by the Write Command **AT+IPR=<rate>**.
3. A selected baud rate takes effect after **OK** is returned after executing the Write Command.
4. **AT+IPR=0** sets the baud rate as adaptive baud rate, and the TE needs to send "AT" or "at" first to automatically match the baud rate. After the module successfully matches the baud rate, there is no response; but you can execute any AT command, and if AT is executed successfully, it means that the module is successfully matched.

Example

```

AT+IPR=115200 //Set fixed baud rate to 115200 bps.
OK
AT&W //Store current setting that the UART communication rate is 115200 bps after restarting module.
OK
AT+IPR?
+IPR: 115200

OK
AT+IPR=115200;&W //Set fixed baud rate to 115200 bps and store current setting.
OK
    
```

3.6. AT+CBAUD Configure Main UART Baud Rate

This command configures the fixed baud rate of main UART.

AT+CBAUD Configure Main UART Baud Rate	
Test Command AT+CBAUD=?	Response +CBAUD: (list of supported fixed <rate>s) OK
Read Command AT+CBAUD?	Response +CBAUD: <rate> OK
Write Command AT+CBAUD=<rate>	Response OK If there is any error: ERROR
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is not saved.

Parameter

<rate>	Integer type. Fixed baud rate. Unit: bps. 0 (Adaptive baud rate) For EC200U and EG91xU series, the supported baud rate are as follows: 1200, 2400, 4800, 9600, 14400, 19200, 28800, 33600, 38400, 57600, <u>115200</u> , 230400, 250000, 460800, 500000, 921600, 1000000, 1843200, 2100000 For EG800G series and EG915G-EU, the supported baud rate are as follows: 1200, 2400, 4800, 9600, 14400, 19200, 28800, 33600, 38400, 57600, <u>115200</u> , 230400, 250000, 460800, 500000, 921600, 1000000, 1843200, 2000000
---------------------	--

NOTE

1. If a fixed baud rate is set, make sure that both TE (DTE, usually external processor) and TA (DCE, Quectel module) are configured to the same baud rate.
2. In multiplex mode, the baud rate cannot be configured by **AT+CBAUD=<rate>**.
3. A selected baud rate takes effect after the Write Command is executed and **OK** is returned.

Example

```
AT+CBAUD=460800 //Set fixed baud rate to 460800 bps.
OK
AT+CBAUD?
+CBAUD: 460800
OK
```

3.7. AT+QIPR Configure UART2 (Auxiliary UART)/ UART3 Baud Rate

This command configures UART2/3 baud rate.

AT+QIPR Configure UART2/3 Baud Rate	
Test Command AT+QIPR=?	Response +QIPR: (list of supported <port>s),(list of supported <rate>s) OK
Read Command AT+QIPR?	Response +QIPR: <port>,<rate> +QIPR: <port>,<rate> OK
Write Command AT+QIPR=<port>,<rate>	Response OK If there is any error: ERROR
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is saved only if you execute AT&W after this command.

Parameter

<port>	Integer type. UART name. 1 UART2 2 UART3
<rate>	Integer type. Baud rate. Unit: bps. 0 (Adaptive baud rate) For EC200U and EG91xU series, the supported baud rate are as follows:

1200, 2400, 4800, 9600, 14400, 19200, 28800, 33600, 38400, 57600, 115200,
230400, 250000, 460800, 500000, 921600, 1000000, 1843200, 2100000

For EG800G series and EG915G-EU, the supported baud rate are as follows:

1200, 2400, 4800, 9600, 14400, 19200, 28800, 33600, 38400, 57600, 115200,
230400, 250000, 460800, 500000, 921600, 1000000, 1843200, 2000000

NOTE

1. If a fixed baud rate is set (<rate> is not 0), make sure that both TE (DTE, usually external processor) and TA (DCE, Quectel module) are configured to the same baud rate.
2. In multiplex mode, the baud rate cannot be configured by **AT+QIPR=<port>,<rate>**.
3. A selected baud rate takes effect after the Write Command is executed and **OK** is returned.

Example

```

AT+QIPR=1,460800 //Set fixed baud rate to 460800 bps for UART2.
OK
AT+QIPR?
+QIPR: 1,460800
+QIPR: 2,115200

OK
AT&W //Store current settings that the baud rate of UART2 is 460800 bps after the module is rebooted.
OK
AT+QIPR?
+QIPR: 1,460800
+QIPR: 2,115200

OK
    
```

3.8. AT+QICF Configure UART2 (Auxiliary UART)/UART3 Frame Format and Parity Algorithm

This command configures UART2/3 frame format and parity algorithm.

AT+QICF Configure UART2/3 Frame Format and Parity Algorithm

Test Command	Response
AT+QICF=?	+QICF: (list of supported <port>s),(range of supported <format>s),(list of supported <parity>s)

	OK
Read Command AT+QICF?	Response +QICF: <port>,<format>,<parity> +QICF: <port>,<format>,<parity>
Write Command AT+QICF=<port>[,<format>[,<parity>]]	OK OK If there is any error: ERROR
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is saved only if you execute AT&W after this command.

Parameter

<port>	Integer type. UART name. 1 UART2 2 UART3
<format>	Integer type. Frame format. 1 8 data bits, 2 stop bits, no parity bit 2 8 data bits, 1 stop bit, 1 parity bit 3 8 data bits, 1 stop bit, no parity bit
<parity>	Integer type. Parity algorithm. Valid only when <format>=2 . 0 Odd 1 Even

NOTE

1. The command is applied for command state.
2. **<parity>** is invalid If **<format>** is configured as 1 or 3.
3. When AT+QICF? Is executed to query the current configuration, if the returned **<format>** is 1 or 3, there is no need to pay attention to the third parameter returned.

Example

```
AT+QICF=2,3 //Set the frame format to 8 data bits, 1 stop bit, no parity bit for UART3.
OK
AT+QICF?
```

```
+QICF: 1,3,0
+QICF: 2,3,0

OK
AT&W //Store current settings that the frame format UART3 is 8 data bits, 1 stop bit, no parity bit after
the module is rebooted.

OK
AT+QICF?
+QICF: 1,3,0
+QICF: 2,3,0

OK
```

3.9. AT+QIFC Set Data Flow Control of UART2 (Auxiliary UART)/UART3

This command sets the flow control behavior of UART2/3.

AT+QIFC Set Data Flow Control of UART2/3	
Test Command AT+QIFC=?	Response +QIFC: (list of supported <port>s),(list of supported <dce_by_dte>s),(list of supported <dte_by_dce>s) OK
Read Command AT+QIFC?	Response +QIFC: <port>,<dce_by_dte>,<dte_by_dce> +QIFC: <port>,<dce_by_dte>,<dte_by_dce> OK
Write Command AT+QIFC=<port>[,<dce_by_dte>,<dte_by_dce>]	Response OK If there is any error: ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved only if you execute AT&W after this command.

Parameter

<port>	Integer type. UART name. 1 UART2 2 UART3
<dce_by_dte>	Integer type. Specify the flow control behavior when TE receives data from TA. <u>0</u> No flow control 2 RTS flow control
<dte_by_dce>	Integer type. Specify the flow control behavior when TA receives data from TE. <u>0</u> No flow control 2 CTS flow control

NOTE

Generally, flow control is used in massive data transmission.

Example

```

AT+QIFC=1,2,2           //Turn on the hardware flow control of UART2.
OK
AT+QIFC?
+QICF: 1,2,2
+QICF: 2,0,0

OK
AT&W //Store current settings that the hardware flow control of UART2 is turned on after the module is
      OK rebooted.
AT+QIFC?
+QIFC: 1,2,2
+QIFC: 2,0,0

OK
    
```

4 Status Control Commands

4.1. AT+CPAS Mobile Equipment Activity Status

This command queries the module activity status.

AT+CPAS Mobile Equipment Activity Status	
Test Command AT+CPAS=?	Response +CPAS: (list of supported <pas>s) OK
Execution Command AT+CPAS	Response TA returns the activity status of ME: +CPAS: <pas> OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	/
Reference 3GPP TS 27.007	

Parameter

<pas>	Integer type. ME activity status. 0 Ready 2 Unknown 3 Ringing 4 Call in progress or call hold
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

EG800G series and EG915G-EU modules currently do not support the command.

Example

```

AT+CPAS
+CPAS: 0 //The module is ready.

OK
RING
AT+CLCC
+CLCC: 1,1,4,0,0,"15695519173",161

OK
AT+CPAS
+CPAS: 3 //The module is ringing.

OK
AT+CLCC
+CLCC: 1,0,0,0,0,"10010",129

OK
AT+CPAS
+CPAS: 4 //Call in progress.

OK
    
```

4.2. AT+CEER Extended Error Report

This command queries an extended error and report the cause of the last failed operation, such as:

- The failure to release a call.
- The failure to set up a call (both mobile originated or terminated).
- The failure to modify a call by using supplementary services.
- The failure to activate, register, query, deactivate or deregister a supplementary service.
- The failure to attach GPRS or the failure to activate a PDP context.
- The failure to detach GPRS or the failure to deactivate a PDP context.

AT+CEER Report Extended Error	
Test command AT+CEER=?	Response +CEER: (list of supported <mode>s) OK
Read Command AT+CEER?	Response +CEER: <mode> OK
Write Command AT+CEER=<mode>	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Execution Command AT+CEER	Response +CEER: <locationID>,<causeID> OK Or +CEER: <locationID>,<causeText> OK Or +CEER: <category>,<locationID>,<causeText> OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved automatically.

Parameter

<mode>	Integer type. AT+CEER response format. 0 The response format is +CEER: <locationID>,<causeID>
---------------------	--

	1	The response format is +CEER: <locationID>,<causeText>
<locationID>		Integer type. Error location ID.
<causeID>		Integer type. Error code in integer format.
<causeText>		Error code in string format.
<category>		String type. Error code category.
<err>		Error codes. For more details, please refer to Chapter 14.5 .

NOTE

EG800G series and EG915G-EU modules currently do not support calling function.

4.3. AT+QINDCFG URC Indication Configuration

This command controls URC indication.

AT+QINDCFG URC Indication Configuration	
Test command AT+QINDCFG=?	Response +QINDCFG: "all",(list of supported <enable>s),(list of supported <save_to_nvram>s) +QINDCFG: "csq",(list of supported <enable>s),(list of supported <save_to_nvram>s) +QINDCFG: "act",(list of supported <enable>s),(list of supported <save_to_nvram>s) +QINDCFG: "smsfull",(list of supported <enable>s),(list of supported <save_to_nvram>s) +QINDCFG: "smsincoming",(list of supported <enable>s),(list of supported <save_to_nvram>s) +QINDCFG: "ring",(list of supported <enable>s),(list of supported <save_to_nvram>s) +QINDCFG: "psm",(list of supported <enable>s),(list of supported <save_to_nvram>s) +QINDCFG: "rach",(list of supported <enable>s),(list of supported <save_to_nvram>s) OK
Write command AT+QINDCFG=<URC_type>[,<enable>[,<save_to_nvram>]]	Response If the optional parameters are omitted, query the current setting: +QINDCFG: <URC_type>,<enable>

	<p>OK</p> <p>If the optional parameters are specified, set the URC indication configurations:</p> <p>OK Or ERROR</p> <p>If there is any error related to ME functionality: +CME ERROR: <err></p>
Maximum Response Time	300 ms
Characteristics	<p>The command takes effect immediately.</p> <p>Whether the parameter configuration is saved depends on <save_to_nvram>.</p>

Parameter

<URC_type>	String type. URC type.
"all"	Main switch of all URCs. Default: ON
"csq"	Indication of signal strength and channel bit error rate change (similar to AT+CSQ). Default: OFF. If this configuration is ON, present: +QIND: "csq",<rsssi>,<ber>
"act"	<p>Indication of network access technology change. Default: OFF . If this configuration is ON, present: +QIND: "act",<actvalue></p> <p><actvalue> String format. The values are as below: "GSM" "EGPRS" "WCDMA" "LTE" "HSDPA" "HSUPA" "HSDPA&HSUPA" "UNKNOWN"</p> <p>The examples of URC are as below: +QIND: "act","LTE" +QIND: "act","UNKNOWN"</p> <p>The description of "act" is as below: 1. If module does not register to network, the <actvalue> would be "UNKNOWN". 2. If this configuration is ON, the URC of "act" is reported immediately. Only when the network access technology changes, a new URC is reported.</p>

"smsfull"	SMS storage full indication. Default is OFF. If this configuration is ON, present: +QIND: "smsfull",<storage>
"smsincoming"	Incoming message indication. Default: ON. Related URCs list: +CMTI, +CMT, +CDS
"ring"	RING indication. Default: ON
"psm"	PSM indication. Default: ON If the module enters PSM mode, present: +QIND: ENTER PSM If the module wakes up from PSM, present: +QIND:EXIT PSM
"rach"	Random access result indication. Default: OFF If the configuration is ON, present: +QIND: "rach",<RAT>,<result>,<value1>,<value2>,<value3>,<value4> <RAT> String type. The values are as below: "GSM" "WCDMA" "LTE" <result> Integer type. Random access result. 0 Successful execution. Other value Failed execution

See the table below for the values of <value1>,<value2>,<value3>,<value4> in different service mode.

<RAT>	<value1>	<value2>	<value3>	<value4>
"GSM"	<ARFCN>	<BSIC>	<LAC>	<cellID>
"WCDMA"	<UARFCN>	<PSC>	<LAC>	<cellID>
"LTE"	<EARFCN>	<PCI>	<TAC>	<cellID>

<ARFCN>	Integer type. ARFCN.
<BSIC>	Integer type. BSIC.
<LAC>	String type. Two-byte location area code in hexadecimal format.
<cellID>	String type. Four bytes in hexadecimal format.
<UARFCN>	Integer type. UARFCN.
<PSC>	Integer type. Primary scrambling code.
<EARFCN>	Integer type. E-UTRA ARFCN.
<PCI>	Integer type. Physical cell identity.
<TAC>	String type. The two-byte tracking area code in hexadecimal format.
<enable>	Integer type. URC indication is ON or OFF. 0 OFF 1 ON
<save_to_nvram>	Integer type. Whether to save configuration into NV. 0 Not save 1 Save
<err>	Error codes. For details, please refer to Chapter 14.5 .

NOTE

1. EC200U, EG800G, EG91xU series and EG915G-EU modules do not support URC type "rach".
2. For EG800G series module, only the module that supports VoLTE supports URC type "ring". EG915G-EU module currently does not support URC type "ring".

4.4. AT+QRDY Query Initialization Status

This command queries the initialization status of the module during booting process.

AT+QRDY Query Initialization Status	
Read Command AT+QRDY?	Response +QRDY: <status> OK
Maximum Response Time	300 ms
Characteristics	/

Parameter

<status>	Integer type. Initialization status during the module booting process.
0x0	Protocol stack is initialized
0x1	Bluetooth function is initialized
0x2	Audio is initialized
0x3	Wi-Fi is initialized
0x4	Hibernation is initialized
0xffff	Boot-up is initialized

NOTE

After the specified function is initialized, the related AT commands can be executed. After the initialization is completed after the module boots, you can execute the AT commands corresponding to all functions.

Example

```
AT+QRDY?
+QRDY: 0xffff           //The initialization is completed after the module boots.
```


OK

4.5. AT+QCFG Extended Settings

AT+QCFG Extended Settings	
Test Command AT+QCFG=?	<p>+QCFG: "nwscanmode", (list of supported <scan_mode>s), (list of supported <effect>s)</p> <p>+QCFG: "band", (list of supported <bandval>s), (list of supported <ltebandval>s), (list of supported <effect>s)</p> <p>+QCFG: "creg/emergency", (list of supported <enable>s)</p> <p>+QCFG: "qoos", (list of supported <enable>s), (range of supported <time>s), (range of supported <count>s), (range of supported <maxlen>s)</p> <p>+QCFG: "airplanecontrol", (list of supported <enable>s)</p> <p>+QCFG: "usbnet", (list of supported <net>s)</p> <p>+QCFG: "nat/cid", (list of supported <cid>s)</p> <p>+QCFG: "nat/subnet", (range of supported <cid>s), <net_address>, <subnet_mask></p> <p>+QCFG: "usbnetmac", <mac_address></p> <p>+QCFG: "urc/ri/other", (list of supported <typeRI>s), (range of supported <pulse_duration>s), (range of supported <pulse_count>s)</p> <p>+QCFG: "urc/ri/smsincoming", (list of supported <typeRI>s), (range of supported <pulse_duration>s), (range of supported <pulse_count>s)</p> <p>+QCFG: "urc/ri/ring", (list of supported <typeRI>s), (range of supported <pulse_duration>s), (range of supported <pulse_count>s)</p> <p>+QCFG: "urc/delay", (range of supported <time>s)</p> <p>+QCFG: "urc/cache", (list of supported <enable>s)</p> <p>+QCFG: "risignalttype", (list of supported <RI_signal_type>s)</p> <p>+QCFG: "apready", (list of supported <enable>s), (list of supported <level>s)</p> <p>+QCFG: "cmux/urcport", (list of supported URC_port>s)</p> <p>+QCFG: "fota/cid", (range of supported <contextID>s)</p> <p>+QCFG: "fota/times", (range of supported <timeout>s), (range of supported <retry_count>s), (range of supported <retry_interval>s)</p> <p>+QCFG: "fota/path", <dst></p> <p>+QCFG: "pkalive/ip", (list of supported</p>

	<p><IP_type>s),<IP_address>,(range of supported <remote_port>s) +QCFG: "ledmode",(list of supported <enable>s) +QCFG: "led/sim",(list of supported <simID>s) +QCFG: "tone/incoming",(list of supported <enable>s) +QCFG: "sleepind/level",(list of supported <value>s) +QCFG: "wakeupin/level",(list of supported <value>s),(list of supported <enable>s) +QCFG: "ntp",(range of supported <cnt>s),(range of supported <interval>s) +QCFG: "urc/interval",(range of supported <interval>s),(range of supported <len>s) +QCFG: "esmfail/times",(range of supported <times>s) OK</p>
Maximum Response Time	300 ms
Characteristics	/

NOTE

The above only shows an example for the command response. The response of the command varies according to the actual module used.

4.5.1. AT+QCFG="nwscanmode" Configure Network Search Mode

This command specifies the network mode to be searched.

AT+QCFG="nwscanmode" Configure Network Search Mode	
Write Command AT+QCFG="nwscanmode"[,<scan_mode>,<effect>]]	Response If the optional parameter is omitted, query the current setting: +QCFG: "nwscanmode",<scan_mode> OK If the optional parameter is specified, set the network mode to be searched: OK Or ERROR If there is any error related to ME functionality:

	+CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	<effect> determines how the command takes effect. The configuration is saved automatically.

Parameter

<scan_mode>	Integer type. Network mode. The supported standards for EC200U and EG91xU series modules: <u>0</u> Automatic (GSM/LTE) 1 GSM only 3 LTE only The supported standards for EG800G series and EG915G-EU modules: 3 LTE only
<effect>	Integer type. Ways the command takes effect. 0 The command takes effect after UE reboots <u>1</u> The command takes effect immediately
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

For EG800G series and EG915G-EU modules, the value of **<scan_mode>** can only be set to 3 by default.

4.5.2. AT+QCFG="band" Configure Bands to Be Searched

This command specifies the frequency bands to be searched by UE.

AT+QCFG="band" Configure Bands to Be Searched	
Write Command AT+QCFG="band" [<bandval>, <ltebandval> [, <effect>]]	Response If the optional parameters are omitted, query the current setting: +QCFG: "band", <bandval>, <ltebandval> OK If any of the optional parameters is specified, configure the frequency bands to be searched: OK Or ERROR

	If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	<effect> determines how the command takes effect. The configurations are saved automatically.

Parameter

<bandval>	A hexadecimal value that specifies the GSM band. If it is set to 0, it means no change to GSM frequency bands. e.g. 0003 = 0001 (EGSM900) + 00000002 (DCS1800)																																				
	<table> <tr><td>00000000</td><td>No change</td></tr> <tr><td>00000001</td><td>EGSM900</td></tr> <tr><td>00000002</td><td>DCS1800</td></tr> <tr><td>00000004</td><td>GSM850</td></tr> <tr><td>00000008</td><td>PCS1900</td></tr> </table>	00000000	No change	00000001	EGSM900	00000002	DCS1800	00000004	GSM850	00000008	PCS1900																										
00000000	No change																																				
00000001	EGSM900																																				
00000002	DCS1800																																				
00000004	GSM850																																				
00000008	PCS1900																																				
<ltebandval>	A hexadecimal value that specifies the LTE frequency band. If it is set to 0, it means no change to LTE frequency band. e.g.: 0x15=0x1 (LTE B1) + 0x4 (LTE B3) + 0x10 (LTE B5)																																				
	<table> <tr><td>0</td><td>No change</td></tr> <tr><td>0x1 (CM_BAND_PREF_LTE_EUTRAN_BAND1)</td><td>LTE B1</td></tr> <tr><td>0x2 (CM_BAND_PREF_LTE_EUTRAN_BAND2)</td><td>LTE B2</td></tr> <tr><td>0x4 (CM_BAND_PREF_LTE_EUTRAN_BAND3)</td><td>LTE B3</td></tr> <tr><td>0x8 (CM_BAND_PREF_LTE_EUTRAN_BAND4)</td><td>LTE B4</td></tr> <tr><td>0x10 (CM_BAND_PREF_LTE_EUTRAN_BAND5)</td><td>LTE B5</td></tr> <tr><td>0x40 (CM_BAND_PREF_LTE_EUTRAN_BAND7)</td><td>LTE B7</td></tr> <tr><td>0x80 (CM_BAND_PREF_LTE_EUTRAN_BAND8)</td><td>LTE B8</td></tr> <tr><td>0x80000 (CM_BAND_PREF_LTE_EUTRAN_BAND20)</td><td>LTE B20</td></tr> <tr><td>0x8000000 (CM_BAND_PREF_LTE_EUTRAN_BAND28)</td><td>LTE B28</td></tr> <tr><td>0x200000000 (CM_BAND_PREF_LTE_EUTRAN_BAND34)</td><td>LTE B34</td></tr> <tr><td>0x2000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND38)</td><td>LTE B38</td></tr> <tr><td>0x4000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND39)</td><td>LTE B39</td></tr> <tr><td>0x8000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND40)</td><td>LTE B40</td></tr> <tr><td>0x10000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND41)</td><td>LTE B41</td></tr> <tr><td>0x20000000000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND66)</td><td>LTE B66</td></tr> <tr><td>0x400000000000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND71)</td><td>LTE B71</td></tr> <tr><td>0x7FFFFFFFFFFFFFFF (CM_BAND_PREF_ANY)</td><td>Full frequency bands</td></tr> </table>	0	No change	0x1 (CM_BAND_PREF_LTE_EUTRAN_BAND1)	LTE B1	0x2 (CM_BAND_PREF_LTE_EUTRAN_BAND2)	LTE B2	0x4 (CM_BAND_PREF_LTE_EUTRAN_BAND3)	LTE B3	0x8 (CM_BAND_PREF_LTE_EUTRAN_BAND4)	LTE B4	0x10 (CM_BAND_PREF_LTE_EUTRAN_BAND5)	LTE B5	0x40 (CM_BAND_PREF_LTE_EUTRAN_BAND7)	LTE B7	0x80 (CM_BAND_PREF_LTE_EUTRAN_BAND8)	LTE B8	0x80000 (CM_BAND_PREF_LTE_EUTRAN_BAND20)	LTE B20	0x8000000 (CM_BAND_PREF_LTE_EUTRAN_BAND28)	LTE B28	0x200000000 (CM_BAND_PREF_LTE_EUTRAN_BAND34)	LTE B34	0x2000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND38)	LTE B38	0x4000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND39)	LTE B39	0x8000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND40)	LTE B40	0x10000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND41)	LTE B41	0x20000000000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND66)	LTE B66	0x400000000000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND71)	LTE B71	0x7FFFFFFFFFFFFFFF (CM_BAND_PREF_ANY)	Full frequency bands
0	No change																																				
0x1 (CM_BAND_PREF_LTE_EUTRAN_BAND1)	LTE B1																																				
0x2 (CM_BAND_PREF_LTE_EUTRAN_BAND2)	LTE B2																																				
0x4 (CM_BAND_PREF_LTE_EUTRAN_BAND3)	LTE B3																																				
0x8 (CM_BAND_PREF_LTE_EUTRAN_BAND4)	LTE B4																																				
0x10 (CM_BAND_PREF_LTE_EUTRAN_BAND5)	LTE B5																																				
0x40 (CM_BAND_PREF_LTE_EUTRAN_BAND7)	LTE B7																																				
0x80 (CM_BAND_PREF_LTE_EUTRAN_BAND8)	LTE B8																																				
0x80000 (CM_BAND_PREF_LTE_EUTRAN_BAND20)	LTE B20																																				
0x8000000 (CM_BAND_PREF_LTE_EUTRAN_BAND28)	LTE B28																																				
0x200000000 (CM_BAND_PREF_LTE_EUTRAN_BAND34)	LTE B34																																				
0x2000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND38)	LTE B38																																				
0x4000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND39)	LTE B39																																				
0x8000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND40)	LTE B40																																				
0x10000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND41)	LTE B41																																				
0x20000000000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND66)	LTE B66																																				
0x400000000000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND71)	LTE B71																																				
0x7FFFFFFFFFFFFFFF (CM_BAND_PREF_ANY)	Full frequency bands																																				
<effect>	Integer type. Ways the command takes effect.																																				
	<table> <tr><td>0</td><td>The command takes effect after UE reboots</td></tr> <tr><td>1</td><td>The command takes effect immediately</td></tr> </table>	0	The command takes effect after UE reboots	1	The command takes effect immediately																																
0	The command takes effect after UE reboots																																				
1	The command takes effect immediately																																				
<err>	Error codes. For more details, please refer to Chapter 14.5 .																																				

NOTE

1. The above provides only one example of a command response. Different command responses are determined according to modules.
2. See the product specification of all applicable modules for specific frequency bands supported by each module.
3. For EG800G series and EG915G-EU module, the value of **<bandval>** can only be set to 0.

4.5.3. AT+QCFG="creg/emergency" Configure Emergency Network Information Display

This command configures whether to display network information in emergency.

AT+QCFG="creg/emergency" Configure Emergency Network Information Display

Execution Command AT+QCFG="creg/emergency"[,<enable>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "creg/emergency",<enable> OK If the optional parameter is specified, configure whether to display network information in emergency: OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved automatically.

Parameter

<enable>	Integer type. Enable or disable display network information in emergency. 0 Disable <u>1</u> Enable
<err>	Error codes. For more details, please refer to Chapter 14.5 .

4.5.4. AT+QCFG="qoos" Configure Network Search Timer Information in OOS State

This command configures the related parameters of no service timer and limited-service timer in OOS state.

AT+QCFG="qoos" Configure Network Search Timer Information in OOS State	
Write Command AT+QCFG="qoos" [<enable>,<time>,<count>,<maxlen>]]]	Response If the optional parameters are omitted, query the current setting: +QCFG: "qoos",<enable>,<time>,<count>,<maxlen> OK If any of the optional parameters is specified, configure network search timer information in OOS state: OK Or +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are saved automatically.

Parameter

<enable>	Integer type. OOS mechanism. <u>0</u> Disable OOS mechanism. In no service or limited-service state, search the network according to the default logic 1 Enable OOS mechanism. Search the network only in no service state 2 Enable OOS mechanism. Search the network in no service or limited-service state
<time>	Integer type. The initial duration of the timer. Range: 0–255. Unit: second. Default value: 0.
<count>	Integer type. Cycles. Range: 0–255. Default value: 0.
<maxlen>	Integer type. The maximum duration of the timer. Range: 0–255. Unit: minute. Default value: 60.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

1. When **<enable>** is equal to 0, **<time>**, **<count>** and **<maxlen>** should be omitted.
2. When **<enable>** is equal to 0, **<time>** is equal to 0, search the network according to the default logic.
3. If **<enable>** is not equal to 0, and **<count>** is equal to 0 or omitted, the timer duration keeps the value to **<time>**.

4. When **<time>** and **<count>** are non-zero, **<maxlen>** must be greater than **<time>**. When **<maxlen>** is greater than **<time>**, after the number of cycles reaches **<count>**, the timer's next start duration will be twice as long as this duration, and the maximum duration will not exceed **<maxlen>**; if **<maxlen>** is omitted, the maximum duration will not exceed 1 hour.
5. If **<enable>** is returned as 0, **<time>**, **<count>** and **<maxlen>** will be omitted.
6. The default timer duration setting logic: the timer duration is fixed as 12 seconds in no service state and the timer duration at first network search is 12 seconds in limited-service state, and after network searches for 5 times and there is no cell changed at this point, the duration is fixed to 1 hour.

Example

```

AT+QCFG="qoos",2,20,5,60 //In no service or limited-service state, set the initial duration
                           of the timer to 20 seconds and the cycles to 5. The maximum
                           duration is 60 minutes.

OK
AT+QCFG="qoos",1,30,3,50 //In no service state, set the initial duration of the timer to 30
                           seconds and cycles to 3. The maximum duration is 50 minutes.

OK
AT+QCFG="qoos",0 //Disable OOS mechanism, the timer is executed in no service
                  and limited-service according to the default logic.

OK
    
```

4.5.5. AT+QCFG="airplanecontrol" Enable/Disable Airplane Mode Control

This command enables or disables airplane mode control.

AT+QCFG="airplanecontrol" Enable/Disable Airplane Mode Control	
Write Command AT+QCFG="airplanecontrol" [<enable>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "airplanecontrol",<enable>,<status> OK If the optional parameter is specified, enable/disable airplane mode control: OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved automatically.

Parameter

<enable>	Integer type. Enable/disable the airplane mode control. 0 Disable the airplane mode control 1 Enable the airplane mode control
<status>	Integer type. Airplane mode status. 0 Out of airplane mode 1 In airplane mode
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

1. After this command enables the airplane mode control, and W_DISABLE# pin changes, URC **+QIND: airplanestatus,<status>** will be reported.
2. After this command enables the airplane mode control, the module will enter airplane mode when W_DISABLE# pin is pulled down and the module will exit from the airplane mode when W_DISABLE# pin is pulled up. If W_DISABLE# pin is in low level, executing **AT+CFUN=1** will cause **Error** returning to not allow to exit from airplane mode.
3. After this command enables the airplane mode control, the module will first detect the level of W_DISABLE# pin. If the pin level is low, the module enters airplane mode immediately.
4. See the hardware design of corresponding module for more details about W_DISABLE# pin.

Example

```

AT+QCFG="airplanecontrol" //Query the current setting.
+QCFG: "airplanecontrol",0,0

OK
AT+QCFG="airplanecontrol",1 //Turn on airplane mode control.
OK
//Pull down W_DISABLE# pin
+QIND: airplanestatus,1 //Enter airplane mode because W_DISABLE# pin is pulled down.
AT+CFUN?
+CFUN: 4 //In airplane mode.

OK
//Pull up W_DISABLE# pin
+QIND: airplanestatus,0 //Exit from airplane mode.
AT+CFUN?
+CFUN: 1 //In full functionality mode.

OK
    
```


4.5.6. AT+QCFG="usbnet" Configure USB Network Port Protocol

This command configures the protocol used by the USB network port.

AT+QCFG="usbnet" Configure USB Network Port Protocol	
Write Command AT+QCFG="usbnet"[,<net>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "usbnet",<net> OK If the optional parameter is specified, configure the protocol used by the USB network port: OK Or ERROR If error is related to ME functionality: +CME ERROR:<err>
Maximum Response Time	300 ms
Characteristics	The command takes effect after the module is rebooted. The configuration is saved automatically.

Parameter

<net>	Integer type. The protocol used by the USB network port. 1 ECM 3 RNIDS
<err>	Error codes. For more details, please refer to Chapter 14.5 .

4.5.7. AT+QCFG="nat/cid" Enable NAT of PDP Context

This command enables the NAT function for the specified PDP context.

AT+QCFG="nat/cid" Enable NAT of PDP Context	
Write Command AT+QCFG="nat/cid"[,<cid>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "nat/cid",<cid> OK If the optional parameter is specified, enable the NAT function for the specified PDP context:

	<p>OK Or ERROR</p> <p>If error is related to ME functionality: +CME ERROR:<err></p>
Maximum Response Time	300 ms
Characteristics	The command takes effect after the module is rebooted. The configuration is saved automatically.

Parameter

- <cid>** A hexadecimal value. Each bit indicates whether PDP NAT function is enabled. This value takes 32 bits. Bits [0:6] in low 16 bits represents PDP CID1 to PDP CID7 of SIM0 respectively; bits [16:22] in high 16 bits represents PDP CID1 to PDP CID7 of SIM1 respectively. Each SIM card supports up to 7 channels of PDP.
- <err>** Error codes. For more details, please refer to **Chapter 14.5**.

Example

```

AT+QCFG="nat/cid" //Query the current setting.
+QCFG: "nat/cid",0x0

OK
AT+QCFG="nat/cid",0x10005 //Enable SIM0's NAT for PDP CID1 and CID 3; Enable SIM1's
OK NAT for PDP CID1.
    
```

4.5.8. AT+QCFG="nat/subnet" Configure NAT Subnet Parameters of PDP Context

This command configures NAT subnet parameters of PDP context.

AT+QCFG="nat/subnet" Configure NAT Subnet Parameters of PDP Context

<p>Write Command</p> <p>AT+QCFG="nat/subnet" [<cid>,<net_address>,<subnet_mask>]</p>	<p>Response</p> <p>If the optional parameters are omitted, query the current setting: +QCFG: "nat/subnet",<cid>,<net_address>,<subnet_mask></p> <p>OK</p> <p>If the optional parameter <cid> is specified, deletes NAT subnet parameters configuration of specified PDP context:</p>
---	---

	<p>OK Or ERROR</p> <p>If the optional parameters are specified, configure NAT subnet parameter of specified PDP context: OK Or ERROR</p> <p>If there is any error related to ME functionality: +CME ERROR: <err></p>
Maximum Response Time	300 ms
Characteristics	The command takes effect after the module is rebooted. The configurations are saved automatically.

Parameter

<cid>	Integer type. Context ID. Range:1–7.
<net_address>	String type. NAT subnet address.
<subnet_mask>	String type. NAT subnet mask.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

4.5.9. AT+QCFG="usbnetmac" Configure MAC Address of USBNet

This command configures MAC address of USBNet.

AT+QCFG="usbnetmac" Configure MAC Address of USBNet	
<p>Write Command AT+QCFG="usbnetmac"[,<macaddress>]</p>	<p>Response</p> <p>If the optional parameter is omitted, query the current setting: +QCFG: "usbnetmac",<macaddress></p> <p>OK</p> <p>If the optional parameter is specified, configure the MAC address of USBNet: OK Or ERROR</p>
Characteristics	The command takes effect after the module is rebooted.

The configuration is saved automatically.

Parameter

<macaddress> String type. MAC address of USBNet. A string of 6 bytes are separated by “.”.

NOTE

After the MAC address is configured with this command and the module is rebooted, the OS of the module reads the MAC address and configures the MAC address to USBNet. If the MAC address is not configured or this command fails to be executed, the OS of the module could not read the corresponding MAC address. At this time, the OS sets the USBNet with default MAC address.

Example

```
AT+QCFG="usbnetmac",AE:0C:29:00:31:1B //Configure MAC address of USBNet.
OK
```

```
AT+QCFG="usbnetmac" //Query the configured MAC address of USBNet.
+QCFG: "usbnetmac",AE:0C:29:00:31:1B
OK
```

4.5.10. AT+QCFG="urc/ri/other" Specify General URC RI Behavior

This command specifies the RI behavior when general URC is reported.

AT+QCFG="urc/ri/other" Specify General URC RI Behavior

Write Command

```
AT+QCFG="urc/ri/other"[,<typeRI>[,<pulse_duration>[,<pulse_count>]]]
```

Response

If the optional parameters are omitted, query the current setting:

```
+QCFG: "urc/ri/other",<typeRI>,<pulse_duration>,<pulse_count>
```

OK

If any of the optional parameter is specified, specify general URC RI behavior:

OK

Or

ERROR

	If error is related to ME functionality: +CME ERROR:<err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are saved automatically.

Parameter

<typeRI>	String type. RI behavior when general URC is reported. "off" No RI behavior "pulse" The pulse on RI. The cycle is determined by <pulse_duration>
<pulse_duration>	Integer type. Pulse cycles. It is valid only when <typeRI> is set to "pulse". Range: 1–2000. Default value: 120. Unit: milliseconds.
<pulse_count>	Integer type. Number of pulses. It is valid only when <typeRI> is set to "pulse". The time interval between two adjacent pulses is <pulse_duration> . Range: 1–5.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

4.5.11. AT+QCFG="urc/ri/smsincoming" Specify SMS URC RI Behavior

This command specifies the RI behavior when SMS related URC is reported.

AT+QCFG="urc/ri/smsincoming" Specify SMS URC RI Behavior	
Write Command AT+QCFG="urc/ri/smsincoming"[,<typeRI>,<pulse_duration>,<pulse_count>]]]	Response If the optional parameters are omitted, query the current setting: +QCFG: "urc/ri/smsincoming",<typeRI>,<pulse_duration>,<pulse_count> OK If the optional parameters are specified, specify SMS URC RI behavior: OK Or ERROR If error is related to ME functionality: +CME ERROR:<err>
Maximum Response Time	300 ms

Characteristics	The command takes effect immediately. The configurations are saved automatically.
-----------------	--

Parameter

<typeRI>	String type. RI behavior when SMS related URC is reported. "off" No RI behavior "pulse" The pulse on RI. The cycle is determined by <pulse_duration>
<pulse_duration>	Integer type. Pulse cycles. It is valid only when <typeRI> is set to "pulse". Range: 1–2000. Default value: 120. Unit: milliseconds.
<pulse_count>	Integer type. Number of pulses. It is valid only when <typeRI> is set to "pulse". The time interval between two adjacent pulses is <pulse_duration> . Range: 1–5.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

4.5.12. AT+QCFG="urc/ri/ring" Specify Call Incoming URC RI Behavior

This command specifies the RI behavior when call incoming related URC is reported.

AT+QCFG="urc/ri/ring" Specify Call Incoming URC RI Behavior	
Write Command AT+QCFG="urc/ri/ring" [<typeRI>,<pulse_duration>,<pulse_count>]	Response If the optional parameters are omitted, query the current setting: +QCFG: "urc/ri/ring",<typeRI>,<pulse_duration>,<pulse_count> OK If the optional parameters are specified, specify call incoming URC RI behavior OK Or ERROR If error is related to ME functionality: +CME ERROR:<err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are saved automatically.

Parameter

<typeRI>	String type. RI behavior when call incoming related URC is reported. "off" No RI behavior "pulse" The pulse on RI. The cycle is determined by <pulse_duration>
<pulse_duration>	Integer type. Pulse cycles. It is valid only when <typeRI> is set to "pulse". Range: 1–2000. Default value: 120. Unit: milliseconds.
<pulse_count>	Integer type. Number of pulses. It is valid only when <typeRI> is set to "pulse". The time interval between two adjacent pulses is <pulse_duration> . Range: 1–5.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

4.5.13. AT+QCFG="urc/delay" Specify Delay of URC Indication

This command specifies the delay of URC indication starting from the end of RI pulse.

AT+QCFG="urc/delay" Specify Delay of URC Indication	
Write Command AT+QCFG="urc/delay" [,<time>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "urc/delay",<time> OK If the optional parameter is specified, specify the delay of URC indication starting from the end of RI pulse: OK Or ERROR If error is related to ME functionality: +CME ERROR:<err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved automatically.

Parameter

<time>	Integer type. The delay of URC indication starting from the end of RI pulse: It is valid only when the RI pulse is greater than or equal to 0. Range: 0–120. Unit: millisecond. Default value: 0, which means no delay.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

4.5.14. AT+QCFG="urc/cache" Enable/Disable URC Cache

This command enables/disables URC cache.

AT+QCFG="urc/cache" Enable/Disable URC Cache	
Write Command AT+QCFG="urc/cache"[,<enable>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "urc/cache",<enable> OK If the optional parameter is specified, enable/disable URC cache: OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved automatically.

Parameter

<enable>	Integer type. Disable/Enable URC cache. After enabling the URC cache, all URCs will be cached. And URC will not be output until the URC cache is disabled. <u>0</u> Disable URC cache 1 Enable URC cache
<err>	Error codes. For more details, please refer to Chapter 14.5 .

4.5.15. AT+QCFG="risignalttype" RI Signal Output Carrier

This command specifies the RI (ring indicator) signal output carrier.

AT+QCFG="risignalttype" RI Signal Output Carrier	
Write Command AT+QCFG="risignalttype"[,<RI_signal_type>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "risignalttype",<RI_signal_type> OK

	<p>If the optional parameter is specified, configure the RI signal output carrier: OK Or ERROR</p> <p>If there is any error related to ME functionality: +CME ERROR: <err></p>
Maximum Response Time	300 ms
Characteristics	<p>This command takes effect immediately. The configuration is saved automatically.</p>

Parameter

<RI_signal_type>	<p>String type. RI signal output carrier. Only valid when the RI pulse is greater than 0.</p> <p>"<u>respective</u>" RI signal output to URC port If URC is output to main UART, the RI signal is output to the RI pin of the main UART. If URC is output to non-main UART, there will be no RI signal.</p> <p>"physical" The RI signal is output to the RI pin of the main UART</p>
<err>	Error codes. For more details, please refer to Chapter 14.5 .

4.5.16. AT+QCFG="apready" Configure AP_Ready Pin Behavior

This command queries and configures the behavior of AP_READY pin. AP_READY pin level can be changed as needed by an external MCU.

When there is a URC to be reported, if the AP_READY pin level is invalid, the URC is buffered first, and the AP_READY pin level will be detected. The URC will be output when the AP_READY pin level becomes valid. The pulse signal generated on the MAIN_RI pin can still be output according to the configured mode, and the pulse signal will not be buffered.

AT+QCFG="apready" Configure AP_Ready Pin Behavior

<p>Write Command</p> <p>AT+QCFG="apready" [,<enable>,<level>]</p>	<p>Response</p> <p>If the optional parameters are omitted, query the current setting: +QCFG: "apready",<enable>,<level></p> <p>OK</p> <p>If the optional parameters are specified, configure the</p>
--	---

	behavior of AP_Ready pin: OK Or ERROR
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configurations are saved automatically.

Parameter

<enable>	Integer type. Enable/disable AP_Ready pin behavior. 0 Disable 1 Enable
<level>	Integer type. Valid level of Indicator pin. This parameter only takes effect when the AP_READY detection is enabled, and the default level of AP_READY is specified. 0 Low level 1 High level
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

1. Maximally 120 URCs can be buffered. When the number of URC exceeds 120, the first buffered URC will be overridden with the new URC.
2. Only one **RING** URC is buffered during the call.
3. Whether the module supports this command depends on whether there are related hardware pins, see the hardware design manual of each module for details.

Example

```
AT+QCFG="apready",1,0
OK
AT+QCFG="apready"
+QCFG: "apready",1,0
OK
```

4.5.17. AT+QCFG="cmux/urcport" Set Ways to Output URC for CMUX Port

This command sets ways to output URC for CUMX port.

AT+QCFG="cmux/urcport" Set Ways to Output URC for CMUX Port	
Write Command AT+QCFG="cmux/urcport" [,<URC_port>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "cmux/urcport",<URC_port> OK If the optional parameter is specified, set ways to output URC for CMUX port: OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved automatically.

Parameter

<URC_port>	Integer type. Ways to output URC for CMUX port. 0 Output URC to all CMUX ports 1 Output URC to all CMUX 1 2 Output URC to all CMUX 2 3 Output URC to all CMUX 3 4 Output URC to all CMUX 4
<err>	Error codes. For more details, please refer to Chapter 14.5 .

4.5.18. AT+QCFG="fota/cid" Configure PDP Context ID in FOTA Download

This command configures PDP context ID in FOTA download.

AT+QCFG="fota/cid" Configure PDP Context ID in FOTA Download	
Write Command AT+QCFG="fota/cid" [,<contextID>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "fota/cid",<contextID>

	<p>OK</p> <p>If the optional parameter is specified, configure PDP context ID in FOTA download:</p> <p>OK</p> <p>Or</p> <p>ERROR</p> <p>If there is any error related to ME functionality:</p> <p>+CME ERROR: <err></p>
Maximum Response Time	300 ms
Characteristics	<p>The command takes effect immediately.</p> <p>The configuration is not saved.</p>

Parameter

<contextID>	Integer type. Context ID. Range: 1–7. Default value: 1.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

4.5.19. AT+QCFG="fota/times" Configure HTTP FOTA Download Information

This command configures the connection expiration time, number of retransmission and interval of retransmission in HTTP FOTA download.

AT+QCFG="fota/times" Configure HTTP FOTA Download Information	
<p>Write Command</p> <p>AT+QCFG="fota/times" [<timeout> [<retry_count> [<retry_interval>]]]</p>	<p>Response</p> <p>If the optional parameter is omitted, query the current setting:</p> <p>+QCFG: "fota/times", <timeout>, <retry_count>, <retry_interval></p> <p>OK</p> <p>If any of the optional parameters is specified, configure the connection expiration time, number of retransmission and interval of retransmission in HTTP FOTA download:</p> <p>OK</p> <p>Or</p> <p>ERROR</p> <p>If there is any error related to ME functionality:</p> <p>+CME ERROR: <err></p>
Maximum Response Time	300 ms

Characteristics	The command takes effect immediately. The configurations are not saved.
-----------------	--

Parameter

<timeout>	Integer type. The connection expiration time in HTTP FOTA download. Range: 1–120. Default value: 60. Unit: second.
<retry_count>	Integer type. Numbers of retransmission in HTTP FOTA download. Range: 1–24. Default value: 6. Unit: times.
<retry_interval>	Integer type. Interval of retransmissions in HTTP FOTA download. Range: 1–120. Default value: 6. Unit: second.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

4.5.20. AT+QCFG="fota/path" Configure FOTA Target Firmware Package Storage Medium

This command configures the storage medium to save the FOTA target firmware package.

AT+QCFG="fota/path" Configure FOTA Target Firmware Package Storage Medium	
Write Command AT+QCFG="fota/path" [,<dst>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "fota/path", <dst> OK If the optional parameter is specified, configure the storage medium to save the FOTA target firmware package: OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.

Parameter

<dst>	String type. The storage medium type. For details about the supported storage types of different modules, please refer to document [1] .
--------------------	---

"UFS:"	UFS. Sub-directories are supported to set
"EFS:"	External Flash. Sub-directories are supported to set
"SD:"	SD card. Only root directory is supported to set
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

EG800G series and EG915G-EU modules do not support SD card.

4.5.21. AT+QCFG="pkalive/ip" Configure PDP Keepalive Parameter

This command configures remote IP and port specified by PDP keepalive function.

AT+QCFG="pkalive/ip" Configure PDP Keepalive Parameter	
Write Command AT+QCFG="pkalive/ip",<IP_type>[,<IP_address>[,<remote_port>]]	Response If the optional parameters are omitted, query the current setting: +QCFG: "pkalive/ip",<IP_type>,<IP_address>,<remote_port> OK If the optional parameters are specified, configure remote IP and port specified by PDP keepalive function: OK Or ERROR
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configurations are not saved. The default value of <IP_address> in IPv4 type: "216.239.57.155". The default value of <IP_address> in IPv6 type: "2000:0:0:0:1:234 5:6789:abcd". The default value of <remote_port> is 9.

Parameter

<IP_type>	Integer type. Protocol type. 1 IPv4
-----------	--

2 IPv6

<IP_address> String type.
 If **<IP_type>** is 1, **<IP_address>** needs to be configured as IPv4 address type, e.g. "216.239.57.155", or **ERROR** is returned.
 If **<IP_type>** is 2, **<IP_address>** needs to be configured as IPv6 address type, e.g. "2000:0:0:0:1:2345:6789:abcd", or **ERROR** is returned.

<remote_port> Integer type. Remote server port. Range: 0–65535. Default value: 9.

NOTE

When **<remote_port>** is omitted or 0, the port is the default value 9.

Example

```
AT+QCFG="pkalive/ip",1,"216.239.57.155",9 //Configure remote server IP address and port number
of keepalive function in PDP IPv4 scene.
OK
AT+QCFG="pkalive/ip",2,"2000:0:0:0:1:2345:6789:abcd",9 //Configure remote server IP address
and port number of keepalive
function in PDP IPv6 scene.
OK
```

4.5.22. AT+QCFG="ledmode" Configure Output Mode of Network Status Light (NET_STATUS)

This command configures the output mode of the network status light (NET_STATUS).

AT+QCFG="ledmode" Configure Output Mode of Network Status Light (NET_STATUS)	
Write Command AT+QCFG="ledmode"[,<enable>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "ledmode",<enable> OK If the optional parameter is specified, configure the output mode of the network status light: OK Or ERROR If there is any error related to ME functionality:

	+CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved automatically.

Parameter

<enable>	Integer type. The output mode of the network status light. <ul style="list-style-type: none"> 0 Modem mode. Default flashing mode 1 Minipcie mode. When the module searches the network, NET_STATUS pin outputs high level, otherwise, it outputs low
<err>	Error codes. For more details, please refer to Chapter 14.5 .

4.5.23. AT+QCFG="led/sim" Configure (U)SIM ID Pointed by the Network Status Light (NET_MODE/NET_STATUS) in Dual SIM Dual Standby

This command configures (U)SIM ID pointed by the network status light (NET_MODE/NET_STATUS) in dual SIM dual standby.

AT+QCFG="led/sim" Configure (U)SIM ID Pointed by the Network Status Light (NET_MODE/NET_STATUS) in Dual SIM Dual Standby	
Write Command AT+QCFG="led/sim"[,<simID>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "led/sim",<simID> OK If the optional parameter is specified, configure simID pointed by the network status light in dual SIM dual standby: OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.

Parameter

<simID>	Integer type. (U)SIM card ID. 0 (U)SIM1 1 (U)SIM2
<err>	Error codes. For more details, please refer to Chapter 14.5 .

4.5.24. AT+QCFG="tone/incoming" Configure Ringtone of Incoming Call

This command configures ringtone for incoming calls.

AT+QCFG="tone/incoming" Configure Ringtone of Incoming Call	
Write Command AT+QCFG="tone/incoming"[,<enable>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "tone/incoming",<enable> OK If the optional parameter is specified, configure the ringtone for incoming calls: OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved automatically.

Parameter

<enable>	Integer type. Incoming call ringtone configuration. 0 Turn off the ringtone 2 Turn on the ringtone, with the type of tone 3 Turn on the ringtone, with the type of customized ringtone. You need to rename the ringtone to <i>CustRingTone.wav</i> and upload it to the UFS directory of the module file system
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

EG800G series and EG915G-EU modules currently do not support the command.

4.5.25. AT+QCFG="sleepind/level" Configure the Output Level of the SLEEP_IND Pin

This command configures the output level of the SLEEP_IND pin when the module is in sleep mode.

AT+QCFG ="sleepind/level" Configure the Output Level of the SLEEP_IND Pin

Write Command AT+QCFG="sleepind/level"[,<value>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "sleepind/level",<value> OK If the optional parameter is specified, configure the output level of the SLEEP_IND pin: OK Or ERROR
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is saved automatically.

Parameter

<value>	Integer type. Indicates the output level of SLEEP_IND pin after the module enters hibernate mode. <u>0</u> When the module enters hibernate mode, SLEEP_IND pin outputs high level 1 When the module enters hibernate mode, SLEEP_IND pin outputs low level
----------------------	---

NOTE

Whether the module supports this function depends on whether there are related hardware pins, see the hardware design manual of each module for details.

4.5.26. AT+QCFG="wakeupin/level" Configure Wake-Up Behavior and Load/Unload USB Through WAKEUP_IN Pin

This command configures whether to wake up the module and load or unload USB through WAKEUP_IN pin.

AT+QCFG="wakeupin/level" Configure Wake-Up Behavior and Load/Unload USB Through WAKEUP_IN Pin	
Write Command AT+QCFG="wakeupin/level"[,<value> [<enable>]]	<p>Response</p> <p>If the optional parameters are omitted, query the current setting: +QCFG: "wakeupin/level",<value>,<enable></p> <p>OK</p> <p>If any of the optional parameters is specified, configures whether to wake up the module and load or unload USB through WAKEUP_IN pin: OK</p> <p>If there is any error: ERROR</p>
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is saved automatically.

Parameter

<value>	Integer type. WAKEUP_IN pin level to trigger <enable> . <u>0</u> Low level 1 High level
<enable>	Integer type. The action triggered by WAKEUP_IN pin level specified by <value> . 0 No action <u>1</u> If <value> is 0, wake up the module when WAKEUP_IN pin is in low level, and allow the module to enter hibernate mode in high level If <value> is 1, wake up the module when WAKEUP_IN pin is in high level, and allow the module to enter hibernate mode in low level 2 If <value> is 0, load USB when WAKEUP_IN pin is in low level, and unload USB in high level If <value> is 1, load USB when WAKEUP_IN pin is in high level, and unload USB in low level

- 3 If **<value>** is 0, wake up the module and load USB when WAKEUP_IN pin is in low level, and allow the module to enter hibernate mode and unload USB in high level
If **<value>** is 1, wake up the module and load USB when WAKEUP_IN pin is in high level, and allow the module to enter hibernate mode and unload USB in low level

NOTE

Whether the module supports this function depends on whether there are related hardware pins, see the hardware design manual of each module for details.

Example

```
AT+QCFG="wakeupin/level",0,1 //Configure that wake up the module when WAKEUP_IN pin is in low
                             level.
OK
AT+QCFG="wakeupin/level" //Query the current setting.
+QCFG: "wakeupin/level",0,1
OK
```

4.5.27. AT+QCFG="ntp" Configure the Maximum Retransmission Counts and the Interval for NTP

This command specifies the maximum retransmission times and the interval of NTP.

AT+QCFG="ntp" Configure the Maximum Retransmission Counts and the Interval for NTP

Write Command AT+QCFG="ntp" [<cnt>,<interval>]	Response If the optional parameters are omitted, query the current setting: +QCFG: "ntp",<cnt>,<interval> OK If the optional parameters are specified, configure the maximum retransmission counts and the interval for NTP: OK Or ERROR
Maximum Response Time	300 ms
Characteristic	The command takes effect immediately. The configurations are saved automatically.

Parameter

<cnt>	Integer type. NTP retransmission counts. Range: 1–10. Default value: 3.
<interval>	Integer type. NTP retransmission interval. Range: 5–60. Default value: 15. Unit: s.

Example

```

AT+QCFG="ntp" //Query the current setting.
+QCFG: "ntp",3,15

OK
AT+QCFG="ntp",5,20 //Set the retransmission counts and interval for NTP.
OK
AT+QCFG="ntp"
+QCFG: "ntp",5,20 //Query the current setting

OK
    
```

4.5.28. AT+QCFG="esmfail/times" Set the Maximum Number of Consecutive LTE Registration Failure and Fall Back to the GSM Network

In Data Centric mode, this command sets the module to fall back to the GSM network when the number of the consecutive LTE registration failures reaches the specified value.

AT+QCFG="esmfail/times" Set the Maximum Number of Consecutive LTE Registration Failure and Fall Back to the GSM Network

Write Command	Response
AT+QCFG="esmfail/times"[,<times>]	If the optional parameter is omitted, query the current setting. +QCFG: "esmfail/times",<times>
	OK
	If the optional parameter is specified, set the number of consecutive LTE registration failures of the module.
	OK
	Or
	ERROR
	If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms

Characteristics	The command takes effect after rebooting. The configurations are saved automatically.
-----------------	--

Parameter

<times>	Integer type. The number of consecutive LTE registration failures of the module. Range: 0–5. Default value: 5. When <times> is 0, it means that the module will not fall back to the GSM network after failing to register to LTE.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

Example

```

AT+QCFG=?
+QCFG: "esmfail/times",(0-5)

OK
AT+QCFG="esmfail/times",4
OK
AT+QCFG="esmfail/times"
+QCFG: "esmfail/times",4

OK
    
```

4.5.29. AT+QCFG="rtc/cfg" Set RTC Launch Configuration

This command sets the RTC launch configuration.

AT+QCFG="rtc/cfg" Set RTC Launch Configuration	
Write Command AT+QCFG="rtc/cfg"[,<NV_enable>,<RTC_enable>,<NWT_enable>,<TZ_cfg>]	Response If the optional parameters are omitted, query the current setting. +QCFG: "rtc/cfg",<NV_enable>,<RTC_enable>,<NWT_enable>,<TZ_cfg> OK If the optional parameters are specified, set the RTC launch configuration. OK Or ERROR
Maximum Response Time	300 ms

Characteristics	The command takes effect after the module is rebooted. The configurations are saved automatically.
-----------------	---

Parameter

<NV_enable>	Integer type. Whether to take the time saved by NV as the RTC initial value. <u>0</u> No 1 Yes
<RTC_enable>	Integer type. Whether to take the time of the RTC register as the RTC initial value. <u>0</u> No 1 Yes
<NWT_enable>	Integer type. After connecting to the base station, synchronize the RTC time with the base station time. 0 Not synchronize <u>1</u> Synchronize
<TZ_cfg>	Integer type. Time zone configuration after network registration. <u>0</u> Update to the network time zone after registering the network 1 Keep the original time zone after registering the network 2 Reset the time zone to 0 after registering the network

Example

```
AT+QCFG="rtc/cfg"
+QCFG: "rtc/cfg",0,0,1,0

OK
AT+QCFG="rtc/cfg",1,1,1,1
OK
```

4.5.30. AT+QCFG="pdn/pco" Configure Whether the PCO in the PDN Request Carries Encrypted Cells When the Module Is Attached to the Network

This command configures whether the PCO in the PDN request carries encrypted cells when the module is attached to the network.

AT+QCFG="pdn/pco" Configure Whether the PCO in the PDN Request Carries Encrypted Cells When the Module Is Attached to the Network

Test Command	Response
AT+QCFG=?	+QCFG: "pdn/pco", (list of supported <mode>s) ... OK

Write Command AT+QCFG="pdn/pco"[,<mode>]	<p>Response</p> <p>If the optional parameter is omitted, query the current setting: +QCFG: "pdn/pco",<mode></p> <p>OK</p> <p>If the optional parameter is specified, configure whether the PCO in the PDN request carries encrypted cells when the module is attached to the network:</p> <p>OK</p> <p>Or</p> <p>ERROR</p> <p>If there is any error related to ME functionality: +CME ERROR: <err></p>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved after power-off.

Parameter

<mode>	Integer type. Configure whether the PCO in the PDN request carries encrypted cells when the module is attached to the network. <table style="margin-left: 20px;"> <tr> <td><u>0</u></td> <td>Carry</td> </tr> <tr> <td>1</td> <td>Not carry</td> </tr> </table>	<u>0</u>	Carry	1	Not carry
<u>0</u>	Carry				
1	Not carry				
<err>	Error code. For more details, please refer to Chapter 14.5 .				

Example

```

AT+QCFG="pdn/pco"
+QCFG: "pdn/pco",0

OK
AT+QCFG="pdn/pco",1
OK
AT+QCFG="pdn/pco"
+QCFG: "pdn/pco",1

OK
    
```


5 (U)SIM Related Commands

5.1. AT+CIMI Request International Mobile Subscriber Identity (IMSI)

This command requests the International Mobile Subscriber Identity (IMSI) which is intended to permit the TE to identify the individual (U)SIM card or active application in the UICC (GSM or (U)SIM) that is attached to MT.

AT+CIMI Request International Mobile Subscriber Identity (IMSI)	
Test Command AT+CIMI=?	Response OK
Execution Command AT+CIMI	Response TA returns <IMSI> for identifying the individual (U)SIM card which is attached to ME. <IMSI> OK If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristic	/
Reference 3GPP TS 27.007	

Parameter

<IMSI>	International Mobile Subscriber Identity (string without double quotes).
<err>	Error codes. For more details, please refer to Chapter 14.5 .

Example

```
AT+CIMI
460023210226023 //Query IMSI of (U)SIM card which is attached to ME.
```

OK

5.2. AT+CLCK Facility Lock

This command locks, unlocks or interrogates a MT or a network facility **<fac>**. It can be aborted when network facilities are being set or interrogated. For Write Command, **<passwd>** is normally needed to do such actions. When querying the status of network service (**<mode>**=2) the response line for 'not active' case (**<status>**=0) should be returned only if service is not active for any **<class>**.

AT+CLCK Facility Lock	
Test Command AT+CLCK=?	Response +CLCK: (list of supported <fac>s) OK
Write Command AT+CLCK=<fac>,<mode>[,<passwd>[,<class>]]	Response If <mode> is not equal to 2 and the command is set successfully: OK If <mode> =2 and command is set successfully: +CLCK: <status>[,<class>] [+CLCK: <status>[,<class>]] [...] OK
Maximum Response Time	5 s
Characteristic	The command takes effect immediately. The configurations are saved automatically.
Reference 3GPP TS 27.007	

Parameter

<fac>	String type.
"SC"	(U)SIM (lock (U)SIM/UICC card installed in the currently selected card slot) ((U)SIM/UICC asks password in MT power-up and when this lock command issued)
"AO"	BAOC (Bar All Outgoing Calls) (refer to 3GPP TS 22.088 clause 1)
"OI"	BOIC (Bar Outgoing International Calls) (refer to 3GPP TS 22.088 clause 1)
"OX"	BOIC-exHC (Bar Outgoing International Calls except to Home Country) (refer to

3GPP TS 22.088)

"FD" (U)SIM card or active application in UICC (GSM or (U)SIM) fixed dialing memory function (if PIN2 has not completed authentication in the current session, PIN2 needs to be entered in **<passwd>**)

<mode>	Integer type. Lock mode.
0	Unlock
1	Lock
2	Query status
<passwd>	String type. Password.
<class>	Integer type. Data type.
1	Voice
2	Data
4	FAX
7	All telephony except SMS
8	Short message service
16	Data circuit synchronization
32	Data circuit asynchronization
<status>	Integer type. Service status.
0	Off
1	On

Example

```

AT+CLCK="SC",2 //Query the status of (U)SIM card.
+CLCK: 0 //The (U)SIM card is unlocked (OFF).

OK
AT+CLCK="SC",1,"1234" //Lock (U)SIM card, and the password is 1234.
OK
AT+CLCK="SC",2 //Query the status of (U)SIM card.
+CLCK: 1 //The (U)SIM card is locked (ON).

OK
AT+CLCK="SC",0,"1234" //Unlock (U)SIM card.
OK
    
```

5.3. AT+CPIN Enter PIN

This command enters a password or queries whether the module requires a password which is necessary or not before it can be operated. The password may be (U)SIM PIN, (U)SIM PUK, etc.

Read Command returns an alphanumeric string indicating whether some password is required or not. MT stores a password, such as (U)SIM PIN, (U)SIM PUK, etc., which is necessary before it can be operated. If the PIN is to be entered twice, the MT shall automatically repeat the PIN. If no PIN request is pending, no action is taken and an error message **+CME ERROR** is returned to TE.

If the MT PIN is SIM PIN/SIM PUK, etc., the MT is in the limited function mode and needs to be unlocked by sending a password to the module through the setting command. After the unlock is successful, **OK** is returned, and the MT releases the limited mode. When the MT is not in the limited mode, an error will be reported when setting command sends the password.

If the MT PIN required is (U)SIM PUK or (U)SIM PUK2, the second pin is required. This second pin **<new_pin>** is entered to replace the old pin in the (U)SIM.

AT+CPIN Enter PIN	
Test Command AT+CPIN=?	Response OK
Read Command AT+CPIN?	Response +CPIN: <code> OK
Write Command AT+CPIN=<pin>[,<new_pin>]	Response OK
Maximum Response Time	5 s
Characteristic	The command takes effect immediately. The configuration is saved automatically.
Reference 3GPP TS 27.007	

Parameter

<code>	String without double quotes. The password type that the module requires. READY MT is not pending for any password SIM PIN MT is waiting for (U)SIM PIN to be given SIM PUK MT is waiting for (U)SIM PUK to be given SIM PIN2 MT is waiting for (U)SIM PIN2 to be given SIM PUK2 MT is waiting for (U)SIM PUK2 to be given
<pin>	String type. Password. If the requested password was a PUK, such as (U)SIM PUK1, or another password, then <pin> must be followed by <new_pin> .
<new_pin>	String type. New password required if the requested code was a PUK.

Example

```
//Enter PIN
AT+CPIN?
+CPIN: SIM PIN //PIN code is locked.

OK
AT+CPIN="1234" //Enter PIN.
OK

+CPIN: READY
AT+CPIN?
+CPIN: READY //PIN has already been entered.

OK
//Enter PUK and PIN
AT+CPIN?
+CPIN: SIM PUK //Waiting (U)SIM PIN to be given.

OK
AT+CPIN="26601934","1234" //Enter PUK and new PIN password.
OK

CPIN: READY
AT+CPIN?
+CPIN: READY //PUK has already been entered.

OK
```

5.4. AT+CPWD Change Password

This command sets a new password for the facility lock function defined by **AT+CLCK**. This Test Command returns a list of pairs which present the available facilities and the maximum length of their password.

AT+CPWD Change Password	
Test Command AT+CPWD=?	Response +CPWD: ("SC",8),("P2",8) OK
Write Command AT+CPWD=<fac>,<oldpwd>,<newpwd>	Response OK

Maximum Response Time	5 s
Characteristic	The command takes effect immediately. The configuration is saved automatically.
Reference	3GPP TS 27.007

Parameter

<fac>	String type. "SC" (U)SIM (lock the currently selected (U)SIM/UICC card in the card slot) ((U)SIM/UICC asks password in MT power-up and when this lock command is executed) "P2" (U)SIM PIN2
<pwdlength>	Integer type. Maximum length of the password.
<oldpwd>	String type. Password specified for the facility from the user interface or with command.
<newpwd>	String type. New password.

Example

```

AT+CPIN?
+CPIN: READY

OK
AT+CPWD="SC","1234","4321"           //Change (U)SIM card password to "4321".
OK
//Restart the module or re-activate the (U)SIM card.
AT+CPIN?
+CPIN: SIM PIN                       //Waiting (U)SIM PIN to be given.

OK
AT+CPIN="4321"                       //PIN must be entered to define a new password "4321".
OK

+CPIN: READY
    
```

5.5. AT+CSIM Generic (U)SIM Access

This command allows a direct control of the (U)SIM that is installed in the currently selected card slot by a distant application on the TE. The TE shall then keep the processing of (U)SIM information within the frame specified by GSM.

AT+CSIM Generic (U)SIM Access	
Test Command AT+CSIM=?	Response OK
Write Command AT+CSIM=<length>,<command>	Response +CSIM: <length>,<response> OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristic	The command takes effect immediately. The configurations are saved automatically.
Reference 3GPP TS 27.007	

Parameter

<length>	Integer type. Length of <command> or <response> string.
<command>	Hex string type. Command transferred by the MT to the (U)SIM in the format as described in <i>3GPP TS 51.011</i> .
<response>	String type. Response to the command transferred by the (U)SIM to the MT in the format as described in <i>3GPP TS 51.011</i> .
<err>	Error codes. For more details, please refer to Chapter 14.5 .

5.6. AT+CRSM Restricted (U)SIM Access

This command offers easy and limited access to the (U)SIM database. It transmits the (U)SIM command (**<command>**) and its required parameters to the MT.

AT+CRSM Restricted (U)SIM Access	
Test Command AT+CRSM=?	Response OK
Write Command AT+CRSM=<command>[,<fileId>[,<P1>,<P2>,<P3>[,<data>][,<pathId>]]]	Response +CRSM: <sw1>,<sw2>[,<response>] OK

	Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristic	The command takes effect immediately. The configurations are saved automatically.
Reference GSM 07.07	

Parameter

<command>	Integer type. (U)SIM command number. 176 READ BINARY 178 READ RECORD 192 GET RESPONSE 214 UPDATE BINARY 220 UPDATE RECORD 242 STATUS
<fileId>	Integer type. Identifier for an elementary data file on (U)SIM, if used by <command> .
<P1>, <P2>, <P3>	Integer type. Parameters transferred by the MT to the (U)SIM. These parameters are mandatory for every command, except GET RESPONSE and STATUS . The values are described in <i>3GPP TS 51.011</i> .
<data>	Information which shall be written to the (U)SIM (hexadecimal character format; refer to AT+CSCS).
<pathId>	The directory path of an elementary file on a (U)SIM/UICC in hexadecimal format.
<sw1>, <sw2>	Integer type. Information from the (U)SIM about the execution of the actual command. These parameters are delivered to the TE in both cases, on successful or failed execution of the command.
<response>	Response of a successful completion of the command previously issued (hexadecimal character format; refer to AT+CSCS). STATUS and GET RESPONSE return data, which gives information about the current elementary data field. The information includes the type of file and its size (refer to <i>3GPP TS 51.011</i>). After READ BINARY , READ RECORD or RETRIEVE DATA command, the requested data will be returned. <response> is not returned after UPDATE BINARY , UPDATE RECORD or SET DATA command is successfully executed.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

Example

```
AT+CRSM=214,28539,0,0,12,"FFFFFFFFFFFFFFFFFFFFFFF"
+CRSM: 144,0,""
OK
```

5.7. AT+QCCID Show ICCID

This command returns the ICCID (Integrated Circuit Card Identifier) number of (U)SIM card.

AT+QCCID Show ICCID	
Test Command AT+QCCID=?	Response OK
Execution Command AT+QCCID	Response +QCCID: <ICCID> OK Or ERROR
Maximum Response Time	300 ms
Characteristics	/

Parameter

<ICCID>	String without double quotes. ICCID (Integrated Circuit Card Identifier) number of the (U)SIM card.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

Example

```
AT+QCCID //Query ICCID of the (U)SIM card.
+QCCID: 89860025128306012474
OK
```

5.8. AT+QINISTAT Query Initialization Status of (U)SIM Card

This command queries the initialization status of (U)SIM card.

AT+QINISTAT Query Initialization Status of (U)SIM Card	
Test Command AT+QINISTAT=?	Response +QINISTAT: (range of supported <status>s) OK
Execution Command AT+QINISTAT	Response +QINISTAT: <status> OK
Maximum Response Time	300 ms
Characteristics	/

Parameter

<status>	Integer type. Initialization status of (U)SIM card. Actual value is the sum of several of the following four kinds (e.g. 7 = 1 + 2 + 4 means CPIN READY & SMS DONE & PB DONE i.e. CPIN is ready, SMS initialization is completed and phonebook initialization is completed). 0 Initial state 1 CPIN READY. Operation like lock/unlock PIN is allowed 2 SMS DONE. SMS initialization is completed 4 PB DONE. Phonebook initialization is completed
-----------------------	---

5.9. AT+QSIMDET (U)SIM Card Detection

This command enables (U)SIM card hot-swap function. (U)SIM card is detected by GPIO interrupt. The level of (U)SIM card detection pin should also be set when (U)SIM card is inserted.

AT+QSIMDET (U)SIM Card Detection	
Test Command AT+QSIMDET=?	Response +QSIMDET: (list of supported <enable>s),(list of supported <insert_level>s) OK
Read Command AT+QSIMDET?	Response +QSIMDET: <enable>,<insert_level>

	OK
Write Command AT+QSIMDET=<enable>,<insert_level> >	Response OK Or ERROR
Maximum Response Time	300 ms
Characteristic	The command takes effect immediately. The configurations are saved automatically.

Parameter

<enable>	Integer type. Enable or disable (U)SIM card detection. 0 Disable 1 Enable
<insert_level>	Integer type. The level of (U)SIM detection pin when a (U)SIM card is inserted. 0 Low level 1 High level

NOTE

Hot-swap function is invalid if the configured value of **<insert_level>** is inconsistent with that of in hardware design.

Example

```

AT+QSIMDET=1,0 //Set (U)SIM card detection pin level as low when (U)SIM card is inserted.
OK
//Remove (U)SIM card
+CPIN: NOT READY
//Insert (U)SIM card
+CPIN: READY //(U)SIM card is ready.
    
```

5.10. AT+QSIMSTAT (U)SIM Card Insertion Status Report

This command queries (U)SIM card insertion status or determines whether to report (U)SIM card insertion status.

AT+QSIMSTAT (U)SIM Card Insertion Status Report	
Test Command AT+QSIMSTAT=?	Response +QSIMSTAT: (list of supported <enable>s) OK
Read Command AT+QSIMSTAT?	Response +QSIMSTAT: <enable>,<inserted_status> OK
Write Command AT+QSIMSTAT=<enable>	Response OK Or ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are saved automatically.

Parameter

<enable>	Integer type. Enable or disable (U)SIM card insertion status report. If it is enabled, when (U)SIM card is removed or inserted, the URC +QSIMSTAT: <enable>,<inserted_status> will be reported. 0 Disable 1 Enable
<inserted_status>	Integer type. (U)SIM card is inserted or removed. This parameter is not allowed to be set. 0 Removed 1 Inserted 2 Unknown, before the initialization of (U)SIM card

Example

```

AT+QSIMSTAT? //Query (U)SIM card insertion status.
+QSIMSTAT: 0,1

OK
AT+QSIMDET=1,0 //Set (U)SIM detection pin to low level when (U)SIM card is inserted.
OK
AT+QSIMSTAT=1 //Enable (U)SIM card insertion status report.
OK
AT+QSIMSTAT? //Query (U)SIM card insertion status.
+QSIMSTAT: 1,1
    
```

```

OK
//Remove (U)SIM card
+QSIMSTAT: 1,0 //Report of (U)SIM card insertion status: removed.

CPIN: NOT READY
AT+QSIMSTAT? //Query (U)SIM card insertion status.
+QSIMSTAT: 1,0

OK
//Insert (U)SIM card
+QSIMSTAT: 1,1 //Report of (U)SIM card insertion status: inserted.

+CPIN: READY
    
```

5.11. AT+CCHO Open Logical Channel

This command opens a logical channel of (U)SIM card.

AT+CCHO Open Logical Channel	
Test Command AT+CCHO=?	Response OK
Write Command AT+CCHO=<dfname>	Response <sessionID> OK Or ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.

Parameter

<dfname>	String type. All selectable applications in the UICC are referenced by a DF name coded on 1 to 16 bytes.
<sessionID>	Integer type. A session ID to be used to target a specific application on the smart card using logical channels mechanism.

NOTE

The logical channel number is contained in the CLASS byte of an **APDU** command, thus implicitly contained in all **APDU** commands sent to a UICC. In this case it will be up to the MT to manage the logical channel part of the APDU CLASS byte and to ensure that the chosen logical channel is relevant to the **<sessionID>** returned after executing the AT command. See *3GPP TS 31.101* for further information on logical channels in APDU commands protocol.

Example

```
AT+CCHO=? //Test command.
OK
AT+CCHO="A0000000871002FF86FFFF89FFFFFF" //<dfname> is made up of AID strings.
+CCHO: 1 //The session ID is 1.
OK
```

5.12. AT+CGLA UICC Logical Channel Access

This command accesses a UICC logical channel.

AT+CGLA UICC Logical Channel Access	
Test Command AT+CGLA=?	Response OK
Write Command AT+CGLA=<sessionID>,<length>,<command>	Response +CGLA: <length>,<response> OK Or ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are not saved.

Parameter

<sessionID> Integer type. This is the identifier of the session to be used to send the **APDU** command to the UICC. It is mandatory to send commands to the UICC when targeting applications on the smart card using a logical channel other than the default channel (channel "0").

<length>	Integer type. Length of the characters that are sent to TE in <command> or <response> (Twice the actual length of the command or response).
<command>	Command passed on by the MT to the UICC in the format as described in <i>3GPP TS 31.101</i> (hexadecimal character format; refer to AT+CSCS).
<response>	Response to the command passed on by the UICC to the MT in the format as described in <i>3GPP TS 31.101</i> (hexadecimal character format; refer to AT+CSCS).

Example

```
AT+CGLA=? //Test command.
OK
AT+CGLA=1,14,"00A40804022F00" //The command is 00A40804022F00.
+CGLA: 4,"6121" //The length is 4, the response is 6121.
OK
```

5.13. AT+CCHC Close Logical Channel

This command closes a logical channel of (U)SIM card with the given **<sessionID>**.

AT+CCHC Close Logical Channel	
Test Command AT+CCHC=?	Response OK
Write Command AT+CCHC=<sessionID>	Response OK Or ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.

Parameter

<sessionID>	Integer type. A session ID to be used to target a specific application on the smart card using logical channels mechanism.
--------------------------	--

Example

```
AT+CCHC=? //Test command.
OK
```

```
AT+CCHC=1 //Close logical channel: 1.
OK
```

5.14. AT+QPINC Get the Remaining Retries of PIN/PUK

This command queries the remaining times of inputting the (U)SIM PIN/PUK passwords.

AT+QPINC Get the Remaining Retries of PIN/PUK	
Test Command AT+QPINC=?	Response +QPINC: (list of supported <facility>s) OK
Read Command AT+QPINC?	Response +QPINC: "SC",<PIN_counter>,<PUK_counter> +QPINC: "P2",<PIN_counter>,<PUK_counter> OK
Write Command AT+QPINC=<facility>	Response +QPINC: <facility>,<PIN_counter>,<PUK_counter> OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	/

Parameter

<facility>	String type. "SC" (U)SIM PIN "P2" (U)SIM PIN2
<PIN_counter>	Integer type. The number of remaining times to input the PIN passwords. Range: 0–3.
<PUK_counter>	Integer type. The number of remaining times to input the PUK passwords. Range: 0–10.
<err>	Error code. For more details, please refer to Chapter 14.5 .

6 Network Service Commands

6.1. AT+COPS Operator Selection

This command returns the current operators and their status, and configures registered operators and network mode.

This Test Command returns a set of five parameters, each representing an operator presenting in the network. When any of the formats may be unavailable, an empty field should be returned. The list of operators shall be in the order of: home network, networks referenced in (U)SIM and other networks.

This Read Command returns the current mode and the currently selected operator. If no operator is selected, **<format>**, **<oper>** and **<AcT>** are omitted.

This Write Command forces an attempt to select and register the GSM/LTE network operator. If the selected operator is not available, no other operator shall be selected (except **<mode>=4**). The format of selected operator name shall apply to further Read Command (**AT+COPS?**).

AT+COPS Operator Selection	
Test Command AT+COPS=?	Response +COPS: [list of supported (<stat>),long alphanumeric <oper> ,short alphanumeric <oper> ,numeric <oper> [, <AcT>]) s][, (list of supported <mode> s),(list of supported <format> s)] OK If there is any error related to ME functionality: +CME ERROR: <err>
Read Command AT+COPS?	Response +COPS: <mode> [, <format> [, <oper>][, <AcT>]] OK If there is any error related to ME functionality: +CME ERROR: <err>

Write Command AT+COPS=<mode>[,<format>[,<oper>[,<AcT>]]]	Response OK If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	180 s, determined by network.
Characteristics	/
Reference 3GPP TS 27.007	

Parameter

<stat>	Integer type. Operator status. 0 Unknown 1 Operator available 2 Current operator 3 Operator forbidden
<oper>	Operator in format as per <format> . <mode> determines whether <oper> is present or not.
<mode>	Integer type. 0 Automatic mode. <oper> field is omitted 1 Manual operator selection. <oper> shall be presented and <AcT> is optional 2 Manually deregister from network 3 Set only <format> (for AT+COPS?), and do not attempt registration/deregistration (<oper> and <AcT> are ignored). This value is invalid in the response of Read Command 4 Manual/automatic selection. <oper> field shall be presented. If manual selection fails, automatic mode (<mode> =0) is entered
<format>	Integer type. Indicate the format of <oper> . 0 Long format alphanumeric <oper> which can be up to 16 characters 1 Short format alphanumeric <oper> 2 Numeric <oper>
<AcT>	Integer type. Access technology selected. 0 GSM 7 E-UTRAN
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

For EC200U and EG91xU series modules, the value of **<AcT>** can only be set to 0 and 7. For EG800G series and EG915G-EU modules, the value of **<AcT>** can only be set to 7.

Example

```

AT+COPS=? //List all current network operators.
+COPS: (1,"CHN-UNICOM","UNICOM","46001",2),(1,"CHN-UNICOM","UNICOM","46001",0),(2,"CHN-UNICOM","UNICOM","46001",7),(1,"46011","46011","46011",7),(3,"CHINA MOBILE","CMCC","46000",0),(0-4),(0-2)

OK
AT+COPS? // Query the network registration status of the current module.
+COPS: 0,0,"CHN-UNICOM",7

OK
    
```

6.2. AT+CREG CS Domain Network Registration Status

This Read Command returns the status of result code presentation and an integer **<stat>** which shows whether the network has currently indicated the registration of the ME. Location information elements **<lac>** and **<ci>** are returned only when **<n>=2** and ME is registered on the network.

This Write Command sets whether to report URC and controls the presentation of an unsolicited result code **+CREG: <stat>** when **<n>=1** and there is a change in the ME network registration status.

AT+CREG CS Domain Network Registration Status	
Test Command AT+CREG=?	Response +CREG: (list of supported <n>s) OK
Read Command AT+CREG?	Response +CREG: <n>,<stat>[,<lac>,<ci>[,<AcT>]] OK If there is any error related to ME functionality: +CME ERROR: <err>
Write Command AT+CREG[=<n>]	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved only if you execute AT&W after this command.
Reference	3GPP TS 27.007

Parameter

<n>	Integer type. Whether to enable related network registration URC. 0 Disable network registration URC 1 Enable network registration URC +CREG: <stat> 2 Enable network registration URC with location information: +CREG: <stat>[,<lac>,<ci>[,<AcT>]]
<stat>	Integer type. Registration network status. 0 Not registered. ME is not currently searching a new operator to register to 1 Registered, home network 2 Not registered, but ME is currently searching a new operator to register to 3 Registration denied 4 Unknown 5 Registered, roaming
<lac>	String type. Two bytes location area code in hexadecimal format.
<ci>	String type. 16-bit (GSM) or 28-bit (LTE) cell ID in hexadecimal format.
<AcT>	Integer type. Access technology selected. 0 GSM 7 E-UTRAN
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

For EC200U and EG91xU series modules, the value of <AcT> can only be set to 0 and 7. For EG800G series and EG915G-EU modules, the value of **<AcT>** can only be set to 7.

Example

```

AT+CREG=1
OK

+CREG: 1 //URC reports that ME has registered on network.
AT+CREG=2 //Enable network registration URC with location information.
OK

+CREG: 1,"D509","80D413D",7 //URC reports the operator with area code and cell ID.
    
```

6.3. AT+CSQ Signal Quality Report

This command indicates the received signal strength **<rssi>** and the channel bit error rate **<ber>**.

This Test Command returns values supported by the TA.

This Execution Command returns received signal strength indication **<rssi>** and channel bit error rate **<ber>** from the ME.

AT+CSQ Signal Quality Report	
Test Command AT+CSQ=?	Response +CSQ: (list of supported <rssi>s),(list of supported <ber>s) OK
Execution Command AT+CSQ	Response +CSQ: <rssi>,<ber> OK
Maximum Response Time	300 ms
Characteristics	/
Reference 3GPP TS 27.007	

Parameter

<rssi>	Integer type. Received signal strength indication.
0	-113 dBm or less
1	-111 dBm
2–30	-109 dBm to -53 dBm
31	-51 dBm or greater
99	Not known or not detectable
<ber>	Integer type. Channel bit error rate (in percent).
0–7	As RxQual values in the table in <i>3GPP TS 45.008 subclause 8.2.4</i>
99	Not known or not detectable

Example

```

AT+CSQ=?
+CSQ: (0-31,99),(0-7,99)

OK
AT+CSQ
+CSQ: 28,99           //The current signal strength indication is 28 and the channel bit error rate is not
                        known or not detectable.

OK
    
```

NOTE

After using network related commands such as **AT+CCWA** and **AT+CCFC**, it is recommended to wait for 3 seconds before entering **AT+CSQ** to ensure that any network access required for the preceding command has been finished.

6.4. AT+CPOL Preferred Operator List

This command edits and queries the list of preferred operators.

AT+CPOL Preferred Operator List	
Test Command AT+CPOL=?	Response +CPOL: (list of supported <index>s),(list of supported <format>s) OK
Read Command AT+CPOL?	Response Query the list of preferred operators: +CPOL: <index>,<format>,<oper>[,<GSM>,<GSM_compact>,<UTRAN>,<E-UTRAN>] [+CPOL: <index>,<format>,<oper>[,<GSM>,<GSM_compact>,<UTRAN>,<E-UTRAN>...] OK
Write Command AT+CPOL=<index>[,<format>[,<oper>[<GSM>,<GSM_compact>,<UTRAN>,<E-UTRAN>]]]	Response Edit the list of preferred operators: OK Or ERROR If the <index> is specified but the <oper> is left out, parameters after <oper> will be omitted.
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are not saved.
Reference	3GPP TS 27.007

Parameter

<index>	Integer type. The order number of PLMN in the (U)SIM.
<format>	Integer type. <oper> format. 0 Long format alphanumeric <oper> 1 Short format alphanumeric <oper> 2 Numeric <oper>
<oper>	String type. Operator. <format> indicates the format is alphanumeric or numeric (see AT+COPS).
<GSM>	Integer type. GSM access technology. 0 Access technology is not selected 1 Access technology is selected
<GSM_compact>	Integer type. GSM compact access technology. 0 Access technology is not selected 1 Access technology is selected
<UTRAN>	Integer type. UTRAN access technology. 0 Access technology is not selected 1 Access technology is selected
<E-UTRAN>	Integer type. E-UTRAN access technology. 0 Access technology is not selected 1 Access technology is selected

NOTE

The values of **<GSM>**, **<GSM_compact>**, **<UTRAN>** and **<E-UTRAN>** depends on PLMN selector list with access technology in (U)SIM card or UICC card.

6.5. AT+COPN Read Operator Names

This command returns the list of operator names from the ME. Each operator code **<numericn>** that has an alphanumeric equivalent **<alphan>** in the ME memory is returned.

AT+COPN Read Operator Names	
Test Command AT+COPN=?	Response OK
Execution Command AT+COPN	Response +COPN: <numeric1>,<alpha1> [+COPN: <numeric2>,<alpha2> ...] OK

	If there is error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	Depends on the number of operator names.
Characteristics	/
Reference 3GPP TS 27.007	

Parameter

<numericn>	String type. Operator in numeric format (see AT+COPS).
<alphan>	String type. Operator in long alphanumeric format (see AT+COPS).
<err>	Error codes. For more details, please refer to Chapter 14.5 .

6.6. AT+CTZU Automatic Time Zone Update

This command enables and disables automatic time zone update via NITZ.

AT+CTZU Automatic Time Zone Update	
Test Command AT+CTZU=?	Response +CTZU: (range of supported <enable>s) OK
Write Command AT+CTZU=<enable>	Response OK Or ERROR
Read Command AT+CTZU?	Response +CTZU: <enable> OK
Maximum Response Time	300 ms
Characteristics	The command takes effect after the module is rebooted. The configuration is saved automatically.
Reference 3GPP TS 27.007	

Parameter

<enable>	Integer type. The mode of automatic time zone update.
<u>0</u>	Disable automatic time zone update via NITZ
1	Enable automatic time zone update via NITZ
3	Enable automatic time zone update via NITZ and update LOCAL time to RTC

Example

```

AT+CTZU? //Query the current time zone update mode.
+CTZU: 0

OK
AT+CTZU=? //Test Command.
+CTZU: (0,1,3)

OK
AT+CTZU=1 //Enable automatic time zone update via NITZ.
OK
AT+CTZU? //Query the current time zone update mode.
+CTZU: 1

OK
    
```

6.7. AT+CTZR Time Zone Change Reporting

This command controls the time zone reporting of changed event. If reporting is enabled, the MT returns the unsolicited result code **+CTZV: <tz>** or **+CTZE: <tz>,<dst>,<time>** whenever the time zone is changed.

AT+CTZR Time Zone Change Reporting	
Test Command AT+CTZR=?	Response +CTZR: (range of supported <reporting>s) OK
Write Command AT+CTZR=<reporting>	Response OK Or ERROR
Read Command AT+CTZR?	Response +CTZR: <reporting> OK

Maximum Response Time	300 ms
Characteristics	The command takes effect after the module is rebooted. The configuration is saved automatically.
Reference	3GPP TS 27.007

Parameter

<reporting>	Integer type. The mode of time zone reporting. <ul style="list-style-type: none"> 0 Disable time zone reporting of changed event 1 Enable time zone reporting of changed event by URC +CTZV: <tz> 2 Enable extended time zone reporting by URC +CTZE: <tz>,<dst>,<time>
<tz>	String type. The sum of the local time zone (difference between the local time and GMT is expressed in quarters of an hour) plus daylight saving time. The format is " \pm zz", expressed as a fixed width, two-digit integer with the range -48 to +56. To maintain a fixed width, numbers in the range -9 to +9 are expressed with a leading zero, e.g. "-09", "+00" and "+09".
<dst>	Integer type. Indicates whether <tz> includes daylight savings adjustment. <ul style="list-style-type: none"> 0 <tz> includes no adjustment for daylight saving time 1 <tz> includes +1 hour (equals 4 quarters in <tz>) adjustment for daylight saving time 2 <tz> includes +2 hours (equals 8 quarters in <tz>) adjustment for daylight saving time
<time>	String type. The local time. The format is "YYYY/MM/DD,hh:mm:ss", expressed as integers representing year (YYYY), month (MM), date (DD), hour (hh), minute (mm) and second (ss). This parameter can be provided by the network when delivering time zone information and will be presented in the unsolicited result code of extended time zone reporting if provided by the network.

Example

```

AT+CTZR=2 //Enable reporting time zone changes through URC
OK       +CTZV: <tz>.
AT+CTZR? //Query time zone reporting status.
+CTZR: 2

OK

+CTZE: "+32",0,"2017/11/04,06:51:13" //Time zone and local time reported by URC.
    
```

6.8. AT+QLTS Obtain the Latest Time Synchronized Through Network

This command obtains the latest time synchronized through network.

This Execution Command returns the latest time that has been synchronized through network.

AT+QLTS Obtain the Latest Time Synchronized Through Network	
Test Command AT+QLTS=?	Response +QLTS: (range of supported <mode>s) OK
Execution Command AT+QLTS	Response +QLTS: <time>,<dst> OK
Write Command AT+QLTS=<mode>	Response +QLTS: <time>,<dst> OK Or ERROR If there is error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	/

Parameter

<mode>	Integer type. Querying network time mode. 0 Query the latest time that has been synchronized through network 1 Query the current GMT time calculated from the latest time that has been synchronized through network 2 Query the current local time calculated from the latest time that has been synchronized through network
<time>	String type value. Format is "YYYY/MM/dd,hh:mm:ss±zz", where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT within ange: from -48 to +48). E.g. GMT time 6th of May 2004, 22:10:00 plus 2 hours equals to "04/05/06,22:10:00+08"
<dst>	Integer type. Includes daylight savings adjustment or not. 0 Includes no adjustment for daylight saving time

- 1 Includes +1 hour adjustment for daylight saving time
 - 2 Includes +2 hours adjustment for daylight saving time
- <err> Error codes. For more details, please refer to **Chapter 14.5**.

NOTE

If the time has not been synchronized through network, the command will return a null time string as **+QLTS: ""**.

Example

```

AT+QLTS=?           //Query the supported network time mode.
+QLTS: (0-2)

OK
AT+QLTS           //Query the latest time synchronized through network.
+QLTS: "2017/10/13,03:40:48+32,0"

OK
AT+QLTS=0         //Query the latest time synchronized through network. It offers the same
                  //function as Execution Command AT+QLTS.
+QLTS: "2017/10/13,03:40:48+32,0"

OK
AT+QLTS=1         //Query the current GMT time calculated from the latest time that has been
                  //synchronized through network.
+QLTS: "2017/10/13,03:41:22+32,0"

OK
AT+QLTS=2         //Query the current local time calculated from the latest time that has been
                  //synchronized through network.
+QLTS: "2017/01/13,11:41:23+32,0"

OK
    
```

6.9. AT+QNWINFO Query Network Information

This command indicates network information such as the selected access technology, the operator and the selected frequency band.

AT+QNWINFO Query Network Information	
Test Command AT+QNWINFO=?	Response OK
Execution Command AT+QNWINFO	Response +QNWINFO: <AcT>,<oper>,<band>,<channel> OK
Maximum Response Time	300 ms
Characteristics	/

Parameter

<AcT>	String type. The selected network access technology. "No Service" "GSM" "GPRS" "EDGE" "TDD LTE" "FDD LTE"
<oper>	String type. The operator in numeric format.
<band>	String type. The selected band. "GSM 850" "GSM 900" "GSM 1800" "GSM 1900" "LTE BAND 1" "LTE BAND 2" "LTE BAND 3" "LTE BAND 4" "LTE BAND 5" "LTE BAND 7" "LTE BAND 8" "LTE BAND 20" "LTE BAND 28" "LTE BAND 34" "LTE BAND 38" "LTE BAND 39" "LTE BAND 40" "LTE BAND 41" "LTE BAND 66" "LTE BAND 71"

<channel> Integer type. Channel ID.

NOTE

For EG800G series and EG915G-EU modules, the value of <AcT> can only be set to "TDD LTE" and "FDD LTE", and <band> can only be set to "LTE BAND".

Example

```
AT+QNWINFO=?
OK
AT+QNWINFO
+QNWINFO: "FDD LTE","46011","LTE BAND 3",1650
OK
```

6.10. AT+QSPN Query Operator Name

AT+QSPN Query Operator Name

Test Command AT+QSPN=?	Response OK
Execution Command AT+QSPN	Response +QSPN: <FNN>,<SNN>,<SPN>,<alphabet>,<RPLMN> OK
Maximum Response Time	300 ms
Characteristics	/

Parameter

<FNN>	String type. Full network name.
<SNN>	String type. Short network name.
<SPN>	String type. Operator name.
<alphabet>	Integer type. Alphabet of full network name and short network name. 0 GSM 7-bit default alphabet 1 UCS2
<RPLMN>	String type. Registered PLMN.

NOTE

1. If <alphabet> is 0, <FNN> and <SNN> will be shown in GSM 7-bit default alphabet string.
2. If <alphabet> is 1, <FNN> and <SNN> will be shown in UCS2 hexadecimal string.

Example

```
AT+QSPN //Query the EONS information of registered PLMN.
+QSPN: "CHN-UNICOM","UNICOM","",0,"46001"
OK
```

6.11. AT+QCSQ Query and Report Signal Strength

This command queries and reports the signal strength of the current service network. If the MT is registered with multiple networks in different service modes, you can query the signal strength of networks in each mode. No matter whether the MT is registered a network or not, you can execute **AT+QCSQ=1** to query the signal strength or allow the MT to report the detected signal strength via URC if the MT camps on the network. If the MT doesn't use any service network or the service mode is uncertain, **"NOSERVICE"** will be returned.

AT+QCSQ Query and Report Signal Strength	
Test Command AT+QCSQ=?	Response +QCSQ: (list of supported <sysmode>s) OK
Write Command AT+QCSQ=<enable>	Response OK
Read Command AT+QCSQ?	Response +QCSQ: <enable> OK
Execution Command AT+QCSQ	Response +QCSQ: <sysmode>,[,<value1>],[,<value2>],[,<value3>],[,<value4>]]]] OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.

Parameter

<sysmode>	A string type value indicating the service mode in which the MT will report the signal strength via URC. "NOSERVICE" NOSERVICE mode "GSM" GSM/GPRS mode "LTE" LTE mode
<value>	The signal strength type corresponding to each service mode. See Table 5 for details.
<gsm_rssi>	Integer type. Received signal strength indication in GSM mode. Unit: dBm.
<lte_rssi>	Integer type. Received signal strength indication in LTE mode. Unit: dBm.
<lte_rsrp>	Integer type. Reference signal received power in LTE mode. Unit: dBm.
<lte_sinr>	Integer type. Signal to interference plus noise ratio in LTE mode. Unit: dB.
<lte_rsrq>	Integer type. Reference signal received quality in LTE mode. Unit: dB.
<enable>	Integer type. Whether to report URC. 0 Disable 1 Enable

Table 5: Signal Strength Type

<sysmode>	<value1>	<value2>	<value3>	<value4>
"NOSERVICE"	-	-	-	-
"GSM"	<GSM_RSSI>	-	-	-
"LTE"	<LTE_RSSI>	<LTE_RSRP>	<LTE_SINR>	<LTE_RSRQ>

NOTE

1. URC format is shown as below:**+QCSQ: <sysmode>[,<value1>[,<value2>[,<value3>[,<value4>]]]]**. The URC allows MT to unsolicitedly report the current signal strength when the strength changes.
2. The Write Command enables/disables URC indication, Default is off (<enable>=0). If <enable>=1, then the MT can unsolicitedly report the current signal strength when the strength changes.
3. EG800G series and EG915G-EU modules only support LTE mode.
4. When querying <lte_rssi>, the module returns the absolute value of RSSI.
5. When querying <lte_sinr>, the module returns the level value, and the conversion formula of the actual SINR value is: $Y = X/2 - 23.5$. (X: the value of <lte_sinr> queried by AT+QCSQ. Y: Actual SINR value after conversion; range: -23–40; unit: dB.)

Example

```

AT+QCSQ //Query signal strength.
+QCSQ: "LTE",62,-91,75,-10

OK
AT+QCSQ? //Query URC configuration.
+QCSQ: 0

OK
AT+QCSQ=? //List of supported <sysmode>s.
+QCSQ: "NOSERVICE","GSM","LTE"

OK
    
```

6.12. AT+CIND Query Indicator State

AT+CIND Query Indicator State	
Test Command AT+CIND=?	Response +CIND: (<descr>,(list of supported <ind>s))[(<descr>,(list of supported <ind>s))[,...]] OK
Read Command AT+CIND?	Response +CIND: <ind>[,<ind>[,...]] OK If error is related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	/

Parameter

<descr>	String type. Indicator state, see the following notes for details.
<ind>	Integer type. Indicator event, related to the value of the <descr> , see the following notes for details.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

The values of <descr> and <ind> are described as follows:

<descr>	<ind>
"battchg"	Battery charge level. Range: 0–5.
"signal"	Signal strength indication. Range: 0–5. According to the signal strength, it is divided into five levels from weak to strong.
"service"	Network service status indicator. 0 Not registered on the network 1 Registered to the known network
"sounder"	Sounder activity. The value is not supported currently.
"message"	Message received. 0 Not received 1 Received
"call"	Call status indication. 0 No call 1 Call
"roam"	Roaming indicator. 0 Registered with the ownership or unregistered network 1 Registered to the roaming network
"smsfull"	SMS storage indication. 0 Full SMS storage 1 Available SMS storage

Example

AT+CIND=?

```
+CIND: ("battchg",(0-5)),("signal",(0-5)),("service",(0,1)),("sounder",(0,1)),("message",(0,1)),("call",
(0,1)),("roam",(0,1)),("smsfull",(0,1))
```

OK

AT+CIND?

```
+CIND: 0,3,1,0,0,0,1,0
```

OK

7 Call Related Commands

7.1. ATA Answer an Incoming Call

This command connects the module to answer an incoming voice or data call indicated by a **RING** URC. After the command is executed, the MT sends an off-hook signal to the remote station.

ATA Answer an Incoming Call	
Execution Command ATA	Response Response in case of voice call, if successfully connected: OK Response if no connection: NO CARRIER
Maximum Response Time	90 s, determined by network.
Characteristics	/
Reference V.25ter	

NOTE

1. Any additional commands on the same command line are ignored.
2. This command may be aborted if a character is received during execution. The aborting is not possible during some states of connection establishment such as handshaking.
3. EG800G series and EG915G-EU modules do not support the command.

Example

```

RING //A voice call is ringing.
AT+CLCC
+CLCC: 1,0,0,1,0,"",128 //PS call in LTE mode.
+CLCC: 2,1,4,0,0,"02154450290",129 //Incoming call.

OK
ATA //Accept the voice call with ATA.
```

OK

7.2. ATD Mobile Originated Call to Dial a Number

This command sets up outgoing voice and data calls. Supplementary services can also be controlled with this command.

ATD Mobile Originated Call to Dial a Number

Execution Command ATD<n>[<mgsms>][;:]	Response If a connection cannot be established: NO CARRIER If connection is successful and voice call: OK
Maximum Response Time	5 s, determined by network (AT+COLP=0).
Characteristics	/
Reference V.25ter	

Parameter

<n>	String of dialing digits and optional V.25ter dialing modifiers. Dialing digits: 0–9, *, #, +, A, B, C Following V.25ter modifiers are ignored: ,(comma), T, P, !, W, @
<mgsms>	String of GSM dialing modifiers: I Activates CLIR (Disable presentation of own number to called party) i Deactivates CLIR (Enable presentation of own number to called party) G Activates closed user group invocation for this call only g Deactivates closed user group invocation for this call only
<;>	Only required to set up voice call, return to command status after the call ends.

NOTE

- When **ATD** is being executed, this command may be aborted if the module receives a character or **ATH**. However, the command will not be aborted during some connection establishments such as handshaking.
- <mgsms>=l/i** are only valid when there is no "*" or "#" in the dial string.
- Responses returned after dialing with **ATD**:
For voice call, two different response modes can be determined. TA returns **OK** immediately either after dialing was completed or after the call was established. The setting is controlled by **AT+COLP**,

of which default is **AT+COLP=0** which causes the TA to return **OK** immediately after the dialing was completed. Otherwise, TA returns **OK**, **BUSY**, **NO DIAL TONE**, or **NO CARRIER**.

4. Using **ATD** in an active voice call:
 - When a user originates a second voice call while there is already an active voice call, the first call will be automatically put on hold.
 - The current states of all calls can be easily checked at any time with **AT+CLCC**.
5. EG800G series and EG915G-EU modules only support PPP calling through the command, while do not support voice calling.

Example

```
ATD10086; //Dialing out.
OK
```

7.3. ATH Disconnect Existing Connection

This command disconnects circuit switched data calls or voice calls, i.e. disconnect existing call from command line and terminate the call. **AT+CHUP** is also used to disconnect the voice call.

ATH Disconnect Existing Connection	
Execution Command ATH[n]	Response OK
Maximum Response Time	90 s, determined by network.
Characteristics	/
Reference V.25ter	

Parameter

<n>	Integer type.
0	Disconnect existing call from command line and terminate the call

NOTE

EG800G series and EG915G-EU modules only support disconnecting PPP call through the command, while do not support disconnecting voice call.

7.4. AT+CVHU Voice Hang up Control

This command controls whether **ATH** can be used to disconnect the voice call.

AT+CVHU Voice Hang up Control	
Test Command AT+CVHU=?	Response +CVHU: (list of supported <mode> s) OK
Read Command AT+CVHU?	Response +CVHU: <mode> OK
Write Command AT+CVHU=<mode>	Response OK Or ERROR
Maximum Response Time	300 ms
Characteristics	/
Reference	3GPP TS 27.007

Parameter

<mode>	Integer type.
<u>0</u>	ATH can be used to disconnect the voice call
1	ATH is ignored but OK response is returned

NOTE

EG800G series and EG915G-EU modules do not support the command.

7.5. AT+CHUP Hang up Voice Call

This command cancels all voice calls that are in the active, waiting and held state. For data disconnections, use **ATH**.

AT+CHUP Hang up Voice Call	
Test Command AT+CHUP=?	Response OK
Execution Command AT+CHUP	Response OK Or ERROR
Maximum Response Time	90 s, determined by network.
Characteristics	/
Reference 3GPP 27.007	

NOTE

EG800G series and EG915G-EU modules do not support the command.

Example

```

RING //Incoming call.

AT+CHUP //Hang up the call.
OK
    
```

7.6. +++ Switch from Data Mode to Command Mode

This command is only available when TA is in data mode. The "+++" character sequence causes the TA to cancel the data flow over the AT interface and switch to command mode. This allows entering AT command while maintaining the data connection with the remote server or, accordingly, the GPRS connection.

+++ Switch from Data Mode to Command Mode	
Execution Command +++	Response OK
Maximum Response Time	300 ms
Characteristics	/
Reference V.25ter	

NOTE

1. To prevent the **+++** escape sequence from being misinterpreted as data, the following sequence should be followed:
 - 1) Do not input any character within 1s before inputting **+++**.
 - 2) Input **+++** within 1s, and no other characters can be inputted during the time.
 - 3) Do not input any character within 1s after **+++** has been inputted.
 - 4) Switch to command mode successfully; otherwise return to **Step 1**).
2. To return back to data mode from command mode, please enter **ATO**.
3. Another way to change to command mode is through DTR level change, and please refer to **AT&D** command for details.

7.7. ATO Switch from Command Mode to Data Mode

This command resumes the connection and switches back from command mode to data mode.

ATO Switch from Command Mode to Data Mode

Execution Command ATO[n]	Response If connection is not successfully resumed: NO CARRIER If connection is successfully resumed, TA returns to data mode from command mode: CONNECT <text>
Maximum Response Time	300 ms
Characteristics	/
Reference V.25ter	

Parameter

<n>	Integer type. 0 Switch from command mode to data mode
------------------	--

NOTE

When TA returns to data mode from command mode successfully, **CONNECT <text>** is returned. Please note that **CONNECT <text>** outputs only when **<value>** is greater than 0 in **ATX** parameter setting.

7.8. ATSO Set Number of Rings before Automatic Answering

This command controls number of rings before automatic answering mode for the incoming calls.

ATSO Set Number of Rings before Automatic Answering	
Read Command ATSO?	Response <n> OK
Write Command ATSO=<n>	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved only if you execute AT&W after this command.
Reference V.25ter	

Parameter

<n>	Integer type. Determines the number of rings before auto-answer. 0 Automatic answering is disabled 1–255 Enable automatic answering on the ring number specified
-----	--

NOTE

1. If <n> is set too high, the calling party may hang up before the call is answered automatically.
2. EG800G series and EG915G-EU modules do not support the command.

Example

```

ATSO=3 //Set three rings before automatically answering a call.
OK

RING //A call is coming.

RING

RING //Automatically answering the call after three rings.
    
```

7.9. AT\$7 Set Time to Wait for Connection Completion

This command specifies the amount of time (unit: second) to wait for the connection completion in case of answering or originating a call. If no connection is established during the time, the module disconnects from the line.

AT\$7 Set Time to Wait for Connection Completion	
Read Command AT\$7?	Response <n> OK
Write Command AT\$7=<n>	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved only if you execute AT&W after this command.
Reference V.25ter	

Parameter

<n>	Integer type.
0	Disabled
1–255	Number of seconds to wait for connection completion. Unit: second

NOTE

EG800G series and EG915G-EU modules do not support the command.

7.10. AT+CSTA Select Type of Address

This Write Command selects the type of number for further dialing commands **ATD** according to 3GPP Specifications. Test command returns all supported values.

AT+CSTA Select Type of Address	
Test Command AT+CSTA=?	Response +CSTA: (list of supported <type>s)

	OK
Read Command AT+CSTA?	Response +CSTA: <type>
	OK
Write Command AT+CSTA=<type>	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.
Reference 3GPP TS 27.007	

Parameter

<type>	Integer type. Current address type.
129	Unknown type
145	International type (contains the character "+")
161	National type

NOTE

EG800G series and EG915G-EU modules do not support the command.

7.11. AT+CLCC List Current Calls of ME

This Execution Command returns the list of all current calls. If the command is executed successfully, but no calls existed, no information response but **OK** is sent to TE.

AT+CLCC List Current Calls of ME	
Test Command AT+CLCC=?	Response OK
Execution Command AT+CLCC	Response [+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]] [+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]] [...]

	<p>OK</p> <p>If there is any error related to ME functionality: +CME ERROR: <err></p>
Maximum Response Time	300 ms
Characteristics	/

Parameter

<idx>	Integer type. Call identification number as described in <i>3GPP TS 22.030 subclause 4.5.5.1</i> . It can be used in AT+CHLD .
<dir>	Integer type. 0 Mobile originated (MO) call 1 Mobile terminated (MT) call
<stat>	Integer type. State of the call. 0 Active 1 Held 2 Dialing (MO call) 3 Alerting (MO call) 4 Incoming (MT call) 5 Waiting (MT call)
<mode>	Integer type. Bearer service/teleservice. 0 Voice 1 Data 2 FAX
<mpty>	Integer type. 0 Call is not one of multiparty (conference) call parties 1 Call is one of multiparty (conference) call parties
<number>	Phone number in string type in format specified by <type> .
<type>	Type of address of octet in integer format (refer to <i>3GPP TS 24.008 subclause 10.5.4.7</i> for details). Usually, it has three kinds of values: 129 Unknown type 145 International type (contains the character "+") 161 National type
<alpha>	Alphanumeric representation of <number> corresponding to the entry found in phonebook.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

EG800G series and EG915G-EU modules do not support the command.

Example

```

ATD10086; //Establish a call.
OK
AT+CLCC
+CLCC: 1,0,0,0,0,"10086",129 //Establish a call, and the call has been answered.
OK
    
```

7.12. AT+CRIC Set the Extended Format for Incoming Call Indication

This command controls whether or not to use the extended format of incoming call indication. When it is enabled, an incoming call is indicated to the TE with unsolicited result code **+CRING: <type>** instead of the normal **RING**.

AT+CRIC Set the Extended Format for Incoming Call Indication	
Test Command AT+CRIC=?	Response +CRIC: (list of supported <mode>s) OK
Read Command AT+CRIC?	Response +CRIC: <mode> OK
Write Command AT+CRIC=[<mode>]	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.
Reference 3GPP TS 27.007	

Parameter

<mode>	Integer type.	
	0	Disable extended format
	1	Enable extended format
<type>	String type.	
	ASYNC	Asynchronous transparent
	SYNC	Synchronous transparent
	REL ASYNC	Asynchronous non-transparent

REL SYNC	Synchronous non-transparent
FAX	Facsimile
VOICE	Voice

NOTE

EG800G series and EG915G-EU modules do not support the command.

Example

```

AT+CRC=1 //Enable extended format.
OK

+CRING: VOICE //Indicate incoming call to the TE.
ATH
OK
AT+CRC=0 //Disable extended format.
OK

RING //Indicate incoming call to the TE.
ATH
OK
    
```

7.13. AT+QECCNUM Configure Emergency Call Numbers

This command queries, adds and deletes ECC (Emergency Call Codes) numbers. There are two kinds of ECC numbers: ECC numbers without (U)SIM card and ECC numbers with (U)SIM card. The default ECC numbers without (U)SIM card is 911, 112, 00, 08, 110, 999, 118 and 119. The default ECC number with (U)SIM card is 911 and 112. 911 and 112 will always be supported as ECC numbers, and cannot be deleted. ECC numbers can be saved into NV automatically. If the (U)SIM card contains ECC file, the numbers in ECC file can also be regarded as ECC numbers.

The supported ECC numbers of each type is 20 at most.

AT+QECCNUM Configure Emergency Call Numbers

Test Command AT+QECCNUM=?	Response +QECCNUM: (range of supported <mode>s) OK
Write Command AT+QECCNUM=<mode>,<type>[,<ecc	Response If <mode> is equal to 0, <type> is specified, query the ECC

<pre>num1>[,<eccnum2>,...[,<eccnumN>]]]</pre>	<p>numbers. In this case, <eccnumN> should be omitted: +QECCNUM: <type>,<eccnum1>,<eccnum2>[,...]</p> <p>OK</p> <p>If <mode> is not equal to 0: <mode>=1 is used to add the ECC number; <mode>=2 is used to delete the ECC number. In this case, at least one ECC number <eccnumN> should be inputted, and the response is:</p> <p>OK Or ERROR</p>
<p>Read Command AT+QECCNUM?</p>	<p>Response +QECCNUM: 0,<eccnum1>,<eccnum2>[,...] +QECCNUM: 1,<eccnum1>,<eccnum2>[,...]</p> <p>OK</p>
<p>Maximum Response Time</p>	<p>300 ms</p>
<p>Characteristics</p>	<p>The command takes effect immediately. The configurations are saved automatically.</p>

Parameter

<p><mode></p>	<p>Integer type. ECC number operation mode.</p> <p>0 Query ECC numbers</p> <p>1 Add ECC numbers</p> <p>2 Delete ECC numbers</p>
<p><type></p>	<p>Integer type. ECC number type.</p> <p>0 ECC numbers without (U)SIM card</p> <p>1 ECC numbers with (U)SIM card</p>
<p><eccnum></p>	<p>String type. ECC numbers (e.g."110", "119").</p>

NOTE

EG800G series and EG915G-EU modules do not support the command.

Example

```
AT+QECCNUM=? //Query the supported ECC number operation mode.
+QECCNUM: (0-2)
```

```

OK
AT+QECCNUM? //Query the ECC numbers with or without (U)SIM card.
+QECCNUM: 0,"911","112","00","08","110","999","118","119"
+QECCNUM: 1,"911","112"

OK
AT+QECCNUM=0,1 //Query the ECC numbers with (U)SIM card.
+QECCNUM: 1,"911","112"

OK
AT+QECCNUM=1,1,"110","234" //Add "110" and "234" into the type of ECC numbers with (U)SIM card.
OK
AT+QECCNUM=0,1 //Query the ECC numbers with (U)SIM card.
+QECCNUM: 1, "911","112","110","234"

OK
AT+QECCNUM=2,1,"110" //Delete "110" from the type of ECC numbers with (U)SIM card.
OK
AT+QECCNUM=0,1 //Query the ECC numbers with (U)SIM card.
+QECCNUM: 1, "911","112","234"

OK

```

7.14. AT+QHUP Hang up Call with a Specific Release Cause

This command can terminate a call or calls (including both voice call and data call) with a specific 3GPP TS 24.008 release cause specified by the host.

AT+QHUP Hang up Call with a Specific Release Cause	
Test Command AT+QHUP=?	Response OK
Write Command AT+QHUP=<cause>[,<idx>]	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	90 s, determined by network.
Characteristics	/

Parameter

<cause>	Integer type. Release cause. <i>3GPP TS 24.008</i> release cause to be indicated to the network.
	1 Release cause "unassigned (unallocated) number"
	16 Release cause "normal call clearing"
	17 Release cause "user busy"
	18 Release cause "no user responding"
	21 Release cause "call rejected"
	27 Release cause "destination out of order"
	31 Release cause "normal, unspecified"
	88 Release cause "incompatible destination"
<idx>	Integer type. Call identification number is an optional index in the list of current calls indicated by AT+CLCC . AT+QHUP will terminate the call identified by the given call number. The default call number 0 is not assigned to any call, but signifies all calls.
	0 Terminate all existing calls. However, if circuit switches data calls and voice calls at the same time, this command only terminates the CSD calls
	1...7 Terminate the specific call with identification number
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

EG800G series and EG915G-EU modules do not support the command.

Example

```

AT+QHUP=?           //Test Command.
OK
ATD10010;           //Dial 10010.
OK
AT+CLCC             //Query the status of calls.
+CLCC: 1,0,0,0,0,"10010",129

OK
AT+QHUP=17,1       //Terminate the call whose ID is 1. Release cause is "user busy".
OK
ATD10010;           //Dial 10010.
OK
AT+CLCC             //Query the status of calls.
+CLCC: 1,0,0,0,0,"10010",129

OK
    
```

```
AT+QHUP=16 //Terminate all existing calls. Release cause is "normal call clearing".
OK
AT+CLCC
OK
```

7.15. AT+QCHLDIPMPTY Hang Up a Call in the VoLTE Conference

This command hangs up a call in the VoLTE conference.

AT+QCHLDIPMPTY Hang Up a Call in the VoLTE Conference	
Test Command AT+QCHLDIPMPTY=?	Response +QCHLDIPMPTY: <number> OK
Write Command AT+QCHLDIPMPTY=<number>	Response OK Or ERROR
Maximum Response Time	300 ms
Characteristics	/

Parameter

<number>	String of dialing digits and optionally V.25ter modifiers. Dialing digits: 0–9, *, #, +, A, B, C Following V.25ter modifiers are ignored: ,(comma), T, P, !, W, @
----------	---

NOTE

EG800G series and EG915G-EU modules do not support the command.

Example

```
AT+QCHLDIPMPTY=? //Test command.
+QCHLDIPMPTY: <number>

OK
ATD13866783782; //Establish a call.
OK
```

AT+CLCC

+CLCC: 2,1,0,1,0,"",128

+CLCC: 1,0,0,0,0,"13866783782",129 //The second call is active.

OK

AT+CHLD=2

//Place the active call on hold and accept another call (waiting call or held call).

OK

AT+CLCC

//Query the status of calls.

+CLCC: 2,1,0,1,0,"",128

+CLCC: 1,0,1,0,0,"13866783782",129 //The second call on hold.

OK

ATD15155196746;

//Establish a call.

OK

AT+CLCC

+CLCC: 2,1,0,1,0,"",128

+CLCC: 1,0,1,0,0,"13866783782",129 //The second call on hold.

+CLCC: 3,1,0,1,0,"",128

+CLCC: 4,0,0,0,0,"15155196746",129 //The fourth call is active.

OK

AT+CHLD=3

//Add a held call to the active calls in order to set up a conference (multiparty) call.

OK

AT+CLCC

+CLCC: 2,1,0,1,0,"",128

+CLCC: 3,1,0,1,0,"",128

+CLCC: 5,0,0,0,0,"sip:mmtel",128

OK

AT+QCHLDIPMPTY="13866783782"

//Hang up a call which is activated.

OK

AT+QCHLDIPMPTY=" 15155196746"

//Hang up a call which is activated.

OK

8 Phonebook Commands

NOTE

EG800G series and EG915G-EU modules do not support phonebook command.

8.1. AT+CNUM Subscriber Number

This command gets the subscribers' own number(s) from the (U)SIM.

AT+CNUM Subscriber Number	
Test Command AT+CNUM=?	Response OK
Execution Command AT+CNUM	Response [+CNUM: [<alpha>,<number>,<type>] [+CNUM: [<alpha>,<number>,<type>] OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	/
Reference 3GPP 27.007	

Parameter

<alpha>	String type associated with <number> . The used character set should be the one selected with AT+CSCS .
<number>	String type phone number in format specified by <type> .
<type>	Type of address of octet in integer format (See <i>3GPP TS 24.008</i>). Usually, it has three

kinds of values:

- 129 Unknown type
- 145 International type (contains the character "+")
- 161 National type

<err> Error codes. For more details, please refer to **Chapter 14.5**.

8.2. AT+CPBF Find Phonebook Entries

This command searches the phonebook entries starting with the given **<findtext>** string from the current phonebook memory storage, and return all found entries sorted in alphanumeric order.

AT+CPBF Find Phonebook Entries	
Test Command AT+CPBF=?	Response +CPBF: <nlength>,<tlength> OK
Write Command AT+CPBF=<findtext>	Response [+CPBF: <index>,<number>,<type>,<text>] [...] OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	Depends on the storage of phonebook entries.
Characteristics	/
Reference 3GPP 27.007	

Parameter

<nlength>	Integer type. Indicate the maximum length of field <number> .
<tlength>	Integer type. Indicate the maximum length of field <text> .
<findtext>	String type. The field of maximum length <tlength> in current TE character set specified by AT+CSCS .
<index>	Integer type. In the range of location numbers of phonebook memory.
<number>	String type. The phone number in format specified by <type> .
<type>	Type of address of octet in integer format (refer 3GPP TS 24.008). Usually, it has three

	kinds of values:
	129 Unknown type
	145 International type (contains the character "+")
	161 National type
<text>	String type. The field of maximum length <tlength> in current TE character set specified by AT+CSCS .
<err>	Error codes. For more details, please refer to Chapter 14.5 .

8.3. AT+CPBR Read Phonebook Entries

This command reads phonebook entries in location number range <index1>... <index2> from the current phonebook memory storage. If <index2> is left out, only location <index1> is returned.

AT+CPBR Read Phonebook Entries	
Test Command AT+CPBR=?	Response +CPBR: (list of supported <index>s),<nlength>,<tlength> OK
Write Command AT+CPBR=<index1>[,<index2>]	Response +CPBR: <index1>,<number>,<type>,<text> [+CPBR: <index2>,<number>,<type>,<text> [...]] OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	Depends on the storage of phonebook entries.
Characteristics	/
Reference 3GPP 27.007	

Parameter

<index>	Integer type. Location numbers of phonebook memory storage.
<nlength>	Integer type. Indicate the maximum length of field <number>.
<tlength>	Integer type. Indicate the maximum length of field <text>.
<index1>	Integer type. The first phonebook record to read.

<index2>	Integer type. The last phonebook record to read.
<number>	String type. The phone number in format specified by <type> .
<type>	Type of address of octet in integer format (see <i>3GPP TS 24.008</i>). Usually, it has three kinds of values: 129 Unknown type 145 International type (contains the character "+") 161 National type
<text>	String type. The field of maximum length <tlength> in current TE character set specified by AT+CSCS .
<err>	Error codes. For more details, please refer to Chapter 14.5 .

8.4. AT+CPBS Select Phonebook Memory Storage

This command selects phonebook memory storage, which is also used by other phonebook commands.

AT+CPBS Select Phonebook Memory Storage	
Test Command AT+CPBS=?	Response +CPBS: (list of supported <storage>s) OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Read Command AT+CPBS?	Response +CPBS: <storage>,<used>,<total> OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Write Command AT+CPBS=<storage>	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>

Maximum Response Time	300 ms
Characteristics	/
Reference	3GPP 27.007

Parameter

<storage>	String type. Phonebook memory storage. "SM" (U)SIM phonebook "FD" (U)SIM fix dialing-phonebook (AT+CPBW operation need the authority of PIN2) "LD" (U)SIM last-dialing-phonebook (AT+CPBW may not be applicable to this storage) "ME" Mobile equipment phonebook "ON" (U)SIM own numbers (MSISDNs) list
<used>	Integer type. Indicate the total number of used locations in selected memory.
<total>	Integer type. Indicate the total number of locations in selected memory.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

8.5. AT+CPBW Write Phonebook Entry

This command writes phonebook entry in location number **<index>** in the current phonebook memory storage. It can also delete a phonebook entry in location number **<index>**.

AT+CPBW Write Phonebook Entry	
Test Command AT+CPBW=?	Response +CPBW: (range of supported <index>s), <nlength> ,(list of supported <type>s), <tlength> OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Write Command AT+CPBW=[<index>][,<number>[,<type>[,<text>]]]	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms

Characteristics	/
Reference 3GPP 27.007	

Parameter

<index>	Integer type. Location numbers of phonebook memory. If <index> is not given, the first free entry will be used. If <index> is given as the only parameter, the phonebook entry specified by <index> is deleted.
<nlength>	Integer type. Indicate the maximum length of field <number> .
<tlength>	Integer type. Indicate the maximum length of field <text> .
<number>	String type. The phone number in format specified by <type> .
<type>	Type of address of octet in integer format (See <i>3GPP TS 24.008</i>). Usually, it has three kinds of values: 129 Unknown type 145 International type (contains the character "+") 161 National type
<text>	String type. The field of maximum length <tlength> in current TE character set specified by AT+CSCS .
<err>	Error codes. For more details, please refer to Chapter 14.5 .

Example

```

AT+CSCS="GSM"
OK
AT+CPBW=10,"15021012496",129,"QUECTEL"//Add a new phonebook entry at location 10.
OK
AT+CPBW=10                               //Delete the entry at location 10.
OK
    
```

9 Short Message Service Commands

9.1. AT+CSMS Select Message Service

This command selects message service **<service>** and returns the types of messages supported by the ME.

AT+CSMS Select Message Service	
Test Command AT+CSMS=?	Response +CSMS: (list of supported <service>s) OK
Read Command AT+CSMS?	Response +CSMS: <service> , <mt> , <mo> , <bm> OK
Write Command AT+CSMS=<service>	Response +CSMS: <mt> , <mo> , <bm> OK If there is any error related to MT functionality: +CMS ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are saved automatically.
Reference 3GPP TS 27.005	

Parameter

<service>	Integer type. Type of message service. <u>0</u> 3GPP TS 23.040 and 3GPP TS 23.041 (the syntax of SMS AT commands is compatible with 3GPP TS 27.005 Phase 2 version 4.7.0; Phase 2+ features which do not require new command syntax may be supported, e.g. correct
------------------------	---

		routing of messages with new Phase 2+ data coding schemes)
	1	3GPP TS 23.040 and 3GPP TS 23.041 (the syntax of SMS AT commands is compatible with 3GPP TS 27.005 Phase 2+ version; the requirement of <service> setting 1 is mentioned in corresponding command descriptions)
<mt>		Integer type. Mobile terminated messages.
	0	Type not supported
	1	Type supported
<mo>		Integer type. Mobile originated messages.
	0	Type not supported
	1	Type supported
<bm>		Integer type. Broadcast type messages.
	0	Type not supported
	1	Type supported
<err>		Error codes. For more details, please refer to Chapter 14.6 .

Example

```

AT+CSMS=? //List supported types of message service.
+CSMS: (0,1)

OK
AT+CSMS=1 //Set type of message service to 1.
+CSMS: 1,1,1

OK
AT+CSMS? //Read command.
+CSMS: 1,1,1,1

OK
    
```

9.2. AT+CMGF Message Format

This command specifies the input and output format of the short messages. <mode> indicates the format of messages used in the TA-TE interface .

The format of messages can be either PDU mode (entire TP data units used) or text mode (headers and body of the messages given as separate parameters). Text mode uses the value of parameter <chset> specified by AT+CSCS command to inform the character set to be used in the message body in the TA-TE interface.

AT+CMGF Message Format	
Test Command AT+CMGF=?	Response +CMGF: (list of supported <mode>s) OK
Read Command AT+CMGF?	Response +CMGF: <mode> OK
Write Command AT+CMGF[=<mode>]	Response OK
Maximum Response Time	300 ms
Characteristics	/
Reference 3GPP TS 27.005	

Parameter

<mode>	Integer type. Message format.
0	PDU mode
1	Text mode

9.3. AT+CSCA Service Center Address

This Write Command updates the SMSC address when mobile originated SMS are transmitted. In text mode, the setting is used by Write Command. In PDU mode, setting is used by the same command, but only when the length of the SMSC address is coded into the **<pdu>** parameter which equals to zero.

AT+CSCA Service Center Address	
Test Command AT+CSCA=?	Response OK
Read Command AT+CSCA?	Response +CSCA: <sca>,<tosca> OK
Write Command AT+CSCA=<sca>[,<tosca>]	Response OK Or ERROR

	If there is any error related to ME functionality: +CMS ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are saved automatically.
Reference	
3GPP TS 27.005	

Parameter

<sca>	Service center address. 3GPP TS 24.011 RP SC address <i>Address-Value</i> field in string format; BCD numbers (or GSM 7-bit default alphabet characters) are converted to characters of the currently selected TE character set (see AT+CSCS command in <i>3GPP TS 27.007</i>). The type of address is given by <tosca> .
<tosca>	Type of service center address. 3GPP TS 24.011 RP SC address <i>Type-of-Address</i> octet in integer format (see <toda>).
<err>	Error codes. For more details, please refer to Chapter 14.6 .

Example

```

AT+CSCA="+8613800210500",145 //Set SMS service center address.
OK
AT+CSCA? //Query SMS service center address.
+CSCA: "+8613800210500",145
OK
    
```

9.4. AT+CPMS Preferred Message Storage

This command selects the memory storages **<mem1>**, **<mem2>** and **<mem3>** to be used for reading, writing, etc.

AT+CPMS Preferred Message Storage	
Test Command AT+CPMS=?	Response +CPMS: (list of supported <mem1>s),(list of supported <mem2>s),(list of supported <mem3>s) OK
Read Command	Response

AT+CPMS?	+CPMS: <mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3> OK
Write Command AT+CPMS=<mem1>[,<mem2>[,<mem3>]]	Response +CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3> OK If there is any error related to ME functionality: +CMS ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are saved automatically.
Reference 3GPP TS 27.005	

Parameter

<mem1>	String type. Messages to be read and deleted from this memory storage. "SM" (U)SIM message storage "ME" Mobile equipment message storage "MT" Same as "ME" storage
<mem2>	String type. Messages will be written and sent to this memory storage. "SM" (U)SIM message storage "ME" Mobile equipment message storage "MT" Same as "ME" storage
<mem3>	String type. Received messages will be placed in this memory storage if routing to TE is not set (AT+CNMI). "SM" (U)SIM message storage "ME" Mobile equipment message storage "MT" Same as "ME" storage
<usedx>	Integer type. Number of current messages in <memx>.
<totalx>	Integer type. Total number of messages which can be stored in <memx>.
<err>	Error codes. For more details, please refer to Chapter 14.6 .

Example

```

AT+CPMS? //Query the current SMS message storage.
+CPMS: "ME",0,255,"ME",0,255,"ME",0,255

OK
    
```

```

AT+CPMS="SM","SM","SM" //Set SMS message storage as "SM".
+CPMS: 0,50,0,50,0,50

OK
AT+CPMS? //Query the current SMS message storage.
+CPMS: "SM",0,50,"SM",0,50,"SM",0,50

OK
    
```

9.5. AT+CMGD Delete Message

This command deletes short messages from the preferred message storage **<mem1>** location **<index>**. If **<delflag>** is presented and not set to 0, then the ME shall ignore **<index>** and follow the rules of **<delflag>** shown as below.

AT+CMGD Delete Message	
Test Command AT+CMGD=?	Response +CMGD: (range of supported <index> s),(range of supported <delflag> s) OK
Write Command AT+CMGD=<index>[,<delflag>]	Response OK If there is any error related to ME functionality: +CMS ERROR: <err>
Maximum Response Time	300 ms.
Characteristics	The command takes effect immediately. The configurations are not saved.
Reference 3GPP TS 27.005	

Parameter

<index>	Integer type. Location numbers supported by the associated memory. When <mem1> is set to "ME" or "MT", the range of <index> is 0–99. When <mem1> is set to "SM", the range of <index> shall be subject to the SMS message storage of (U)SIM card.
<delflag>	Integer type.
0	Delete the message specified in <index>
1	Delete all read messages from <mem1> storage
2	Delete all read messages and sent mobile originated messages from <mem1>

	storage
3	Delete all read messages, sent and unsend mobile originated messages from <mem1> storage
4	Delete all messages from <mem1> storage
<mem1>	String type. Messages to be read and deleted from this memory storage. "SM" (U)SIM message storage <u>"ME"</u> Mobile equipment message storage "MT" Same as "ME" storage
<err>	Error codes. For more details, please refer to Chapter 14.6 .

Example

```

AT+CMGD=1 //Delete the message specified in <index>=1.
OK
AT+CMGD=1,4 //Delete all messages from <mem1> storage.
OK
    
```

9.6. AT+CMGL List Message

This command returns messages with status value **<stat>** from preferred message storage **<mem1>** to the TE. If the status of the message is "REC UNREAD", the status in the storage changes to "REC READ". When executing **AT+CMGL** without status value **<stat>**, it will report the list of SMS messages with "REC UNREAD" status.

AT+CMGL List Message	
Test Command AT+CMGL=?	Response +CMGL: (list of supported <stat> s) OK
Write Command AT+CMGL[=<stat>]	Response If the optional parameter is omitted (that is, execute AT+CMGL), list all messages with "REC UNREAD" status from message storage <mem1> , and then the status in the storage changes to "REC READ". If the optional parameter is specified: If in text mode (AT+CMGF=1) and the command is executed successfully: For SMS-SUBMITs and/or SMS-DELIVERs: +CMGL: <index>,<stat>,<oa/da>,[<alpha>],[<scts>][,<too

	<p>a/toda>,<length>]<CR><LF><data>[<CR><LF> +CMGL: <index>,<stat>,<da/oa>,<[alpha]>,<[scts]>[,<too a/toda>,<length>]<CR><LF><data>[...]]</p> <p>For SMS-STATUS-REPORTS: +CMGL: <index>,<stat>,<fo>,<mr>,<[ra]>,<[tora]>,<sct s>,<dt>,<st>[<CR><LF> +CMGL: <index>,<stat>,<fo>,<mr>,<[ra]>,<[tora]>,<sct s>,<dt>,<st>[...]]</p> <p>For SMS-COMMANDS: +CMGL: <index>,<stat>,<fo>,<ct>[<CR><LF> +CMGL: <index>,<stat>,<fo>,<ct>[...]]</p> <p>For CBM storage: +CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages><C R><LF><data>[<CR><LF> +CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages><C R><LF><data>[...]]</p> <p>OK</p> <p>If in PDU mode (AT+CMGF=0) and the command is executed successfully: +CMGL: <index>,<stat>,<[alpha]>,<length><CR><LF><p du><CR><LF> +CMGL: <index>,<stat>,<[alpha]>,<length><CR><LF><pd u>[...]]</p> <p>OK</p> <p>If there is any error related to ME functionality: +CMS ERROR: <err></p>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are not saved.
Reference	
3GPP TS 27.005	

Parameter

<stat>	<p>String type. In text mode:</p> <table border="0"> <tr> <td>"REC UNREAD"</td> <td>Received unread messages</td> </tr> <tr> <td>"REC READ"</td> <td>Received read messages</td> </tr> <tr> <td>"STO UNSENT"</td> <td>Stored unsent messages</td> </tr> <tr> <td>"STO SENT"</td> <td>Stored sent messages</td> </tr> <tr> <td>"ALL"</td> <td>All messages</td> </tr> </table> <p>Integer type. In PDU mode:</p> <table border="0"> <tr> <td>0</td> <td>Received unread messages</td> </tr> <tr> <td>1</td> <td>Received read messages</td> </tr> <tr> <td>2</td> <td>Stored unsent messages</td> </tr> <tr> <td>3</td> <td>Stored sent messages</td> </tr> <tr> <td>4</td> <td>All messages</td> </tr> </table>	"REC UNREAD"	Received unread messages	"REC READ"	Received read messages	"STO UNSENT"	Stored unsent messages	"STO SENT"	Stored sent messages	"ALL"	All messages	0	Received unread messages	1	Received read messages	2	Stored unsent messages	3	Stored sent messages	4	All messages
"REC UNREAD"	Received unread messages																				
"REC READ"	Received read messages																				
"STO UNSENT"	Stored unsent messages																				
"STO SENT"	Stored sent messages																				
"ALL"	All messages																				
0	Received unread messages																				
1	Received read messages																				
2	Stored unsent messages																				
3	Stored sent messages																				
4	All messages																				
<index>	Integer type. Location numbers supported by the associated memory.																				
<da>	Destination address. <i>3GPP TS 23.040 TP-Destination-Address Address-Value</i> field in string format. BCD numbers (or GSM 7-bit default alphabet characters) are converted to characters of the currently selected TE character set (see AT+CSCS in <i>3GPP TS 27.007</i>). The type of address is given by <toda> .																				
<oa>	Originating address. <i>3GPP TS 23.040 TP-Originating-Address Address-Value</i> field in string format. BCD numbers (or GSM 7-bit default alphabet characters) are converted to characters of the currently selected TE character set (see AT+CSCS in <i>3GPP TS 27.007</i>). The type of address is given by <toa> .																				
<alpha>	String type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook. Implementation of this feature is manufacturer specified. The used character set should be the one selected with AT+CSCS (see <i>3GPP TS 27.007</i>).																				
<scts>	Service center time stamp. <i>3GPP TS 23.040 TP-Service-Centre-Time-Stamp</i> in time-string format (see <dt>).																				
<toda>	Type of destination address. <i>3GPP TS 24.011 TP-Destination-Address Type-of-Address</i> octet in integer format.																				
<toa>	Type of originating address. <i>3GPP TS 24.011 TP-Originating-Address Type-of-Address</i> octet in integer format (see <toda> by default).																				
<length>	Integer type. Message length. Indicate the length of the message body <data> in characters in the text mode (AT+CMGF=1), or the length of the actual TP data unit in octets in PDU mode (AT+CMGF=0) (i.e. the RP layer SMSC address octets are not counted in the length). The maximum length in text mode is 160 bytes; the maximum length in PDU mode is 163 bytes.																				
<data>	<p>In the case of SMS: <i>3GPP TS 23.040 TP-User-Data</i> in text mode responses. The format is defined as follows:</p> <ul style="list-style-type: none"> - If <dcs> (see Chapter 9.7) indicates that <i>3GPP TS 23.038</i> GSM 7-bit default alphabet is used and <fo> indicates that <i>3GPP TS 23.040 TP-User-Data-Header-Indication</i> is not set. <ul style="list-style-type: none"> ◆ If TE character set other than "HEX" (refer to AT+CSCS in <i>3GPP TS 27.007</i>): ME/TA converts GSM alphabet into current TE character set according to rules 																				

of Annex A in 3GPP TS 27.007.

- ♦ If TE character set is "HEX": ME/TA converts each 7-bit character of GSM 7-bit default alphabet into two IRA character long hexadecimal number (e.g. character π (GSM 7-bit default alphabet 22) is presented as 16 (IRA 49 and 55)).
- If **<dcs>** (see **Chapter 9.7**) indicates that 8-bit or UCS2 data coding scheme is used, or **<fo>** indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)).

In the case of CBS: 3GPP TS 23.041 CBM Content of Message in text mode responses.

The format is defined as follows:

- If **<dcs>** (see **Chapter 9.7**) indicates that 3GPP TS 23.038 GSM 7-bit default alphabet is used:
 - ♦ If TE character set other than "HEX" (see **AT+CSCS** in 3GPP TS 27.007): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A in 3GPP TS 27.007.
 - ♦ If TE character set is "HEX": ME/TA converts each 7-bit character of the GSM 7-bit default alphabet into two IRA character long hexadecimal number.
- If **<dcs>** (see **Chapter 9.7**) indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number.

<pdu>

In the case of SMS: 3GPP TS 24.011 SC address and 3GPP TS 23.040 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit 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)) 3GPP TS 27.007.

<fo>

Depends on the command or result code: first octet of 3GPP TS 23.040 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format.

<mr>

3GPP TS 23.040 TP-Message-Reference in integer format.

<ra>

3GPP TS 23.040 TP-Recipient-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 (see **AT+CSCS** in 3GPP TS 27.007); type of address given by **<tora>**.

<tora>

3GPP TS 24.011 TP-Recipient-Address Type-of-Address octet in integer format (see **<toda>** by default).

<scts>

3GPP TS 23.040 TP-Service-Centre-Time-Stamp in time-string format (see **<dt>**).

<dt>

3GPP TS 23.040 TP-Discharge-Time in time-string format: "yy/MM/dd,hh:mm:ss zz", where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone. E.g. 6th of May 1994, 22:10:00 in GMT +2 hours equals to "94/05/06,22:10:00+08".

<st>

3GPP TS 23.040 TP-Status in integer format.

<ct>

3GPP TS 23.040 TP-Command-Type in integer format (default value: 0).

<sn>

3GPP TS 23.041 CBM Serial Number in integer format.

<mid>

3GPP TS 23.041 CBM Message Identifier in integer format.

<page>	3GPP TS 23.041 CBM Page Parameter bits 4–7 in integer format.
<pages>	3GPP TS 23.041 CBM Page Parameter bits 0–3 in integer format.
<mem1>	String type. Messages to be read and deleted from this memory storage. "SM" (U)SIM message storage "ME" Mobile equipment message storage "MT" Same as "ME" storage
<err>	Error codes. For details of error codes, please refer to Chapter 14.6 .

Example

```

AT+CMGF=1 //Set SMS message format as text mode.
OK
AT+CMGL="ALL" //List all messages from message storage.
+CMGL: 1,"STO UNSENT","",,
<This is a test from Quectel>
+CMGL: 2,"STO UNSENT","",,
<This is a test from Quectel>

OK
    
```

NOTE

Operation of **<stat>** depends on the storage of listed messages.

9.7. AT+CMGR Read Message

This command returns SMS message with location value **<index>** from message storage **<mem1>**. If status of the message is "REC UNREAD", status in the storage changes to "REC READ".

AT+CMGR Read Message by Index	
Test Command AT+CMGR=?	Response OK
Write Command AT+CMGR=<index>	Response If in text mode (AT+CMGF=1) and the command is executed successfully: For SMS-DELIVER: +CMGR: <stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dc>,<sca>,<tosca>,<length>]<CR><LF><data> OK

	<p>For SMS-SUBMIT: +CMGR: <stat>,<da>,[<alpha>],[<toda>,<fo>,<pid>,<dc s>],[<vp>],[<sca>,<tosca>,<length>]<CR><LF><data></p> <p>OK</p> <p>For SMS-STATUS-REPORTs: +CMGR: <stat>,<fo>,<mr>,[<ra>],[<tora>],[<scts>,<dt>,<s t></p> <p>OK</p> <p>For SMS-COMMANDs: +CMGR: <stat>,<fo>,<ct>[,<pid>,[<mn>],[<da>],[<toda>], <length><CR><LF><cdata>]</p> <p>OK</p> <p>For CBM storage: +CMGR: <stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR> <LF><data></p> <p>OK</p> <p>If in PDU mode (AT+CMGF=0) and command is executed successfully: +CMGR: <stat>,[<alpha>],[<length><CR><LF><pdu></p> <p>OK</p> <p>If there is any error related to ME functionality: +CMS ERROR: <err></p>
Maximum Response Time	Depends on the length of message content.
Characteristics	The command takes effect immediately. The configurations are not saved.
Reference	
3GPP TS 27.005	

Parameter

<index>	Integer type value in the range of location numbers supported by the associated memory.
<stat>	String type. In text mode:

	"REC UNREAD"	Received unread messages
	"REC READ"	Received read messages
	"STO UNSENT"	Stored unsent messages
	"STO SENT"	Stored sent messages
	"ALL"	All messages
	Integer type. In PDU mode:	
	0	Received unread messages
	1	Received read messages
	2	Stored unsent messages
	3	Stored sent messages
	4	All messages
<alpha>	String type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook. Implementation of this feature is manufacturer specified. The used character set should be the one selected with AT+CSCS (see <i>3GPP TS 27.007</i>).	
<da>	Destination address. <i>3GPP TS 23.040 TP-Destination-Address Address-Value</i> field in string format. BCD numbers (or GSM 7-bit default alphabet characters) are converted to characters of the currently selected TE character set (refer to AT+CSCS in <i>3GPP TS 27.007</i>). The type of address is given by <toda> .	
<oa>	Originating address. <i>3GPP TS 23.040 TP-Originating-Address Address-Value</i> field in string format. BCD numbers (or GSM 7-bit default alphabet characters) are converted to characters of the currently selected TE character set (refer to AT+CSCS in <i>3GPP TS 27.007</i>). The type of address is given by <tooa> .	
<scts>	Service center time stamp. <i>3GPP TS 23.040 TP-Service-Centre-Time-Stamp</i> in time-string format (refer to <dt>).	
<fo>	Depends on the command or result code: first octet of <i>3GPP TS 23.040 SMS-DELIVER, SMS-SUBMIT</i> (default 17), <i>SMS-STATUS-REPORT</i> , or <i>SMS-COMMAND</i> (default 2) in integer format.	
<pid>	Protocol identifier. <i>3GPP TS 23.040 TP-Protocol-Identifier</i> in integer format (default 0).	
<dcs>	Data coding scheme. Depending on the command or result code: <i>3GPP TS 23.038 SMS Data Coding Scheme</i> (default 0), or <i>Cell Broadcast Data Coding Scheme</i> in integer format.	
<vp>	Validity period. Depending on SMS-SUBMIT <fo> setting: <i>3GPP TS 23.040 TP-Validity-Period</i> either in integer format or in time-string format (refer to <dt>).	
<mn>	Message number. <i>3GPP TS 23.040 TP-Message-Number</i> in integer format.	
<mr>	Message reference. <i>3GPP TS 23.040 TP-Message-Reference</i> in integer format.	
<ra>	Recipient address. <i>3GPP TS 23.040 TP-Recipient-Address Address-Value</i> field in string format. BCD numbers (or GSM 7-bit default alphabet characters) are converted to characters of the currently selected TE character set (refer to AT+CSCS). The type of address is given by <tora> .	
<tora>	Type of recipient address. <i>3GPP TS 24.011 TP-Recipient-Address Type-of-Address</i> octet in integer format (default refer <toda>).	
<toda>	Type of destination address. <i>3GPP TS 24.011 TP-Destination-Address Type-of-Address</i> octet in integer format.	

<toa>	Type of originating address. <i>3GPP TS 24.011 TP-Originating-Address Type-of-Address</i> octet in integer format (default refer to <toa>).
<sca>	Service center address. <i>3GPP TS 24.011 RP SC address Address-Value</i> field in string format. BCD numbers (or GSM 7-bit default alphabet characters) are converted to characters of the currently selected TE character set (refer to AT+CSCS in <i>3GPP TS 27.007</i>). The type of address is given by <tosca> .
<tosca>	Type of service center address. <i>3GPP TS 24.011 RP SC address Type-of-Address</i> octet in integer format (default refer to <toa>).
<length>	Integer type. Message length. Indicate the length of the message body <data> in characters in the text mode (AT+CMGF=1), or the length of the actual TP data unit in octets in PDU mode (AT+CMGF=0) (i.e. the RP layer SMSC address octets are not counted in the length). The maximum length in text mode is 160 bytes; the maximum length in PDU mode is 163 bytes.
<data>	The text of short message. Please refer Chapter 14.8 for details.
<pdu>	In the case of SMS: <i>3GPP TS 24.011 SC address</i> follow <i>3GPP TS 23.040 TPDU</i> in hexadecimal format: ME/TA converts each octet of TP data unit 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)).
<dt>	<i>3GPP TS 23.040 TP-Discharge-Time</i> in time-string format: "yy/MM/dd,hh:mm:ss zz", during which characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone, e.g. 6th of May 1994, 22:10:00 GMT+2 hours equals "94/05/06,22:10:00+08".
<st>	<i>3GPP TS 23.040 TP-Status</i> in integer format.
<ct>	<i>3GPP TS 23.040 TP-Command-Type</i> in integer format (default 0).
<sn>	<i>3GPP TS 23.041 CBM Serial Number</i> in integer format.
<mid>	Integer type. Message ID.
<page>	<i>3GPP TS 23.041 CBM Page Parameter bits 4–7</i> in integer format.
<pages>	<i>3GPP TS 23.041 CBM Page Parameter bits 0–3</i> in integer format.
<cdata>	<i>3GPP TS 23.040 TP-Command-Data</i> in text mode responses; ME/TA converts each 8-bit octet into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)).
<mem1>	String type. Messages to be read and deleted from this memory storage. "SM" (U)SIM message storage "ME" Mobile equipment message storage "MT" Same as "ME" storage
<err>	Error codes. For more details, please refer to Chapter 14.6 .

Example

```
+CMTI: "SM",3 //New message has been received and saved to <index>=3 of (U)SM".
AT+CSDH=1
OK
AT+CMGR=3 //Read message.
+CMGR: "REC UNREAD","+8615021012496",,"13/12/13,15:06:37+32",145,4,0,0,"+861380021050
```

```
0",145,27
<This is a test from Quectel>

OK
```

9.8. AT+CMGS Send Message

This command sends a short message from TE to network (SMS-SUBMIT). After invoking the Write Command, wait for the prompt **>** and then start to write the message. After that, enter "**Ctrl+Z**" to indicate the ending of PDU and begin to send the message. Sending can be cancelled by entering "**ESC**". Abortion is acknowledged with **OK**, though the message will not be sent. The message reference **<mr>** is returned to the TE on successful message delivery.

AT+CMGS Send Message	
Test Command AT+CMGS=?	Response OK
Write Command 1) If in text mode (AT+CMGF=1): AT+CMGS=<da>[,<toda>]<CR> >text is entered "Ctrl+Z"/"ESC" Send the message/Quit the sending	Response If in text mode (AT+CMGF=1) and sent successfully: +CMGS: <mr> OK
2) If in PDU mode (AT+CMGF=0): AT+CMGS=<length><CR> >PDU is given "Ctrl+Z"/"ESC" Send the message/Quit the sending	If in PDU mode (AT+CMGF=0) and sent successfully: +CMGS: <mr> OK If there is any error related to ME functionality: +CMS ERROR: <err>
Maximum Response Time	120 s, determined by network.
Characteristics	The command takes effect immediately. The configurations are not saved.
Reference 3GPP TS 27.005	

Parameter

<da>	Destination address. <i>3GPP TS 23.040 TP-Destination-Address Address-Value</i> field in string format. BCD numbers (or GSM 7-bit default alphabet characters) are converted to characters of the currently selected TE character set (refer to AT+CSCS in <i>3GPP TS 27.007</i>). The type of address is given by <toda> .
-------------------	--

<tda>	Type of destination address. <i>3GPP TS 24.011 TP-Destination-Address Type-of-Address</i> octet in integer format.
<length>	Integer type. Indicate in the text mode (AT+CMGF=1) the length of the message body (<data> or <cdata> , see Chapter 9.7) in characters, or in PDU mode (AT+CMGF=0), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length). The maximum length in text mode is 160 bytes; the maximum length in PDU mode is 158 bytes.
<mr>	Message reference. <i>3GPP TS 23.040 TP-Message-Reference</i> in integer format.
<err>	Error codes. For more details, please refer to Chapter 14.6 .

Example

```

AT+CMGF=1 //Set SMS message format as text mode.
OK
AT+CSCS="GSM" //Set character set as GSM which is used by the TE.
OK
AT+CMGS="15021012496"
>This is a test from Quectel //Text is entered. Tap "Ctrl+Z" to send message, or
                               "ESC" to quit the sending.
+CMGS: 247
OK
    
```

9.9. AT+CMMS More Messages to Send

This command controls the continuity of the SMS relay protocol link. If the feature is enabled (and supported by the currently used network) multiple messages can be sent fast as the link is kept open.

AT+CMMS More Messages to Send	
Test Command AT+CMMS=?	Response +CMMS: (range of supported <n>s) OK
Read Command AT+CMMS?	Response +CMMS: <n> OK
Write Command AT+CMMS[=<n>]	Response OK Or ERROR

	If there is any error related to ME functionality: +CMS ERROR: <err>
Maximum Response Time	120 s, determined by network.
Characteristics	The command takes effect immediately. The configuration is saved automatically.
Reference	
3GPP TS 27.005	

Parameter

<n>	Integer type. Whether to enable SMS relay protocol link.
0	Feature disabled
1	Keep enabled until the time between the response of the latest message send command (AT+CMGS , AT+CMSS , etc.) and the next send command exceeds 1–5 seconds (the exact value is up to ME implementation), and then ME shall close the link and MT switches <n> back to 0 automatically
2	Feature enabled (if the time between the response of the latest message send command and the next send command exceeds 1–5 seconds (the exact value is up to ME implementation), ME shall close the link but MT will not switch <n> back to 0 automatically)
<err>	Error codes. For more details, please refer to Chapter 14.6 .

NOTE

After the execution of Read Command, a delay of 5–10 seconds is required before issuing the Write Command. Otherwise, the **+CMS ERROR: 500** may appear.

9.10. AT+CMGW Write Message to Memory

This Write and Execution Commands store short messages to memory storage **<mem2>**, and then the memory location **<index>** of the stored message is returned. Message status will be set to "STO UNSENT" by default, but parameter **<stat>** also allows other status values to be given. The syntax of input text is the same as the one specified in **AT+CMGS** Write Command.

AT+CMGW Write Message to Memory	
Test Command AT+CMGW=?	Response OK
Write Command 1) If in text mode (AT+CMGF=1): AT+CMGW=<oa/da>[,<toa/toda>[,<stat>]]<CR>	Response If writing is successful: +CMGW: <index>

>text is entered "Ctrl+Z"/"ESC" Send the message/Quit the sending 2) If in PDU mode (AT+CMGF=0): AT+CMGW=<length>[,<stat>]<CR> >PDU is given "Ctrl+Z"/"ESC" Send the message/Quit the sending	OK If there is any error related to ME functionality: +CMS ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are not saved.
Reference	GSM 07.05

Parameter

<da>	Destination address. <i>3GPP TS 23.040 TP-Destination-Address Address-Value</i> field in string format. BCD numbers (or GSM 7-bit default alphabet characters) are converted to characters of the currently selected TE character set (see AT+CSCS in <i>3GPP TS 27.007</i>). The type of address is given by <toa> .
<oa>	Originating address. <i>3GPP TS 23.040 TP-Originating-Address Address-Value</i> field in string format. BCD numbers (or GSM 7-bit default alphabet characters) are converted to characters of the currently selected TE character set (see AT+CSCS in <i>3GPP TS 27.007</i>). The type of address given by <toa> .
<toa>	Type of originating address. <i>3GPP TS 24.011 TP-Originating-Address Type-of-Address</i> octet in integer format (see <toa> by default).
<stat>	1) Text mode. String type. "REC UNREAD" Received unread messages "REC READ" Received read messages "STO UNSENT" Stored unsent messages "STO SENT" Stored sent messages "ALL" All messages 2) PDU mode. Integer type. 0 Received unread messages 1 Received read messages 2 Stored unsent messages 3 Stored sent messages 4 All messages
<toa>	Type of destination address. <i>3GPP TS 24.011 TP-Destination-Address Type-of-Address</i> octet in integer format.
<length>	Integer type. Message length. Indicate the length of the message body <data> (or <cdata>) in characters in the text mode (AT+CMGF=1), or the length of the actual TP

	data unit in octets in PDU mode (AT+CMGF=0) (i.e. the RP layer SMSC address octets are not counted in the length). The maximum length in text mode is 160 bytes; the maximum length in PDU mode is 163 bytes.
<pdu>	In the case of SMS: 3GPP TS 24.011 SC address and 3GPP TS 23.04TPDU in hexadecimal format: ME/TA converts each octet of TP data unit 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)).
<index>	Integer type. Index of message in selected storage <mem2> .
<mem2>	String type. Messages will be written and sent to this memory storage. "SM" (U)SIM message storage <u>"ME"</u> Mobile equipment message storage "MT" Same as "ME" storage
<err>	Error codes. For more details, please refer to Chapter 14.6 .

Example

```

AT+CMGF=1 //Set SMS message format as text mode.
OK
AT+CSCS="GSM" //Set character set as GSM which is used by the TE.
OK
AT+CMGW="15021012496"
>This is a test from Quectel //Text is entered. Tap "Ctrl+Z" to send message, or
"ESC" to quit the sending.
+CMGW: 4

OK
AT+CMGF=0 //Set SMS message format as PDU mode.
OK
AT+CMGW=18
> 0051FF00000008000A0500030002016D4B8BD5
+CMGW: 5

OK

```

9.11. AT+CMSS Send Message from Storage

This Write Command sends message with location value **<index>** from message storage **<mem2>** to the network (SMS-SUBMIT). If new recipient address **<da>** is given, it shall be used instead of the one stored with the message. Reference value **<mr>** is returned to the TE on successful message delivery. Values can be used to identify message upon unsolicited delivery status report result code.

AT+CMSS Send Message from Storage	
Test Command AT+CMSS=?	Response OK
Write Command AT+CMSS=<index>[,<da>[,<toda>]]	Response If in text mode (AT+CMGF=1) and sent successfully: +CMSS: <mr>[,<scts>] OK If in PDU mode (AT+CMGF=0) and sent successfully: +CMSS: <mr> [,<ackpdu>] OK If there is any error related to ME functionality: +CMS ERROR: <err>
Maximum Response Time	/
Characteristics	The command takes effect immediately. The configurations are not saved.
Reference 3GPP TS 27.005	

Parameter

<index>	Integer type. Value in the range of location numbers supported by the associated memory.
<mem2>	String type. Messages will be written and sent to this memory storage. "SM" (U)SIM message storage "ME" Mobile equipment message storage "MT" Same as "ME" storage
<da>	Destination address. <i>3GPP TS 23.040 TP-Destination-Address Address-Value</i> field in string format. BCD numbers (or GSM 7-bit default alphabet characters) are converted to characters of the currently selected TE character set (see AT+CSCS in <i>3GPP TS 27.007</i>). The type of address is given by <toda> .
<toda>	Type of destination address. <i>3GPP TS 24.011 TP-Destination-Address Type-of-Address</i> octet in integer format.
<mr>	Message reference. <i>3GPP TS 23.040 TP-Message-Reference</i> in integer format.
<scts>	Service center time stamp. <i>3GPP TS 23.040 TP-Service-Centre-Time-Stamp</i> in time-string format (see <dt>).
<ackpdu>	String type. The format is the same as <pdu> in case of SMS, but without <i>3GPP TS 24.011</i> SC address field.
<err>	Error codes. For more details, please refer to Chapter 14.6 .

Example

```

AT+CMGF=1 //Set SMS message format as text mode.
OK
AT+CSCS="GSM" //Set character set as GSM which is used by the TE.
OK
AT+CMGW="15021012496"
> Hello //Text is entered. Tap "Ctrl+Z" to send message, or
"ESC" to quit the sending.
+CMGW: 4
OK
AT+CMSS=4 //Send the message of <index>=4 from memory storage.
+CMSS: 54
OK
    
```

9.12. AT+CNMA New Message Acknowledgement to UE/TE

This Write and Execution Commands confirm successful receipt of a new message (SMS-DELIVER or SMS-STATUS-REPORT) routed directly to the TE. If the UE does not receive acknowledgement within required time (network timeout), it sends an **RP-ERROR** message to the network. The UE will automatically disable routing to the TE by setting both **<mt>** and **<ds>** values of **AT+CNMI** to 0.

AT+CNMA New Message Acknowledgement to UE/TE	
Test Command AT+CNMA=?	Response +CNMA: (range of supported <n>s) OK
Execution Command AT+CNMA	Response OK Or ERROR If there is any error related to ME functionality: +CMS ERROR: <err>
Write Command AT+CNMA=<n>	Response OK Or ERROR If there is any error related to ME functionality:

	+CMS ERROR: <err>
Maximum Response Time	300 ms
Characteristics	/
Reference	3GPP TS 27.005

Parameter

- <n>** Integer type. Parameter required only for PDU mode.
 - 0 Command operates similarly as in text mode
 - 1 Send positive (**RP-ACK**) acknowledgement to the network. Accepted only in PDU mode
 - 2 Send negative (**RP-ERROR**) acknowledgement to the network. Accepted only in PDU mode
- <err>** Error codes. For more details, please refer to **Chapter 14.6**.

NOTE

The Execution and Write Commands shall only be used when **<service>** in **AT+CSMS** equals 1 (phase 2+) and an appropriate URC has been issued by the module, i.e.:

- +CMT: <mt>=2** incoming message Class 0,1,3 and none;
- +CMT: <mt>=3** incoming message Class 0 and 3;
- +CDS: <ds>=1**.

Example

```

AT+CSMS=1
OK
AT+CNMI=1,2,0,0,0
OK
AT+CMGF=1
OK
AT+CSDH=1
OK
+CMT: "+8615021012496",,"13/03/18,17:07:21+32",145,4,0,0,"+8613800551500",145,28
This is a test from Quectel.           //Short message is outputted directly when an SMS is incoming.
AT+CNMA                               //Send ACK to the network.
OK
AT+CNMA
+CMS ERROR: 340                       //An error returned for the second time. It needs ACK only once.
    
```

9.13. AT+CNMI SMS Event Reporting Configuration

This command configures the reporting method when the module receives a new SMS.

This Write Command selects the procedure on how the received new messages from the network are indicated to the TE when TE is active, i.e. DTR is at low level (ON). If TE is inactive (i.e. DTR is at high level (OFF)), message receiving should be done as specified in 3GPP TS 23.038.

AT+CNMI SMS Event Reporting Configuration	
Test Command AT+CNMI=?	Response +CNMI: (range of supported <mode>s),(range of supported <mt>s),(list of supported <bm>s),(range of supported <ds>s),(list of supported <bfr>s) OK
Read Command AT+CNMI?	Response +CNMI: <mode> , <mt> , <bm> , <ds> , <bfr> OK
Write Command AT+CNMI[=<mode>[,<mt>[,<bm>[,<ds> >[,<bfr>]]]]]	Response OK Or ERROR If there is any error related to ME functionality: +CMS ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are saved automatically.
Reference	3GPP TS 27.005

Parameter

<mode>	Integer type.
0	Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications.
1	Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (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 data

- mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE.
- 3 Forward unsolicited result codes directly to the TE. TA-TE link specific inband technique used to embed result codes and data when TA is in on-line data mode.
- <mt>** Integer type. The rules for storing received SMS depend on its data coding scheme (refer to 3GPPTS 23.038) and preferred memory storage (**AT+CPMS**) setting, and the value is:
- 0 No SMS-DELIVER indications are routed to the TE
 - 1 If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE by using unsolicited result code: **+CMTI: <mem>,<index>**
 - 2 SMS-DELIVERs (except Class 2) are routed directly to the TE using unsolicited result code: **+CMT: [<alpha>],<length><CR><LF><pdu>** (PDU mode enabled) or **+CMT: <oa>,<alpha>,<scts>,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data>** (text mode enabled; about the parameters in italics, see **AT+CSDH**). Class 2 messages result in indication as defined in **<mt>=1**
 - 3 Class 3 SMS-DELIVERs are routed directly to TE by using unsolicited result codes defined in **<mt>=2**. Messages of other classes result in indication as defined in **<mt>=1**
- <bm>** Integer type. The rules for storing received CBMs depend on its data coding scheme (see 3GPP TS 23.038) and the setting of CBM types selection, and the value is:
- 0 No CBM indications are routed to the TE
 - 2 New CBMs are routed directly to the TE using unsolicited result code: **+CBM: <length><CR><LF><pdu>** (PDU mode);
or
+CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> (text mode)
- <ds>** Integer type. The reporting method of SMS status.
- 0 No SMS-STATUS-REPORTs are routed to the TE
 - 1 SMS-STATUS-REPORTs are routed to the TE using unsolicited result code: **+CDS: <length><CR><LF><pdu>** (PDU mode)
or
+CDS: <fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st> (text mode)
- <bfr>** Integer type.
- 0 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)
 - 1 TA buffer of unsolicited result codes defined within this command is cleared when **<mode>** 1 or 2 is entered
- <err>** Error codes. For more details, please refer to **Chapter 14.6**.

NOTE

Unsolicited result code:

- | | |
|--|---|
| +CMTI: <mem>,<index> | Indicates that new message has been received. |
| +CMT: [<alpha>],<length><CR><LF><pdu> | Short message is outputted directly. |
| +CBM: <length><CR><LF><pdu> | Cell broadcast message is outputted directly. |

Example

```

AT+CMGF=1 //Set SMS message format as text mode.
OK
AT+CSCS="GSM" //Set character set as GSM which is used by the TE.
OK
AT+CNMI=1,2,0,1,0 //Set SMS-DELIVERs are routed directly to the TE.
OK
+CMT: "+8615021012496",,"13/03/18,17:07:21+32",145,4,0,0,"+8613800551500",145,28
This is a test from Quectel //Short message is outputted directly when an SMS is incoming.
    
```

9.14. AT+CSDH Show SMS Text Mode Parameters

This Write Command controls whether detailed header information is shown in text mode result codes.

AT+CSDH Show SMS Text Mode Parameters	
Test Command AT+CSDH=?	Response +CSDH: (list of supported <show>s) OK
Read Command AT+CSDH?	Response +CSDH: <show> OK
Write Command AT+CSDH[=<show>]	Response OK Or ERROR
Maximum Response Time	300 ms
Characteristics	/
Reference	3GPP TS 27.005

Parameter

<show> Integer type.
0 Do not show header values defined in the URC of commands **+CMT**, **+CMGL**, **+CMGR**:
 For SMS-DELIVERs and SMS-SUBMITs in text mode: **<sca>**, **<tosca>**, **<fo>**, **<vp>**,
<pid> and **<dcs>** is not included in the result codes of **+CSCA** and **+CSMP**; and

<length>, <todo> or <tooa> is not included in the result codes of **+CMT**, **+CMGL**, **+CMGR** for SMS-DELIVERs and SMS-SUBMITs in text mode

- 1 Show the header values in result codes

Example

```

AT+CSDH=0
OK
AT+CMGR=2
+CMGR: "STO UNSENT", "",
<This is a test from Quectel>
OK
AT+CSDH=1
OK
AT+CMGR=2
+CMGR: "STO UNSENT", "",128,17,0,0,143,"+8613800551500",145,18
<This is a test from Quectel>
OK
    
```

9.15. AT+CSMP Set SMS Text Mode Parameters

This command sets values for additional parameters needed when SMS is sent to the network or placed in a storage when text mode is selected (**AT+CMGF=1**). It is possible to set the validity period starting from when the SMS is received by the SMSC (<vp> ranges from 0 to 255) or define the absolute time of the validity period termination (<vp> is a string).

AT+CSMP Set SMS Text Mode Parameters	
Test Command AT+CSMP=?	Response OK
Read Command AT+CSMP?	Response +CSMP: <fo>,<vp>,<pid>,<dcs> OK
Write Command AT+CSMP=<fo>[,<vp>[,<pid>[,<dcs>]]	Response OK
Maximum Response Time	300 ms
Characteristics	/
Reference	
3GPP TS 27.005	

Parameter

<fo>	Integer type. First octet of TPDU. As for the different message types, see <i>3GPP TS 23.040</i> for details.
<vp>	Validity period. Depending on SMS-SUBMIT <fo> setting: <i>3GPP TS 23.040 TP-Validity-Period</i> either in integer format or in time-string format (refer to <dt>).
<pid>	Protocol identifier. <i>3GPP TS 23.040 TP-Protocol-Identifier</i> in integer format (default 0).
<dcs>	Data coding scheme. Depending on the command or result code: <i>3GPP TS 23.038 SMS Data Coding Scheme</i> (default 0), or Cell Broadcast Data Coding Scheme in integer format.

9.16. AT+QCMGS Send Concatenated Messages

This command sends concatenated messages. Different from **AT+CMGS**, when sending a concatenated message via this command, each segment of the concatenated message must be identified by the additional parameters: **<uid>**, **<msg_seg>** and **<msg_total>**. When sending all segments of the message one by one, **AT+QCMGS** must be executed multiple times (equal to **<msg_total>**) for each segment. This command is only used in text mode (**AT+CMGF=1**).

AT+QCMGS Send Concatenated Messages	
Test Command AT+QCMGS=?	Response OK
Write Command If text mode (AT+CMGF=1): AT+QCMGS=<da>[,<toda>],<uid>,<msg_seg>,<msg_total><CR> >text is entered <Ctrl+Z/ESC> Send the message/Quit the sending	Response If in text mode (AT+CMGF=1) and sent successfully: +QCMGS: <mr> OK Or ERROR If there is any error related to ME functionality: +CMS ERROR: <err>
Maximum Response Time	300 ms
Characteristics	/

Parameter

<uid>	Integer type. Message identification in the user data header (UDH). Range: 0–255. This parameter is defined and inputted by the user. All segments of a same concatenated message must have the same <uid> . Different concatenated messages should have different <uid> .
--------------------	--

<msg_seg>	Integer type. Sequence number of a concatenated message. Range: 0–7. <msg_seg>=0 : ignore the value and regard it as a non-concatenated message.
<msg_total>	Integer type. The total number of the segments of one concatenated message. Range: 0–7. <msg_total>=0 or 1 : ignore the value and regard it as a non-concatenated message.
<da>	Please refer to AT+CMGS .
<toda>	Please refer to AT+CMGS .
<mr>	Please refer to AT+CMGS .
<err>	Error codes. For more details, please refer to Chapter 14.6 .

NOTE

- For concatenated messages, the maximum length will be reduced by the length of the user data header (UDH). *3GPP TS 23.040* defines two kinds of UDH length: 6 bytes and 7 bytes, so the two kinds of **<uid>** are 8-bit (6 bytes) and 16-bit (7 bytes). **AT+QCMGS** uses 8-bit **<uid>**.
 - In the case of GSM 7-bit default alphabet data coding scheme, the maximum length of each segment of a concatenated message is $(140 - 6) * 8 / 7 = 153$ characters.
 - In the case of 16-bit UCS2 data coding scheme, the maximum length of each segment is $(140 - 6) / 2 = 67$ characters.
 - In the case of 8-bit data coding scheme, the maximum length of each segment is $140 - 6 = 134$ characters.
- <mr>** Message-Reference field gives an integer representation of a reference number of the SMS-SUBMIT or SMS-COMMAND submitted to the SC by the MS, and it is used to confirm whether the SMS-DELIVER has been received from SC duplicate or not.

<uid> The field of UDH. It is message identification of the concatenated SMS, which is different from **<mr>**. Each segment in a concatenated message should have the same **<uid>**, but **<mr>** must be incremented for each segment of a concatenated message.
- AT+QCMGS** does not support to send message in PDU mode (**AT+CMGF=0**).

Example

```

AT+CMGF=1 //Set SMS message format as text mode.
OK
AT+CSCS="GSM" //Set character set as GSM which is used by the TE.
OK
AT+QCMGS="15056913384",120,1,2 //Input 120 for <uid>, and send the first segment of the
concatenated SMS.
>ABCD
+QCMGS: 190

OK
AT+QCMGS="15056913384",120,2,2 //Send the second segment of the concatenated SMS.
>EFGH
+QCMGS: 191
    
```

OK

9.17. AT+QCMGR Read Concatenated Messages

This function of this command is similar to **AT+CMGR**, except that the message to be read is a segment of concatenated messages, and parameters **<uid>**, **<msg_seg>** and **<msg_total>** would be shown in the result. Several segments should be concatenated to a whole concatenated message according to these three parameters. **AT+QCMGR** is only used in text mode (**AT+CMGF=1**).

AT+QCMGR Read Concatenated Messages

Test Command	Response
AT+QCMGR=?	OK
Write Command AT+QCMGR=<index>	<p>Response</p> <p>In text mode (AT+CMGF=1) and command is executed successfully:</p> <p>For SMS-DELIVER: +QCMGR: <stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>][,<uid>,<msg_seg>,<msg_total>]<CR><LF><data></p> <p>OK</p> <p>For SMS-SUBMIT: +QCMGR: <stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcs>,[<vp>],<sca>,<tosca>,<length>][,<uid>,<msg_seg>,<msg_total>]<CR><LF><data></p> <p>OK</p> <p>For SMS-STATUS-REPORTs: +QCMGR: <stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st></p> <p>OK</p> <p>For SMS-COMMANDs: +QCMGR: <stat>,<fo>,<ct>[,<pid>,[<mn>],[<da>],[<toda>],<length>]<CR><LF><cdata></p> <p>OK</p>

	If there is any error related to ME functionality: +CMS ERROR: <err>
Maximum Response Time	Depends on the length of message content.
Characteristics	/

Parameter

<uid>	Integer type. Message identification in the user data header (UDH). Range: 0–65535 (see NOTE). All segments of a same concatenated message have same <uid> . Different concatenated messages should have different <uid> .
<msg_seg>	Integer type. Sequence number of a concatenated message. Range: 1–7.
<msg_total>	Integer type. The total number of the segments of one concatenated message. Range: 2–7.
<err>	Error codes. For more details, please refer to Chapter 14.6 .

NOTE

1. Please refer to **AT+CMGR** for details of other parameters in this command.
2. The **<uid>** in **AT+QCMGR** is different from the **<uid>** in **AT+QCMGS**. It is possible that UE receives concatenated messages with 8-bit or 16-bit **<uid>**, so its maximal value is 255 with 8-bit and 65535 with 16-bit.
3. If the message to be read is not a concatenated message, **<uid>**, **<msg_seg>** and **<msg_total>** would not be shown in the result.

Example

```
+CMTI: "SM",3 //The first message of a concatenated message comes.

+CMTI: "SM",4 //The second message of a concatenated message comes.
AT+QCMGR=3 //Read the first segment of the concatenated message.
+QCMGR: "REC UNREAD","+8615056913384","13/07/30,14:44:37+32",120,1,2
ABCD

OK
AT+QCMGR=4 //Read the second segment of the concatenated message.
+QCMGR: "REC UNREAD","+8615056913384","13/07/30,14:44:37+32",120,2,2
EFGH

OK
```

10 Packet Domain Commands

10.1. AT+CGATT Attachment or Detachment of PS

This Write Command attaches the MT to, or detaches the MT from the PS Domain service. After the command has been completed, the MT remains in V.25ter command state. If the MT is already in the requested state, the command will be ignored and the **OK** response will be returned. If the requested state cannot be achieved, an **ERROR** or **+CME ERROR** response is returned.

AT+CGATT Attachment or Detachment of PS	
Test Command AT+CGATT=?	Response +CGATT: (list of supported <state>s) OK
Read Command AT+CGATT?	Response +CGATT: <state> OK
Write Command AT+CGATT=<state>	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	140 s, determined by network.
Characteristics	Whether the command takes effect determined by network. The configuration is not saved.
Reference	3GPP TS 27.007

Parameter

<state>	Integer type. Indicates the state of PS attachment.
0	Detached

1 Attached
 Other values are reserved and will result in an **ERROR** response to the Write Command.
 <err> Error codes. For more details, please refer to **Chapter 14.5**.

Example

```

AT+CGATT=1 //Attach to PS service.
OK
AT+CGATT=0 //Detach from PS service.
OK
AT+CGATT? //Query the current PS service state.
+CGATT: 0
OK
    
```

10.2. AT+CGDCONT Define PDP Context

This command specifies PDP context parameters for a specific context <cid>. A special form of the Write Command (**AT+CGDCONT=<cid>**) causes the values for context <cid> to become undefined. It is not allowed to change the definition of an already activated context.

This Read Command returns the current settings for each defined PDP context.

AT+CGDCONT Define PDP Context	
Test Command AT+CGDCONT=?	Response +CGDCONT: (range of supported <cid>s),<PDP_type>,<APN>,<PDP_addr>,(range of supported <data_comp>s), (range of supported <head_comp>s),(list of supported <IPv4_addr_alloc>s),(list of supported <request_type>s) OK
Read Command AT+CGDCONT?	Response +CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<data_comp>,<head_comp>,<IPv4_addr_alloc>,<request_type> [...] OK
Write Command AT+CGDCONT=<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[,<data_comp>[,	Response OK Or

<head_comp>[,<IPv4_addr_alloc>[,<request_type>]]]]]]]]	ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are saved automatically.
Reference	3GPP TS 27.007

Parameter

<cid>	Integer type. PDP context identifier. 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.
<PDP_type>	String type. Packet data protocol type, a string parameter which specifies the type of packet data protocol. "IP" IPv4. Internet protocol (<i>IETF STD 5</i>) "PPP" Point to Point Protocol (<i>IETF STD 51</i>) "IPV6" Internet Protocol, version 6 (see <i>RFC 2460</i>) "IPV4V6" Virtual introduced to handle dual IP stack UE capability (see <i>RFC 2460</i>)
<APN>	String type. Access point name, a string parameter that is a logical name used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested.
<PDP_addr>	String type. Identifies the MT in the address space applicable to the PDP. If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, failing that, a dynamic address will be requested. The allocated address may be read with AT+CGPADDR .
<data_comp>	Integer type. Controls PDP data compression (applicable for SNDCP only) (refer to <i>3GPP TS 44.065</i>). <u>0</u> Off 1 On (Manufacturer preferred compression) 2 V.42bis
<head_comp>	Integer type. Control PDP header compression (refer to <i>3GPP TS 44.065</i> and <i>3GPP TS 25.323</i>). <u>0</u> Off 1 On 2 RFC1144 3 RFC2507 4 RFC3095
<IPv4_addr_alloc>	Integer type. Control how the MT/TA requests to get the IPv4 address information. <u>0</u> IPv4 address allocation through NAS signaling 1 IPv4 address allocated through DHCP
<request_type>	Integer type. Indicate the type of PDP context activation request for the PDP

context.	
<u>0</u>	PDP context is for new PDP context establishment or for handover from a non-3GPP access network (how the MT decides whether the PDP context is for new PDP context establishment or for handover is implementation specific)
1	PDP context is for emergency bearer services

10.3. AT+CGQREQ Quality of Service Profile (Requested)

This command allows the TE to specify the profile of service quality that is used when the TE activates a PDP context.

The Write Command specifies a profile for the context <cid>. A special form of the Write Command, **AT+CGQREQ=<cid>** causes the requested profile for context number <cid> to become undefined. This Read Command returns the current settings for each defined context. Details can be found in *3GPP TS 23.107*.

AT+CGQREQ Quality of Service Profile (Requested)	
Test Command AT+CGQREQ=?	Response +CGQREQ: <PDP_type>,(range of supported <precedence>s),(range of supported <delay>s),(range of supported <reliability>s),(range of supported <peak>s),(range of supported <mean>s) OK
Read Command AT+CGQREQ?	Response [+CGQREQ: <cid>,<precedence>,<delay>,>reliability>,<peak>,<mean>] [+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>] [...] OK
Write Command AT+CGQREQ=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]	Response OK If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are saved automatically.

Reference
3GPP TS 27.007

Parameter

<cid>	Integer type. Specify a particular PDP context definition (see AT+CGDCONT).
<PDP_type>	String type. PDP type. "IP" IPv4. Internet protocol (<i>IETF STD 5</i>) "PPP" Point to Point Protocol (<i>IETF STD 51</i>) "IPV6" Internet Protocol, version 6 "IPV4V6" Virtual introduced to handle dual IP stack UE capability (see <i>RFC 2460</i>)
<precedence>	Integer type. Specify the precedence class. <u>0</u> Network subscribed value 1 High priority. Service commitments shall be maintained ahead of precedence classes 2 and 3 2 Normal priority. Service commitments shall be maintained ahead of precedence class 3 3 Low priority. Service commitments shall be maintained
<delay>	Integer type. Specify the delay class. This parameter defines the end-to-end transfer delay incurred in the transmission of SDUs through the network. See Table 6 for details. <u>0</u> Network subscribed value 1 < 0.5 2 < 5 3 < 50 4 Unspecified
<reliability>	Integer type. Specify the reliability class. <u>0</u> Network subscribed value 1 Non real-time traffic, error-sensitive application that cannot cope with data loss 2 Non real-time traffic, error-sensitive application that cannot cope with infrequent data loss 3 Non real-time traffic, error-sensitive application that can cope with data loss, GMM/SM, and SMS 4 Real-time traffic, error-sensitive application that can cope with data loss 5 Real-time traffic, error non-sensitive application that can cope with data loss
<peak>	Integer type. Specify the peak throughput class, in octets per second. <u>0</u> Network subscribed value 1 Up to 1 000 (8 kbit/s) 2 Up to 2 000 (16 kbit/s) 3 Up to 4 000 (32 kbit/s) 4 Up to 8 000 (64 kbit/s) 5 Up to 16 000 (128 kbit/s) 6 Up to 32 000 (256 kbit/s) 7 Up to 64 000 (512 kbit/s)

	8	Up to 128 000 (1024 kbit/s)
	9	Up to 256 000 (2048 kbit/s)
<mean>		Integer type. Specify the mean throughput class, in octets per second.
	<u>0</u>	Network subscribed value
	1	100 (–0.22 bit/s)
	2	200 (–0.44 bit/s)
	3	500 (–1.11 bit/s)
	4	1 000 (–2.2 bit/s)
	5	2 000 (–4.4 bit/s)
	6	5 000 (–11.1 bit/s)
	7	10 000 (–22 bit/s)
	8	20 000 (–44 bit/s)
	9	50 000 (–111 bit/s)
	10	100 000 (–0.22 kbit/s)
	11	200 000 (–0.44 kbit/s)
	12	500 000 (–1.11 kbit/s)
	13	1000 000 (–2.2 kbit/s)
	14	2 000 000 (–4.4 kbit/s)
	15	5 000 000 (–11.1 kbit/s)
	16	10 000 000 (–22 kbit/s)
	17	20 000 000 (–44 kbit/s)
	18	50 000 000 (–111 kbit/s)
	31	Best capacity
<err>		Error codes. For more details, please refer to Chapter 14.5 .

Table 6: Delay Class

SDU Size	Delay Class	Mean Transfer Delay	95 Percentile
128 octets	1 (Predictive)	< 0.5	< 1.5
	2 (Predictive)	< 5	< 25
	3 (Predictive)	< 50	< 250
	4 (Best Effort)	Unspecified	-
1024 octets	1 (Predictive)	< 0.5	< 1.5
	2 (Predictive)	< 5	< 25
	3 (Predictive)	< 50	< 250
	4 (Best Effort)	Unspecified	-

10.4. AT+CGQMIN Quality of Service Profile (Minimum Acceptable)

This command allows the TE to specify a minimum acceptable profile which is checked by the MT against the negotiated profile when the PDP context is activated. This Write Command specifies a profile for the context identified by the context identification parameter **<cid>**.

A special form of the Write Command, **AT+CGQMIN=<cid>** causes the minimum acceptable profile for context number **<cid>** to become undefined. In this case no check is made against the negotiated profile. This Read Command returns the current settings for each defined context. Details can be found in *3GPP TS 23.107*.

AT+CGQMIN Quality of Service Profile (Minimum Acceptable)	
Test Command AT+CGQMIN=?	Response +CGQMIN: <PDP_type>,(range of supported <precedence>s),(range of supported <delay>s),(range of supported <reliability>s),(range of supported <peak>s),(range of supported <mean>s) OK
Read Command AT+CGQMIN?	Response [+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>] [+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>] [...] OK
Write Command AT+CGQMIN=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]	Response OK If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are saved automatically.
Reference	3GPP TS 27.007

Parameter

<cid>	Integer type. Specify a particular PDP context definition (see AT+CGDCONT).
<PDP_type>	String type. PDP type. "IP" IPv4. Internet protocol (<i>IETF STD 5</i>) "PPP" Point to Point Protocol (<i>IETF STD 51</i>) "IPV6" Internet Protocol, version 6 (see <i>RFC 2460</i>) "IPV4V6" Virtual introduced to handle dual IP stack UE capability, support IPv4 and IPv6 (see <i>RFC 2460</i>)
<precedence>	Integer type. Specify the precedence class. <u>0</u> Network subscribed value 1 High priority. Service commitments shall be maintained ahead of precedence classes 2 and 3 2 Normal priority. Service commitments shall be maintained ahead of precedence class 3 3 Low priority. Service commitments shall be maintained
<delay>	Integer type. Specify the delay class. This parameter defines the end-to-end transfer delay incurred in the transmission of SDUs through the network. See Table 6 for details. <u>0</u> Network subscribed value 1 < 0.5 2 < 5 3 < 50 4 Unspecified
<reliability>	Integer type. Specify the reliability class. <u>0</u> Network subscribed value 1 Non real-time traffic, error-sensitive application that cannot cope with data loss 2 Non real-time traffic, error-sensitive application that cannot cope with infrequent data loss 3 Non real-time traffic, error-sensitive application that can cope with data loss, GMM/SM, and SMS 4 Real-time traffic, error-sensitive application that can cope with data loss 5 Real-time traffic, error non-sensitive application that can cope with data loss
<peak>	Integer type. Specify the peak throughput class, in octets per second. <u>0</u> Network subscribed value 1 Up to 1 000 (8 kbit/s) 2 Up to 2 000 (16 kbit/s) 3 Up to 4 000 (32 kbit/s) 4 Up to 8 000 (64 kbit/s) 5 Up to 16 000 (128 kbit/s) 6 Up to 32 000 (256 kbit/s) 7 Up to 64 000 (512 kbit/s) 8 Up to 128 000 (1024 kbit/s) 9 Up to 256 000 (2048 kbit/s)
<mean>	Integer type. Specify the mean throughput class, in octets per second.

0	Network subscribed value
1	100 (–0.22 bit/s)
2	200 (–0.44 bit/s)
3	500 (–1.11 bit/s)
4	1 000 (–2.2 bit/s)
5	2 000 (–4.4 bit/s)
6	5 000 (–11.1 bit/s)
7	10 000 (–22 bit/s)
8	20 000 (–44 bit/s)
9	50 000 (–111 bit/s)
10	100 000 (–0.22 kbit/s)
11	200 000 (–0.44 kbit/s)
12	500 000 (–1.11 kbit/s)
13	1000 000 (–2.2 kbit/s)
14	2 000 000 (–4.4 kbit/s)
15	5 000 000 (–11.1 kbit/s)
16	10 000 000 (–22 kbit/s)
17	20 000 000 (–44 kbit/s)
18	50 000 000 (–111 kbit/s)
31	Best effort

<err> Error codes. For more details, please refer to **Chapter 14.5**.

10.5. AT+CGACT Activate or Deactivate PDP Context

This Write Command activates or deactivates the specified PDP context(s). After the command has completed, the MT remains in V.250 command state. If any PDP context is already in the requested state, the state for that context remains unchanged. If the MT is not PS attached when the activation form of the command is executed, the MT first performs a PS attach and then attempts to activate the specified contexts. If no **<cid>**s specify the activation/deactivation form of the command, it will activate or deactivate all defined contexts.

AT+CGACT Activate or Deactivate PDP Context

Test Command AT+CGACT=?	Response +CGACT: (list of supported <state> s) OK
Read Command AT+CGACT?	Response +CGACT: <cid> , <state> [+CGACT: <cid> , <state> ...] OK

Write Command AT+CGACT=<state>,<cid>	Response OK Or NO CARRIER If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	150 s, determined by network.
Characteristics	Whether the command takes effect is determined by network. The configurations are not saved.
Reference 3GPP TS 27.007	

Parameter

<state>	Integer type. Indicate the state of PDP context activation. 0 Deactivated 1 Activated Other values are reserved and will result in an ERROR response to the Write Command
<cid>	Integer type. Specify a particular PDP context definition (see AT+CGDCONT).
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

If VoLTE feature is enabled, **<cid>** holds a range from 1 to 5.

Example

```
AT+CGDCONT=1,"IP","UNINET" //Define PDP context.
OK
AT+CGACT=1,1 //Activated PDP.
OK
AT+CGACT=0,1 //Deactivated the PDP.
OK
```

10.6. AT+CGDATA Enter Data State

This Write Command causes the MT to perform whatever actions that are necessary to establish

communication between the TE and the network using one or more packet domain PDP types. This may include performing a PS attach and one or more PDP context activations. Any command following the **AT+CGDATA** in the AT command line will not be processed by the MT.

If the **<L2P>** value is unacceptable to the MT, the MT shall return an **ERROR** or **+CME ERROR** response. Otherwise, the MT issues the intermediate result code **CONNECT** and enters V.250 online data state. After data transfer is completed, and the layer 2 protocol termination procedure has been completed successfully, the command state is reentered and the MT returns the final result code **OK**.

AT+CGDATA Enter Data State	
Test Command AT+CGDATA=?	Response +CGDATA: (list of supported <L2P> s) OK
Write Command AT+CGDATA=<L2P>[,<cid>[,<cid>[, ...]]]	Response CONNECT Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	Whether the command takes effect is determined by network. The configuration is not saved.
Reference 3GPP TS 27.007	

Parameter

<L2P>	String type. Indicate the layer 2 protocol to be used between the TE and MT: PPP Point to Point protocol for a PDP such as IP Other values are not supported and will result in an ERROR response to the Write Command.
<cid>	Integer type. Specify a particular PDP context definition (see AT+CGDCONT).
<err>	Error codes. For more details, please refer to Chapter 14.5 .

10.7. AT+CGPADDR Show PDP Address

This Write Command returns a list of PDP addresses for the specified context identifiers. If no **<cid>** is specified, the addresses for all defined contexts are returned.

AT+CGPADDR Show PDP Address	
Test Command AT+CGPADDR=?	Response +CGPADDR: (list of defined <cid>s) OK
Write Command AT+CGPADDR[=<cid>[,<cid>[,...]]]	Response +CGPADDR: <cid>,<PDP_addr> [+CGPADDR: <cid>,<PDP_addr> ...] OK Or ERROR
Maximum Response Time	300 ms
Characteristics	Whether the command takes effect is determined by network. The configurations are not saved.
Reference 3GPP TS 27.007	

Parameter

<cid>	Integer type. Specify a particular PDP context definition (see AT+CGDCONT).
<PDP_addr>	String type. Identify the TE in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by AT+CGDCONT 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.

Example

```

AT+CGDCONT=1,"IP","UNINET"           //Define PDP context.
OK
AT+CGACT=1,1                          //Activated PDP.
OK
AT+CGPADDR=1                          //Show PDP address.
+CGPADDR: 1,"10.76.51.180"
OK
    
```

10.8. AT+CGCLASS GPRS Mobile Station Class

This command sets the MT to operate according to the specified mode of operation. See 3GPP TS 23.060.

AT+CGCLASS GPRS Mobile Station Class	
Test Command AT+CGCLASS=?	Response +CGCLASS: (list of supported <class>s) OK
Read Command AT+CGCLASS?	Response +CGCLASS: <class> OK
Write Command AT+CGCLASS=<class>	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved automatically.
Reference 3GPP TS 27.007	

Parameter

<class>	String type. Indicate the GPRS mobile class (Functionality in descending order). "B" Class-B mode of operation (A/Gb mode), or CS/PS mode of operation (Iu mode) "CG" Only PS mode of operation (A/Gb mode) or PS mode of operation (Iu mode) Other values are reserved and will result in an ERROR response to the Write Command
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

- <class> ="B" means that the MT would operate PS or CS services but not simultaneously; <class> ="CG" means that the MT would only operate PS services.
- EG800G series and EG915G-EU modules do not support the command.

10.9. AT+CGREG PS Domain Network Registration Status

This command queries the network registration status and controls the presentation of an unsolicited result code.

- **+CGREG: <stat>** when <n>=1 and there is a change in the MT's GPRS network registration status.
- **+CGREG: <stat>[,<lac>],<ci>[,<AcT>]]** when <n>=2 and there is a change of the GPRS network cell.

AT+CGREG PS Domain Network Registration Status	
Test Command AT+CGREG=?	Response +CGREG: (list of supported <n>s) OK
Read Command AT+CGREG?	Response +CGREG: <n>,<stat>[,<lac>,<ci>[,<AcT>]] OK
Write Command AT+CGREG[=<n>]	Response OK Or ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved only if you execute AT&W after this command.
Reference 3GPP TS 27.007	

Parameter

<n>	Integer type. Control the presentation of the specified URC. 0 Disable network registration unsolicited result code 1 Enable network registration unsolicited result code +CGREG: <stat> 2 Enable network registration and location information unsolicited result code +CGREG: <stat>[,<lac>,<ci>[,<AcT>]]
<stat>	Integer type. Network registration status. 0 Not registered. MT is not currently searching an operator to register to. The UE is in GMM state GMM-NULL or GMM-DEREGISTERED-INITIATED. The GPRS service is disabled, but the UE is allowed to attach for GPRS if requested by the user 1 Registered, home network. The UE is in GMM state GMM-REGISTERED or

	GMM-ROUTING-AREA-UPDATING-INITIATED INITIATED on the home PLMN
2	Not registered, but MT is currently trying to attach or searching an operator to register to. UE is in GMM state GMM-DEREGISTERED or GMM-REGISTERED-INITIATED. The GPRS service is enabled, but an allowable PLMN is currently not available. The UE will start a GPRS attach as soon as an allowable PLMN is available
3	Registration denied. The UE is in GMM state GMM-NUL. The GPRS service is disabled, and the UE is not allowed to attach for GPRS if requested by the user
4	Unknown
5	Registered, roaming
<lac>	String type. Two-byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal).
<ci>	String type. 16-bit (GSM) or 28-bit (LTE) cell ID in hexadecimal format.
<AcT>	Integer type. Access technology selected.
0	GSM
7	E-UTRAN

NOTE

For EC200U and EG91xU series modules, the value of <AcT> can only be set to 0 and 7. For EG800G series and EG915G-EU modules, the value of <AcT> can only be set to 7.

Example

```

AT+CGREG=2
OK
AT+CGATT=0
OK
+CGREG: 2
AT+CGATT=1
OK
+CGREG: 1,"D5D5","8054BBF",7
    
```

10.10. AT+CGEREP Packet Domain Event Reporting

This Write Command enables or disables sending of unsolicited result codes **+CGEV** from MT to TE in the case of certain events occurring in the Packet Domain or the network. **<mode>** controls the processing of unsolicited result codes specified within this command. **<bfr>** controls the effect on buffered codes when **<mode>=1**.

AT+CGEREP Packet Domain Event Reporting

Test Command AT+CGEREP=?	Response +CGEREP: (list of supported <mode>s),(list of supported <bfr>s) OK
Read Command AT+CGEREP?	Response +CGEREP: <mode> , <bfr> OK
Write Command AT+CGEREP=mode[,<bfr>]	Response OK Or ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved only if you execute AT&W after this command.
Reference 3GPP TS 27.007	

Parameter

<mode>	Integer type. Control the processing of unsolicited result codes specified within this command.
<u>0</u>	Buffer unsolicited result codes in the MT; if MT result code buffer is full, the oldest ones can be discarded. No codes are forwarded to the TE
1	Discard unsolicited result codes when MT-TE link is reserved (e.g. in on-line data mode), otherwise forward them directly to the TE
<bfr>	Integer type. Control the effect on buffered codes.
<u>0</u>	MT buffer of unsolicited result codes defined within this command is cleared when <mode>=1 is specified
1	MT buffer of unsolicited result codes defined within this command is flushed to the TE when <mode>=1 is specified (OK response shall be given before flushing the codes)

NOTE

The unsolicited result codes and the corresponding events are defined as follows:

1. **+CGEV: REJECT <PDP_type>, <PDP_addr>**: A network request for PDP context activation occurred when the MT was unable to report it to the TE with a **+CRING** unsolicited result code and was

automatically rejected.

Note: This event is not applicable for EPS.

2. **+CGEV: NW REACT <PDP_type>, <PDP_addr>,[<cid>]**: The network has requested a context reactivation. The <cid> used to reactivate the context is provided if known to the MT.
Note: This event is not applicable for EPS.
3. **+CGEV: NW DEACT <PDP_type>, <PDP_addr>,[<cid>]**: The network has forced a context deactivation. The <cid> used to activate the context is provided if known to the MT.
4. **+CGEV: ME DEACT <PDP_type>, <PDP_addr>,[<cid>]**: The mobile equipment has forced a context deactivation. The <cid> used to activate the context is provided if known to the MT.
5. **+CGEV: NW DETACH**: The network has forced a Packet Domain detach. This implies that all active contexts have been deactivated. These are not reported separately.
6. **+CGEV: ME DETACH**: The mobile equipment has forced a Packet Domain detach. This implies that all active contexts have been deactivated. These are not reported separately.
7. **+CGEV: NW CLASS <class>**: The network has forced a change of MS class. The highest available class is reported (see **AT+CGCLASS**).
8. **+CGEV: ME CLASS <class>**: The mobile equipment has forced a change of MS class. The highest available class is reported (see **AT+CGCLASS**).
9. **+CGEV: PDN ACT <cid>**: Activated a context. The context represents a PDN connection in LTE or a Primary PDP context in GSM.
10. **+CGEV: PDN DEACT <cid>**: Deactivated a context. The context represents a PDN connection in LTE or a Primary PDP context in GSM.

Example

```
AT+CGEREP=?
+CGEREP: (0,1),(0,1)

OK
AT+CGEREP?
+CGEREP: 0,0

OK
```

10.11. AT+CGSMS Select Service for MO SMS Messages

This command specifies the service or service preference that the MT will use to send MO (mobile originated) SMS messages.

AT+CGSMS Select Service for MO SMS Messages

Test Command	Response
AT+CGSMS=?	+CGSMS: (range of supported <service>s)

	OK
Read Command AT+CGSMS?	Response +CGSMS: <service>
	OK
Write Command AT+CGSMS=[<service>]	Response OK If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	
Reference 3GPP TS 27.007	

Parameter

<service>	Integer type. Indicate the service or service preference to be used. 0 PS domain 1 Circuit switch 2 PS domain preferred (use circuit switched if PS domain not available) 3 Circuit switch preferred (use PS domain if circuit switched not available)
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

EG800G series and EG915G-EU modules do not support the command.

10.12. AT+CEREG EPS Network Registration Status

This command queries the network registration status and 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.
- **+CEREG: <stat>,[<tac>],[<ci>],[<AcT>]** when **<n>=2** and there is a change of the network cell in E-UTRAN.

AT+CEREG EPS Network Registration Status	
Test Command AT+CEREG=?	Response +CEREG: (list of supported <n>s) OK
Read Command AT+CEREG?	Response +CEREG: <n>,<stat>[,<tac>,<ci>[,<AcT>]] OK
Write Command AT+CEREG[=<n>]	Response OK Or ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved only if you execute AT&W after this command.
Reference 3GPP TS 27.007	

Parameter

- <n>** Integer type. Control the presentation of an unsolicited result code.
 - 0 Disable network registration unsolicited result code
 - 1 Enable network registration unsolicited result code **+CEREG: <stat>**
 - 2 Enable network registration and location information unsolicited result code **+CEREG: <stat>[,<tac>,<ci>[,<AcT>]]**
- <stat>** Integer type.
 - 0 Not registered. MT is not currently searching an operator to register to
 - 1 Registered, home network
 - 2 Not registered, but MT is currently trying to attach or searching an operator to register to
 - 3 Registration denied
 - 4 Unknown
 - 5 Registered, roaming
- <tac>** String type. Two-byte tracking area code in hexadecimal format.
- <ci>** String type. 28-bit E-UTRAN cell ID in hexadecimal format.
- <AcT>** Integer type. Access technology selected.
 - 0 GSM
 - 7 E-UTRAN

NOTE

For EC200U and EG91xU series modules, the value of **<Act>** can only be set to 0 and 7. For EG800G series and EG915G-EU modules, the value of **<Act>** can only be set to 7.

10.13. AT+QGDCNT Packet Data Counter

This command allows the application to check how many bytes are sent to or received by the module.

AT+QGDCNT Packet Data Counter	
Test Command AT+QGDCNT=?	Response +QGDCNT: (list of supported <op>s) OK
Read Command AT+QGDCNT?	Response +QGDCNT: <bytes_sent>,<bytes_rcv> OK
Write Command AT+QGDCNT=<op>	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	Whether the command takes effect is determined by network. The configuration is not saved.

Parameter

<op>	Integer type. The operation about data counter. 0 Reset the data counter 1 Save the results of data counter to NV If results need to be automatically saved, please refer to AT+QAUGDCNT .
<bytes_sent>	Integer type. The amount of sent bytes.
<bytes_rcv>	Integer type. The amount of received bytes.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

When the MT is powered on, **<bytes_sent>** and **<bytes_rcv>** are loaded from results of data counter in NV. The default result in NV is 0.

Example

```

AT+QGDCNT=? //Test command.
+QGDCNT: (0,1)

OK
AT+QGDCNT? //Query the current bytes sent and received.
+QGDCNT: 3832,4618

OK
AT+QGDCNT=1 //Save the results to NV.
OK
AT+QGDCNT=0 //Reset the data counter.
OK
    
```

10.14. AT+QAUGDCNT Auto Save Packet Data Counter

This command allows **AT+QGDCNT** to save results to NV automatically.

AT+QAUGDCNT Auto Save Packet Data Counter	
Test Command AT+QAUGDCNT=?	Response +QAUGDCNT: (list of supported <value>s) OK
Read Command AT+QAUGDCNT?	Response +QAUGDCNT: <value> OK
Write Command AT+QAUGDCNT=<value>	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>

Maximum Response Time	300 ms
Characteristics	Whether the command takes effect is determined by network. The configuration is not saved.

Parameter

<value>	Integer type. This parameter is the time-interval for AT+QGDCNT to save results to NV automatically. Range: 0, 30–65535; default: 0; unit: second. If it is set to 0, auto-save feature is disabled.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

Example

```

AT+QAUGDCNT=? //Test command.
+QAUGDCNT: (0,30-65535)

OK
AT+QGDCNT=35 //Set <value> to 35.
OK
AT+QAUGDCNT? //Query the interval of auto-save.
+QAUGDCNT: 35

OK
    
```

10.15. AT+CGCONTRDP PDP Context Read Dynamic Parameters

AT+CGCONTRDP PDP Context Read Dynamic Parameters	
Test Command AT+CGCONTRDP=?	Response +CGCONTRDP: (list of supported <cid>s) OK
Write Command AT+CGCONTRDP[=<cid>]	Response +CGCONTRDP: <cid>,<bearer_id>,<APN>[,<local_addr and subnet_mask>[,<gw_addr>[,<DNS_prim_addr>[,<DNS_sec_addr>[,<P-CSCF_prim_addr>[,<P-CSCF_sec_addr>[,<IM_CN_Signalling_Flag>[,<LIPA_indication>[,<IPv4_MTU>[,<WLAN_Offload>[,<Local_Addr_Ind>[,<Non-IP_MTU>[,<Serving_PLMN_rate_control_value>]]]]]]]]]]]]]]]]]]]] [+CGCONTRDP: <cid>,<bearer_id>,<APN>[,<local_addr and

	LIPA PDN connection. This parameter cannot be set by the TE.
	0 Indication not received that the PDP context provides connectivity using a LIPA PDN connection
	1 Indication received that the PDP context provides connectivity using a LIPA PDN connection
<IPv4_MTU>	Integer type. Show the IPv4 MTU size in octets.
<WLAN_Offload>	Integer type. Indicate whether traffic can be offloaded using the specified PDN connection via a WLAN or not. This refers to bits 1 and 2 of the WLAN offload acceptability IE as specified in <i>3GPP TS 24.008 subclause 10.5.6.20</i> .
	0 Offloading the traffic of the PDN connection via a WLAN when in S1 mode or when in lu mode is not acceptable
	1 Offloading the traffic of the PDN connection via a WLAN when in S1 mode is acceptable, but not acceptable in lu mode
	2 Offloading the traffic of the PDN connection via a WLAN when in lu mode is acceptable, but not acceptable in S1 mode
	3 Offloading the traffic of the PDN connection via a WLAN when in S1 mode or when in lu mode is acceptable
<Local_Addr_Ind>	Integer type. Indicate whether or not the MS and the network support local IP address in TFTs (see <i>3GPP TS 24.301</i> and <i>3GPP TS 24.008 subclause 10.5.6.3</i>)
	0 Indicate that the MS or the network or both do not support local IP address in TFTs
	1 Indicate that the MS and the network support local IP address in TFTs
<Non-IP_MTU>	Integer type. Show the Non-IP MTU size in octets.
<Serving_PLMN_rate_control_value>	Integer type. Indicate the maximum number of uplink messages the UE is allowed to send in a 6-minute interval. This refers to octet 3 to 4 of the Serving PLMN rate control IE as specified in <i>3GPP TS 24.301 subclause 9.9.4.28</i> .

10.16. AT+QNETDEVCTL Configure Network Adapter Data Call

This command connects or disconnects network adapter data call.

AT+QNETDEVCTL Configure Network Adapter Data Call	
Test Command	Response
AT+QNETDEVCTL=?	+QNETDEVCTL: (list of supported <connect_type>s),(range of supported <CID>s),(range of supported <URC_switch>s)
	OK

Read Command AT+QNETDEVCTL?	Response +QNETDEVCTL: <connect_type>,<CID>,<URC_switch>,<PDN_status> OK
Write Command AT+QNETDEVCTL=<connect_type>[,<CID>[,<URC_switch>]]	Response OK Or +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are saved automatically if <connect_type>=3 . The configurations are not saved if <connect_type>=1 .

Parameter

<connect_type>	Integer type. Network adapter connection type. 0 Disconnect network adapter 1 Manually connect the network adapter 3 Automatically connect to the network adapter. If the connection fails, it will retry every 2 seconds, 4 seconds, 8 seconds, 16 seconds, 32 seconds..., the maximum interval time is 5 minutes
<CID>	Integer type. PDP context index number. Range: 1–7.
<URC_switch>	Integer type. Whether to enable the reporting of URC +QNETDEVSTATUS: <status> . 0 Disable 1 Enable
<status>	Integer type. Network adapter connection status. 0 Failure 1 Success
<PDN_status>	Integer type. PDN connection status. 0 Not connected 1 Connected
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

When **<connect_type>=1/3**, if **<URC_switch>** is not specified, URC will not be reported.

Example

```
AT+QNETDEVCTL=1,1,1 //Manually connect the network adapter. Use the first PDP, and enable the
URC report.
OK
+QNETDEVSTATUS: 1
AT+QNETDEVCTL=0 //Disconnect network adapter.
OK
AT+QNETDEVCTL=3,2 //Automatically connect to the network adapter. Use the second PDP, and
disable the URC report.
OK
AT+QNETDEVCTL?
+QNETDEVCTL: 3,2,0,1
OK
```

11 Supplementary Service Commands

11.1. AT+CCFC Call Forwarding Number and Conditions Control

This command allows control of the call forwarding supplementary service according to 3GPP TS 22.082. Registration, erasure, activation, deactivation and status query are supported. TA controls the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported.

AT+CCFC Call Forwarding Number and Conditions Control	
Test Command AT+CCFC=?	Response +CCFC: (range of supported <reason>s) OK
Write Command AT+CCFC=<reason>,<mode>[,<number>[,<type>[,<class>[,<subaddr>[,<satype>[,<time>]]]]]]	Response If <mode> is not equal to 2 and the command is executed successfully: OK If <mode>=2 and the command is executed successfully: If call forwarding numbers are registered: +CCFC: <status>,<class1>[,<number>,<type>[,<subaddr>[,<satype>[,<time>]]]] [...] OK If no call forwarding numbers are registered (i.e. all classes are inactive): +CCFC: <status>,<class> OK where <status>=0 and <class>=1 If there is any error related to ME functionality:

	+CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	Whether this command takes effect depends on the network status. The configurations are not saved.
Reference	3GPP TS 27.007

Parameter

<reason>	Integer type. Configure the forwarding conditions. 0 Unconditional 1 Mobile busy 2 No reply 3 Not reachable 4 All call forwarding (0–3) 5 All conditional call forwarding (1–3)
<mode>	Integer type. Control the call forwarding supplementary service. 0 Disable 1 Enable 2 Query status (<reason>=0,1,2,3) 3 Registration 4 Erasure
<number>	Phone number in string type of forwarding address in format specified by <type> .
<type>	Integer type. Type of address. Default value: 145 when dialing string includes international access code character "+" and 129 otherwise.
<subaddr>	String type. Sub-address of format specified by <satype> .
<satype>	Type of sub-address in integer.
<class>	Integer type. Information class. 1 Voice 2 Data 4 FAX 8 Short message service
<time>	Integer type. When "no reply" (<reason>=2) is enabled or queried, this gives the time in seconds to wait before call is forwarded for no reply. Range: 1–30. Default: 20. Unit: second.
<status>	Integer type. 0 Not active 1 Active
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

EG800G series and EG915G-EU modules do not support the command.

Example

```

AT+CCFC=0,3,"15021012496" //Register the destination number for unconditional call
                           forwarding (CFU).
OK
AT+CCFC=0,2 //Query the status of CFU without specifying <class>.
+CCFC: 1,1,"+8615021012496",145,,,
OK
AT+CCFC=0,4 //Erase the registered CFU destination number.
OK
AT+CCFC=0,2 //Query the status, no destination number.
+CCFC: 0,1
OK
    
```

11.2. AT+CCWA Call Waiting Control

This command allows control of the call waiting supplementary service according to 3GPP TS 22.083. Activation, deactivation and status query are supported. TA controls the call waiting supplementary service with the Write Command. Activation, deactivation and status query are supported.

AT+CCWA Call Waiting Control	
Test Command AT+CCWA=?	Response +CCWA: (list of supported <n>s) OK
Read Command AT+CCWA?	Response +CCWA: <n> OK
Write Command AT+CCWA=<n>[,<mode>[,<class>]]	Response If <mode> is not equal to 2 and the command is executed successfully: OK If <mode>=2 and the command is executed successfully:

	<p>+CCWA: <status>,<class1> [+CCWA: <status>,<class2> ...]</p> <p>OK</p> <p>If there is any error related to ME functionality: +CME ERROR: <err></p>
Maximum Response Time	300 ms
Characteristics	<p>If <mode> is specified, whether this command takes effect depends on the network status;</p> <p>If <mode> is omitted, this command takes effect immediately.</p> <p>The configurations are not saved.</p>
Reference	3GPP TS 27.007

Parameter

<n>	<p>Integer type. Whether to present the URC of :+CCWA: <number>,<type>,<class>[,<alpha>] when TA displays call waiting (i.e. call waiting is enabled) and MT is received during an established call.</p> <p><u>0</u> Disable presentation of an unsolicited result code</p> <p>1 Enable presentation of an unsolicited result code</p>
<mode>	<p>Integer type. When <mode> parameter is not given, AT+CCWA is ignored by the network.</p> <p>0 Disable</p> <p>1 Enable</p> <p>2 Query status</p>
<class>	<p>A sum of integers, each integer represents a class of information.</p> <p>1 Voice (telephony)</p> <p>2 Data (bearer service)</p> <p>4 FAX (facsimile)</p>
<status>	<p>Integer type. Disable or enable the call waiting supplementary service.</p> <p>0 Disable</p> <p>1 Enable</p>
<number>	Phone number in string type of calling address in format specified by <type> .
<type>	<p>Type of address octet in integer format.</p> <p>129 Unknown type (ISDN format)</p> <p>145 International number type (ISDN format)</p>
<alpha>	Optional string type alphanumeric representation of <number> corresponding to the entry found in phonebook.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

1. **<status>**=0 should be returned only if service is not activated for any **<class>** i.e. **+CCWA: 0,7** will be returned in this case.
2. When **<mode>**=2, all active call waiting classes will be reported. At this time the command can be aborted by pressing any key.
3. EG800G series and EG915G-EU modules do not support the command.

Example

```

AT+CCWA=1,1 //Enable presentation of an unsolicited result code.
OK
ATD10086; //Establish a call.
OK
+CCWA: "02154450293",129,1 //Indication of a call that has been waiting.
    
```

11.3. AT+CHLD Call Related Supplementary Services

This command allows the control of the following call related supplementary services:

- A call can be temporarily disconnected from the MT but the connection is retained by the network;
- Multiparty conversation (conference calls);
- The served subscriber who has two calls (one held and the other either active or alerting) can connect the other parties and release the served subscriber’s own connection.

Calls can be put on hold, recovered, released and added to a conversation, and transferred similarly as defined in 3GPP TS 22.030.

This is based on the GSM supplementary services HOLD (Call Hold; refer to 3GPP TS 22.083 clause 2), MPTY (Multiparty; refer to 3GPP TS 22.084) and ECT (Explicit Call Transfer; refer to 3GPP TS 22.091). The interaction of this command with other commands based on other GSM supplementary services is described in the GSM standards. Call Hold, Multiparty and Explicit Call Transfer are only applicable to teleservice 11.

TA controls the supplementary services call hold, multiparty and explicit call transfer with the Write Command. Calls can be put on hold, recovered, released, added to conversation and transferred.

AT+CHLD Call Related Supplementary Services

Test Command	Response
AT+CHLD=?	+CHLD: (list of supported <n>s)

	OK
Write Command AT+CHLD=<n>	Response OK If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	Whether this command takes effect depends on the network status. The configuration is not saved.
Reference 3GPP TS 27.007	

Parameter

<n>	0	Terminate all held calls or UDUB (User Determined User Busy) for a waiting call.
If		a call is waiting, terminate the waiting call. Otherwise, terminate all held calls (if any)
	1	Terminate all active calls (if any) and accept the other call (waiting call or held call)
	1X	Terminate the specific call number X (X=1-7)
	<u>2</u>	Place all active calls on hold (if any) and accept the other call (waiting call or held call) as the active call
	2X	Place all active calls except call X (X=1-7) on hold
	3	Add the held call to the active calls
<err>		Error codes. For more details, please refer to Chapter 14.5 .

NOTE

EG800G series and EG915G-EU modules do not support the command.

Example

```

ATD10086; //Establish a call.
OK

+CCWA: "02154450293",129,1 //Indication of a call that has been waiting.
AT+CHLD=2 //Place the active call on hold and accept the waiting call as
the active call.

OK
AT+CLCC
    
```

```

+CLCC: 1,0,1,0,0,"10086",129 //The first call is on hold.
+CLCC: 2,1,0,0,0,"02154450293",129 //The second call is active.

OK
AT+CHLD=21 //Place the active call except call X=1 on hold.
OK
AT+CLCC
+CLCC: 1,0,0,0,0,"10086",129 //The first call is active.
+CLCC: 2,1,1,0,1,"02154450293",129 //The second call is on hold.

OK
AT+CHLD=3 //Add a held call to the active calls in order to set up a
conference (multiparty) call.

OK
AT+CLCC
+CLCC: 1,0,0,0,1,"10086",129
+CLCC: 2,1,0,0,1,"02154450293",129

OK
    
```

11.4. AT+CLIP Calling Line Identification Presentation

This command refers to the GSM supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to get the calling line identity (CLI) of the calling party when receiving a mobile terminated call. TA enables or disables the presentation of the calling line identity (CLI) at the TE with the Write Command. It has no effect on the execution of the supplementary service CLIP in the network.

AT+CLIP Calling Line Identification Presentation	
Test Command AT+CLIP=?	Response +CLIP: (list of supported <n>s) OK
Read Command AT+CLIP?	Response +CLIP: <n>,<m> OK
Write Command AT+CLIP=<n>	Response OK If there is any error related to ME functionality: +CME ERROR: <err>

Maximum Response Time	15 s, determined by network.
Characteristics	/
Reference	3GPP TS 27.007

Parameter

<n>	Integer type. Whether to present the URC of +CLIP: <number>,<type>,[subaddr],[satype],[alpha],<CLI_validity> after RING (or +CRING: <type>) is returned in MT party call when TE displays CLIP (and MO party allows). 0 Disable presentation of unsolicited result codes 1 Enable presentation of unsolicited result codes
<m>	Integer type. 0 CLIP not provisioned 1 CLIP provisioned 2 Unknown
<number>	Phone number in string type of calling address in format specified by <type> .
<subaddr>	String type sub-address of format specified by <satype> .
<satype>	Type of sub-address octet in integer format (refer to <i>3GPP TS 24.008 subclause 10.5.4.8</i>).
<type>	Type of address octet in integer format. 129 Unknown type (ISDN format) 145 International number type (ISDN format) 161 National number
<alpha>	String type alphanumeric representation of <number> corresponding to the entry found in phonebook.
<CLI_validity>	Integer type. 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
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

EG800G series and EG915G-EU modules do not support the command.

Example

```
AT+CPBW=1,"02151082965",129,"QUECTEL"
OK
AT+CLIP=1
OK

RING

+CLIP: "02151082965",129,,,"QUECTEL",0
```

11.5. AT+CLIR Calling Line Identification Restriction

This command refers to the CLIR supplementary service (Calling Line Identification Restriction) according to 3GPP TS 22.081 and the OIR supplementary service (Originating Identification Restriction) according to 3GPP TS 24.607 that allows a calling subscriber to enable or disable the presentation of the calling line identity (CLI) to the called party when originating a call. TA restricts or enables the presentation of the calling line identity (CLI) to the called party when originating a call with the Write Command.

The Write Command overrides the CLIR subscription (default is restricted or allowed) when temporary mode is provisioned as a default adjustment for all following outgoing calls. This adjustment can be revoked by using the opposite command.

AT+CLIR Calling Line Identification Restriction	
Test Command AT+CLIR=?	Response +CLIR: (range of supported <n>s) OK
Read Command AT+CLIR?	Response +CLIR: <n>,<m> OK
Write Command AT+CLIR=<n>	Response OK If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	15 s, determined by network.
Characteristics	/
Reference	3GPP TS 27.007

Parameter

<n>	Integer type. Set the adjustment for outgoing calls. 0 Presentation indicator is used according to the subscription of the CLIR service 1 CLIR invocation 2 CLIR suppression
<m>	Integer type. Show the subscriber CLIR service status in the network. 0 CLIR not provisioned 1 CLIR provisioned in permanent mode 2 Unknown (e.g. no network, etc.) 3 CLIR temporary mode presentation restricted 4 CLIR temporary mode presentation allowed
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

EG800G series and EG915G-EU modules do not support the command.

11.6. AT+COLP Connected Line Identification Presentation

This command refers to the GSM supplementary service COLP (Connected Line Identification Presentation) that enables a calling subscriber to get the connected line identity (COL) of the called party after setting up a mobile originated call. The command enables or disables the presentation of the COL at the TE. It has no effect on the execution of the supplementary service COLR in the network.

Intermediate result code is returned from TA to TE before any +CR or V.25ter responses.

AT+COLP Connected Line Identification Presentation

Test Command AT+COLP=?	Response +COLP: (list of supported <n>s) OK
Read Command AT+COLP?	Response +COLP: <n>,<m> OK
Write Command AT+COLP=<n>	Response OK
Maximum Response Time	15 s, determined by network.

Characteristics	/
Reference	
3GPP TS 27.007	

Parameter

<n>	Integer type. Set/show the result code presentation status in MT. <u>0</u> Disable 1 Enable. When the result code presents (and MT party allows), before any +CR or V.25 ter responding, the intermediate result code is returned as follow: +COLP: <number>,<type>,[<subaddr>],[<satype>],[<alpha>]
<m>	Integer type. Show the subscriber COLP service status in the network. 0 COLP not provisioned 1 COLP provisioned 2 Unknown (e.g. no network, etc.)
<number>	String type. Phone number, the format is specified by <type> .
<type>	Integer type. Type of address octet in integer format. 129 Unknown type (ISDN format) 145 International number type (ISDN format)
<subaddr>	String type sub-address of format specified by <satype> .
<satype>	Integer type. Type of sub-address octet (refer to <i>3GPP TS 24.008 subclause 10.5.4.8</i>).
<alpha>	Optional string type alphanumeric representation of <number> corresponding to the entry found in phonebook.

NOTE

EG800G series and EG915G-EU modules do not support the command.

Example

```
AT+CPBW=1,"02151082965",129,"QUECTEL"
OK
AT+COLP=1
OK
ATD02151082965;
+COLP: "02151082965",129,,,"QUECTEL"
OK
```

11.7. AT+CSSN Supplementary Service Notifications

This command refers to network-initiated notifications related to supplementary service. This Write Command enables/disables the presentation of notification result codes from TA to TE.

AT+CSSN Supplementary Service Notifications	
Test Command AT+CSSN=?	Response +CSSN: (list of supported <n>s),(list of supported <m>s) OK
Read Command AT+CSSN?	Response +CSSN: <n>,<m> OK
Write Command AT+CSSN=<n>[,<m>]	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	/
Reference 3GPP TS 27.007	

Parameter

<n>	Integer type. Enable/disable the +CSSI: <code1> intermediate result code presentation status to the TE. 0 Disable 1 Enable
<m>	Integer type. Enable/disable the +CSSU: <code2> unsolicited result code presentation status to the TE. 0 Disable 1 Enable
<code1>	Integer type. It is manufacturer specific and supports the following codes: 0 Unconditional call forwarding is active 1 Some of the conditional call forwardings are active 2 Call has been forwarded 3 Waiting call is pending

	5	Outgoing call is barred
<code2>	Integer type. It is manufacturer specific and supports the following codes:	
	0	The incoming call is a forwarded call
	2	Call has been put on hold (during a voice call)
	3	Call has been retrieved (during a voice call)
	5	Held call was terminated by another party
	10	Additional incoming call forwarded
<err>	Error codes. For more details, please refer to Chapter 14.5 .	

NOTE

- When **<n>=1** and a supplementary service notification is received after a mobile originated call setup, the **+CSSI** intermediate result code is sent to TE before any other MO call setup result codes:
+CSSI: <code1>.
- When **<m>=1** and a supplementary service notification is received during a mobile terminated call setup or during a call, the **+CSSU** unsolicited result code is sent to TE:
+CSSU: <code2>.
- EG800G series and EG915G-EU modules do not support the command.

11.8. AT+CUSD Unstructured Supplementary Service Data

This command allows control of the Unstructured Supplementary Service Data (USSD) according to 3GPP TS 22.090. Both network and mobile initiated operations are supported.

When **<reqstr>** is given, a mobile initiated USSD string or a response USSD string to a network-initiated operation is sent to the network. The response USSD string from the network is returned in a subsequent URC **+CUSD**.

AT+CUSD Unstructured Supplementary Service Data

Test Command AT+CUSD=?	Response +CUSD: (range of supported <mode>s) OK
Read Command AT+CUSD?	Response +CUSD: <mode> OK
Write Command AT+CUSD=[<mode>[,<reqstr>[,<dc>]]]	Response OK Or ERROR

	If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	120 s, determined by network.
Characteristics	The command takes effect immediately. The configurations are not saved.
Reference	
3GPP TS 27.007	

Parameter

<mode>	Integer type. Set/show the result code presentation status to the TE. <ul style="list-style-type: none"> <u>0</u> Disable the result code presentation to the TE 1 Enable the result code presentation to the TE. For an USSD response from the network, or a network-initiated operation, the format is: +CUSD: <status>[,<rspstr>[,<dc>]] 2 Cancel session (not applicable to the response to Read Command)
<reqstr>	String type. Unstructured Supplementary Service Data (USSD) to be sent to the network. If this parameter is not given, network is not interrogated.
<rspstr>	String type. Unstructured Supplementary Service Data (USSD) received from the network.
<dc>	Integer type. <i>3GPP TS 23.038 Cell Broadcast Data Coding Scheme</i> . Default value: 15.
<status>	Integer type. USSD response from the network or the network-initiated operation. <ul style="list-style-type: none"> 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 network 3 Another local client has responded 4 Operation not supported 5 Network time out
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

EG800G series and EG915G-EU modules do not support the command.

12 Audio Commands

12.1. AT+CLVL Loudspeaker Volume Level Selection

This command selects the volume of the internal loudspeaker of the MT.

AT+CLVL Loudspeaker Volume Level Selection	
Test Command AT+CLVL=?	Response +CLVL: (range of supported <level>s) OK
Read Command AT+CLVL?	Response +CLVL: <level> OK
Write Command AT+CLVL=<level>	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved automatically.
Reference	3GPP TS 27.007

Parameter

- <level>** Integer type. Volume level with manufacturer specific range (the minimum value represents the lowest sound level). Range: 0–5. Default value: 3.
- <err>** Error codes. For more details, please refer to **Chapter 14.5**.

12.2. AT+QAUDLOOP Enable/Disable Audio Loop Test

This command enables/disables audio loop test.

AT+QAUDLOOP Enable/Disable Audio Loop Test	
Test Command AT+QAUDLOOP=?	Response +QAUDLOOP: (list of supported <enable>s) OK
Read Command AT+QAUDLOOP?	Response +QAUDLOOP: <enable> OK
Write Command AT+QAUDLOOP=<enable>	Response OK Or ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.

Parameter

<enable>	Integer type. Enable or disable audio loop test. 0 Disable 1 Enable
<err>	Error codes. For more details, please refer to Chapter 14.5 .

12.3. AT+QAUDRD Record Audio File

This command records the uplink or downlink speech during voice call or record sound from local microphone in idle state and save it to files.

AT+QAUDRD Record Audio File	
Test Command AT+QAUDRD=?	Response +QAUDRD: (list of supported of <state>s),<file_name>,(list of supported <format>),(list of supported <dlink>s)

	OK
Read Command AT+QAUDRD?	Response +QAUDRD: <state> OK
Write Command AT+QAUDRD=<control>[,<file_name>[,<format>[,<dlink>]]]	Response OK Or ERROR If error is related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	/

Parameter

<state>	Integer type. The recording state. 0 Not recording 1 Recording
<control>	Integer type. Stop or start recording. 0 Stop recording 1 Start recording
<file_name>	String type. Name of the recorded audio file, including file path (UFS directory by default), filename and filename extension.
<format>	Integer type. Format of the file. 13 WAV_PCM16, AMRNB, AMRWB or PCM
<dlink>	Integer type. Record the local or call sound. 0 Record the local sound 1 Record the call sound (including the uplink and downlink)
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

1. The module supports recorded audio files with a suffix ".wav" (<format>=13).
2. If the recording file's name and format are same with that of an existing file or an unknown error occurs, the module reports URC **+QAUDRIND: 0,1**.
3. If current recording is interrupted by other audio task, the module reports URC **+QAUDRIND: 0,6**.
4. If there is no space to record, the module reports URC **+QAUDRIND: 0,3**.
5. This command returns error if the file format is inconsistent with the filename extension.
6. The call sound record is prohibited in non-calling mode and the local sound record is prohibited in

calling mode.

7. For EG800G series module, only the module that supports VoLTE supports the command, please contact Quectel Technical Support for details. EG915G-EU module currently does not support the command.

Table 7: The Description of <code> in URC +QAUDRIND: 0,<code>

<code>	Meaning
0	Reserved
1	Unknown error
3	No space to record
6	Interrupted by other audio task

Example

```

AT+QAUDRD=1,"UFS:A.wav",13,0 //Record the local sound with wav format, store it in UFS.
OK
AT+QAUDRD=0 //Stop recording.
OK
AT+QAUDRD=1,"UFS:B.wav",13,1 //Record the call sound with wav format, store it in UFS.
OK
AT+QAUDRD=0 //Stop recording.
OK
    
```

12.4. AT+QPSND Play Audio File to Uplink or Downlink

This command plays local audio file to uplink or downlink. The applicable file formats include wav, pcm, amr, awb and mp3.

AT+QPSND Play Audio File to Uplink or Downlink

Test Command AT+QPSND=?	Response +QPSND: (list of supported <control>s),<file_name>,(list of supported <repeat>s),(list of supported <ulmute>s),(list of supported <dlmute>s) OK
-----------------------------------	--

Read Command AT+QPSND?	Response +QPSND: <state> OK
Write Command AT+QPSND=<control>,<file_name>,<repeat>[,<ulmute>[,<dlmute>]]	Response OK Or ERROR If error is related to ME functionality: +CME ERROR: <err> After the playing is finished: +QPSND: 0
Maximum Response Time	300 ms
Characteristics	/

Parameter

<state>	Integer type. 0 Not playing 1 Playing
<control>	Integer type. 0 Stop playing 1 Start playing
<file_name>	String type. Name of the file to be played. including file path (UFS directory by default), filename and filename extension.
<repeat>	Integer type. Repeat play or not. 0 Play only once 1 Repeat playing
<ulmute>	Integer type. Mute uplink or not. 0 Mute 1 Not mute
<dlmute>	Integer type. Mute downlink or not. 0 Mute 1 Not mute
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

1. The module only supports 8 kHz liner, mono wave format while playing audio file to uplink.
2. Downlink playback is prohibited in calling mode and uplink playback is prohibited in non-calling mode.
3. If an unknown error occurs, the module reports URC **+QPSND: 0,1**.
4. EG800G series and EG915G-EU modules only support playing local audio file, while do not support play audio file to uplink.

Example

```

AT+QPSND=1,"UFS:A.wav",0 //Play a wave file which is stored in UFS.
OK

+QPSND: 0
AT+QPSND=1,"UFS:A.wav",0,1,0 //Play a wave file to a remote subscriber when a call is ongoing.
OK

+QPSND: 0 //Finish the playing.
    
```

NOTE

AT+QPSND does not support both **<ulmute>** and **<dlmute>** to be 0 or 1 at the same time.

12.5. AT+QAUDPLAY Play Audio File to Downlink

This command plays local audio file to downlink. The applicable file formats include wav, pcm, amr, awb and mp3.

AT+QAUDPLAY Play Audio File to Downlink

Test Command AT+QAUDPLAY=?	Response +QAUDPLAY: <file_name>,(list of supported <state>s) OK
Read Command AT+QAUDPLAY?	Response +QAUDPLAY: <state> OK
Write Command AT+QAUDPLAY=<file_name>,<repea	Response OK

t>	Or ERROR If error is related to ME functionality: +CME ERROR: <err> After the playing is finished: +QAUDPLAY: 0
Maximum Response Time	300 ms
Characteristics	The command takes effects immediately. The configuration is not saved.

Parameter

<state>	Integer type. Module status. 0 Not playing 1 Playing
<file_name>	String type. Name of the file to be played, including file path (UFS directory by default), filename and filename extension.
<repeat>	Integer type. Whether to play the file repeatedly. 0 Play only once 1 Repeat
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

1. If an unknown error occurs, the module reports URC **+QAUDPIND: 0,1**.
2. If current playing is interrupted by other audio tasks, the module reports URC **+QAUDPIND: 0,6**.

12.6. AT+QAUDSTOP Stop Playing Audio File

This command stops playing the audio file.

AT+QAUDSTOP Stop Playing Audio File	
Test Command AT+QAUDSTOP=?	Response OK
Execution Command AT+QAUDSTOP	Response OK Or

	ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	/

Parameter

<err>	Error codes. For more details, please refer to Chapter 14.5 .
--------------------	--

12.7. AT+QAUDMOD Set Audio Mode

This command sets the audio mode required for the connected device.

AT+QAUDMOD Set Audio Mode	
Test Command AT+QAUDMOD=?	Response +QAUDMOD: (range of supported <mode>s) OK
Read command AT+QAUDMOD?	Response +QAUDMOD: <mode> OK
Write Command AT+QAUDMOD=<mode>	Response OK Or ERROR If error is related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect at next sound activity. The configuration is not saved.

Parameter

<mode>	Integer type. Indicate the current audio mode. 0 Handset (Not supported by EC200U series module) 1 Earphone (Not supported by EC200U series, EG800G series and EG915G-EU module) 2 Speaker (Not supported by EG800G series, EG91xU family and EG915G-EU module)
<err>	Error codes. For more details, please refer to Chapter 14.5 .

12.8. AT+QIIC IIC Read/Write

This command reads or writes to the IIC register from peripheral devices.

AT+QIIC IIC Read/Write	
Test Command AT+QIIC=?	Response +QIIC: (list of supported <rw>s),(range of supported <device>s),(range of supported <addr>s),(list of supported <bytes>s),(range of supported <value>s) OK
Write Command AT+QIIC=<rw>,<device>,<addr>,<bytes>[,<value>]	Response If the optional parameter is specified: OK If the optional parameter is omitted: +QIIC: <value> OK
Maximum Response Time	300 ms
Characteristics	The command takes effects after immediately. The configurations are not saved.

Parameter

<rw>	Integer type. 0 Write Command 1 Read Command
<device>	Integer type in Hex. 7-bit device address. Range: 0–0xff.
<addr>	Integer type in Hex. Register address. Range: 0–0xFF.
<bytes>	Integer type. 1 Read/write one byte

2 Read/write two bytes
 <value> Integer type in Hex. The written value. Range: 0–0xFFFF.

NOTE

1. This parameter is hexadecimal, please add prefix “0x” for <device>,<addr>,<value>.
2. <device> is slave device address (7 bit, not include read/write bit), please find it on device datasheet, and only support ALC5616 now.

Example

```
AT+QIIC=1, 0x1B,0x0c,1 //Read one-byte content of register value, slave address: 0x1B, register
                        address: 0x0c.
+QIIC: 0x50

OK
AT+QIIC=0, 0x1B,0x0c,1,0x5f //Write one-byte content of register value, slave address: 0x1B, register
                        address: 12. Write 0x5f.
OK
```

12.9. AT+QDAI Configure Digital Audio

This command configures the input or output format of digital audio in external Codec mode.

AT+QDAI Configure Digital Audio	
Test Command AT+QDAI=?	Response +QDAI: (list of supported <io>s),(list of supported <mode>s),(list of supported <fsync>s),(list of supported <clock>s),(list of supported <format>s),(list of supported <sample>s),(list of supported <num_slots>s),(list of supported <slot_mapping>s) OK
Read Command AT+QDAI?	Response +QDAI: <io>[,<mode>,<fsync>,<clock>,<format>,<sample>,<num_slots>,<slot_mapping>] OK
Write Command AT+QDAI=<io>[,<mode>,<fsync>,<clock>[,<format>[,<sample>[,<num_slot	Response OK Or

<code>s>,<slot_mapping>]]]]</code>	ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect after the module is rebooted. The configurations are saved.

Parameter

<io>	Integer type. Audio input/output device. 0 Digital audio input/output (User-defined external Codec) 1 Configure NAU88C10 as Digital audio input/output device 3 Configure ALC5616 as Digital audio input/output device
<mode>	Integer type. Master or slave mode. 0 Master mode (Not supported) 1 Slave mode. The module serves as slave
<fsync>	Integer type. Frame synchronization type. 0 PCM short frame synchronization 1 IIS short frame synchronization
<clock>	Integer type. Clock frequency. (Currently not supported)
<format>	Integer type. Data format. (Currently not supported)
<sample>	Integer type. Sample rate. (Currently not supported)
<num_slots>	Integer type. The total number of time slots used. (Currently not supported)
<slot_mapping>	Integer type. Which time slot is used. (Currently not supported)

NOTE

1. The digital audio format is short frame synchronization. The sampling rate supports 8–44.1kHz. The module supports 1–4 channels. The sampling bit depth is 16 bits.
2. This command is used together with **AT+QAUDSW**. After the digital audio output device and format are specified, use **AT+QAUDSW** to switch to the external Codec mode.
3. EG800G series and EG915G-EU modules do not support the command.

12.10. AT+QAUDSW Codec Switch

This command switches the built-in or external codec.

AT+QAUDSW Codec Switch	
Test Command AT+QAUDSW=?	Response +QAUDSW: (list of supported <n>s)

	OK
Read Command AT+QAUDSW?	Response +QAUDSW: <n>
	OK
Write Command AT+QAUDSW=<n>	Response OK Or ERROR If error is related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect after the module is rebooted. The configuration is saved after power down.
Reference	3GPP TS 27.007

Parameter

<n>	Integer type. 0 External codec 1 Embedded codec
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

- For external Codec, EC200U series modules are currently compatible with ALC5616 and NAU88C10. When the IIC and PCM/IIS connections on the hardware are ensured to be complete, after sending **AT+QAUDSW=0**, the module will automatically identify whether the current Codec connected is supported by the module. If the current connected Codec module is already supported, it will return **OK**. And after rebooting, the module will use the embedded register parameters to automatically control Codec during playback/recording/calling. You can also manually control the Codec register area through **AT+QIIC**; if the module does not automatically identify the current connected Codec, this command will report an error (if the module automatically identify Codec but this command still reports an error, please confirm whether the IIC on the hardware is connected). You can use **AT+QDAI** to configure to work in custom Codec mode, and then send **AT+QAUDSW=0** to switch to external Codec mode. In this case, after rebooting, the module will not automatically control the Codec, and you can use **AT+QIIC** to control the external Codec.
- EC200U series modules currently only support PCM/IIS slave mode, i.e. Codec serving as the master and the module serving as the slave. If an external Codec not automatically identified by the module is used, you need to configure PCM/IIS clock of the external Codec through **AT+QIIC** or

other means. Among them, PCM_SYNC clock needs to be equal to the sampling rate of the module playback/recording/calling. You can send **AT+QAUDCFG="urc" 1** to enable the module to report the sampling rate through URC at booting, and then the module reports the sampling rate to the host when playing/recording/calling starts through URC. $PCM_CLK = PCM_SYNC * channel\ number * sampling\ bit\ depth$. EC200U series modules support 1–4 channels, the sampling bit depth is 16 bits, and the transmission format is short frame synchronization.

3. EG800G series and EG915G-EU modules currently only support PCM master mode, i.e., Codec serving as the slave, and the modules serving as the master. The modules support channels 1–4, and the sampling bit depth is 16 bit with the transmission format is short frame synchronization. When using the Codec that cannot be automatically recognized by the modules, users can configure external Codec register through AT+QIIC commands or other means according to the corresponding Codec usage method.
4. For EC200U series module, when using the EVB provided by Quectel to debug the external Codec, jump wire is required. For the specific jump wire method, please contact Quectel Technical Support (support@quectel.com).

12.11. AT+QAUDPASW Switch Audio PA Type

This command switches the audio PA type.

AT+QAUDPASW Switch Audio PA Type	
Test Command AT+QAUDPASW=?	Response +QAUDPASW: (list of supported <n>s) OK
Read Command AT+QAUDPASW?	Response +QAUDPASW: <n> OK
Write Command AT+QAUDPASW=<n>	Response OK Or ERROR If error is related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect after the module is rebooted. The configuration is not saved.

Parameter

<n>	Integer type. PA type. 0 AB 1 D
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

EG800G series and EG915G-EU modules currently do not support the command.

12.12. AT+QTTS Play Text

This command plays text.

AT+QTTS Play Text	
Test Command AT+QTTS=?	Response +QTTS: (range of supported <mode>s), <text> ,(range of supported <device>s) OK
Read Command AT+QTTS?	Response +QTTS: <status> OK
Write Command AT+QTTS=<mode>[,<text>[,<device>]]	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err> When the text playback is completed: +QTTS: 0
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are not saved.

Parameter

<mode>	Integer type. Start/stop playing and indicate <text> format. Range: 0–2. 0 Stop playing, and <text> can be omitted 1 Start playing, and <text> uses UCS2 encoding 2 Start playing, and <text> is string type, usually ASCII characters, and is GBK encoding in Chinese
<text>	String type. Text to be played. The text format depends on <mode> . Maximum length: 548 bytes.
<device>	Integer type. TTS playing device. 0 Play TTS text through embedded/external Codec 1 Play TTS text through embedded/external Codec, and output the audio data to USB AT port 2 Play TTS text through embedded/external Codec, output the audio data to USB Modem port 3 Play TTS text through embedded/external Codec, output the audio data to USB NMEA port
<status>	Integer type. Status of the TTS player. 0 Idle 1 Busy
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

1. The module supports playing text with this command during a non-call process.
2. Text playing will be terminated during a call.
3. The module supports both text and audio playing, but asynchronously.
4. For EG800G and EG915G-EU modules, only models that support GNSS function have USB NMEA port, the value of **<device>** is supported to set to 3. Please contact Quectel Technical Support for detailed GNSS function.

Example

```

AT+QTTS=? //Test command.
+QTTS: (0-2),<text>,<device>

OK
AT+QTTS=1,"6B228FCE4F7F752879FB8FDC6A215757" //Play a UCS2 string.
OK

+QTTS: 0
AT+QTTS=2,"hello world,你好" //Play an ASCII string.
OK
    
```

```
+QTTS: 0
AT+QTTS=0 //Stop playing.
OK
```

12.13. AT+QWTTTS Play or Send Text to Far-end

This command plays or sends text to the far-end during a call.

AT+QWTTTS Play or Send Text to Far-end

Test Command AT+QWTTTS=?	Response +QWTTTS: (list of supported <ulmute>s),(list of supported <dlmute>s),(range of supported <mode>s),<text> OK
Read Command AT+QWTTTS?	Response +QWTTTS: <status> OK
Write Command AT+QWTTTS=<ulmute>,<dlmute>,<mode>[,<text>]	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err> When the text playing is completed: +QWTTTS: 0 When the text playing is interrupted by an incoming call: +QWTTTS: 4111
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is not saved.

Parameter

<ulmute>	Integer type. Unmute the uplink. 1 Unmute
----------	--

<dlmute>	Integer type. Mute the downlink. 0 Mute
<mode>	Integer type. Start/stop playing and specify <text> format. 0 Stop playing. <text> can be omitted 1 Start playing. <text> uses UCS2 encoding 2 Start playing. <text> is usually ASCII encoding in string and is GBK encoding in Chinese
<text>	Integer type. Text to be played/sent. The format depends on <mode> . The max. length is 548 bytes.
<status>	Integer type. Status of TTS player. 0 Idle 1 Busy
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

For EG800G series module, only the module that supports VoLTE supports the command, please contact Quectel Technical Support for details. EG915G-EU module currently does not support the command.

Example

```

AT+QWTTTS=? //Test command.
+QWTTTS: (1),(0),(0-2),<text>

OK
AT+QWTTTS=1,0,1,"6B228FCE4F7F752879FB8FDC6A215757" //Play UCS2 string and send it to the
OK //far-end during the call.

+QWTTTS: 0
AT+QWTTTS=1,0,2,"hello world,你好" //Play ASCII string during a call and send it to the
OK //far-end.

+QWTTTS: 0 //Text playing is completed.
AT+QWTTTS=1,0,0 //Stop playing.
OK
    
```


12.14. AT+QTTSETUP Set Parameters for TTS

This command sets the TTS speed or adjusts the volume.

AT+QTTSETUP Set Parameters for TTS	
Test Command AT+QTTSETUP=?	Response +QTTSETUP: (list of supported <mode>s),(list of supported <ID>s),(range of supported <value>s) OK
Read Command AT+QTTSETUP?	Response OK
Write Command AT+QTTSETUP=<mode>,<ID>[,<value>]	Response If <mode>=1 , all parameters are specified: OK Or ERROR If <mode>=2 , optional parameter should be omitted: +QTTSETUP: 2,<ID>,<value> If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are not saved.

Parameter

<mode>	Integer type. Write or read the parameter value. 1 Write 2 Read
<ID>	Integer type. 1 Speed 2 Volume
<value>	Integer type. Speed or volume value. If <mode>=2 , <value> is omitted in Write Command, and it means to read the current speed or volume value. Speed Range: -32768–32767. Normal speed: 0. Default value: 0. Volume Range: -32768–32767. Default value: 0.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

Example

```

AT+QTTSETUP=? //Test command.
+QTTSETUP: (1,2),(1,2),(-32768-32767)

OK
AT+QTTSETUP=1,2,0 //Set the volume to 0.
OK
    
```

12.15. AT+QAUDCFG="urc" Enable/Disable Reporting Sample Rate Through URC

AT+QAUDCFG="urc" Enable/Disable Reporting Sample Rate Through URC	
Test Command AT+QAUDCFG=?	Response ... +QAUDCFG: "urc",(list of supported <on_off>s) OK
Write Command AT+QAUDCFG="uacmode" [<on_off>]	Response If the optional parameter is omitted, query the current setting: +QAUDCFG: "uacmode",<on_off> OK If the optional parameter is specified, enable or disable reporting sample rate through URC: OK If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	/
Characteristics	This command takes effect immediately. The configuration is saved automatically.

Parameter

<on_off> Integer type. Enable or disable the module to report sample rate through URC.
 0 Disable. Sample rate is not reported through URC during playback, recording, and calling

- 1 Enable. If PCM master-slave mode is used to control external Codec, sample rate is reported through URC during playback, recording, and calling. And PCM_CLK and PCM_SYNC clock of PCM master can be configured by the reported value.

<err> Error codes. For more details, please refer to **Chapter 14.5**.

NOTE

After this command is enabled, the sample rate URC format is **+QSAMPRATE: <value>**. <value> is the sample rate used in this playback/recording/calling (unit: kHz).

12.16. AT+QICMIC Set the Uplink Gain of Microphone

This command sets the uplink gain of the microphone.

AT+ QICMIC Set the Uplink Gain of Microphone	
Test Command AT+QICMIC=?	Response +QICMIC: (range of supported <txgain>s),(range of supported<txdgain>s) OK
Read Command AT+QICMIC?	Response +QICMIC: <txgain>,<txdgain> OK
Write Command AT+QICMIC=<txgain>[,<txdgain>]	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is not saved.

Parameter

<txgain>	Integer type. Uplink analog gain. Range: 0–7. The default value may be different in different audio modes.
<txdgain>	Integer type. Uplink digital gain. Range: 0–15. The default value may be different in different audio modes.

<err> Error codes. For more details, please refer to **Chapter 14.5**

12.17. AT+QRXGAIN Set Downlink Gain

This command sets the downlink gain of playback/calling.

AT+QRXGAIN Set Downlink Gain	
Test Command AT+QRXGAIN=?	Response +QRXGAIN: (range of supported <rxgain>s) OK
Read Command AT+QRXGAIN?	Response +QRXGAIN: <rxgain> OK
Write Command AT+QRXGAIN=<rxgain>	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is not saved.

Parameter

<rxgain>	Integer type. Downlink gain. Range: 0–65535. The default value may be different in different audio modes.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

12.18. AT+QICSIDET Set the Sidetone Gain

This command sets the sidetone gain.

AT+QICSIDET Set the Sidetone Gain	
Test Command AT+QICSIDET=?	Response +QICSIDET: (range of supported <st_gain>s) OK
Read Command AT+QICSIDET?	Response +QICSIDET: <st_gain> OK
Write Command AT+QICSIDET=<st_gain>	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is not saved.

Parameter

<st_gain>	Integer type. Sidetone gain for the current mode. Range: 0–15. The default value may be different in different audio modes.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

1. This command only takes effect after using **AT+QAUDLOOP** (See *Chapter 12.2*) to disable audio loop test.
2. EG800G series and EG915G-EU modules currently do not support the command.

12.19. AT+QLDTMF Play or Stop Local DTMF Tone Playing

This command plays or stops playing the local DTMF tone string.

AT+QLDTMF Play or Stop Local DTMF Tone String.	
Test Command AT+QLDTMF=?	Response +QLDTMF: (range of supported<n>s),(list of supported <DTMF_string>s),(list of supported <y>s) OK
Write Command AT+QLDTMF=<n>,<DTMF_string>[,<y>]	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err> When the playback is completed: +QLDTMF: 5
Execution Command Stop the local DTMF tone playing AT+QLDTMF	Response OK
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configurations are not saved.

Parameter

<n>	Integer type. Indicate playing time and mute time of each DTMF. Range: 1–1000. Unit is specified by <y>.
<DTMF_string>	String type. DTMF string. Separated by commas or not. Maximum length: 39 characters (including comma). DTMF format: 0–9,*,#,A–G. with double quotes ("...").
<y>	Integer type. Time unit to control <n>. if <y> is omitted or <y>=0, unit of <n> is 0.1 second; if <y>=1, unit of <n> is 0.01 second.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

For EG800G series module, only the module that supports VoLTE supports the command, please contact Quectel Technical Support for details. EG915G-EU module currently does not support the command.

Example

```

AT+QLDTMF=? //Test Command.
+QLDTMF: (1-1000),( "0-9,*,#,A-G"),(0,1)

OK
AT+QLDTMF=2,"A,B,1,2,#" //Play A,B,1,2,#, and the playback time and mute time are both
200 ms.

OK
AT+QLDTMF //Stop playing.
OK
    
```

12.20. AT+QWDTMF Play or Send DTMF Tone to Far-end

This command plays or sends DTMF tone to far-end.

AT+QWDTMF Play or Send DTMF Tone to Far-end

<p>Test Command AT+QWDTMF=?</p>	<p>Response +QWDTMF: (list of supported <ulmute>s),(list of supported <dlmute>s),(list of supported <DTMF_string>s),(range of supported <duration>s),(range of supported <mute_duration>s)</p> <p>OK</p>
<p>Write Command AT+QWDTMF=<ulmute>,<dlmute>,<DTMF_string>,<duration>,[<mute_duration>]</p>	<p>Response OK Or ERROR</p> <p>If there is any error related to ME functionality: +CME ERROR: <err></p> <p>When the playback is completed: +QWDTMF: 5</p>

Execution Command Stop playing DTMF tone AT+QWDTMF	Response OK
Maximum Response Time	300 ms
Characteristics	/

Parameter

<ulmute>	Integer type. Unmute uplink. 1 Unmute uplink
<dlmute>	Integer type. Mute downlink. 0 Mute downlink
<DTMF_string>	String type. DTMF tone, separated by comma or not. The maximum length: 39 bytes (including comma). DTMF format: 0–9, *, #, A–G with double quotes ("...").
<duration>	Integer type. If <mute_duration> is omitted, it indicates the duration of playback and mute. If <mute_duration> is specified, it indicates the duration of playback. Range: 10–1000. Unit: ms.
<mute_duration>	Integer type. the duration of mute. Range: 10–1000. Unit: ms.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

For EG800G series module, only the module that supports VoLTE supports the command, please contact Quectel Technical Support for details. EG915G-EU module currently does not support the command.

Example

```

AT+QWDTMF=? //Test Command.
+QWDTMF: (1),(0),("0-9,*,#,A-G"),(10-1000),(10-1000)

OK
AT+QWDTMF=1,0,"1,2,3,A,B",500 //Play 1,2,3,A,B with play time of 500 ms,
mute time of 500 ms.

OK
AT+QWDTMF=1,0,"AB",100,120 //Play A,B with play time of 100 ms and mute
time of 120 ms.

OK
AT+QWDTMF //Stop playing.
OK
    
```


12.21. AT+VTS Send DTMF Tone to Remote Subscriber

This command sends ASCII characters which cause MSC to transmit DTMF tones to a remote subscriber. This command can only be operated in a voice call.

AT+VTS Send DTMF Tone to Far-end	
Test Command AT+VTS=?	Response +VTS: (list of supported <DTMF_string>s),(range of supported <duration>s) OK
Write Command AT+VTS=<DTMF_string>[,<duration>]	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	Depends on the length of <DTMF_string> and <duration>
Characteristics	The command takes effect immediately. The configurations are not saved.
Reference	3GPP TS 27.007

Parameter

<DTMF_string>	String type. ASCII characters in the set 0–9, #, *, A, B, C, D. The string should be enclosed in quotation marks ("...").
<duration>	Integer type. The duration of each DTMF tone with a tolerance of 10 milliseconds. Range: 100–1000. Default value: 300. Unit: ms. If the duration is less than the minimum time specified by the network, the actual duration will be the network specified time.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

For EG800G series module, only the module that supports VoLTE supports the command, please contact Quectel Technical Support for details. EG915G-EU module currently does not support the command.

Example

```

ATD12345678900;           //Dial
OK
AT+VTS="1"                //The remote subscriber can hear the DTMF tone
OK
AT+VTS="1234567890A"     //Send multiple tones at a time
OK
    
```

12.22. AT+QLTONE Play Local Customized Tones

This command plays a local customized tone.

AT+QLTONE Play Local Customized Tones	
Test Command AT+QLTONE=?	Response +QLTONE: (list of supported <mode>s),(range of supported <frequency>s),(range of supported <period_on>s),(range of supported <period_off>s),(range of supported <duration>s) OK
Write Command AT+QLTONE=<mode>[,<frequency>,<period_on>,<period_off>,<duration>]	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err> When the playback is completed: +QLTONE: 0
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configurations are not saved.

Parameter

<mode>	Integer type. Stop/start playing. 0 Stop playing 1 Start playing
<frequency>	Integer type. Tone frequency. Range:50–3500. Unit: Hz.

<period_on>	Integer type. Playing time of the tone. Range: 1–1000. Unit: ms.
<period_off>	Integer type. Muting time of the tone. Range: 1–1000. Unit: ms.
<duration>	Integer type. Total time of the tone. Range: 1–15300000. Unit: ms.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

For EG800G series module, only the module that supports VoLTE supports the command, please contact Quectel Technical Support for details. EG915G-EU module currently does not support the command.

Example

```

AT+QLTONE=? //Test Command.
+QLTONE: (0,1),(50-3500),(1-1000),(1-1000),(1-15300000)

OK
AT+QLTONE=1,1000,200,300,3000 //Play a 1000 Hz tone, with playing time of 200 ms and muting
time of 300 ms. Total time: 3000 ms.

OK

+QLTONE: 0
AT+QLTONE=0 //Stop playing.

OK
    
```

12.23. AT+QLTONEX Play Local Customized Tones

This command plays a local customized tone.

AT+QLTONEX Play Local Customized Tones

Test Command AT+QLTONEX=?	Response +QLTONEX: (list of supported <mode>s),<tone_list>,(range of supported <duration>s) OK
Write Command AT+QLTONEX=<mode>[,<tone_list>,<duration>]	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>

	When the playback is completed: +QLTONEX: 0
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configurations are not saved.

Parameter

<mode>	Integer type. Stop/start playing. 0 Stop playing 1 Start playing
<tone_list>	String type. Tone to be played. The format is as follows: " <frequency_min>,<frequency_max>,<period_on>,<period_off>,<tone_num> "
<frequency_min>	Integer type. The minimal frequency of the tone to be palyed. Range: 50–3500; Unit: Hz.
<frequency_max>	Integer type. The maximum frequency of the tone to be palyed. Range:50–3500; Unit: Hz.
<period_on>	Integer type. Play time of the tone. Range: 1–1000. Unit: ms.
<period_off>	Integer type. Mute time of the tone. Range: 1–1000. Unit: ms.
<tone_num>	Integer type. Number of the tone to be played. Range: 0–4.
<duration>	Integer type. Total time of the tone. Range: 10–65535. Unit: ms.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

Example

```

AT+QLTONEX=?
+QLTONEX: (0,1),<tone_list>,(10-65535)

OK
AT+QLTONEX=1,"500,1000,400,400,1","300,800,600,600,0",4000
//Play 500–1000 Hz tone, with playing time of 400 ms and muting time of 400 ms; Playing 300–800 Hz
tone, with playing time of 600 ms and mute time of 600 ms. Play cyclically until the total time reaches
4000 ms.
OK

+QLTONEX: 0
AT+QLTONEX=0 //Stop playing.
OK
    
```

NOTE

For EG800G series module, only the module that supports VoLTE supports the command, please contact Quectel Technical Support for details. EG915G-EU module currently does not support the command.

12.24. AT+QTONEDET Enable/Disable DTMF Detection

This command enables or disables DTMF detection. If this function is enabled, DTMF tones sent by the far-end will be detected and reported to the specified serial port.

AT+QTONEDET Enable/Disable DTMF Detection	
Test Command AT+QTONEDET=?	Response +QTONEDET: (list of supported <enable>s) OK
Read Command AT+QTONEDET?	Response +QTONEDET: <enable> OK
Write Command AT+QTONEDET=<enable>	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is not saved.

Parameter

<enable>	Integer type. Enable/disable DTMF detection. 0 Disable 1 Enable
<err>	Error codes. For more details, please refer to Chapter 14.5 .

NOTE

DTMF characters -ASCII:

DTMF	ASCII	DTMF	ASCII
0	48	8	56
1	49	9	57
2	50	A	65
3	51	B	66
4	52	C	67
5	53	D	68
6	54	*	42
7	55	#	35

NOTE

EG800G series and EG915G-EU modules currently do not support the command.

13 Hardware Related Commands

13.1. AT+QPOWD Power Off the Module

This command powers off the module. UE returns **OK** immediately when the command is executed. Then UE deactivates the network. After the deactivation is completed, UE outputs **POWERED DOWN** and enters into the shutdown state. The maximum time for deactivating network is 60 seconds. To avoid data loss, UE is not allowed to turn off the power before the module's STATUS pin is set to low or **POWERED DOWN** is outputted.

AT+QPOWD Power Off	
Test Command AT+QPOWD=?	Response +QPOWD: (list of supported <n>s) OK
Execution Command AT+QPOWD[=<n>]	Response OK POWERED DOWN
Maximum Response Time	300 ms
Characteristics	/

Parameter

<n>	Integer type.
0	Immediately power down
<u>1</u>	Normally power down

13.2. AT+CCLK Clock

This command sets and queries the real time clock (RTC) of the module.

AT+CCLK RTC	
Test Command AT+CCLK=?	Response OK
Read Command AT+CCLK?	Response +CCLK: <time> OK
Write Command AT+CCLK=<time>	Response OK If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.
Reference 3GPP TS 27.007	

Parameter

<time>	String type. The format is "yy/MM/dd, hh:mm:ss±zz", indicating year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range: -48 to +56). E.g. May 6 th , 1994, 22:10:00 GMT+2 hours equals to "94/05/06,22:10:00+08".
<err>	Error codes. For more details, please refer to Chapter 14.5 .

Example

```

AT+CCLK? //Query the local time.
+CCLK: "08/01/04,00:19:43+00"
OK
    
```


13.3. AT+CBC Query Battery Charge Status and Quantity

This command returns battery charge status **<bc>**s and battery charge level **<bcl>**s of the MT.

AT+CBC Query Battery Charge Status and Quantity	
Test Command AT+CBC=?	Response +CBC: (range of supported <bc>s),(range of supported <bcl>s),<voltage> OK
Execution Command AT+CBC	Response +CBC: <bc>,<bcl>,<voltage> OK If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	/
Reference 3GPP TS 27.007	

Parameter

<bc>	Integer type. Battery charge status. 0 ME is not charging 1 ME is charging 2 Charging has been finished
<bcl>	Integer type. Battery charge level. 0–100 Remaining capacity percentage
<voltage>	Battery voltage. Unit: mV.
<err>	Error codes. For more details, please refer to Chapter 14.5 .

13.4. AT+QADC Read ADC Value

This command reads the voltage value of ADC channel.

AT+QADC Read ADC Value	
Test Command AT+QADC=?	Response +QADC: (range of supported <port>s) OK
Read Command AT+QADC=<port>	Response +QADC: <port>,<value> OK
Maximum Response Time	300 ms
Characteristics	/

Parameter

<port>	Integer type. Channel number of the ADC. 0 ADC0 1 ADC1 2 ADC2 3 ADC3
<value>	Integer type. The voltage of specified ADC channel. Unit: mV.

NOTE

1. ADC3 is currently not supported by EC200U series module.
2. ADC2 and ADC3 are currently not supported by EG800G and EG91xU series module.
3. ADC0 and ADC3 are currently not supported by EG915G-EU module.

13.5. AT+QWIFISCAN Synchronously Scan Wi-Fi AP (Hotspot) Information

AT+QWIFISCAN Synchronously Scan Wi-Fi AP (Hotspot) Information	
Test Command AT+QWIFISCAN=?	Response +QWIFISCAN: (range of supported <scan_time>s),(range of supported <scan_round>s),(range of supported <scan_num>s) OK
Read Command AT+QWIFISCAN?	Response +QWIFISCAN: <scan_time>,<scan_round>,<scan_num> OK Or ERROR
Write Command AT+QWIFISCAN=<scan_time>,<scan_round>,<scan_num>	Response [+QWIFISCAN: -,,<rssival>,<mac>,<channel>] [...] OK Or ERROR
Execution Command AT+QWIFISCAN	Response [+QWIFISCAN: -,,<rssival>,<mac>,<channel>] [...] OK Or ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are not saved.

Parameter

<scan_time>	Integer type. The time required to scan a channel. Range: 4000–65000. Default value: 12000.
<scan_round>	Integer type. Scan cycle. Range: 1–3. Default value: 1.
<scan_num>	Integer type. The maximum number of APs scanned. Range: 4–30. Default value: 5.

<rssival>	Integer type. Hotspot signal strength. Range: -111 to -46.
<mac>	String in hexadecimal format. Hotspot Mac address.
<channel>	Integer type. AP channel. Range: 1–13.

NOTE

1. The Wi-Fi Scan function is optional, so **AT+QWIFISCAN** is only applicable to the module that supports such function.
2. When synchronously scanning AP information, the AP information will be reported firstly, and then **OK** is returned.
3. Execution command scans the Wi-Fi AP information using the default configuration.
4. For EG800G series and EG915G-EU modules, if scan time reaches the timeout, **ERROR** will be returned.

Example

```

AT+QWIFISCAN=?
+QWIFISCAN: (4000-65000),(1-3),(4-30)

OK
AT+QWIFISCAN? //Get the configurations of Wi-Fi AP information.
+QWIFISCAN: 12000,1,5

OK
AT+QWIFISCAN //Use the default configuration to scan Wi-Fi AP information synchronously.
+QWIFISCAN: (-,-,-91,"44:00:4D:D5:26:E1",6)
+QWIFISCAN: (-,-,-90,"44:00:4D:D5:26:E0",6)
+QWIFISCAN: (-,-,-89,"44:00:4D:D5:27:01",11)
+QWIFISCAN: (-,-,-89,"44:00:4D:D5:27:00",11)

OK
AT+QWIFISCAN=10000,1,13 //Scan Wi-Fi AP information synchronously.
+QWIFISCAN: (-,-,-88,"44:00:4D:D5:26:E0",6)
+QWIFISCAN: (-,-,-86,"44:00:4D:D5:26:E1",6)
+QWIFISCAN: (-,-,-70,"44:00:4D:D5:27:00",11)
+QWIFISCAN: (-,-,-68,"44:00:4D:D5:27:01",11)

OK
    
```

13.6. AT+QWIFISCANEX Asynchronously Scan Wi-Fi AP (Hotspot)

Information

AT+QWIFISCANEX Asynchronously Scan Wi-Fi AP (Hotspot) Information	
Test Command AT+QWIFISCANEX=?	Response +QWIFISCANEX: (range of supported <scan_time>s),(range of supported <scan_round>s),(range of supported <scan_num>s) OK
Read Command AT+QWIFISCANEX?	Response +QWIFISCANEX: <scan_time>,<scan_round>,<scan_num> Or ERROR
Write Command AT+QWIFISCANEX=<scan_time>,<scan_round>,<scan_num>	Response OK [+QWIFISCANEX: -,-,<rssival>,<mac>,<channel>] [...] Or ERROR
Execution Command AT+QWIFISCANEX	Response OK [+QWIFISCANEX: -,-,<rssival>,<mac>,<channel>] [...] Or ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are not saved.

Parameter

<scan_time> Integer type. The time required to scan a channel. Range: 4000–65000.
Default value: 12000.

<scan_round>	Integer type. Scan cycle. Range: 1–3. Default value: 1.
<scan_num>	Integer type. The maximum number of APs scanned. Range: 4–30. Default value: 5.
<rssival>	Integer type. Hotspot signal strength. Range: -111 to -46.
<mac>	String in hexadecimal format. Hotspot Mac address.
<channel>	Integer type. AP channel. Range: 1–13.

NOTE

1. The Wi-Fi Scan function is optional, so **AT+QWIFISCANEX** is only applicable to the module that supports such function.
2. When asynchronously scanning AP information, **OK** will be reported firstly, and then the AP information is returned.
3. Execution command scans the Wi-Fi AP information using the default value.
4. For EG800G series and EG915G-EU module, if scan time reaches the timeout, **+QWIFISCANEX: SCAN TIMEOUT** will be reported, and **+QWIFISCANEX: ERROR** will be reported when other error occurs.

Example

```

AT+QWIFISCANEX=?
+QWIFISCANEX: (4000-65000),(1-3),(4-30)

OK
AT+QWIFISCANEX? //Get the configurations of Wi-Fi AP information scan.
+QWIFISCANEX: 12000,1,5

OK
AT+QWIFISCANEX //Use the default configuration to scan Wi-Fi AP information asynchronously.
OK

+QWIFISCANEX: (-,-,-91,"44:00:4D:D5:26:E1",6)
+QWIFISCANEX: (-,-,-90,"44:00:4D:D5:26:E0",6)
+QWIFISCANEX: (-,-,-89,"44:00:4D:D5:27:01",11)
+QWIFISCANEX: (-,-,-89,"44:00:4D:D5:27:00",11)
AT+QWIFISCANEX=10000,1,13 //Scan Wi-Fi AP information asynchronously.
OK

+QWIFISCANEX: (-,-,-88,"44:00:4D:D5:26:E0",6)
+QWIFISCANEX: (-,-,-86,"44:00:4D:D5:26:E1",6)
+QWIFISCANEX: (-,-,-70,"44:00:4D:D5:27:00",11)
+QWIFISCANEX: (-,-,-68,"44:00:4D:D5:27:01",11)
    
```

14 Appendix and Reference

14.1. References

Table 8: Related Documents

Document Name
[1] Quectel_EC200U&EG800G&EG91xU&EG915G_Series_FILE_Application_Note

Table 9: Terms and Abbreviations

Abbreviation	Description
3GPP	3rd Generation Partnership Project
ACK	Acknowledgement
ACL	Access Control List
ADC	Analog TO Digital Converter
AID	Application Identifier
AMR	Adaptive Multi-Rate
APN	Access Point Name
ARFCN	Absolute Radio-Frequency Channel Number
ASCII	American Standard Code for Information Interchange
BCD	Binary-Coded Decimal
CBM	Cell Broadcast Message
CCH	Control Channel

CDMA	Code Division Multiple Access
CFU	Call Forwarding Unconditional
CLI	Calling Line Identification
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
CMUX	Connection Multiplexing
COL	Connected Line
COLP	Connected Line Identification Presentation
COLR	Connected Line Identification Restriction
CPT	Communication Production Technology
CS	Circuit Switched/Circuit Switching
CSD	Circuit Switched Data
DCD	Data Carrier Detection
DCE	Data Circuit-terminating Equipment
DCS	Data Coding Scheme
DNS	Domain Name Server
DTE	Data Terminal Equipment
DTMF	Dual-Tone Multifrequency
DTR	Data Terminal Ready
ECC	Emergency Call
ECT	Explicit Call Transfer
EGPRS	Enhanced General Packet Radio Service
EMM	EPS Mobility Management
EONS	Enhanced Operator Name String
EPS	Evolved Packet System

ESM	EPS Session Management
E-UTRAN	Evolved Universal Terrestrial Radio Access Network
FDD	Frequency Division Duplex
GERAN	GSM/EDGE Radio Access Network
GGSN	Gateway GPRS Support Node
GMT	Greenwich Mean Time
GPIO	General-Purpose Input/Output
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
HLR	Home Location Register
HSDPA	High Speed Downlink Packet Access
HSUPA	High Speed Uplink Packet Access
ICCID	Integrated Circuit Card Identifier
IETF	The Internet Engineering Task Force
IIC	Inter-Integrated Circuit
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
IRA	International Reference Alphabet (7-bit coded character set)
IRAT	Inter-Radio Access Technology
ISDN	Integrated Services Digital Network
LIPA	Local IP Access
LLC	Logical Link Control
LTE	Long-Term Evolution

MCU	Microprogrammed Control Unit
ME	Mobile Equipment
MO	Mobile Original
MPTY	MultiParty
MS	Mobile Station
MSC	Mobile Services Switching Center
MSISDN	Mobile Subscriber International Integrated Service Digital Network number
MT	Mobile Terminal
MTU	Maximum Transmission Unit
NAS	Non-Access Stratum
NITZ	Network Identity and Time Zone / Network Informed Time Zone
NSAPI	Network Service Access Point Identifier
NV	Non-Volatile Memory
OIR	Originating Identification Restriction
PA	Power Amplifier
PDN	Public Data Network
PDP	Packet Data Protocol
PDU	Protocol Data Unit
PIN	Personal Identification Number
PLMN	Public Land Mobile Network
PPP	Point-to-Point Protocol
PS	Packet Switch
PUK	PIN Unlock Key
QCI	QoS Class Identifier
QMI	Qualcomm MSM (Mobile Station Modem) Interface

QoS	Quality of Service
RAT	Radio Access Technology
RDI	Remote Defect Indication
RI	Ring Indicator
RPLMN	Registered PLMN
RRC	Radio Resource Control
RTC	Real-Time Clock
RTS/CTS	Request To Send/Clear To Send
RxQual	Receive Quality
SDU	Service Data Unit
SINR	Signal-to-interference-plus-noise Ratio
SMS	Short Messag Service
SMSC	Short Message Service Center
SN	Serial Number
SNDCP	SubNetwork Dependence Convergence Protocol
TA	Terminal Adapter
TDD	Time Division Duplex
TE	Terminal Equipment
TFT	Traffic Flow Template
UART	Universal Asynchronous Receiver/Transmitter
UCS2	Universal Character Set (UCS-2) Format
UDH	User Data Header
UDUB	User Determined User Busy
UE	User Equipment
UFS	User File System

UMTS	Universal Mobile Telecommunications System
UICC	Universal Integrated Circuit Card
UIM	User Identity Module
UL	Uplink
UMTS	Universal Mobile Telecommunications System
URC	Unsolicited Result Code
USB	Universal Serial Bus
(U)SIM	(Universal) Subscriber Identity Module
USSD	Unstructured Supplementary Service Data
UTRAN	Universal Terrestrial Radio Access Network
VLR	Visitor Location Register
VoLTE	Voice (voice calls) over LTE. A standard high-speed wireless communication for mobile phones and data terminals, including Internet of things devices and wearables.
WLAN	Wireless Local Area Network

14.2. AT Command Settings Storable with AT&F

Table 10: AT Command Settings Storable with AT&F

AT Command	Parameter	Default value
ATE	<value>	1
ATQ	<n>	0
ATS0	<n>	0
ATS3	<n>	13
ATS4	<n>	10
ATS5	<n>	8

ATS7	<n>	0
ATV	<value>	1
ATX	<value>	4
AT&C	<value>	1
AT&D	<value>	2
AT+CREG	<n>	0
AT+CGREG	<n>	0
AT+CMEE	<n>	1
AT+CSCS	<chset>	"GSM"
AT+CSTA	<type>	129
AT+CRC	<mode>	0
AT+CSMS	<service>	0
AT+CMGF	<mode>	0
AT+CSMP	<fo>,<vp>,<pid>,<dcs>	17,167,0,0
AT+CSDH	<show>	0
AT+CPMS	<mem1>,<mem2>,<mem3>	"ME","ME","ME"
AT+CNMI	<mode>,<mt>,<bm>,<ds>,<bfr>	2,1,0,0,0
AT+CMMS	<n>	0
AT+CVHU	<mode>	0
AT+CLIP	<n>	0
AT+COLP	<n>	0
AT+CLIR	<n>	0
AT+CSSN	<n>	0
AT+CTZR	<reporting>	0
AT+CPBS	<storage>	"SM"

AT+CGEREP	<mode>,<brf>	0,0
AT+CEREG	<n>	0
AT+CCWA	<n>	0
AT+CUUSD	<mode>	0
AT+QAUDLOOP	<enable>	0

14.3. AT Command Settings Storable with AT&W

Table 11: AT Command Settings Storable with AT&W

AT Command	Parameters	Display with AT&V
ATE	<value>	Yes
ATQ	<n>	Yes
ATS0	<n>	Yes
ATS7	<n>	Yes
ATV	<value>	Yes
ATX	<value>	Yes
AT&C	<value>	Yes
AT&D	<value>	Yes
AT+IPR	<rate>	No
AT+CREG	<n>	No
AT+CGREG	<n>	No
AT+CEREG	<n>	No

14.4. AT Command Settings Storable with ATZ

Table 12: AT Command Settings Storable with ATZ

AT Command	Parameters	Factory Defaults
ATE	<value>	1
ATQ	<n>	0
ATS0	<n>	0
ATS7	<n>	0
ATV	<value>	1
ATX	<value>	4
AT&C	<value>	1
AT&D	<value>	2
AT+CREG	<n>	0
AT+CGREG	<n>	0
AT+CEREG	<n>	0

14.5. Summary of CME ERROR Codes

Final result code **+CME ERROR: <err>** indicates an error related to mobile equipment or network. The operation is similar to **ERROR** result code. None of the commands in the same command line is executed, then neither **ERROR** nor **OK** result code shall be returned.

<err> values are mostly used by common message commands. The following table lists most of general and GRPS related **ERROR** codes. For some GSM protocol failure cause described in GSM specifications, the corresponding **ERROR** codes are not included.

Table 13: Different Coding Schemes of +CME ERROR: <err>

Code of <err>	Meaning
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
6	PH-FSIM PIN required
7	PH-FSIM PUK 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 timeout
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
901	Audio unknown error
902	Audio invalid parameters
903	Audio operation not supported
904	Audio device busy
919	Audio initialization uncompleted

14.6. Summary of CMS ERROR Codes

Final result code **+CMS ERROR: <err>** indicates an error related to mobile equipment or network. The operation is similar to ERROR result code. None of the following commands in the same command line is executed, then neither **ERROR** nor **OK** result code shall be returned.

<err> values are mostly used by common message commands:

Table 14: Different Coding Schemes of +CMS ERROR: <err>

Code of <err>	Meaning
107	Other General problems
300	ME failure
301	SMS ME reserved

302	Operation not allowed
303	Operation not supported
304	Invalid PDU mode
305	Invalid text mode
310	SIM not inserted
311	SIM pin necessary
312	PH SIM pin necessary
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
332	Network timeout
340	No +CNMA acknowledgement expected
350	Unknown
500	Unknown
510	Message blocked

14.7. Summary of URC

Table 15: Summary of URC

Index	URC Display	Meaning	Condition
1	+CREG: <stat>	Indicate registration status of the ME	AT+CREG=1
2	+CREG: <stat>[,<lac>,<ci>[,<AcT>]]	After cell neighborhood changing shows whether the network has currently indicated the registration of the ME, with location area code	AT+CREG=2
3	+CEREG: <stat>	Indicate network registration status of the ME	AT+CREG=1
4	+CEREG: <stat>[,<tac>,<ci>[,<AcT>]]	Indicate the change of the cell in E-UTRAN	AT+CEREG=2
5	+CGREG: <stat>	Indicate network registration status of the ME	AT+CGREG=1
6	+CGREG: <stat>[,<lac>],<ci>[,<AcT>],<rac>]]	Indicate network registration and location information of the ME	AT+CGREG=2
7	+CTZV: <tz>	Time zone reporting	AT+CTZR=1
8	+CTZE: <tz>,<dst>,<time>	Extended time zone reporting	AT+CTZR=2
9	+CMTI: <mem>,<index>	New message is received, and saved to memory	See AT+CNMI
10	+CMT: [<alpha>],<length><CR><LF><pdu>	New short message is received and output directly to TE (PDU mode)	See AT+CNMI
11	+CMT: <oa>[,<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data>	New short message is received and output directly to TE (Text mode)	See AT+CNMI
12	+CBM: <length><CR><LF><pdu>	New CBM is received and output directly (PDU mode)	See AT+CNMI
13	+CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data>	New CBM is received and output directly (Text mode)	See AT+CNMI
14	+CDS: <length><CR><LF><pdu>	New CDS is received and output directly (PDU mode)	See AT+CNMI

15	+CDS: <fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>	New CDS is received and output directly (Text mode)	See AT+CNMI
16	+COLP: <number>,<type>,[<subaddr>],[<satype>],[<alpha>]	The presentation of the COL (connected line) at the TE for a mobile originated call	AT+COLP=1
17	+CLIP: <number>,<type>,[subaddr],[satype],[alpha],<CLI validity>	Mobile terminating call indication	AT+CLIP=1
18	+CRING: <type>	An incoming call is indicated to the TE with unsolicited result code instead of the normal RING	AT+CRC=1
19	+CCWA: <number>,<type>,<class>,[alpha]	Call waiting indication	AT+CCWA=1,1
20	+CSSI: <code1>	Shows the +CSSI intermediate result code presentation status to the TE	AT+CSSN=1
21	+CSSU: <code2>	Shows the +CSSU unsolicited result code presentation status to the TE	AT+CSSN=<n>,1
22	+CUSD: <status>,[<rspstr>],[<dc>]]	USSD response from the network, or a network initiated operation	AT+CUSD=1
23	RDY	MT initialization is successful	N/A
24	+CFUN: 1	All function of the MT is available	N/A
25	+CPIN: <state>	SIM card pin state	N/A
26	+QIND: SMS DONE	SMS initialization finished	N/A
27	+QIND: PB DONE	Phonebook initialization finished	N/A
28	POWERED DOWN	Module power down	AT+QPOWD
29	+CGEV: REJECT <PDP_type>, <PDP_addr>	A network request for PDP activation, and was automatically rejected.	AT+CGEREP=1,1
30	+CGEV: NW REACT <PDP_type>, <PDP_addr>,[<cid>]	The network request PDP reactivation	AT+CGEREP=1,1
31	+CGEV: NW DEACT <PDP_type>, <PDP_addr>,[<cid>]	The network has forced a context deactivation	AT+CGEREP=1,1
32	+CGEV: ME DEACT	The ME has forced a context	AT+CGEREP=1,1

	<PDP_type>, <PDP_addr>, [<cid>]	deactivation.	
33	+CGEV: NW DETACH	The network has forced a Packet Domain detach.	AT+CGEREP=1,1
34	+CGEV: ME DETACH	The mobile equipment has forced a Packet Domain detach.	AT+CGEREP=1,1
35	+CGEV: NW CLASS <class>	The network has forced a change of MS class.	AT+CGEREP=1,1
36	+CGEV: ME CLASS <class>	The mobile equipment has forced a change of MS class.	AT+CGEREP=1,1
37	+CGEV: PDN ACT<cid>	Activated the context	AT+CGEREP=1,1
38	+CGEV: PDN DEACT<cid>	Deactivated the context	AT+CGEREP=1,1
39	+USIM: 0	Use SIM card	N/A
40	+USIM: 1	Use USIM card	N/A
41	+QIND: "csq",<rsqi>,<ber>	Indicate signal strength and channel bit error rate changes	See AT+QINDCFG
42	+QIND: "smsfull",<storage>	Indicates that the short message storage is full	See AT+QINDCFG
43	+QIND: "act",<actvalue>	Indicate network access technology changes	See AT+QINDCFG
44	+QIND: airplanestatus,<status>	After the flight mode control is turned on, it indicates the W_DISABLE# pin to change.	See AT+QCFG="airplanecontrol"
45	+QSIMSTAT: <enable>,<inserted_status>	Indicate (U) SIM card insertion and removal status	See AT+QSIMSTAT
46	+QCSQ: <sysmode>[,<value1>[,<value2>[,<value3>[,<value4>]]]]	When the signal strength changes, the MT actively reports the current signal strength through this URC.	See AT+QCSQ
47	+QNETDEVSTATUS: <status>	Indicate the connection status of the network card	See AT+QNETDEVCTL
48	+QAUDRIND: 0,<code>	Indicate the reason for the failure of audio recording	See AT+QAUDRD
49	+QAUDPIND: 0,1/+QAUDPIND: 0,6	Indicate the reason for the failure of audio playing.	See AT+QAUDPLAY

14.8. SMS Character Sets Conversions

In 3GPP TS 23.038 DCS (Data Coding Scheme) defined three kinds of alphabets in SMS, GSM 7-bit default alphabet, 8-bit data and UCS2 (16-bit). **AT+CSMP** can set the DCS in text mode (**AT+CMGF=1**). In text mode, DCS (Data Coding Scheme) and **AT+CSCS** determine the way of SMS text input or output.

Table 16: The Way of SMS Text Input or Output

DCS	AT+CSCS	The Way of SMS Text Input or Output
GSM 7-bit	GSM	Input or output GSM character sets.
GSM 7-bit	IRA	Input or output IRA character sets. Input: UE will convert IRA characters to GSM characters. Output: UE will convert GSM characters to IRA characters.
GSM 7-bit	UCS2	Input or output a hex string similar to PDU mode. So only support characters 0–9 and A–F. Input: UE will convert the UCS2 hex string to GSM characters. Output: UE will convert the GSM characters to UCS2 hex string.
UCS2	-	Ignore the value of AT+CSCS , input or output a hex string similar to PDU mode. So only support characters 0–9 and A–F.
8-bit	-	Ignore the value of AT+CSCS , input or output a hex string similar to PDU mode. So only support characters 0–9 and A–F.

When DCS = GSM 7-bit, the input or output needs conversion. The detailed conversion tables are shown as below.

Table 17: The Input Conversions Table (DCS = GSM 7 bit and AT+CSCS="GSM")

	0	1	2	3	4	5	6	7
0	00	10	20	30	40	50	60	70
1	01	11	21	31	41	51	61	71
2	02	12	22	32	42	52	62	72
3	03	13	23	33	43	53	63	73
4	04	14	24	34	44	54	64	74
5	05	15	25	35	45	55	65	75
6	06	16	26	36	46	56	66	76

7	07	17	27	37	47	57	67	77
8	08	18	28	38	48	58	68	78
9	09	19	29	39	49	59	69	79
A	0A	Submit	2A	3A	4A	5A	6A	7A
B	0B	Cancel	2B	3B	4B	5B	6B	7B
C	0C	1C	2C	3C	4C	5C	6C	7C
D	0D	1A	2D	3D	4D	5D	6D	7D
E	0E	1E	2E	3E	4E	5E	6E	7E
F	0F	1F	2F	3F	4F	5F	6F	7F

Table 18: The Output Conversions Table (DCS = GSM 7-bit and AT+CSCS="GSM")

	0	1	2	3	4	5	6	7
0	00	10	20	30	40	50	60	70
1	01	11	21	31	41	51	61	71
2	02	12	22	32	42	52	62	72
3	03	13	23	33	43	53	63	73
4	04	14	24	34	44	54	64	74
5	05	15	25	35	45	55	65	75
6	06	16	26	36	46	56	66	76
7	07	17	27	37	47	57	67	77
8	08	18	28	38	48	58	68	78
9	09	19	29	39	49	59	69	79
A	0D0A		2A	3A	4A	5A	6A	7A
B	0B		2B	3B	4B	5B	6B	7B
C	0C	1C	2C	3C	4C	5C	6C	7C
D	0D	1A	2D	3D	4D	5D	6D	7D

E	0E	1E	2E	3E	4E	5E	6E	7E
F	0F	1F	2F	3F	4F	5F	6F	7F

Table 19: GSM Extended Characters

	0	1	2	3	4	5	6	7
0					1B40			
1								
2								
3								
4		1B14						
5								
6								
7								
8			1B28					
9			1B29					
A								
B								
C				1B3C				
D				1B3D				
E				1B3E				
F			1B2F					

Table 20: The Input Conversions Table (DCS = GSM 7-bit and AT+CSCS="IRA")

	0	1	2	3	4	5	6	7
0		20	20	30	00	50	20	70
1	20	20	21	31	41	51	61	71

2	20	20	22	32	42	52	62	72
3	20	20	23	33	43	53	63	73
4	20	20	02	34	44	54	64	74
5	20	20	25	35	45	55	65	75
6	20	20	26	36	46	56	66	76
7	20	20	27	37	47	57	67	77
8	backspace	20	28	38	48	58	68	78
9	20	20	29	39	49	59	69	79
A	0A	Submit	2A	3A	4A	5A	6A	7A
B	20	Cancel	2B	3B	4B	1B3C	6B	1B28
C	20	20	2C	3C	4C	1B2F	6C	1B40
D	0D	20	2D	3D	4D	1B3E	6D	1B29
E	20	20	2E	3E	4E	1B14	6E	1B3D
F	20	20	2F	3F	4F	11	6F	20

Table 21: IRA Extended Characters

	A	B	C	D	E	F
0	20	20	20	20	7F	20
1	40	20	20	5D	20	7D
2	20	20	20	20	20	08
3	01	20	20	20	20	20
4	24	20	5B	20	7B	20
5	03	20	0E	20	0F	20
6	20	20	1C	5C	1D	7C
7	5F	20	09	20	20	20
8	20	20	20	0B	04	0C

9	20	20	1F	20	05	06
A	20	20	20	20	20	20
B	20	20	20	20	20	20
C	20	20	20	5E	07	7E
D	20	20	20	20	20	20
E	20	20	20	20	20	20
F	20	60	20	1E	20	20

Table 22: The Output Conversions Table (DCS = GSM 7-bit and AT+CSCS="IRA")

	0	1	2	3	4	5	6	7
0	40	20	20	30	A1	50	BF	70
1	A3	5F	21	31	41	51	61	71
2	24	20	22	32	42	52	62	72
3	A5	20	23	33	43	53	63	73
4	E8	20	A4	34	44	54	64	74
5	E9	20	25	35	45	55	65	75
6	F9	20	26	36	46	56	66	76
7	EC	20	27	37	47	57	67	77
8	F2	20	28	38	48	58	68	78
9	C7	20	29	39	49	59	69	79
A	0D0A		2A	3A	4A	5A	6A	7A
B	D8		2B	3B	4B	C4	6B	E4
C	F8	C6	2C	3C	4C	D6	6C	F6
D	0D	E6	2D	3D	4D	D1	6D	F1
E	C5	DF	2E	3E	4E	DC	6E	FC
F	E5	C9	2F	3F	4F	A7	6F	E0

Table 23: GSM Extended Characters (ISO-8859-1/Unicode)

	0	1	2	3	4	5	6	7
0					7C			
1								
2								
3								
4		5E						
5								
6								
7								
8			7B					
9			7D					
A								
B								
C				5B				
D				7E				
E				5D				
F			5C					

Because the low 8 bit of UCS2 character is the same as the IRA character:

The conversion table of DCS = GSM-7 bit and **AT+CSCS="UCS2"** is similar to **AT+CSCS="IRA"**.
 The conversion table of fmt = GSM-7 bit and **AT+CSCS="GSM"** is similar to **AT+CSCS="GSM"**.
 The conversion table of fmt = GSM-7 bit and **AT+CSCS="IRA"** is similar to **AT+CSCS="IRA"**.
 The conversion table of fmt = GSM-7 bit and **AT+CSCS="UCS2"** is similar to **AT+CSCS="IRA"**.

The difference is the way of SMS text input or output. Please refer to **Table 16** for more details.

14.9. Release Cause Text List of AT+CEER

Table 24: List of Location ID List

Location ID	Meaning
0	CS internal cause
1	CS network cause
2	CS network reject
3	PS internal cause
4	PS network cause
5	PS LTE cause
6	PS LTE local cause

Table 25: List of Cause

CS Internal Cause	Meaning
-1	No cause information available (default)
0	Phone is offline
21	No service available
25	Network release, no reason given
27	Received incoming call
29	Client ended call
34	UIM not present
35	Access attempt already in progress
36	Access failure, unknown source
38	Concur service not supported by network
39	No response received from network

45	GPS call ended for user call
46	SMS call ended for user call
47	Data call ended for emergency call
48	Rejected during redirect or handoff
100	Lower-layer ended call
101	Call origination request failed
102	Client rejected incoming call
103	Client rejected setup indication
104	Network ended call
105	No funds available
106	No service available
108	Full service not available
109	Maximum packet calls exceeded
301	Video connection lost
302	Video call setup failure
303	Video protocol closed after setup
304	Video protocol setup failure
305	Internal error
CS Network Cause	Meaning
1	Unassigned/unallocated number
3	No route to destination
6	Channel unacceptable
8	Operator determined barring
16	Normal call clearing
17	User busy

18	No user responding
19	User alerting, no answer
21	Call rejected
22	Number changed
26	Non selected user clearing
27	Destination out of order
28	Invalid/incomplete number
29	Facility rejected
30	Response to status enquiry
31	Normal, unspecified
34	No circuit/channel available
38	Network out of order
41	Temporary failure
42	Switching equipment congestion
43	Access information discarded
44	Requested circuit/channel not available
47	Resources unavailable, unspecified
49	Quality of service unavailable
50	Requested facility not subscribed
55	Incoming calls barred within the CUG
57	Bearer capability not authorized
58	Bearer capability not available
63	Service/option not available
65	Bearer service not implemented
68	ACM >= ACM max

69	Requested facility not implemented
70	Only RDI bearer is available
79	Service/option not implemented
81	Invalid transaction identifier value
87	User not member of CUG
88	Incompatible destination
91	Invalid transit network selection
95	Semantically incorrect message
96	Invalid mandatory information
97	Message non-existent/not implemented
98	Message type not compatible with state
99	IE non-existent/not implemented
100	Conditional IE error
101	Message not compatible with state
102	Recovery on timer expiry
111	Protocol error, unspecified
127	Interworking, unspecified
CS Network Reject	Meaning
2	IMSI unknown in HLR
3	Illegal MS
4	IMSI unknown in VLR
5	IMEI not accepted
6	Illegal ME
7	GPRS services not allowed
8	GPRS and non GPRS services not allowed

9	MS identity cannot be derived
10	Implicitly detached
11	PLMN not allowed
12	Location area not allowed
13	Roaming not allowed
14	GPRS services not allowed in PLMN
15	No suitable cells in location area
16	MSC temporary not reachable
17	Network failure
20	MAC failure
21	Synch failure
22	Congestion
23	GSM authentication unacceptable
32	Service option not supported
33	Requested service option not subscribed
34	Service option temporary out of order
38	Call cannot be identified
40	No PDP context activated
95	Semantically incorrect message
96	Invalid mandatory information
97	Message type non-existent
98	Message type not compatible with state
99	Information element non-existent
101	Message not compatible with state
161	RR release indication

162	RR random access failure
163	RRC release indication
164	RRC close session indication
165	RRC open session failure
166	Low level failure
167	Low level failure no redial allowed
168	Invalid SIM
169	No service
170	Timer T3230 expired
171	No cell available
172	Wrong state
173	Access class blocked
174	Abort message received
175	Other cause
176	Timer T303 expired
177	No resources
178	Release pending
179	Invalid user data
PS Internet Cause	Meaning
0	Invalid connection identifier
1	Invalid NSAPI
2	Invalid primary NSAPI
7	PDP establish timeout
3	Invalid field
4	SNDCCP failure

5	RAB setup failure
6	No GPRS context
8	PDP activate timeout
9	PDP modify timeout
10	PDP inactive max timeout
11	PDP lower layer error
12	PDP duplicate
13	Access technology change
14	PDP unknown reason
PS Network Cause	Meaning
25	LLC or SNDSCP failure
26	Insufficient resources
27	Missing or unknown APN
28	Unknown PDP address or PDP type
29	User authentication failed
30	Activation rejected by GGSN
31	Activation rejected, unspecified
32	Service option not supported
33	Requested service option not subscribed
34	Service option temporary out of order
35	NSAPI already used (not sent)
36	Regular deactivation
37	QoS not accepted
38	Network failure
39	Reactivation required

40	Feature not supported
41	Semantic error in the TFT operation
42	Syntactical error in the TFT operation
43	Unknown PDP context
44	PDP context without TFT already activated
45	Semantic errors in packet filter
46	Syntactical errors in packet filter
81	Invalid transaction identifier
95	Semantically incorrect message
96	Invalid mandatory information
97	Message non-existent/not implemented
98	Message type not compatible with state
99	IE non-existent/not implemented
100	Conditional IE error
101	Message not compatible with state
111	Protocol error, unspecified
PS LTE Cause	Meaning
8	Operator determined barring
26	Insufficient Resources
27	Missing or unknown APN
28	Unknown PDP address or PDP type
29	User Authentication failure
30	Activation rejected by Servicing GW or PDN GW
31	Activation rejected, unspecified
32	Service option not supported

33	Requested service option not subscribed
34	Service option temporarily out of order
35	PTI already In use
36	Regular deactivation
37	QoS not accepted
38	Network failure
39	Reactivation required
40	Feature not supported
41	Semantic error in the TFT operation
42	Syntactical error in the TFT operation
43	Unknown Bearer context
44	Semantic errors in packet filter
45	Syntactical errors in packet filter
46	Bearer Context without TFT already Active
47	PTI mismatch
49	PDN disconnected, not allowed
50	PDN type IPV4 only Allowed
51	PDN type IPV6 only Allowed
52	Single ADR bearers only Allowed
53	ESM info not received
54	PDN connection does not exist
55	Multiple PDN connection for given APN not allowed
56	Collision with network init request
59	Unsupported QCI value
81	Invalid PTI value

95	Systematically invalid message
96	Invalid mandatory information
97	Message non-existent/not implemented
98	Message type not compatible with state
99	Info element non existent
100	Conditional IE error
101	Message type not compatible with state
111	Protocol error, unspecified
112	APN restrict value incompatible with ACT context
PS LTE Local Cause	Meaning
3	Illegal UE
6	Illegal ME
7	EPS services not allowed
9	UE id can't be driven by network
10	Implicitly Detached
11	PLMN not allowed
12	Tracking area not allowed
13	Roaming not allowed in this tracking area
15	No Suitable cells in tracking area
18	CS Domain Not available
25	Not Authorized for this CSG
38	CS fallback call EST not allowed
39	CS domain temporarily not allowed
43	Unknown EPS bearer context
256	Released AT RRC

257	Signal Connection Released
258	EMM detached
259	EMM attach failed
260	EMM attach started
261	NAS service request failed
262	ESM activate dedicated bearer reactivated by network
263	Lower layer failure
264	Lower layer failure
265	Network activate dedicated bearer with ID of deferred bearer
266	BAD OTA message
267	DS rejected the call
268	Context transferred due to IRAT
269	DS explicit deactivation
270	ESM MSGR failure
271	Local Cause not available
272	Rejected due to connected state
273	NAS Service request failed, no throttle
274	ACL failure
275	NAS Service request failed, DS disallow
276	EMM T3417 expired
277	EMM T3417 ext expired
278	NAS LRRC UL data CNF failure TXN
279	NAS LRRC UL data CNF failure HO
280	NAS LRRC UL data CNF failure CONN release
281	NAS LRRC UL data CNF failure RLF

282	NAS LRRRC UL data CNF failure control Not CONN
283	NAS LRRRC connection EST success
284	NAS LRRRC connection EST failure
285	NAS LRRRC connection EST failure, aborted
286	NAS LRRRC connection EST failure, access barrer
287	NAS LRRRC connection EST failure, CELL resel
288	NAS LRRRC connection EST failure, config failure
289	NAS LRRRC connection EST failure, timer expired
290	NAS LRRRC connection EST failure, link failure
291	NAS LRRRC connection EST failure, not camped
292	NAS LRRRC connection EST failure, SI failure
293	NAS LRRRC connection EST failure, CONN reject
294	NAS LRRRC connection release normal
295	NAS LRRRC connection release RLF
296	NAS LRRRC connection release CRE failure
297	NAS LRRRC connection release QOS during CRE
298	NAS LRRRC connection release aborted
299	NAS LRRRC connection release SIB read error
300	NAS LRRRC connection release aborted IRAT success
301	NAS Reject LRRRC radio link failure
302	NAS service request failure, LTE network reject
303	NAS detach with reattach, LTE network detach
304	NAS detach without reattach, LTE network detach
