



# SIM7022 Series\_ AT Command Manual

LPWA Module

## **SIMCom Wireless Solutions Limited**

SIMCom Headquarters Building, Building 3, No. 289 Linhong  
Road, Changning District, Shanghai P.R. China

Tel: 86-21-31575100

[support@simcom.com](mailto:support@simcom.com)

[www.simcom.com](http://www.simcom.com)

<b>Document Title:</b>	SIM7022 Series_AT Command Manual
<b>Version:</b>	1.03
<b>Date:</b>	2022.05.31
<b>Status:</b>	Released

## GENERAL NOTES

SIMCOM OFFERS THIS INFORMATION AS A SERVICE TO ITS CUSTOMERS, TO SUPPORT APPLICATION AND ENGINEERING EFFORTS THAT USE THE PRODUCTS DESIGNED BY SIMCOM. THE INFORMATION PROVIDED IS BASED UPON REQUIREMENTS SPECIFICALLY PROVIDED TO SIMCOM BY THE CUSTOMERS. SIMCOM HAS NOT UNDERTAKEN ANY INDEPENDENT SEARCH FOR ADDITIONAL RELEVANT INFORMATION, INCLUDING ANY INFORMATION THAT MAY BE IN THE CUSTOMER'S POSSESSION. FURTHERMORE, SYSTEM VALIDATION OF THIS PRODUCT DESIGNED BY SIMCOM WITHIN A LARGER ELECTRONIC SYSTEM REMAINS THE RESPONSIBILITY OF THE CUSTOMER OR THE CUSTOMER'S SYSTEM INTEGRATOR. ALL SPECIFICATIONS SUPPLIED HEREIN ARE SUBJECT TO CHANGE.

## COPYRIGHT

THIS DOCUMENT CONTAINS PROPRIETARY TECHNICAL INFORMATION WHICH IS THE PROPERTY OF SIMCOM WIRELESS SOLUTIONS LIMITED. COPYING, TO OTHERS AND USING THIS DOCUMENT, ARE FORBIDDEN WITHOUT EXPRESS AUTHORITY BY SIMCOM. OFFENDERS ARE LIABLE TO THE PAYMENT OF INDEMNIFICATIONS. ALL RIGHTS RESERVED BY SIMCOM IN THE PROPRIETARY TECHNICAL INFORMATION, INCLUDING BUT NOT LIMITED TO REGISTRATION GRANTING OF A PATENT, A UTILITY MODEL OR DESIGN. ALL SPECIFICATION SUPPLIED HEREIN ARE SUBJECT TO CHANGE WITHOUT NOTICE AT ANY TIME.

### **SIMCom Wireless Solutions Limited**

SIMCom Headquarters Building, Building 3, No. 289 Linhong Road, Changning District, Shanghai P.R. China

Tel: +86 21 31575100

Email: [simcom@simcom.com](mailto:simcom@simcom.com)

### **For more information, please visit:**

<https://www.simcom.com/download/list-863-en.html>

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

<https://www.simcom.com/ask/> or email to: [support@simcom.com](mailto:support@simcom.com)

Copyright © 2022 SIMCom Wireless Solutions Limited All Rights Reserved.

# Version History

Version	Date	Chapter	What is new
V1.00	2021.05.19	All	New version
V1.01	2021.08.12	4.2.29 AT+DMCONFIG	Removed
		6 AT Commands for Ocean Connect	Removed
		7 AT Commands for OneNET	Removed
V1.02	2021.12.03	AT\$ Commands to AT+	Modified
	2021.12.03	6.2.10 +QCMTREC V	Add <data_len> parameter
	2021.12.13	4.2.39 AT+QCADC	Add AT+QCADC?
	2022.4.12	8	Added the command about mqtt.
	2022.4.13	9	Added the command about TCPIP.
	2022.04.13	3.2.52 AT+SIMEI 3.2.53 AT+COPN 3.2.54 AT+CNBP 3.2.55 AT+CPSI 3.2.56 AT+CGDSCONT	Added SIMEI/COPN/CNBP/CPSI/CGDSC ONT 指令
	2022.04.28	9	Modify the command about TCPIP
	2022.04.28	Chapter 10, 11	Add the command about HTTP and LWM2M.
	2022.04.29	3.2.57 AT+CICCID 3.2.58 AT+SPIC	Added CICCID/SPIC
	2022.05.05	Chapter 5	Delete the command about socket
V1.03	2022.07.13		Add command for CoAP\FOTA,fix +LWEXECUTERSP

# Contents

<b>Version History .....</b>	<b>3</b>
<b>Contents .....</b>	<b>4</b>
<b>1 Introduction .....</b>	<b>11</b>
1.1 Scope of the document .....	11
1.2 Related documents .....	11
1.3 Conventions and abbreviations .....	11
1.4 AT Command syntax .....	11
1.4.1 Basic syntax .....	12
1.4.2 S Parameter syntax .....	12
1.4.3 Extended Syntax .....	12
1.4.4 Combining AT commands on the same Command line .....	12
1.4.5 Entering successive AT commands on separate lines .....	13
1.5 AT Command Responses .....	13
1.6 AT Command definitions .....	14
1.7 3GPP Alignment .....	14
1.8 Supported character sets .....	14
1.9 Definitions .....	14
1.9.1 Parameter Saving Mode .....	14
1.9.2 Max Response Time .....	15
<b>2 AT Commands According to V.25TER .....</b>	<b>17</b>
2.1 Overview of AT Commands According to V.25TER .....	17
2.2 Detailed Description of AT Commands According to V.25TER .....	17
2.2.1 ATE Set Command Echo Mode .....	17
9.1 0 Echo mode off .....	17
9.2 1 Echo mode on .....	18
2.2.2 ATI Display Product Identification Information .....	18
<b>3 AT Commands According to 3GPP TS 27.007 .....</b>	<b>19</b>
3.1 Overview of AT Command According to 3GPP TS 27.007 .....	19
3.2 Detailed Descriptions of AT Command According to 3GPP TS 27.007 .....	20
3.2.1 AT+CGMI Request Manufacturer Identification .....	20
3.2.2 AT+CGMM Request Model Identification .....	21
3.2.3 AT+CGMR Request TA Revision Identification of Software Release .....	21
3.2.4 AT+CGSN Request Product Serial Number Identification .....	22
3.2.5 AT+CREG Network Registration .....	23
3.2.6 AT+CEREG EPS Network Registration Status .....	25
3.2.7 AT+CSCON Signalling Connection Status .....	27

3.2.8 AT+CSQ	Signal Quality Report	29
3.2.9 AT+CESQ	Get Extended Signal Quality	29
3.2.10 AT+CGPADDR	Show PDP Address	30
3.2.11 AT+COPS	Operator Selection	32
3.2.12 AT+CGATT	Attach or Detach from GPRS Service	34
3.2.13 AT+CGACT	PDP Context Activate or Deactivate	36
3.2.14 AT+CIMI	Request International Mobile Subscriber Identity	37
3.2.15 AT+CGDCONT	Define PDP Context	38
3.2.16 AT+CFUN	Set Phone Functionality	42
3.2.17 AT+CMEE	Report Mobile Equipment Error	43
3.2.18 AT+CCLK	Return Current Date & Time	44
3.2.19 AT+CPSMS	Power Saving Mode Setting	45
3.2.20 AT+CEDRXS	Extended-DRX Setting	47
3.2.21 AT+CEDRXRDP	eDRX Read Dynamic Parameters	49
3.2.22 AT+CTZR	Time Zone Reporting	50
3.2.23 AT+CTZU	Automatic Time Zone Update	52
3.2.24 AT+CIPCA	Initial PDP context activation	52
3.2.25 AT+CGAPNRC	APN Rate Control	54
3.2.26 AT+CSODCP	Sending of Originating Data via the Control Plane	55
3.2.27 AT+CRTDCP	Reporting of Terminating Data via the Control Plane	57
3.2.28 AT+CGEREP	Packet Domain Event Reporting	58
3.2.29 +CGEV	Indicate EPS PDN Connection and Bearer Resources Operations Status	59
3.2.30 AT+CGCONTRDP	PDP Context Read Dynamic Parameters	60
3.2.31 AT+CGAUTH	Define PDP Context Authentication Parameters	63
3.2.32 AT+CPIN	Enter PIN	64
3.2.33 AT+CLCK	Facility Lock	65
3.2.34 AT+CMOLR	Mobile Originated Location Request	66
3.2.35 AT+CPWD	Change Password	69
3.2.36 AT+CPINR	Remaining PIN Retries	70
3.2.37 AT+CCHO	Open Logical Channel	71
3.2.38 AT+CCHC	Close logical channel	72
3.2.39 AT+CGLA	Generic UICC Logical Channel Access	73
3.2.40 AT+CMTLR	Mobile Terminated Location Request Notification	74
3.2.41 AT+CMTLRA	Mobile Terminated Location Request Disclosure Allowance	75
3.2.42 AT+CRCES	Reading Coverage Enhancement Status	76
3.2.43 AT+CRSM	Restricted SIM Access	77
3.2.44 AT+CSIM	Generic SIM Access	78
3.2.45 AT+CGDATA	Enter Data State	79
3.2.46 AT+CCIOPT	IoT Optimization Configuration	80
3.2.47 AT+CGCMOD	PDP Context Modify	82
3.2.48 AT+CGEQOS	Define EPS Quality of Service	83
3.2.49 AT+CGEQOSRDP	EPS Quality of Service Read Dynamic Parameters	84
3.2.50 AT+CGTFT	Traffic Flow Template	86
3.2.51 AT+IPR	Set UE Baud Rate	89
3.2.52 AT+SIMEI	Set the IMEI for the module	91
3.2.53 AT+COPN	Read operator names	92

3.2.54 AT+CNBP Preferred band selection .....	93
3.2.55 AT+CPSI Inquiring UE system information .....	95
3.2.56 AT+CGDSCONT Define Secondary PDP Context .....	97
3.2.57 AT+CICCID Read ICCID from SIM card .....	99
3.2.58 AT+SPIC Times remain to input SIM PIN/PUK .....	100
<b>4 AT Command for General Commands .....</b>	<b>101</b>
4.1 Overview of AT Commands for General .....	101
4.2 Detailed Descriptions of Commands .....	102
4.2.1 AT+QCBAND Set Supported Network and Bands .....	102
4.2.2 AT+QCLOGDBVER Database Version Information .....	103
4.2.3 AT+QCCFG UE Extended Configuration .....	103
4.2.4 AT+QCPING Test IP Network Connectivity to a Remote Host .....	105
4.2.5 AT+QCFREQ Lock or Unlock Cell .....	107
4.2.6 AT+QCRMFLMN Remove FPLMN in NVM or SIM .....	108
4.2.7 AT+QCATTBEARER Configure the PDN Info Request to Establish .....	109
4.2.8 AT+QCSENDDATA Send Data Via Control Plane or User Plane .....	110
4.2.9 +RECVNONIP Indicate Downlink NON-IP Data .....	111
4.2.10 AT+QCPMUCFG Set PMU mode .....	111
4.2.11 AT+QCSMSEND Send one SMS .....	112
4.2.12 AT+QCCGSN Sets the IMEI and SN .....	113
4.2.13 AT+QCRFSTAT Shows the Status of RF Calibration .....	113
4.2.14 AT+QCRST Restart the Chip .....	114
4.2.15 AT+QCPSMR Report the Power Saving Mode Status .....	114
4.2.16 AT+QCPLMNS Used to trigger a PLMN .....	115
4.2.17 AT+QCCESQS Controls the Extended Signal Quality Change Event Reporting .....	116
4.2.18 AT+QCSTATUS Returns Some Key Parameter in UE Side .....	117
4.2.19 AT+QCICCID Causes the TA to Return the ICCID of the UICC .....	119
4.2.20 AT+QCBCINFO Return the Basic Serving Cell Information .....	120
4.2.21 AT+QCDNS Get the IP Address for a Specific URL .....	122
4.2.22 AT+QCDNSCFG Set the Default DNS Addresses Configuration .....	122
4.2.23 AT+QCEMMTIME Report and Get the Emm Time State .....	123
4.2.24 AT+QCPCFG Set Plat Configure .....	124
4.2.25 AT+QCSLEEP Power Consumption Test .....	125
4.2.26 AT+QCSIMSLEEP Set UE to Allow SIM Card Sleep for Power Consumption .....	126
4.2.27 AT+QCCGSNLOCK Set Lock Flag for IMEI and SN .....	127
4.2.28 AT+QCSAVEFAC Saves Related Regions to Default Reliable Region .....	128
4.2.29 AT+QCTASKINFO Returns All the Task's Information .....	128
4.2.30 AT+QCTASKHISTINFO Shows Most Recent Tasks' Scheduling History .....	129
4.2.31 AT+QCSHOWMEM Shows Current Heap Memory Usage .....	129
4.2.32 AT+QCSYSTEST Triggers a Test Feature .....	129
4.2.33 AT+QCVOTECHK Analyze the Reason of Sleep Failure .....	130
4.2.34 AT+QCURC Close/Open URC Report .....	131
4.2.35 AT+QCPTWEDRXS Control Whether the UE .....	132
4.2.36 +QCPIN Indicate SIM PIN State .....	133
4.2.37 +QCPCFUN Power on status URC report .....	134

4.2.38 +QCPADDR	Print PDP Address .....	134
4.2.39 AT+QCADC	Read ADC .....	135
4.2.40 AT+QCSWC	Set the UE Operation SIM Counter .....	136
4.2.41 AT+QCIPR	Operate the Baud Rate of UE .....	137
4.2.42 AT+QCNPICFG	Operating NPI .....	137
4.2.43 AT+QCPRMODE	Control NPI production mode .....	138
4.2.44 AT+QCLEDMODE	Enable the Netlight Function .....	139
4.2.45 AT+QCPOWERCLASS	Sets the Band Power Class .....	140
<b>5 AT Commands for MQTT</b>	<b>.....</b>	<b>142</b>
5.1	Overview .....	142
5.2	Detailed Descriptions of Commands .....	142
5.2.1 AT+QCMTCFG	Creates a MQTT Client .....	142
5.2.2 AT+QCMTOPEN	Open a Network for MQTT Client .....	146
5.2.3 AT+QCMTCLOSE	Send MQTT Close Packet .....	146
5.2.4 AT+QCMTCONN	Send MQTT Subscribe Packet .....	147
5.2.5 AT+QCMTDISC	Send MQTT Disconnect Packet .....	148
5.2.6 AT+QCMTSUB	Send MQTT Subscribe Packet .....	149
5.2.7 AT+QCMTUNS	Send MQTT Unsubscribe Packet .....	149
5.2.8 AT+QCMTPUB	Send MQTT Publish Packet .....	150
5.2.9 +QCMTSTAT	Receive Data from MQTT Server .....	151
5.2.10 +QCMTREC V	Receive Data from MQTT Server .....	151
<b>6 AT Commands for HTTP</b>	<b>.....</b>	<b>153</b>
6.1	Overview .....	153
6.2	Detailed Descriptions of Commands .....	153
6.2.1 AT+HTTPCREATE	Creates a Http Client .....	153
6.2.2 AT+HTTPCON	Create a Socket and Connects with a Http Server .....	154
6.2.3 AT+HTTPDESTROY	Close a Socket .....	155
6.2.4 AT+HTTPSEND	SendData to the Http Server .....	155
6.2.5 +HTTPRESPH	Represent response header .....	156
6.2.6 +HTTPRESPC	Represent response content .....	157
6.2.7 +HTTPERR	Indicate of error Message .....	158
<b>7 AT Commands for MQTT(S)</b>	<b>.....</b>	<b>159</b>
7.1	Overview .....	159
7.2	Detailed Description of Commands .....	159
7.2.1 AT+CMQTTSTART	Start MQTT service .....	159
7.2.2 AT+CMQTTSTOP	Stop MQTT service .....	160
7.2.3 AT+CMQTTACCQ	Acquire a client .....	161
7.2.4 AT+CMQTTREL	Release a client .....	163
7.2.5 AT+CMQTTSSLCFG	Set the SSL context (only for SSL/TLS MQTT) .....	164
7.2.6 AT+CMQTTWILLTOPIC	Input the topic of will message .....	165
7.2.7 AT+CMQTTWILLMSG	Input the will message .....	166
7.2.8 AT+CMQTTCONNECT	Connect to MQTT server .....	167
7.2.9 AT+CMQTTDISC	Disconnect from server .....	169
7.2.10 AT+CMQTTTOPIC	Input the topic of publish message .....	171

7.2.11 AT+CMQTTPAYLOAD	Input the publish message .....	172
7.2.12 AT+CMQTT PUB	Publish a message to server .....	173
7.2.13 AT+CMQTT SUB	Subscribe a message to server .....	174
7.2.14 AT+CMQTT UNSUB	Unsubscribe a message to server .....	176
7.2.15 AT+CMQTT CFG	Configure the MQTT Context .....	178
7.3	Command Result Codes .....	179
7.3.1	Description of <err> .....	179
7.3.2	Unsolicited Result Codes .....	180
<b>8</b>	<b>AT Commands for TCP/IP .....</b>	<b>183</b>
8.1	Overview of AT Commands for TCP/IP .....	183
8.2	Detailed Description of AT Commands for TCP/IP .....	183
8.2.1	AT+NETOPEN Start Socket Service .....	183
8.2.2	AT+NETCLOSE Stop Socket Service .....	185
8.2.3	AT+CIPOPEN Establish Connection in Multi-Socket Mode .....	186
8.2.4	AT+CIPSEND Send data through TCP or UDP Connection .....	188
8.2.5	AT+CIPRXGET Set the Mode to Retrieve Data .....	192
8.2.6	AT+CIPCLOSE Close TCP or UDP Socket .....	195
8.2.7	AT+IPADDR Inquire Socket PDP address .....	196
8.2.8	AT+CIPHEAD Add an IP Header When Receiving Data .....	197
8.2.9	AT+CIPSRIP Show Remote IP Address and Port .....	198
8.2.10	AT+CIPMODE Set TCP/IP Application Mode .....	200
8.2.11	AT+CIPSENDMODE Set Sending Mode .....	201
8.2.12	AT+CIPTIMEOUT Set TCP/IP Timeout Value .....	202
8.2.13	AT+CIPCCFG Configure Parameters of Socket .....	203
8.2.14	AT+SERVERSTART Startup TCP Sever .....	205
8.2.15	AT+SERVERSTOP Stop TCP Sever .....	206
8.2.16	AT+CIPACK Query TCP Connection Data Transmitting Status .....	207
8.2.17	AT+CDNSGIP Query the IP Address of Given Domain Name .....	208
8.2.18	AT+CSOCKSETPN Set active PDP context's profile .....	209
8.2.19	AT+CTCPKA Conigure TCP heartbeat .....	210
8.2.20	AT+CDNSCFG Configure Domain Name Server .....	211
8.2.21	AT+CSOC Set some features of the data service .....	213
8.3	Command Result Codes .....	215
8.3.1	Description of <err_info> .....	215
8.3.2	Description of <err> .....	215
8.4	Unsolicited Result Codes .....	216
<b>9</b>	<b>AT Commands for HTTP(S) .....</b>	<b>217</b>
9.1	Overview .....	217
9.2	Detailed Description of AT Commands for HTTP(S) .....	217
9.2.1	AT+HTTPINIT Start HTTP Service .....	217
9.2.2	AT+HTTPTERM Stop HTTP Service .....	218
9.2.3	AT+HTTPPARA Set HTTP Parameters value .....	218
9.2.4	AT+HTTPACTION HTTP Method Action .....	220
9.2.5	AT+HTTPHEAD Read the HTTP Header Information of Server Response .....	222
9.2.6	AT+HTTPREAD Read the response information of HTTP Server .....	223



9.2.7 AT+HTTPDATA	Input HTTP Data .....	225
9.2.8 AT+HTTPPOSTFILE	Send HTTP Request to HTTP(S)server by File .....	225
9.2.9 AT+HTTPREADFILE	Receive HTTP Response Content to a file .....	227
9.3	Command Result Codes .....	228
9.3.1	Description of <statuscode> .....	228
9.3.2	Description of <errcode> .....	230
9.4	Unsolicited Result Codes .....	230
<b>10</b>	<b>AT Commands for LWM2M .....</b>	<b>231</b>
10.1	Overview .....	231
10.2	Detailed Description of AT Commands for LWM2M .....	231
10.2.1	AT+LWSTART Start LWM2M service .....	231
10.2.2	AT+LWSTOP Stop LWM2M Service .....	232
10.2.3	AT+LWCNF Config the LWM2M .....	233
10.2.4	AT+LWOPEN Register to a LWM2M server .....	234
10.2.5	AT+LWCLOSE Deregister to a LWM2M server .....	235
10.2.6	AT+LWADDOBJ Add a LWM2M object .....	236
10.2.7	AT+LWDELOBJ Delete a LWM2M object .....	237
10.2.8	AT+LWREADRSP Send read response to LWM2M server .....	237
10.2.9	AT+LWWRITERSP Send response to a LWM2M server .....	239
10.2.10	AT+LWEXECUTERSP Send response to LWM2M server .....	240
10.2.11	+LWREAD LWM2M client response of LWM2M server operate read .....	241
10.2.12	+LWWRITE LWM2M client response of LWM2M server operate write .....	241
10.2.13	+LWEXECUTE LWM2M client response of LWM2M server operate execute .....	242
10.3	Command Result Codes .....	243
<b>11</b>	<b>AT Commands for FOTA .....</b>	<b>244</b>
11.1	Overview .....	244
11.2	Detailed Description of AT Command for FOTA .....	244
11.2.1	AT+CFOTA Start FOTA service .....	244
11.2.2	AT+LFOTA Start Local Fota Service .....	245
9.3	Unsolicited Result Codes .....	246
<b>12</b>	<b>AT Commands for COAP .....</b>	<b>248</b>
12.1	Overview .....	248
12.2	Detailed Description of AT Commands for COAP .....	248
12.2.1	AT+COAPSTART Active PDP .....	248
12.2.2	AT+COAPSTOP Deactive PDP .....	249
12.2.3	AT+COAPOPEN Open a COAP server .....	249
12.2.4	AT+COAPCLOSE Close a COAP server .....	250
12.2.5	AT+COAPHEAD Config the head of COAP .....	251
12.2.6	AT+COAPOPTION Config the option of COAP .....	252
12.2.7	AT+COAPSEND Send COAP message to the server .....	252
12.2.8	AT+COAPSENDTX Send COAP message to the server by transparent transmission ..	253
12.2.9	+COAPRECV Receive response message from server .....	254
<b>13</b>	<b>Error Codes and Reset Reasons .....</b>	<b>256</b>
13.1	Summary of CME ERROR Codes .....	256

13.1.1 General Errors .....	256
13.1.2 Error Code for Socket Command .....	259
13.1.3 Error Code for CTM2M .....	259
13.2 Summary of CMS ERROR Codes .....	260
13.3 Summary of Unsolicited Result Codes .....	261

SIMCom  
Confidential

# 1 Introduction

## 1.1 Scope of the document

This document presents the AT Command Set for SIMCom SIM7022 Series, including SIM7022.

## 1.2 Related documents

You can visit the SIMCom Website using the following link:

<http://www.simcom.com>

## 1.3 Conventions and abbreviations

In this document, the GSM engines are referred to as following term:

- ME (Mobile Equipment);
- MS (Mobile Station);
- TA (Terminal Adapter);
- DCE (Data Communication Equipment) or facsimile DCE (FAX modem, FAX board);

In application, controlling device controls the GSM engine by sending AT Command via its serial interface. The controlling device at the other end of the serial line is referred to as following term:

- TE (Terminal Equipment);
- DTE (Data Terminal Equipment) or plainly "the application" which is running on an embedded system;

## 1.4 AT Command syntax

The "AT" or "at" or "aT" or "At" prefix must be set at the beginning of each Command line. To terminate a Command line enter <CR>.

Commands are usually followed by a response that includes. "<CR><LF><response><CR><LF>"

Throughout this document, only the responses are presented, <CR><LF> are omitted intentionally.

### 1.4.1 Basic syntax

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 whether received characters should be echoed back to the DTE according to the value of "<n>". "<n>" is optional and a default will be used if missing.

### 1.4.2 S Parameter syntax

These AT commands have 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. "<m>" is optional; if it is missing, then a default value is assigned.

### 1.4.3 Extended Syntax

These commands can operate in several modes, as in the following table:

**Table 1: Types of AT commands and responses**

<b>Test Command</b> AT+<x>=?	The mobile equipment returns the list of parameters and value ranges set with the corresponding Write Command or by internal processes.
<b>Read Command</b> AT+<x>?	This command returns the currently set value of the parameter or parameters.
<b>Write Command</b> AT+<x>=<...>	This command sets the user-definable parameter values.
<b>Execution Command</b> AT+<x>	The execution command reads non-variable parameters affected by internal processes in the GSM engine.

### 1.4.4 Combining AT commands on the same Command line

You can enter several AT commands on the same line. In this case, you do not need to type the "AT" or "at" prefix before every command. Instead, you only need type "AT" or "at" the beginning of the command line. Please note to use a semicolon as the command delimiter after an extended command; in basic syntax or S parameter syntax, the semicolon need not enter, for example:

```
ATE1Q0S0=1S3=13V1X4;+IFC=0,0;+IPR=115200.
```

The Command line buffer can accept a maximum of 559 characters(counted from the first command without "AT" or "at" prefix) or 39 AT commands. If the characters entered exceeded this number then none of the Command will executed and TA will return "**ERROR**".

### 1.4.5 Entering successive AT commands on separate lines

When you need to enter a series of AT commands on separate lines, please Note that you need to wait the final response (for example OK, CME error, CMS error) of last AT Command you entered before you enter the next AT Command.

## 1.5 AT Command Responses

When the AT Command processor has finished processing a line it will output either OK, ERROR or an error code indicating that it is ready to accept a new command. Solicited informational responses are sent before the final OK or ERROR. Unsolicited information responses will never occur between a solicited informational response and the final OK or ERROR.

For AT Commands aligned to the 3GPP 27.007 specification error codes are enabled with the CMEE command, else the ERROR message will be returned. For AT Commands aligned to the 3GPP 27.005 specification, a CMS error will be returned where specified.

Responses will be of the format:

```
<CR><LF>+CMD1: <parameters><CR><LF>
```

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

or

```
<CR><LF><parameters><CR><LF>
```

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

## 1.6 AT Command definitions

- <CR> Carriage return character
- <LF> Line feed character
- <.> Parameter name. Angle brackets do not appear on command line
- [..] Option parameter. Square brackets do not appear on the command line.

## 1.7 3GPP Alignment

3GPP commands are aligned to 3GPP TS 27.007 v14.3.0 (2017-03). For clarification on 3GPP commands, please refer to this document.

## 1.8 Supported character sets

The SIM7022 Series AT Command interface defaults to the **IRA** character set. The SIM7022 Series supports the following character sets:

- UCS2
- IRA

The character set affects transmission and reception of SMS and SMS Cell Broadcast messages, the entry and display of phone book entries text field and SIM Application Toolkit alpha strings.

## 1.9 Definitions

### 1.9.1 Parameter Saving Mode

For the purposes of the present document, the following syntactical definitions apply:

- **NO\_SAVE**: The parameter of the current AT command will be lost if module is rebooted or current AT command doesn't have parameter.
- **AUTO\_SAVE**: The parameter of the current AT command will be kept in NVRAM automatically and take in effect immediately, and it won't be lost if module is rebooted.

- **AUTO\_SAVE\_REBOOT:** The parameter of the current AT command will be kept in NVRAM automatically and take in effect after reboot, and it won't be lost if module is rebooted.
- -: "-" means this AT command doesn't care the parameter saving mode.

### 1.9.2 Max Response Time

Max response time is estimated maximum time to get response, the unit is seconds.

"-" means this AT command doesn't care the response time.

SIMCom  
Confidential

SIMCom  
Confidential



# 2 AT Commands According to V.25TER

## 2.1 Overview of AT Commands According to V.25TER

Command	Description
<a href="#">ATE</a>	Set Command Echo Mode.
<a href="#">ATI</a>	Display Product Identification Information.

## 2.2 Detailed Description of AT Commands According to V.25TER

### 2.2.1 ATE Set Command Echo Mode

ATE Set Command Echo Mode	
Execution Command <a href="#">ATE&lt;value&gt;</a>	Response This setting determines whether or not the TA echoes characters received from TE during Command state. <b>OK</b>
Parameter Saving Mode	NO_SAVE
Maximum Response Time	
Reference	V.25ter

### Defined Values

<value>	<b>9.1 0 Echo mode off</b>
---------	----------------------------

## 9.2 1 Echo mode on

### Example

```
ATE0
OK
(ATE1)
OK
AT
OK
```

### 2.2.2 ATI Display Product Identification Information

#### ATIDisplay Product Identification Information

Response	TA issues product information text.
Execution Command	Example: <b>SIM7022 R2110</b>
<b>ATI</b>	<b>OK</b>
Parameter Saving Mode	NO_SAVE
Maximum Response Time	-
Reference	V.25ter

### Example

```
ATI
SIM7022 R2110

OK
```

## 3 AT Commands According to 3GPP TS 27.007

### 3.1 Overview of AT Command According to 3GPP TS 27.007

Command	Description
<b>AT+CGMI</b>	Request Manufacturer Identification
<b>AT+CGMM</b>	Request Model Identification
<b>AT+CGMR</b>	Request TA Revision Identification of Software Release
<b>AT+CGSN</b>	Request Product Serial Number Identification
<b>AT+CREG</b>	Network Registration
<b>AT+CEREG</b>	EPS Network Registration Status
<b>AT+CSCON</b>	Signalling connection status
<b>AT+CSQ</b>	Signal Quality Report
<b>AT+CESQ</b>	Get Extended Signal Quality
<b>AT+CGPADDR</b>	Show PDP Address
<b>AT+COPS</b>	Operator Selection
<b>AT+CGATT</b>	Attach or Detach from GPRS Service
<b>AT+CGACT</b>	PDP Context Activate or Deactivate
<b>AT+CIMI</b>	Request International Mobile Subscriber Identity
<b>AT+CGDCONT</b>	Define PDP Context
<b>AT+CFUN</b>	Set Phone Functionality
<b>AT+CMEE</b>	Report Mobile Equipment Error
<b>AT+CCLK</b>	Return current date & time
<b>AT+CPSMS</b>	Power Saving Mode Setting
<b>AT+CEDRXS</b>	Extended-DRX Setting
<b>AT+CEER</b>	Extended Error Report
<b>AT+CEDRXRDP</b>	eDRX Read Dynamic Parameters
<b>AT+CTZR</b>	Time Zone Reporting
<b>AT+CTZU</b>	Automatic Time Zone Update
<b>AT+CIPCA</b>	Initial PDP context activation
<b>AT+CGAPNRC</b>	APN rate control
<b>AT+CSODCP</b>	Sending of originating data via the control plane
<b>AT+CRTDCP</b>	Reporting of terminating data via the control plane
<b>AT+CGEREP</b>	Packet Domain Event Reporting
<b>+CGEV</b>	Indicate EPS PDN Connection and Bearer Resources Operations Status
<b>AT+CGCONTRDP</b>	PDP Context Read Dynamic Parameters

<b>AT+CGAUTH</b>	Define PDP Context Authentication Parameters
<b>AT+CPIN</b>	Enter PIN
<b>AT+CLCK</b>	Facility Lock
<b>AT+CMOLR</b>	Mobile Originated Location Request
<b>AT+CPWD</b>	Change Password
<b>AT+CPINR</b>	Remaining PIN Retries
<b>AT+CCHO</b>	Open Logical Channel
<b>AT+CCHC</b>	Close logical channel
<b>AT+CGLA</b>	Generic UICC Logical Channel Access
<b>AT+CMTLR</b>	Mobile Terminated Location Request Notification
<b>AT+CMTLRA</b>	Mobile Terminated Location Request Disclosure Allowance
<b>AT+CRCES</b>	Reading Coverage Enhancement Status
<b>AT+CRSM</b>	Restricted SIM Access
<b>AT+CSIM</b>	Generic SIM Access
<b>AT+CGDATA</b>	Enter Data State
<b>AT+CCIoTOPT</b>	CloT optimization configuration
<b>AT+CGCMOD</b>	PDP context modify
<b>AT+CGEQOS</b>	Define EPS quality of service
<b>AT+CGEQOSRDP</b>	EPS Quality of Service Read Dynamic Parameters
<b>AT+CGTFT</b>	Traffic flow template
<b>AT+IPR</b>	Set UE Baud Rate

## 3.2 Detailed Descriptions of AT Command According to 3GPP TS 27.007

### 3.2.1 AT+CGMI Request Manufacturer Identification

<b>AT+CGMI Request Manufacturer Identification</b>	
Test Command <b>AT+CGMI=?</b>	Response <b>+CGMI: &lt;manufacturer_ID&gt;</b>
Execution Command <b>AT+CGMI</b>	<b>OK</b>
Parameter Saving Mode	Response <b>&lt;manufacturer&gt;</b> <b>OK</b> or <b>+CMEERROR: &lt;err&gt;</b>
Max Response Time	<b>NO_SAVE</b> -

Reference	3GPP TS 27.007 [13]
-----------	---------------------

### Defined Values

<manufacturer_ID>	The ID of manufacturer the total number of characters, including line terminators, in the information text shall not exceed 2048 characters. Text shall not contain the sequence 0<CR> or OK<CR>
-------------------	--

### 3.2.2 AT+CGMM Request Model Identification

#### AT+CGMM Request Model Identification

Test Command <b>AT+CGMM=?</b>	Response <b>+CGMM:&lt;list of supported technologies&gt;,&lt;model&gt;</b>  <b>OK</b>
Execution Command <b>AT+CGMM</b>	Response <b>&lt;model&gt;</b>  <b>OK</b> If error is related to ME functionality: <b>+CMEERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	3GPP TS 27.007 [13]

### Defined Values

<model>	Product model identification text the total number of characters, including line terminators, in the information text shall not exceed 2048 characters. Text shall not contain the sequence 0<CR> or OK<CR>
---------	--

### 3.2.3 AT+CGMR Request TA Revision Identification of Software Release

#### AT+CGMR Request TA Revision Identification of Software Release

Test Command <b>AT+CGMR=?</b>	Response <b>OK</b>
Execution Command <b>AT+CGMR</b>	Response This command returns the manufacturer revision. The text is human readable

	<p>and is not intended for microcontroller parsing. By default this will return the firmware revision – release and build. <b>&lt;revision&gt;</b></p> <p><b>OK</b> If error is related to ME functionality: <b>+CMEERROR: &lt;err&gt;</b></p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	3GPP TS 27.007 [13]

### Defined Values

<b>&lt;revision&gt;</b>	<p>Product software version identification text. The total number of characters, including line terminators, in the information text shall not exceed 2048 characters. Text shall not contain the sequence 0&lt;CR&gt; or OK&lt;CR&gt;</p>
-------------------------	--

#### NOTE

<revision> will change format over time. It should be treated as an opaque identifier.  
SECURITY PROTOCOL and APPLICATION is the core version and will update with the firmware version.  
RADIO is the specific module calibration parameter, if the module has been calibrated during the production line then we'd better not to change it during the next operation.  
SSB second stage bootloader version.

### 3.2.4 AT+CGSN Request Product Serial Number Identification

#### AT+CGSN Request Product Serial Number Identification (Identical with +GSN)

<p>Test Command <b>AT+CGSN=?</b></p>	<p>Response when TE supports &lt;snt&gt; and command successful: <b>+CGSN:</b> (list of supported &lt;snt&gt;s)</p> <p><b>OK</b></p>
<p>Execution Command <b>AT+CGSN[=&lt;snt&gt;]</b></p>	<p>Response when &lt;snt&gt;=0 (or omitted) and command successful: <b>[+CGSN:]&lt;sn&gt;</b> when &lt;snt&gt;=1 and command successful: <b>+CGSN: &lt;imei&gt;</b></p>

	<p>when &lt;snt&gt;=2 and command successful: <b>+CGSN: &lt;imeisv&gt;</b></p> <p>when &lt;snt&gt;=3 and command successful: <b>+CGSN: &lt;svn&gt;</b></p> <p>or <b>+CME ERROR: &lt;err&gt;</b></p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	
3GPP TS 27.007 [13]	

## Defined Values

<snt>	<p>Integer type indicating the serial number type that has been requested.</p> <p>0 returns &lt;sn&gt;</p> <p>1 returns the IMEI (International Mobile station Equipment Identity)</p> <p>2 returns the IMEISV (International Mobile station Equipment Identity and Software Version number)</p> <p>3 returns the SVN (Software Version Number)</p>
<sn>	<p>The 128-bit UUID of the UE. The total number of characters, including line terminators, in the information text shall not exceed 2048 characters. Text shall not contain the sequence 0&lt;CR&gt; or OK&lt;CR&gt;</p>
<imei>	<p>string type in decimal format indicating the IMEI</p>
<imeisv>	<p>string type in decimal format indicating the IMEISV</p>
<svn>	<p>string type in decimal format indicating the current SVN which is a part of IMEISV;</p>

### 3.2.5 AT+CREG Network Registration

AT+CREG Network Registration	
<p>Test Command</p> <p><b>AT+CREG=?</b></p>	<p>Response</p> <p><b>+CREG: (list of supported &lt;n&gt;s)</b></p> <p><b>OK</b></p>
<p>Read Command</p> <p><b>AT+CREG?</b></p>	<p>Response</p> <p><b>+CREG:</b></p> <p><b>&lt;n&gt;,&lt;stat&gt;[,&lt;tac&gt;],[&lt;ci&gt;],[&lt;AcT&gt;][,&lt;cause_type&gt;,&lt;reject_cause&gt;]]</b></p> <p><b>OK</b></p>
<p>Write Command</p>	<p>Response</p> <p><b>OK</b></p>

<b>AT+CREG=[&lt;n&gt;]</b>	or <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

## Defined Values

<b>&lt;n&gt;</b>	integer type 0 disable network registration unsolicited result code 1 enable network registration unsolicited result code +CEREG: <stat> 2 enable network registration and location information unsolicited resultcode <b>+CEREG: &lt;stat&gt;,[&lt;tac&gt;],[&lt;ci&gt;],[&lt;AcT&gt;]</b> 3 enable network registration, location information and EMM cause value information unsolicitedresultcode <b>+CEREG: &lt;stat&gt;,[&lt;tac&gt;],[&lt;ci&gt;],[&lt;AcT&gt;],[&lt;cause_type&gt;,&lt;reject_cause&gt;]</b>
<b>&lt;stat&gt;</b>	Integer type; indicates the EPS registration status 0 not registered, MT is not currently searching for an operator to register to 1 registered, home network 2 not registered, but MT is currently trying to attach or searching for an operator to register to 3 registration denied 4 unknown (e.g. out of E-UTRAN coverage) 5 registered, roaming 6 registered for "SMS only", home network (not applicable) 7 registered for "SMS only", roaming (not applicable) 8 attached for emergency bearer services only 9 registered for "CSFB not preferred", home network (not applicable) 10 registered for "CSFB not preferred", roaming (not applicable)
<b>&lt;tac&gt;</b>	string type; two byte tracking area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)
<b>&lt;ci&gt;</b>	string type; four byte E-UTRAN cell ID in hexadecimal format
<b>&lt;AcT&gt;</b>	integer type; indicates the access technology of the serving cell 0 GSM (not applicable) 1 GSM Compact (not applicable) 2 UTRAN (not applicable) 3 GSM w/EGPRS (not applicable) 4 UTRAN w/HSDPA (not applicable) 5 UTRAN w/HSUPA (not applicable) 6 UTRAN w/HSDPA and HSUPA (not applicable)



	7 E-UTRAN
	8 EC-GSM-IoT (A/Gb mode) (see NOTE 5) (not applicable)
	9 E-UTRAN (NB-S1 mode) (see NOTE 6)
<b>&lt;cause_type&gt;</b>	Integer type; indicates the type of <reject_cause>. 0 Indicates that <reject_cause> contains an EMM cause value 1 Indicates that <reject_cause> contains a manufacturer-specific cause.
<b>&lt;reject_cause&gt;</b>	Integer type; contains the cause of the failed registration. The value is of type as defined by <cause_type>.

**NOTE**

Set of <n> will save to NVM, and the default value is 0.

### 3.2.6 AT+CEREG EPS Network Registration Status

AT+CEREG EPS Network Registration Status	
Test Command <b>AT+CEREG=?</b>	Response <b>+CEREG:</b> (list of supported <n>s)  <b>OK</b>
Read Command <b>AT+CEREG?</b>	Response when <n>=0, 1, 2 or 3 and command successful: <b>+CEREG:</b> <n>,<stat>[, [<tac>], [<ci>], [<AcT>], [<cause_type>, <reject_cause>]]] when <n>=4 or 5 and command successful: <b>+CEREG:</b> <n>,<stat>[, [<lac>], [<ci>], [<AcT>], [<rac>], [<cause_type>], [<reject_cause>], [<Active- Time>], [<Periodic-TAU>]]] If error is related to wrong AT syntax or operation not allowed: <b>+CME ERROR: &lt;err&gt;</b>
Write Command <b>AT+CEREG=&lt;n&gt;</b>	Response <b>OK</b> or <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

## Defined Values

<b>&lt;n&gt;</b>	<p>integer type</p> <p>0 disable network registration unsolicited result code</p> <p>1 enable network registration unsolicited result code +CEREG: &lt;stat&gt;</p> <p>2 enable network registration and location information unsolicited resultcode <b>+CEREG: &lt;stat&gt;[,&lt;tac&gt;],[&lt;ci&gt;],[&lt;AcT&gt;]]</b></p> <p>3 enable network registration, location information and EMM cause value information unsolicitedresultcode <b>+CEREG: &lt;stat&gt;[,&lt;tac&gt;],[&lt;ci&gt;],[&lt;AcT&gt;],[&lt;cause_type&gt;,&lt;reject_cause&gt;]]</b></p> <p>4 For a UE that wants to apply PSM, enable network registration and location information unsolicited resultcode <b>+CEREG: &lt;stat&gt;[,&lt;tac&gt;],[&lt;ci&gt;],[&lt;AcT&gt;][,],[&lt;Active-Time&gt;],[&lt;Periodic-TAU&gt;]]]]</b></p> <p>5 For a UE that wants to apply PSM, enable network registration, location information and EMM cause value information unsolicited resultcode <b>+CEREG: &lt;stat&gt;[,&lt;tac&gt;],[&lt;ci&gt;],[&lt;AcT&gt;],[&lt;cause_type&gt;],[&lt;reject_cause&gt;][,],[&lt;Active-Time&gt;],[&lt;Periodic-TAU&gt;]]]]</b></p>
<b>&lt;stat&gt;</b>	<p>Integer type; indicates the EPS registration status</p> <p>0 not registered, MT is not currently searching for an operator to register to</p> <p>1 registered, home network</p> <p>2 not registered, but MT is currently trying to attach or searching for an operator to register to</p> <p>3 registration denied</p> <p>4 unknown (e.g. out of E-UTRAN coverage)</p> <p>5 registered, roaming</p> <p>6 registered for "SMS only", home network (not applicable)</p> <p>7 registered for "SMS only", roaming (not applicable)</p> <p>8 attached for emergency bearer services only</p> <p>9 registered for "CSFB not preferred", home network (not applicable)</p> <p>10 registered for "CSFB not preferred", roaming (not applicable)</p>
<b>&lt;tac&gt;</b>	<p>string type; two byte tracking area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)</p>
<b>&lt;ci&gt;</b>	<p>string type; four byte E-UTRAN cell ID in hexadecimal format</p>
<b>&lt;AcT&gt;</b>	<p>integer type; indicates the access technology of the serving cell</p> <p>0 GSM (not applicable)</p> <p>1 GSM Compact (not applicable)</p> <p>2 UTRAN (not applicable)</p> <p>3 GSM w/EGPRS (not applicable)</p> <p>4 UTRAN w/HSDPA (not applicable)</p> <p>5 UTRAN w/HSUPA (not applicable)</p> <p>6 UTRAN w/HSDPA and HSUPA (not applicable)</p>

	<p>7 E-UTRAN</p> <p>8 EC-GSM-IoT (A/Gb mode) (see NOTE 5) (not applicable)</p> <p>9 E-UTRAN (NB-S1 mode) (see NOTE 6)</p>
<b>&lt;cause_type&gt;</b>	<p>Integer type; indicates the type of &lt;reject_cause&gt;.</p> <p>0 Indicates that &lt;reject_cause&gt; contains an EMM cause value</p> <p>1 Indicates that &lt;reject_cause&gt; contains a manufacturer-specific cause.</p>
<b>&lt;reject_cause&gt;</b>	<p>Integer type; contains the cause of the failed registration. The value is of type as defined by &lt;cause_type&gt;.</p>
<b>&lt;Active-Time&gt;</b>	<p>String type; one byte in an 8 bit format. Indicates the Active Time value (T3324) allocated to the UE in E-UTRAN. The Active Time value is coded as one byte (octet 3) of the GPRS Timer 2 information element coded as bit format (e.g. "00100100" equals 4 minutes). For the coding and the value range, see the GPRS Timer 2 IE in 3GPP TS 24.008 Table 10.5.163/3GPP TS 24.008. See also 3GPP TS 23.682 and 3GPP TS 23.401</p>
<b>&lt;Periodic-TAU&gt;</b>	<p>String type; one byte in an 8 bit format. Indicates the extended periodic TAU value (T3412) allocated to the UE in E-UTRAN. The extended periodic TAU value is coded as one byte (octet 3) of the GPRS Timer 3 information element coded as bit format (e.g. "01000111" equals 70 hours). For the coding and the value range, see the GPRS Timer 3 IE in 3GPP TS 24.008 Table 10.5.163a/3GPP TS 24.008. See also 3GPP TS 23.682 and 3GPP TS 23.401</p>

**NOTE**

- NOTE 1: If the EPS MT in GERAN/UTRAN/E-UTRAN also supports circuit mode services and/or GPRS services, the +CREG command and +CREG: result codes and/or the +CGREG command and +CGREG: result codes apply to the registration status and location information for those services.
- NOTE 2: 3GPP TS 24.008 and 3GPP TS 24.301 specify the condition when the MS is considered as attached for emergency bearer services.
- NOTE 3: 3GPP TS 44.060 specifies the System Information messages which give the information about whether the serving cell supports EGPRS.
- NOTE 4: 3GPP TS 25.331 specifies the System Information blocks which give the information about whether the serving cell supports HSDPA or HSUPA.
- NOTE 5: 3GPP TS 44.018 [156] specifies the EC-SCH INFORMATION message which, if present, indicates that the serving cell supports EC-GSM-IoT.
- NOTE 6: 3GPP TS 36.331 [86] specifies the System Information blocks which give the information about whether the serving cell supports NB-IoT, which corresponds to E-UTRAN (NB-S1 mode).

### 3.2.7 AT+CSCON Signalling Connection Status

#### AT+CSCON Signalling Connection Status

Test Command	Response
--------------	----------

<b>AT+CSCON=?</b>	<b>+CSCON:</b> (list of supported<n>s)  <b>OK</b>
Read Command <b>AT+CSCON?</b>	Response <b>+CSCON:</b> <n>,<mode>[,<state>]  <b>OK</b>
Write Command <b>AT+CSCON=&lt;n&gt;</b>	Response Sets which character set <n> are used by the TE. The TA can then convert character strings correctly between the TE and ME character sets. <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	3GPP TS 27.007 [13]

### Defined Values

<n>	Integer type 0 disable unsolicited result code 1 enable unsolicited result code +CSCON: <mode>
<mode>	Integer type; indicates the signalling connection status 0 idle 1 connected 2-255 <reserved for future use>
<state>	Integer type; indicates the CS or PS state while in GERAN and the RRC state information if the MT is in connected Mode while in UTRAN and E-UTRAN. 0 UTRAN URA_PCH state 1 UTRAN Cell_PCH state 2 UTRAN Cell_FACH state 3 UTRAN Cell_DCH state 4 GERAN CS connected state 5 GERAN PS connected state 6 GERAN CS and PS connected state 7 E-UTRAN connected state
<access>	Integer type; indicates the current radio access type. 0 Indicates usage of radio access of type GERAN 1 Indicates usage of radio access of type UTRAN TDD 2 Indicates usage of radio access of type UTRAN FDD 3 Indicates usage of radio access of type E-UTRAN TDD 4 Indicates usage of radio access of type E-UTRAN FDD

### 3.2.8 AT+CSQ Signal Quality Report

AT+CSQ Signal Quality Report	
Test Command <b>AT+CSQ=?</b>	Response <b>+CSQ:</b> (list of supported <rss>s),(list of supported <ber>s)  <b>OK</b>
Execution Command <b>AT+CSQ</b>	Response Execution command returns received signal strength indication <rss> and channel bit error rate <ber> from the MT. <b>+CSQ:</b> <rss>,<ber>  <b>OK</b> If error is related to ME functionality: <b>+CME ERROR:</b> <err>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	3GPP TS 27.007 [13]

#### Defined Values

<rss>	0 -113 dBm or less 1 -111 dBm 2...30 -109... -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 (refer to 3GPP specification) 99 Not known or not detectable

### 3.2.9 AT+CESQ Get Extended Signal Quality

AT+CESQ Get Extended Signal Quality	
Test Command <b>AT+CESQ=?</b>	Response <b>+CESQ:</b> (list of supported <rxlev>s),(list of supported <ber>s, list of supported <rsrp>s),(list of supported <ecno>s,(list of supported <rsrq>s),(list of supported <rsrp>s)  <b>OK</b>

Execution Command <b>AT+CESQ</b>	Response <b>+CESQ:</b> <rxlev>,<ber>,<rsqp>,<ecno>,<rsrq>,<rsrp>  <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

### Defined Values

<rxlev>	Integer type; not supported by NB-IoT 99 not known or not detectable
<ber>	Integer type; not supported by NB-IoT 99 not known or not detectable
<rsqp>	Integer type; not supported by NB-IoT 255 not known or not detectable
<ecno>	Integer type; not supported by NB-IoT 255 not known or not detectable
<rsrq>	0 rsrq<-19.5dB 1 -19.5dB<=rsrq<-19dB 2 -19dB<=rsrq<-18.5dB ::: 32 -4dB<=rsrq<-3.5dB 33 -3.5dB<=-3 dB 34 -3 dB <=rsrq 255 not known or not detectable
<rsrp>	0 rsrp<-149dBm 1 -140dBm<=rsrp<-139dBm 2 -139dBm<=rsrp<-138dBm ::: 95 -46dBm<=rsrp<-45dBm 96 -45dBm<=rsrp<-44dBm 97 -44dBm<=rsrp 255 not known or not detectable

### 3.2.10 AT+CGPADDR Show PDP Address

#### AT+CGPADDR Show PDP Address

Test Command	Response
--------------	----------

<b>AT+CGPADDR=?</b>	<b>+CGPADDR:</b> (list of defined<cid>s)
	OK or OK
Write Command <b>AT+CGPADDR[=&lt;cid&gt;[ ,&lt;cid&gt;[,...]]]</b>	Response <b>+CGPADDR:</b> <cid>[,<PDP_addr>][<CR><LF>+CGPADDR: <cid>[,<PDP_addr>][...]]  <b>[+CGPADDR:</b> <cid>[,<PDP_addr_1>[,<PDP_addr_2>]]][<CR><LF>+CGPADDR: <cid>[,<PDP_addr_1>[,<PDP_addr_2>]] [...]]
	OK or OK or <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

## Defined Values

<cid>	A numeric parameter which specifies a particular PDP context definition (see +CGDCONT command). If no <cid> is specified, the addresses for all defined contexts are returned.
<PDP_addr>	A string that identifies the MT in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the +CGDCONT command when the context was defined. For a dynamic address, it will be the one assigned during the last PDP context activation that used the context definition referred to by <cid>. <PDP_address> is omitted if none is available.
<cid>	Integer type; specifies a particular PDP context definition (see the +CGDCONT command).
<PDP_addr_1> and <PDP_addr_2>	Each is a string type that identifies the MT in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the +CGDCONT command when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to by <cid>. Both <PDP_addr_1> and <PDP_addr_2> are omitted if none is available. Both <PDP_addr_1> and <PDP_addr_2> are included when both IPv4 and

IPv6 addresses are assigned, with <PDP\_addr\_1> containing the IPv4 address and <PDP\_addr\_2> containing the IPv6 address.

The string is given as dot-separated numeric (0-255) parameter of the form: a1.a2.a3.a4 for IPv4 and

a1.a2.a3.a4.a5.a6.a7.a8.a9.a10.a11.a12.a13.a14.a15.a16 for IPv6.

When +CGPIAF is supported, its settings can influence the format of the IPv6 address in parameter <PDP\_addr\_1> or <PDP\_addr\_2> returned with the execute form of +CGPADDR.

**NOTE**

In dual-stack terminals (<PDP\_type> IPV4V6), the IPv6 address will be provided in <PDP\_addr\_2>. For terminals with a single IPv6 stack (<PDP\_type> IPv6) or due to backwards compatibility, the IPv6 address can be provided in parameter <PDP\_addr\_1>.

### 3.2.11 AT+COPS Operator Selection

#### AT+COPS Operator Selection

<p>Test Command <b>AT+COPS=?</b></p>	<p>Response TA returns a list of quadruplets, each representing an operator present in the network. Any of the formats may be unavailable and should then be an empty field. The list of operators shall be in order: home network, networks referenced in SIM, and other networks.</p> <p><b>+COPS:</b> (list of supported &lt;stat&gt;, long alphanumeric &lt;oper&gt;, short alphanumeric &lt;oper&gt;, numeric &lt;oper&gt;, &lt;Act&gt;)s[,,(list of supported &lt;mode&gt;s),(list of supported &lt;format&gt;s)]</p> <p><b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p>
<p>Read Command <b>AT+COPS?</b></p>	<p>Response TA returns the current mode and the currently selected operator. If no operator is selected, &lt;format&gt; and &lt;oper&gt; are omitted.</p> <p><b>+COPS: &lt;mode&gt;[,&lt;format&gt;,&lt;oper&gt;][,&lt;Act&gt;]</b></p> <p><b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p>
<p>Write Command <b>AT+COPS=&lt;mode&gt;[,&lt;format&gt;[,&lt;oper&gt;[,&lt;Act&gt;</b></p>	<p>Response TA forces an attempt to select and register the GSM network operator. If the selected operator is not available, no other operator shall be selected</p>



>]]]	(except <mode>=4). The selected operator name format shall apply to further read commands (AT+COPS?).
	<p><b>OK</b></p> <p>If error is related to ME functionality:</p> <p><b>+CME ERROR: &lt;err&gt;</b></p>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	Test command: 45 seconds Write command: 120 seconds
Reference	3GPP TS 27.007 [14]

## Defined Values

<stat>	<p>Integer type</p> <p>0 Unknown</p> <p>1 Operator available</p> <p>2 Operator current</p> <p>3 Operator forbidden</p>
<oper>	<p>String type; &lt;format&gt; indicates if the format is alphanumeric or numeric; long alphanumeric format can be upto 16 characters long and short format up to 8 characters; numeric format is the GSM Location Area Identification number which consists of a three BCD digit ITU-T country code coded, plus a two or three BCD digit network code, which is administration specific.</p>
<mode>	<p>Integer type</p> <p>0 Automatic mode; &lt;oper&gt; field is ignored</p> <p>1 Manual(&lt;oper&gt;field shall be present, and &lt;AcT&gt; optionally)</p> <p>2 Manual deregister from network</p> <p>3 Set only &lt;format&gt; (for read Command +COPS?) - not shown in Read Command response</p> <p>4 Manual/automatic(&lt;oper&gt;field shall be present); if manual selection fails, automatic mode (&lt;mode&gt;=0) is entered</p>
<format>	<p>Integer type</p> <p>0 Long format alphanumeric &lt;oper&gt;</p> <p>1 Short format alphanumeric &lt;oper&gt;</p> <p>2 Numeric &lt;oper&gt;</p>
<Act>	<p>Integer type; access technology selected</p> <p>0 GSM</p> <p>1 GSM Compact</p> <p>2 UTRAN</p> <p>3 GSM w/EGPRS (see NOTE 1)</p> <p>4 UTRAN w/HSDPA (see NOTE 2)</p> <p>5 UTRAN w/HSUPA (see NOTE 2)</p>

6	UTRAN w/HSDPA and HSUPA (see NOTE 2)
7	E-UTRAN
8	EC-GSM-IoT (A/Gb mode) (see NOTE 3)
9	E-UTRAN (NB-S1 mode) (see NOTE 4)

## NOTE

NOTE 1: 3GPP TS 44.060 specifies the System Information messages which give the information about whether the serving cell supports EGPRS.

NOTE 2: 3GPP TS 25.331 specifies the System Information blocks which give the information about whether the serving cell supports HSDPA or HSUPA.

NOTE 3: 3GPP TS 44.018 [156] specifies the EC-SCH INFORMATION message which, if present, indicates that the serving cell supports EC-GSM-IoT.

NOTE 4: 3GPP TS 36.331 [86] specifies the System Information blocks which give the information about whether the serving cell supports NB-IoT, which corresponds to E-UTRAN(NB-S1 mode).

- <Act>, if provided, must be set to 9
- Only <format>=2 is supported
- Only <mode>=0, <mode>=1 & <mode>=2 are supported

When <mode>=1 is used, the PLMN setting will not persist after the UE is rebooted

<mode>=1 is only for development use. <mode>=0 should be used in production, which the mode used when AUTOCONNECT is enabled.

- The test command currently returns the configured values rather than performing a PLMN search.
- Not return <ACT> for AT+COPS?
- <oper> field couldn't be present when <mode>=0;
- AT+COPS=? will start background PLMN search when MT is idle state and wait searching result, other state will return ERROR.
- Return the searched PLMN list in the network after searching.

And could be aborted by any characters when searching. See Chapter 9 for more details about abort.

### 3.2.12 AT+CGATT Attach or Detach from GPRS Service

#### AT+CGATT Attach or Detach from GPRS Service

##### Description

The execution command is used to attach the MT to, or detach the MT from, the Packet Domain service. After the command has completed, the MT remains in V.250 command state. If the MT is already in the requested state, the command is ignored and the OK response is returned. If the requested state cannot be achieved, an ERROR or +CME ERROR response is returned. Refer to Chapter 9: Error Values for possible <err> values.

**NOTE 1: If the initial PDP context is supported, the context with <cid>=0 is**

	<p><i>automatically defined at startup.</i></p> <p>Any active PDP contexts will be automatically deactivated when the attachment state changes to detached.</p> <p>The read command returns the current Packet Domain service state.</p> <p>The test command is used for requesting information on the supported Packet Domain service states.</p> <p><b>NOTE 2: This command has the characteristics of both the V.250 action and parameter commands.</b></p> <p>Hence it has the read form in addition to the execution/set and test forms.</p>
<p>Test Command</p> <p><b>AT+CGATT=?</b></p>	<p>Response</p> <p><b>+CGATT:</b> (list of supported &lt;state&gt;s)</p> <p><b>OK</b></p>
<p>Read Command</p> <p><b>AT+CGATT?</b></p>	<p>Response</p> <p><b>+CGATT:</b> &lt;state&gt;</p> <p><b>OK</b></p>
<p>Write Command</p> <p><b>AT+CGATT=&lt;state&gt;</b></p>	<p>Response</p> <p><b>OK</b></p> <p>If error is related to ME functionality:</p> <p><b>+CME ERROR:</b> &lt;err&gt;</p>
<p>Parameter Saving Mode</p>	NO_SAVE
<p>Max Response Time</p>	75 seconds
<p>Reference</p>	

## Defined Values

<state>	<p>Integer type; indicates the state of PDP context activation. The default value is manufacturer specific</p> <p>0 Detached</p> <p>1 Attached</p> <p>Other values are reserved and will result in an ERROR response to the Write Command.</p>
---------	--

### NOTE

- When <state>=1 is selected, +COPS=0 is automatically selected.
- If a CGATT is in progress, further execution of the CGATT=command prior to the attach or detach completing will return error.

### 3.2.13 AT+CGACT PDP Context Activate or Deactivate

#### AT+CGACT PDP Context Activate or Deactivate

<p><b>Description</b></p>	<p>The execution command is used to activate or deactivate 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 requested state for any specified context cannot be achieved, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command. 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 the attach fails then the MT responds with ERROR or, if extended error responses are enabled, with the appropriate failure-to-attach error message. Refer to Chapter 9: Error Values for possible &lt;err&gt; values.</p> <p>For EPS, if an attempt is made to disconnect the last PDN connection, then the MT responds with ERROR or, if extended error responses are enabled, a +CME ERROR.</p> <p>NOTE: If the initial PDP context is supported, the context with &lt;cid&gt;=0 is automatically defined at startup, see subclause 10.1.0.</p> <p>For EPS, the activation request for an EPS bearer resource will be answered by the network by either an EPS dedicated bearer activation or EPS bearer modification request. The request must be accepted by the MT before the PDP context can be set in to established state.</p> <p>If no &lt;cid&gt;s are specified the activation form of the command activates all defined non-emergency contexts.</p> <p>If no &lt;cid&gt;s are specified the deactivation form of the command deactivates all active contexts.</p> <p>The read command returns the current activation states for all the defined PDP contexts.</p> <p>The test command is used for requesting information on the supported PDP context activation states.</p> <p>NOTE. This command has the characteristics of both the V.250 action and parameter commands.</p> <p>Hence it has the read form in addition to the execution/set and test forms.</p>
<p>Test Command <b>AT+CGACT=?</b></p>	<p>Response <b>+CGACT: (list of supported &lt;state&gt;s)</b></p> <p><b>OK</b></p>
<p>Read Command <b>AT+CGACT?</b></p>	<p>Response <b>+CGACT: &lt;cid&gt;,&lt;state&gt;[&lt;CR&gt;&lt;LF&gt;+CGACT: &lt;cid&gt;,&lt;state&gt;...]</b></p>

	<b>OK</b>
Write Command <b>AT+CGACT=&lt;state&gt;[,&lt;cid&gt;]</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR:&lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	150 seconds
Reference	

## Defined Values

<b>&lt;state&gt;</b>	Indicates 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.
<b>&lt;cid&gt;</b>	A numeric parameter which specifies a particular PDP context definition (see +CGDCONT Command). If the <cid> is omitted, it only affects the first cid.

### NOTE

- Could only activate or deactivate one cid one time.
- Could not be executed when PLMN searching, attaching or detaching.
- Could disconnect the last PDN connection when MT and Core Network all support without PDN connection.

### 3.2.14 AT+CIMI Request International Mobile Subscriber Identity

<b>AT+CIMI Request International Mobile Subscriber Identity</b>	
Description	Execution command causes the TA to return <IMSI>, which is intended to permit the TE to identify the individual SIM card or active application in the UICC (GSM or USIM) which is attached to MT.
Test Command <b>AT+CIMI=?</b>	Response <b>OK</b>
Execution Command <b>AT+CIMI</b>	Response TA returns <IMSI> for identifying the individual SIM which is attached to ME. <b>&lt;IMSI&gt;</b> <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>

Parameter Saving Mode	NO_SAVE
Max Response Time	20s
Reference	3GPP TS 27.007 [13]

## Defined Values

<IMSI>	International Mobile Subscriber Identity (string without double quotes)
--------	---

### NOTE

IMSI may not be displayed for a few seconds after power-on

### 3.2.15 AT+CGDCONT Define PDP Context

#### AT+CGDCONT Define PDP Context

#### Description

The set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, <cid> and also allows the TE to specify whether security protected transmission of ESM information is requested, because the PCO can include information that requires ciphering. There can be other reasons for the UE to use security protected transmission of ESM information, e.g. if the UE needs to transfer an APN. The number of PDP contexts that may be in a defined state at the same time is given by the range returned by the test command. Refer to Chapter 9: Error Values for possible <err> values.

For EPS the PDN connection and its associated EPS default bearer is identified herewith.

A special form of the set command, +CGDCONT=<cid> causes the values for context number <cid> to become undefined.

If the initial PDP context is supported, the context with <cid>=0 is automatically defined at startup, see 3GPP TS 27.007 V13.5.0, subclause 10.1.0. As all other contexts, the parameters for <cid>=0 can be modified with +CGDCONT. If the initial PDP context is supported, +CGDCONT=0 resets context number 0 to its particular default settings.

The read command returns the current settings for each defined context.

	<p>The test command returns values supported as compound values. If the MT supports several PDP types, &lt;PDP_type&gt;, the parameter value ranges for each &lt;PDP_type&gt; are returned on a separate line.</p>
<p>Test Command <b>AT+CGDCONT=?</b></p>	<p>Response</p> <p><b>+CGDCONT:</b> (range of supported&lt;cid&gt;s),&lt;PDP_type&gt;,,,(list of supported&lt;d_comp&gt;s),(list of supported&lt;h_comp&gt;s),(list of supported&lt;IPv4AddrAlloc&gt;s),(list of supported&lt;request_type&gt;s),(list of supported&lt;PCSCF_discovery&gt;s),(list of supported&lt;IM_CN_Signalling_Flag_Ind&gt;s),(list of supported&lt;NSLPI&gt;s),(list of supported&lt;securePCO&gt;s),(list of supported&lt;IPv4_MTU_discovery&gt;s),(list of supported&lt;Local_Addr_Ind&gt;s),(list of supported&lt;NonIP_MTU_discovery&gt;s),(list of supported&lt;Reliable_Data_Service&gt;s)[&lt;CR&gt;&lt;LF&gt;+CGDCONT: (range of supported&lt;cid&gt;s),&lt;PDP_type&gt;,,,(list of supported&lt;d_comp&gt;s),(list of supported&lt;h_comp&gt;s),(list of supported &lt;IPv4AddrAlloc&gt;s),(list of supported&lt;request_type&gt;s),(list of supported&lt;PCSCF_discovery&gt;s),(list of supported&lt;IM_CN_Signalling_Flag_Ind&gt;s),(list of supported &lt;NSLPI&gt;s),(list of supported&lt;securePCO&gt;s),(list of supported&lt;IPv4_MTU_discovery&gt;s),(list of supported&lt;Local_Addr_Ind&gt;s),(list of supported &lt;NonIP_MTU_discovery&gt;s),(list of supported&lt;Reliable_Data_Service&gt;s)[...]]</p> <p>OK</p>
<p>Read Command <b>AT+CGDCONT?</b></p>	<p>Response</p> <p><b>[+CGDCONT:</b> &lt;cid&gt;,&lt;PDP_type&gt;,&lt;APN&gt;,&lt;PDP_addr&gt;,&lt;d_comp&gt;,&lt;h_comp&gt;[,&lt;IPv4AddrAlloc&gt;,&lt;request_type&gt;,&lt;PCSCF_discovery&gt;,&lt;IM_CN_Signalling_Flag_Ind&gt;,&lt;NSLPI&gt;,&lt;securePCO&gt;,&lt;IPv4_MTU_discovery&gt;,&lt;Local_Addr_Ind&gt;,&lt;Non-IP_MTU_discovery&gt;,&lt;Reliable_Data_Service&gt;]]]]]]]]]] ]]][&lt;CR&gt;&lt;LF&gt;+CGDCONT: &lt;cid&gt;,&lt;PDP_type&gt;,&lt;APN&gt;,&lt;PDP_addr&gt;,&lt;d_comp&gt;,&lt;h_comp&gt;[,&lt;IPv4AddrAlloc&gt;,&lt;request_type&gt;,&lt;PCSCF_discovery&gt;,&lt;IM_CN_Signalling_Flag_Ind&gt;,&lt;NSLPI&gt;,&lt;securePCO&gt;,&lt;IPv4_MTU_discovery&gt;,&lt;Local_Addr_Ind&gt;,&lt;Non-IP_MTU_discovery&gt;,&lt;Reliable_Data_Service&gt;]]]]]]]]]] ] [...]]</p> <p>OK</p>
<p>Write Command <b>AT+CGDCONT=[&lt;cid&gt;[,&lt;PDP_type&gt;[,&lt;APN&gt;[,&lt;PDP_addr&gt;[,&lt;d_comp&gt;[,&lt;h_comp&gt;[,&lt;IPv4AddrAlloc&gt;[,&lt;request_type&gt;[,</b></p>	<p>Response</p> <p>OK or ERROR</p>





	<ul style="list-style-type: none"> <li>0 off</li> <li>1 on (manufacturer preferred compression)</li> <li>2 RFC 1144 [105] (applicable for SNDCP only)</li> <li>3 RFC 2507 [107]</li> <li>4 RFC 3095 [108] (applicable for PDCP only)</li> </ul>
<IPv4AddrAlloc>	<p>Integer type; controls how the MT/TA requests to get the IPv4 address information</p> <ul style="list-style-type: none"> <li>0 IPv4 address allocation through NAS signalling</li> <li>1 IPv4 address allocated through DHCP</li> </ul>
<request_type>	<p>Integer type; indicates the type of PDP context activation request for the PDP context, see 3GPP TS 24.301 (subclause 6.5.1.2) and 3GPP TS 24.008 subclause 10.5.6.17). If the initial PDP context is supported it is not allowed to assign &lt;cid&gt;=0 for emergency bearer services. According to 3GPP TS 24.008 (subclause 4.2.4.2.2 and subclause 4.2.5.1.4) and 3GPP TS 24.301 (subclause 5.2.2.3.3 and subclause 5.2.3.2.2), a separate PDP context must be established for emergency bearerservices.</p> <p><b>NOTE 4: If the PDP context for emergency bearer services is the only activated context, only emergency calls are allowed, see 3GPP TS 23.401 subclause 4.3.12.9.</b></p> <ul style="list-style-type: none"> <li>0 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) <ul style="list-style-type: none"> <li>1 PDP context is for emergency bearer services</li> <li>2 PDP context is for new PDP context establishment</li> <li>3 PDP context is for handover from a non-3GPP access network</li> </ul> </li> </ul>
<P-CSCF_discovery >	<p>Integer type; influences how the MT/TA requests to get the P-CSCF address, see 3GPP TS 24.229 [89] annex B and annex L.</p> <ul style="list-style-type: none"> <li>0 Preference of P-CSCF address discovery not influenced by +CGDCONT</li> <li>1 Preference of P-CSCF address discovery through NAS signalling</li> <li>2 Preference of P-CSCF address discovery through DHCP</li> </ul>
<IM_CN_Signalling_Flag_Ind>	<p>Integer type; indicates to the network whether the PDP context is for IM CN subsystem-related signalling only or not.</p> <ul style="list-style-type: none"> <li>0 UE indicates that the PDP context is not for IM CN subsystem-related signalling only</li> <li>1 UE indicates that the PDP context is for IM CN subsystem-related signalling only</li> </ul>
<NSLPI>	<p>Integer type; indicates the NAS signalling priority requested for this PDP context:</p> <ul style="list-style-type: none"> <li>0 indicates that this PDP context is to be activated with the value for the low priority indicator configured in the MT.</li> <li>1 indicates that this PDP context is to be activated with the value for the low priority indicator set to "MS is not configured for NAS signalling low priority".</li> </ul> <p>3GPP TS 24.301 [83] and 3GPP TS 24.008 .</p>
<securePCO>	<p>Integer type. Specifies if security protected transmission of PCO is requested</p>

	<p>or not (applicable for EPS only)</p> <p>0 Security protected transmission of PCO is not requested</p> <p>1 Security protected transmission of PCO is requested</p>
<IPv4_MTU_discovery>	<p>Integer type; influences how the MT/TA requests to get the IPv4 MTU size, see 3GPP TS 24.008 subclause 10.5.6.3.</p> <p>0 Preference of IPv4 MTU size discovery not influenced by +CGDCONT</p> <p>1 Preference of IPv4 MTU size discovery through NAS signalling</p>
<Local_Addr_Ind>	<p>Integer type; indicates to the network whether or not the MS supports local IP address in TFTs (see 3GPP TS 24.301 [83] and 3GPP TS 24.008 [8] subclause 10.5.6.3).</p> <p>0 indicates that the MS does not support local IP address in TFTs</p> <p>1 indicates that the MS supports local IP address in TFTs</p>
<Non-IP_MTU_discovery>	<p>Integer type; influences how the MT/TA requests to get the Non-IP MTU size, see 3GPP TS 24.008 [8] subclause 10.5.6.3.</p> <p>0 Preference of Non-IP MTU size discovery not influenced by +CGDCONT</p> <p>1 Preference of Non-IP MTU size discovery through NAS signalling</p>
<Reliable_Data_Service>	<p>Integer type; indicates whether the UE is using Reliable Data Service for a PDN connection or not, see 3GPP TS 24.301 [83] and 3GPP TS 24.008 [8] subclause 10.5.6.3.</p> <p>0 Reliable Data Service is not being used for the PDN connection</p> <p>1 Reliable Data Service is being used for the PDN connection</p>

**NOTE**

- Only <PDP\_type>="IP","NONIP","IPV6","IPV4V6" are supported.
- Only support +CGDCONT=<cid>,<PDP\_type>,<APN>,,,,,,<NSLPI>,<securePCO>.
- <cid> values of 0-10 are supported
- Only <hcomp> and <dcomp> values of 0 are supported.
- <cid> value of 7 can't be set when bip is enabled.
- The APN is a string of up to 63 characters.

### 3.2.16 AT+CFUN Set Phone Functionality

#### AT+CFUN Set Phone Functionality

Description	<p>Set command selects the level of functionality in the MT. Level "full functionality" is where the highest level of power is drawn. "Minimum functionality" is where minimum power is drawn.</p> <p>Read command returns the current setting of &lt;fun&gt;.</p> <p>Test command returns values supported by the MT as compound values.</p>
Test Command	Response

<b>AT+CFUN=?</b>	<b>+CFUN:</b> (list of supported <fun>s),(list of supported <rst>s)
	<b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Read Command <b>AT+CFUN?</b>	Response <b>+CFUN: &lt;fun&gt;</b>
	<b>OK</b> If error is related to ME functionality: <b>+CME ERROR:&lt;err&gt;</b>
Write Command <b>AT+CFUN=&lt;fun&gt;[,&lt;rst&gt;]</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	-
Max Response Time	10s
Reference	3GPP TS 27.007 [13]

### Defined Values

<b>&lt;fun&gt;</b>	Integer type 0 Minimum functionality 1 Full functionality 4 Turn off RF
<b>&lt;rst&gt;</b>	Integer type 0 Do not reset the MT before setting it to <fun> power level. This shall always be defaulted when <rst> is not given. 1 Reset the MT before setting it to <fun> power level. (not supported and will be ignored)

### 3.2.17 AT+CMEE Report Mobile Equipment Error

<b>AT+CMEE Report Mobile Equipment Error</b>	
Description	Set command disables or enables the use of final result code +CME ERROR: <err> as an indication of an error relating to the functionality of the MT. When enabled, MT related errors cause +CME ERROR: <err> final result code instead of the regular ERROR final result code. ERROR is returned normally when error is related to syntax, invalid parameters, or TA functionality.

	Read command returns the current setting of <n>. Test command returns values supported as a compound value.
Test Command <b>AT+CMEE=?</b>	Response <b>+CMEE:</b> (list of supported <n>s)  <b>OK</b>
Read Command <b>AT+CMEE?</b>	Response <b>+CMEE:</b> <n>  <b>OK</b>
Write Command <b>AT+CMEE=&lt;n&gt;</b>	Response TA disables or enables the use of result code +CME ERROR: <err> as an indication of an error relating to the functionality of the ME. <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	3GPP TS 27.007 [13]

### Defined Values

<n>	integer type 0 Disable +CME ERROR: <err> result code and use ERROR instead. <u>1</u> Enable+CME ERROR:<err>result codeandusenumeric <err> 2 Enable +CME ERROR: <err> result code and use verbose <err> values
-----	--

### 3.2.18 AT+CCLK Return Current Date & Time

<b>AT+CCLK Return CurrentDate&amp;Time</b>	
Test Command <b>AT+CCLK=?</b>	Response <b>OK</b>
Read Command <b>AT+CCLK?</b>	Response <b>+CCLK:</b> [<yy/MM/dd, hh:mm:ss>[<zz>]]  <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Write Command <b>AT+CCLK=&lt;time&gt;</b>	Response <b>OK</b> If error is related to ME functionality:

	<b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	
3GPP TS 27.007 [13]	

## Defined Values

<b>&lt;time&gt;</b>	String type value; format is "yy/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; range -96...+96). E.g. 6th of May 1994, 22:10:00 GMT+2 hours equals to "94/05/06,22:10:00+08"
---------------------	--

### NOTE

- No value will be returned before core network sent EMM INFORMATION.
- Need to send AT+NITZ=0 first before set time.
- If MT does not support time zone information then the three last characters of <time> are not returned by +CCLK?

### 3.2.19 AT+CPSMS Power Saving Mode Setting

#### AT+CPSMS Power Saving Mode Setting

Description	<p>The set command controls the setting of the UEs power saving mode (PSM) parameters. The command controls whether the UE wants to apply PSM or not, as well as the requested extended periodic RAU value and the requested GPRS READY timer value in GERAN/UTRAN, the requested extended periodic TAU value in E-UTRAN and the requested Active Time value. See the unsolicited result codes provided by command +CEREG for the Active Time value and the extended periodic TAU value that are allocated to the UE by the network in E-UTRAN.</p> <p>A special form of the command can be given as +CPSMS=2. In this form, the use of PSM will be disabled and data for all parameters in the command +CPSMS will be removed or, if available, set to the manufacturer specific default values.</p> <p>The read command returns the current parameter values.</p>
-------------	---

	The test command returns the supported <mode>s and the value ranges for the requested extended periodic RAU value and the requested GPRS READY timer value in GERAN/UTRAN, the requested extended periodic TAU value in E-UTRAN and the requested Active Time value as compound values.
Test Command <b>AT+CPSMS=?</b>	Response <b>+CPSMS:</b> (list of supported <mode>s),(list of supported <Requested_Periodic-RAU>s),(list of supported <Requested_GPRS-READY-timer>s),(list of supported <Requested_Periodic-TAU>s),(list of supported <Requested_Active-Time>s)  <b>OK</b>
Read Command <b>AT+CPSMS?</b>	Response <b>+CPSMS:</b> <mode>,<Requested_Periodic-RAU>,<Requested_GPRS-READY-timer>,<Requested_Periodic-TAU>,<Requested_Active-Time>  <b>OK</b>
Write Command <b>AT+CPSMS=[&lt;mode&gt;,&lt;Requested_Periodic-RAU&gt;,&lt;Requested_GPRS-READY-timer&gt;,&lt;Requested_Periodic-TAU&gt;,&lt;Requested_Active-Time&gt;]]]]</b>	Response <b>OK</b> If failed: <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	

## Defined Values

<mode>	Integer type. Indication to disable or enable the use of PSM in the UE. 0 Disable the use of PSM 1 Enable the use of PSM 2 Disable the use of PSM and discard all parameters for PSM or, if available, reset to the manufacturer specific default values.
<Requested_Periodic-RAU>	String type; one byte in an 8 bit format. Requested extended periodic RAU value (T3312) to be allocated to the UE in GERAN/UTRAN. The requested extended periodic RAU value is coded as one byte (octet 3) of the GPRS Timer 3 information element coded as bit format (e.g. "01000111" equals 70 hours). For the coding and the value range, see the GPRS Timer 3 IE in 3GPP TS 24.008 [8] Table 10.5.163a/3GPP TS 24.008. See also 3GPP TS 23.682 [149] and 3GPP TS 23.060 [47]. The default value, if available, is

	manufacturer specific.
<Requested_GPRS-READY-timer>	String type; one byte in an 8 bit format. Requested GPRS READY timer value (T3314) to be allocated to the UE in GERAN/UTRAN. The requested GPRS READY timer value is coded as one byte (octet 2) of the GPRS Timer information element coded as bit format (e.g. "01000011" equals 3 decihours or 18 minutes). For the coding and the value range, see the GPRS Timer IE in 3GPP TS 24.008 [8] Table 10.5.172/3GPP TS 24.008. See also 3GPP TS 23.060 [47]. The default value, if available, is manufacturer specific.
<Requested_Periodic-TAU>	String type; one byte in an 8 bit format. Requested extended periodic TAU value (T3412) to be allocated to the UE in E-UTRAN. The requested extended periodic TAU value is coded as one byte (octet 3) of the GPRS Timer 3 information element coded as bit format (e.g. "01000111" equals 70 hours). For the coding and the value range, see the GPRS Timer 3 IE in 3GPP TS 24.008 [8] Table 10.5.163a/3GPP TS 24.008. See also 3GPP TS 23.682 [149] and 3GPP TS 23.401 [82]. The default value, if available, is manufacturer specific.
<Requested_Active-Time>	String type; one byte in an 8 bit format. Requested Active Time value (T3324) to be allocated to the UE. The requested Active Time value is coded as one byte (octet 3) of the GPRS Timer 2 information element coded as bit format (e.g. "00100100" equals 4 minutes). For the coding and the value range, see the GPRS Timer 2 IE in 3GPP TS 24.008 [8] Table 10.5.163/3GPP TS 24.008. See also 3GPP TS 23.682 [149], 3GPP TS 23.060 [47] and 3GPP TS 23.401 [82]. The default value, if available, is manufacturer specific.

**NOTE**

- RAU is not supported by NB-IOT. No value will be output, and any input will be ignored.
- <Requested\_Periodic-TAU> and <Requested\_Active-Time> could be quoted.

### 3.2.20 AT+CEDRXS Extended-DRX Setting

AT+CEDRXS Extended-DRX Setting	
Description	<p>The set command controls the setting of the UEs eDRX parameters. The command controls whether the UE wants to apply eDRX or not, as well as the requested eDRX value for each specified type of access technology.</p> <p>The set command also controls the presentation of an unsolicited result code</p> <p><b>+CEDRXP:</b>            &lt;AcT-type&gt;[,&lt;Requested_eDRX_value&gt;[,&lt;NW-provided_eDRX_value&gt;[,&lt;Paging_time_window&gt;]]]</p>

	<p>when&lt;n&gt;=2 and there is a change in the eDRX parameters provided by the network.</p> <p>A special form of the command can be given as +CEDRXS=3. In this form, eDRX will be disabled and data for all parameters in the command +CEDRXS will be removed or, if available, set to the manufacturer specific default values.</p> <p>The read command returns the current settings for each defined value of &lt;AcT-type&gt;.</p> <p>The test command returns the supported &lt;mode&gt;s and the value ranges for the access technology and the requested eDRX value as compound values.</p>
<p>Test Command <b>AT+CEDRXS=?</b></p>	<p>Response</p> <p><b>+CEDRXS:</b> (list of supported &lt;mode&gt;s),(list of supported&lt;AcT-type&gt;s),(list of supported&lt;Requested_eDRX_value&gt;s)</p> <p><b>OK</b></p>
<p>Read Command <b>AT+CEDRXS?</b></p>	<p>Response</p> <p><b>+CEDRXS:</b>&lt;AcT-type&gt;,&lt;Requested_eDRX_value&gt;</p> <p><b>OK</b></p>
<p>Write Command <b>AT+CEDRXS=[&lt;mode&gt; ,[,&lt;AcT-type&gt;[,&lt;Requested_eDRX_value&gt;]]]</b></p>	<p>Response</p> <p><b>OK</b></p> <p>If failed: <b>+CME ERROR: &lt;err&gt;</b></p>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	

## Defined Values

<mode>	<p>Integer type, indicates to disable or enable the use of eDRX in the UE. This parameter is applicable to all specified types of access technology, i.e. the most recent setting of &lt;mode&gt; will take effect for all specified values of &lt;AcT&gt;.</p> <p>0 Disable the use of eDRX</p> <p>1 Enable the use of eDRX</p> <p>2 Enable the use of eDRX and enable the unsolicited result code +CEDRXP:&lt;AcT-type&gt;[,&lt;Requested_eDRX_value&gt;[,&lt;NW-provided_eDRX_value&gt;[,&lt;Paging_time_window&gt;]]]</p> <p>3 Disable the use of eDRX and discard all parameters for eDRX or, if available, reset to the manufacturer specific default values.</p>
<AcT-type>	<p>Integer type, indicates the type of access technology. This AT-command is used to specify the relationship between the type of access technology and the requested eDRX value.</p> <p>5 E-UTRAN (NB-S1 mode)</p>



<Requested_eDRX_value>	String type; half a byte in a 4 bit format. The eDRX value refers to bit 4 to 1 of octet 3 of the Extended DRX parameters information element (see subclause 10.5.5.32 of 3GPP TS 24.008 [8]). For the coding and the value range, see Extended DRX parameters information element in 3GPP TS 24.008 [8] Table 10.5.5.32/3GPP TS 24.008. The default value, if available, is manufacturer specific.
<NW-provided_eDRX_value>	String type; half a byte in a 4 bit format. The eDRX value refers to bit 4 to 1 of octet 3 of the Extended DRX parameters information element (see subclause 10.5.5.32 of 3GPP TS 24.008 [8]). For the coding and the value range, see Extended DRX parameters information element in 3GPP TS 24.008 [8] Table 10.5.5.32/3GPP TS 24.008.
<Paging_time_window>	String type; half a byte in a 4 bit format. The paging time window refers to bit 8 to 5 of octet 3 of the Extended DRX parameters information element (see subclause 10.5.5.32 of 3GPP TS 24.008 [8]). For the coding and the value range, see the Extended DRX parameters information element in 3GPP TS 24.008 [8] Table 10.5.5.32/3GPP TS 24.008.

### 3.2.21 AT+CEDRXRDP eDRX Read Dynamic Parameters

AT+CEDRXRDP eDRX Read Dynamic Parameters	
Description	The execution command returns <AcT-type> and <Requested_eDRX_value>, <NW-provided_eDRX_value> and <Paging_time_window> if eDRX is used for the cell that the MS is currently registered to. If the cell that the MS is currently registered to is not using eDRX, AcT-type=0 is returned.
Test Command <b>AT+CEDRXRDP=?</b>	Response <b>OK</b>
Execution Command <b>AT+CEDRXRDP</b>	Response <b>+CEDRXRDP:</b> <b>&lt;AcT-type&gt;[,&lt;Requested_eDRX_value&gt;[,&lt;NW-provided_eDRX_value&gt;[,&lt;Paging_time_window&gt;]]]</b>  <b>OK</b> If error is related to ME functionality: <b>+CME ERROR:&lt;err&gt;</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

### Defined Values

<b>&lt;AcT-type&gt;</b>	Integer type,indicates the type of access technology.This AT-command is used to specify the relationship between the type of access technology and the requested eDRX value 0 Access technology is not using eDRX 5 E-UTRAN(NB-S1 mode)
<b>&lt;Requested_Edrx_value&gt;</b>	String type;half a byte in a 4-bit format.The Edrx value refers to bit 4 to 1 of octet 3 of the Extended DRX parameters information element (see sub-clause 10.5.5.32 of 3GPP TS 24.008).For the coding and the value range,see Extended DRX parameters information element in 3GPP TS 24.008 Table 10.5.5.32/3GPP TS 24.008.
<b>&lt;NW-provided_eDRX_value&gt;</b>	String type;half a byte in a 4-bit format.The eDRX value Refers to bit 4 to 1 of octet 3 of the Extended DRX parameters information element (see sub-clause 10.5.5.32 of 3GPP TS 24.008).For the coding and the value range,see the Extended DRX parameters information element in 3GPP TS 24.008 Table 10.5.5.32/3GPP TS 24.008.
<b>&lt;Paging_time_window&gt;</b>	String type;half a byte in a 4-bit format.The paging time window refers to bit 8 to 5 octet 3of the Extended DRX. Parameters information element (see sub-clause 10.5.5.32 of 3GPP TS 24.008).For the coding and the value range,see the Extended DRX parameters information element in 3GPP TS 24.008 Table 10.5.5.32/3GPP TS 24.008.

### 3.2.22 AT+CTZR Time Zone Reporting

<b>AT+CTZR Time Zone Reporting</b>	
Description	<p>This set command controls the time zone change event reporting. If reporting is enabled the MT returns the unsolicited result code <b>+CTZV: &lt;tz&gt;, +CTZE: &lt;tz&gt;,&lt;dst&gt;,[&lt;time&gt;],</b> or <b>+CTZEU: &lt;tz&gt;,&lt;dst&gt;,[&lt;utime&gt;]</b> whenever the time zone is changed. The MT also provides the time zone upon network registration if provided by the network. If setting fails in an MT error, +CME ERROR: &lt;err&gt; is returned. Refer to Chapter 9: Error Values for possible &lt;err&gt; values.</p> <p>Read command returns the current reporting settings in the MT. Test command returns supported &lt;reporting&gt;-values as a compound value.</p>
Test Command <b>AT+CTZR=?</b>	<p>Response <b>+CTZR: (list of supported &lt;reporting&gt;s)</b></p> <p><b>OK</b></p>
Read Command <b>AT+CTZR?</b>	<p>Response <b>+CTZR: &lt;reporting&gt;</b></p>

	<p><b>OK</b></p> <p>If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p>
<p>Write Command</p> <p><b>AT+CTZR=&lt;reporting&gt;</b></p>	<p>Response</p> <p><b>OK</b></p> <p>If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p>
Unsolicited result code	<b>+CTZV: &lt;zone&gt;</b>
Parameter Saving Mode	AUTO_SAVE_REBOOT
Max Response Time	-
Reference	
3GPP TS 27.007 [13]	

## Defined Values

<b>&lt;reporting&gt;</b>	<p>Integer type value indicating:</p> <p>0 Disable time zone change event reporting.</p> <p>1 Enable time zone change event reporting by unsolicited result code +CTZV: &lt;tz&gt;.</p> <p>2 Enable extended time zone and local time reporting by unsolicited result code(not support) +CTZE: &lt;tz&gt;,&lt;dst&gt;,[&lt;time&gt;].</p> <p>3 Enable extended time zone and universal time reporting by unsolicited result code +CTZEU: &lt;tz&gt;,&lt;dst&gt;,[&lt;utime&gt;].</p>
<b>&lt;tz&gt;</b>	<p>String type value representing the sum of the local time zone (difference between the local time and GMT expressed in quarters of an hour) plus daylight saving time. The format is "±zz", expressed as a fixed width, two digit integer with the range -48 ... +56. To maintain a fixed width, numbers in the range -9 ... +9 are expressed with a leading zero, e.g. "-09", "+00" and "+09".</p>
<b>&lt;dst&gt;</b>	<p>Integer type value indicating whether &lt;tz&gt; includes daylight savings adjustment;</p> <p>0 &lt;tz&gt; includes no adjustment for Daylight Saving Time</p> <p>1 &lt;tz&gt; includes +1 hour (equals 4 quarters in &lt;tz&gt;) adjustment for daylight saving time</p> <p>2 &lt;tz&gt; includes +2 hours (equals 8 quarters in &lt;tz&gt;) adjustment for daylight saving time</p>
<b>&lt;time&gt;</b>	<p>String type value representing 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). The local time can be derived by the MT from information provided by the network at the time of delivering time zone information and will be present in the unsolicited result code for extended time zone and local time reporting if the universal</p>

	time is provided by the network.
<utime>	String type value representing the universal 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). The universal time can be provided by the network at the time of delivering time zone information and will be present in the unsolicited result code for extended time zone and universal time reporting if provided by the network.

### 3.2.23 AT+CTZU Automatic Time Zone Update

AT+CTZU Automatic Time Zone Update	
Description	Set command enables and disables automatic time zone update via NITZ. If setting fails in an MT error, +CME ERROR: <err> is returned. Read command returns the current settings in the MT. Test command returns supported on- and off-values as a compound value.
Test Command <b>AT+CTZU=?</b>	Response <b>+CTZU: (lists of supported &lt;onoff&gt;s)</b>  <b>OK</b>
Read Command <b>AT+CTZU?</b>	Response <b>+CTZU: &lt;onoff&gt;</b>  <b>OK</b>
Write Command <b>AT+CTZU=&lt;onoff&gt;</b>	Response <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	

#### Defined Values

<onoff>	0 Disable automatic time zone update via NITZ. 1 Enable automatic time zone update via NITZ.
---------	---

### 3.2.24 AT+CIPCA Initial PDP context activation

AT+CIPCA Initial PDP context activation	
Description	<p>The set command controls whether an initial PDP context (see subclause 10.1.0) shall be established automatically following an attach procedure when the UE is attached to GERAN or UTRAN RATs and whether the UE is attached to E-UTRAN with or without a PDN connection.</p> <p>For <math>\langle n \rangle \neq 0</math>, deactivating the last (active) PDP context can lead to a (re)establishment of the initial PDP context. Changing setting of <math>\langle n \rangle</math> from 0 to 1 will cause an immediate attempt to (re)establish the initial PDP context if no PDP context is active. Changing <math>\langle n \rangle</math> from 0 to 2 will if not roaming cause an immediate attempt to (re)establish the initial PDP context if no other PDP context is active. The value of <math>\langle n \rangle = 3</math> applies to E-UTRAN RATs and does not change the setting of PDP context activation in GERAN or UTRAN RATs. Changing <math>\langle n \rangle</math> will never cause a PDP context deactivation.</p> <p>For <math>\langle \text{AttachWithoutPDN} \rangle = 1</math>, the EPS Attach is performed without a PDN connection.</p> <p><b>NOTE:</b> For this command, the term roaming corresponds to being registered to a VPLMN which is not equivalent to HPLMN or EHPLMN.</p> <p>The read command returns the current setting of the command. The test command returns values supported as a compound value. Refer to Chapter 9: Error Values for possible <math>\langle \text{err} \rangle</math> values</p>
Test Command <b>AT+CIPCA=?</b>	<p>Response</p> <p><b>+CIPCA:</b>(list of supported <math>\langle n \rangle</math>s),(list of supported <math>\langle \text{AttachWithoutPDN} \rangle</math>s)</p> <p><b>OK</b></p>
Read Command <b>AT+CIPCA?</b>	<p>Response</p> <p><b>+CIPCA:</b> <math>\langle n \rangle</math> [, <math>\langle \text{AttachWithoutPDN} \rangle</math>]</p> <p><b>OK</b></p>
Write Command <b>AT+CIPCA=[<math>\langle n \rangle</math> [, <math>\langle \text{AttachWithoutPDN} \rangle</math>]]</b>	<p>Response</p> <p><b>OK</b></p> <p>If error is related to ME functionality:</p> <p><b>+CME ERROR:</b> <math>\langle \text{err} \rangle</math></p>
Parameter Saving Mode	-
Max Response Time	-
Reference	

## Defined Values

$\langle n \rangle$	<p>Integer type. Activation of PDP context upon attach.</p> <p>0 Do not activate</p> <p>1 Always activate</p> <p>2 Activate when not roaming</p> <p>3 No change in current setting</p>
---------------------	--

<b>&lt;AttachWithoutPDN</b>	Integer type. EPS Attach with or without PDN connection.
<b>&gt;</b>	<p><u>0</u> EPS Attach with PDN connection</p> <p>1 EPS Attach without PDN connection</p>

**NOTE**

- Only <n>=3 is supported.
- If <AttachWithoutPDN> is omitted, will use the default value 0.

### 3.2.25 AT+CGAPNRC APN Rate Control

AT+CGAPNRC APN Rate Control	
Description	<p>This execution command returns the APN rate control parameters (see 3GPP TS 24.008 [8]) associated to the provided context identifier &lt;cid&gt;.</p> <p>If the parameter &lt;cid&gt; is omitted, the APN rate control parameters for all active PDP contexts are returned. The test command returns a list of &lt;cid&gt;s associated with secondary and non-secondary active PDP contexts.</p> <p>Refer to Chapter 9: Error Values for possible &lt;err&gt; values.</p>
Test Command <b>AT+CGAPNRC=?</b>	Response <b>+CGAPNRC:</b> (list of <cid>s associated with active contexts)  <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Write Command <b>AT+CGAPNRC[=&lt;cid&gt;]</b>	Response <b>[+CGAPNRC:</b> <cid>[,<Additional_exception_reports>[,<Uplink_time_unit>[,<Maximum_uplink_rate>]]][<CR><LF> <b>+CGAPNRC:</b> <cid>[,<Additional_exception_reports>[,<Uplink_time_unit>[,<Maximum_uplink_rate>]]][...]]  <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

### Defined Values

<cid>	Integer type; specifies a particular PDP context definition (see the +CGDCONT command).
<Additional_exception_reports>	Integer type; indicates whether or not additional exception reports are allowed to be sent when the maximum uplink rate is reached. This refers to bit 4 of octet 1 of the APN rate control parameters IE as specified in 3GPP TS 24.008 [8] subclause 10.5.6.3.2. 0 Additional_exception_reports at maximum rate reached are not allowed to be sent. 1 Additional_exception_reports at maximum rate reached are allowed to be sent.
<Uplink_time_unit>	Integer type; specifies the time unit to be used for the maximum uplink rate. This refers to bits 1 to 3 of octet 1 of the APN rate control parameters IE as specified in 3GPP TS 24.008 [8] subclause 10.5.6.3.2. 0 unrestricted 1 minute 2 hour 3 day 4 week
<Maximum_uplink_rate>	Integer type; specifies the maximum number of messages the UE is restricted to send per uplink time unit. This refers to octet 2 to 4 of the APN rate control parameters IE as specified in 3GPP TS 24.008 [8] subclause 10.5.6.3.2.

### 3.2.26 AT+CSODCP Sending of Originating Data via the Control Plane

<b>AT+CSODCP Sending of Originating Data via the Control Plane</b>	
Description	<p>The set command is used by the TE to transmit data over control plane to network via MT. Context identifier &lt;cid&gt; is used to link the data to particular context.</p> <p>This command optionally indicates that the application on the MT expects that the exchange of data:</p> <ul style="list-style-type: none"> <li>- will be completed with this uplink data transfer; or</li> <li>- will be completed with the next received downlink data.</li> </ul> <p>This command also optionally indicates whether or not the data to be transmitted is an exception data.</p> <p>This command causes transmission of an ESM DATA TRANSPORT message, as defined in 3GPP TS 24.301 [83].</p> <p>Test command returns the maximum number of bytes of the user data container supported by the MT, supported &lt;RAI&gt;s and supported &lt;type_of_user_data&gt;s as a compound value.</p> <p>If &lt;sequence&gt; is not omitted, when datagram is sent by rf or discard, will report the result <b>+CSODCPR: &lt;cid&gt;,&lt;sequence&gt;,&lt;status&gt;</b>.</p>

Test Command <b>AT+CSODCP=?</b>	Response <b>+CSODCP:</b> (range of supported <cid>s),(maximum number of bytes of the <cpdata_length>),(list of supported <RAI>s),(list of supported <type_of_user_data>s),(list of supported <sequence>s)  <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Write Command <b>AT+CSODCP=&lt;cid&gt;,&lt;cpdata_length&gt;,&lt;cpdata&gt;[,&lt;RAI&gt;[,&lt;type_of_user_data&gt;[,&lt;sequence&gt;]]</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b> Parameters
Parameter Saving Mode	-
Max Response Time	-
Reference	

## Defined Values

<cid>	Integer type. A numeric parameter which specifies a particular PDP context or EPS bearer context definition. The <cid> parameter is local to the TE-MT interface and identifies the PDP or EPS bearer contexts which have been setup via AT command (see the +CGDCONT command).
<cpdata_length>	Integer type. Indicates the number of bytes of the <cpdata> information element. When there is no data to transmit, the value shall be set to zero.
<cpdata>	String of octets. Contains the user data container contents (refer 3GPP TS 24.301 [83] subclause 9.9.4.24). When there is no data to transmit, the <cpdata> shall be an empty string (""). This parameter shall not be subject to conventional character conversion as per +CSCS. The coding format of the user data container and the maximum length of <cpdata> are implementation specific.
<RAI>	Integer type. Indicates the value of the release assistance indication, refer 3GPP TS 24.301 [83] subclause 9.9.4.25. <u>0</u> No information available. 1 The MT expects that exchange of data will be completed with the transmission of the ESM DATA TRANSPORT message. 2 The MT expects that exchange of data will be completed with the receipt of an ESM DATA TRANSPORT message.
<type_of_user_data>	Integer type. Indicates whether the user data that is transmitted is regular or exceptional. <u>0</u> Regular data. 1 Exception data.



<sequence>	Sequence of data, range 1-255.If omit, will not report data sent status. <b>NOTE: &lt;sequence&gt; is not defined by 3GPP but only used for HiSi.</b>
<status>	The status of datagram. 0 Error 1 Sent

**NOTE**

- Maximum data length will be 1358 bytes when non-IP is used, otherwise will be 0.
- Only one message will be buffered at any one time.

### 3.2.27 AT+CRTDCP Reporting of Terminating Data via the Control Plane

#### AT+CRTDCP Reporting of Terminating Data via the Control Plane

Description	The set command is used to enable and disable reporting of data from the network to the MT that is transmitted via the control plane in downlink direction. If reporting is enabled, the MT returns the unsolicited result code <b>+CRTDCP: &lt;cid&gt;,&lt;cpdata_length&gt;,&lt;cpdata&gt;</b> when data is received from the network. Read command returns the current settings. Test command returns supported values as compound values. Refer to Chapter 9: Error Values for possible <err> values.
Test Command <b>AT+CRTDCP=?</b>	Response <b>+CRTDCP:(list of supported &lt;reporting&gt;s),(range of supported &lt;cid&gt;s),(maximum number of octets of user data indicated by &lt;cpdata_length&gt;)</b>  <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Read Command <b>AT+CRTDCP?</b>	Response <b>+CRTDCP: &lt;reporting&gt;</b>  <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Write Command <b>AT+CRTDCP=&lt;reporting&gt;</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	-
Max Response Time	-

Reference

**Defined Values**

<b>&lt;reporting&gt;</b>	Integer type, controlling reporting of mobile terminated control plane data events 0 Disable reporting of MT control plane data. 1 Enable reporting of MT control plane data by the unsolicited result code +CRTDCP.
<b>&lt;cid&gt;</b>	Integer type. A numeric parameter which specifies a particular PDP context or EPS bearer context definition. The <cid> parameter is local to the TE-MT interface and identifies the PDP or EPS bearer contexts which have been setup via AT command (see the +CGDCONT command).
<b>&lt;cpdata_length&gt;</b>	Integer type. Indicates the number of bytes of the <cpdata> information element. When there is no data to transmit, the value shall be set to zero.
<b>&lt;cpdata&gt;</b>	String of octets. Contains the user data container contents (refer 3GPP TS 24.301 [83] subclause 9.9.4.24). When there is no data to transmit, the <cpdata> shall be an empty string (""). This parameter shall not be subject to conventional character conversion as per +CSCS. The coding format of the user data container and the maximum length of <cpdata> are implementation specific.

**NOTE**

- Maximum data length will be 1358 bytes when non-IP is used, otherwise will be 0.
- Only one message will be buffered at any one time.
- Terminating data via the control plane before enable reporting will be discarded.

**3.2.28 AT+CGEREP Packet Domain Event Reporting**

**AT+CGEREP Packet Domain Event Reporting**

Description	Set command enables or disables sending of unsolicited result codes, +CGEV: XXX from MT to TE in the case of certain events occurring in the Packet Domain MT 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 or 2 is entered. If a setting is not supported by the MT, ERROR or +CME ERROR: is returned. Read command returns the current mode and buffer settings.
-------------	---

	Test command returns the modes and buffer settings supported by the MT as compound values.
Test Command <b>AT+CGEREP=?</b>	Response <b>+CRTDCP:</b> (list of supported <reporting>s),(range of supported <cid>s),(maximum number of octets of user data indicated by <cpdata_length>)  <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Read Command <b>AT+CGEREP?</b>	Response <b>+CRTDCP: &lt;reporting&gt;</b>  <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Write Command <b>AT+CGEREP=&lt;mode&gt;[,&lt;bfr&gt;]</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

### Defined Values

<mode>	0 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>	0 MT buffer of unsolicited result codes defined within this command is cleared when <mode> 1 ; Only it now

### 3.2.29 +CGEV Indicate EPS PDN Connection and Bearer Resources Operations Status

#### +CGEV Indicate EPS PDN Connection and BearerResources Operations Status

Description	This is an unsolicited message to indicate EPS PDN connection and bearer resources operations status  <b>+CGEV: NW PDN DEACT &lt;cid&gt;</b>
-------------	--

## Defined Values

<b>&lt;cid&gt;</b>	The format is found in command +CGDCONT.<cid> values of 1-11 are supported.
--------------------	---

### 3.2.30 AT+CGCONTRDP PDP Context Read Dynamic Parameters

#### AT+CGCONTRDP PDP Context Read Dynamic Parameters

Description	<p>The execution command returns the relevant information &lt;bearer_id&gt;, &lt;apn&gt;, &lt;local_addr and subnet_mask&gt;, &lt;gw_addr&gt;, &lt;DNS_prim_addr&gt;, &lt;DNS_sec_addr&gt;, &lt;P-CSCF_prim_addr&gt;, &lt;P-CSCF_sec_addr&gt;, &lt;IM_CN_Signalling_Flag&gt;, &lt;LIPA_indication&gt;, &lt;IPv4_MTU&gt;, &lt;WLAN_Offload&gt;, &lt;Non-IP_MTU&gt;, &lt;Serving_PLMN_rate_control_value&gt; and &lt;Reliable_Data_Service&gt; for an active non secondary PDP context with the context identifier &lt;cid&gt;. If the MT indicates more than two IP addresses of P-CSCF servers or more than two IP addresses of DNS servers, multiple lines of information per &lt;cid&gt; will be returned.</p> <p>If the MT has dual stack capabilities, at least one pair of lines with information is returned per &lt;cid&gt;. First one line with the IPv4 parameters followed by one line with the IPv6 parameters. If this MT with dual stack capabilities indicates more than two IP addresses of P-CSCF servers or more than two IP addresses of DNS servers, multiple of such pairs of lines are returned.</p> <p><b>NOTE:</b> <i>If the MT doesn't have all the IP addresses to be included in a line, e.g. in case the UE received four IP addresses of DNS servers and two IP addresses of P-CSCF servers, the parameter value representing an IP address that can not be populated is set to an empty string or an absent string.</i></p> <p>If the parameter &lt;cid&gt; is omitted, the relevant information for all active non secondary PDP contexts is returned.</p> <p>The test command returns a list of &lt;cid&gt;s associated with active non secondary contexts.</p>
Test Command <b>AT+CGCONTRDP=?</b>	<p>Response</p> <p><b>+CGCONTRDP:</b> (list of&lt;cid&gt;s associated with active contexts)</p> <p><b>OK</b></p> <p>or</p> <p><b>OK</b></p>
Write Command <b>AT+CGCONTRDP[=&lt;cid&gt;]</b>	<p>Response</p> <p><b>[+CGCONTRDP:</b> &lt;cid&gt;,&lt;bearer_id&gt;,&lt;apn&gt;[,&lt;local_addr and subnet_mask&gt;[,&lt;gw_addr&gt;[,&lt;DNS_prim_addr&gt;[,&lt;DNS_sec_addr&gt;[,&lt;P-CSCF_prim_addr&gt;[,&lt;P-CSCF_sec_addr&gt;[,&lt;IM_CN_Signalling_Flag&gt;[,&lt;</p>



	+CGPIAF is supported, its settings can influence the format of this parameter returned with the execute form of +CGCONTRDP.
<P_CSCF_prim_addr >	String type; shows the IP address of the primary P-CSCF server. When +CGPIAF is supported, its settings can influence the format of this parameter returned with the execute form of +CGCONTRDP.
<P_CSCF_sec_addr >	String type; shows the IP address of the secondary P-CSCF server. When +CGPIAF is supported, its settings can influence the format of this parameter returned with the execute form of +CGCONTRDP.
<IM_CN_Signalling_Flag>	Integer type; shows whether the PDP context is for IM CN subsystem- related signalling only or not. 0 PDP context is not for IM CN subsystem-related signalling only 1 PDP context is for IM CN subsystem-related signalling only
<LIPA_indication>	Integer type; indicates that the PDP context provides connectivity using a 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; shows the IPv4 MTU size in octets.
<WLAN_Offload>	Integer type; indicates 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 3GPP TS 24.008 [8] subclause 10.5.6.20. 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; indicates whether or not the MS and the network support local IP address in TFTs (see 3GPP TS 24.301 [83] and 3GPP TS 24.008 [8] subclause 10.5.6.3). 0 indicates that the MS or the network or both do not support local IP address in TFTs 1 indicates that the MS and the network support local IP address in TFTs
<Non-IP_MTU>	Integer type; shows the Non-IP MTU size in octets.
<Serving_PLMN_rate_control_value>	Integer type; indicates 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 3GPP TS 24.301 [8] subclause 9.9.4.28.
<Reliable_Data_Service>	Integer type; indicates whether the UE is using Reliable Data Service for a PDN connection or not, see 3GPP TS 24.301 [83] and 3GPP TS 24.008 [8] subclause 10.5.6.3. 0 Reliable Data Service is not being used for the PDN connection

1 Reliable Data Service is being used for the PDN connection

**NOTE**

- Only support <cid>,<apn>,<DNS\_prim\_addr>,<DNS\_sec\_addr> now.
- <DNS\_prim\_addr>,<DNS\_sec\_addr> could display only when <PDP\_type> is "IP" or "IPV6".
- Could configure PDP context dynamic parameter items to read by +NCPCDPR.

### 3.2.31 AT+CGAUTH Define PDP Context Authentication Parameters

#### AT+CGAUTH Define PDP Context Authentication Parameters

<p>Description</p>	<p>Set command allows the TE to specify authentication parameters for a PDP context identified by the (local) context identification parameter &lt;cid&gt; used during the PDP context activation and the PDP context modification procedures. Since the &lt;cid&gt; is the same parameter that is used in the +CGDCONT command, +CGAUTH is effectively as an extension to these commands.</p> <p>The read command returns the current settings for each defined context.</p> <p>The test command returns values supported as compound values.</p>
<p>Test Command</p> <p><b>AT+CGAUTH=?</b></p>	<p>Response</p> <p><b>+CGAUTH:</b> (range of supported&lt;cid&gt;s),(list of supported&lt;auth_prot&gt;s),(range of supported&lt;userid&gt;s),(range of supported&lt;password&gt;s)</p> <p><b>OK</b></p>
<p>Read Command</p> <p><b>AT+CGAUTH?</b></p>	<p>Response</p> <p><b>[+CGAUTH:</b>  &lt;cid&gt;,&lt;auth_prot&gt;,&lt;userid&gt;,&lt;password&gt;][&lt;CR&gt;&lt;LF&gt;<b>+CGAUTH:</b>  &lt;cid&gt;,&lt;auth_prot&gt;,&lt;userid&gt;,&lt;password&gt;  <b>[...]]</b></p> <p><b>OK</b></p>
<p>Write Command</p> <p><b>AT+CGAUTH=&lt;cid&gt;[,&lt;auth_prot&gt;[,&lt;userid&gt;[,&lt;password&gt;]]]</b></p>	<p>Response</p> <p>When &lt;auth_prot&gt;/&lt;username&gt;/&lt;password&gt; set:</p> <p><b>OK</b></p> <p>When no &lt;auth_prot&gt;/&lt;username&gt;/&lt;password&gt; set displays current auth_prot username and password for &lt;cid&gt;:</p> <p><b>+CGAUTH: &lt;cid&gt;,&lt;auth_prot&gt;,&lt;username&gt;,&lt;password&gt;</b></p> <p><b>OK</b></p>

	If error is related to wrong AT syntax: <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

## Defined Values

<cid>	Integer type. Specifies a particular PDP context definition (see the +CGDCONT command).
<auth_prot>	Integer type. Authentication protocol used for this PDP context. 0 None. Used to indicate that no authentication protocol is used for this PDP context. Username and password are removed if previously specified. 1 PAP 2 CHAP
<userid>	String type. User name for access to the IP network.
<password>	String type. Password for access to the IP network.

### NOTE

- <userid> is needed when <auth\_prot> is 1 or 2.
- Maximum <userid> string and <password> string length is 60.

### 3.2.32 AT+CPIN Enter PIN

#### AT+CPIN Enter PIN

Description	<p>Set command sends to the MT a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.). If the PIN is to be entered twice, the TA shall automatically repeat the PIN. If no PIN request is pending, no action is taken towards MT and an error message, +CME ERROR, is returned to TE. Refer to Chapter 9 for possible &lt;err&gt; values.</p> <p><b>NOTE 1:</b> <i>SIM PIN, SIM PUK, PH-SIM PIN, PH-FSIM PIN, PH-FSIM PUK, SIM PIN2 and SIM PUK2 refer to the PIN of the selected application on the UICC. For example, in an UTRAN context, the selected application on the currently selected UICC should be a USIM and the SIM PIN then represents the PIN of the selected USIM. See 3GPP TS 31.101 [65] for further details on application selection on the UICC.</i></p> <p>If the PIN required is SIM PUK or SIM PUK2, the second pin is required. This second pin, &lt;newpin&gt;, is used to replace the old pin in the SIM.</p>
-------------	--



	<p><b>NOTE 2:</b> Commands which interact with MT that are accepted when MT is pending SIM PIN, SIM PUK, or PH-SIM are: +CGMI, +CGMM, +CGMR, +CGSN, D112; (emergency call), +CPAS, +CFUN,+CPIN, +CPINR, +CDIS (read and test command only), and +CIND (read and test command only). It is implementation specific whether additional commands can be accepted when MT is pending SIM PIN, SIM PUK, or PH-SIM.</p> <p>Read command returns an alphanumeric string indicating whether some password is required or not.</p>
Test Command <b>AT+CPIN=?</b>	Response <b>OK</b>
Read Command <b>AT+CPIN?</b>	Response <b>+CPIN: &lt;code&gt;</b>  <b>OK</b>
Write Command <b>AT+CPIN=&lt;pin&gt;[,&lt;new pin&gt;]</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR:&lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	5s
Reference	3GPP TS 27.007 [13]

### Defined Values

<b>&lt;code&gt;</b>	<p>READY MT is not pending for any password</p> <p>SIM PIN MT is waiting SIM PIN to be given</p> <p>SIM PUK MT is waiting for SIM PUK to be given</p> <p>SIM PUK BLOCKED</p>
<b>&lt;pin&gt;</b>	String type; password
<b>&lt;new pin&gt;</b>	String type; If the PIN required is SIM PUK or SIMPUK2: new password

#### NOTE

Set and read could execute only when power on.

### 3.2.33 AT+CLCK Facility Lock

## AT+CLCK Facility Lock

Description	Execute command is used to lock, unlock or interrogate a MT or a network facility <fac>. Password is normally needed to do such actions. When querying the status of a 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>. This command should be abortable when network facilities are set or interrogated. Test command returns facility values supported as a compound value.
Test Command <b>AT+CLCK=?</b>	Response <b>OK</b>
Write Command <b>AT+CLCK=&lt;fac&gt;,&lt;mode&gt;[,&lt;passwd&gt;]</b>	Response <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b> When <mode>=2 and command successful: <b>+CLCK: &lt;status&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

### Defined Values

<fac>	"SC" SIM (lock SIM/UICC card installed in the currently selected card slot) (SIM/UICC asks password in MT power-up and when this lock command issued)
<mode>	0 Unlock 1 Lock 2 Query status
<status>	0 Not active 1 active
<passwd>	String type; shall be the same as password specified for the facility from the MT user interface or with command Change Password +CPWD

### 3.2.34 AT+CMOLR Mobile Originated Location Request

#### AT+CMOLR Mobile Originated Location Request

Description	Set command initiates a mobile originated location request (MO-LR). The parameter <enable> enables or disables positioning and reporting by unsolicited result codes. Reporting can be performed in the format of GAD shapes <location_parameters> or in the format of NMEA strings <NMEA-string> or both.
-------------	--

	<p>The unsolicited result codes that can be provided are +CMOLRG: &lt;location_parameters&gt; and/or +CMOLRN: &lt;NMEA-string&gt;.</p> <p>Read command returns the current settings of the parameters &lt;enable&gt;, &lt;method&gt;, &lt;hor-acc-set&gt;, &lt;horacc&gt;, &lt;ver-req&gt;, &lt;ver-acc-set&gt;, &lt;ver-acc&gt;, &lt;vel-req&gt;, &lt;rep-mode&gt;, &lt;timeout&gt;, &lt;interval&gt;&lt;shape-rep&gt;, &lt;plane&gt;, &lt;NMEA-rep&gt; and &lt;third-party-address&gt;. The parameters &lt;hor-acc&gt;, &lt;veraccset&gt;, &lt;ver-acc&gt; and &lt;plane&gt; are only applicable in certain configurations. The parameter &lt;interval&gt;is only applicable if periodic reporting is specified. The parameter &lt;NMEA-rep&gt; is only applicable if reporting is specified by NMEA strings. The parameter &lt;third-party-address&gt; is only applicable if reporting to third party is specified.</p> <p>Test command returns the supported values and ranges.</p>
Test Command AT+CMOLR=?	<p>Response</p> <p><b>+CMOLR:</b> (list of supported&lt;enable&gt;s),(list of supported&lt;method&gt;s),(list of supported&lt;horacc-set&gt;s),(list of supported &lt;hor-acc&gt;s),(list of supported&lt;ver-req&gt;s),(list of supported&lt;veracc-set&gt;s),(list of supported &lt;ver-acc&gt;s),(list of supported&lt;vel-req&gt;s),(list of supported&lt;repmode&gt;s),(list of supported&lt;timeout&gt;s),(list of supported &lt;interval&gt;s),(list of supported&lt;shape-rep&gt;s),(list of supported&lt;plane&gt;s),(list of supported&lt;NMEA-rep&gt;s),(list of supported &lt;third-party-address&gt;s)</p> <p><b>OK</b></p>
Read Command AT+CMOLR?	<p>Response</p> <p><b>+CMOLR:</b> &lt;enable&gt;,&lt;method&gt;,&lt;hor-accset&gt;,[&lt;hor-acc&gt;],&lt;ver-req&gt;,[&lt;ver-accset&gt;],[&lt;ver-acc&gt;],&lt;vel-req&gt;,&lt;repmode&gt;,&lt;timeout&gt;,[&lt;interval&gt;],&lt;shaperep&gt;,[&lt;plane&gt;],[&lt;NMEA-rep&gt;],[&lt;thirdparty-address&gt;]</p> <p><b>OK</b></p>
Write Command AT+CMOLR=[<enable>[,<method>[,<hor-accset>[,<hor-acc>[,<ver-req>[,<ver-accset>[,<ver-acc>[,<vel-req>[,<repmode>[,<timeout>[,<interval>[,<shaperep>[,<plane>[,<NMEA-rep>[,<thirdparty-address>]]]]]]]]]]]]]]]]]]]]	<p>Response</p> <p><b>OK</b></p> <p>or</p> <p><b>+CME ERROR: &lt;err&gt;</b></p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

## Defined Values

<b>&lt;enable&gt;</b>	<p>0 Disables reporting and positioning</p> <p>1 Enables reporting of NMEA strings by unsolicited result code +CMOLRN: &lt;NMEA-string&gt;. Lack of data at each timeout is indicated by an unsolicited result code +CMOLRE.</p> <p>2 Enables reporting of GAD shapes by unsolicited result code +CMOLRG: &lt;location_parameters&gt;. Lack of data at each timeout is indicated by an unsolicited result code +CMOLRE.</p> <p>3 Enables reporting of NMEA strings and GAD shapes by unsolicited result codes +CMOLRG: &lt;location_parameters&gt; and +CMOLRN: &lt;NMEA-string&gt;. Lack of data at each timeout is indicated by an unsolicited result code +CMOLRE.</p>
<b>&lt;method&gt;</b>	<p>0 Unassisted GPS. Autonomous GPS only, no use of assistance data.</p> <p>1 Assisted GPS. 2 Assisted GANSS. 3 Assisted GPS and GANSS. 4 Basic Self location (the network determines the position technology).</p> <p>5 Transfer to third party. This method makes the parameters &lt;shape-rep&gt; and &lt;NMEA-rep&gt; irrelevant (any values are accepted and disregarded). The third party address is given in the parameter &lt;thirdparty-address&gt;.</p> <p>6 Retrieval from third party. This method is to get the position estimate of the third party. The third party address is given in the parameter &lt;third-party-address&gt;.</p>
<b>&lt;hor-acc-set&gt;</b>	<p>0 Horizontal accuracy not set/specified.</p> <p>1 Horizontal accuracy set in parameter &lt;hor-acc&gt;.</p>
<b>&lt;hor-acc&gt;</b>	<p>Requested accuracy as horizontal uncertainty exponent. The value range is 0-127.</p>
<b>&lt;ver-req&gt;</b>	<p>0 Vertical coordinate (altitude) is not requested, 2D location fix is acceptable. The parameters &lt;ver-accset&gt; and &lt;ver-acc&gt; do not apply.</p> <p>1 Vertical coordinate (altitude) is requested, 3D location fix is required.</p>
<b>&lt;ver-acc-set&gt;</b>	<p>0 Vertical accuracy not set/specified.</p> <p>1 Vertical accuracy set/specified in parameter &lt;ver-acc&gt;.</p>
<b>&lt;ver-acc&gt;</b>	<p>Requested accuracy as vertical uncertainty exponent The value range is 0-127. The default value is implementation specific.</p>
<b>&lt;vel-req&gt;</b>	<p>0 Velocity not requested.</p> <p>1 Horizontal velocity requested.</p> <p>2 Horizontal velocity and vertical velocity requested.</p> <p>3 Horizontal velocity with uncertainty requested.</p> <p>4 Horizontal velocity with uncertainty and vertical velocity with uncertainty requested.</p>
<b>&lt;rep-mode&gt;</b>	<p>0 Single report, the timeout for the MO-LR response request is specified by &lt;timeout&gt;.</p>

	1 Periodic reporting, the timeout for each MO-LR response request is specified by <timeout> and the interval between each MO-LR is specified by <interval>.
<timeout>	Indicates how long the MS will wait for a response after a MO-LR. The value range is in seconds from 1 to 65535.
<interval>	The parameter is applicable to periodic reporting only. Determine the interval between periodic MO-LRs. The value range is in seconds from 1 to 65535, and must be greater than or equal to <timeout>.
<shape-req>	This parameter is a sum of integers each representing a certain GAD shape that will be accepted in the unsolicited result code <location_parameters>. Note that only one GAD shape is present per unsolicited result code. 1 Ellipsoid point. 2 Ellipsoid point with uncertainty circle. 4 Ellipsoid point with uncertainty ellipse. 8 Polygon. 16 Ellipsoid point with altitude. 32 Ellipsoid point with altitude and uncertainty ellipsoid. 64 Ellipsoid arc.
<plane>	The parameter specifies whether the control plane or SUPL will be used for MO-LR. 0 Control plane. 1 Secure user plane (SUPL).
<NMEA-rep>	The supported NMEA strings are specified as a comma separated values inside one string. If the parameter is omitted or an empty string is given, no restrictions apply and all NMEA strings are supported.
<third-party-address >	The parameter is applicable to reporting to third party only, and specifies the address to the third party. This parameter has to be specified when <method> value is set to 5 or 6.
<location-parameter s>	String type in UTF-8. This parameter provides XML-formatted strings of GADshape positioning data as defined in table 8.50-2. This parameter shall not be subject to conventional character conversion as per +CSCS. The XML according to the DTD in table 8.50-2 may be provided in one or multiple unsolicited result codes.

### 3.2.35 AT+CPWD Change Password

AT+CPWD Change Password	
Description	Command sets a new password for the facility lock function defined by command Facility Lock +CLCK. Test command returns a list of pairs which present the available facilities and the maximum length of their password.
Test Command	Response
AT+CPWD=?	+CPWD: list of supported (<fac>,<pwdlength>)s

	OK or <b>+CME ERROR: &lt;err&gt;</b>
Write Command <b>AT+CPWD=&lt;fac&gt;,&lt;old pwd&gt;,&lt;newpwd&gt;</b>	Response OK or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

## Defined Values

<b>&lt;fac&gt;</b>	"SC" SIM (lock SIM/UICC card installed in the currently selected card slot) (SIM/UICC asks password in MT power-up and when this lock command issued)
<b>&lt;oldpwd&gt;,&lt;newpwd &gt;</b>	<oldpwd> shall be the same as password specified for the facility from the MT user interface or with command Change Password +CPWD and <newpwd> is the new password, maximum length of password can be determined with <pwdlength>
<b>&lt;pwdlength&gt;</b>	Integer type; maximum length of the password for the facility.

### 3.2.36 AT+CPINR Remaining PIN Retries

#### AT+CPINR Remaining PIN Retries

Description	<p>Execution command cause the MT to return the number of remaining PIN retries for the MT passwords with intermediate result code +CPINR: &lt;code&gt;,&lt;retries&gt;[,&lt;default_retries&gt;] for standard PINs and +CPINRE: &lt;ext_code&gt;,&lt;retries&gt;[,&lt;default_retries&gt;] for manufacturer specific PINs.</p> <p>One line with one intermediate result code is returned for every &lt;code&gt; or &lt;ext_code&gt; selected by &lt;sel_code&gt;.</p> <p>When execution command is issued without the optional parameter &lt;sel_code&gt;, intermediate result codes are returned for all &lt;code&gt;s and &lt;ext_code&gt;s.</p> <p>In the intermediate result codes, the parameter &lt;default_retries&gt; is an optional (manufacturer specific) parameter, per &lt;code&gt; and &lt;ext_code&gt;.</p>
Test Command <b>AT+CPINR=?</b>	Response OK
Write Command <b>AT+CPINR[=&lt;sel_code &gt;]</b>	Response <b>[+CPINR: &lt;code&gt;,&lt;retries&gt;[,&lt;default_retries&gt;]][&lt;CR&gt;,&lt;LF&gt;+CPINR: &lt;code&gt;,&lt;retries&gt;[,&lt;default_retries&gt;]</b>

	<p><b>OK</b></p> <p>If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	
3GPP TS 27.007 [13]	

## Defined Values

<retries>	Integer type. Number of remaining retries per PIN.
<default_retries>	Integer type. Number of default/initial retries per PIN.
<code>	Type of PIN. All values listed under the description of the AT+CPIN command, <code> parameter, except 'READY'.
<ext_code>	Extended, manufacturer specific codes.
<sel_code>	String type. Same values as for the <code> and <ext_code> parameters. These values are strings and shall be indicated within double quotes. It is optional to support wildcard match by '*', meaning match any (sub-)string.

### NOTE

Set and read could execute only when power on.

## 3.2.37 AT+CCHO Open Logical Channel

### AT+CCHO Open Logical Channel

Description	<p>Execution of the command causes the MT to return &lt;sessionid&gt; to allow the TE to identify a channel that is being allocated by the currently selected UICC, which is attached to ME. The currently selected UICC will open a new logical channel; select the application identified by the &lt;dfname&gt; received with this command and return a session Id as the response. The ME shall restrict the communication between the TE and the UICC to this logical channel.</p> <p>This &lt;sessionid&gt; is to be used when sending commands with Restricted UICC Logical Channel access +CRLA or Generic UICC Logical Channel access +CGLA commands.</p> <p><b>NOTE:</b> <i>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 &lt;sessionid&gt; indicated in the AT command. See 3GPP TS 31.101 [65] for further information on</i></p>
-------------	---

	<i>logical channels in APDU commands protocol.</i>
Write Command <b>AT+CCHO=&lt;dfname&gt;</b>	Response <b>+CCHO: &lt;sessionid&gt;</b>  <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	

### Defined Values

<dfname>	String type in hexadecimal character format. 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 (e.g. (U)SIM, WIM, ISIM) using logical channels mechanism. See 3GPP TS 31.101 [65] for more information about defined values

### 3.2.38 AT+CCHC Close logical channel

#### AT+CCHC Close UICC Logical Channel

Description	This command asks the ME to close a communication session with the active UICC. The ME shall close the previously opened logical channel. The TE will no longer be able to send commands on this logical channel. The UICC will close the logical channel when receiving this command.
Write Command <b>AT+CCHC=&lt;sessionid&gt;</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	

### Defined Values

<sessionid>	Integer type; the session used to target a specific application on the smart card (e.g. (U)SIM, WIM, ISIM) using logical channels mechanism
-------------	---



### 3.2.39 AT+CGLA Generic UICC Logical Channel Access

#### AT+CGLA Generic UICC Logical Channel Access

Description	<p>Set command transmits to the MT the &lt;command&gt; it then shall send as it is to the selected UICC. In the same manner the UICC &lt;response&gt; shall be sent back by the MT to the TA as it is.</p> <p>This command allows a direct control of the currently selected UICC by a distant application on the TE. The TE shall then take care of processing UICC information within the frame specified by GSM/UMTS.</p> <p>Although Generic UICC Logical Channel Access command +CGLA allows TE to take control over the UICC-MT interface, there are some functions of the UICC-MT interface that logically do not need to be accessed from outside the TA/MT. Moreover, for security reason the GSM network authentication should not be handled outside the TA/MT. Therefore it shall not be allowed to execute a Run GSM Algorithm command or an Authenticate command in GSM context from the TE using +CGLA at all time whether the +CGLA is locked or unlocked. This shall not forbid the TE to send Authenticate commands in other security contexts (e.g. EAP security context).</p> <p>For example, the TA/MT shall forbid the transfer of the Authenticate command to a USIM application when parameters P2=0 (GSM security context). See 3GPP TS 31.102 [59] for USIM authenticate command definition.</p> <p><b>NOTE: Compared to Restricted UICC Access command +CRLA, the definition of +CGLA allows TE to take more control over the UICC-MT interface. The locking and unlocking of the interface may be done by a special &lt;command&gt; value or automatically by TA/MT (by interpreting &lt;command&gt; parameter). In case that TE application does not use the unlock command (or does not send a &lt;command&gt; causing automatic unlock) in a certain timeout value, MT may release the locking.</b></p>
Write Command <b>AT+CGLA=&lt;sessionid&gt;,&lt;length&gt;,&lt;command&gt;</b>	<p>Response</p> <p><b>+CGLA: &lt;length&gt;,&lt;response&gt;</b></p> <p><b>OK</b></p> <p>If error is related to ME functionality:</p> <p><b>+CME ERROR: &lt;err&gt;</b></p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	

#### Defined Values

<sessionid>	Integer type; this is the identifier of the session to be used in order to send the APDU commands to the UICC. It is mandatory in order 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>(two times the actual length of the command or response)
<command>	Command passed on by the MT to the UICC in the format as described in 3GPP TS 31.101 [65] (hexadecimal character format; refer +CSCS)
<response>	Response to the command passed on by the UICC to the MT in the format as described in 3GPP TS 31.101 [65] (hexadecimal character format; refer +CSCS)

### 3.2.40 AT+CMTLR Mobile Terminated Location Request Notification

AT+CMTLR Mobile Terminated Location Request Notification	
Description	<p>Set command enables Mobile Terminated Location Request (MT-LR) notifications to the TE. The parameter &lt;subscribe&gt; enables or disables notification by an unsolicited result code. It is possible to enable notification of MT-LR performed over the control plane or over SUPL or both. Relevant location request parameters are provided in the unsolicited result code +CMTLR:&lt;handle-id&gt;,&lt;notification-type&gt;,&lt;locationtype&gt;,[&lt;client-external-id&gt;],[&lt;client-name&gt;],[&lt;plane&gt;].</p> <p>Read command returns the current value of &lt;subscribe&gt;.</p> <p>Test command returns the supported values as a compound value.</p>
Test Command <b>AT+CMTLR=?</b>	<p>Response</p> <p><b>+CMTLR:</b> (list of supported &lt;subscribe&gt;s)</p> <p><b>OK</b></p>
Read Command <b>AT+CMTLR?</b>	<p>Response</p> <p><b>+CMTLR:</b> &lt;subscribe&gt;</p> <p><b>OK</b></p>
Write Command <b>AT+CMTLR=[&lt;subscribe&gt;]</b>	<p>Response</p> <p><b>OK</b></p> <p>or</p> <p><b>+CME ERROR:</b> &lt;err&gt;</p>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	

#### Defined Values

<subscribe>	Enables and disables the subscription for MT-LR notifications 0 Disables reporting and positioning. 1 Subscribe for notifications of MT-LR over control plane. 2 Subscribe for notifications of MT-LR over SUPL. 3 Subscribe for notifications of MT-LR over control plane and SUPL.
<handle-id>	ID associated with each MT-LR used to distinguish specific request in case of multiple requests. The value range is 0-255.
<notification-type>	Integer type. Information about the user's privacy. 0 The subscription may stipulate that positioning the user by a third party is allowed and the network may choose to inform the user as a matter of courtesy. 1 Locating the user is permitted if the user ignores the notification. 2 Locating the user is forbidden if the user ignores the notification
<location-type>	Integer type. Indicates what type of the location is requested. 0 The current location. 1 The current or last known location. 2 The initial location.
<client-external-id>	String type. Indicates the external client where the location information is sent to (if required).
<client-name>	String type. Contains the string identifying the external client requesting the user's location
<plane>	Integer type. The parameter specifies whether the MT-LR came over control plane or SUPL. 0 Control plane. 1 Secure user plane (SUPL).

### 3.2.41 AT+CMTLRA Mobile Terminated Location Request Disclosure Allowance

AT+CMTLRA Mobile Terminated Location Request Disclosure Allowance	
Description	Set command allows or disallows disclosure of the location to the TE as a result of MT-LR by the parameter <allow>. Read command returns the current values. Test command returns the supported values.
Test Command <b>AT+CMTLRA=?</b>	Response <b>+CMTLRA:</b> (lists of supported <allow>values)
Read Command <b>AT+CMTLRA?</b>	Response <b>+CMTLRA:</b> <allow>,<handle-id>
Write Command	Response

<b>AT+CMTLRA=&lt;allow&gt;, &lt;handle-id&gt;</b>	OK or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	

### Defined Values

<b>&lt;allow&gt;</b>	Integer type. Enables and disables the allowance for location disclosure. 0 Location disclosure allowed. 1 Location disclosure not allowed.
<b>&lt;handle-id&gt;</b>	Integer type. ID associated with each MT-LR used to distinguish specific request in case of multiple requests. The value range is 0-255.

### 3.2.42 AT+CRCES Reading Coverage Enhancement Status

<b>AT+CRCES Reading Coverage Enhancement Status</b>	
Description	This command returns the coverage enhancement status of the MT. The terminal can consider the coverage enhancement status prior to deciding to transmit data. Depending on the coverageenhancement status the terminal can refrain from transmitting data. The coverage enhancement status is only provided by the MT if the access technology of the serving cell is E-UTRAN, EC-GSM-IoT or E-UTRAN (NB-S1 mode). If the access technology of the serving cell is different, <Act>=0 is indicated.
Test Command <b>AT+CRCES=?</b>	Response <b>+CRCES: &lt;Act&gt;,&lt;CE_level&gt;,&lt;CC&gt;</b>
Execution Command <b>AT+CRCES</b>	Response <b>OK</b>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	

### Defined Values

<b>&lt;Act&gt;</b>	Integer type; access technology of the serving cell. 0 Location disclosure allowed.
--------------------	--

	<p>1 E-UTRAN. 2 EC-GSM-IoT (A/Gb mode) 3 E-UTRAN (NB-S1 mode)</p>
<CE_level>	<p>Integer type; Coverage Enhancement (CE) level of the MT in the serving cell. Applicable only if &lt;Act&gt;=1 (E-UTRAN) or &lt;Act&gt;=3 (E-UTRAN (NB-S1 mode)).</p> <p>0 No Coverage Enhancement in the serving cell 1 Coverage Enhancement level 0 2 Coverage Enhancement level 1 3 Coverage Enhancement level 2 4 Coverage Enhancement level 3</p>
<cc>	<p>Integer type; Coverage Class (CC) of the MT in the serving cell. Applicable only if &lt;Act&gt;=2 (EC-GSMIoT).</p> <p>0 No Coverage Class in the serving cell 1 Coverage Class 1 2 Coverage Class 2 3 Coverage Class 3 4 Coverage Class 4 5 Coverage Class 5.</p>

### 3.2.43 AT+CRSM Restricted SIM Access

AT+CRSM Restricted SIM Access	
	<p>This command returns the coverage enhancement status of the MT. The terminal can consider the coverage enhancement status prior to deciding to transmit data. Depending on the coverage enhancement status the terminal can refrain from transmitting data.</p> <p>The coverage enhancement status is only provided by the MT if the access technology of the serving cell is E-UTRAN, EC-GSM-IoT or E-UTRAN (NB-S1 mode). If the access technology of the serving cell is different, &lt;Act&gt;=0 is indicated.</p>
Test Command <b>AT+CRSM=?</b>	<p>Response <b>OK</b></p>
Write Command <b>AT+CRSM=&lt;Command&gt;[,&lt;fileId&gt;[,&lt;P1&gt;,&lt;P2&gt;,&lt;P3&gt;[,&lt;data&gt;]]]</b>	<p>Response <b>+CRSM: &lt;sw1&gt;,&lt;sw2&gt;[,&lt;response&gt;]</b></p> <p><b>OK</b> or <b>ERROR</b></p> <p>If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

3GPP TS 27.007  
GSM 11.11

## Defined Values

<b>&lt;Command&gt;</b>	(command passed on by the MT to the SIM; refer 3GPP TS 51.011 [28]): 176 READ BINARY 178 READ RECORD 192 GET RESPONSE 214 UPDATE BINARY 220 UPDATE RECORD 242 STATUS All other values are reserved
<b>&lt;fileId&gt;</b>	Integer type; this is the identifier for an elementary data file on SIM. Mandatory for every Command except STATUS
<b>&lt;P1&gt;,&lt;P2&gt;,&lt;P3&gt;</b>	Integer type, range 0 – 255 Parameters to be passed on by the ME to the SIM; refer GSM 11.11.
<b>&lt;data&gt;</b>	Information which shall be written to the SIM (hex-decimal character format)
<b>&lt;sw1&gt;,&lt;sw2&gt;</b>	Integer type, range 0 - 255 Status information from the 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; refer GSM 11.11.
<b>&lt;response&gt;</b>	Response of a successful completion of the Command previously issued (hexadecimal character format)

### NOTE

**<Command>** does not support 203 and 219.

### 3.2.44 AT+CSIM Generic SIM Access

#### AT+CSIM Generic SIM Access

Description	<p>Set command transmits to the MT the &lt;command&gt; it then shall send as it is to the SIM. In the same manner, the SIM &lt;response&gt; shall be sent back by the MT to the TA as it is.</p> <p>This command allows a direct control of the SIM that is installed in the currently selected card slot, by an distant application on the TE. The TE shall then take care of processing SIM information within the frame specified by GSM/UMTS.</p> <p><b>NOTE:</b> Compared to Restricted SIM Access command +CRSM, the definition of +CSIM allows TE to take more control over the SIM-MT interface. The locking and</p>
-------------	--

	<i>unlocking of the interface may be done by a special &lt;command&gt; value or automatically by TA/MT (by interpreting &lt;command&gt; parameter). In case that TE application does not use the unlock command (or does not send a &lt;command&gt; causing automatic unlock) in a certain timeout value, MT may release the locking.</i>
Test Command <b>AT+CSIM=?</b>	Response <b>OK</b>
Write Command <b>AT+CSIM=&lt;length&gt;,&lt;Command&gt;</b>	Response <b>+CSIM: &lt;length&gt;,&lt;response&gt;</b>  <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	3GPP TS 27.007 [13]

### Defined Values

<b>&lt;length&gt;</b>	Integer type: length of characters sent to the TE in <Command> or <response> (i.e. twice the number of octets in the raw data).
<b>&lt;Command&gt;</b>	String type (string should be included in quotation marks): hex format: GSM 11.11 SIM Command sent from the ME to the SIM.
<b>&lt;response&gt;</b>	String type(string should be included in quotation marks): hex format: GSM 11.11 response from SIM to <Command>.

### 3.2.45 AT+CGDATA Enter Data State

AT+CGDATA Enter Data State	
Description	The execution command causes the MT to perform whatever actions are necessary to establish communication between the TE and the network using one Packet Domain PDP types. This may include performing a PS attach and one PDP context activations. <cid> should be specified (see the +CGDCONT) in order to provide the information needed for the context activation request.  The test command is used for requesting information on the supported <L2P> protocols.
Test Command <b>AT+CGDATA=?</b>	Response <b>+CGDATA: (list of supported&lt;L2P&gt;s)</b>  <b>OK</b>
Write Command	Response

<b>AT+CGDATA=[&lt;L2P&gt;[,&lt;cid&gt;[,&lt;cid&gt;[,...]]]]</b>	<b>OK</b> or <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

## Defined Values

<b>&lt;L2P&gt;</b>	String type; indicates the layer 2 protocol to be used between the TE and MT. M-PT Eigencomm specified protocol - PDP Type, such as IP/IPV6/IPV4V6/Non-IP.
<b>&lt;cid&gt;</b>	Integer type; specifies a particular PDP context definition (see the +CGDCONT command).

### NOTE

- This AT command is not fully followed the 3GPP 27.007, execution command just trigger MT to activate a PDP context, just same as: +CGACT=1,<cid>.The baud rate needs to be greater than or equal to 57600.
- If PDP activation success, MT issues the result code: OK, not: CONNECT, as not support V.250 online data state now.

## 3.2.46 AT+CCIOTOPT CloT Optimization Configuration

### AT+CCIOTOPT CloT Optimization Configuration

Description	<p>The set command controls which CloT EPS optimizations the UE indicates as supported and preferred in the ATTACH REQUEST and TRACKING AREA UPDATE REQUEST messages. The command also allows reporting of the CloT EPS optimizations that are supported by the network. A UE supporting CloT functionality may support control plane CloT EPS optimization or user plane CloT EPS optimization or both (see 3GPP TS 24.301 [83], subclause 9.9.3.34). Based on the application characteristics the UE may prefer to be registered for control plane CloT EPS optimization or for user plane CloT EPS optimization (see 3GPP TS 24.301 [83], subclause 9.9.3.0B). Further the network may support control plane CloT EPS optimization or user plane CloT EPS optimization or both (see 3GPP TS 24.301 [83], subclause 9.9.3.12A).</p> <p>The set command is used also to control the unsolicited result code +CCIOTOPTI. An unsolicited result code</p>
-------------	---



	<p>+CCIOTOPTI: &lt;supported_Network_opt&gt; is used to indicate the supported CloT EPS optimizations by the network.</p> <p>current status of unsolicited result code +CCIOTOPTI. The test command returns values supported as compound values.</p>
<p>Test Command <b>AT+CCIOTOPT=?</b></p>	<p>Response <b>+CCIOTOPT:</b> (list of supported &lt;n&gt;s),(list of supported &lt;supported_UE_opt&gt;s),(list of supported &lt;preferred_UE_opt&gt;s)</p> <p><b>OK</b></p>
<p>Read Command <b>AT+CCIOTOPT?</b></p>	<p>Response <b>+CCIOTOPT:</b> &lt;n&gt;,&lt;supported_UE_opt&gt;,&lt;preferred_UE_opt&gt;</p> <p><b>OK</b></p> <p>If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p>
<p>Write Command <b>AT+CCIOTOPT=[&lt;n&gt;[,&lt;supported_UE_opt&gt;[,&lt;preferred_UE_opt&gt;]]]</b></p>	<p>Response <b>OK</b></p> <p>If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	3GPP TS 27.007 [13]

## Defined Values

<n>	<p>Integer type. Enables or disables reporting of unsolicited result code +CCIOTOPTI.</p> <ul style="list-style-type: none"> <li>0 Disable reporting.</li> <li>1 Enable reporting.</li> <li>3 Disable reporting and reset the parameters for CloT EPS optimization to the default values.</li> </ul>
<supported_UE_opt>	<p>Integer type; indicates the UE's support for CloT EPS optimizations.</p> <ul style="list-style-type: none"> <li>0 No support.</li> <li>1 Support for control plane CloT EPS optimization.</li> <li>2 Support for user plane CloT EPS optimization.</li> <li>3 Support for both control plane CloT EPS optimization and user plane CloT EPS optimization.</li> </ul>
<preferred_UE_opt>	<p>Integer type; indicates the UE's preference for CloT EPS optimizations.</p> <ul style="list-style-type: none"> <li>0 No preference.</li> <li>1 Preference for control plane CloT EPS optimization.</li> <li>2 Preference for user plane CloT EPS optimization.</li> </ul>
<supported_Network	<p>Integer type; indicates the Network support for CloT EPS optimizations.</p>

<b>_opt&gt;</b>	<p>0 No support.</p> <p>1 Support for control plane CloT EPS optimization.</p> <p>2 Support for user plane CloT EPS optimization.</p> <p>3 Support for both control plane CloT EPS optimization and user plane CloT EPS optimization.</p>
-----------------	---

### Example

**AT+CCIOTOPT=?**

**+CCIOTOPT: (0,1,3),(1,3),(0,1,2)**

OK

**AT+CCIOTOPT?**

**+CCIOTOPT: 0,3,1**

OK

### 3.2.47 AT+CGCMOD PDP Context Modify

#### AT+CGCMOD PDP Context Modify

Description	<p>The execution command is used to modify the specified PDP context (s) with respect to QoS profiles and TFTs.</p> <p>After the command has completed, the MT returns to V.250 online data state. If the requested modification for any specified context cannot be achieved, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command. Refer to Chapter 9: Error Values for possible &lt;err&gt; values. For EPS, the modification request for an EPS bearer resource will be answered by the network by an EPS bearer modification request. The request must be accepted by the MT before the PDP context is effectively changed.</p> <p>If no &lt;cid&gt;s are specified the activation form of the command modifies all active contexts. The test command returns a list of &lt;cid&gt;s associated with active contexts</p>
Test Command <b>AT+CGCMOD=?</b>	<p>Response</p> <p><b>+CGCMOD:</b> (list of &lt;cid&gt;s associated with active contexts)</p> <p>OK</p>
Write Command <b>AT+CGCMOD[=&lt;cid&gt;[,&lt;cid&gt;[,...]]]</b>	<p>Response</p> <p>OK</p> <p>If error is related to ME functionality:</p> <p><b>+CME ERROR:</b> &lt;err&gt;</p>

Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	
3GPP TS 27.007 [13]	

## Defined Values

<cid>	Integer type; specifies a particular PDP context definition (see the +CGDCONT command).
-------	---

### NOTE

- Could only modify one cid one time.
- Will block other commands when processing.

## 3.2.48 AT+CGEQOS Define EPS Quality of Service

AT+CGEQOS Define EPS Quality of Service	
Description	<p>The set command allows the TE to specify the EPS Quality of Service parameters &lt;cid&gt;, &lt;QCI&gt;, [&lt;DL_GBR&gt; and &lt;UL_GBR&gt;] and [&lt;DL_MBR&gt; and &lt;UL_MBR&gt;] for a PDP context or Traffic Flows (see 3GPP TS 24.301 [83] and 3GPP TS 23.203 [85]). When in UMTS/GPRS the MT applies a mapping function to UMTS/GPRS Quality of Service. Refer to Chapter 9: Error Values for possible &lt;err&gt; values.</p> <p>A special form of the set command, +CGEQOS=&lt;cid&gt; causes the values for context number &lt;cid&gt; to become undefined.</p> <p>The read command returns the current settings for each defined QoS.</p> <p>The test command returns the ranges of the supported parameters as compound values.</p>
Test Command <b>AT+CGEQOS=?</b>	<p>Response</p> <p><b>+CGEQOS:</b> (range of supported &lt;cid&gt;s),(list of supported &lt;QCI&gt;s),(list of supported &lt;DL_GBR&gt;s),(list of supported &lt;UL_GBR&gt;s),(list of supported &lt;DL_MBR&gt;s),(list of supported &lt;UL_MBR&gt;s)</p> <p><b>OK</b></p>
Read Command <b>AT+CGEQOS?</b>	<p>Response</p> <p><b>[+CGEQOS:</b> &lt;cid&gt;,&lt;QCI&gt;,&lt;DL_GBR&gt;,&lt;UL_GBR&gt;,&lt;DL_MBR&gt;,&lt;UL_MBR&gt;]]&lt;CR&gt;&lt;LF&gt;<b>+CGEQOS:</b></p>

	<cid>,<QCI>,[<DL_GBR>,<UL_GBR>],[<DL_MBR>,<UL_MBR>] [...]
	OK
Write Command <b>AT+CGEQOS=[&lt;cid&gt;[,&lt;QCI&gt;[,&lt;DL_GBR&gt;,&lt;UL_GBR&gt;[,&lt;DL_MBR&gt;,&lt;UL_MBR&gt;]]]]</b>	Response OK If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	3GPP TS 27.007 [13]

### Defined Values

<cid>	Integer type; specifies a particular EPS Traffic Flows definition in EPS and a PDP Context definition in UMTS/GPRS (see the +CGDCONT command).
<QCI>	Integer type; specifies a class of EPS QoS 0 QCI is selected by network [1-4] Value range for guaranteed bit rate Traffic Flows 75 Value for guaranteed bit rate Traffic Flows [5-9] Value range for non-guaranteed bit rate Traffic Flows 79 Value for non-guaranteed bit rate Traffic Flows
<DL_GBR>	Integer type; indicates DL GBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI (see 3GPP TS 24.301 [83]).
<UL_GBR>	Integer type; indicates UL GBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI (see 3GPP TS 24.301 [83]).
<DL_MBR>	Integer type; indicates DL MBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI (see 3GPP TS 24.301 [83]).
<UL_MBR>	Integer type; indicates UL MBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI (see 3GPP TS 24.301 [83]).

### 3.2.49 AT+CGEQOSRDP EPS Quality of Service Read Dynamic Parameters

AT+CGEQOSRDP EPS Quality of Service Read Dynamic Parameters	
Description	The execution command returns the quality of service parameters <QCI>,[<DL_GBR> and <UL_GBR>] and [<DL_MBR> and <UL_MBR>] of the active secondary or non-secondary PDP context associated to the provided context identifier <cid>. If the parameter <cid> is omitted, the quality of service parameters for all secondary and non-secondary active PDP contexts are returned.

	The test command returns a list of <cid>s associated with secondary or non-secondary active PDP contexts
Test Command <b>AT+CGEQOSRDP=?</b>	Response <b>+CGEQOSRDP:</b> (list of <cid>s)  <b>OK</b>
Write Command <b>AT+CGEQOSRDP [=&lt;cid&gt;]</b>	Response <b>+CGEQOSRDP:</b> <cid>,<QCI>,<DL_GBR>,<UL_GBR>,<DL_MBR>,<UL_MBR>[<DL_A MBR>,<UL_AMBR>] [<CR><LF>+CGEQOSRDP: <cid>,<QCI>,<DL_GBR>,<UL_GBR>,<DL_MBR>,<UL_MBR>[<DL_A MBR>,<UL_AMBR>] [...]]  <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	3GPP TS 27.007 [13]

## Defined Values

<cid>	Integer type; specifies a particular EPS Traffic Flows definition in EPS and a PDP Context definition in UMTS/GPRS (see the +CGDCONT command).
<QCI>	Integer type; specifies a class of EPS QoS (see 3GPP TS 23.203 [85] and 3GPP TS 24.301 [83]). 0 QCI is selected by network [1 – 4] value range for guaranteed bit rate Traffic Flows 75 value for guaranteed bit rate Traffic Flows [5 – 9] value range for non-guarenteed bit rate Traffic Flows 79 value for non-guaranteed bit rate Traffic Flows [128 – 254] value range for Operator-specific QCIs The QCI values 65, 66, 69 and 70 are not allowed to be requested by the UE. If the TE requests a QCI parameter 65, 66, 69 or 70, the MT responds with result code +CME ERROR: 181 (unsupported QCI value).
<DL_GBR>	Integer type; indicates DL GBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI (see 3GPP TS 24.301 [83]).
<UL_GBR>	Integer type; indicates UL GBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI (see 3GPP TS 24.301 [83]).
<DL_MBR>	Integer type; indicates DL MBR in case of GBR QCI. The value is in kbit/s.

	This parameter is omitted for a non-GBR QCI (see 3GPP TS 24.301 [83]).
<UL_MBR>	Integer type; indicates UL MBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI (see 3GPP TS 24.301 [83]).
<DL_AMBR>	Integer type; indicates DL APN aggregate MBR. The value is in kbit/s.
<UL_AMBR>	Integer type; indicates UL APN aggregate MBR. The value is in kbit/s.

#### NOTE

- Could set <QCI> only and only <QCI>=0 & 5 & 6 & 7 & 8 & 9 & 79 are supported.
- Could execute only when power on and pdp context defined.

### 3.2.50 AT+CGTFT Traffic Flow Template

#### AT+CGTFT Traffic Flow Template

##### Description

This command allows the TE to specify a Packet Filter - PF for a Traffic Flow Template - TFT that is used in the GGSN in UMTS/GPRS and Packet GW in EPS for routing of packets onto different QoS flows towards the TE. The concept is further described in the 3GPP TS 23.060 [47]. A TFT consists of from one and up to 16 Packet Filters, each identified by a unique <packet filter identifier>. A Packet Filter also has an <evaluation precedence index> that is unique within all TFTs associated with all PDP contexts that are associated with the same PDP address.

The set command specifies a Packet Filter that is to be added to the TFT stored in the MT and used for the context identified by the (local) context identification parameter, <cid>. The specified TFT will be stored in the GGSN in UMTS/GPRS and Packet GW in EPS only at activation or MS-initiated modification of the related context. Since this is the same parameter that is used in the +CGDCONT command, the +CGTFT command is effectively an extension to these commands. The Packet Filters consist of a number of parameters, each of which may be set to a separate value.

A special form of the set command, +CGTFT=<cid> causes all of the Packet Filters in the TFT for context number <cid> to become undefined. At any time there may exist only one PDP context with no associated TFT amongst all PDP contexts associated to one PDP address. At an attempt to delete a TFT, which would violate this rule, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command. Refer to Chapter 9 for possible <err> values.

The read command returns the current settings for all Packet Filters for each defined context.

The test command returns values supported as compound values. If the MT supports several PDP types, the parameter value ranges for each PDP type

	<p>are returned on a separate line. TFTs shall be used for PDP-type IP and PPP only. For PDP-type PPP a TFT is applicable only when IP traffic is carried over PPP. If PPP carries header- compressed IP packets, then a TFT cannot be used.</p>
<p>Test Command <b>AT+CGTFT=?</b></p>	<p>Response <b>+CGTFT:</b> &lt;PDP_type&gt;,(list of supported &lt;packet filter identifier&gt;s),(list of supported &lt;evaluation precedence index&gt;s),(list of supported &lt;remote address and subnet mask&gt;s),(list of supported &lt;protocol number (ipv4) / next header (ipv6)&gt;s),(list of supported &lt;local port range&gt;s),(list of supported &lt;remote port range&gt;s),(list of supported &lt;ipsec security parameter index (spi)&gt;s),(list of supported &lt;type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask&gt;s),(list of supported &lt;flow label (ipv6)&gt;s),(list of supported &lt;direction&gt;s),(list of supported &lt;local address and subnet mask&gt;s)[&lt;CR&gt;&lt;LF&gt;<b>+CGTFT:</b> &lt;PDP_type&gt;,(list of supported &lt;packet filter identifier&gt;s),(list of supported &lt;evaluation precedence index&gt;s),(list of supported &lt;remote address and subnet mask&gt;s),(list of supported &lt;protocol number (ipv4) / next header (ipv6)&gt;s),(list of supported &lt;local port range&gt;s),(list of supported &lt;remote port range&gt;s),(list of supported &lt;ipsec security parameter index (spi)&gt;s),(list of supported &lt;type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask&gt;s),(list of supported &lt;flow label (ipv6)&gt;s),(list of supported &lt;direction&gt;s),(list of supported &lt;local address and subnet mask&gt;s [...]]</p> <p><b>OK</b></p>
<p>Read Command <b>AT+CGTFT?</b></p>	<p>Response <b>[+CGTFT:</b> &lt;cid&gt;,&lt;packet filter identifier&gt;,&lt;evaluation precedence index&gt;,&lt;remote address and subnet mask&gt;,&lt;protocol number (ipv4) / next header (ipv6)&gt;,&lt;local port range&gt;,&lt;remote port range&gt;,&lt;ipsec security parameter index (spi)&gt;,&lt;type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask&gt;,&lt;flow label (ipv6)&gt;,&lt;direction&gt;,&lt;local address and subnet mask&gt;] [&lt;CR&gt;&lt;LF&gt;<b>+CGTFT:</b> &lt;cid&gt;,&lt;packet filter identifier&gt;,&lt;evaluation precedence index&gt;,&lt;remote address and subnet mask&gt;,&lt;protocol number (ipv4) / next header (ipv6)&gt;,&lt;local port range&gt;,&lt;remote port range&gt;,&lt;ipsec security parameter index (spi)&gt;,&lt;type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask&gt;,&lt;flow label (ipv6)&gt;,&lt;direction&gt;,&lt;local address and subnet mask&gt; [...]]</p> <p><b>OK</b></p>
<p>Write Command <b>AT+CGTFT=[&lt;cid&gt;,&lt;packet filter identifier&gt;,&lt;evaluation precedence</b></p>	<p>Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR:</b> &lt;err&gt;</p>





parameter (spi)>	index	FFFFFFFF.
<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>		String type. The string is given as dot-separated numeric (0-255) parameters on the form "t.m".
<flow label (ipv6)>		Numeric value in hexadecimal format. The value range is from 00000 to FFFFF. Valid for IPv6 only.
<direction>		Integer type. Specifies the transmission direction in which the packet filter shall be applied. 0 Pre-Release 7 TFT filter (see 3GPP TS 24.008 [8], table 10.5.162) 1 Uplink 2 Downlink 3 Birectional (Up & Downlink)
<local address and subnet mask>		String type. The string is given as dot-separated numeric (0-255) parameters on the form: "a1.a2.a3.a4.m1.m2.m3.m4" for IPv4 or "a1.a2.a3.a4.a5.a6.a7.a8.a9.a10.a11.a12.a13.a14.a15.a16.m1.m2.m3.m4.m5.m6.m7.m8.m9.m10.m11.m12.m13.m14.m15.m16", for IPv6. When +CGPIAF is supported, its settings can influence the format of this parameter returned with the read form of +CGTFT. Some of the above listed attributes may coexist in a Packet Filter while others mutually exclude each other, the possible combinations are shown in 3GPP TS 23.060 [47].

**NOTE**

- Could execute only when power on and PDP context defined.
- <local address and subnet mask> is not supported yet.

### 3.2.51 AT+IPR Set UE Baud Rate

AT+IPR Set UE Baud Rate	
Description	Set command sets the UE baud rate to be used. Read command returns the current baud rate. Test command returns baud rates supported by the UE.
Test Command <b>AT+IPR=?</b>	Response <b>+IPR:(list of supported auto detectable&lt;rate&gt; values),(list of fixed-only&lt;rate&gt;values)</b>

	OK
Read Command <b>AT+IPR?</b>	Response <b>+IPR:&lt;rate&gt;</b>
Write Command <b>AT+IPR=&lt;rate&gt;</b>	OK or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	SAVE
Max Response Time	-
Reference	

### Defined Values

<b>&lt;rate&gt;</b>	Baud rate at which the UE will accept commands.
---------------------	---

#### NOTE

If <rate> is 0 for set command, UE will enter auto baud rate detection mode and 'AT' or 'at' shall be sent for baud rate detection.

### 3.2.52 AT+SIMEI Set the IMEI for the module

This command is used to set the module's IMEI value.

#### AT+SIMEI Set the IMEI for the module

Test Command <b>AT+SIMEI=?</b>	Response <b>OK</b>
Read Command <b>AT+SIMEI?</b>	Response 1) <b>+SIMEI: &lt;imei&gt;</b>  2) <b>OK</b> 3) <b>ERROR</b>
Write Command <b>AT+SIMEI=&lt;imei&gt;</b>	Response 1) <b>OK</b> 2) <b>ERROR</b>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	9000ms
Reference	Vendor

#### Defined Values

<imei>	The 15-digit IMEI value.
--------	--------------------------

#### Examples

```

AT+SIMEI=?
OK
AT+SIMEI?
+SIMEI: 357396012183175

OK
AT+SIMEI=357396012183175
OK

```

### 3.2.53 AT+COPN Read operator names

This command is used to return the list of operator names from the ME. Each operator code <numericX> that has an alphanumeric equivalent <alphaX> in the ME memory shall be returned.

#### AT+COPN Read operator names

Test Command <b>AT+COPN=?</b>	Response 1) <b>OK</b> 2) <b>ERROR</b>
Execution Command <b>AT+COPN</b>	Response 1) <b>+COPN: &lt;numeric1&gt;,&lt;alpha1&gt;[&lt;CR&gt;&lt;LF&gt;&lt;CR&gt;&lt;LF&gt;</b> <b>+COPN: &lt;numeric2&gt;,&lt;alpha2&gt;</b> <b>[..]</b> <b>OK</b> 2) <b>ERROR</b> 3) <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	3GPP TS 27.007

#### Defined Values

<numericX>	String type, operator in numeric format (see AT+COPS).
<alphaX>	String type, operator in long alphanumeric format (see AT+COPS).

#### Examples

```

AT+COPN=?
OK
AT+COPN
+COPN: "46000","CMCC"

+COPN: "46001","UNICOM"
.....
OK

```

### 3.2.54 AT+CNBP Preferred band selection

This command is used to select or set the state of the band preference.

#### AT+CNBP Preferred band selection

Read Command <b>AT+CNBP?</b>	Response <b>+CNBP: &lt;mode&gt;[,&lt;lte_mode&gt;]</b>  <b>OK</b>
Write Command <b>AT+CNBP=&lt;mode&gt;[,&lt;lte_mode&gt;]</b>	Response 1) <b>OK</b> 2) <b>ERROR</b>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	9000ms
Reference	3GPP TS 27.007

#### Defined Values

<b>&lt;mode&gt;</b>	64bit number, the value is "1" << "<pos>", then or by bit.
<b>&lt;pos&gt;</b>	Value: 0xFFFFFFFF7FFFFFFF Any (any value) 7 GSM_DCS_1800 8 GSM_EGSM_900 9 GSM_PGSM_900 16 GSM_450 17 GSM_480 18 GSM_750 19 GSM_850 20 GSM_RGSM_900 21 GSM_PCS_1900 22 WCDMA_IMT_2000 23 WCDMA_PCS_1900 24 WCDMA_III_1700 25 WCDMA_IV_1700 26 WCDMA_850 27 WCDMA_800 48 WCDMA_VII_2600 49 WCDMA_VIII_900 50 WCDMA_IX_1700
<b>&lt;lte_mode&gt;</b>	64 bit number, the value is "1" << "<lte_pos>", then or by bit. NOTE: FDD(band1 ~ band32), TDD(band33 ~ band42)

<lte\_pos>

Value:

0x000007FF3FDF3FFF Any (any value)

0 EUTRAN\_BAND1(UL:1920-1980; DL:2110-2170)

1 EUTRAN\_BAND2(UL:1850-1910; DL:1930-1990)

2 EUTRAN\_BAND3(UL:1710-1785; DL:1805-1880)

3 EUTRAN\_BAND4(UL:1710-1755; DL:2110-2155)

4 EUTRAN\_BAND5(UL: 824-849; DL: 869-894)

5 EUTRAN\_BAND6(UL: 830-840; DL: 875-885)

6 EUTRAN\_BAND7(UL:2500-2570; DL:2620-2690)

7 EUTRAN\_BAND8(UL: 880-915; DL: 925-960)

8 EUTRAN\_BAND9(UL:1749.9-1784.9;

DL:1844.9-1879.9)

9 EUTRAN\_BAND10(UL:1710-1770; DL:2110-2170)

10 EUTRAN\_BAND11(UL:1427.9-1452.9; DL:1475.9-1500.9)

11 EUTRAN\_BAND12(UL:698-716; DL:728-746)

12 EUTRAN\_BAND13(UL: 777-787; DL: 746-756)

13 EUTRAN\_BAND14(UL: 788-798; DL: 758-768)

16 EUTRAN\_BAND17(UL: 704-716; DL: 734-746)

17 EUTRAN\_BAND18(UL: 815-830; DL: 860-875)

18 EUTRAN\_BAND19(UL: 830-845; DL: 875-890)

19 EUTRAN\_BAND20(UL: 832-862; DL: 791-821)

20 EUTRAN\_BAND21(UL:1447.9-1462.9; DL: 1495.9-1510.9)

22 EUTRAN\_BAND23(UL: 2000-2020; DL: 2180-2200)

23 EUTRAN\_BAND24(UL: 1626.5-1660.5; DL: 1525 -1559)

24 EUTRAN\_BAND25(UL: 1850-1915; DL: 1930 -1995)

25 EUTRAN\_BAND26(UL: 814-849; DL: 859 -894)

26 EUTRAN\_BAND27(UL: 807.5-824; DL: 852 -869)

27 EUTRAN\_BAND28(703-748; DL: 758-803)

28 EUTRAN\_BAND29(UL:1850-1910 or 1710-1755;

DL:716-728)

29 EUTRAN\_BAND30(UL: 2305-2315 ; DL: 2350 - 2360)

32 EUTRAN\_BAND33(UL: 1900-1920; DL: 1900-1920)

33 EUTRAN\_BAND34(UL: 2010-2025; DL: 2010-2025)

34 EUTRAN\_BAND35(UL: 1850-1910; DL: 1850-1910)

35 EUTRAN\_BAND36(UL: 1930-1990; DL: 1930-1990)

36 EUTRAN\_BAND37(UL: 1910-1930; DL: 1910-1930)

37 EUTRAN\_BAND38(UL: 2570-2620; DL: 2570-2620)

38 EUTRAN\_BAND39(UL: 1880-1920; DL: 1880-1920)

39 EUTRAN\_BAND40(UL: 2300-2400; DL: 2300-2400)

40 EUTRAN\_BAND41(UL: 2496-2690; DL: 2496-2690)

41 EUTRAN\_BAND42(UL: 3400-3600; DL: 3400-3600)

42 EUTRAN\_BAND43(UL: 3600-3800; DL: 3600-3800)

## Examples

**AT+CNBP?**

**+CNBP: 0X000200000400180,0X000001E200000095**

**OK**

**AT+CNBP=0X000200000400180,0X000001E200000095**

**OK**

### 3.2.55 AT+CPSI Inquiring UE system information

This command is used to return the UE system information.

#### AT+CPSI Inquiring UE system information

Test Command

**AT+CPSI=?**

Response

1)

**OK**

2)

**ERROR**

Read Command

**AT+CPSI?**

Response

1)If camping on a gsm cell:

**+CPSI: <System Mode>,<Operation Mode>,<MCC>-<MNC>,<LAC>,<Cell ID>,<Absolute RF Ch Num>,<RxLev>,<Track LO Adjust>,<C1-C2>**

**OK**

2)If camping on a wcdma cell:

**+CPSI: <System Mode>,<Operation Mode>,<MCC>-<MNC>,<LAC>,<Cell ID>,<Frequency Band>,<PSC>,<Freq>,<SSC>,<EC/IO>,<RSCP>,<Qual>,<RxLev>,<TXPWR>**

**OK**

3)If camping on a lte cell:

**+CPSI: <System Mode>,<Operation Mode>[,<MCC>-<MNC>,<TAC>,<SCellID>,<PCellID>,<Frequency Band>,<earfcn>,<dlbw>,<ulbw>,<RSRQ>,<RSRP>,<RSSI>,<RSSNR>]**

**OK**

4)If no service:

**+CPSI: NO SERVICE, Low Power Mode**

**OK**

5)

	<b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	3GPP TS 27.007

## Defined Values

<System Mode>	System mode, values: "NO SERVICE", "GSM", "WCDMA", "LTE"
<Operation Mode>	UE operation mode, values: "Unknown", "Online", "Offline", "Factory Test Mode", "Reset", "Low Power Mode", "Flight Mode".
<MCC>	Mobile Country Code (first part of the PLMN code)
<MNC>	Mobile Network Code (second part of the PLMN code)
<LAC>	Location Area Code (hexadecimal digits)
<Cell ID>	Service-cell Identify.
<Absolute RF Ch Num>	AFRCN for service-cell.
<Track LO Adjust>	Track LO Adjust
<C1>	Coefficient for base station selection
<C2>	Coefficient for Cell re-selection
<Frequency Band>	Frequency Band of active set
<PSC>	Primary synchronization code of active set.
<Freq>	Downlink frequency of active set.
<SSC>	Secondary synchronization code of active set
<EC/IO>	Ec/Io value
<RSCP>	Received Signal Code Power
<Qual>	Quality value for base station selection
<RxLev>	RX level value for base station selection
<TXPWR>	UE TX power in dBm. If no TX, the value is 500.
<Cpid>	Cell Parameter ID
<TAC>	Tracing Area Code
<PCellID>	Physical Cell ID
<earfcn>	E-UTRA absolute radio frequency channel number for searching LTE cells
<dlbw>	Transmission bandwidth configuration of the serving cell on the downlink
<ulbw>	Transmission bandwidth configuration of the serving cell on the uplink
<RSRP>	Current reference signal received power in -1/10 dBm. Available for LTE
<RSRQ>	Current reference signal receive quality as measured by L1.
<RSSNR>	Average reference signal signal-to-noise ratio of the serving cell
<SCellID>	String type. cell ID in decimal format for serving cell
<RSSI>	Number format. Received signal strength indication.



## Examples

**AT+CPSI?**

**+CPSI:**

LTE,Online,460-01,0x230A,175499523,318,EUTRAN-BAND3,1650,5,0,21,67,255,19

OK

### 3.2.56 AT+CGDSCONT Define Secondary PDP Context

The set command specifies PDP context parameter values for a Secondary PDP context identified by the (local)context identification parameter,<cid>. The number of PDP contexts that may be in a defined state at the same time is given by the range returned by the test command. A special form of the set command, AT+CGDSCONT=<cid> causes the values for context number <cid> to become undefined.

#### AT+CGDSCONT Define Secondary PDP Context

Test Command <b>AT+CGDSCONT=?</b>	Response 1) <b>+CGDSCONT:</b> (range of supported <cid>s),(list of <p_cid>s for active primary contexts),<PDP_type>,(list of supported <d_comp>s),(list of supported <h_comp>s)  <b>OK</b> 2) <b>ERROR</b>
Read Command <b>AT+CGDSCONT?</b>	Response 1) <b>+CGDSCONT:</b> [<cid>,<p_cid>,<d_comp>,<h_comp> [<CR><LF>+CGDSCONT: <cid>,<p_cid>,<d_comp>,<h_comp> [..]]  <b>OK</b> 2) <b>ERROR</b>
Write Command <b>AT+CGDSCONT=&lt;cid&gt;[,&lt;p_cid&gt;[,&lt;d_comp&gt;[,&lt;h_comp&gt;]]]</b>	Response 1) <b>OK</b> 2) <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms

Reference 3GPP TS 27.007

## Defined Values

<b>&lt;cid&gt;</b>	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. NOTE: The <cid>s for network-initiated PDP contexts have values outside the ranges activated by the +CGACT.
<b>&lt;p_cid&gt;</b>	a numeric parameter which specifies a particular PDP context definition which has been specified by use of the +CGDSCONT command and activated by the +CGACT. The parameter is local to the TE-MT interface. The list of permitted values is returned by the test form of the command.
<b>&lt;PDP_type&gt;</b>	(Packet Data Protocol type)a string parameter which specifies the type of packet data protocol. IP Internet Protocol IPV6 Internet Protocol Version 6 IPV4V6 Dual PDN Stack
<b>&lt;d_comp&gt;</b>	a numeric parameter that controls PDP data compression (applicable for SMDCPonly)(refer 3GPP TS 44.065 [61]) 0 off 1 on (manufacturer preferred compression) 2 V.42bis Other values are reserved.
<b>&lt;h_comp&gt;</b>	a numeric parameter that controls PDP header compression (refer 3GPP TS 44.065 [61] and 3GPP TS 25.323 [62]) 0 off 1 RFC1144 Other values are reserved.

## Examples

### AT+CGDSCONT=?

+CGDSCONT: (2,3,4,5,6,7,8,9,10,11,12,13,14,15),(1),"IP",(0-2),(0-1)

+CGDSCONT: (2,3,4,5,6,7,8,9,10,11,12,13,14,15),(1),"IPV6",(0-2),(0-1)

+CGDSCONT: (2,3,4,5,6,7,8,9,10,11,12,13,14,15),(1),"IPV4V6",(0-2),(0-1)

OK

### AT+CGDSCONT?

+CGDSCONT:

OK

**AT+CGDSCONT=4,2**

+CME ERROR: operation not supported

### 3.2.57 AT+CICCID Read ICCID from SIM card

This command is used to Read the ICCID from SIM card.

#### AT+CICCID Read ICCID from SIM card

Test Command <b>AT+CICCID=?</b>	Response <b>OK</b>
Execution Command <b>AT+CICCID</b>	Response 1) <b>+ICCID: &lt;ICCID&gt;</b> <b>OK</b> 2) <b>ERROR</b> 3) <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	Vendor

#### Defined Values

<b>&lt;ICCID&gt;</b>	Integrate circuit card identity, a standard ICCID is a 20-digit serial number of the SIM card, it presents the publish state, network code, publish area, publish date, publish manufacture and press serial number of the SIM card.
----------------------	--

#### Examples

**AT+CICCID**

+ICCID: 89860318760238610932

OK

**AT+CICCID=?**

OK

### 3.2.58 AT+SPIC Times remain to input SIM PIN/PUK

This command is used to inquire times remain to input SIM PIN/PUK.

#### AT+SPIC Times remain to input SIM PIN/PUK

Test Command <b>AT+SPIC=?</b>	Response <b>OK</b>
Execution Command <b>AT+SPIC</b>	Response <b>+SPIC: &lt;pin1&gt;,&lt;puk1&gt;,&lt;pin2&gt;,&lt;puk2&gt;</b>
Parameter Saving Mode	<b>OK</b>
Max Response Time	NO_SAVE
Reference	-
	Vendor

#### Defined Values

<pin1>	Times remain to input PIN1 code.
<puk1>	Times remain to input PUK1 code.
<pin2>	Times remain to input PIN2 code.
<puk2>	Times remain to input PUK2 code.

#### Examples

```

AT+SPIC=?
OK
AT+SPIC
+SPIC: 3,10,0,10
OK

```

# 4 AT Command for General Commands

## 4.1 Overview of AT Commands for General

Command	Description
<b>AT+QCBAND</b>	Set Supported Network and Bands.
<b>AT+QCLOGDBVER</b>	Database Version Information.
<b>AT+QCCFG</b>	UE Extended Configuration
<b>AT+QCPING</b>	Test IP Network Connectivity to a Remote Host
<b>AT+QCFREQ</b>	Lock or Unlock Cell
<b>AT+QCRMFPLMN</b>	Remove FPLMN in NVM or SIM
<b>AT+QCATTBEARER</b>	Configure the PDN Info Request to Establish.
<b>AT+QCSENDDATA</b>	Send Data Via Control Plane or User Plane
<b>+RECVNONIP</b>	Indicate Downlink NON-IP Data.
<b>AT+QCPMUCFG</b>	Set PMU mode
<b>AT+QCSMSEND</b>	Send one SMS
<b>AT+QCCGSN</b>	Sets the IMEI and SN
<b>AT+QCRFSTAT</b>	Shows the Status of RF Calibration
<b>AT+QCRST</b>	Restart the Chip
<b>AT+QCPSMR</b>	Report the Power Saving Mode Status
<b>AT+QCPLMNS</b>	Used to trigger a PLMN
<b>AT+QCCESQS</b>	Controls the Extended Signal Quality Change Event Reporting
<b>AT+QCSTATUS</b>	Returns Some Key Parameter in UE Side
<b>AT+QCICCID</b>	Causes the TA to Return the ICCID of the UICC
<b>AT+QCBCINFO</b>	Return the Basic Serving Cell Information
<b>AT+QCDNS</b>	Get the IP Address for a Specific URL
<b>AT+QCDNSCFG</b>	Set the Default DNS Addresses Configuration
<b>AT+QCEMMTIME</b>	Report and Get the Emm Time State
<b>AT+CPCFG</b>	Set Plat Configure
<b>AT+QCSLEEP</b>	Power Consumption Test
<b>AT+QCSIMSLEEP</b>	Set UE to Allow SIM Card Sleep for Power Consumption
<b>AT+QCCGSNLOCK</b>	Set Lock Flag for IMEI and SN
<b>AT+QCSAVEFAC</b>	Saves Related Regions to Default Reliable Region
<b>AT+QCTASKINFO</b>	Returns All the Task's Information
<b>AT+QCTASKHISTINFO</b>	Shows Most Recent Tasks' Scheduling History

<b>AT+QCSHOWMEM</b>	Shows Current Heap Memory Usage
<b>AT+QCSYSTEST</b>	Triggers a Test Feature
<b>AT+QCVOTECHK</b>	Analyze the Reason of Sleep Failure
<b>AT+QCURC</b>	Close/Open URC Report
<b>AT+QCPTWEDRXS</b>	Control Whether the UE
<b>+QCPIN</b>	Indicate SIM PIN State
<b>+QCPCFUN</b>	
<b>+QCPADDR</b>	Print PDP Address
<b>AT+QCADC</b>	Read ADC
<b>AT+QCSWC</b>	Set the UE Operation SIM Counter
<b>AT+QCIPR</b>	Operate the Baud Rate of UE
<b>AT+CNPICFG</b>	Operating NPI
<b>AT+QCPRDMODE</b>	Control NPI production mode
<b>AT+QCLEDMODE</b>	Enable the Netlight Function
<b>AT+QCPOWERCLASS</b>	Sets the Band Power Class

## 4.2 Detailed Descriptions of Commands

### 4.2.1 AT+QCBAND Set Supported Network and Bands

<b>AT+QCBAND Set Supported Network and Bands</b>	
Description	The command sets the network mode and bands to be used.
Test Command <b>AT+QCBAND=?</b>	Response <b>+QCBAND: (list of supported&lt;mode&gt;s),(list of supported&lt;band&gt;s)</b>  <b>OK</b>
Read Command <b>AT+QCBAND?</b>	Response <b>+QCBAND: &lt;mode&gt;,&lt;band1&gt;,&lt;band2&gt;,...</b>  <b>OK</b>
Write Command <b>AT+QCBAND=&lt;mode&gt; [,&lt;band1&gt;[,&lt;band2&gt;...]</b> <b>]</b>	Response <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

## Defined Values

<b>&lt;mode&gt;</b>	0 NB-IOT mode(current support NB-IoT only)
<b>&lt;band&gt;</b>	Band list in decimal number:<band> values of 1, 3, 5, 8 are supported.

### NOTE

The default value is decided by RF Calibration table.

## 4.2.2 AT+QCLOGDBVER Database Version Information

AT+QCLOGDBVER Database Version Information	
Description	This read command returns current unilog database version information.
Read Command <b>AT+QCLOGDBVER?</b>	Response <b>+QCLOGDBVER: &lt;LogDbVserion&gt;</b> <b>OK</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

## 4.2.3 AT+QCCFG UE Extended Configuration

AT+QCCFG UE Extended Configuration	
Description	The command set UE extended configuration. The read command return current setting of each parameters. The test command returns values supported as a compound value.
Test Command <b>AT+QCCFG=?</b>	Response <b>+QCCFG: (list of supported&lt;param&gt;s)</b> <b>OK</b>
Read Command <b>AT+QCCFG?</b>	Response <b>+QCCFG:</b> <b>&lt;param1&gt;,&lt;value1&gt;,&lt;param2&gt;,&lt;value2&gt;...&lt;paramN&gt;,&lt;valueN&gt;</b>

	OK
Write Command	Response
<code>AT+QCCFG=&lt;param1&gt; ,&lt;value1&gt;[,&lt;param2&gt;,&lt; value2&gt;[,&lt;param3&gt;,&lt;v alue3&gt;,[...]]]</code>	OK or +CME ERROR: <err>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

## Defined Values

<param>	0 NB-IOT mode(current support NB-IoT only)
"AutoApn"	Whether UE auto set the attached APN according to the inserted SIM card. Supported values: (0,1)
"UsimPowerSave"	Enable/disable USIM power save. Supported values: (0,1)
"UsimSimulator"	Enable/disable virtual SIM card for instrument test, such as CMW500. Supported values: (0,1)
"Rohc"	Whether UE support ROHC. Supported values: (0,1)
"Ipv6RsDelay"	Delay in seconds then UE trigger IPv6 NDP (RS) procedure to get IPv6 prefix address. Supported values: (0-65535)
"PowerCfun"	Default CFUN state after UE power-on or reboot; Supported values: (0,1,4) a) If set to 0, UE remain CFUN0 state (neither turn on protocol/RF nor SIM) after power-on or reboot; And could turn on protocol/RF and SIM via AT+CFUN=1 b) If set to 1, UE auto turn on protocol, and connect the network after power-on or reboot; c) If set to 4, UE only turn on SIM, disable (turn off) protocol/RF, after power-on or reboot;
"PsPowerOnMaxDelay"	Max delay in seconds after power on, UE will delay in a random value between 0 to max delay value. Supported values: (0-65535)
"SupportSms"	Whether UE support SMS. Supported values: (0,1)
"TauForSms"	Whether need to trigger TAU procedure, if UE support SMS capability, while NW not support. Supported values: (0,1)
"PlmnSearchPowerLevel"	Set the PLMN search level when UE OOS; Supported values: (0,1,2,3) 0 - OOS PLMN search interval: 30 sec, 1 min, 2 min 1 - OOS PLMN search interval: 5 min, 10 min, 15 min 2 - OOS PLMN search interval: 10 min, 30 min, 1 hour 3 - OOS PLMN search interval: 30 sec, then stop PLMN search, and let AT: AT+QCPLMNS to start PLMN search
"EpcO"	Whether UE need to use "EPCO" in "PDN CONNECTION REQUEST" carried in "ATTACH REQUEST", and "ESM INFORMATION RESPONSE"; If set to 0, just use "PCO". Supported values: (0,1)



"T3324MaxValueS"	Set user control T3324 value in second. Support values: (0-0xFFFFFFFF) a) If T3324MaxValues is smaller than 0xFFFF and network configured T3324 is equal to or greater than T3324MaxValues (or network not configured T3324),use the configured T3324MaxValues b) If T3324MaxValues is smaller than 0xFFFF and network configured T3324 is smaller than T3324MaxValues , use the network configured value c) If T3324MaxValues is equal to or greater than 0xFFFF,just means disable this feature(use network configured value)
"MultiCarrier"	Whether UE support multi-carrier feature.Support values: (0,1)
"MultiTone"	Whether UE support multi-tone feature.Support values: (0,1)
"SupportUpRai"	Whether UE support L2 (MAC layer) RAI feature, which only valid whether set to R14 version. Supported values: (0,1)
"DataInactTimer"	Set the value of "data inactivity timer" in seconds, if this timer is not configured by NW (in MAC-MainConfig-NB), just use this setting value. Supported value: (0,40-254) a) Default value: 60 b) If set to 0, just means this timer is invalid, don't need to start.
"RelaxMonitorDeltaP"	Set the value of "SearchDeltaP" in DB for RelexMonitor feature. If this value is not configured by NW (in SIB-NB), just use this setting value. Supported values: (0-15). Default value: 6.
"DisableNCellMeas"	Whether UE support NCell measuring feature.Supported values: (0,1)
"NbCategory"	Set the value of NB-IOT category. Supported values: (1,2)
"RelVersion"	Set the NB release version. Supported values: (13,14)
"Ipv6RsForTestSim"	Whether UE trigger IPv6 NDP (RS) procedure to get IPv6 prefix address, when the SIM card inserted is a TEST SIM. Supported values: (0,1) Default value 0. IPv6 NDP (RS) procedure is triggered by default if the inserted SIM card is not for testing.
<CellSearchGuardTimer>	
<PsSoftReset>	
<value>	Value of configuration.

#### 4.2.4 AT+QCPING Test IP Network Connectivity to a Remote Host

##### AT+QCPING Test IP Network Connectivity to a Remote Host

Description	The command sends an ICMP packet to the specified host address. AT+QCPING initiates the sending of a PING packet with payload size: <size> to the specified address. This will either cause a packet to be returned if the remote system is connected and responding to PING packets
-------------	--

	or no response will be received. If none of the response packet received within the timeout period <timeout>. It will continue to send PING packet until the <count> number of times.
Test Command <b>AT+QCPING=?</b>	Response <b>+QCPING:</b> (list of supported<ipaddr/Url/mode>s),(list of supported<count> s),(list of supported <size>s),(list of supported<timeout>s)  <b>OK</b>
Write Command <b>AT+QCPING=[&lt;ipaddr/Url&gt;/&lt;mode&gt;[,&lt;count&gt;[,&lt;size&gt;[,&lt;timeout&gt;][,rai_enable]]]</b>	Response <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

## Defined Values

<mode>	0 Stop ping
<ipaddr/Url>	String type, IP address or URL
<count>	ping times: 1-255 default value: 4. 255 means all the time Note: default value: 4, 255 means all the time
<size>	Payload size: 1-5000 default value: 32.
<timeout>	UE ping reply timeout after ping request (ms). <timeout> values between 1 to 600000 are supported, and default value: 20000.
<rai_enable>	Integer type, if the value is 1, UE will send the last ping request packet with RAI indication 0-1 Note: default value: 0

### NOTE

- When one PING reply received in <timeout>, an unsolicited result code: +QCPING: SUCC, dest: <dest\_ip\_addr>, RTT: <rtt\_time>ms will sent to TE..
- If no PING reply received in <timeout>, an unsolicited result code: +QCPING: FAIL, dest: <dest\_ip\_addr>, time out: <timeout>ms will sent to TE.
- If this is an ERROR meet during PING procedure, an unsolicited result code: +QCPING: ERROR, Cause: <cause> will send to TE.
- When PING procedure is done, an unsolicited result code: +QCPING: DONE<CR><LF>+QCPING: dest: <dest\_ip\_addr>, <count> packets transmitted, <reply\_count> received, <lost\_percent>%

packet loss<CR> rtt min/avg/max = <rtt\_min> / <rtt\_avg> / <rtt\_max> ms will send to TE.

#### 4.2.5 AT+QCFREQ Lock or Unlock Cell

AT+QCFREQ Lock or Unlock Cell	
Description	The command set prefer EARFCN list, lock or unlock cell.
Test Command <b>AT+QCFREQ=?</b>	Response <b>+QCFREQ: (list of supported&lt;mode&gt;s)</b>  <b>OK</b>
Read Command <b>AT+QCFREQ?</b>	Response If neither set prefer EARFCN list nor lock EARFCN/cell : <b>OK</b> If set prefer EARFCN list: <b>+QCFREQ: &lt;1&gt;,&lt;arfcn1&gt;,&lt;arfcn2&gt;,...</b> If lock EARFCN or lock cell: <b>+QCFREQ: &lt;2&gt;,&lt;arfcn&gt;,&lt;phyCellId&gt;</b>  <b>OK</b> If both set prefer EARFCN list and lock EARFCN/cell: <b>+QCFREQ: &lt;1&gt;,&lt;arfcn1&gt;,&lt;arfcn2&gt;,...</b> <b>+QCFREQ: &lt;2&gt;,&lt;arfcn&gt;,&lt;phyCellId&gt;</b>  <b>OK</b>
Write Command <b>AT+QCFREQ=&lt;mode&gt;</b> <b>(mode=0)</b> <b>AT+QCFREQ=&lt;mode&gt;[</b> <b>&lt;earfcn1&gt;[,&lt;earfcn2&gt;</b> <b>...]](mode=1)</b> <b>AT+QCFREQ=&lt;mode&gt;,</b> <b>&lt;earfcn&gt;[,&lt;phyCellId&gt;]</b> <b>(mode2)</b>	Response <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

#### Defined Values

<b>&lt;mode&gt;</b>	0 Cancel cell lock 1 Set prefer EARFCN list 2 EARFCN lock, or cell lock 3 Clear prefer EARFCN
<b>&lt;earfcn&gt;</b>	E-UTRA Absolute Radio Frequency Channel Number
<b>&lt;phyCellId&gt;</b>	Physical cell ID

**NOTE**

AT+QCFREQ must be restricted to execute in power off or air plane state.

#### 4.2.6 AT+QCRMFPLMN Remove FPLMN in NVM or SIM

##### AT+QCRMFPLMN Remove FPLMN in NVM or SIM

Description	Set command remove FPLMN in NVM or SIM.
Test Command <b>AT+QCRMFPLMN=?</b>	Response <b>+QCRMFPLMN:</b> (list of supported<mode>s)  <b>OK</b>
Write Command <b>AT+QCRMFPLMN=&lt;mode&gt;</b>	Response <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

#### Defined Values

<b>&lt;mode&gt;</b>	0 Remove FPLMN in NVM file and in SIM card 1 Remove FPLMN in NVM file 2 Remove FPLMN in SIM card
---------------------	--

## 4.2.7 AT+QCATTBEARER Configure the PDN Info Request to Establish

AT+QCATTBEARER Configure the PDN Info Request to Establish	
Description	<p>The set command is used to configure the PDN info request to establish during the attach process, if attach with PDN required.</p> <p>The read command is used to obtain the configuration of the PDN info request to establish during the attach process.</p> <p>The test command returns values supported as a compound value.</p>
Test Command <b>AT+QCATTBEARER=?</b>	<p>Response</p> <p><b>+QCATTBEARER:</b> (list of supported&lt;PDP_type&gt;s),(list of supported &lt;eif&gt;s),(list of supported&lt;IPv4AddrAlloc&gt;s),(list of supported&lt;NSLPI&gt;s),(list of supported&lt;IPv4_MTU_discovery&gt;s),(list of supported&lt;NonIP_MTU_discovery&gt;s),(list of supported&lt;auth_proto&gt;s),)((userId string),(password string)</p> <p><b>OK</b></p>
Read Command <b>AT+QCATTBEARER?</b>	<p>Response</p> <p><b>+QCATTBEARER:</b>&lt;pdnType&gt;,&lt;eif&gt;,&lt;apnStr&gt;,&lt;ipv4allocType&gt;,&lt;NSLPI&gt;,&lt;ipv4Mtu&gt;,&lt;nonIpMtu&gt;,&lt;auth_proto&gt;,&lt;userId&gt;,&lt;password&gt;</p> <p><b>OK</b></p>
Write Command <b>AT+QCATTBEARER=&lt;PDP_type&gt;[,&lt;eif&gt;[,&lt;apn&gt;[,&lt;IPv4AddrAlloc&gt;[,&lt;NSLPI&gt;[,&lt;IPv4_MTU_discovery&gt;[,&lt;NonIP_MTU_discovery&gt;[,&lt;auth_proto&gt;[,&lt;userId&gt;,&lt;password&gt;]]]]]]]</b>	<p>Response</p> <p><b>OK</b></p> <p>or</p> <p><b>+CME ERROR: &lt;err&gt;</b></p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

### Defined Values

<PDP_type>	<p>1 IPv4</p> <p>2 IPv6</p> <p>3 IPv4v6</p> <p>5 NON IP</p>
<eif>	<p>0 Security protected ESM information transfer not required</p> <p>1 Security protected ESM information transfer required</p>

<apn>	Apn string, the max length is 99 characters;
<IPv4AddrAlloc>	0 IPv4 address allocate through NAS signaling 1 IPv4 address allocate through DHCP (not applicable)
<NSLPI>	0 indicates that this PDP context is to be activated with the value for the low priority indicator configured in the MT. 1 indicates that this PDP context is is to be activated with the value for the low priority indicator set to "MS is not configured for NAS signaling low priority".
<IPv4_MTU_discovery>	0 IPv4 MTU size discovery not influenced by +QCATTBEARER 1 IPv4 MTU size discovery through NAS signaling
<NonIP_MTU_discovery>	0 Non-IP MTU size discovery not influenced by +QCATTBEARER 1 Non-IP MTU size discovery through NAS signaling
<auth_proto>	0 None. Used to indicate that no authentication protocol is used for this PDP 1 PAP
<userid>	userId string, the max length is 20 characters;
<password>	password string, the max length is 20 characters;

#### 4.2.8 AT+QCSSENDATA Send Data Via Control Plane or User Plane

AT+QCSSENDATA Send Data Via Control Plane or User Plane	
Description	The set command could send data via control plane or user plane
Test Command <b>AT+QCSSENDATA=?</b>	Response <b>+QCSSENDATA:</b> (range of supported<cid>s),(maximum number of octets of user data indicated by<data_length>),(list of supported<RAI>s),(list of supported<type_of_user_data>s)
Write Command <b>AT+QCSSENDATA=&lt;cid&gt;,&lt;data_length&gt;,&lt;data&gt;[,&lt;RAI&gt;[,&lt;type_of_user_data&gt;]]</b>	Response <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

#### Defined Values

<cid>	Integer type; specifies a particular PDP context definition.
<data_length>	Integer type. Indicates the number of octets of the <data>information element. The max length is 950.

<data>	String of octets.
<RAI>	0 No information available 1 The MT expects that exchange of data will be completed with the transmission of this UL packet. 2 The MT expects that exchange of data will be completed with the receipt of a DL packet.
<type_of_user_data>	0 Regular data 1 Exception data

#### NOTE

Difference with AT+CSODCP, AT+CSODCP limit to transmit data over control plane to network, but this AT don't have such limitation.

### 4.2.9 +RECVNONIP Indicate Downlink NON-IP Data

<b>+RECVNONIP Indicate Downlink NON-IP Data</b>	
Description	This is an unsolicited code message used to indicate downlink NON-IP data. <b>+RECVNONIP: &lt;cid&gt;,&lt;data_length&gt;,&lt;data&gt;</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

#### Defined Values

<cid>	Integer type; specifies a particular PDP context definition. <cid> values of 1-11 are supported.
<data_length>	Integer type. Indicates the number of octets of the <data> information element.
<data>	string of octets.

### 4.2.10 AT+QCPMUCFG Set PMU mode

#### AT+QCPMUCFG Set PMU mode

Description	The command set PMU mode. Read command returns the current setup. Test command returns values supported as a compound value.
Test Command <b>AT+QCPMUCFG=?</b>	Response <b>+QCPMUCFG: (range of supported&lt;enable&gt;s),(list of supported&lt;mode&gt;s)</b>  <b>OK</b>
Read Command <b>AT+QCPMUCFG?</b>	Response <b>+QCPMUCFG: &lt;enable&gt;[,&lt;mode&gt;]</b>  <b>OK</b>
Write Command <b>AT+QCPMUCFG=&lt;enable&gt;[,&lt;mode&gt;]</b>	Response <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

### Defined Values

<b>&lt;ENABLE&gt;</b>	0 Disable the PMU, <mode> will be ignored and only enter idle 1 Enable the PMU
<b>&lt;MODE&gt;</b>	0 Active <u>1</u> Idle 2 Sleep1 3 Sleep2 4 Hibernate

### 4.2.11 AT+QCSMSEND Send one SMS

<b>AT+QCSMSEND Send one SMS</b>	
Description	The command is used to send one SMS. Currently we only support TEXT mode.
Write Command <b>AT+QCSMSEND=&lt;mode&gt;,&lt;da&gt;[,&lt;today&gt;,&lt;text_sms&gt;]</b>	Response <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-



Reference

### Defined Values

<mode>	1 TEXT mode
<da>	destination for TXT mode
< toda >	integer type; Type of destination address
<test_sms>	Message's content for TXT mode

### 4.2.12 AT+QCCGSN Sets the IMEI and SN

#### AT+QCCGSN Sets the IMEI and SN

Description	The command is used to send one SMS. Currently we only support TEXT mode.
Test Command <b>AT+QCCGSN=?</b>	Response <b>+QCCGSN: (list of supported&lt;type&gt;s),(data)</b>
Write Command <b>AT+QCCGSN=&lt;type&gt;,&lt;sn/imei&gt;</b>	OK or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

### Defined Values

<type>	Can be "IMEI" or "SN"
<sn/imei>	SN(31bytes maximum as visable character)

### 4.2.13 AT+QCRFSTAT Shows the Status of RF Calibration

#### AT+QCRFSTAT Shows the Status of RF Calibration

Description	The command shows the status of RF calibration.
Read Command <b>AT+QCRFSTAT?</b>	Response <b>+QCRFSTAT: calibrate done</b>  <b>OK</b> If RF is not calibrated, response: <b>+QCRFSTAT: not calibrate</b>
Execute Command <b>AT+QCRFSTAT</b>	Response <b>+QCRFSTAT: calibrate done</b>  <b>OK</b> If RF is not calibrated, response: <b>+QCRFSTAT: not calibrate</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

#### 4.2.14 AT+QCRST Restart the Chip

<b>AT+QCRST Restart the Chip</b>	
Description	The command restart the chip.
Execution Command <b>AT+QCRST</b>	Response <b>OK</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

#### 4.2.15 AT+QCPSMR Report the Power Saving Mode Status

<b>AT+QCPSMR Report the Power Saving Mode Status</b>	
Description	The command report the power saving mode status.
Test Command <b>AT+QCPSMR=?</b>	Response <b>+QCPSMR: (range of supported&lt;n&gt;s)</b>

	OK
Read Command <b>AT+QCPSMR?</b>	Response <b>+QCPSMR: &lt;n&gt;,&lt;mode&gt;</b>
	OK or <b>+CME ERROR: &lt;err&gt;</b>
Write Command <b>AT+QCPSMR=&lt;n&gt;</b>	Response OK or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

### Defined Values

<n>	0: disable unsolicited result code 1: enable unsolicited result code +QCPSMR: <mode>
<mode>	0: normal mode 1: power saving mode

### 4.2.16 AT+QCPLMNS Used to trigger a PLMN

<b>AT+QCPLMNS Used to trigger a PLMN</b>	
Description	Set command is used to trigger a PLMN search while UE is out of service, if UE is not out of service, +CME ERROR: <err> is returned. Read command returns the current PLMN search state, and the reset of time of PLMN search timer.
Test Command <b>AT+QCPLMNS=?</b>	Response OK
Read Command <b>AT+QCPLMNS?</b>	Response <b>+QCPLMNS: &lt;state&gt;[,&lt;oosTimeStep&gt;]</b>
Execute Command <b>AT+QCPLMNS</b>	OK Response OK or <b>+CME ERROR: &lt;err&gt;</b>

Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

## Defined Values

<state>	<p>0 Deactivated, no PLMN search is ongoing</p> <p>1 Searching, PLMN search is ongoing</p> <p>2 Selected, already selected a PLMN</p> <p>3 OOS, UE is out of service and has started a PLMN search timer</p>
<oosTimeStep>	Integer type. The rest of time (in seconds) of OOS PLMN search timer, only present when <state> is 3.

### 4.2.17 AT+QCCESQS Controls the Extended Signal Quality Change Event Reporting

AT+QCCESQS Controls the Extended Signal Quality Change Event Reporting	
Description	<p>The set command controls the extended signal quality change event reporting. If reporting is enabled the MT returns the unsolicited result codes:</p> <p><b>+CESQ: &lt;rxlev&gt;,&lt;ber&gt;,&lt;rscp&gt;,&lt;ecno&gt;,&lt;rsrq&gt;,&lt;rsrp&gt;</b>,</p> <p>or</p> <p><b>+QCCESQ: RSRP,&lt;rsrp&gt;,RSRQ,&lt;rsrq&gt;,SNR,&lt;snr&gt;</b></p> <p>whenever the extended signal quality is changed. If setting fails in an MT error, +CME ERROR: &lt;err&gt; is returned.</p>
Test Command <b>AT+QCCESQS=?</b>	<p>Response</p> <p><b>+QCCESQS: (list of supported&lt;report level&gt;s)</b></p> <p><b>OK</b></p>
Read Command <b>AT+QCCESQS?</b>	<p>Response</p> <p><b>+QCCESQS: &lt;report level&gt;</b></p> <p><b>OK</b></p>
Execution Command <b>AT+QCCESQS=&lt;report level&gt;</b>	<p>Response</p> <p><b>OK</b></p> <p>or</p> <p><b>+CME ERROR: &lt;err&gt;</b></p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

## Defined Values

<report level>	0 disable unsolicited report. 1 report +CESQ: <rxlev>, <ber>, <rscp>, <ecno>, <rsrq>, <rsrp> 2 report +QCCESQ: RSRP, <rsrp>, RSRQ, <rsrq>, SNR, <snr>
<rxlev>	99 not known or not detectable
<ber>	99 not known or not detectable
<rscp>	255 not known or not detectable
<ecno>	255 not known or not detectable
<rsrp>	For +CESQ reporting, refer to sub clause 2.2.9 AT+CESQ For +QCCESQ reporting, the range is -34 dB to 2.5 dB
<rsrq>	For +CESQ reporting, refer to sub clause 2.2.9 AT+CESQ For +QCCESQ reporting, the range is -34 dB to 2.5 dB
<snr>	The range is -30 dB to 30 dB

#### 4.2.18 AT+QCSTATUS Returns Some Key Parameter in UE Side

##### AT+QCSTATUS Returns Some Key Parameter in UE Side

Description	This action command returns some key parameter in UE side.
Test Command <b>AT+QCSTATUS=?</b>	Response <b>+QCCESQS:</b> (list of supported<report level>s)  <b>OK</b>
Execution Command <b>AT+QCSTATUS</b>	Response <b>+QCSTATUS:</b> PHY, DLEarfcn:<dLEarfcn>, ULEarfcn:<uLEarfcn>, PCI:<pci>, Band:<band>, RSRP:<rsrp>, RSRQ:<rsrq>, SNR:<snr>, AnchorFreqOfst:<freqOfst>, NonAnchorFreqOfst:<freqOfst>, CeLevel:<ceLevel>, DIBler:<dIBler>, UIBler:<uIBler>, DataInactTimerS:<dataInactTimers>, RetxBSRTimerP:<retxBSRTimerP>, TAValue:<taValue>, TxPower<txPower>, NBMode:<nbMode> <b>+QCSTATUS:</b> L2, SrbNum:<srbNum>, DrbNum:<drbNum> <b>+QCSTATUS:</b> RRC, State:<rrcState>, TAC:<tac>, CellId:<cellId> <b>+QCSTATUS:</b> EMM, EmmState:<emmState>, EmmMode:<emmMode>, PTWMs:<ptwMs>, EDRXPeriodMs:<eDRXPeriodMs>, PsmExT3412TimerS:<psmExT3412TimerS>, T3324TimerS:<T3324TimerS>, T3346RemainTimeS:<T3346RemainTimeS> <b>+QCSTATUS:</b> PLMN, PlmnState:<plmnState>,

	<b>PlmnType:&lt;plmnType&gt;, SelectPlmn:&lt;selectPlmn&gt;</b> <b>+QCSTATUS: ESM, ActBearerNum:&lt;actBearerNum&gt;,  APN:&lt;apn&gt;, IPv4:&lt;ipaddr&gt;</b> <b>+QCSTATUS: CCM, Cfun:&lt;cfun&gt;, IMSI:&lt;imsi&gt;</b>
	<b>OK</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

## Defined Values

<dIEarfcn>	Downlink earfcn, value range is 0~262143
<uIEarfcn>	Uplink earfcn, value range is 0~262143
<pci>	Physical cell ID, value range is 0~503,255
<band>	Band, value range is 0~70
<rsrp>	Value in dBm, range is -156dBm ~ -44dBm
<rsrq>	Value in dB, range is -34dB ~ -2.5dB
<snr>	Value in dB, range is -30dB ~ 30dB
<ceLevel>	0 CE level 0 1 CE level 1 2 CE level 2
<dIBler>	Downlink block error, value range is 0~10000
<uIBler>	Uplink block error, value range is 0~10000
<dataInactTimerS>	Data inactive timer in seconds, value range is 0~180
<retxBSRTimerP>	Timer for BSR reporting, value in number of PDCCH periods. Value pp4 corresponds to 4 PDCCH periods, pp16 corresponds to 16 PDCCH periods and so on.
<NBMode>	Value range is "InBand Same PCI","InBand Diff PCI","Guard Band","Stand alone"
<srNum>	Value range is 0~2
<drbNum>	Value range is 0~2
<rrcState>	Value range is "DEACT", "OOS", "IDLE", "SUSPEND IDLE", "CONNECTED", "UNKONWN"
<tac>	Value range is 0~65534
<cellId>	Value range is 0~268435455
<emmState>	Value range is "NULL", "DEREG", "REG INIT", "REG", "DEREG INIT", "TAU INIT", "SR INIT", "UNKNOWN"
<emmMode>	Value range is "IDLE", "PSM", "CONNECTED", "UNKNOWN"
<ptwMs>	eDRX Paging Time Window in milliseconds
<edrxPeriodMs>	eDRX period in milliseconds
<psmExT3412TimerS>	Extended T3412 timer value in seconds

<T3324TimerS>	T3324 timer value in seconds
<T3346RemainTimeS>	If T3346 is running, set to the remaining time, else set to 0
<plmnState>	Value range is "NO PLMN", "SEARCHING", "SELECTED", "UNKNOWN"
<plmnType>	Value range is "HPLMN", "EHPLMN", "VPLMN", "UPLMN", "OPLMN", "UNKNOWN"
<selectPlmn>	Selected PLMN
<actBearerNum>	activated bearer number
<apn>	access point name
<ipv4Addr ipv6Addr>	Ipv4/Ipv6 address
<fun>	0 Minimum functionality 1 Full functionality 4 Turn off RF
<IMSI>	International Mobile Subscriber Identity (string with double quotes)
<AnchorFreqOfst>	Integer type Range is 0 ~ 21, stand for Frequency Offset {Invalid, -10,-9,-8,-7,-6,-5,-4,-3,-2,-1,-0.5,0,1,2,3,4,5,6,7,8,9}
<NonAnchorFreqOfst>	Integer type Range is 0 ~ 21, stand for Frequency Offset {Invalid, -10,-9,-8,-7,-6,-5,-4,-3,-2,-1,-0.5,0,1,2,3,4,5,6,7,8,9}
<taValue>	Integer type Timing advance value. Value range is 0~1282. -1 is invalid value
<txPower>	Integer type Current TX power level in dBm. Value range is -45~23. -128 is invalid value

#### 4.2.19 AT+QCICCID Causes the TA to Return the ICCID of the UICC

##### AT+QCICCID Causes the TA to Return the ICCID of the UICC

Description	Execution command causes the TA to return the ICCID of the UICC.
Test Command <b>AT+QCICCID=?</b>	Response <b>OK</b>
Execution Command <b>AT+QCICCID</b>	Response <b>+QCICCID: &lt;ICCID&gt;</b>  <b>OK</b>

	or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

## Defined Values

<ICCID>	Integrated circuit card identification
---------	--

### 4.2.20 AT+QCBCINFO Return the Basic Serving Cell Information

AT+QCBCINFO Return the Basic Serving Cell Information	
Description	Execution command to return the basic serving cell information and neighbor cells information, mainly used for location service.
Test Command <b>AT+QCBCINFO=?</b>	Response <b>+QCBCINFO:</b> [(list of supported<mode>s)[,(list of supported<timeout>s) [,(list of supported<save_for_last>s)[,(list of supported<max_cell_number>s)[,(list of supported<report_mode>s)]]]]] <b>OK</b>
Execution Command <b>AT+QCBCINFO</b>	Response <b>+QCBCINFOSC:</b> <earfcn>,<pci>,<rsrp>,<rsrq>,<mcc>,<mnc>,<cellid>[<CR><LF> <b>+QCBCINFONC:</b> <earfcn>,<pci>,<rsrp>,<rsrq> ,<tac>[...]] <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

## Defined Values

<mode>	0 Only search/measure neighbor cell signal quality: RSRP and RSRQ, don't acquire neighbor cell SIB-NB, don't return cell location information. In this mode, neighbor cell information in AT response is: +QCBCINFONC: <earfcn>,<pci>,<rsrp>,<rsrq> Note: default value 0 1 Search cell, including measure cell and acquire cell SIB1-NB to get cellID,
--------	---



	<p>PLMN and tac info. In this mode, neighbor cell information in AT response is: +QCBCINFONC:          &lt;earfcn&gt;,&lt;pci&gt;,&lt;rsrp&gt;,&lt;rsrq&gt;,&lt;mcc&gt;,&lt;mnc&gt;,&lt;cellid&gt;,&lt;tac&gt;          2 Read saved cell information, &lt;save_for_later&gt; set to 1 should be called before, and otherwise, no cell information will be returned.</p>
<timeoutS>	<p>Integer type          MAX measurement time in unit of seconds, cell information should be acquired/returned in this time period.          Note:          1. Range: (4-300)          2. Default value: 8</p>
<save_for_later>	<p>Integer type          Whether need to save cell information, which could be returned in case of AT+QCBCINFO=2 later.          Note:          1. As the cell information should be saved into flash when enter deep sleep mode: sleep2 and HIB, don't suggest to save it frequently.          2. List value: (0,1)          3. Default value: 0, not save.</p>
<max_cell_number>	<p>Integer type          Max number of cells to be measured or searched, including serving cell.          Note:          1. The more cells needed, the longer measurement time it takes.          2. Range: (1-5)          3. Default value: 5</p>
<report_mode>	<p>Integer type          0 Synchronous modes. Report cell info in AT response.          Note: Default value: 0          1 Asynchronous mode. AT response immediately, measured cell information returned in URC:          [&lt;CR&gt;&lt;LF&gt;+QCBCINFOFC:          &lt;earfcn&gt;,&lt;pci&gt;,&lt;rsrp&gt;,&lt;rsrq&gt;,&lt;mcc&gt;,&lt;mnc&gt;,&lt;cellid&gt;,&lt;tac&gt;[          &lt;CR&gt;&lt;LF&gt;          [&lt;CR&gt;&lt;LF&gt;+QCBCINFONC:          &lt;earfcn&gt;,&lt;pci&gt;,&lt;rsrp&gt;,&lt;rsrq&gt;[,&lt;mcc&gt;,&lt;mnc&gt;,&lt;cellid&gt;,&lt;tac&gt;          ]          [...]]</p>
<earfcn>	Indicate the EARFCN of the cell. Range 0 ~ 262143
<pci>	Indicate the physical cell ID. Range 0 ~ 503
<rsrp>	Indicate the measurement of RSRP value, in unit of dBm. Range -156 ~ -44
<rsrq>	Indicate the measurement of RSRQ value, in unit of dB. Range -34 ~ 25
<mcc>	Indicate the mobile country code
<mnc>	Indicate the mobile network code

<cellId>	Four byte E-UTRAN cell ID in hexadecimal format
<tac>	String type Two byte tracking area code in hexadecimal format

#### 4.2.21 AT+QCDNS Get the IP Address for a Specific URL

AT+QCDNS Get the IP Address for a Specific URL	
Description	This command to get the IP address for a specific URL. As a limitation now, only one IP address is returned for a URL
Test Command <b>AT+QCDNS=?</b>	Response <b>OK</b>
Execution Command <b>AT+QCDNS=&lt;url&gt;</b>	Response <b>+QCDNS: &lt;ipaddr&gt;</b> <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

#### Defined Values

<url>	Domain name
<ipaddr>	If IPv4 type, output is dot-notation format, such as: "32.1.13.184" If IPv6 type, output is colon-notation format, such as: "2001:0DB8:0000:CD30:0000:0000:0000:0002"

#### 4.2.22 AT+QCDNSCFG Set the Default DNS Addresses Configuration

AT+QCDNSCFG Set the Default DNS Addresses Configuration	
Description	This command to get the IP address for a specific URL. As a limitation now, only one IP address is returned for a URL
Test Command <b>AT+QCDNSCFG=?</b>	Response <b>OK</b>
Read Command <b>AT+QCDNSCFG?</b>	Response <b>+QCDNSCFG: &lt;ipaddr1&gt;[,&lt;ipaddr2&gt;[,&lt;ipaddr3&gt;[,&lt;ipaddr4&gt;]]]</b>

	OK
Execution Command <b>AT+QCDNSCFG=&lt;ipaddr1&gt;[,&lt;ipaddr2&gt;[,&lt;ipaddr3&gt;[,&lt;ipaddr4&gt;]]]</b>	Response OK or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	

## Defined Values

<b>&lt;ipaddr&gt;</b>	If IPv4 type, output is dot-notation format, such as: "32.1.13.184" If IPv6 type, output is colon-notation format, such as: "2001:0DB8:0000:CD30:0000:0000:0000:0002"
-----------------------	---

### 4.2.23 AT+QCEMMTIME Report and Get the Emm Time State

<b>AT+QCEMMTIME Report and Get the Emm Time State</b>	
Description	This command report and get the Emm Time State, include T3346、T3448 and T3412/extend T3412.
Test Command <b>AT+QCEMMTIME=?</b>	Response <b>+QCEMMTIME: (range of supported&lt;bitmap&gt;s)</b>  OK
Read Command <b>AT+QCEMMTIME?</b>	Response <b>+QCEMMTIME:0,&lt;timeState&gt;[,&lt;remainTimeValue&gt;]</b> <b>+QCEMMTIME:1,&lt;timeState&gt;[,&lt;remainTimeValue&gt;]</b> <b>+QCEMMTIME:2,&lt;timeState&gt;[,&lt;remainTimeValue&gt;]</b>  OK
Write Command <b>AT+QCEMMTIME=&lt;bitmap&gt;</b>	Response OK or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

## Defined Values

<bitmap>	bit 0: enable/disable unsolicited result code T3346 bit 1: enable/disable unsolicited result code T3448 bit 2: enable/disable unsolicited result code T3412/ext T3412
<timeld>	0: Emm Timer: T3346 1: Emm Timer: T3448 2: Emm Timer: T412/ext T3412
<timeState>	0: Start 1: Stop 2: Expiry
<remainTimeValue>	Time remain value in seconds, Only include when <timeState> is 0.
<timeValue>	Time value in seconds, Only include when <timeState> is 0.

#### 4.2.24 AT+QCPCFG Set Plat Configure

AT+QCPCFG Set Plat Config	
Description	Set command is used to set plat config, if UE is not out of service, +CME ERROR: <err> is returned. Read command returns the current plat config setting.
Test Command AT+QCPCFG=?	Response <b>+QCPCFG:&lt;option&gt;,&lt;setting&gt;</b>  <b>OK</b>
Read Command AT+QCPCFG?	Response <b>+QCPCFG:</b> <b>&lt; option&gt;,&lt; setting&gt;,&lt; option&gt;,&lt; setting&gt;,...</b>  <b>OK</b>
Write Command AT+QCPCFG=<option> ,<setting>	Response <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	SAVE
Max Response Time	-
Reference	

#### Defined Values

<option>	faultAction Set the hardfault action mode dumpToATPort Set show assert dump in AT port or not startWDT Set watch dog mode
----------	---

	<p>logCtrl Set log control mode</p> <p>logLevel Set log print level</p> <p>logBaudrate Set log print baud rate</p> <p>slpWaitTime Set sleep wait time</p>
<setting>	<p>For faultAction, the values range is from 0 to 4 0: dump full exception info to flash and EPAT tool then trapped in endless loop</p> <p>1: print necessary exception info then reset</p> <p>2: dump full exception info to flash then reset</p> <p>3: dump full exception info to flash and EPAT tool then reset</p> <p>4: reset directly. Suggest set to this value when mass production stage.</p> <p>For dumpToATPort, the values range is from 0 to 1</p> <p>0: not dump to AT port</p> <p>1: dump to AT port</p> <p>For startWDT, the values range is from 0 to 1</p> <p>0: stop WDT</p> <p>1: start WDT. Suggest set to this value when mass production stage.</p> <p>For logCtrl, the values range is from 0 to 2</p> <p>0: unilog is disabled</p> <p>1: only sw log is enabled</p> <p>2: All log is enabled</p> <p>For logLevel, the values range is from 0 to 5</p> <p>0: debug log level</p> <p>1: info log level</p> <p>2: value log level</p> <p>3: signal log level</p> <p>4: warning log level</p> <p>5: error log level</p> <p>For logBaudrate, the values range is from 921600 to 6000000. Default value is 3000000.</p> <p>For slpWaitTime, the values range is from 0 to 0xffff Default value is 0.</p>

#### 4.2.25 AT+QCSLEEP Power Consumption Test

AT+QCSLEEP Power Consumption Test	
Description	This command is used for power consumption test. After executing this command, UE will enter related low power state. And UE could be wake up by wakeup PAD, after wake up, UE will reboot.
Test Command	Response
<b>AT+QCSLEEP=?</b>	<b>+QCSLEEP: &lt;state&gt;</b>
	OK

Write Command <b>AT+QCSLEEP=&lt;state&gt;</b>	Response <b>+QCSLEEP: &lt;mode&gt;</b> <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	SAVE
Max Response Time	-
Reference	

### Defined Values

<b>&lt;state&gt;</b>	0 HIB2 1 HIB1 2 SLEEP2 3 SLEEP1
<b>&lt;mode&gt;</b>	HIB2 Hibernate2 status HIB1 Hibernate1 status SLEEP2 Sleep2 status SLEEP1 Sleep1 status

### 4.2.26 AT+QCSIMSLEEP Set UE to Allow SIM Card Sleep for Power Consumption

<b>AT+QCSIMSLEEP Set UE to Allow SIM Card Sleep for Power Consumption</b>	
Description	The command set UE to allow SIM card sleep for power consumption. The read command return current setting of each parameters. The test command returns values supported as a compound value.
Test Command <b>AT+QCSIMSLEEP=?</b>	Response <b>+QCSIMSLEEP: &lt;mode&gt;</b> <b>OK</b>
Write Command <b>AT+QCSIMSLEEP=&lt;mode&gt;</b>	Response <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	SAVE
Max Response Time	-
Reference	

### Defined Values

<b>&lt;mode&gt;</b>	0 Not allowed SIM sleep
	1 Allowed SIM sleep

#### 4.2.27 AT+QCCGSNLOCK Set Lock Flag for IMEI and SN

<b>AT+QCCGSNLOCK Set Lock Flag for IMEI and SN</b>	
Description	This command is used to set lock flag for IMEI and SN. If locked, IMEI and SN could not be write via AT+QCCGSN command. The lock feature maybe required in production stage, to prevent customer's miss operation. If lock is set, it could not be cleared via AT command, the only way to clear it is via flash tool (erase related region).
Test Command <b>AT+QCCGSNLOCK=?</b>	Response <b>+QCCGSNLOCK: &lt;list of support para&gt;</b>
Read Command <b>AT+QCCGSNLOCK?</b>	Response <b>+QCCGSNLOCK: &lt;imeistatus,snstatus&gt;</b> <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Write Command <b>AT+QCCGSNLOCK=&lt;para&gt;</b>	Response <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	SAVE
Max Response Time	-
Reference	

#### Defined Values

<b>&lt;para&gt;</b>	"IMEI" "SN"
<b>&lt;imeistatus&gt;</b>	"IMEI LOCKED" "IMEI NOT LOCKED "
<b>&lt;snstatus&gt;</b>	"SN LOCKED" "SN NOT LOCKED "

#### 4.2.28 AT+QCSAVEFAC Saves Related Regions to Default Reliable Region

AT+QCSAVEFAC Saves Related Regions to Default Reliable Region	
Description	This command is used in production line, which saves related regions to default reliable region.e.g. after IMEI/SN was written or RF calibration was done. Default reliable regions is used to restore factory setting.
Test Command <b>AT+QCSAVEFAC=?</b>	Response <b>+QCSAVEFAC: &lt;mode&gt;</b>  <b>OK</b>
Write Command <b>AT+QCSAVEFAC=&lt;mode&gt;</b>	Response <b>+QCSAVEFAC:OK</b>  <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	SAVE
Max Response Time	-
Reference	

#### Defined Values

<b>&lt;mode&gt;</b>	"all" All regions "rfregion" Only RF regions "other" Regions except RF, currently IMEI/SN region
---------------------	--

#### 4.2.29 AT+QCTASKINFO Returns All the Task's Information

AT+QCTASKINFO Returns All the Task's Information	
Description	The execution command returns all the task's name, id, status, priority and stack information. This command is only for debug purpose.
Execution Command <b>AT+QCTASKINFO</b>	Response <b>&lt;task information&gt;</b>  <b>OK</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	



#### 4.2.30 AT+QCTASKHISTINFO Shows Most Recent Tasks' Scheduling History

AT+QCTASKHISTINFO Shows Most Recent Tasks' Scheduling History	
Description	The execution command shows most recent tasks' scheduling history. This command is only for debug purpose.
Execution Command <b>AT+QCTASKHISINFO</b>	Response <b>+QCTASKHISINFO: &lt;task scheduling history&gt;</b> <b>OK</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

#### 4.2.31 AT+QCSHOWMEM Shows Current Heap Memory Usage

AT+QCSHOWMEM Shows Current Heap Memory Usage	
Description	The execution command shows current heap memory usage. This command is only for debug purpose.
Execution Command <b>AT+QCSHOWMEM</b>	Response <b>curr_free_heap:&lt;curr_free_heap&gt;, min_free_heap:&lt;min_free_heap&gt;</b> <b>OK</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

#### Defined Values

<curr_free_heap>	0—heap size current remained free memory size in heap
<min_free_heap>	0---heap size minimum heap memory size ever remaining in heap

#### 4.2.32 AT+QCSYSTEST Triggers a Test Feature

AT+QCSYSTEST Triggers a Test Feature	
--------------------------------------	--

Description	This command is only for debug purpose. The test command returns option supported as a compound value. The set command triggers a test feature..
Test Command <b>AT+QCSYSTEST=?</b>	Response <b>+QCSYSTEST: &lt;option&gt;</b>
Write Command <b>AT+QCSYSTEST=&lt;option&gt;</b>	Response <b>OK</b> or When <test>="assert" or "fsassert" system assert <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

### Defined Values

<b>&lt;option&gt;</b>	handshake	Perform handshake with UE
	assert	Trigger a test assert
	testwdt	Trigger watch dog test
	fsassert	Trigger file system assert for test
	hardfault	Trigger a hardfault for test

### 4.2.33 AT+QCVOTECHK Analyze the Reason of Sleep Failure

<b>AT+QCVOTECHK Analyze the Reason of Sleep Failure</b>	
Description	This command shows current vote state, which can help to analyze the reason of sleep failure. This command is only for debug purpose.
Write Command <b>AT+QCVOTECHK</b>	Response <b>Sleep Vote Info:</b> <b>&lt;vote info detail&gt;</b> <b>OK</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

**NOTE**

- Vote info detail shows comprehensive information which will affect sleep process in QCX212.
  - Part1: user set sleep depth limitation.
  - Part2: QCX212 internal sleep vote result.
  - Part3: application vote result.
  - Part4: user registered sleep depth callback.
  - Part5: driver vote result.
- For more detail information, please refer to slpman\_qcx212.h in SDK and QCX212 low power development manual.

#### 4.2.34 AT+QCURC Close/Open URC Report

AT+QCURC Close/Open URC Report	
Description	The command close/open URC (unsolicited result code) report.
Test Command <b>AT+QCURC=?</b>	Response <b>+QCURC: "ALL":(0-1), "CREG":(0-1), "CEREG":(0-1), "CEDRXP":(0-1), "CCIOTOPTI":(0-1), "CSCON":(0-1), "CTZEU":(0-1), "QCCESQ":(0-1), "CGEV":(0-1), "QCPSMR":(0-1), "QCPTWEDRXP":(0-1), "QCPIN":(0-1), "QCPADDR":(0-1), "QCPCFUN":(0-1)</b>  <b>OK</b>
Read Command <b>AT+QCURC?</b>	Response <b>+QCURC: "ALL":(0-1), "CREG":(0-1), "CEREG":(0-1), "CEDRXP":(0-1), "CCIOTOPTI":(0-1), "CSCON":(0-1), "CTZEU":(0-1), "QCCESQ":(0-1), "CGEV":(0-1), "QCPSMR":(0-1), "QCPTWEDRXP":(0-1), "QCPIN":(0-1), "QCPADDR":(0-1), "QCPCFUN":(0-1)</b>  <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Write Command <b>AT+QCURC=&lt;option&gt;, &lt;value&gt;</b>	Response <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	

#### Defined Values

<b>&lt;option&gt;</b>	<p>"ALL" All unsolicited result codes included as below</p> <p>"CREG" unsolicited result code +CREG</p> <p>"CEREG" unsolicited result code +CEREG</p> <p>"CEDRXP" unsolicited result code +CEDRXP</p> <p>"CCIOTOPTI" unsolicited result code +CCIOTOPTI</p> <p>"CSCON" unsolicited result code +CSCON</p> <p>"CTZEU" unsolicited result code +CTZEU</p> <p>"QCCESQ" unsolicited result code +QCCESQ</p> <p>"CGEV" unsolicited result code +CGEV</p> <p>"QCPSMR" unsolicited result code +QCPSMR</p> <p>"QCPTWEDRXP" unsolicited result code +QCPTWEDRXP</p> <p>"QCPIN" unsolicited result code +QCPIN</p> <p>"QCPADDR" unsolicited result code +QCPADDR</p> <p>"QCPCFUN" unsolicited result code +QCPCFUN</p>
<b>&lt;value&gt;</b>	<p>0 disable unsolicited result code report</p> <p>1 enable unsolicited result code report</p>

**NOTE**

Set of <value> will save to NVM, and the default value is 0.

#### 4.2.35 AT+QCPTWEDRXS Control Whether the UE

<b>AT+QCPTWEDRXS Control Whether the UE</b>	
Description	A special form of the command can be given as AT+QCPTWEDRXS=3. In this form, paging time window and eDRX will be disabled and data for all parameters in AT+QCPTWEDRXS command will be removed.
Test Command <b>AT+QCPTWEDRXS=?</b>	<p>Response</p> <p><b>+QCPTWEDRXS:</b> (list of supported&lt;mode&gt;s),(list of supported &lt;AcT-type&gt;s),(list of supported&lt;Requested_Paging_time_window&gt;s),(list of supported&lt;Requested_eDRX_value&gt;s)</p> <p><b>OK</b></p>
Read Command <b>AT+QCPTWEDRXS?</b>	<p>Response</p> <p><b>+QCPTWEDRXS:</b>&lt;AcT-type&gt;,&lt;Requested_Paging_time_window&gt;,&lt;Requested_eDRX_value&gt;[,&lt;NW_provided_eDRX_VALUE&gt;[,&lt;Paging_time_window&gt;]]</p>

	OK
Write Command <b>AT+QCPTWEDRXS=[&lt;mode&gt;[,&lt;AcT-type&gt;[,&lt;Requested_Paging_time_window&gt;[,&lt;Requested_eDRX_value&gt;]]]]</b>	Response OK or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	

## Defined Values

<b>&lt;mode&gt;</b>	0 Disable the use of requested paging time window and eDRX 1 Enable the use of requested paging time window and eDRX 2 Enable the use of requested paging time window and eDRX and enable the unsolicited result code: <b>+QCPTWEDRXP: &lt;AcT-type&gt;[,&lt;Requested_Paging_time_window&gt;[,&lt;Requested_eDRX_value&gt;[,&lt;NWprovided_eDRX_value&gt;[,&lt;Paging_time_window&gt;]]]]</b> 3 Disable the use of paging time window and eDRX and discard all parameters for paging time window and eDRX.
<b>&lt;AcT-type&gt;</b>	5 NB IOT
<b>&lt;Requested_Paging_time_window&gt;</b>	String type; half a byte in a 4 bit format. The paging time window refers to bit 8 to 5 of octet 3 of the Extended DRX parameters information element. (e.g. "0000" equals 2.56 seconds)
<b>&lt;Requested_eDRX_value&gt;</b>	String type; half a byte in a 4-bit format. The eDRX value refers to bit 4 to 1 of octet 3 of the Extended DRX parameters information element. (e.g. "0010" equals 20.48 seconds)
<b>&lt;NW-provided_eDRX_value&gt;</b>	String type; half a byte in a 4-bit format. The eDRX value refers to bit 4 to 1 of octet 3 of the Extended DRX parameters information element. (e.g. "0010" equals 20.48 seconds)
<b>&lt;Paging_time_window&gt;</b>	String type; half a byte in a 4 bit format. The paging time window refers to bit 8 to 5 of octet 3 of the Extended DRX parameters information element. (e.g. "0000" equals 2.56 seconds)

### 4.2.36 +QCPIN Indicate SIM PIN State

**+QCPIN Indicate SIM PIN State**

Description	This is an unsolicited result code used to indicate SIM PIN state. It's controlled by AT+QCURC.
	<b>+QCPIN: &lt;code&gt;</b>

### Defined Values

<code>	<p>READY MT is not pending for any password</p> <p>SIM PIN MT is waiting SIM PIN to be given</p> <p>SIM PUK MT is waiting SIM PUK to be given</p> <p>SIM PUK BLOCKED The SIM is locked</p> <p>SIM NOT READY The SIM is not ready.</p>
--------	---

### 4.2.37 +QCPCFUN Power on status URC report

#### +QCPCFUN Power on status URC report

Description	This is an unsolicited result code used to indicate the setting of <fun> as AT+CFUN when the MT powered on. It's controlled by AT+QCURC.
	<b>+QCPCFUN: &lt;fun&gt;</b>

### Defined Values

<fun>	<p>0 Minimum functionality</p> <p>1 Full functionality</p> <p>4 Turn off RF.</p>
-------	--

### 4.2.38 +QCPADDR Print PDP Address

#### +QCPADDR Print PDP Address

Description	This is an unsolicited result code used to indicate SIM PIN state. It's controlled by AT+QCURC.
	<b>+QCPADDR: &lt;cid&gt;[ ,&lt;PDP_addr_1&gt;[,&lt;PDP_addr_2&gt;]]</b>

### Defined Values

<cid>	specifies a particular PDP context definition (see the +CGDCONT commands).
-------	--

	<cid> values of 1-11 are supported.
<PDP_addr_1> <PDP_addr_2>	<PDP_addr_1> and <PDP_addr_2>: each is a string type that identifies the MT in the address space applicable to the PDP. Both <PDP_addr_1> and <PDP_addr_2> are omitted if none is available. Both <PDP_addr_1> and <PDP_addr_2> are included when both IPv4 and IPv6 addresses are assigned, with <PDP_addr_1> containing the IPv4 address and <PDP_addr_2> containing the IPv6 address. The string is given as dot-separated numeric (0-255) parameter of the form: a1.a2.a3.a4 for IPv4 and colon-separated hexadecimal parameter of the form:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx for IPv6.

### 4.2.39 AT+QCADC Read ADC

AT+QCADC Read ADC	
Description	This command is used to get thermal temperature and VBAT values sampled by ADC.
Test Command <b>AT+QCADC=?</b>	Response <b>+QCADC: &lt;option&gt;</b>  <b>OK</b>
Write Command <b>AT+QCADC=&lt;option&gt;</b>	Response <b>+QCADC: &lt;option&gt;, &lt;value&gt;[,&lt;option&gt;,&lt;value&gt;]</b>  <b>OK</b>
Read Command <b>AT+QCADC?</b>	Response <b>+QCADC: 1,&lt;value&gt;</b>  <b>OK</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

### Defined Values

<option>	Temp Get current thermal temperature in unit of degree centigrade with 1 degree resolution. Vbat Get current VBAT value in unit of mV. All Get current thermal temperature and VBAT value.
<value>	Corresponding value of option

#### 4.2.40 AT+QCSWC Set the UE Operation SIM Counter

AT+QCSWC Set the UE Operation SIM Counter	
Description	The command set UE to enable, disable, query and reset SIM write counter. The counter record the execution of SIM write command, such as update binary and update record
Test Command <b>AT+QCSWC=?</b>	Response <b>+QCSWC: (list of supported &lt;mode&gt;s)</b>  <b>OK</b>
Read Command <b>AT+QCSWC?</b>	Response <b>+QCSWC: &lt;mode&gt;</b>  <b>OK</b>
Write Command <b>AT+QCSWC=&lt;mode&gt;</b>	Response <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b> When <mode>=2 and command successful: <b>+QCSWC: &lt;filename&gt;,&lt;counter&gt;</b> <b>+QCSWC: &lt;filename&gt;,&lt;counter&gt;</b> ...  <b>OK</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

#### Defined Values

<mode>	0 Disable the SIM write counter 1 Enable the SIM write counter 2 Query the SIM write counter 3 Reset all SIM write counter as 0
<filename>	SIM EF name, referred to TS31.102, "null" means no file written.
<counter>	if overflow occurs, restart from 0.



#### 4.2.41 AT+QCIPR Operate the Baud Rate of UE

AT+QCIPR Operate the Baud Rate of UE	
Description	Set command sets the UE baud rate to be used. Read command returns the current baud rate. Test command returns baud rates supported by the UE.
Test Command <b>AT+QCIPR=?</b>	Response <b>+QCIPR:</b> (list of fixed-only<rate> values)  <b>OK</b>
Read Command <b>AT+QCIPR?</b>	Response <b>+QCIPR:&lt;rate&gt;</b>  <b>OK</b>
Write Command <b>AT+QCIPR=&lt;rate&gt;</b>	Response <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

#### Defined Values

<rate>	Baud rate at which the UE will accept commands.
--------	---

#### 4.2.42 AT+QCNPICFG Operating NPI

AT+QCNPICFG Operating NPI	
Description	Set command is used to set NPI config Read command returns the current NPI config setting.
Test Command <b>AT+QCNPICFG=?</b>	Response <b>+QCNPICFG: &lt;option&gt;,&lt;value&gt;</b>  <b>OK</b>
Read Command <b>AT+QCNPICFG?</b>	Response <b>+QCNPICFG:</b>

	"rfCaliDone":<value>, "rfNSTDone":<value>
	OK
Write Command <b>AT+QCNPICFG=&lt;option&gt;,&lt;setting&gt;</b>	Response OK or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	SAVE
Max Response Time	-
Reference	

### Defined Values

<option>	rfCaliDone Set RFCALI process status rfNSTDone Set RFNST process status
<setting>	For rfCaliDone , the values range is from 0 to 1 0: RFCALI process is not done 1: RFCALI process is done For rfNSTDone, the values range is from 0 to 1 0: RFNST process is not done 1: RFNST process is done

### 4.2.43 AT+QCPRMODE Control NPI production mode

<b>AT+QCPRMODE Control NPI production mode</b>	
Description	Set command is used to control entering NPI production mode. Read command returns the current NPI production mode status.
Test Command <b>AT+QCPRMODE=?</b>	Response <b>+QCPRMODE: &lt;status&gt;</b>  OK
Read Command <b>AT+QCPRMODE?</b>	Response <b>+QCPRMODE:</b> <b>"prodModeEnable":&lt;value1&gt;,"prodModeEnter":&lt;value2&gt;</b>  OK
Write Command <b>AT+QCPRMODE=&lt;setting&gt;</b>	Response OK or

	<b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	SAVE
Max Response Time	-
Reference	

### Defined Values

<b>&lt;setting&gt;</b>	prodModeEnable Enable production mode prodModeDisable Disable production mode prodModeEnter Enter production mode prodModeExit Exit production mode
<b>&lt;value1&gt;</b>	0: prodMode is disabled 1: prodMode is enabled
<b>&lt;value2&gt;</b>	0: prodMode isn't entered 1: prodMode is entered
<b>&lt;status&gt;</b>	reflects prodMode status

#### 4.2.44 AT+QCLEDMODE Enable the Netlight Function

AT+QCLEDMODE Enable the Netlight Function	
Description	Set command is used to control entering NPI production mode. Read command returns the current NPI production mode status.
Test Command <b>AT+QCLEDMODE=?</b>	Response <b>+QCLEDMODE: (0,1)</b>  <b>OK</b>
Read Command <b>AT+QCLEDMODE?</b>	Response <b>+QCLEDMODE: &lt;state&gt;</b>  <b>OK</b>
Write Command <b>AT+QCLEDMODE=&lt;state&gt;</b>	Response <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	SAVE
Max Response Time	-
Reference	

## Defined Values

<b>&lt;state&gt;</b>	0 Netlight function disable
	1 Netlight function enable

### NOTE

In QCX212 NB-IoT SDK, Netlight is set to PAD 30 using PWM Instance 5. It can be changed by rewrite NetLightInit function (in bsp\_custom.c).

- Netlight function may cause extra power consumption
- All sleep is disabled, until NB enter Idle/PSM
- A pull-down resistor is needed to keep Pad low to avoid unwanted flickerl.
- Netlight Indication Note NB Status

HighLevel 64ms(LED ON)/ LowLevel 800ms(LED OFF)    Network searching

HighLevel 64ms(LED ON)/ LowLevel 2000ms(LED OFF)    Network connected in NB Connect state

Keep Low Level    NB Idle/PSM or other

## 4.2.45 AT+QCPOWERCLASS Sets the Band Power Class

### AT+QCPOWERCLASS Sets the Band Power Class

Description	The command sets the band power class. Read command returns the current band and related power class setting. Test command returns the bands and related power class supported by the UE.
Test Command <b>AT+QCPOWERCLASS=?</b>	Response <b>+QCPOWERCLASS: &lt;band1&gt;,(list of supported &lt;power class&gt;s)</b> <b>+QCPOWERCLASS: &lt;band2&gt;,(list of supported &lt;power class&gt;s)</b> ...
Read Command <b>AT+QCPOWERCLASS?</b>	Response <b>+QCPOWERCLASS: &lt;band1&gt;,&lt;power class&gt;</b> <b>+QCPOWERCLASS: &lt;band2&gt;,&lt;power class&gt;</b> ...
Write Command <b>AT+QCPOWERCLASS=&lt;band&gt;,&lt;powerclass&gt;</b>	Response <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>

Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	

## Defined Values

<band>	Band in decimal number.All bands supported by RF. 0 is to set power class of all bands.
<power class>	3 UE maximum output power is 23dBm 5 UE maximum output power is 20dBm 6 UE maximum output power is 14dBm

### NOTE

AT+QECPOWERCLASS must be restricted to execute under power off or air plane state.Parameter <power class> can only be set to 6 when “RelVersion” in AT+QCCFG is 14.When set parameter <power class> to 6,parameter <band> must be set to 0.

## 5 AT Commands for MQTT

### 5.1 Overview

Command	Description
<b>AT+QCMTCFG</b>	Creates a MQTT Client
<b>AT+QCMTOPEN</b>	Open a Network for MQTT Client.
<b>AT+QCMTCLOSE</b>	Send MQTT Close Packet.
<b>AT+QCMTCONN</b>	Send MQTT Subscribe Packet.
<b>AT+QCMTDISC</b>	Send MQTT Disconnect Packet
<b>AT+QCMTSUB</b>	Send MQTT Subscribe Packet.
<b>AT+QCMTUNS</b>	Send MQTT Unsubscribe Packet
<b>AT+QCMT PUB</b>	Send MQTT Publish Packet
<b>+QCMTSTAT</b>	Receive Data from MQTT Server
<b>+QCMTRECV</b>	Receive Data from MQTT Server

### 5.2 Detailed Descriptions of Commands

#### 5.2.1 AT+QCMTCFG Creates a MQTT Client

<b>AT+QCMTCFG Creates a MQTT Client</b>	
Description	The command creates a MQTT client.
Test Command	Response <b>+QCMTCFG: "echomode",(0),(0,1)</b> <b>"dataformat",(0),(0,1),(0,1)</b> <b>"keepalive",(0),(0-3600),</b> <b>"session",(0),(0,1)</b> <b>"timeout",(0),(1-60),(1-10),(0,1)</b> <b>"will",(0),(0,1),(0-2),(0,1),"will_topic","will_msg"</b> <b>"version",(0),(3,4)</b> <b>"aliauth",(0),"productkey","devicename","devicesecret"</b> <b>"cloud",(0-256),(0-256)</b>

	<p><b>OK</b></p>
<p>Write Command <b>AT+QCMTCFG="mode",&lt;value&gt;,[...]</b></p>	<p>Response <b>OK</b> or <b>ERROR</b></p>
<p>Write Command <b>AT+QCMTCFG="echo mode",&lt;tcpconnectID&gt;,[&lt;echo_mode&gt;]</b></p>	<p>Response <b>OK</b> If &lt;echo_mode&gt; is omitted, query the data echo mode: <b>+QCMTCFG: "echomode",&lt;echo_mode&gt;</b> or <b>ERROR</b></p>
<p>Write Command <b>AT+QCMTCFG="dataformat",&lt;tcpconnectID&gt;,[&lt;send_format&gt;,&lt;recv_format&gt;]</b></p>	<p>Response <b>OK</b> If &lt;send_format&gt; and &lt;recv_format&gt; are both omitted, query the format of sent/received data: <b>+QCMTCFG: "dataformat",&lt;send_format&gt;,&lt;recv_format&gt;</b> <b>OK</b> or <b>ERROR</b></p>
<p>Write Command <b>AT+QCMTCFG="keepalive",&lt;tcpconnectID&gt;,[&lt;keep-alive time&gt;]</b></p>	<p>Response <b>OK</b> If &lt;keep-alive time&gt; is omitted, query the keep-alive time: <b>+QCMTCFG: "keepalive",&lt;keep-alive time&gt;</b> <b>OK</b> or <b>ERROR</b></p>
<p>Write Command <b>AT+QCMTCFG="session",&lt;tcpconnectID&gt;,[&lt;clean_session&gt;]</b></p>	<p>Response <b>OK</b> If &lt;clean_session&gt; is omitted, query the session type: <b>+QCMTCFG: "session",&lt;clean_session&gt;</b> <b>OK</b> or <b>ERROR</b></p>
<p>Write Command <b>AT+QCMTCFG="timeout",&lt;tcpconnectID&gt;,[&lt;pkt_timeout&gt;,[&lt;retry_times&gt;],[&lt;timeout_notice&gt;]]</b></p>	<p>Response <b>OK</b> If &lt;pkt_timeout&gt;, &lt;retry_times&gt;, &lt;timeout_notice&gt; are omitted, query the timeout value of message delivery: <b>+QCMTCFG: "timeout",&lt;pkt_timeout&gt;,&lt;retry_times&gt;,&lt;timeout_notice&gt;</b> <b>OK</b> or <b>ERROR</b></p>
<p>Write Command <b>AT+QCMTCFG="will",&lt;tcpconnectID&gt;,[&lt;will_fg&gt;,&lt;will_qos&gt;,&lt;will_retain&gt;,&lt;will_topic&gt;,&lt;will_msg&gt;]</b></p>	<p>Response <b>OK</b> If &lt;will_fg&gt;, &lt;will_qos&gt;, &lt;will_retain&gt;, &lt;will_topic&gt; and &lt;will_msg&gt; are</p>

<p><code>g&gt;[,&lt;will_qos&gt;,&lt;will_retain&gt;,&lt;will_topic&gt;,&lt;will_msg&gt;"]]</code></p>	<p>omitted, query the Will information:  <b>+QCMTCFG:</b>  <code>"will",&lt;will_fg&gt;[,&lt;will_qos&gt;,&lt;will_retain&gt;,&lt;will_topic&gt;,&lt;will_msg&gt;]</code>  <b>OK</b>  or  <b>ERROR</b></p>
<p>Write Command  <code>AT+QCMTCFG="version",&lt;tcpconnectID&gt;[,&lt;version&gt;]</code></p>	<p>Response  <b>OK</b>  If &lt;version&gt; is omitted, query the MQTT protocol version:  <b>+QCMTCFG: "version",&lt;version&gt;</b>  <b>OK</b>  or  <b>ERROR</b></p>
<p>Write Command  <code>AT+QCMTCFG="aliauth",&lt;tcpconnectID&gt;[,&lt;product_key&gt;,&lt;device_name&gt;,&lt;device_secret&gt;"]]</code></p>	<p>Response  <b>OK</b>  If "&lt;product_key&gt;",&lt;device_name&gt;",&lt;device_secret&gt;" are omitted, query the device information:  <b>+QCMTCFG:</b>  <code>"aliauth",&lt;product_key&gt;,&lt;device_name&gt;,&lt;device_secret&gt;</code>  <b>OK</b>  or  <b>ERROR</b></p>
<p>Write Command  <code>AT+QCMTCFG="cloud",&lt;tcpconnectID&gt;,&lt;cloudtype&gt;,&lt;data type&gt;</code></p>	<p>Response  <b>OK</b>  or  <b>ERROR</b></p>
<p>Parameter Saving Mode</p>	<p>-</p>
<p>Max Response Time</p>	<p>-</p>
<p>Reference</p>	<p></p>

## Defined Values

<code>&lt;tcpconnectID&gt;</code>	MQTT socket identifier, the value is 0
<code>&lt;echo_mode&gt;</code>	0 Do not echo the input data to UART 1 Echo the input data to UART
<code>&lt;send_format&gt;</code>	0 Text mode 1 Hex mode
<code>&lt;recv_format&gt;</code>	0 Text mode 1 Hex mode
<code>&lt;keep-alive time&gt;</code>	The range is 0-3600. The default value is 120. Unit: second. It defines the maximum time interval between messages received from a client. If the server does not receive a message from the client within 1.5 times of the keep-alive time period, it disconnects the client as if the client has sent a DISCONNECT message.



<clean_session>	0 The server must store the subscriptions of the client after it disconnects. 1 The server must discard any previously maintained information about the
<pkt_timeout>	Timeout of the packet delivery. The range is 1-60. The default value is 10. Unit: second.
<retry_times>	Retry times when packet delivery times out. The range is 1-10. The default value is 3.
<timeout_notice>	0 Not report timeout message when transmitting packet 1 Report timeout message when transmitting packet
<will_fg>	0 Ignore the Will flag configuration 1 Require the Will flag configuration
<will_qos>	0 At most once 1 At least once 2 Exactly once
<will_retain>	0 When a client sends a PUBLISH message to a server, the server will not hold on to the message after it has been delivered to the current subscribers. 1 When a client sends a PUBLISH message to a server, the server should hold on to the message after it has been delivered to the current subscribers.
<will_topic>	Will topic string
<will_msg>	The Will message defines the content of the message that is published to the will topic if the client is unexpectedly disconnected. It can be a zero-length message.
<version>	Version of MQTT protocol, the default is MQTT v3.1.1 3 MQTT v3.1 4 MQTT v3.1.1
<product_key>	Product key issued by AliCloud
<device_name>	Device name issued by AliCloud
<device_secret>	Device secret key issued by AliCloud
<cloud_type>	Integer type 0 mosquitto 1 OneNet 2 alibaba 3-255 is reserved for customers
<data_type>	Integer type, the range is 0-255 For OneNet cloud 1 OneNet data type1 2 OneNet data type2 3 OneNet data type3 4 OneNet data type4 5 OneNet data type5 6 OneNet data type6 For Ali cloud 1 Json data 2 string data For other, data format insensitive

## 5.2.2 AT+QCMTOPEN Open a Network for MQTT Client

AT+QCMTOPEN Open a Network for MQTT Client	
Description	The command is used to open a network for MQTT client.
Test Command <b>AT+QCMTOPEN=?</b>	Response <b>+QCMTOPEN:</b> (list of supported<tcpconnectID>s), "<host_name>",(list of supported <port>s)  OK
Read Command <b>AT+QCMTOPEN?</b>	Response OK
Write Command <b>AT+QCMTOPEN=&lt;tcpconnectID&gt;,"&lt;host_name&gt;",&lt;port&gt;</b>	Response OK  <b>+QCMTOPEN:</b> <tcpconnectID>,<result> or ERROR
Parameter Saving Mode	-
Max Response Time	-
Reference	

### Defined Values

<tcpconnectID>	MQTT socket identifier. The value is 0
<host_name>	The address of the server. It could be an IP address or a domain name. The maximum size is 100 bytes
<port>	The port of the server. The range is 1-65535
<result>	-1 Failed to open network 0 Opened network successfully

## 5.2.3 AT+QCMTCLOSE Send MQTT Close Packet

AT+QCMTCLOSE Send MQTT Close Packet	
Description	The command send MQTT close packet.
Test Command	Response <b>+QCMTCLOSE:</b> (list of <tcpconnectID>s)

<b>AT+QCMTCLOSE=?</b>	<b>OK</b>
Write Command <b>AT+QCMTCLOSE=&lt;tcpconnectID&gt;</b>	Response <b>+QCMTCLOSE: &lt;tcpconnectID&gt;,&lt;result&gt;</b> or <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

### Defined Values

<b>&lt;tcpconnectID&gt;</b>	MQTT socket identifier. The value is 0
<b>&lt;result&gt;</b>	-1 Failed to open network 0 Opened network successfully

### 5.2.4 AT+QCMTCONN Send MQTT Subscribe Packet.

<b>AT+QCMTCONN Send MQTT Subscribe Packet</b>	
Description	The command send MQTT subscribe packet.
Test Command <b>AT+QCMTCONN=?</b>	Response <b>+QCMTCONN: (list of supported &lt;tcpconnectID&gt;s), "&lt;clientID&gt;"</b> <b>["&lt;username&gt;" ["&lt;password&gt;"]]</b>  <b>OK</b>
Read Command <b>AT+QCMTCONN?</b>	Response <b>OK</b>
Write Command <b>AT+QCMTCONN=&lt;tcpconnectID&gt;,"&lt;clientID&gt;"</b> <b>["&lt;username&gt;"["&lt;password&gt;"]]</b>	Response <b>OK</b> <b>+QCMTCONN: &lt;tcpconnectID&gt;,&lt;result&gt;[,&lt;ret_code&gt;]</b> or <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

### Defined Values

<b>&lt;tcpconnectID&gt;</b>	MQTT socket identifier. The value is 0
-----------------------------	--

<clientID>	The client identifier
<username>	User name of the client. It can be used for authentication
<password>	Password corresponding to the user name of the client. It can be used for Authentication.
<result>	Integer type 0 send data successfully and received ACK from server 1 send data successfully and received error ACK from server 2 send data fail
<ret_code>	Integer type 0 connect accepted 1 connect refused - incorrect protocol version 2 connect refused -invalid client identifier 3 connect refused - server unavailable 4 connect refused-bad user name or password 5 connect refused -not authorised 6 connect fail

### 5.2.5 AT+QCMTDISC Send MQTT Disconnect Packet

AT+QCMTDISC Send MQTT Disconnect Packet	
Description	The command send MQTT disconnect packet.
Test Command <b>AT+QCMTDISC=?</b>	Response <b>+QCMTDISC:</b> (list of supported<tcpconnectID>s)  <b>OK</b>
Write Command <b>AT+QCMTDISC=&lt;tcpconnectID&gt;</b>	Response <b>OK</b> <b>+QCMTDISC:</b> <tcpconnectID>,<result> or <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

#### Defined Values

<tcpconnectID>	MQTT socket identifier. The value is 0
<result>	-1 Failed to open network 0 Opened network successfully

## 5.2.6 AT+QCMTSUB Send MQTT Subscribe Packet

AT+QCMTSUB Send MQTT Subscribe Packet	
Description	The command send MQTT subscribe packet.
Test Command <b>AT+QCMTSUB=?</b>	Response <b>+QCMTSUB:</b> (list of supported<tcpconnectID>s),(list of supported <msgid>s), "<topic>",(list of supported<qos>s)  <b>OK</b>
Write Command <b>AT+QCMTSUB=&lt;tcpconnectID&gt;,&lt;msgid&gt;,&lt;topic&gt;,&lt;qos&gt;</b>	Response <b>+QCMTSUB:</b> (list of supported<tcpconnectID>s),(list of supported<msgid>s), "<topic>",(list of supported<qos>s)  <b>OK</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

### Defined Values

<tcpconnectID>	MQTT socket identifier. The value is 0
<msgid>	Message identifier of packet. The range is 1-65535
<topic>	Topic that the client wants to subscribe to or unsubscribe from. The maximum length is 255 bytes
<qos>	Message QoS, can be 0,1 or 2

## 5.2.7 AT+QCMTUNS Send MQTT Unsubscribe Packet

AT+QCMTUNS Send MQTT Unsubscribe Packet	
Description	The command send MQTT unsubscribe packet.
Test Command <b>AT+QCMTUNS=?</b>	Response <b>+QCMTUNS:</b> (list of supported<tcpconnectID>s),(list of supported<msgid>s), "<topic>"  <b>OK</b>
Write Command <b>AT+QCMTUNS=&lt;tcpconnectID&gt;,&lt;msgid&gt;,&lt;topic&gt;</b>	Response <b>OK</b>

<b>opic&gt;"</b>	<b>+QCMTUNS: &lt;tcpconnectID&gt;,&lt;msgID&gt;,&lt;result&gt;</b> or <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

### Defined Values

<b>&lt;tcpconnectID&gt;</b>	MQTT socket identifier. The value is 0
<b>&lt;msgID&gt;</b>	Message identifier of packet. The range is 1-65535
<b>&lt;topic&gt;</b>	Topic that the client wants to subscribe to or unsubscribe from. The maximum length is 255 bytes
<b>&lt;result&gt;</b>	-1 Failed to open network 0 Opened network successfully

### 5.2.8 AT+QCMPUB Send MQTT Publish Packet

<b>AT+QCMPUB Send MQTT Publish Packet</b>	
Description	The command send MQTT publish packet .
Test Command <b>AT+QCMPUB=?</b>	Response <b>+QCMPUB: (list of supported&lt;tcpconnectID&gt;s),(list of supported&lt;msgID&gt;s),(list of supported &lt;qos&gt;s),(list of supported&lt;retain&gt;s), "&lt;topic&gt;","&lt;msg&gt;"</b>  <b>OK</b>
Write Command <b>AT+QCMPUB=&lt;tcpconnectID&gt;,&lt;msgID&gt;,&lt;qos&gt;,&lt;retain&gt;,"&lt;topic&gt;","&lt;payload&gt;"</b>	Response <b>OK</b> <b>+QCMPUB: &lt;tcpconnectID&gt;,&lt;msgID&gt;,&lt;result&gt;</b> or <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

### Defined Values

<b>&lt;tcpconnectID&gt;</b>	MQTT socket identifier. The value is 0
<b>&lt;msgID&gt;</b>	Message identifier of packet. The range is 1-65535.It will be 0 only when

	<qos>=0
<qos>	Message QoS, can be 0,1 or 2
<retain>	0 Server should not retain the message 1 Server should retain the message
<topic>	Topic that needs to be published. The maximum length is 255 bytes
<payload>	Message that needs to be published. Maximum length is 700 bytes. If in data mode, the maximum length is 1023 bytes
<result>	-1 Failed to open network 0 Opened network successfully

### 5.2.9 +QCMTSTAT Receive Data from MQTT Server

<b>+QCMTSTAT Receive Data from MQTT Server</b>	
Description	This is an unsolicited message to indicate MQTT client receive data from MQTT server.
	<b>+QCMTSTAT: &lt;tcpconnectID&gt;,&lt;err_code&gt;</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

#### Defined Values

<tcpconnectID>	MQTT socket identifier. The value is 0
<err_code>	1 Connection is closed or reset by peer

### 5.2.10 +QCMTRECV Receive Data from MQTT Server

<b>+QCMTRECV Receive Data from MQTT Server</b>	
Description	This is an unsolicited message to indicate MQTT client receive data from MQTT server.
	<b>+ QCMTRECV: &lt;tcpconnectID&gt;,&lt;msgID&gt;,&lt;topic&gt;,&lt;data_len&gt;,&lt;data&gt;</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

#### Defined Values

---

<tcpconnectID>	MQTT socket identifier. The value is 0
<msgID>	The message identifier of packet
<topic>	The topic that received from MQTT server.
<data_len>	The length of <data>.
<data>	Receive data from server.

---

SIMCom  
Confidential



## 6 AT Commands for HTTP

### 6.1 Overview

Command	Description
<b>AT+HTTPCREATE</b>	Create a http client.
<b>AT+HTTPCON</b>	Create a socket and connects with a http server
<b>AT+HTTPDESTROY</b>	Close a socket
<b>AT+HTTPSEND</b>	Send data to the http server
<b>+HTTPRESPH</b>	Represent response header
<b>+HTTPRESPC</b>	Represent response content.
<b>+HTTPERR</b>	Epresent error message

### 6.2 Detailed Descriptions of Commands

#### 6.2.1 AT+HTTPCREATE Creates a Http Client

<b>AT+HTTPCREATE</b> Create a http client.	
Description	Set command creates a http or https client instance. Configure host, server certification, etc. It can create most 5 instance at one time. Test command returns values supported as a compound value.
Test Command <b>AT+HTTPCREATE=?</b>	Response <b>+HTTPCREATE: (list of supported &lt;flag&gt;s), "&lt;host&gt;", "&lt;authuser&gt;", "&lt;authpasswd&gt;"</b>  <b>OK</b> or <b>ERROR</b>
Write Command <b>AT+HTTPCREATE=&lt;flag&gt;,&lt;host&gt;,&lt;authuser&gt;,&lt;authpasswd&gt;</b>	Response if there are more commands need to enter: <b>+HTTP CMD: CONTIUE ENTER CMD</b> If all commands has enter: <b>+HTTPCREATE: &lt;httpclientId&gt;</b>

	or <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	5S
Reference	

### Defined Values

<flag>	Integer type 1 not last part of command 0 last part of command
<host>	string type, http server's host name
<authuser>	string type, Authentication user name
<authpasswd>	string type, Authentication password
<httpclientId>	Integer type, http Client Id ,0-4

#### NOTE

Only one instance and http was fully verified. https and multiple instances will be test later.

## 6.2.2 AT+HTTPCON Create a Socket and Connects with a Http Server

### AT+HTTPCON Create a socket and connects with a http server

Description	Set command creates a socket and connects with a http server. Then creates a task to receive data come from http server. Test command returns values supported as a compound value.
Test Command <b>AT+HTTPCON=?</b>	Response <b>+HTTPCON:</b> (list of supported<httpclientId> <b>OK</b> or <b>ERROR</b>
Write Command <b>AT+HTTPCON=&lt;httpclientId&gt;</b>	Response <b>OK</b> or <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	40S
Reference	

## Defined Values

<httpclientId>	Integer type; http client id returned by +HTTPCREATE
----------------	--

### 6.2.3 AT+HTTPDESTROY Close a Socket

#### AT+HTTPDESTROY Close a socket

Description	Set command closes a socket, stops receive data from the http server and free the memory that was allocated by the client when creation. Test command returns values supported as a compound value.
Test Command <b>AT+HTTPDESTROY=?</b>	Response <b>+HTTPDESTROY:</b> (list of supported<httpclientId> <b>OK</b> or <b>ERROR</b>
Write Command <b>AT+HTTPDESTROY=&lt;httpclientId&gt;</b>	Response <b>OK</b> or <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	40S
Reference	

## Defined Values

<httpclientId>	Integer type; http client id returned by +HTTPCREATE
----------------	--

### 6.2.4 AT+HTTPSEND SendData to the Http Server

#### AT+HTTPSEND Send data to the http server

Description	Set command closes a socket, stops receive data from the http server and free the memory that was allocated by the client when creation. Test command returns values supported as a compound value.
Test Command <b>AT+HTTPSEND=?</b>	Response <b>+HTTPSEND:</b> (list of supported<httpclientId>),(list of supported<method>),(range of supported<pathlen>),"<path>", (range of

	supported<customheaderlen>,"<customheader>",(range of supported<contentTypelen>),"<contentType>",(range of supported<contentlen>),"<content>"
	OK or ERROR
Write Command <b>AT+HTTPSEND=&lt;httpclientId&gt;,&lt;method&gt;,&lt;pathlen&gt;,&lt;path&gt;,&lt;customheaderlen&gt;,&lt;customheader&gt;,&lt;contentTypelen&gt;,&lt;contentType&gt;,&lt;contentlen&gt;,&lt;content&gt;</b>	Response OK or ERROR
Parameter Saving Mode	NO_SAVE
Max Response Time	5S
Reference	

### Defined Values

<httpclientId>	Integer type; http client id returned by +HTTPCREATE
<method>	Integer type; http method 0 GET 1 POST 2 PUT 3 DELETE 4 HEAD
<pathlen>	Integer type, Lenth of path,0-260
<path>	string typePath
<customheaderlen>	Integer type, Length of custom header,0-255
<customheader>	string type, Customheader in hex string
<contentTypelen>	Integer type, Length of content type,0-64
<contentType>	string type, Content type
<contentlen>	Integer type, Length of content, 0-1024
<content>	String type User data need to send in hex string

### 6.2.5 +HTTPRESPH Represent response header

### +HTTPRESPH Represent response header

Description	This is an unsolicited message to represent response header.
	<b>+HTTPRESPH: &lt;clientId&gt;,&lt;responseCode&gt;,&lt;headerlen&gt;,&lt;header&gt;</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

#### Defined Values

<clientId>	Integer type,http client id returned by +HTTPCREATE
<responseCode>	Integer type, http response code
<headerlen>	Integer type, Length of http response header
<header>	Integer type, Header

### 6.2.6 +HTTPRESPC Represent response content

#### +HTTPRESPC Represent response content

Description	This is an unsolicited message to represent response content.
	<b>+HTTPRESPC:&lt;clientId&gt;,&lt;flag&gt;,&lt;contentlength&gt;,&lt;blockcontentlen&gt;,&lt;content&gt;</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

#### Defined Values

<clientId>	Integer type,http client id returned by +HTTPCREATE
<flag>	Integer type, if has more data 0 No more data 1 Has more data
<contentlength>	Integer type, Length of content
<blockcontentlen>	Integer type, Current block length
<content>	string type content

## 6.2.7 +HTTPErr Indicate of error Message

<b>+HTTPErr Indicate of error message</b>	
Description	This is an unsolicited message to represent error message when error happen.
	<b>+HTTPErr: &lt;clientId&gt;,&lt;errorCode&gt;,[&lt;rspcode&gt;]</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

### Defined Values

<b>&lt;clientId&gt;</b>	Integer type,http client id returned by +HTTPCREATE
<b>&lt;errorCode&gt;</b>	Integer type, if has more data 2 URL parse error 3 could not resolve DNS 4 Protocol error 5 HTTP 404 error,NOT FOUND 6 HTTP 403 error,REFUSED 7 HTTP xxx error,with specific rspcode for followed 8 Connection timeout 9 Connection error 10 Connection fatal error 11 Connection closed 13 Buffer overflow error

## 7 AT Commands for MQTT(S)

### 7.1 Overview

Command	Description
<b>AT+CMQTTSTART</b>	Start MQTT service
<b>AT+CMQTTSTOP</b>	Stop MQTT service
<b>AT+CMQTTACCQ</b>	Acquire a client
<b>AT+CMQTTREL</b>	Release a client
<b>AT+CMQTTSSLCFG</b>	Set the SSL context (only for SSL/TLS MQTT)
<b>AT+CMQTTWILLTOPIC</b>	Input the topic of will message
<b>AT+CMQTTWILLMSG</b>	Input the will message
<b>AT+CMQTTCONNECT</b>	Connect to MQTT server
<b>AT+CMQTTDISC</b>	Disconnect from server
<b>AT+CMQTTTOPIC</b>	Input the topic of publish message
<b>AT+CMQTTPAYLOAD</b>	Input the publish message
<b>AT+CMQTTPUB</b>	Publish a message to server
<b>AT+CMQTTSUB</b>	Subscribe a message to server
<b>AT+CMQTTUNSUB</b>	Unsubscribe a message to server
<b>AT+CMQTTCFG</b>	Configure the MQTT Context

### 7.2 Detailed Description of Commands

#### 7.2.1 AT+CMQTTSTART Start MQTT service

AT+CMQTTSTART is used to start MQTT service by activating PDP context. You must execute this command before any other MQTT related operations.

<b>AT+CMQTTSTART Start MQTT service</b>	
Test Command	Response
<b>AT+CMQTTSTART=?</b>	<b>OK</b>
Execute Command	Response
<b>AT+CMQTTSTART</b>	1)If start MQTT service successfully:

	<p>OK</p> <p><b>+CMQTTSTART: 0</b></p> <p>2)If failed:</p> <p>OK</p> <p><b>+CMQTTSTART: &lt;errcode&gt;</b></p> <p>3)If MQTT service have started successfully and you executed AT+CMQTTSTART again:</p> <p><b>ERROR</b></p>
Max Response Time	12000ms
Parameter Saving Mode	-
Reference	

### Defined Values

<errcode>	The result code, please refer to Chapter 8.3
-----------	--

### Examples

**AT+CMQTTSTART**

OK

**+CMQTTSTART: 0**

### NOTE

AT+CMQTTSTART is used to start MQTT service. You must execute this command before any other MQTT related operations.

If you don't execute AT+CMQTTSTART, the Write/Read Command of any other MQTT will return ERROR immediately.

## 7.2.2 AT+CMQTTSTOP Stop MQTT service

AT+CMQTTSTOP is used to stop MQTT service.

### AT+CMQTTSTOP Stop MQTT service



Test Command <b>AT+CMQTTSTOP=?</b>	Response <b>OK</b>
Execute Command <b>AT+CMQTTSTOP</b>	Response 1)If stop MQTT service successfully: <b>OK</b>  <b>+CMQTTSTOP: 0</b> 2)If failed: <b>+CMQTTSTOP: &lt;errcode&gt;</b>  <b>ERROR</b> 3)If MQTT service have stopped successfully and you executed AT+CMQTTSTOP again: <b>ERROR</b>
Max Response Time	12000ms
Parameter Saving Mode	-
Reference	

### Defined Values

<errcode>	The result code, please refer to chapter 8.3
-----------	--

### Examples

```
AT+CMQTTSTOP
OK

+CMQTTSTOP: 0
```

### NOTE

AT+CMQTTSTOP is used to stop MQTT service. You can execute this command after AT+CMQTTDISC and AT+CMQTTREL.

### 7.2.3 AT+CMQTTACCQ Acquire a client

AT+CMQTTACCQ is used to acquire a MQTT client. It must be called before all commands about MQTT

connect and after AT+CMQTTSTART.

## AT+CMQTTACCQ Acquire a client

Test Command <b>AT+CMQTTACCQ=?</b>	Response <b>+CMQTTACCQ: (0-0),(1-64)[,(0-1)]</b>  <b>OK</b>
Read Command <b>AT+CMQTTACCQ?</b>	Response <b>[+CMQTTACCQ: &lt;client_index&gt;,&lt;clientID&gt;,&lt;server_type&gt; [.....]]</b>  <b>OK</b>
Write Command <b>AT+CMQTTACCQ=&lt;client_index&gt;,&lt;clientID&gt;[&lt;server_type&gt;]</b>	Response 1)If successfully: <b>OK</b> 2)If failed: <b>+CMQTTACCQ: &lt;client_index&gt;,&lt;err&gt;</b>  <b>ERROR</b> 3)If failed: <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

### Defined Values

<client_index>	A numeric parameter that identifies a client. The range of permitted values is 0 to 0.
<clientID>	The UTF-encoded string. It specifies a unique identifier for the client. The string length is from 1 to 64 bytes.
<server_type>	A numeric parameter that identifies the server type. The default value is 0. 0 MQTT server with TCP 1 MQTT server with SSL/TLS
<errcode>	The result code, please refer to chapter 18.3

### Examples

**AT+CMQTTACCQ=0,"a12mmmm",0**

**OK**

**AT+CMQTTACCQ?**

+CMQTTACCQ: 0,"a12mmmm",0

OK

AT+CMQTTACCQ=?

+CMQTTACCQ: (0-0),(1-64)[,(0-1)]

OK

### 7.2.4 AT+CMQTTREL Release a client

AT+CMQTTREL is used to release a MQTT client. It must be called after AT+CMQTTDISC and before AT+CMQTTSTOP.

#### AT+CMQTTREL Release a client

Test Command AT+CMQTTREL=?	Response <b>+CMQTTREL: (0-0)</b>  <b>OK</b>
Read Command AT+CMQTTREL?	Response 1)If successfully: <b>OK</b> 2)if MQTT not start <b>ERROR</b>
Write Command AT+CMQTTREL=<client_index>	Response 1)If successfully: <b>OK</b> 2)If failed: <b>+CMQTTREL: &lt;client_index&gt;,&lt;err&gt;</b>  <b>ERROR</b> 3)If failed: <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

#### Defined Values

<client_index>	A numeric parameter that identifies a client. The range of permitted values is 0 to 0.
<errcode>	The result code, please refer to chapter 18.3

## Examples

```
AT+CMQTTREL=?
+CMQTTREL: (0-0)

OK
AT+CMQTTREL=0
OK
AT+CMQTTREL?
OK
```

### 7.2.5 AT+CMQTTSSLCFG Set the SSL context (only for SSL/TLS MQTT)

AT+CMQTTSSLCFG is used to set the SSL context which to be used in the SSL connection when it will connect to a SSL/TLS MQTT server. It must be called before AT+CMQTTCONNECT and after AT+CMQTTSTART. The setting will be cleared after AT+CMQTTCONNECT failed or AT+CMQTTDISC.

#### AT+CMQTTSSLCFG Set the SSL context (only for SSL/TLS MQTT)

Test Command <b>AT+CMQTTSSLCFG=?</b>	Response <b>+CMQTTSSLCFG: (0,0),(0-1)</b>  <b>OK</b>
Read Command <b>AT+CMQTTSSLCFG?</b>	Response <b>[+CMQTTSSLCFG: &lt;session_id&gt;,&lt;ssl_ctx_index&gt;]</b> <b>[.....]</b>  <b>OK</b>
Write Command <b>AT+CMQTTSSLCFG=&lt;session_id&gt;,&lt;ssl_ctx_index&gt;</b>	Response 1)If successfully: <b>OK</b> 2)If failed: <b>ERROR</b>
Parameter Saving Mode	-

Max Response Time	-
Reference	-

## Defined Values

<session_id>	The session_id to operate. It's from 0 to 0.
<ssl_ctx_index>	The SSL context ID which will be used in the SSL connection. Refer to the <ssl_ctx_index> of AT+CSSLCFG

## Examples

**AT+CMQTTSSLCFG?**

+CMQTTSSLCFG: 0,0

OK

**AT+CMQTTSSLCFG=?**

+CMQTTSSLCFG: (0,0),(0-1)

OK

**AT+CMQTTSSLCFG=0,1**

OK

### 7.2.6 AT+CMQTTWILLTOPIC Input the topic of will message

AT+CMQTTWILLTOPIC is used to input the topic of will message.

#### AT+CMQTTWILLTOPIC Input the topic of will message

Test Command <b>AT+CMQTTWILLTOPIC=?</b>	Response <b>+CMQTTWILLTOPIC: (0-0),(1-1024)</b>  <b>OK</b>
Write Command <b>AT+CMQTTWILLTOPIC=&lt;client_index&gt;,&lt;req_length&gt;</b>	Response 1)If successfully: > <b>&lt;input data here&gt;</b> <b>OK</b> 2)If failed: <b>+CMQTTWILLTOPIC: &lt;client_index&gt;,&lt;err&gt;</b>

	<b>ERROR</b> 3)If failed: <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

## Defined Values

<client_index>	A numeric parameter that identifies a client. The range of permitted values is 0 to 0.
<req_length>	The length of input topic. The will topic should be UTF-encoded string. The range is from 1 to 1024 bytes.
<err>	The result code, please refer to chapter 8.3

## Examples

```
AT+CMQTTWILLTOPIC=0,10
```

```
>
```

```
OK
```

### 7.2.7 AT+CMQTTWILLMSG Input the will message

AT+CMQTTWILLMSG is used to input the message body of will message.

#### AT+CMQTTWILLMSG Input the will message

Test Command <b>AT+CMQTTWILLMSG=?</b>	Response <b>+CMQTTWILLMSG: (0-0),(1-1024),(0-2)</b>
	<b>OK</b>
Write Command <b>AT+CMQTTWILLMSG=&lt;client_index&gt;,&lt;req_length&gt;,&lt;qos&gt;</b>	Response 1)If successfully: > <b>&lt;input data here&gt;</b> <b>OK</b> 2)If failed: <b>+CMQTTWILLMSG: &lt;client_index&gt;,&lt;err&gt;</b>
	<b>ERROR</b>

	3)If failed: <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

## Defined Values

<client_index>	A numeric parameter that identifies a client. The range of permitted values is 0 to 0.
<req_length>	The length of input data. The will message should be UTF-encoded string. The range is from 1 to 1024 bytes.
<qos>	The qos value of the will message. The range is from 0 to 2.

## Examples

```
AT+CMQTTWILLMSG=0,6,1
```

```
>  
OK
```

### 7.2.8 AT+CMQTTCONNECT Connect to MQTT server

AT+CMQTTCONNECT is used to connect to a MQTT server.

#### AT+CMQTTCONNECT Connect to MQTT server

Test Command <b>AT+CMQTTCONNECT=?</b>	Response <b>+CMQTTCONNECT:</b> (0-0),(1-128),(1-64800),(0-1)[,<user_name>,<pass_word>]  <b>OK</b>
Read Command <b>AT+CMQTTCONNECT?</b>	Response <b>+CMQTTCONNECT:</b> [<client_index>,<server_addr>,<keepalive_time>,<clean_session>,<user_name>,<pass_word>] [.....]  <b>OK</b>
Write Command <b>AT+CMQTTCONNECT=&lt;client_index&gt;,&lt;server_addr&gt;,&lt;keepalive_time&gt;,&lt;clean_session&gt;,&lt;user_name&gt;,&lt;pass_word&gt;</b>	Response 1)If successfully: <b>OK</b>

```
palive_time>,<clean_session
>,<user_name>,<pass_word
>]]
```

**+CMQTTCONNECT: <client\_index>,0**

2)If failed:

**OK**

**+CMQTTCONNECT: <client\_index>,<err>**

3)If failed:

**ERROR**

**+CMQTTCONNECT: <client\_index>,<err>**

3)If failed:

**ERROR**

**+CMQTTCONNECT: <client\_index>,<err>**

4) If failed:

**+CMQTTCONNECT: <client\_index>,<err>**

**ERROR**

5)If failed:

**ERROR**

Parameter Saving Mode

-

Max Response Time

-

Reference

## Defined Values

**<client\_index>**

A numeric parameter that identifies a client. The range of permitted values is 0 to 0.

**<server\_addr>**

The string that described the server address and port. The range of the string length is 1 to 128 bytes. The string should be like this "tcp://116.247.119.165:5141", must begin with "tcp://". If the <server\_addr> not include the port, the default port is 1883.

**<keepalive\_time>**

The time interval between two messages received from a client. The client will send a keep-alive packet when there is no message sent to server after song long time. The range is from 1s to 64800s (18 hours).

**<clean\_session>**

The clean session flag. The value range is from 0 to 1, and default value is 0.

0 the server must store the subscriptions of the client after it disconnected. This includes continuing to store QoS 1 and QoS 2 messages for the subscribed topics so that they can be delivered when the client reconnects. The server must also maintain the state of in-flight messages being delivered at the point the connection is lost. This information must be kept until



	<p>the client reconnects.</p> <p>1 the server must discard any previously maintained information about the client and treat the connection as "clean". The server must also discard any state when the client disconnects.</p>
<user_name>	The user name identifies the name of the user which can be used for authentication when connecting to server. The string length is from 1 to 128 bytes.
<pass_word>	The password corresponding to the user which can be used for authentication when connecting to server. The string length is from 1 to 128 bytes.
<err>	The result code: 0 is success. Other values are failure. Please refer to chapter 7.3.

## Examples

```
AT+CMQTTCONNECT=0,"tcp://120.27.2.154:1883",20,1
```

```
OK
```

```
+CMQTTCONNECT: 0,0
```

```
AT+CMQTTCONNECT?
```

```
+CMQTTCONNECT: 0,"tcp://120.27.2.154:1883",20,1
```

```
OK
```

### NOTE

AT+CMQTTCONNECT is used to connect to a MQTT server.

If you don't set the SSL context by AT+CMQTTSSLCFG before connecting a SSL/TLS MQTT server by AT+CMQTTCONNECT, it will use the <client\_index> (the 1st parameter of AT+CMQTTCONNECT) SSL context when connecting to the server.

## 7.2.9 AT+CMQTTDISC Disconnect from server

AT+CMQTTDISC is used to disconnect from the server.

### AT+CMQTTDISC Disconnect from server

Test Command

```
AT+CMQTTDISC=?
```

Response:

```
+CMQTTDISC: (0-0),(0, 60-180)
```

<p>Read Command <b>AT+CMQTTDISC?</b></p>	<p><b>OK</b></p> <p>Response: <b>[+CMQTTDISC: 0,&lt;disc_state&gt;</b> <b>[.....]]</b></p>
<p>Write Command <b>AT+CMQTTDISC=&lt;client_in</b> <b>dex&gt;,&lt;timeout&gt;</b></p>	<p><b>OK</b></p> <p>Response</p> <p>1)If disconnect successfully: <b>+CMQTTDISC: &lt;client_index&gt;,0</b></p> <p><b>OK</b></p> <p>2)If disconnect successfully: <b>OK</b></p> <p><b>+CMQTTDISC: &lt;client_index&gt;,0</b></p> <p>3)If failed: <b>OK</b></p> <p><b>+CMQTTDISC: &lt;client_index&gt;,&lt;err&gt;</b></p> <p>4)If failed: <b>ERROR</b></p> <p>5)If failed: <b>+CMQTTDISC: &lt;client_index&gt;,&lt;err&gt;</b></p> <p><b>ERROR</b></p>
<p>Parameter Saving Mode</p>	<p>-</p>
<p>Max Response Time</p>	<p>-</p>
<p>Reference</p>	<p></p>

## Defined Values

<client_index>	A numeric parameter that identifies a client. The range of permitted values is 0 to 0.
<timeout>	The timeout value for disconnection. The unit is second. The range is 60s to 180s. The default value is 0s (not set the timeout value).
<disc_state>	1 disconnection 0 connection
<err>	The result code: 0 is success. Other values are failure. Please refer to chapter 8.3.

## Examples

**AT+CMQTTDISC=0,120**

OK

+CMQTTDISC: 0,0

## 7.2.10 AT+CMQTTTOPIC Input the topic of publish message

AT+CMQTTTOPIC is used to input the topic of a publish message.

### AT+CMQTTTOPIC Input the topic of publish message

Test Command <b>AT+CMQTTTOPIC=?</b>	Response <b>+CMQTTTOPIC: (0-0),(1-1024)</b>
	<b>OK</b>
Write Command <b>AT+CMQTTTOPIC=&lt;client_index&gt;,&lt;req_length&gt;</b>	Response 1)If successfully: > <input data here> <b>OK</b> 2)If failed: <b>+CMQTTTOPIC: &lt;client_index&gt;,&lt;err&gt;</b>
	<b>ERROR</b> 3)If failed: <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

### Defined Values

<client_index>	A numeric parameter that identifies a client. The range of permitted values is 0 to 0.
<req_length>	The length of input topic data. The publish message topic should be UTF-encoded string. The range is from 1 to 1024 bytes.
<err>	The result code: 0 is success. Other values are failure. Please refer to chapter 8.3.

### Examples

**AT+CMQTTTOPIC=0,9**

>

OK

**NOTE**

The topic will be clean after execute AT+CMQTTPUB.

### 7.2.11 AT+CMQTTPAYLOAD Input the publish message

AT+CMQTTPAYLOAD is used to input the message body of a publish message.

#### AT+CMQTTPAYLOAD Input the publish message

Test Command <b>AT+CMQTTPAYLOAD=?</b>	Response <b>+CMQTTPAYLOAD: (0-0),(1-10240)</b>  <b>OK</b>
Write Command <b>AT+CMQTTPAYLOAD=&lt;client_index&gt;,&lt;req_length&gt;</b>	Response 1)If successfully: > <input data here> <b>OK</b> 2)If failed: <b>+CMQTTPAYLOAD: &lt;client_index&gt;,&lt;err&gt;</b>  <b>ERROR</b> 3)If failed: <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	

#### Defined Values

<client_index>	A numeric parameter that identifies a client. The range of permitted values is 0 to 0.
<req_length>	The length of input message data. The publish message should be UTF-encoded string. The range is from 1 to 10240 bytes.
<err>	The result code: 0 is success. Other values are failure. Please refer to

## Examples

```
AT+CMQTTPAYLOAD=0,6
```

```
>
```

```
OK
```

### NOTE

The topic will be clean after execute AT+CMQTT PUB.

## 7.2.12 AT+CMQTT PUB Publish a message to server

AT+CMQTT PUB is used to publish a message to MQTT server.

### AT+CMQTT PUB Publish a message to server

Test Command <b>AT+CMQTT PUB=?</b>	Response <b>+CMQTT PUB: (0-0),(0-2),(60-180),(0-1),(0-1)</b>  <b>OK</b>
Write Command <b>AT+CMQTT PUB=&lt;client_index&gt;,&lt;qos&gt;,&lt;pub_timeout&gt;[,&lt;retained&gt;[,&lt;dup&gt;]]</b>	Response 1)If successfully: <b>OK</b>  <b>+CMQTT PUB: &lt;client_index&gt;,0</b> 2)If failed: <b>OK</b>  <b>+CMQTT PUB: &lt;client_index&gt;,&lt;err&gt;</b> 3)If failed: <b>+CMQTT PUB: &lt;client_index&gt;,&lt;err&gt;</b>  <b>ERROR</b> 4)If failed: <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	-

Reference

### Defined Values

<client_index>	A numeric parameter that identifies a client. The range of permitted values is 0 to 0.
<qos>	The publish message's qos. The range is from 0 to 2. 0 at most once 1 at least once 2 exactly once
<pub_timeout>	The publishing timeout interval value. Since the client publish a message to server, it will report failed if the client receive no response from server after the timeout value seconds. The range is from 60s to 180s.
<retained>	The retain flag of the publish message. The value is 0 or 1. The default value is 0. When a client sends a PUBLISH to a server, if the retain flag is set to 1, the server should hold on to the message after it has been delivered to the current subscribers.
<dup>	The dup flag to the message. The value is 0 or 1. The default value is 0. The flag is set when the client or server attempts to re-deliver a message.
<err>	The result code: 0 is success. Other values are failure. Please refer to chapter 8.3.

### Examples

```
AT+CMQTTPUB=0,1,60
```

```
OK
```

```
+CMQTTPUB: 0,0
```

#### NOTE

The topic and payload will be clean after execute AT+CMQTTPUB.

### 7.2.13 AT+CMQTTSUB Subscribe a message to server

AT+CMQTTSUB is used to subscribe a message to MQTT server.

## AT+CMQTTSUB Subscribe a message to server

Test Command <b>AT+CMQTTSUB=?</b>	Response <b>+CMQTTSUB: (0-0),(1-1024),(0-2),(0-1)</b>  <b>OK</b>
Read Command <b>AT+CMQTTSUB?</b>	Response <b>+CMQTTSUB:</b> <b>[&lt;topic&gt;]</b> <b>OK</b>
Write Command /* subscribe one topic*/ <b>AT+CMQTTSUB=&lt;client_index&gt;,&lt;reqLength&gt;,&lt;qos&gt;[,&lt;dup&gt;]</b>	Response 1)If successfully: > <input data here> <b>OK</b>  <b>+CMQTTSUB: &lt;client_index&gt;,0</b> 2)If failed: <b>OK</b>  <b>+CMQTTSUB: &lt;client_index&gt;,&lt;err&gt;</b> 3)If failed: <b>+CMQTTSUB: &lt;client_index&gt;,&lt;err&gt;</b>  <b>ERROR</b> 4)If failed: <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	-

### Defined Values

<client_index>	A numeric parameter that identifies a client. The range of permitted values is 0 to 0.
<req_length>	The length of input topic data. The message topic should be UTF-encoded string. The range is from 1 to 1024 bytes.
<qos>	The publish message's qos. The range is from 0 to 2. 0 at most once 1 at least once 2 exactly once
<dup>	The dup flag to the message. The value is 0 or 1. The default value is 0. The flag is set when the client or server attempts to re-deliver a

	message.
<err>	The result code: 0 is success. Other values are failure. Please refer to chapter 8.3.
<topic>	Topics to which you have subscribed

## Examples

```
AT+CMQTTSUB=0,9,1
```

```
>
```

```
OK
```

```
+CMQTTSUB: 0,0
```

```
AT+CMQTTSUB=0,1
```

```
OK
```

```
+CMQTTSUB: 0,0
```

### NOTE

The topic will be clean after execute AT+CMQTTSUB.

## 7.2.14 AT+CMQTTUNSUB Unsubscribe a message to server

AT+CMQTTUNSUB is used to unsubscribe a message to MQTT server.

### AT+CMQTTUNSUB Unsubscribe a message to server

Test Command <b>AT+CMQTTUNSUB=?</b>	Response <b>+CMQTTUNSUB: (0-0),(1-1024),(0-1)</b>
	<b>OK</b>
Write Command /* unsubscribe one topic*/ <b>AT+CMQTTUNSUB=&lt;client_index&gt;,&lt;reqLength&gt;,&lt;dup&gt;</b>	Response 1)If successfully: > <b>&lt;input data here&gt;</b> <b>OK</b>
	<b>+CMQTTUNSUB: &lt;client_index&gt;,0</b> 2)If failed:



	<p><b>OK</b></p> <p><b>+CMQTTUNSUB: &lt;client_index&gt;,&lt;err&gt;</b></p> <p>3)If failed:</p> <p><b>+CMQTTUNSUB: &lt;client_index&gt;,&lt;err&gt;</b></p> <p><b>ERROR</b></p> <p>4)If failed:</p> <p><b>ERROR</b></p>
Parameter Saving Mode	-
Max Response Time	-
Reference	-

## Defined Values

<client_index>	A numeric parameter that identifies a client. The range of permitted values is 0 to 0.
<req_length>	The length of input topic data. The message topic should be UTF-encoded string. The range is from 1 to 1024 bytes.
<dup>	The dup flag to the message. The value is 0 or 1. The default value is 0. The flag is set when the client or server attempts to re-deliver a message.
<err>	The result code: 0 is success. Other values are failure. Please refer to chapter 8.3.

## Examples

```
AT+CMQTTUNSUBTOPIC=0,9
```

```
>
```

```
OK
```

```
AT+CMQTTUNSUB=0,1
```

```
OK
```

```
+CMQTTUNSUB: 0,0
```

### NOTE

The topic will be clean after execute AT+CMQTTUNSUB.

## 7.2.15 AT+CMQTTCFG Configure the MQTT Context

AT+CMQTTCFG is used to configure the MQTT context. It must be called before AT+CMQTTCONNECT and after AT+CMQTTACCQ. The setting will be cleared after AT+CMQTTREL.

### AT+CMQTTCFG Configure the MQTT Context

<p>Test Command</p> <p><b>AT+CMQTTCFG=?</b></p>	<p>Response</p> <p><b>+CMQTTCFG: "checkUTF8",(0-0),(0-1)</b></p> <p><b>+CMQTTCFG: "optimeout ",(0-0),(20-120)</b></p> <p><b>+CMQTTCFG: "version",(0-0),(3-4)</b></p> <p><b>OK</b></p>
<p>Read Command</p> <p><b>AT+CMQTTCFG?</b></p>	<p>Response</p> <p><b>[+CMQTTCFG: 0,&lt;checkUTF8_flag&gt;,&lt;optimeout_val&gt;</b></p> <p><b>[.....]]</b></p> <p><b>OK</b></p>
<p>Write Command</p> <p>/*Configure the check UTF8 flag of the specified MQTT client context*/</p> <p><b>AT+CMQTTCFG="checkUTF8",&lt;index&gt;,&lt;checkUTF8_flag&gt;</b></p> <p><b>&gt;</b></p>	<p>Response</p> <p>1)If successfully:</p> <p><b>OK</b></p> <p>2)If failed:</p> <p><b>ERROR</b></p>
<p>Write Command</p> <p>/*Configure the max timeout interval of the send or receive data operation */</p> <p><b>AT+CMQTTCFG="optimeout",&lt;index&gt;,&lt;optimeout_val&gt;</b></p>	<p>Response</p> <p>1)If successfully:</p> <p><b>OK</b></p> <p>2)If failed:</p> <p><b>ERROR</b></p>
Parameter Saving Mode	-
Max Response Time	-
Reference	-

### Defined Values

<b>&lt;checkUTF8_flag&gt;</b>	<p>The flag to indicate whether to check the string is UTF8 coding or not, the default value is 1.</p> <p>0 Not check UTF8 coding.</p> <p><u>1</u> Check UTF8 coding.</p>
<b>&lt;optimeout_val&gt;</b>	<p>The max timeout interval of sending or receiving data operation. The range is from 20 seconds to 120 seconds, the default value is 120 seconds.</p>

## Examples

**AT+CMQTTCFG?**

+CMQTTCFG: 0,1,120

OK

**AT+CMQTTCFG="optimeout",0,24**

OK

**AT+CMQTTCFG="checkUTF8",0,0**

OK

**AT+CMQTTCFG?**

+CMQTTCFG: 0,0,24

+CMQTTCFG: 1,1,120

OK

### NOTE

The setting will be cleared after AT+CMQTTREL.

## 7.3 Command Result Codes

### 7.3.1 Description of <err>

<err>	Description
0	operation succeeded
1	failed
2	bad UTF-8 string
3	sock connect fail
4	sock create fail
5	sock close fail
6	message receive fail
7	network open fail
8	network close fail

9	network not opened
10	client index error
11	no connection
12	invalid parameter
13	not supported operation
14	client is busy
15	require connection fail
16	sock sending fail
17	timeout
18	topic is empty
19	client is used
20	client not acquired
21	client not released
22	length out of range
23	network is opened
24	packet fail
25	DNS error
26	socket is closed by server
27	connection refused: unaccepted protocol version
28	connection refused: identifier rejected
29	connection refused: server unavailable
30	connection refused: bad user name or password
31	connection refused: not authorized
32	handshake fail
33	not set certificate
34	Open session failed
35	Disconnect from server failed

### 7.3.2 Unsolicited Result Codes

URC	Description
<b>+CMQTTCONNLOST: &lt;client_index&gt;,&lt;cause&gt;</b>	When client disconnect passively, URC "+CMQTTCONNLOST" will be reported, then user need to connect MQTT server again.
<b>+CMQTTTRXSTART:</b> <b>&lt;client_index&gt;,&lt;topic_total_len&gt;,&lt;payload_total_len&gt;</b> <b>+CMQTTTRXTOPIC: &lt;client_index&gt;,&lt;sub_topic_len&gt;</b> <b>&lt;sub_topic&gt;</b>	If a client subscribes to one or more topics, any message published to those topics are sent by the server to the client. The following URC is

/\*for long topic, split to multiple packets to report\*/

[<CR><LF>+CMQTTRXTOPIC:

<client\_index>,<sub\_topic\_len>

<sub\_topic>]

+CMQTTRXPAYLOAD: <client\_index>,<sub\_payload\_len>

<sub\_payload>

/\*for long payload, split to multiple packets to report\*/

[+CMQTTRXPAYLOAD: <client\_index>,<sub\_payload\_len>

<sub\_payload>]

+CMQTTRXEND: <client\_index>

used for transmitting the message published from server to client.

1)+CMQTTRXSTART:

<client\_index>,<topic\_total\_len>,<payload\_total\_len>\r\n

At the beginning of receiving published message, the module will report this to user, and indicate client index with <client\_index>, the topic total length with <topic\_total\_len> and the payload total length with <payload\_total\_len> after "\r\n".

2)+CMQTTRXTOPIC:

<client\_index>,<sub\_topic\_len>\r\n<sub\_topic>

After the command "+CMQTTRXSTART" received, the module will report the second message to user, and indicate client index with <client\_index>, the topic packet length with <sub\_topic\_len> and the topic content with <sub\_topic> after "\r\n".

For long topic, it will be split to multiple packets to report and the command "+CMQTTRXTOPIC" will be send more than once with the rest of topic content. The sum of <sub\_topic\_len> is equal to <topic\_total\_len>.

3)+CMQTTRXPAYLOAD:

<client\_index>,<sub\_payload\_len>\r\n<sub\_payload>

After the command "+CMQTTRXTOPIC" received, the module will send third message to user, and indicate client index with <client\_index>, the payload packet length with <sub\_payload\_len> and the payload content with <sub\_payload> after "\r\n".

For long payload, the same as "+CMQTTRXTOPIC".

4)+CMQTTRXEND: <client\_index>

At last, the module will send fourth

message to user and indicate the topic and payload have been transmitted completely.

## Defined Values

<client_index>	A numeric parameter that identifies a client. The range of permitted values is 0 to 1.
<cause>	The cause of disconnection. 1 Socket is closed passively. 2 Socket is reset. 3 Network is closed.
<topic_total_len>	The length of message topic received from MQTT server. The range is from 1 to 1024 bytes.
<payload_total_len>	The length of message body received from MQTT server. The range is from 1 to 10240 bytes.
<sub_topic_len>	The sub topic packet length, The sum of <sub_topic_len> is equal to <topic_total_len>.
<sub_topic>	The sub topic content.
<sub_payload_len>	The sub message body packet length, The sum of <sub_payload_len> is equal to <payload_total_len>.
<sub_payload>	The sub message body content.

## 8 AT Commands for TCP/IP

### 8.1 Overview of AT Commands for TCP/IP

Command	Description
<b>AT+NETOPEN</b>	Start Socket Service
<b>AT+NETCLOSE</b>	Stop Socket Service
<b>AT+CIOPEN</b>	Establish Connection in Multi-Socket Mode
<b>AT+CIPSEND</b>	Send data through TCP or UDP Connection
<b>AT+CIPRXGET</b>	Set the Mode to Retrieve Data
<b>AT+CIPCLOSE</b>	Close TCP or UDP Socket
<b>AT+IPADDR</b>	Inquire Socket PDP address
<b>AT+CIPHEAD</b>	Add an IP Header When Receiving Data
<b>AT+CIPSRIP</b>	Show Remote IP Address and Port
<b>AT+CIPMODE</b>	Set TCP/IP Application Mode
<b>AT+CIPSENDMODE</b>	Set Sending Mode
<b>AT+CIPTIMEOUT</b>	Set TCP/IP Timeout Value
<b>AT+CIPCCFG</b>	Configure Parameters of Socket
<b>AT+SERVERSTART</b>	Startup TCP Sever
<b>AT+SERVERSTOP</b>	Stop TCP Sever
<b>AT+CIPACK</b>	Query TCP Connection Data Transmitting Status
<b>AT+CDNSGIP</b>	Query the IP Address of Given Domain Name
<b>AT+CSOCKETPN</b>	Set active PDP context's profile

### 8.2 Detailed Description of AT Commands for TCP/IP

#### 8.2.1 AT+NETOPEN Start Socket Service

AT+NETOPEN is used to start service by activating PDP context. You must execute AT+NETOPEN before any other TCP/UDP related operations.

## AT+NETOPEN Start Socket Service

Read Command <b>AT+NETOPEN?</b>	Response <b>+NETOPEN: &lt;net_state&gt;</b>  <b>OK</b>
Execute Command <b>AT+NETOPEN</b>	Response 1)If the PDP context has not been activated or the network closed abnormally, response: <b>OK</b>  <b>+NETOPEN: &lt;err&gt;</b> 2)When the PDP context has been activated successfully, if you execute AT+NETOPEN again, response: <b>+IP ERROR: Network is already opened</b>  <b>ERROR</b> 3)other: <b>ERROR</b>
Parameter Saving Mode	<b>NO_SAVE</b>
Max Response Time	Range: 3000ms-120000ms default: 120000ms (it can be set by AT+CIPTIMEOUT)
Reference	3GPP TS 27.005

### Defined Values

<b>&lt;net_state&gt;</b>	Integer type, indicates the state of PDP context activation. <u>0</u> network close (deactivated) 1 network open(activated)
<b>&lt;err&gt;</b>	Integer type, the result of operation. 0 is success, other value is failure, please refer to Chapter 9.3.2 for details

### Examples

**AT+NETOPEN?**

**+NETOPEN: 1**

**OK**

**AT+NETOPEN**

**OK**

**+NETOPEN: 0**



## 8.2.2 AT+NETCLOSE Stop Socket Service

AT+NETCLOSE is used to stop service by deactivating PDP context. It can also close all the opened socket connections when you didn't close these connections by AT+CIPCLOSE.

AT+NETCLOSE Stop Socket Service	
Test Command <b>AT+NETCLOSE=?</b>	Response <b>OK</b>
Execute Command <b>AT+NETCLOSE</b>	Response 1)If the PDP context has been activated, response: <b>OK</b> <b>+NETCLOSE: &lt;err&gt;</b>
	2)If the PDP context has been activated and one connection is in non-transparent mode and transparent mode, response: <b>OK</b> <b>CLOSED</b> <b>+CIPCLOSE: &lt;link_num&gt;,&lt;err&gt;</b> <b>+NETCLOSE: &lt;err&gt;</b>
Parameter Saving Mode	3)If the PDP context has not been activated, response: <b>+NETCLOSE: &lt;err&gt;</b> <b>ERROR</b>
	4)Others: <b>ERROR</b>
Max Response Time	NO_SAVE
Reference	Range: 3000ms-120000ms default: 120000ms (it can be set by AT+CIP TIMEOUT)

### Defined Values

<err>	Integer type, the result of operation. 0 is success, other value is failure, please refer to Chapter 9.3.2 for details
-------	---

## Examples

**AT+NETCLOSE**

OK

+NETCLOSE: 0

### 8.2.3 AT+CIOPEN Establish Connection in Multi-Socket Mode

You can use AT+CIOPEN to establish a connection with TCP server and UDP server, the maximum of the connections is 2.

#### AT+CIOPEN Establish Connection in Multi-Socket Mode

Test Command  
**AT+CIOPEN=?**

Response  
**+CIOPEN: (0-1),("TCP","UDP")**

**OK**

Read Command  
**AT+CIOPEN?**

Response  
**+CIOPEN:**  
**<link\_num>[,<type>,<serverIP>,<serverPort>,<index>]**  
**+CIOPEN:**  
**<link\_num>[,<type>,<serverIP>,<serverPort>,<index>]**  
**[...]**

**OK**

If a connection identified by <link\_num> has not been established successfully, only +CIOPEN: <link\_num> will be returned.

Write Command  
TCP connection  
**AT+CIOPEN=<link\_num>,"TCP",<serverIP>,<serverPort>[,<localPort>]**

Response  
1)if PDP context has been activated successfully, response:  
**OK**

**+CIOPEN: <link\_num>,<err>**

2)when the <link\_num> is greater than 9, response:

**+IP ERROR: Invalid parameter**

**ERROR**

3)If PDP context has not been activated, or the connection has been established, or parameter is incorrect, or when AT+CIPMODE=1 is set, the <link\_num> is greater than 0, or other errors, response:

**+CIOPEN: <link\_num>,<err>**

	<p><b>ERROR</b></p> <p>4)Transparent mode for TCP connection: When you want to use transparent mode to transmit data, you should set AT+CIPMODE=1 before AT+NETOPEN. And if AT+CIPMODE=1 is set, the &lt;link_num&gt; is restricted to be only 0. if success <b>CONNECT [&lt;text&gt;]</b> if failure <b>CONNECT FAIL</b></p> <p>5)Others: <b>ERROR</b></p>
<p>Write Command UDP Connection <b>AT+CIOPEN=&lt;link_num&gt;,"UDP",,&lt;localPort&gt;</b></p>	<p>1)If PDP context has been activated successfully, response: <b>+CIOPEN: &lt;link_num&gt;,0</b></p> <p><b>OK</b></p> <p>2)When the &lt;link_num&gt; is greater than 9, response: <b>+IP ERROR: Invalid parameter</b></p> <p><b>ERROR</b> If PDP context has not been activated, or the connection has been established, or parameter is incorrect, or other errors, response: <b>+CIOPEN: &lt;link_num&gt;,&lt;err&gt;</b></p> <p><b>ERROR</b></p> <p>3)Others: <b>ERROR</b></p>
<p>Parameter Saving Mode</p>	<p>NO_SAVE</p>
<p>Max Response Time</p>	<p>Range: 3000ms-120000ms default: 120000ms (it can be set by AT+CIPTIMEOUT)</p>
<p>Reference</p>	

## Defined Values

<p>&lt;link_num&gt;</p>	<p>Integer type, identifies a connection. Range is 0-1. If AT+CIPMODE=1 is set, the &lt;link_num&gt; is restricted to be only 0.</p>
<p>&lt;type&gt;</p>	<p>String type, identifies the type of transmission protocol. TCP Transmission Control Protocol UDP User Datagram Protocol</p>
<p>&lt;serverIP&gt;</p>	<p>String type, identifies the IP address of server. The IP address format consists of 4 octets, separated by decimal point, like "AAA.BBB.CCC.DDD". Also the domain name is supported here.</p>
<p>&lt;serverPort&gt;</p>	<p>Integer type, identifies the port of TCP server, range is 0-65535.</p>

	NOTE: When open port as TCP, the port must be the opened TCP port; When open port as UDP, the port may be any port.
<localPort>	Integer type, identifies the port of local socket, range is 0-65535.
<index>	Integer type, indicates whether the module is used as a client or server. When used as server, the range is 0-3, <index> is the server index to which the client is linked. -1 TCP client 0-3 TCP server index
<text>	String type, indicates CONNECT result code.
<err>	Integer type, the result of operation. 0 is success, other value is failure, please refer to Chapter 9.3.2 for details

## Examples

**AT+CIOPEN=?**

**+CIOPEN: (0-9),("TCP","UDP")**

OK

**AT+CIOPEN?**

**+CIOPEN: 0**

**+CIOPEN: 1,"TCP","183.230.174.137",6031,-1**

OK

**AT+CIOPEN=0,"TCP","183.230.174.137",6031**

OK

//TCP connection

**+CIOPEN: 0,0**

**AT+CIOPEN=1,"UDP",,,6031**

**+CIOPEN: 1,0**

// UDP Connection

OK

### 8.2.4 AT+CIPSEND Send data through TCP or UDP Connection

AT+CIPSEND is used to send data to remote side. If service type is TCP, the data is firstly sent to the module's internal TCP/IP stack, and then sent to server by protocol stack. The <length> field may be empty. While it is empty, each <Ctrl+Z> character present in the data should be coded as <ETX><Ctrl+Z>. Each <ESC> character present in the data should be coded as <ETX><ESC>. Each <ETX> character will be coded as <ETX><ETX>. Single <Ctrl+Z> means end of the input data. Single <ESC> is used to cancel the

sending.

<ETX> is 0x03, and <Ctrl+Z> is 0x1A,<ESC> is 0x1B.

## AT+CIPSEND Send data through TCP or UDP Connection

<p>Test Command <b>AT+CIPSEND=?</b></p>	<p>Response <b>+CIPSEND: (0-1),(1-1500)</b></p> <p><b>OK</b></p>
<p>Write Command If service type is "TCP", send data with changeable length <b>AT+CIPSEND=&lt;link_num&gt;</b></p> <p>Response "&gt;", then type data to send, tap CTRL+Z to send data, tap ESC to cancel the operation</p>	<p>Response 1)If the connection identified by &lt;link_num&gt; has been established successfully, response: &gt; <b>&lt;input data&gt;</b> <b>CTRL+Z</b> <b>OK</b> <b>+CIPSEND: &lt;link_num&gt;,&lt;reqSendLength&gt;,&lt;cnfSendLength&gt;</b> 2)If &lt;reqSendLength&gt; is equal &lt;cnfSendLength&gt;, it means that the data has been sent to TCP/IP protocol stack successfully. 3)If the connection has not been established, abnormally closed, or parameter is incorrect, response: <b>+CIPERROR: &lt;err&gt;</b></p> <p><b>ERROR</b> 4)Others: <b>ERROR</b></p>
<p>Write Command If service type is "TCP", send data with fixed length <b>AT+CIPSEND=&lt;link_num&gt;,&lt;length&gt;</b></p>	<p>Response 1)If the connection identified by &lt;link_num&gt; has been established successfully, response: &gt; <b>&lt;input data with specified length&gt;</b> <b>OK</b> <b>+CIPSEND: &lt;link_num&gt;,&lt;reqSendLength&gt;,&lt;cnfSendLength&gt;</b> 2)If &lt;reqSendLength&gt; is equal &lt;cnfSendLength&gt;, it means that the data has been sent to TCP/IP protocol stack successfully. 3)If the connection has not been established, abnormally closed, or parameter is incorrect, response: <b>+CIPERROR: &lt;err&gt;</b></p> <p><b>ERROR</b> 4)Others: <b>ERROR</b></p>
<p>Write Command</p>	<p>Response</p>

<p>If service type is "UDP", send data with changeable length</p> <p><b>AT+CIPSEND=&lt;link_num&gt;,,&lt;serverIP&gt;,&lt;serverPort&gt;</b></p> <p>Response "&gt;", then type data to send, tap CTRL+Z to send data, tap ESC to cancel the operation</p>	<p>1)If the connection identified by &lt;link_num&gt; has been established successfully, response:</p> <p>&gt;</p> <p><b>&lt;input data&gt;</b></p> <p><b>CTRL+Z</b></p> <p><b>OK</b></p> <p><b>+CIPSEND: &lt;link_num&gt;,&lt;reqSendLength&gt;,&lt;cnfSendLength&gt;</b></p> <p>2)If the connection has not been established, abnormally closed, or parameter is incorrect, response:</p> <p><b>+CIPERROR: &lt;err&gt;</b></p> <p><b>ERROR</b></p> <p>3)Others:</p> <p><b>ERROR</b></p>
<p>Write Command</p> <p>If service type is "UDP", send data with fixed length</p> <p><b>AT+CIPSEND=&lt;link_num&gt;,&lt;length&gt;,&lt;serverIP&gt;,&lt;serverPort&gt;</b></p> <p>Response "&gt;", type data until the data length is equal to &lt;length&gt;</p>	<p>Response</p> <p>1)If the connection identified by &lt;link_num&gt; has been established successfully, response:</p> <p>&gt;</p> <p><b>&lt;input data with specified length&gt;</b></p> <p><b>OK</b></p> <p><b>+CIPSEND: &lt;link_num&gt;,&lt;reqSendLength&gt;,&lt;cnfSendLength&gt;</b></p> <p>2)If the connection has not been established, abnormally closed, or parameter is incorrect, response:</p> <p><b>+CIPERROR: &lt;err&gt;</b></p> <p><b>ERROR</b></p> <p>3)Others:</p> <p><b>ERROR</b></p>
<p>Parameter Saving Mode</p>	<p>NO_SAVE</p>
<p>Max Response Time</p>	<p>Range: 3000ms-120000ms default: 120000ms (it can be set by AT+CIPTIMEOUT)</p>
<p>Reference</p>	

## Defined Values

<link_num>	Integer type, identifies a connection. Range is 0-1.
<length>	Integer type, indicates the length of sending data, range is 1-1500.
<serverIP>	String type, identifies the IP address of server. The IP address format consists of 4 octets, separated by decimal point, like "AAA.BBB.CCC.DDD". Also the domain name is supported here.

<b>&lt;serverPort&gt;</b>	Integer type, identifies the port of TCP server, range is 0-65535. NOTE: When open port as TCP, the port must be the opened TCP port; When open port as UDP, the port may be any port. But, for Qualcomm, connecting the port 0 is regarded as an invalid operation.
<b>&lt;reqSendLength&gt;</b>	Integer type, the length of the data requested to be sent
<b>&lt;cnfSendLength&gt;</b>	Integer type, the length of the data confirmed to have been sent -1 the connection is disconnected. 0 own send buffer or other side's congestion window are full. Note: If the <cnfSendLength> is not equal to the <reqSendLength>, the socket then cannot be used further.
<b>&lt;err&gt;</b>	Integer type, the result of operation. 0 is success, other value is failure, please refer to Chapter 9.3.2 for details

## Examples

**AT+CIPSEND=?**

**+CIPSEND: (0-1),(1-1500)**

OK

**AT+CIPSEND=1,5**

>12345

OK

// If service type is "TCP", send data with fixed length

**+CIPSEND: 1,5,5**

**AT+CIPSEND=1,5,"183.230.174.137",6031**

>12345

OK

// If service type is "UDP", send data with fixed length

**+CIPSEND: 1,5,5**

## NOTE

If you use UDP to send more than 1400 bytes of data when the server does not receive data, this may be the reason for the carrier, in this case please send no more than 1400 bytes of data.

If you use TCP to send data, the instruction can be followed by a comma just like "AT+CIPSEND=0," or "AT+CIPSEND=0,10," without an error, but it doesn't make any sense

## 8.2.5 AT+CIPRXGET Set the Mode to Retrieve Data

If set <mode> to 1, after receiving data, the module will buffer it and report a URC as "+CIPRXGET: 1,<link\_num>" to notify the host. Then host can retrieve data by AT+CIPRXGET.

If set <mode> to 0, the received data will be outputted to COM port directly by URC as "RCV FROM:<IP ADDRESS>:<PORT><CR><LF>+IPD(data length)<CR><LF><data>".

The default value of <mode> is 0.

AT+CIPRXGET Set the Mode to Retrieve Data	
Test Command <b>AT+CIPRXGET=?</b>	Response <b>+CIPRXGET: (0-4),(0-1),(1-1500)</b>
Read Command <b>AT+CIPRXGET?</b>	Response <b>+CIPRXGET: &lt;mode&gt;</b>  <b>OK</b>
Write Command <b>AT+CIPRXGET=&lt;mode&gt;</b> In this case,<mode> can only be 0 or 1	Response 1)If the parameter is correct, response: <b>OK</b> 2)If the parameter is incorrect or other error, response: <b>+IP ERROR: &lt;err_info&gt;</b>  <b>ERROR</b>  3)Others: <b>ERROR</b>
Write Command <b>AT+CIPRXGET=2,&lt;link_num&gt;[,&lt;len&gt;]</b> Retrieve data in ACSII form	Response 1)If <len> field is empty, the default value to read is 1500. If the buffer is not empty, response: <b>+CIPRXGET: &lt;mode&gt;,&lt;link_num&gt;,&lt;read_len&gt;,&lt;rest_len&gt;</b> <b>&lt;data&gt;ACSII form</b>  <b>OK</b> 2)If the buffer is empty, response: <b>+IP ERROR: No data</b>  <b>ERROR</b> 3)If the parameter is incorrect or other error, response: <b>+IP ERROR: &lt;err_info&gt;</b>  <b>ERROR</b> 4)Others: <b>ERROR</b>
Write Command	Response



<p><b>AT+CIPRXGET=3,&lt;link_num&gt;[,&lt;len&gt;]</b> Retrieve data in hex form</p>	<p>1)If &lt;length&gt; field is empty, the default value to read is 750. If the buffer is not empty, response: <b>+CIPRXGET: &lt;mode&gt;,&lt;link_num&gt;,&lt;read_len&gt;,&lt;rest_len&gt;</b> <b>&lt;data&gt;</b> hex form</p> <p><b>OK</b></p> <p>2)If the buffer is empty, response: <b>+IP ERROR: No data</b></p> <p><b>ERROR</b></p> <p>3)If the parameter is incorrect or other error, response: <b>+IP ERROR: &lt;err_info&gt;</b></p> <p><b>ERROR</b></p> <p>4)Others:</p> <p><b>ERROR</b></p>
<p>Write Command <b>AT+CIPRXGET=4,&lt;link_num&gt;</b></p>	<p>Response</p> <p>1)If the parameter is correct, response: <b>+CIPRXGET: 4,&lt;link_num&gt;,&lt;rest_len&gt;</b></p> <p><b>OK</b></p> <p>2)If the parameter is incorrect or other error, response: <b>+IP ERROR: &lt;err_info&gt;</b></p> <p><b>ERROR</b></p> <p>3)Others</p> <p><b>ERROR</b></p>
<p>Parameter Saving Mode</p>	<p>NO_SAVE</p>
<p>Max Response Time</p>	<p>8s</p>
<p>Reference</p>	

## Defined Values

<p><b>&lt;mode&gt;</b></p>	<p>Integer type, sets the mode to retrieve data</p> <p><u>0</u> set the way to get the network data automatically</p> <p>1 set the way to get the network data manually</p> <p>2 read data, the max read length is 1500</p> <p>3 read data in HEX form, the max read length is 750</p> <p>4 get the rest data length</p>
<p><b>&lt;link_num&gt;</b></p>	<p>Integer type, identifies a connection. Range is 0-1.</p>
<p><b>&lt;len&gt;</b></p>	<p>Integer type, the data length to be read.</p>

	Not required, the default value is 1500 when <mode>=2, and 750 when <mode>=3.
<read_len>	Integer type, the length of data that has been read.
<rest_len>	Integer type, the length of data which has not been read in the buffer.
<err_info>	String type, displays the cause of occurring error, please refer to Chapter 15.3.1 for more details.

## Examples

**AT+CIPRXGET=?**

+CIPRXGET: (0-4),(0-1),(1-1500)

OK

**AT+CIPRXGET?**

+CIPRXGET: 1

OK

**AT+CIPRXGET=1**

OK

**AT+CIPRXGET=2,0**

+CIPRXGET: 2,0,6,0

123456

OK

**AT+CIPRXGET=3,0**

+CIPRXGET: 3,0,6,0

313233343536

OK

**AT+CIPRXGET=4,0**

+CIPRXGET: 4,0,18

OK

### NOTE

When data is received and reported, the maximum length of <data length> is 1500 each time.

## 8.2.6 AT+CIPCLOSE Close TCP or UDP Socket

AT+CIPCLOSE is used to close a TCP or UDP Socket

### AT+CIPCLOSE Close TCP or UDP Socket

<p>Test Command <b>AT+CIPCLOSE=?</b></p>	<p>Response <b>+CIPCLOSE: (0-1)</b></p> <p><b>OK</b></p>
<p>Read Command <b>AT+CIPCLOSE?</b></p>	<p>Response <b>+CIPCLOSE:</b> <b>&lt;link0_state&gt;,&lt;link1_state&gt;,&lt;link2_state&gt;,&lt;link3_state&gt;,&lt;link4_state&gt;,&lt;link5_state&gt;,&lt;link6_state&gt;,&lt;link7_state&gt;,&lt;link8_state&gt;,&lt;link9_state&gt;</b></p> <p><b>OK</b></p>
<p>Write Command <b>AT+CIPCLOSE=&lt;link_num&gt;</b></p>	<p>Response</p> <p>1)If service type is TCP and the connection identified by &lt;link_num&gt; has been established, response <b>OK</b></p> <p><b>+CIPCLOSE: &lt;link_num&gt;,&lt;err&gt;</b></p> <p>2)If service type is TCP and the access mode is transparent mode, response: <b>OK</b></p> <p><b>CLOSED</b></p> <p><b>+CIPCLOSE: &lt;link_num&gt;,&lt;err&gt;</b></p> <p>3)If service type is UDP and the connection identified by &lt;link_num&gt; has been established and closed successfully, response: <b>+CIPCLOSE: &lt;link_num&gt;,0</b></p> <p><b>OK</b></p> <p>4)If service type is UDP and access mode is transparent mode, response: <b>CLOSED</b></p> <p><b>+CIPCLOSE: &lt;link_num&gt;,&lt;err&gt;</b></p> <p><b>OK</b></p> <p>5)If the connection has not been established, abnormally closed, or parameter is incorrect, response:</p>

	<b>+CIPCLOSE: &lt;link_num&gt;,&lt;err&gt;</b>
	<b>ERROR</b> 6)Others: <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	Range: 3000ms-120000ms default: 120000ms (it can be set by AT+CIPTIMEOUT)
Reference	

### Defined Values

<link_num>	Integer type, identifies a connection. Range is 0-1.
<linkX_state>	Integer type, indicates state of connection identified by <link_num>. Range is 0-1. 0 disconnected 1 connected
<err>	Integer type, the result of operation. 0 is success, other value is failure, please refer to Chapter 9.3.2 for details

### Examples

```

AT+CIPCLOSE=?
+CIPCLOSE: (0-1)

OK
AT+CIPCLOSE?
+CIPCLOSE: 0,0

OK
AT+CIPCLOSE=0
OK

+CIPCLOSE: 0,0

```

### 8.2.7 AT+IPADDR Inquire Socket PDP address

AT+IPADDR is used to get active PDP address.

## AT+IPADDR Inquire Socket PDP Address

Test Command <b>AT+IPADDR=?</b>	Response <b>OK</b>
Execute Command <b>AT+IPADDR</b>	Response 1)If PDP context has been activated successfully, response <b>+IPADDR: &lt;ip_address&gt;</b>  2) <b>+IP ERROR: Network not opened</b>  <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	default: 9000ms
Reference	-

### Defined Values

**<ip\_address>** String type, identifies the IP address of current active socket PDP.

### Examples

```
AT+IPADDR
+IPADDR: 10.84.17.161

OK
```

## 8.2.8 AT+CIPHEAD Add an IP Header When Receiving Data

AT+CIPHEAD is used to add an IP header when receiving data.

### AT+CIPHEAD Add an IP Header When Receiving Data

Test Command <b>AT+CIPHEAD=?</b>	Response <b>+CIPHEAD: (0-1)</b>
Read Command <b>AT+CIPHEAD?</b>	Response <b>+CIPHEAD: &lt;mode&gt;</b>

	<b>OK</b>
Write Command <b>AT+CIPHEAD=&lt;mode&gt;</b>	Response 1)If the parameter is correct, response: <b>OK</b> 2) <b>ERROR</b>
Execute Command <b>AT+CIPHEAD</b>	Response Set default value:(<mode>=1) <b>OK</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	default: 9000ms
Reference	-

### Defined Values

<b>&lt;mode&gt;</b>	Integer type, indicates whether adding an IP header or not when receiving data 0 not add IP header 1 add IP header, the format is "+IPD(data length)"
---------------------	---

### Examples

```
AT+CIPHEAD=?
+CIPHEAD: (0-1)
```

```
OK
AT+CIPHEAD?
+CIPHEAD: 1
```

```
OK
AT+CIPHEAD=1
OK
AT+CIPHEAD
OK
```

### 8.2.9 AT+CIPSRIP Show Remote IP Address and Port

AT+CIPSRIP is used to set whether to display IP address and port of server when receiving data.

## AT+CIPSRIP Show Remote IP Address and Port

Test Command <b>AT+CIPSRIP=?</b>	Response <b>+CIPSRIP: (0-1)</b>  <b>OK</b>
Read Command <b>AT+CIPSRIP?</b>	Response <b>+CIPSRIP: &lt;mode&gt;</b>  <b>OK</b>
Write Command <b>AT+CIPSRIP=&lt;mode&gt;</b>	Response 1)If the parameter is correct, response: <b>OK</b> 2) <b>ERROR</b>
Execute Command <b>AT+CIPSRIP</b>	Response Set default value:(<mode>=1) <b>OK</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	default: 9000ms
Reference	-

### Defined Values

<b>&lt;mode&gt;</b>	Integer type, indicates whether to show IP address and port of server or not when receiving data. 0 not show <u>1</u> show, the format is as follows: "RECV FROM:<IP ADDRESS>:<PORT>"
---------------------	--

### Examples

```
AT+CIPSRIP=?
+CIPSRIP: (0-1)
```

```
OK
AT+CIPSRIP?
+CIPSRIP: 1
```

```
OK
AT+CIPSRIP=0
OK
AT+CIPSRIP
OK
```

## 8.2.10 AT+CIPMODE Set TCP/IP Application Mode

AT+CIPMODE is used to select transparent mode(data mode) or non-transparent mode(command mode).The default mode is non-transparent mode.

AT+CIPMODE Set TCP/IP Application Mode	
Test Command <b>AT+CIPMODE=?</b>	Response <b>+CIPMODE: (0-1)</b>  <b>OK</b>
Read Command <b>AT+CIPMODE?</b>	Response <b>+CIPMODE: &lt;mode&gt;</b>  <b>OK</b>
Write Command <b>AT+CIPMODE=&lt;mode&gt;</b>	Response 1)If the parameter is correct, response: <b>OK</b> 2) <b>ERROR</b>
Execute Command <b>AT+CIPMODE</b>	Response Set default value:(<mode>=0) <b>OK</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	default: 9000ms
Reference	-

### Defined Values

<b>&lt;mode&gt;</b>	Integer type, sets TCP/IP application mode <u>0</u> Non transparent mode 1 Transparent mode
---------------------	---

### Examples

```
AT+CIPMODE=?
+CIPMODE: (0-1)
```

```
OK
AT+CIPMODE?
```



**+CIPMODE: 0**

OK

**AT+CIPMODE=1**

OK

**AT+CIPMODE**

OK

## NOTE

When you want to use transparent mode to transmit data, you should set AT+CIPMODE=1 before AT+NETOPEN.

### 8.2.11 AT+CIPSENDMODE Set Sending Mode

AT+CIPSENDMODE is used to select sending mode when service type is "TCP".

If set <mode> to 1, when sending data by AT+CIPSEND, the URC "+CIPSEND:

<link\_num>,<reqSendLength>,<cnfSendLength>" will not be returned until module receives the server's ACK message to the sent data last time.

If set <mode> to 0, the URC "+CIPSEND: <link\_num>,<reqSendLength>,<cnfSendLength>" will be returned If the data has been sent to module's internal TCP/IP protocol stack. In this case, the module doesn't need to wait for the server's ACK message.

The default mode is sending without waiting peer TCP ACK mode.

### AT+CIPSENDMODE Set Sending Mode

Test Command <b>AT+CIPSENDMODE=?</b>	Response <b>+CIPSENDMODE: (0-1)</b>  OK
Read Command <b>AT+CIPSENDMODE?</b>	Response <b>+CIPSENDMODE: &lt;mode&gt;</b>  OK
Write Command <b>AT+CIPSENDMODE=&lt;mode&gt;</b>	Response 1)If the parameter is correct, response: <b>OK</b> 2) <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	default: 9000ms
Reference	-

## Defined Values

<mode>	Integer type, sets sending mode
	0 sending without waiting peer TCP ACK mode
	1 sending wait peer TCP ACK mode

## Examples

**AT+CIPSENDMODE=?**

**+CIPSENDMODE: (0-1)**

OK

**AT+CIPSENDMODE=1**

OK

**AT+CIPSENDMODE?**

**+CIPSENDMODE: 1**

OK

### 8.2.12 AT+CIPTIMEOUT Set TCP/IP Timeout Value

AT+CIPTIMEOUT is used to set timeout value for AT+NETOPEN/AT+CIPOPEN/AT+CIPSEND.

#### AT+CIPTIMEOUT Set TCP/IP Timeout Value

Read Command <b>AT+CIPTIMEOUT?</b>	Response <b>+CIPTIMEOUT:</b> <b>&lt;netopen_timeout&gt;,&lt;cipopen_timeout&gt;,&lt;cipsend_timeout&gt;</b>
	<b>OK</b>
Write Command <b>AT+CIPTIMEOUT=[&lt;netopen_timeout&gt;],[&lt;cipopen_timeout&gt;],[&lt;cipsend_timeout&gt;]]</b>	Response 1)If the parameter is correct, response: <b>OK</b> 2) <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	default: 9000ms
Reference	-

## Defined Values

<netopen_timeout>	Integer type, timeout value for AT+NETOPEN. default is 120000ms. Range is 3000ms-120000ms.
<cipopen_timeout>	Integer type, timeout value for AT+CIPOPEN. default is 120000ms. Range is 3000ms-120000ms.
<cipsend_timeout>	Integer type, timeout value for AT+CIPSEND. default is 120000ms. Range is 3000ms-120000ms.

## Examples

### AT+CIPTIMEOUT?

```
+CIPTIMEOUT: 120000,120000,120000
```

OK

```
AT+CIPTIMEOUT=3000,3000,3000
```

OK

### 8.2.13 AT+CIPCCFG Configure Parameters of Socket

AT+CIPCCFG is used to configure parameters of socket.

#### AT+CIPCCFG Configure Parameters of Socket

Test Command <b>AT+CIPCCFG=?</b>	Response <b>+CIPCCFG: (0-10),(0-1000),(0),(0-1),(0-1),(0-1),(500-120000)</b>
	<b>OK</b>
Read Command <b>AT+CIPCCFG?</b>	Response <b>+CIPCCFG:</b> <b>&lt;NmRetry&gt;,&lt;DelayTm&gt;,&lt;Ack&gt;,&lt;errMode&gt;,&lt;Header-Type&gt;,&lt;AsyncMode&gt;,&lt;TimeoutVal&gt;</b>
	<b>OK</b>
Write Command <b>AT+CIPCCFG=[&lt;NmRetry&gt;][,&lt;DelayTm&gt;][,&lt;Ack&gt;][,&lt;errMode&gt;][,&lt;HeaderType&gt;][,&lt;AsyncMode&gt;][,&lt;TimeoutVal&gt;]]]]]]]]</b>	Response 1) If the parameter is correct, response: <b>OK</b> 2) <b>ERROR</b>
Execute Command <b>AT+CIPCCFG</b>	Response Set default value: <b>OK</b>

Parameter Saving Mode	NO_SAVE
Max Response Time	default: 9000ms
Reference	-

## Defined Values

<NmRetry>	Integer type, number of retransmission to be made for an IP packet. Range is 0-10. The default value is 10.
<DelayTm>	Integer type, number of milliseconds to delay to output data of Receiving. Range is 0-1000. The default value is 0.
<Ack>	Integer type, it can only be set to 0. It's used to be compatible with old TCP/IP command set.
<errMode>	Integer type, sets mode of reporting <err_info>, default value is 1. 0 error result code with numeric values 1 error result code with string values
<HeaderType>	Integer type, select which data header is used when receiving data, it only takes effect in multi-client mode. Default value is 0. 0 add data header, the format is "+IPD<data length>" 1 add data header, the format is "+RECEIVE,<link num>,<data length>"
<AsyncMode>	Integer type, range is 0-1. Default value is 0. It's used to be compatible with old TCP/IP command set.
<TimeoutVal>	Integer type, set the minimum retransmission timeout value for TCP connection. Range is 500ms-120000ms. Default is 500ms.

## Examples

```
AT+CIPCCFG=?
+CIPCCFG: (0-10),(0-1000),(0),(0-1),(0-1),(0-1),(500-120000)
```

```
OK
AT+CIPCCFG?
+CIPCCFG: 10,0,0,1,0,0,500
```

```
OK
AT+CIPCCFG=2
OK
AT+CIPCCFG
OK
```

## 8.2.14 AT+SERVERSTART Startup TCP Sever

AT+SERVERSTART is used to startup a TCP server, and the server can receive the request of TCP client. After the command executes successfully, an unsolicited result code is returned when a client tries to connect with module and module accepts request. The unsolicited result code is+CLIENT:  
<link\_num>,<server\_index>,<client\_IP>:<port>.

### AT+SERVERSTART Startup TCP Sever

Test Command <b>AT+SERVERSTART=?</b>	Response <b>+SERVERSTART: (0-65535),(0-1)</b>
Read Command <b>AT+SERVERSTART?</b>	<p><b>OK</b></p> <p>Response 1)If the PDP context has not been activated successfully, response: <b>+CIPERROR: &lt;err&gt;</b></p> <p><b>ERROR</b></p> <p>2)If there exists opened server, response: <b>[+SERVERSTART: &lt;server_index&gt;,&lt;port&gt; ...]</b></p> <p><b>OK</b></p> <p>3)Others: <b>ERROR</b></p>
Write Command <b>AT+SERVERSTART=&lt;port&gt;,&lt;server_index&gt;[,&lt;backlog&gt;]</b>	<p>Response 1)If there is no error, response: <b>OK</b></p> <p>2)If the PDP context has not been activated, or the server identified by &lt;server_index&gt; has been opened, or the parameter is not correct, or other errors, response: <b>+CIPERROR: &lt;err&gt;</b></p> <p><b>ERROR</b></p> <p>3)Others: <b>ERROR</b></p>
Parameter Saving Mode	NO_SAVE
Max Response Time	default: 9000ms
Reference	-

### Defined Values

<port>	Integer type, identifies the listening port of module when used as a TCP server. Range is 0-65535.
<server_index>	Integer type, the TCP server index, range is 0-1.
<backlog>	Integer type, the maximum connections can be queued in listening queue. Range is 1-3. Default is 3.

## Examples

**AT+SERVERSTART=?**

**+SERVERSTART: (0-65535),(0-1)**

OK

**AT+SERVERSTART?**

OK

**AT+SERVERSTART=8080,0**

OK

### 8.2.15 AT+SERVERSTOP Stop TCP Sever

AT+SERVERSTOP is used to stop TCP server. Before stopping a TCP server, all sockets <server\_index> of which equals to the closing TCP server index must be closed first.

#### AT+SERVERSTOP Stop TCP Sever

Write Command

**AT+SERVERSTOP=<server\_index>**

Response

1)If there exists open connection with the server identified by <server\_index>, or the server identified by <server\_index> has not been opened, or the parameter is incorrect, response:

**+SERVERSTOP: <server\_index>,<err>**

**ERROR**

2)If the server socket is closed immediately, response:

**+SERVERSTOP: <server\_index>,0**

**OK**

(In general, the result is shown as below.)

3)If the server socket starts to close, response:

**OK**

**+SERVERSTOP: <server\_index>,<err>**

4)Others:

**ERROR**

Parameter Saving Mode	NO_SAVE
Max Response Time	default: 9000ms
Reference	-

## Defined Values

<server_index>	Integer type, the TCP server index, range is 0-1.
<err>	Integer type, the result of operation. 0 is success, other value is failure, please refer to Chapter 9.3.2 for details

## Examples

**AT+SERVERSTOP=0**

OK

+SERVERSTOP: 0,0

### 8.2.16 AT+CIPACK Query TCP Connection Data Transmitting Status

AT+CIPACK is used to query TCP connection data transmitting status.

#### AT+CIPACK Query Connection Data Transmitting State

Test Command <b>AT+CIPACK=?</b>	Response <b>+CIPACK: (range of supported &lt;link_num&gt;s)</b>  <b>OK</b>
Write Command <b>AT+CIPACK=&lt;link_num&gt;</b>	Response 1)If the PDP context has not been activated, or the connection identified by <link_num> has not been established, abnormally closed, or the parameter is incorrect, or other errors, response: <b>+IP ERROR: &lt;err_info&gt;</b>  <b>ERROR</b> 2)If the connection has been established, and the service type is "TCP", response: <b>+CIPACK: &lt;sent_data_size&gt;,&lt;ack_data_size&gt;,&lt;recv_data_size&gt;</b>  <b>OK</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	default: 9000ms

Reference

-

## Defined Values

<link_num>	Integer type, identifies a connection. Range is 0-1.
<sent_data_size>	Integer type, the total length of sent data
<ack_data_size>	reserve
<recv_data_size>	Integer type, the total length of received data
<err>	Integer type, the result of operation. 0 is success, other value is failure, please refer to Chapter 9.3.2 for details
<err_info>	String type, displays the cause of occurring error, please refer to Chapter 3 for details.

## Examples

**AT+CIPACK=?**

**+CIPACK: (0-1)**

OK

**AT+CIPACK=0**

**+CIPACK: 10,0,5**

OK

### 8.2.17 AT+CDNSGIP Query the IP Address of Given Domain Name

AT+CDNSGIP is used to query the IP address of given domain name.

#### AT+CDNSGIP Query the IP Address of Given Domain Name

Test Command  
**AT+CDNSGIP=?**

Response  
**OK**

Write Command  
**AT+CDNSGIP=<domain name>**

Response  
1)If the given domain name has related IP, response:  
**+CDNSGIP: 1,<domain name>,<IP address>**  
  
OK  
2)If the given name has no related IP, response:  
**+CDNSGIP: 0,<dns error code>**

**ERROR**



	3)Others: <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	default: 6s
Reference	-

## Defined Values

<domain name>	String type (string should be included in quotation marks), indicates the domain name. The maximum length of domain name is 254. Valid characters allowed in the domain name area include a-z, A-Z, 0-9, "-" (hyphen)and ".". A domain name is made up of one label name or more label names separated by "." (eg: AT+CDNSGIP="aa.bb.cc"). For label names separated by ".", length of each label must be no more than 63 characters. The beginning character of the domain name and of labels should be an alphanumeric character.
<IP address>	String type, indicates the IP address corresponding to the domain name.
<dns error code>	Integer type, indicates the error code. 10 DNS GENERAL ERROR

## Examples

```
AT+CDNSGIP=?
OK
AT+CDNSGIP="www.baidu.com"
+CDNSGIP: 1,"www.baidu.com","61.135.169.121"
OK
```

### 8.2.18 AT+CSOCKSETPN Set active PDP context's profile

This command sets default active PDP context's profile number and type. When we activate PDP by using AT+NETOPEN command, we need use the default profile number and type.,and the context of this profile is set by AT+CGDCONT command.

#### AT+CSOCKSETPN Set active PDP context's profile

Test Command <b>AT+CSOCKSETPN=?</b>	Response <b>+CSOCKSETPN: 1,(1,6)</b>
--	---

	<b>OK</b>
Read Command <b>AT+CSOCKSETPN?</b>	Response <b>+CSOCKSETPN: &lt;profile_num&gt;,&lt;ip_family&gt;</b>
Write Command <b>AT+CSOCKSETPN=&lt;profile_num&gt;[,&lt;ip_family&gt;]</b>	<b>OK</b> Response 1)If the parameter is correct, response: <b>OK</b> 2)If the parameter is wrong,or NETOPEN is already active, response: <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Maximum Response Time	default: 9000ms
Reference	-

## Defined Values

<profile_num>	Packet Data Protocol context's profile number. Now only 1 is supported for this parameter value.
<ip_family>	Packet Data Protocol type 1 IPV4 6 IPV6

## Examples

```
AT+CSOCKSETPN=?
+CSOCKSETPN: 1,(1,6)
```

```
OK
AT+CSOCKSETPN?
+CSOCKSETPN: 1,1
```

```
OK
AT+CSOCKSETPN=1,6
OK
```

### 8.2.19 AT+CTCPKA Conigure TCP heartbeat

This command is used to set TCP heartbeat parameters. Set this up after we activate PDP by using AT+NETOPEN command.

## AT+CTCPKA Conigure TCP heartbeat

Test Command <b>AT+CTCPKA=?</b>	Response <b>OK</b>
Read Command <b>AT+CTCPKA?</b>	Response <b>+CTCPKA:</b> <b>&lt;keepalive&gt;,&lt;keepidle&gt;,&lt;keepcount&gt;,&lt;keepinterval&gt;</b>
Write Command <b>AT+CTCPKA=&lt;keepalive&gt;,&lt;keepidle&gt;,&lt;keepcount&gt;,&lt;keepinterval&gt;</b>	Response 1)If successfully: <b>OK</b> 2)If failed: <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Maximum Response Time	default: 9000ms
Reference	-

### Defined Values

<b>&lt;keepalive &gt;</b>	Set TCP keepalive option. 0 Disable TCP keep alive mechanism 1 Enable TCP keep alive mechanism
<b>&lt;keepidle&gt;</b>	The unit is minute. If there is no data interaction within this period, the probe is performed. (1-120)
<b>&lt;keepcount&gt;</b>	Number of probe retries. If all times out, the connection is considered Invalid.(1-10)
<b>&lt;keepinterval&gt;</b>	The unit is minute. Interval for sending probe packets during probe.

### Examples

```
AT+CTCPKA=1,2,5,1
```

```
OK
```

```
AT+CTCPKA?
```

```
+CTCPKA: 1,2,5,1
```

```
OK
```

## 8.2.20 AT+CDNSCFG Configure Domain Name Server

This command is used to configure Domain Name Server.

## AT+CDNSCFG Configure Domain Name Server

Test Command <b>AT+CDNSCFG=?</b>	Response <b>+CDNSCFG: ("Primary DNS"),("Secondary DNS"),type</b>
	<b>OK</b>
Read Command <b>AT+CDNSCFG?</b>	Response <b>Primary IPv4 DNS: &lt;pri_dns&gt;,Secondary IPv4 DNS: &lt;pri_dns&gt;</b> <b>Primary IPv6 DNS: &lt;pri_dns&gt;,Secondary IPv6 DNS: &lt;pri_dns&gt;</b>
	<b>OK</b>
Write Command <b>AT+CDNSCFG=&lt;pri_dns&gt;[,&lt;sec_dns&gt;][,&lt;type&gt;]</b>	Response 1)If successfully: <b>OK</b> 2)If failed: <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Maximum Response Time	default: 9000ms
Reference	-

### Defined Values

<b>&lt;pri_dns&gt;</b>	A string parameter which indicates the IP address of the primary domain name server.
<b>&lt;sec_dns&gt;</b>	A string parameter which indicates the IP address of the secondary domain name server.
<b>&lt;type&gt;</b>	0 Set the server for the ipv4 network 1 Set the server for the ipv6 network

### Examples

#### AT+CDNSCFG?

Primary IPv4 DNS: 183.230.126.224,Secondary IPv4 DNS: 183.230.126.225

Primary IPv6 DNS: 2409:8060:20EA:101::1,Secondary IPv6 DNS: 2409:8060:20EA:201::1

OK

**AT+CDNSCFG=183.230.126.224,183.230.126.225,0**

OK

## 8.2.21 AT+CSOC Set some features of the data service

This command is used to set some features of the data service. Only supports in Cat1 modules.

AT+CSOC Set some features of the data service	
Test Command <b>AT+CSOC=?</b>	Response  <b>OK</b>
Read Command <b>AT+CSOC?</b>	Response <b>+CSOC: "Tcp srxt",&lt;srxt&gt;,&lt;tcp_sync_backoff&gt;</b> <b>+CSOC: "Tcp rxt",&lt;rtx&gt;, &lt;tcp_backoff&gt;</b> <b>+CSOC: "Mss",&lt;mtu&gt;</b> <b>+CSOC: "RecvWin",&lt;win&gt;</b> <b>+CSOC:</b> <b>"DnsTmr",&lt;dnsMaxWaitTime&gt;,&lt;dnsMaxRetry&gt;,&lt;dns_wait_tmr&gt;</b>  <b>OK</b>
Write Command <b>AT+CSOC="Tcp srxt",&lt;tcp_sync_backoff&gt;</b>	Response 1)If parameter format is right: <b>OK</b> 2)If parameter format is not right or other errors occur: <b>ERROR</b>
Write Command <b>AT+CSOC="Tcp rxt",&lt;tcp_backoff&gt;</b>	Response 1)If parameter format is right: <b>OK</b> 2)If parameter format is not right or other errors occur: <b>ERROR</b>
Write Command <b>AT+CSOC="Mss",&lt;mtu&gt;</b>	Response 1)If parameter format is right: <b>OK</b> 2)If parameter format is not right or other errors occur: <b>ERROR</b>
Write Command <b>AT+CSOC="RecvWin",&lt;win&gt;</b>	Response 1)If parameter format is right: <b>OK</b> 2)If parameter format is not right or other errors occur: <b>ERROR</b>
Write Command <b>AT+CSOC="DnsTmr",&lt;dns_wait_tmr&gt;</b>	Response 1)If parameter format is right: <b>OK</b> 2)If parameter format is not right or other errors occur: <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	-

Reference	-
-----------	---

## Defined Values

<srxt>	Maximum number of TCP SYN packets retransmitted. The maximum value is 12. The default is 6.
<tcp_sync_backoff>	Set the interval for TCP SYN packet retransmission. tcp_sync_backoff[13]. defaults to { 1, 1, 1, 2, 3, 4, 5, 6, 7, 7, 7, 7, 7}.
<rxt>	Maximum number of TCP data packets retransmitted. The maximum value is 12. The default is 6.
<tcp_backoff>	Set the interval for TCP data package retransmission. tcp_backoff_default [13]. defaults to {1, 1, 1, 3, 3, 6, 12, 24, 48, 96, 120, 120, 120}
<mtu>	Maximum value 1500, minimum value 640.
<win>	TCP Sliding Window.
<dnsMaxWaitTime>	Maximum timeout for DNS resolution retries
<dnsMaxRetry>	Maximum number of DNS resolution retries <b>Note:</b> The value ranges from 2 to 8.
<dns_wait_tmr>	Set the DNS retry interval. Unit is second. Dns_wait_tmr [8] defaults to {2, 2, 4, 8, 8, 8, 8, 8}. <b>Note:</b> The first interval cannot be less than 2 seconds.

## Examples

### AT+CSOC?

```
+CSOC: "Tcp
srxt",6,1,1,1,3,3,6,12,24,48,96,120,120,120
+CSOC: "Tcp rxt",6,1,1,1,2,3,4,5,6,7,7,7,7,7
+CSOC: "Mss",1500
+CSOC: "RecvWin",64240
+CSOC: "DnsTmr",17,4,2,3,4,8,8,8,8,8
```

OK

```
AT+CSOC="DnsTmr","2,2,0,0,0,0,0,0"
```

OK

## 8.3 Command Result Codes

### 8.3.1 Description of <err\_info>

The fourth parameter <errMode> of AT+CIPCCFG (TODO) is used to determine how <err\_info> is displayed.

If <errMode> is set to 0, the <err\_info> is displayed with numeric value.

If <errMode> is set to 1, the <err\_info> is displayed with string value.

The default is displayed with string value.

Numeric Value	String Value
0	Connection time out
1	Bind port failed
2	Port overflow
3	Create socket failed
4	Network is already opened
5	Network is already closed
6	No clients connected
7	No active client
8	Network not opened
9	Client index overflow
10	Connection is already created
11	Connection is not created
12	Invalid parameter
13	Operation not supported
14	DNS query failed
15	TCP busy
16	Net close failed for socket opened
17	Sending time out
18	Sending failure for network error
19	Open failure for network error
20	Server is already listening
21	Operation failed
22	No data

### 8.3.2 Description of <err>

<err>	Description of <err>
-------	----------------------

0	operation succeeded
1	Network failure
2	Network not opened
3	Wrong parameter
4	Operation not supported
5	Failed to create socket
6	Failed to bind socket
7	TCP server is already listening
8	Busy
9	Sockets opened
10	Timeout
11	DNS parse failed for AT+CIOPEN
12	Unknown error

## 8.4 Unsolicited Result Codes

URC	Description
<b>+CIPEVENT: NETWORK CLOSED UNEXPECTEDLY</b>	Network is closed for network error(Out of service, etc). When this event happens, user's application needs to check and close all opened sockets, and then uses AT+NETCLOSE to release the network library if AT+NETOPEN? shows the network library is still opened.
<b>+IPCLOSE: &lt;client_index&gt;,&lt;close_reason&gt;</b>	Socket is closed passively. <client_index> is the link number. <close_reason>: 0 Closed by local, active 1 Closed by remote, passive 2 Closed for sending timeout or DTR off
<b>+CLIENT: &lt;link_num&gt;,&lt;server_index&gt;,&lt;client_IP&gt;:&lt;port&gt;</b>	TCP server accepted a new socket client, the index is<link_num>, the TCP server index is <server_index>. The peer IP address is <client_IP>, the peer port is <port>.



## 9 AT Commands for HTTP(S)

### 9.1 Overview

Command	Description
<b>AT+HTTPINIT</b>	Start HTTP service
<b>AT+HTTPTERM</b>	Stop HTTP Service
<b>AT+HTTPPARA</b>	Set HTTP Parameters value
<b>AT+HTTPACTION</b>	HTTP Method Action
<b>AT+HTTPHEAD</b>	Read the HTTP Header Information of Server Response
<b>AT+HTTPREAD</b>	Read the response information of HTTP Server
<b>AT+HTTPDATA</b>	Input HTTP Data
<b>AT+HTTPPOSTFILE</b>	Send HTTP Request to HTTP(S)server by File
<b>AT+HTTPREADFILE</b>	Receive HTTP Response Content to a file

### 9.2 Detailed Description of AT Commands for HTTP(S)

#### 9.2.1 AT+HTTPINIT Start HTTP Service

AT+HTTPINIT is used to start HTTP service by activating PDP context. You must execute AT+HTTPINIT before any other HTTP related operations.

<b>AT+HTTPINIT Start HTTP Service</b>	
Test Command <b>AT+HTTPINIT=?</b>	Response  <b>OK</b>
Execute Command <b>AT+HTTPINIT</b>	Response 1)If start HTTP service successfully: <b>OK</b> 2)If failed: <b>ERROR</b>
Parameter Saving Mode	-

Max Response Time	120000ms
Reference	-

## Examples

**AT+HTTPIPINIT**  
OK

### 9.2.2 AT+HTTPTERM Stop HTTP Service

AT+HTTPTERM is used to stop HTTP service.

#### AT+HTTPTERM Stop HTTP Service

Test Command	Response
<b>AT+HTTPTERM=?</b>	<b>OK</b>
Execute Command	Response
<b>AT+HTTPTERM</b>	1)If stop HTTP service successfully: <b>OK</b> 2)If failed: <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	120000ms
Reference	-

## Examples

**AT+HTTPTERM**  
OK

### 9.2.3 AT+HTTPPARA Set HTTP Parameters value

AT+HTTPPARA is used to set HTTP parameters value. When you want to access to a HTTP server, you should input <value> like http://'server':'tcpPort'/'path'. In addition, https://'server':'tcpPort'/'path' is used to access to a HTTPS server.

**AT+HTTTPARA Set HTTP Parameters value**

Test Command	Response
<b>AT+HTTTPARA=?</b>	<b>OK</b>
Write Command <b>AT+HTTTPARA="URL",&lt;url&gt;</b>	Response 1)If parameter format is right: <b>OK</b> 2)If parameter format is not right or other errors occur: <b>ERROR</b>
Write Command <b>AT+HTTTPARA="CONNECTTO",&lt;conn_timeout&gt;</b>	Response 1)If parameter format is right: <b>OK</b> 2)If parameter format is not right or other errors occur: <b>ERROR</b>
Write Command <b>AT+HTTTPARA="RECVTO",&lt;recv_timeout&gt;</b>	Response 1)If parameter format is right: <b>OK</b> 2)If parameter format is not right or other errors occur: <b>ERROR</b>
Write Command <b>AT+HTTTPARA="CONTENT",&lt;content_type&gt;</b>	Response 1)If parameter format is right: <b>OK</b> 2)If parameter format is not right or other errors occur: <b>ERROR</b>
Write Command <b>AT+HTTTPARA="ACCEPT",&lt;accept-type&gt;</b>	Response 1)If parameter format is right: <b>OK</b> 2)If parameter format is not right or other errors occur: <b>ERROR</b>
Write Command <b>AT+HTTTPARA="SSLCFG",&lt;sslcfg_id&gt;</b>	Response 1)If parameter format is right: <b>OK</b> 2)If parameter format is not right or other errors occur: <b>ERROR</b>
Write Command <b>AT+HTTTPARA="USERDATA",&lt;user_data&gt;</b>	Response 1)If parameter format is right: <b>OK</b> 2)If parameter format is not right or other errors occur: <b>ERROR</b>
Write Command <b>AT+HTTTPARA="READMODE",&lt;readmode&gt;</b>	Response 1)If parameter format is right: <b>OK</b> 2)If parameter format is not right or other errors occur:

	ERROR
Parameter Saving Mode	-
Max Response Time	120000ms
Reference	-

## Defined Values

<url>	URL of network resource.String,start with "http://" or"https://" a)http://'server':'tcpPort'/'path'. b)https://'server':'tcpPort'/'path' "server" DNS domain name or IP address "path" path to a file or directory of a server "tcpPort" http default value is 80,https default value is 443.(can be omitted)
<conn_timeout>	Timeout for accessing server, Numeric type, range is 20-120s, default is 120s.
<recv_timeout>	Timeout for receiving data from server, Numeric type range is 2s-120s, default is 20s.
<content_type>	This is for HTTP "Content-Type" tag, String type, max length is 256, and default is "text/plain".
<accept-type>	This is for HTTP "Accept-type" tag, String type, max length is 256, and default is "*/*".
<sslcfg_id>	This is setting SSL context id, Numeric type, range is 0-1. Default is 0.
<user_data>	The customized HTTP header information. String type, max length is 256.
<readmode>	For HTTPREAD, Numeric type, it can be set to 0 or 1. If set to 1, you can read the response content data from the same position repeatedly. The limit is that the size of HTTP server response content should be shorter than 1M.Default is 0.

## Examples

```
AT+HTTPPARA="URL","http://www.baidu.com"
OK
```

### 9.2.4 AT+HTTPACTION HTTP Method Action

AT+HTTPACTION is used to perform a HTTP Method. You can use HTTPACTION to send a get/post request to a HTTP/HTTPS server.

## AT+HTTPACTION HTTP Method Action

Test Command <b>AT+HTTPACTION=?</b>	Response <b>+HTTPACTION: (0-4)</b>  <b>OK</b>
Write Command <b>AT+HTTPACTION=&lt;method&gt;</b>	Response 1)If parameter format is right: <b>OK</b>  <b>+HTTPACTION: &lt;method&gt;,&lt;statuscode&gt;,&lt;datalen&gt;</b> 2)If parameter format is right but server connected unsuccessfully: <b>OK</b>  <b>+HTTPACTION: &lt;method&gt;,&lt;errcode&gt;,&lt;datalen&gt;</b> 3)If parameter format is not right or other errors occur: <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	120000ms
Reference	-

### Defined Values

<b>&lt;method&gt;</b>	HTTP method specification: 0 GET 1 POST 2 HEAD 3 DELETE 4 PUT
<b>&lt;statuscode&gt;</b>	Please refer to the end of this chapter
<b>&lt;datalen&gt;</b>	The length of data received

### Examples

```
AT+HTTPACTION=?
+HTTPACTION: (0-4)
```

```
OK
```

```
AT+HTTPACTION=0
```

```
OK
```

```
+HTTPACTION: 0,200,104220
```

## 9.2.5 AT+HTTPHEAD Read the HTTP Header Information of Server Response

AT+HTTPHEAD is used to read the HTTP header information of server response when module receives the response data from server.

### AT+HTTPHEAD Read the HTTP Header Information of Server Response

Test Command <b>AT+HTTPHEAD=?</b>	Response  <b>OK</b>
Execute Command <b>AT+HTTPHEAD</b>	Response 1)If read the header information successfully: <b>+HTTPHEAD: &lt;data_len&gt;</b> <b>&lt;data&gt;</b> <b>OK</b> 2)If read failed: <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	120000ms
Reference	-

#### Defined Values

<dat_len>	The length of HTTP header
<data>	The header information of HTTP response

#### Examples

```
AT+HTTPHEAD
+HTTPHEAD: 653
HTTP/1.1 200 OK
Content-Type: text/html
Connection: keep-alive
X-Cache: MISS from PDcache-04:opinion.people.com.cn
Date: Tue, 24 Mar 2020 03:12:09 GMT
Powered-By-ChinaCache: HIT from CNC-WB-b-D24
Powered-By-ChinaCache: HIT from CNC-WV-b-D1C
ETag: W/"5b7379f5-57e9"
x-cc-via: CNC-WB-b-D24[H,1], CNC-WV-b-D1C[H,62]
d-cc-upstream: CNC-WV-b-D1C
CACHE: TCP_HIT
Vary: Accept-Encoding
Last-Modified: Wed, 15 Aug 2018 00:55:17 GMT
```

```
Expires: Tue, 24 Mar 2020 03:17:09 GMT
x-cc-req-id: f4b9e1793697d1ef2950f530aeec4519
Content-Length: 22505
Age: 0
Accept-Ranges: bytes
Server: nginx
X-Frame-Options: ALLOW-FROM .*
CC_CACHE: TCP_REFRESH_HIT
OK
```

### 9.2.6 AT+HTTPREAD Read the response information of HTTP Server

After sending HTTP(S)GET/POST requests, you can retrieve HTTP(S)response information from HTTP(S)server via UART/USB port by AT+HTTPREAD. When the <datalen> of "+HTTPACTION: <method>, <statuscode>, <datalen>" is not equal to 0, You can execute AT+HTTPREAD=<start\_offset>,<byte\_size> to read out data to port. If parameter <byte\_size> is set greater than the size of data saved in buffer, all data in cache will output to port.

#### AT+HTTPREAD Read the response information of HTTP Server

Test Command <b>AT+HTTPREAD=?</b>	Response <b>OK</b>
Read Command <b>AT+HTTPREAD?</b>	Response 1)If check successfully: <b>+HTTPREAD: LEN,&lt;len&gt;</b> <b>OK</b> 2)If failed (no more data other error): <b>ERROR</b>
Write Command <b>AT+HTTPREAD=[&lt;start_offset&gt;,&lt;byte_size&gt;</b>	Response 1)If read the response info successfully: <b>OK</b> <b>+HTTPREAD: &lt;data_len&gt;</b> <b>&lt;data&gt;</b> <b>+HTTPREAD: 0</b> If <byte_size> is bigger than the data size received, module will only return actual data size. 2)If read failed: <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	120000ms

Reference -

## Defined Values

<start_offset>	The start position of reading
<byte_size>	The length of data to read
<datalen>	The actual length of read data
<data>	Response content from HTTP server
<len>	Total size of data saved in buffer.

## Examples

### AT+HTTPREAD?

```
+HTTPREAD: LEN,22505
```

```
OK
```

### AT+HTTPREAD=0,500

```
OK
```

```
+HTTPREAD: 500
```

```
\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
```

```
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
```

```
<html xmlns="http://www.w3.org/1999/xhtml">
```

```
<head>
```

```
<meta http-equiv="content-type" content="text/html;charset=GB2312"/>
```

```
<meta http-equiv="Content-Language" content="utf-8" />
```

```
<meta content="all" name="robots" />
```

```
<title>人民日报钟声:牢记历史是为了更好开创未来--观点--人民网 </title>
```

```
<meta name="keywords" content="" />
```

```
<meta name="description" content=" 日方应在正确对待历史?"
```

```
+HTTPREAD: 0
```

## NOTE

The response content received from server will be saved in cache, and would not be cleaned up by AT+HTTPREAD.

Due to the max size of protocol stack is 10K bytes, when the total size of the data from server is bigger than that and 'READMODE' is 0, you should read the data quickly, or you will fail to read it.



## 9.2.7 AT+HTTPDATA Input HTTP Data

You can use AT+HTTPDATA to input data to post when you send a HTTP/HTTPS POST request.

### AT+HTTPDATA Input HTTP Data

Test Command <b>AT+HTTPDATA=?</b>	Response  <b>OK</b>
Write Command <b>AT+HTTPDATA=&lt;size&gt;,&lt;time&gt;</b>	Response 1)if parameter format is right: <b>DOWNLOAD</b> <b>&lt;input data here&gt;</b> When the total size of the inputted data reaches <size>, TA will report the following code. Otherwise, the serial port will be blocked. <b>OK</b> 2)If parameter format is wrong or other errors occur: <b>ERROR</b>
Parameter Saving Mode	
Max Response Time	
Reference	

### Defined Values

<b>&lt;size&gt;</b>	Size in bytes of the data to post. range is 1- 10240 (bytes)
<b>&lt;time&gt;</b>	Maximum time in seconds to input data.range is 10-65535

### Examples

```
AT+HTTPDATA=18,1000
DOWNLOAD
Message=helloworld
OK
```

## 9.2.8 AT+HTTPPOSTFILE Send HTTP Request to HTTP(S)server by File

You also can send HTTP request in a file via AT+HTTPPOSTFILE command. The URL must be set by AT+HTTPPARA before executing AT+HTTPPOSTFILE command. The parameter <path> can be used to

set the file directory. When modem has received response from HTTP server, it will report the following URC:

+HTTPPOSTFILE: <httpstatuscode>,<content\_length>

### AT+HTTPPOSTFILE Send HTTP Request to HTTP(S)server by File

Test Command <b>AT+HTTPPOSTFILE=?</b>	Response <b>+HTTPPOSTFILE: &lt;filename&gt;[(1-1)][(0-4)][(0-1)]</b>
	<b>OK</b>
Write Command <b>AT+HTTPPOSTFILE=&lt;filename&gt;[,&lt;path&gt;[,&lt;method&gt;[,&lt;send_header&gt;]]]</b>	Response 1)if parameter format is right and server connected successfully: a)if parameter <method> is valid: <b>OK</b> <b>+HTTPPOSTFILE: &lt;method&gt;,&lt;statuscode&gt;,&lt;content_len&gt;</b> b)if parameter <method> is ignored: <b>OK</b> <b>+HTTPPOSTFILE: &lt;statuscode&gt;,&lt;content_len&gt;</b> 2)if parameter format is right but server connected unsuccessfully: a)if parameter <method> is valid: <b>OK</b> <b>+HTTPPOSTFILE: &lt;method&gt;,&lt;errcode&gt;,0</b> b)if parameter <method> is ignored: <b>OK</b> <b>+HTTPPOSTFILE: &lt;errcode&gt;,0</b> 3)if parameter format is not right or any other error occurs: <b>ERROR</b>
Parameter Saving Mode	
Max Response Time	
Reference	

### Defined Values

<filename>	String type, filename, the max length is 63 bytes.
<path>	The directory where the sent file saved. Numeric type, range is 1-1 1 C:/ (local storage)
<method>	HTTP method specification: 0 GET 1 POST 2 HEAD 3 DELETE

	<p>4 PUT</p> <p>If this value is not provided, it is same to the value described in the post file.</p>
<send_header>	<p>Send file as HTTP header and Body or Only as Body. Numeric type, the range is 0-1, the default is 0.</p> <p>0 Send file as HTTP header and body</p> <p>1 Send file as Body</p>

## Examples

### AT+HTTPPOSTFILE=?

```
+HTTPPOSTFILE: <filename>[(1-1)][(0-3)][(0-1)]
```

OK

```
AT+HTTPPOSTFILE="getbaidu.txt",1
```

OK

```
+HTTPPOSTFILE: 200,14615
```

```
AT+HTTPPOSTFILE="getbaidu.txt",1,1,1
```

OK

```
+HTTPPOSTFILE: 1,200,14615
```

## 9.2.9 AT+HTTPREADFILE Receive HTTP Response Content to a file

After execute AT+HTTPACTION/AT+HTTPPOSTFILE command. You can receive the HTTP server response content to a file via AT+HTTPREADFILE.

Before AT+HTTPREADFILE executed, "+HTTPACTION: <method>,<httpstatuscode>,<content\_len>" or "+HTTPPOSTFILE: <httpstatuscode>,<content\_len>" must be received. The parameter <path> can be used to set the directory where to save the file. If omit parameter <path>, the file will be save to local storage.

### AT+HTTPREADFILE Receive HTTP Response Content to a File

<p>Test Command</p> <pre>AT+HTTPREADFILE=?</pre>	<p>Response</p> <pre>+HTTPREADFILE: &lt;filename&gt;</pre> <p>OK</p>
<p>Write Command</p> <pre>AT+HTTPREADFILE=&lt;filename&gt; &gt;[,&lt;path&gt;]</pre>	<p>Response</p> <p>1)if parameter format is right:</p> <pre>OK</pre> <pre>+HTTPREADFILE: &lt;errcode&gt;</pre>

	2)if failed: <b>OK</b>
	<b>+HTTPREADFILE: &lt;errcode&gt;</b>
	3)if parameter format is not right or any other error occurs: <b>ERROR</b>
Parameter Saving Mode	
Max Response Time	
Reference	

## Defined Values

<filename>	String type, filename, the max length is 112.unit:byte.
<path>	The directory where the read file saved. Numeric type, range is 1-1. 1 C:/(local storage)

## Examples

```

AT+HTTPREADFILE=?
+HTTPREADFILE: <filename>[, (1-1)]

OK
AT+HTTPREADFILE="readbaidu.dat"
OK

+HTTPREADFILE: 0

```

## 9.3 Command Result Codes

### 9.3.1 Description of <statuscode>

<statuscode>	Description
100	Continue
101	Switching Protocols
200	OK
201	Created

202	Accepted
203	Non-Authoritative Information
204	No Content
205	Reset Content
206	Partial Content
300	Multiple Choices
301	Moved Permanently
302	Found
303	See Other
304	Not Modified
305	Use Proxy
307	Temporary Redirect
400	Bad Request
401	Unauthorized
402	Payment Required
403	Forbidden
404	Not Found
405	Method Not Allowed
406	Not Acceptable
407	Proxy Authentication Required
408	Request Timeout
409	Conflict
410	Gone
411	Length Required
412	Precondition Failed
413	Request Entity Too Large
414	Request-URI Too Large
415	Unsupported Media Type
416	Requested range not satisfiable
417	Expectation Failed
500	Internal Server Error
501	Not Implemented
502	Bad Gateway
503	Service Unavailable
504	Gateway timeout
505	HTTP Version not supported
600	Not HTTP PDU
601	Network Error
602	No memory
603	DNS Error
604	Stack Busy

### 9.3.2 Description of <errcode>

<errcode>	Meaning
0	Success
701	Alert state
702	Unknown error
703	Busy
704	Connection closed error
705	Timeout
706	Receive/send socket data failed
707	File not exists or other memory error
708	Invalid parameter
709	Network error
710	start a new ssl session failed
711	Wrong state
712	Failed to create socket
713	Get DNS failed
714	Connect socket failed
715	Handshake failed
716	Close socket failed
717	No network error
718	Send data timeout
719	CA missed

### 9.4 Unsolicited Result Codes

URC	Description
+HTTP_PEER_CLOSED	It's a notification message. While received, it means the connection has been closed by server.
+HTTP_NONET_EVENT	It's a notification message. While received, it means now the network is unavailable.

## 10 AT Commands for LWM2M

### 10.1 Overview

Command	Description
<b>AT+LWSTART</b>	Start LWM2M service
<b>AT+LWSTOP</b>	Stop LWM2M Service
<b>AT+LWCNF</b>	Config the LWM2M
<b>AT+LWOPEN</b>	Register to a LWM2M server
<b>AT+LWCLOSE</b>	Deregister to LWM2M server
<b>AT+LWADDOBJ</b>	Add a LWM2M object
<b>AT+LWDELOBJ</b>	Delete a LWM2M object
<b>AT+LWREADRSP</b>	Send read response to LWM2M server
<b>AT+LWWRITERSP</b>	Send write response to LWM2M server
<b>AT+LWEXECUTERSP</b>	Send execute response to LWM2M server

### 10.2 Detailed Description of AT Commands for LWM2M

#### 10.2.1 AT+LWSTART Start LWM2M service

AT+LWSTART is used to start LWM2M service by activating PDP context. You must execute AT+LWSTART before any other LWM2M related operations except AT+LWCNF.

<b>AT+LWSTART Start LWM2M service</b>	
Test Command <b>AT+LWSTART=?</b>	Response  <b>OK</b>
Execution Command <b>AT+LWSTART</b>	Response 1) <b>OK</b> 2)

	<b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

## Examples

**AT+LWSTART**  
OK

### 10.2.2 AT+LWSTOP Stop LWM2M Service

AT+LWSTOP is used to stop LWM2M service by deactivating PDP context. When you are no longer using the LWM2M service, use this command.

#### AT+LWSTOP Stop LWM2M Service

Test Command	Response
<b>AT+LWSTOP=?</b>	<b>OK</b>
Execution Command	Response
<b>AT+LWSTOP</b>	1) <b>OK</b> 2) <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

## Examples

**AT+LWSTOP**  
OK



### 10.2.3 AT+LWCNF Config the LWM2M

AT+LWCNF is used to config the LWM2M.

AT+LWCNF Config the LWM2M	
Test Command <b>AT+LWCNF=?</b>	Response <b>+LWCNF: "server",&lt;ipaddress&gt;</b> <b>+LWCNF: "serverport",&lt;serverport&gt;</b> <b>+LWCNF: "endpointname",&lt;endpointname&gt;</b> <b>+LWCNF: "connecttype",(4,6)</b> <b>+LWCNF: "lifetime",&lt;lifetime&gt;</b> <b>+LWCNF: "localport",&lt;localport&gt;</b>  <b>OK</b>
Write Command <b>AT+LWCNF=&lt;server&gt;,&lt;ipaddress&gt;</b> <b>AT+LWCNF=&lt;serverport&gt;,&lt;serverport&gt;</b> <b>AT+LWCNF=&lt;endpointname&gt;,&lt; endpointname&gt;</b> <b>AT+LWCNF=&lt; connecttype&gt;,4 or 6</b> <b>AT+LWCNF=&lt;lifetime&gt;,&lt;lifetime&gt;</b> <b>AT+LWCNF=&lt;localport&gt;,&lt;localport&gt;</b>	Response 1) <b>OK</b> 2) <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

#### Defined Values

<b>&lt;server&gt;</b>	The LWM2M server address URL or ipaddress.
<b>&lt;serverport&gt;</b>	The LWM2M server port,the range is from 0 to 65535.
<b>&lt;endpointname&gt;</b>	The LWM2M client device name.
<b>&lt;connecttype&gt;</b>	The type of LWM2M server address IPV4 or IPV6.
<b>&lt;lifetime&gt;</b>	The connection life time.the max value is 65535.
<b>&lt;localport&gt;</b>	The LWM2M client device local port. The range is from 0 to 65535.

#### Examples

**AT+LWCNF="server","leshan.eclipseprojects.io"**

OK

**AT+LWCNF="serverport","5683"**

OK

**AT+LWCNF="endpointname","simcom"**

OK

**AT+LWCNF="connectiontype","4"**

OK

**AT+LWCNF="lifetime","800"**

OK

**AT+LWCNF="localport","56833"**

OK

#### 10.2.4 AT+LWOPEN Register to a LWM2M server

AT+LWOPEN is used to register to a LWM2M sever, make sure you register to a LWM2M sever before you execute AT+LWCLOSE command.

#### AT+LWOPEN Register to a LWM2M server

Test Command	Response
<b>AT+LWOPEN=?</b>	<b>OK</b>
Execute Command	Response
<b>AT+LWOPEN</b>	1) <b>OK</b>
	<b>+LMOPEN:&lt;lwm2mld&gt;</b>
	2) <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

## Defined Values

<lwm2mId>	The LWM2M session ID.the range is from 0 to 1.
-----------	--

## Examples

```
AT+LWOPEN=?
```

```
OK
```

```
AT+LWOPEN
```

```
OK
```

```
LMOPEN:0
```

## 10.2.5 AT+LWCLOSE Deregister to a LWM2M server

This command is used to Deregister to a LWM2M server.

### AT+LWCLOSE Deregister to a LWM2M server

Test Command	Response
<b>AT+LWCLOSE=?</b>	<b>OK</b>
Write Command	Response
<b>AT+LWCLOSE=&lt;lwm2mId&gt;</b>	1) <b>OK</b> 2) <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

## Defined Values

<lwm2mId>	AT+LWOPEN return the LWM2M session ID.the range is from 0 to 1.
-----------	---

## Examples

```
AT+LWCLOSE=0
```

```
OK
```

## 10.2.6 AT+LWADDOBJ Add a LWM2M object

AT+LWADDOBJ is used to add a LWM2M object.

### AT+LWADDOBJ Add a LWM2M object

Test Command <b>AT+LWADDOBJ=?</b>	Response <b>OK</b>
Write Command <b>AT+LWADDOBJ=&lt;lwm2mId&gt;,&lt;objectId&gt;,&lt;instanceId&gt;,&lt;resourceCnt&gt;,&lt;resourceId&gt;,&lt;resourceId&gt;&gt;....</b>	Response 1) <b>OK</b> 2) <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

### Defined Values

<lwm2mId>	AT+LWOPEN return the LWM2M session ID.the range is from 0 to 1.
<objectId>	The LWM2M object ID you want to add.the range is from 0 to 65535, But 0-7 has already used.
<instanceId>	The LWM2M object instance ID. The range is from 0 to 65535.
<resourceCnt>	The LWM2M resource count. The range is from 1 to 15.
<resourceId>	The LWM2M resource ID. The range is from 0 to 65535.

### Examples

```
AT+LWADDOBJ=?
OK
AT+LWADDOBJ=0,3303,0,6,5518,5601,5602,5603,5604,5605
OK
```

## 10.2.7 AT+LWDELOBJ Delete a LWM2M object

AT+LWDELOBJ is used to delete a LWM2M object.

### AT+LWDELOBJ Delete a LWM2M object

Test Command	Response
<b>AT+LWDELOBJ=?</b>	<b>OK</b>
Write Command <b>AT+LWDELOBJ=&lt;lwm2mId&gt;,&lt;objectId&gt;</b>	Response 1) <b>OK</b> 2) <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

### Defined Values

<b>&lt;lwm2mId&gt;</b>	AT+LWOPEN return the LWM2M session ID.the range is from 0 to 1.
<b>&lt;objectId&gt;</b>	The LWM2M object ID you want to delete.the range is from 0 to 65535.

### Examples

```
AT+LWDELOBJ=?
OK
AT+LWDELOBJ=0,3303
OK
```

## 10.2.8 AT+LWREADRSP Send read response to LWM2M server

You can use this command to send read response to LWM2M server.

### AT+LWREADRSP Send read response to LWM2M server

Test Command	Response
<b>AT+LWREADRSP=?</b>	<b>OK</b>

Write Command <b>AT+LWREADRSP=&lt;lwm2mld&gt;,&lt;objectld&gt;,&lt;instanceld&gt;,&lt;resourceCnt&gt;,&lt;resourceld&gt;,&lt;valuetype&gt;,&lt;valuelen&gt;,&lt;value&gt;,&lt;resourceld &gt;,&lt;valuetype&gt;...</b>	Response 1) <b>OK</b> 2) <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

## Defined Values

<lwm2mld>	The LWM2M session ID,according to "+LWREAD" returned.
<objectld>	The LWM2M object ID,according to "+LWREAD" returned.
<instanceld>	The LWM2M object instance ID,according to "+LWREAD" returned.
<resourceCnt>	The LWM2M resource count,according to "+LWREAD" returned.
<resourceld>	The LWM2M resource ID,according to "+LWREAD" returned.
<valuetype>	The type of value of reponse. <ul style="list-style-type: none"> <li>● I Integer</li> <li>● F Float</li> <li>● B Boolean</li> <li>● D UINT8 array data</li> <li>● S String</li> </ul>
<valuelen>	The length of value.
<value>	The reponse value.

## Examples

**AT+LWREADRSP=?**

**OK**

**+LWREAD:0,3303,0,1,5602**

**AT+LWREADRSP= 0,3303,0,1,5602,"F",5,"15623"**

**OK**

### NOTE

Must execute the this command after URC "+LWREAD" returned."+LWREAD" see 30.2.11

## 10.2.9 AT+LWWRITERSP Send response to a LWM2M server

This command is used to send a response to LWM2M server.

### AT+LWWRITERSP Send reponse to a LWM2M server

Test Command <b>AT+LWWRITERSP=?</b>	Response <b>+CFTPSPWD:</b>
	<b>OK</b>
Execute Command <b>AT+LWWRITERSP=&lt;lwm2mId&gt;,&lt;result&gt;</b>	Response 1) <b>OK</b> 2) <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

#### Defined Values

<lwm2mId>	The LWM2M session ID,according to "+LWWRITE" returned.
<result>	According to "+LWWRITE",return the result, see 30.3

#### Examples

```
+LMWRITE: 0,3335,0,1,5750,S,1,"p"
AT+LWWRITERSP =0,0
OK
```

#### NOTE

Must execute the this command after URC "+LWWRITE" returned." +LWWRITE" see 30.2.12

## 10.2.10 AT+LWEXECUTERSP Send response to LWM2M server

You can use AT+LWEXECUTERSP send response to LWM2M server.

### AT+LWEXECUTERSP Send response to LWM2M server

Test Command <b>AT+LWEXECUTERSP=?</b>	Response <b>+LWEXECUTERSP: &lt;lwm2mld&gt;,&lt;result&gt;</b>  <b>OK</b>
Write Command <b>AT+LWEXECUTERSP=&lt;lwm2mld&gt;,&lt;result&gt;</b>	Response 1) <b>OK</b> 2) <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

#### Defined Values

<lwm2mld>	The LWM2M session ID,according to "+LWEXECUTE" returned.
<result>	According to "+LWEXECUTE",return the result, see 30.3

#### Examples

```
AT+LWEXECUTERSP=?
OK

+LWEXECUTE: 0,3303,0,5605,1,"0"
AT+LWEXECUTERSP=0,0
OK
```

#### NOTE

Must execute the this command after URC "+LWEXECUTE returned." "+LWEXECUTE" see 30.2.13



### 10.2.11 +LWREAD LWM2M client response of LWM2M server operate read

LWM2M client response of LWM2M server operate read.

#### +LWREAD LWM2M client response of LWM2M server operate read

	Response +LWREAD:<lwm2mId>,<objectId>,<instanceId>,<resourceCnt>,<resourceId>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

#### Defined Values

<lwm2mId>	The LWM2M session ID.the range is from 0 to 1.
<objectId>	The LWM2M object ID you want to add.the range is from 8 to 65535.
<instanceId>	The LWM2M object instance ID. The range is from 0 to 65535.
<resourceCnt>	The LWM2M resource count. The range is from 1 to 15.
<resourceId>	The LWM2M resource ID. The range is from 0 to 65535.

### 10.2.12 +LWWRITE LWM2M client response of LWM2M server operate write

LWM2M client response of LWM2M server operate write.

#### +LWWRITE LWM2M client response of LWM2M server operate read

	Response +LWWRITE: <lwm2mId>,<objectId>,<instanceId>,<resourceCnt>,<resourceId>,<valuetype>,<valuelen>,<value>,< resourceId >,<valuetype>...
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

#### Defined Values

<lwm2mId>	The LWM2M session ID.the range is from 0 to 1.
<objectId>	The LWM2M object ID you want to add.the range is from 8 to 65535.

<instanceId>	The LWM2M object instance ID. The range is from 0 to 65535.
<resourceCnt>	The LWM2M resource count. The range is from 1 to 15.
<resourceId>	The LWM2M resource ID. The range is from 0 to 65535.
<valuetype>	The type of value of reponse. <ul style="list-style-type: none"> <li>● I Integer</li> <li>● F Float</li> <li>● B Boolean</li> <li>● D UINT8 array data</li> <li>S String</li> </ul>
<valuelen>	The length of value.
<value>	The reponse value.

### 10.2.13 +LWEXECUTE LWM2M client response of LWM2M server operate execute

LWM2M client response of LWM2M server operate execute.

#### +LWEXECUTE LWM2M client response of LWM2M server operate execute

	Response 1) +LWEXECUTE: <lwm2mId>,<objectId>,<instanceId>,<resourceId>,<len>,<buffer>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

#### Defined Values

<lwm2mId>	The LWM2M session ID.the range is from 0 to 1.
<objectId>	The LWM2M object ID.the range is from 8 to 65535.
<instanceId>	The LWM2M object instance ID. The range is from 0 to 65535.
<resourceId>	The LWM2M resource count. The range is from 1 to 15.
<len>	The response buffer len.
<buffer>	The response buffer.

## 10.3 Command Result Codes

<result>	Description
0	No error
1	Ignore
65	Created
66	Deleted
68	Changed
69	Content
95	Continue
128	Bad request
129	Unauthorized
130	Bad option
132	Not found
133	Method no allowed
134	Not acceptable
136	Req entity incomplete
140	Precondition failed
141	Entity too large
160	Internal server error
161	Not implemented
163	Service unavailable

Confidential

# 11 AT Commands for FOTA

## 11.1 Overview

Command	Description
<b>AT+CFOTA</b>	Start FOTA Service
<b>AT+LFOTA</b>	Start Local FOTA Service

## 11.2 Detailed Description of AT Command for FOTA

### 11.2.1 AT+CFOTA Start FOTA service

AT+CFOTA Start FOTA Service	
Write Command <b>AT+CFOTA=&lt;channel&gt;,&lt;mode&gt;,&lt;destination_ip/url&gt;,&lt;username&gt;,&lt;password&gt;</b>	Response 1) <b>OK</b> <b>+CFOTA: &lt;err&gt;</b> 2) <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	-

### Defined Values

<channel>	0-5 means the channel number
<mode>	0 FTP way 1 HTTP way
<destination_ip:port/url>	The remote site server's IP address or URL address. IP address should be in the format of the dotted decimal notation:

	<p>XXX.XXX.XXX.XXX.</p> <p>URL address should be ASCII characters, the maximum of the length is 255 bytes.</p> <p>NOTE: If &lt;port&gt; are omitted, the default FTP port is 21 and the default HTTP port is 80.</p>
<username>	The login user name, it should be ASCII characters, and the maximum of the length is 128 bytes.
<password>	The login password, it should be ASCII characters, and the maximum of the length is 128 bytes.

## Examples

```
AT+CFOTA=0,0,"183.230.174.137:6047/fbf_dfota.bin",simcom,simcom
```

```
OK
```

```
+CFOTA: 0
```

## 11.2.2 AT+LFOTA Start Local Fota Service

### AT+LFOTA Start Local Fota Service

Test Command <b>AT+LFOTA=?</b>	<p>Response</p> <p><b>+LFOTA=&lt;0-1&gt;,&lt;File Size&gt;</b></p> <p><b>OK</b></p>
Read Command <b>AT+LFOTA?</b>	<p>Response</p> <p>1)if data pass check</p> <p><b>+LFOTA: 1</b></p> <p><b>OK</b></p> <p>2)if data doesn't pass check</p> <p><b>+LFOTA: 0</b></p> <p><b>OK</b></p> <p>3)if data has not transfer yet. It will be initial value -1</p> <p><b>+LFOTA: -1</b></p> <p><b>OK</b></p>
Write Command <b>AT+LFOTA=&lt;ops&gt;,&lt;File Size&gt;</b>	<p>Response</p> <p>1)If successfully:</p> <p><b>&gt;</b></p>

	<p><b>OK</b></p> <p>2)If failed:</p> <p>&gt;</p> <p><b>ERROR</b></p> <p>3)If failed:</p> <p><b>ERROR</b></p>
Parameter Saving Mode	-
Max Response Time	-
Reference	-

### Defined Values

<ops>	<p>0 initial parameters</p> <p>1 start transfer</p>
<File Size>	The bytes of the file data to send.

### Examples

**AT+LFOTA=0,5358979**

OK

**AT+LFOTA=1,5358979**

>

OK

#### NOTE

If UART is used for LFOTA, please make sure that the delay time between each 256 byte reach to at least 50ms.

If sending file crash, restart module and increase the delay time between each 256 byte reach to 50ms, and then try to send file again

## 9.3 Unsolicited Result Codes

URC	Description
+CFOTA: 100	FOTA COMPLETE, it will restart in 8s.

+CFOTA: 1001	FOTA URL is invalid, maybe PDP was active.
+CFOTA: 1002	FOTA timeout
+CFOTA: 1003	FOTA URL is unknown
+CFOTA: 1004	FOTA username or password is error
+CFOTA: 1005	FOTA file is not exist
+CFOTA: 1006	The size of FOTA file is invalid
+CFOTA: 1007	Get file failed
+CFOTA: 1008	Check file error
+CFOTA: 1009	FOTA internal error
+CFOTA: 1010	Fota file too large
+CFOTA: 1011	Fota set flag error
+CFOTA: 1012	Fota parameter size error

SIMCom  
Confidential

## 12 AT Commands for COAP

### 12.1 Overview

Command	Description
<b>AT+COAPSTART</b>	Active PDP
<b>AT+COAPSTOP</b>	Deactive PDP
<b>AT+COAPOPEN</b>	Open a COAP server
<b>AT+COAPCLOSE</b>	Close a COAP server
<b>AT+COAPHEAD</b>	Config the head of COAP
<b>AT+COAPOPTION</b>	Config the option of COAP
<b>AT+COAPSEND</b>	Send COAP message to the server
<b>AT+COAPSENDTX</b>	Send COAP message to the server by transparent transmission

### 12.2 Detailed Description of AT Commands for COAP

#### 12.2.1 AT+COAPSTART Active PDP

AT+COAPSTART is used to active PDP context. You must execute AT+COAPSTART before any other COAP related operations.

<b>AT+COAPSTART Active PDP</b>	
Test Command <b>AT+COAPSTART=?</b>	Response <b>OK</b>
Execution Command <b>AT+COAPSTART</b>	Response 1) <b>OK</b> 2) <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	



## Examples

**AT+COAPSTART**

OK

### 12.2.2 AT+COAPSTOP Deactive PDP

AT+LWSTOP is used to deactivate PDP context When you are no longer using the COAP service, use this command.

#### AT+COAPSTOP Deactive PDP

Test Command	Response
<b>AT+COAPSTOP=?</b>	<b>OK</b>
Execution Command	Response
<b>AT+COAPSTOP</b>	1) <b>OK</b> 2) <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

## Examples

**AT+COAPSTOP**

OK

### 12.2.3 AT+COAPOPEN Open a COAP server

AT+COAPOPEN is used to open a COAP sever, make sure you open a COAP sever before you execute AT+COAPCLOSE command.

#### AT+COAPOPEN Open a COAP server

Test Command	Response
<b>AT+COAPOPEN=?</b>	<b>OK</b>
Execute Command	Response
<b>AT+COAPOPEN=&lt;server&gt;,&lt;serverport&gt;</b>	1) <b>OK</b>

	<b>+COAPOPEN:&lt;coapId&gt;</b> 2) <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

## Defined Values

<server>	The COAP server address URL or ipaddress
<serverport>	The COAP server port,the range is from 0 to 65535.
<coap_sessionId>	The COAP session ID.the range is from 0 to 1.

## Examples

```

AT+COAPOPEN=?
OK
AT+COAPOPEN="47.108.134.22",5683
OK
+COAPOPEN:0
  
```

### 12.2.4 AT+COAPCLOSE Close a COAP server

This command is used to Deregister to a COAP server.

#### AT+COAPCLOSE Close a COAP server

Test Command	Response
<b>AT+COAPCLOSE=?</b>	<b>OK</b>
Write Command	Response
<b>AT+COAPCLOSE=&lt;</b> <b>coap_sessionId &gt;</b>	1) <b>OK</b> 2) <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

## Defined Values

<coap_sessionId>	AT+COAPOPEN return the COAP session ID.the range is from 0 to 1.
------------------	--

## Examples

**AT+COAPCLOSE=0**

OK

### 12.2.5 AT+COAPHEAD Config the head of COAP

AT+COAPHEAD is used to config the head of COAP

#### AT+COAPHEAD Config the head of COAP

Test Command	Response
<b>AT+COAPHEAD=?</b>	<b>OK</b>
Write Command	Response
<b>AT+COAPHEAD=&lt;coap_sessionId&gt;,&lt;msgId&gt;,&lt;tkl&gt;,&lt;token&gt;</b>	1) <b>OK</b> 2) <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

## Defined Values

<coap_sessionId>	AT+COAPOPEN return the COAP session ID.the range is from 0 to 1.
<msgId>	The COAP message ID,the range is 0 to 65535.
<tkl>	The length of token,the range is 0 to 8.
<token>	The token of COAP message.

## Examples

**AT+COAPHEAD=?**

```
OK
AT+COAPOHEAD=0,35691,1,"1"
OK
```

## 12.2.6 AT+COAPOPTION Config the option of COAP

AT+COAPOPTION is used to config the option of COAP.

### AT+COAPOPTION Config the option of COAP

Test Command	Response
<b>AT+COAPOPTION=?</b>	<b>OK</b>
Write Command <b>AT+COAPOPTION=&lt;coap_sessionId&gt;,&lt;opt_count&gt;,&lt;optNum&gt;,&lt;optValue&gt;.....</b>	Response 1) <b>OK</b> 2) <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

### Defined Values

<b>&lt;coap_sessionId&gt;</b>	AT+COAPOPEN return the COAP session ID.the range is from 0 to 1.
<b>&lt;opt_count&gt;</b>	The num of option you want to config.the range is 0 to 10.
<b>&lt;optNum&gt;</b>	The type of option.
<b>&lt;optValue&gt;</b>	The value of the option

### Examples

```
AT+COAPOPTION=?
OK
AT+COAPOPTION=0,1,7,"5683"
OK
```

## 12.2.7 AT+COAPSEND Send COAP message to the server

You can use this command to Send COAP message to the server

### AT+COAPSEND Send COAP message to the server

Test Command <b>AT+COAPSEND=?</b>	Response  <b>OK</b>
Write Command <b>AT+COAPSEND=&lt;coap_sessionId&gt;,&lt;type&gt;,&lt;method&gt;,&lt;data_len&gt;,&lt;data&gt;</b>	Response 1) <b>OK</b> 2) <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

#### Defined Values

<b>&lt;coap_sessionId&gt;</b>	AT+COAPOPEN return the COAP session ID.the range is from 0 to 1.
<b>&lt;type&gt;</b>	The message type of COAP,it can set "con","non","ack","rst".
<b>&lt;method&gt;</b>	The message method of COAP,it can set "get","post","put","delete","fetch","patch","ipatch".
<b>&lt;data_len&gt;</b>	The data length of COAP message.the range is 0 to 2000.
<b>&lt;data&gt;</b>	The data of COAP message

#### Examples

```
AT+COAPSEND=?
OK
AT+COAPSEND=0,"con","get",5,"12345"
OK
```

### 12.2.8 AT+COAPSENDTX Send COAP message to the server by transparent transmission

This command is used to Send COAP message to the server by transparent transmission.

### AT+COAPSENDTX Send COAP message to the server by transparent transmission

Test Command <b>AT+COAPSENDTX=?</b>	Response <b>+CFTPSPWD:</b>  <b>OK</b>
--	--

Execute Command <b>AT+COAPSENDTX=&lt;coap_sessionId&gt;,&lt;type&gt;,&lt;method&gt;,&lt;data_len&gt;</b>	Response 1) <b>OK</b> 2) <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

## Defined Values

<coap_sessionId>	AT+COAPOPEN return the COAP session ID.the range is from 0 to 1.
<type>	The message type of COAP,it can set "con","non","ack","rst".
<method>	The message method of COAP,it can set "get","post","put","delete","fetch","patch","ipatch".
<data_len>	The data length of COAP message.the range is 0 to 2000.

## Examples

```
AT+COAPSENDTX=?
OK
AT+COAPSENDTX =0,"con","get",5
>
01234
OK
```

### 12.2.9 +COAPRECV Receive response message from server

Receive response message from server

#### +COAPRECV Receive response message from server

	Response 1) +COAPRECV: <request or response>,from session <coap_sessionId>,<received code>, <received tid>[,<len>,<data>]
Parameter Saving Mode	NO_SAVE
Max Response Time	9000ms
Reference	

## Defined Values

<b>&lt;request or response&gt;</b>	The message type of COAP server response.
<b>&lt;coap_sessionId&gt;</b>	The COAP server response which coap session
<b>&lt;received code&gt;</b>	The received code of the message
<b>&lt;received tid&gt;</b>	The received tid of the message
<b>&lt;len&gt;</b>	The response data len.
<b>&lt;data&gt;</b>	The response data.

SIMCom  
Confidential

## 13 Error Codes and Reset Reasons

### 13.1 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 following commands in the same Command line is executed. Neither ERROR nor OK result code shall be returned.

<err> values used by common messaging commands:

#### 13.1.1 General Errors

Code of <err>	Error Text
1	MT not connection
2	MT 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
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 call 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
48	hidden key required
49	EAP method not support
50	incorrect Parameters
51	command implemented but currently disabled
52	command aborted by user
53	not attached to network due to MT functionality restrictions
54	modem not allowed - MT restricted to emergency calls only
55	operation not allowed because of MT functionality restrictions
56	fixed dial number only allowed - called number is not a fixed dial number
57	temporarily out of service due to other MT usage
58	language/alphabet not supported
59	unexpected data value
60	system failure
61	data missing
62	call barred
63	message waiting indication subscription failure
100	unknown
103	illegal MS

106	illegal ME
107	GPRS services not allowed
108	GPRS services and non GPRS services not allowed
111	PLMN not allowed
112	location area not allowed
113	roaming not allowed in this location area
114	GPRS services not allowed in this plmn
115	No suitable cells in location area
122	Congestion
126	Insufficient resources
127	Mission or unknown APN
128	SIM PUK required
129	SIM failure
130	SIM busy
131	SIM wrong
132	incorrect password
133	requested service option not subscribed
134	service option temporarily out of order
140	Feature not supported
141	Semantic errors in the TFT operation
142	Syntactical errors in the TFT operation
143	Unknown PDP context
144	Semantic errors in packet filters
145	Syntactical errors in packet filters
146	PDP context without TFT already activated
148	unspecified GPRS error
149	PDP authentication failure
150	invalid mobile class
171	Last PDN disconnection not allowed
172	Semantically incorrect message
173	Mandatory information element error
174	Information element nonexistent or not implemented
175	Conditional ie error
176	Protocol error unspecified
177	Operator determined barring
178	Max number of PDP contexts reached
179	Requested APN not supported in current rat and PLMN combination
180	Request rejected bearer control mode violation
181	Unsupported oci value
182	User data transmission via control plane is congested
301	Internal error base
302	UE busy
303	Not power on

304	PDN not active
305	PDN not valid
306	PDN invalid type
307	PDN no parameter
308	UE fail
309	PDN type and APN duplicate used

### 13.1.2 Error Code for Socket Command

Code of <err>	Error Text
402	Parameter invalid
403	Too much socket instance
404	Create socket error
405	operation not supported
406	Cannot find the socket
407	Socket Connect fail
408	Socket bind fail
409	Send data fail
410	The socket status is not connected
411	The socket status is already connected
412	The socket status is invalid
413	The socket connect timeout
414	The socket close fail
415	The socket happen fatal error
416	Cannot allocate more memory
417	No more DL buffer resource
418	The socket is connecting
419	UL sequence is invalid
420	Send request fail
421	Unknown error

### 13.1.3 Error Code for CTM2M

Code of <err>	Error Text
1	Other errors
2	Parameter quantity error
3	Parameter value error
4	command cannot be issued
8	The platform connection parameter is not initialized

14	The Data field length exceeds the limit
15	The Object19 transport channel does not exist
16	Unable to obtain IMSI
17	Data fields are not even in length
33	Operation failed. Logged in
34	Failed to create LWM2M session
950	Engine exception, recovering
951	The connection is unavailable, the network is congested
952	Operation failed, overwrite level 2
953	Engine exception, need to restart
954	Operation failed, not logged in
955	Operation failed, log in
957	The connection is temporarily unavailable
959	The operation is not allowed, only if ON_UQMode=2
960	Operation failed. No authentication encryption string is set
961	Error setting allowed only when IDAuth_Mode=2/3
968	Functionality not supported or otherwise
969	Lifetime exceeds the limit
970	Cache queue overruns
972	Invalid Uri_str

## 13.2 Summary of CMS ERROR Codes

Final result code **+CMS ERROR: <err>** indicates an error related to message service or network. The operation is similar to ERROR result code. None of the following commands in the same Command line is executed. Neither ERROR nor OK result code shall be returned.

<err> values used by common messaging commands:

Code of <err>	Meaning
300	ME failure
301	SMS service of ME reserved
302	operation not allowed
303	operation not supported
304	invalid PDU mode parameter
305	invalid text mode parameter
310	USIM not inserted
311	USIM PIN required
312	PH-(U)SIM PIN required
313	USIM failure
314	USIM busy

315	USIM wrong
316	USIM PUK required
317	USIM PIN2 required
318	USIM PUK2 required
320	memory failure
321	invalid memory index
322	memory full
330	SMSC address unknown
331	no network service
332	network timeout
340	no +CNMA acknowledgement expected
500	unknown error

### 13.3 Summary of Unsolicited Result Codes

URC	Description	AT Command
-----	-------------	------------