

EG800Q&EG91xQ Series

AT Commands Manual

LTE Standard Module Series

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About the Document

Revision History

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-	2022-09-15	Bronson ZHAN/ Obuntu QIN	Creation of the document
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1.1	2024-11-03	Obuntu QIN	<ol style="list-style-type: none"> Updated the applicable modules: <ul style="list-style-type: none"> Added applicable module EG916Q-GL; Updated EG800Q-EU to EG800Q Series; Updated EG915Q-NA to EG915Q Series. Updated the declaration of AT command examples (Chapter 1.7). Updated the AT&V response (Chapter 2.11) Added the default value of <urc_port_value> in AT+QURCCFG (Chapter 2.24). Added AT+QPPPDROOP (Chapter 2.26). Updated the value of <rate> in AT+IPR (Chapter 3.5). Updated the description of AT+CEER (Chapter 4.2). Added the following commands (Chapters 4.3 & 4.4): <pre> AT+QINDCFG="datastatus" AT+QINDCFG="mode" AT+QINDCFG="sqi" AT+QCFG="urc/ri/level" AT+QCFG="cmux/urcport" AT+QCFG="cmux/baudratework" AT+QCFG="aprstlevel" AT+QCFG="modemrstlevel" AT+QCFG="ledmode" AT+QCFG="nat" </pre>

-
- AT+QCFG="ppp/termframe"
 - AT+QCFG="rf/tuner_cfg"
 - AT+QCFG="fast/poweroff"
 - AT+QCFG="fota/cid"
 - AT+QCFG="qcautoconnect"
 - AT+QCFG="sms/listmsgmap"
 - AT+QCFG="sms/MeNum"
 - 9. Updated AT+QCFG="urc/ri/sms" to AT+QCFG="urc/ri/smsincoming" (Chapter 4.4.2).
 - 10. Updated the value of <ltebandval> in AT+QCFG="band" (Chapter 4.4.12).
 - 11. Updated the default value of <interval> in AT+QCFG="nwoptmz/acq" (Chapter 4.4.13).
 - 12. Updated the response of the write command AT+CPIN=<pin>[,<new_pin>] (Chapter 5.3).
 - 13. Updated the value of <band> in AT+QNWINFO (Chapter 6.9).
 - 14. Deleted ATA and ATH commands.
 - 15. Updated ATD command (Chapter 7.1).
 - 16. Deleted "MT" of <mem1>, <mem2> and <mem3> (Chapter 8.4–Chapter 8.7).
 - 17. Specified the default value of <stat> in AT+CMGL (Chapter 8.6).
 - 18. Added AT+QNETDEVCTL (Chapter 9.13).
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1 Introduction

This document gives details of the AT Command Set supported by Quectel EG800Q series and EG91xQ family (EG915Q series and EG916Q-GL) modules.

1.1. Definitions

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

1.2. AT Command Syntax

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

AT commands implemented by EG800Q and EG91xQ family modules can be separated into two categories syntactically: “basic command”, and “extended command”, as listed below:

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

Table 1: Type of AT Commands and Responses

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

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

When entering AT commands, spaces should be ignored except in the following cases:

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

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

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

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

1.3. Supported Character Sets

The AT command interface of LTE standard modules defaults to the **GSM** character set. LTE standard modules support the following character sets:

- GSM format
- UCS2
- IRA

The character set can be configured and queried with **AT+CSCS** (3GPP TS 27.007) and it is defined in 3GPP TS 27.005. The character set affects transmission and reception of SMS and SMS Cell Broadcast

Messages, as well as the entry and display of phone book entry text fields.

1.4. AT Command Interfaces

The main UART port and two USB ports (USB modem port and USB AT port) support AT command communication and data transfer.

1.5. Unsolicited Result Code

Unsolicited Result Code (URC) is not issued in response to an executed AT command, but as a report message issued by the modules without being requested by the TE. It is automatically issued by the module in response to a certain event. Typical URC triggering events include incoming calls (RING), received short messages, etc.

1.6. Turn-off Procedure

The safest and best way to turn off the module is to execute **AT+QPOWD**. This procedure is performed by letting the module log off from the network and allowing the software to enter a secure and safe data state before disconnecting the power supply.

After sending **AT+QPOWD**, do not enter any other AT commands. Once the command is executed successfully, the module will output **POWERED DOWN** and then enter the power down mode. To avoid data loss, it is suggested to wait for 1s to disconnect the power supply after the URC **POWERED DOWN** is outputted. If **POWERED DOWN** cannot be received within 65 s, the power supply shall be disconnected compulsorily.

1.7. Declaration of AT Command Examples

The AT command examples in this document are provided to help you learn about the use of the AT commands introduced herein. The examples, however, should not be taken as Quectel's recommendations or suggestions about how to design a program flow or what status to set the module into. Sometimes multiple examples may be provided for one AT command. However, this does not mean that there is a correlation among these examples, or that they should be executed in a given sequence. The URLs, domain names, IP addresses, usernames/accounts, and passwords (if any) in the AT command examples are provided for illustrative and explanatory purposes only, and they should be modified to reflect your actual usage and specific needs.

2 General Commands

2.1. ATI Display MT Identification

This Execution Command returns the MT identification.

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

Parameter

<objectID>	String type. Device type identifier.
<revision>	String type. Product firmware version identifier.

Example

```

ATI
Quectel
EG800Q
Revision: EG800QEULCR01A03M04

OK
```

2.2. AT+GMI Request Manufacturer Identification

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

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

2.3. AT+GMM Request TA Model Identification

This command returns the TA model identification. It is identical to **AT+CGMM** in *Chapter 2.6*.

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

Parameter

<objectID> String type. Device type identifier.

2.4. AT+GMR Request TA Firmware Revision Identification

This command returns the product firmware version. It is identical to **AT+CGMR**.

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

Parameter

<revision>	String type. product firmware version identifier.
------------	---

Example

```

AT+GMR
EG800QEULCR01A03M04

OK

```

2.5. AT+CGMI Request Manufacturer Identification

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

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

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

2.6. AT+CGMM Request MT Model Identification

This command returns the product model information. It is identical to the above **AT+GMM**.

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

Parameter

<objectID> String type. Product model identifier.

2.7. AT+CGMR Request MT Firmware Revision Identification

This command returns the MT firmware version identification. It is identical to **AT+GMR** in **Chapter 2.4**.

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

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

Parameter

<revision>	String type. MT firmware version identifier.
-------------------------	--

2.8. AT+GSN Request IMEI and SN

This command returns the International Mobile Equipment Identity (IMEI) number, which permits the user to identify individual ME device, and the Serial Number (SN) of the ME. It is identical to the **AT+CGSN** in *Chapter 2.9*.

AT+GSN Request International Mobile Equipment Identity (IMEI) and SN	
Test Command AT+GSN=?	Response +GSN: (list of supported <snt>s) OK
Write Command AT+GSN=<snt>	Response If <snt>=0, query SN of the ME: +GSN: <SN> OK If <snt>=1, query IMEI of the ME: +GSN: <IMEI> OK
Execution Command AT+GSN	Response <IMEI> OK Or ERROR If there is any error related to ME functionality: +CMS ERROR: <err>

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

Parameter

<snt>	Integer type. Whether to query SN or IMEI of the ME. 0 Query SN of the ME 1 Query IMEI of the ME
<SN>	String type. SN of the ME.
<IMEI>	String type. IMEI of the ME.
<err>	Error codes. For more details, see Chapter 12.5 .

2.9. AT+CGSN Request IMEI and SN

This command returns the International Mobile Equipment Identity (IMEI) number, which permits the user to identify individual ME device, and the Serial Number (SN) of ME. It is identical to the **AT+GSN** in **Chapter 2.8**.

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

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

Parameter

<snt>	Integer type. Whether to query SN or IMEI of the ME. 0 Query SN of the ME 1 Query IMEI of the ME
<SN>	String type. SN of the ME.
<IMEI>	String type. IMEI of the ME.
<err>	Error codes. For more details, see Chapter 12.5 .

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

This command resets all AT command settings to the default values specified by the manufacturer. (See **Table 12**).

AT&F Reset AT Command Settings to Factory Defaults	
Execution Command AT&F[<value>]	Response OK
Maximum Response Time	300 ms
Characteristics	/
Reference V.25ter	

Parameter

<value>	Integer type. <u>0</u> Reset all AT command settings to factory defaults
----------------------	---

2.11. AT&V Display Current Configuration

This command displays the current settings of certain AT command parameters (see **Table 2**), including the single-letter AT command parameters that are not readable.

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

Table 2: AT&V Response

AT&V
&C: 1
&D: 2
&F: 0
&W: 0
E: 1
Q: 0
V: 1
X: 4
Z: 0
S3: 13
S4: 10
S5: 8
S12: 50
OK

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

This command stores the current AT command settings to a user-defined profile in non-volatile memory. (See **Table 13**). The AT command settings will be automatically restored from the user-defined profile during power-up or if ATZ is executed.

AT&W Store Current AT Command Settings to User-Defined Profile

Execution Command AT&W[<n>]	Response OK
Maximum Response Time	300 ms
Characteristics	/
Reference V.25ter	

Parameter

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

2.13. ATZ Restore All AT Command Settings from User-Defined Profile

This command first resets the AT command settings to factory defaults. Afterwards, the AT command settings are restored from the user-defined profile in the non-volatile memory, if they have been stored with **AT&W** before (See **Table 14**).

Any additional AT command on the same command line may be ignored.

ATZ Restore All AT Command Settings from User-Defined Profile

Execution Command ATZ[<value>]	Response OK
Maximum Response Time	300 ms
Characteristics	/
Reference V.25ter	

Parameter

<value>	Integer type.
<u>0</u>	Reset to profile number 0.

2.14. ATQ Set Result Code Presentation Mode

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

ATQ Set Result Code Presentation Mode	
Execution Command ATQ<n>	Response If <n>=0: OK If <n>=1: (none)
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.
Reference V.25ter	

Parameter

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

2.15. ATV AT Response Format

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

The numeric equivalents and brief descriptions of results code are listed in **Table 3**.

ATV AT Response Format	
Execution Command ATV<value>	Response When <value>=0: 0 When <value>=1: OK
Maximum Response Time	300 ms

Characteristics	The command takes effect immediately. The configuration is not saved.
Reference V.25ter	

Parameter

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

Example

```

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

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

```

Table 3: Numeric Equivalents and Brief Descriptions of ATV0&ATV1 Result Codes

ATV1	ATV0	Description
OK	0	Acknowledges execution of a command
CONNECT	1	A connection has been established; the DCE is switching from command mode to data mode
RING	2	DCE has detected an incoming call signal from network
NO CARRIER	3	The connection has been terminated or the attempt to establish a connection failed
ERROR	4	Command not recognized, command line maximum length exceeded, parameter value invalid, or other problem with processing the command line

NO DIALTONE	6	No dial tone detected
BUSY	7	Engaged (busy) signal detected
NO ANSWER	8	"@" (Wait for Quiet Answer) dial modifier was used, but remote ringing followed by 5 s of silence was not detected before connection timer (S7) expired

2.16. ATE Set Command Echo Mode

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

ATE Set Command Echo Mode	
Execution Command ATE<value>	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.
Reference V.25ter	

Parameter

<value>	Integer type. Whether to echo the characters received from TE.
0	Echo mode OFF
<u>1</u>	Echo mode ON

2.17. ATS3 Set Command Line Termination Character

This command determines the character that terminates an incoming command line, which is recognized by TA. It is also generated for result codes and information text, along with character value set via **ATS4**.

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

Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.
Reference V.25ter	

Parameter

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

2.18. ATS4 Set Response Formatting Character

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

ATS4 Set Response Formatting Character	
Read Command ATS4?	Response <n> OK
Write Command ATS4=<n>	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.
Reference V.25ter	

Parameter

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

2.19. ATS5 Set Command Line Editing Character

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

ATS5 Set Command Line Editing Character	
Read Command ATS5?	Response <n> OK
Write Command ATS5=<n>	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.
Reference V.25ter	

Parameter

<n>	Integer type. Command line editing character. Range: 0–127. Default: 8.
------------------	---

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

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

ATX Set CONNECT Result Code Format and Monitor Call Progress	
Execution Command ATX<value>	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations can be saved with AT&W .
Reference V.25ter	

Parameter

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

2.21. AT+CFUN Set UE Functionality

This command controls the UE functionality level. It can also be used to reset the UE.

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

Parameter

<fun>	Integer type.	
	0	Minimum functionality
	1	Full functionality
<rst>	Integer type.	
	0	Do not reset the ME before setting it to <fun> functionality level.
	1	Reset the ME. Device is fully functional after the reset. This value is available only for <fun>=1
<err>	Error codes. For more details, see Chapter 12.4 .	

Example

```

AT+CFUN=0                                     //Switch UE to minimum functionality.
OK
AT+COPS?
+COPS: 0                                     //No operator is registered.

OK
AT+CPIN?
+CME ERROR: 13                               //(U)SIM failure.

AT+CFUN=1                                     //Switch UE to full functionality.
OK

+CPIN: SIM PIN
AT+CPIN=1234
OK

+CPIN: READY

+QUSIM: 1

+QIND: PB DONE

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

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

```

OK

2.22. AT+CMEE Error Message Format

This command controls the format of error result codes: **ERROR**, error numbers or verbose messages as **+CME ERROR: <err>** and **+CMS ERROR: <err>**. This command disables or enables the use of final result code **+CME ERROR: <err>** as the indication of an error.

AT+CMEE Error Message Format	
Test Command AT+CMEE=?	Response +CMEE: (list of supported <n>s) OK
Read Command AT+CMEE?	Response +CMEE: <n> OK
Write Command AT+CMEE=<n>	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.
Reference 3GPP TS 27.007	

Parameter

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

Example

```

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

AT+CMEE=1           //Enable error result code with numeric values.
OK

```

```

AT+CPIN?
+CME ERROR: 10
AT+CME=2 //Enable error result code with verbose (string) values.
OK
AT+CPIN?
+CME ERROR: SIM not inserted

```

2.23. AT+CSCS Select TE Character Set

This command informs the MT whose character set is used by the TE. TA is then able to convert character strings correctly between TE and MT character sets.

AT+CSCS Select TE Character Set	
Test Command AT+CSCS=?	Response +CSCS: (list of supported <chset>s) OK
Read Command AT+CSCS?	Response +CSCS: <chset> OK
Write Command AT+CSCS=<chset>	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.
Reference 3GPP TS 27.007	

Parameter

<chset>	String type. Character set
	"GSM" GSM default alphabet
	"IRA" International reference alphabet
	"UCS2" UCS2 alphabet

Example

```

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

```

```

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

```

2.24. AT+QURCCFG Configure URC Output Port

This command configures the URC output port.

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

Parameter

<urc_port_value>	String type. URC output port.
"usbat"	USB AT port
"usbmodem"	USB modem port
"uart1"	Main UART
"uart2"	Debug UART
"all"	All ports

Example

```

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

OK
AT+QURCCFG="urcport"
+QURCCFG: "urcport","usbat"

OK
AT+QURCCFG="urcport","usbmodem"
OK
AT+QURCCFG="urcport"
+QURCCFG: "urcport","usbmodem"

OK

```

2.25. AT+QDIAGPORT Configure Debug UART as AT Port

This command configures debug UART as AT port.

AT+QDIAGPORT Configure Debug UART as AT Port	
Read Command AT+QDIAGPORT=?	Response +QDIAGPORT: (list of supported <num>s) OK
Write Command AT+QDIAGPORT=<num>	Response OK Or ERROR
Maximum Response Time	12 s
Characteristics	The command takes effect after module is rebooted. The configuration is saved automatically.

Parameter

<num>	Integer type.
0	Debug UART port
1	AT port

NOTE

1. When Debug UART is configured to AT port, the baud rate is fixed to 115200 bps.
2. Outputting module booting message remains enabled when Debug UART is configured to AT port.
3. It is recommended not to set up data connection on Debug UART due to limited baud rate.

2.26. AT+QPPDROOP Terminate PPP Connection

This command terminates the PPP connection.

AT+QPPDROOP Terminate PPP Connection

Test Command AT+QPPDROOP=?	Response + QPPDROOP : (list of supported <op>s) OK
Write Command AT+QPPDROOP[=<op>]	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.

Parameter

<op>	Integer Type. The operation about dropping PPP connection. 0 Hung up PPP connection without sending TERM REQ frame to peer. 1 Hung up PPP connection and automatically send TERM REQ frame to peer. 2 Hung up PPP connection with sending TERM REQ frame to peer.
-------------------	--

NOTES

1. This command will return OK immediately and then perform following procedures:
Step1: Check if PPP link exists. Run step2 if exists.
Step2: Hung up PPP connection and then output NO CARRIER to the port that's used for dialing up.
2. If **<op>** is 1, TERM REQ frame will be sent to peer only when PPP connection exists and dial-up port is in data mode.
3. If **<op>** is omitted, the hung-up procedure is the same as one that **<op>** is set to 1.

Example

AT+QPPPDROP //send command from USB_AT port

OK //receive result from USB_AT port

//MCU's Dial-up port receive the TERM REQ frame from module

7E FF 7D 23 C0 21 7D 25 7D 25 7D 20 7D 24 5C A4 7E

NO CARRIER //PPP has been terminated and output this URC from dial-up port. If **ATV0** is set, module will show **NO CARRIER** as number format(3).

3 Serial Interface Control Commands

3.1. AT&C Set DCD Function Mode

This command controls the behavior of the UE's DCD (data carrier detection) line.

AT&C Set DCD Function Mode	
Execution Command AT&C[<value>]	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations can be saved with AT&W .
Reference V.25ter	

Parameter

<value>	Integer type. It determines how the state of circuit (DCD) relates to the detection of received line signal from the distant end.
0	DCD line is always ON
<u>1</u>	DCD line is ON only in the presence of data carrier

3.2. AT&D Set DTR Function Mode

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

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

	The configurations can be saved with AT&W .
Reference V.25ter	

Parameter

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

3.3. AT+IFC Set TE-TA Local Data Flow Control

This command sets the serial port flow control for data mode.

AT+IFC Set TE-TA Local Data Flow Control	
Test Command AT+IFC=?	Response +IFC: (list of supported <dce_by_dte>s),(list of supported <dte_by_dce>s) OK
Read Command AT+IFC?	Response +IFC: <dce_by_dte> , <dte_by_dce> OK
Write Command AT+IFC=<dce_by_dte>,<dte_by_dce>	Response OK Or ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations can be saved with AT&W .
Reference V.25ter	

Parameter

<dce_by_dte>	Integer type. Specifies the method that will be used by TE when receiving data from TA.
0	None
2	RTS flow control
<dte_by_dce>	Integer type. Specifies the method that will be used by TA when receiving data from TE.
0	None
2	CTS flow control

NOTE

Flow control is only applicable for data mode.

Example

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

3.4. AT+ICF Set TE-TA Control Character Framing

This command determines the serial interface character framing format and parity received by TA from TE.

AT+ICF Set TE-TA Control Character Framing

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

	Or ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations can be saved with AT&W .
Reference V.25ter	

Parameter

<format>	Integer type. <u>3</u> 8 data 0 parity 1 stop
<parity>	Integer type. 0 Odd 1 Even 2 Mark (1) <u>3</u> Space (0)

NOTE

1. The command is valid only in command mode.
2. **<parity>** field is omitted if no parity is specified in **<format>** field.

3.5. AT+IPR Set TE-TA Fixed Local Rate

This command queries and sets the UART baud rate.

AT+IPR Set TE-TA Fixed Local Rate	
Test Command AT+IPR=?	Response +IPR: (list of supported auto detectable <rate>s),(list of supported fixed-only <rate>s) OK
Read Command AT+IPR?	Response +IPR: <rate> OK
Write Command AT+IPR=<rate>	Response OK

Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations can be saved with AT&W .
Reference V.25ter	

Parameter

<rate>	String type. Baud rate per second.
	4800
	9600
	19200
	38400
	57600
	<u>115200</u>
	230400
	460800
	921600

NOTE

1. If a fixed baud rate is set, make sure that both TE (DTE, usually external processor) and TA (DCE, Quectel module) are configured to the same rate.
2. **AT+IPR** value cannot be restored with **AT&F** and **ATZ**; but it is still storable with **AT&W**.
3. In multiplex mode, the baud rate cannot be changed with the Write Command **AT+IPR=<rate>**; and the setting is invalid and cannot be stored even if **AT&W** is executed after the Write Command.
4. A selected baud rate takes effect after the Write Commands are executed and acknowledged by **OK**.
5. After the baud rate is changed, it is necessary to wait for 500 ms to send the next command.

Example

```

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

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

```


4 Status Control Commands

4.1. AT+CPAS Mobile Equipment Activity Status

This command queries the module's activity status.

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

Parameter

<pas>	Integer type. ME activity status.
	0 Ready
	2 Unknow
	3 Ringing
	4 Call in progress or call on hold
<err>	Error codes. For more details, see Chapter 12.4 .

Example

```

AT+CPAS
+CPAS: 0                                //The module is idle

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

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

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

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

OK
    
```

4.2. AT+CEER Extended Error Report

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

- Failure to activate, register, query, deactivate or deregister a supplementary service
- Failure to activate or deactivate a PDP context

The release cause **<text>** is a text that describes the cause information given by the network.

AT+CEER Extended Error Report	
Test Command AT+CEER=?	Response OK
Execution Command AT+CEER	Response +CEER: <text> OK Or ERROR

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

Parameter

<text>	Release cause text. Reason for the last call failure to setup or release (listed in Chapter 12.8). Both CS and PS domain call types are reported. Cause data is captured from Call Manager events and cached locally for later use by this command.
<err>	Error codes. For more details, see Chapter 12.4 .

4.3. AT+QINDCFG Configure URC Indication

This command controls URC indication.

AT+QINDCFG Configure URC Indication	
Test Command AT+QINDCFG=?	Response +QINDCFG: "all", (list of supported <enable>s),(list of supported <save_to_nvram>s) +QINDCFG: "csq", (list of supported <enable>s),(list of supported <save_to_nvram>s) +QINDCFG: "datastatus", (list of supported <enable>s),(list of supported <save_to_nvram>s) +QINDCFG: "mode", (list of supported <enable>s),(list of supported <save_to_nvram>s) +QINDCFG: "smsfull", (list of supported <enable>s),(list of supported <save_to_nvram>s) +QINDCFG: "smsincoming", (list of supported <enable>s),(list of supported <save_to_nvram>s) +QINDCFG: "act", (list of supported <enable>s),(list of supported <save_to_nvram>s) +QINDCFG: "sqi", (list of supported <enable>s),(list of supported <save_to_nvram>s) OK
Write Command AT+QINDCFG=<urctype>[,<enable>[,<save_to_nvram>]]	Response If the optional parameters are omitted, query the current setting:

	+QINDCFG: <urctype>,<enable> OK If the optional parameters are specified, set the URC indication configurations: OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms

Parameter

<urctype>	String type. URC type. "all" Main switch of all URCs. Default: ON. "csq" Indication of signal strength and channel bit error rate change (similar to AT+CSQ). Default: OFF. If this configuration is ON, present: +QIND: "csq",<rssi>,<ber> "datastatus" The URC of data service status. Default: OFF. If <enable> is set to ON, the following URC is reported: +QIND: "datastatus",<suspended>,<reason> (the URC is currently not supported) <suspended> Reserved. <reason> Integer type. The values are as follows: 0 SUSPEND_NO_CAUSE 1 SUSPEND_BY_RAU_ATTACH 2 SUSPEND_BY_LAU 3 SUSPEND_BY_TAU 4 SUSPEND_BY_CS_SERVICE 5 SUSPEND_BY_DS_OPERATION 6 SUSPEND_BY_POWERUP "mode" The URC of network main mode and sub mode. Default: OFF. If <enable> is set to ON, the following URC is reported: ^MODE: <main_mode>,<sub_mode> <main_mode> Integer type. Network main mode. 0 SYSINFO_SYSTEMO_MODE_NO_SERVICE 1 SYSINFO_SYSTEMO_MODE_RESERVED_1 2 SYSINFO_SYSTEMO_MODE_RESERVED_2 3 SYSINFO_SYSTEMO_MODE_GSM_GPRS 5 SYSINFO_SYSTEMO_MODE_WCDMA
------------------------	--

	17	SYSINFO_SYSTEMO_MODE_LTE
	<sub_mode>	Integer type. Network sub mode.
	0	SYSINFO_SYSTEMO_SUBMODE_NO_SERVICE
	1	SYSINFO_SYSTEMO_SUBMODE_GSM
	3	SYSINFO_SYSTEMO_SUBMODE_GSM_EGPRS
	5	SYSINFO_SYSTEMO_SUBMODE_UTRAN_HSDPA
	6	SYSINFO_SYSTEMO_SUBMODE_UTRAN_HSUPA
	7	SYSINFO_SYSTEMO_SUBMODE_UTRAN_HSPA
	8	SYSINFO_SYSTEMO_SUBMODE_UTRAN
	17	SYSINFO_SYSTEMO_SUBMODE_EUTRAN
"smsfull"		SMS storage full indication. Default: OFF. If this configuration is ON, present: +QIND: "smsfull",<storage> <storage> String type. Internal storage mode. "ME" UE mode "SM" SIM card mode
"smsincoming"		Incoming message indication. Default: ON. Related URCs list: +CMTI, +CMT, +CDS
"act"		Indication of network access technology change. Default: OFF. If this configuration is ON, present: +QIND: "act",<actvalue> <actvalue> is string format. Values: "LTE" "UNKNOWN" URC examples: +QIND: "act","LTE" +QIND: "act","UNKNOWN" Description of "act": 1. If module does not register on network, <actvalue> is "UNKNOWN". 2. If this configuration is ON, the URC of "act" is reported immediately. Only when the network access technology changes, a new URC is reported.
"sqi"		The URC of reference signal receiving power, reference signal receiving quality and signal to interference plus noise ratio. Default is OFF. If <enable> is set to ON, the following URC is reported: +QIND: "SQI",<RSRP>,<RSRQ>,<SINR> <RSRP> Integer type. Reference signal receiving power. Unit: dBm. <RSRQ> Integer type. Reference signal receiving quality. Unit: dB. <SINR> Integer type. Signal to interference plus noise

ratio. Unit: dB.

<enable>	Integer type. Whether URC indication is enabled.
0	OFF
1	ON
<save_to_nvram>	Integer type. Whether to save configuration into NVM.
0	Do not save
1	Save
<err>	Error codes, see Chapter 12.4 .

4.4. AT+QCFG Extended Configuration Settings

AT+QCFG Extended Configuration Settings

Test command

AT+QCFG=?

Response

...

+QCFG: "urc/ri/ring",(list of supported **<typeri>s**),(list of supported**<pulse_duration>s**),(list of supported **<pulse_count>s**)

+QCFG: "urc/ri/smsincoming",(list of supported **<typeri>s**),(list of supported **<pulse_duration>s**),(list of supported **<pulse_count>s**)

+QCFG: "urc/ri/other",(list of supported **<typeri>s**),(list of supported **<pulse_duration>s**),(list of supported **<pulse_count>s**)

+QCFG: "urc/ri/level",(list of supported **<level>s**)

+QCFG: "cmux/urcport",(list of supported **<URC_port>s**)

+QCFG: "cmux/baudratework",(list of supported **<enable>s**)

+QCFG: "urc/delay",(list of supported **<time>s**)

+QCFG: "urc/cache",(list of supported **<enable>s**)

+QCFG: "urc/port",(list of supported **<URC_port_value>s**)

+QCFG: "risignaltype",(list of supported **<RI_signal_type>s**)

+QCFG: "roamservice",(list of supported **<roam_mode>s**),(list of supported **<effect>s**)

+QCFG: "band",(list of supported **<bandval>s**),(list of supported **<ltebandval>s**)

+QCFG: "nwoptmz/acq",(list of supported **<flag>s**),(list of supported **<interval>s**)

+QCFG: "usbnet",(list of supported **<net>s**)

	<p>+QCFG: "aprstlevel", (list of supported <level>s)</p> <p>+QCFG: "modemrstlevel", (list of supported <level>s)</p> <p>+QCFG: "ntp", (list of supported <cnt>s), (list of supported <interval>s)</p> <p>+QCFG: "ledmode", (list of supported <mode>s)</p> <p>+QCFG: "nat", (list of supported <nat>s)</p> <p>+QCFG: "netmaskset", (list of supported <enable>s), <net mask></p> <p>+QCFG: "ppp/termframe", (list of supported <flag>s)</p> <p>+QCFG: "rf/tuner_cfg", (list of supported <index>s), (list of supported <lte bands>s)</p> <p>+QCFG: "tcp/windowsize", (list of supported <buffer>s), (list of supported <>window_size>s)</p> <p>+QCFG: "TCP/SendMode", (list of supported <mode>s)</p> <p>+QCFG: "fast/poweroff", (list of supported <n>s)</p> <p>+QCFG: "fota/cid", (list of supported <contextID>s)</p> <p>+QCFG: "qcautoconnect", (list of supported <data_format>s)</p> <p>+QCFG: "sms/listmsgmap", (list of supported <msgtype>s), (list of supported <msgmap>s)</p> <p>+QCFG: "sms/MeNum", (list of supported <value>s)</p> <p>OK</p>
Maximum Response Time	300 ms

4.4.1. AT+QCFG="urc/ri/ring" Set RI Behavior When RING URC is Presented

The ring indicator is active low. **AT+QCFG="urc/ri/ring"** specifies the RI behavior when URC **RING** is presented to indicate an incoming call.

The sum of <active_duration> and <inactive_duration> determines the **RING** indication interval of an incoming call.

AT+QCFG="urc/ri/ring" Set RI Behavior When RING URC is Presented	
<p>Write Command</p> <p>AT+QCFG="urc/ri/ring"[,<typeri>[,<pulse_duration>[,<pulse_count>]]]</p>	<p>Response</p> <p>If the optional parameters are omitted, query the current setting:</p> <p>+QCFG: "urc/ri/ring",<typeri>,<pulse_duration>,<pulse_count></p> <p>OK</p> <p>If any of the optional parameters is specified, set the RI</p>

	behavior when RING URC is presented: OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is saved automatically.

Parameter

<typeri>	String type. RI behavior when an URC is presented. "off" No change. Ring indicator remains inactive. "pulse" Pulse. Pulse width is determined by <pulse_duration> .
<pulse_duration>	Integer type. Set pulse width. Range: 1–2000. Default value: 120. Unit: ms. This parameter is only valid when <typeri> is "pulse". If this parameter is not needed, it can be set as null.
<pulse_count>	Integer type. Pulse count. It is valid only when <typeri> is "pulse". Range: 1–5. Default value: 1. Interval between two pulses is equal to <pulse_duration> .
<err>	Error codes. For more details, see Chapter 12.4 .

4.4.2. AT+QCFG="urc/ri/smsincoming" Set RI Behavior When Incoming SMS URCs are Presented

This command specifies the RI (ring indicator) behavior when the following URCs are presented: **+CMTI**, **+CMT**, **+CDS** and **+CBM**.

AT+QCFG="urc/ri/smsincoming" Set RI Behavior When Incoming SMS URCs are Presented

Write Command AT+QCFG="urc/ri/smsincoming"[,<typeri>,<pulse_duration>,<pulse_count>]]]	Response If the optional parameters are omitted, query the current setting: +QCFG: "urc/ri/smsincoming",<typeri>,<pulse_duration>,<pulse_count> OK If any of the optional parameters is specified, set the RI behavior when incoming SMS URCs are presented: OK Or
--	---

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

Parameter

<typeri>	String type. RI behavior when URCs are presented. "off" No change. Ring indicator remains inactive. "pulse" Pulse. Pulse width is determined by <pulse_duration> .
<pulse_duration>	Integer type. Set pulse width. Range: 1–2000. Default value: 120. Unit: ms. This parameter is only valid when <typeri> is "pulse".
<pulse_count>	Integer type. Pulse count. It is valid only when <typeri> is "pulse". Range: 1–5. Default value: 1. Interval between two pulses are equal to <pulse_duration> .
<err>	Error codes. For more details, see Chapter 12.4 .

4.4.3. AT+QCFG="urc/ri/other" Set RI Behavior When Other URCs are Presented

This command specifies the RI (ring indicator) behavior when other URCs are presented.

AT+QCFG="urc/ri/other" Set RI Behavior When Other URCs are Presented

Write Command AT+QCFG="urc/ri/other"[,<typeri>[,<pulse_duration>[,<pulse_count>]]]	Response If the optional parameters are omitted, query the current setting: +QCFG: "urc/ri/other",<typeri>,<pulse_duration>,<pulse_count> OK If the optional parameters are specified, set the RI behavior when other URCs are presented: OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
--	---

Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is saved automatically.

Parameter

<typeri>	String type. RI behavior when URCs are presented. "off" No change. Ring indicator keeps inactive. "pulse" Pulse. Pulse width is determined by <pulse_duration> .
<pulse_duration>	Integer type. Set the width of pulse. Range: 1–2000. Default value: 120. Unit: ms. It is valid only when <typeri> is "pulse".
<pulse_count>	Integer type. Pulse count. It is valid only when <typeri> is "pulse". Range: 1–5. Default value: 1. Interval between two pulses is equal to <pulse_duration> .
<err>	Error codes. For more details, see Chapter 12.4 .

4.4.4. AT+QCFG="urc/ri/level" Set Default Level of MAIN_RI Pin

This command sets the default level of MAIN_RI pin.

AT+QCFG="urc/ri/level" Set Default Level of MAIN_RI Pin	
Write Command AT+QCFG="urc/ri/level"[,<level>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "urc/ri/level",<level> OK If the optional parameter is specified, set the default level of RI pin OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is saved automatically.

Parameter

<level>	Integer type. Default level of RI pin.
----------------------	--

	0	low level
	<u>1</u>	high level
<err>	Integer type. Error code. For more details, see Chapter 12.4 .	

4.4.5. AT+QCFG="cmux/urcport" Set Output Port of CMUX URCs

This command sets the output port of CMUX URCs or queries the current setting.

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

Parameter

<URC_port>	Integer type. Output port of CMUX URCs. 0 All ports 1 Virtual port 1 <u>2</u> Virtual port 2 3 Virtual port 3 4 Virtual port 4
<err>	Integer type. Error code. For more details, see Chapter 12.4 .

4.4.6. AT+QCFG="cmux/baudratework" Set Baud Rate in CMUX Mode

This Command sets the baud rate in CMUX mode.

AT+QCFG="cmux/baudratework" Set Baud Rate Configuration in CMUX Mode	
Write Command AT+QCFG="cmux/baudratework"[,<enable>]	<p>Response</p> <p>If the optional parameter is omitted, query the current setting: +QCFG: "cmux/baudratework"[,<enable>]</p> <p>OK</p> <p>If the optional parameter is specified, set the baud rate in CMUX mode: OK Or ERROR</p> <p>If there is any error related to ME functionality: +CME ERROR: <err></p>
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is saved automatically.

Parameter

<enable>	Integer type. Whether it is allowed to set the CMUX baud rate. 0 Not allowed 1 Allowed
<err>	Integer type. Error code. For more details, see Chapter 12.4 .

4.4.7. AT+QCFG="urc/delay" Set Delay Time of URC Indication

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

AT+QCFG="urc/delay" Set Delay Time URC Indication Output	
Write Command AT+QCFG="urc/delay"[,<time>]	<p>Response</p> <p>If the optional parameter is omitted, query the current setting: +QCFG: "urc/delay",<time></p> <p>OK</p> <p>If the optional parameter is specified, set the delay time of URC indication starting from the end of RI pulse: OK Or</p>

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

Parameter

<time>	Integer type. Delay time of URC indication starting from the end of RI pulse: It is valid only when the RI pulse is greater than or equal to 0. Range: 0–120. Unit: millisecond. Default value: 0, which means no delay.
<err>	Error codes. For more details, see Chapter 12.4 .

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

AT+QCFG="urc/cache" Enable/Disable URC Cache	
Write Command AT+QCFG="urc/cache",<enable>	Response If the optional parameter is omitted, query the current setting: +QCFG: "urc/cache",<enable> OK If the optional parameter is specified, enable/disable URC cache: OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is not saved.

Parameter

<enable>	Integer type. Whether to enable/disable URC cache. 0 Disable
-----------------------	---

	1	Enable
<err>	Error codes. For more details, see Chapter 12.4 .	

Example

```

AT+QCFG="urc/cache"
+QCFG: "urc/cache",0      //Disable URC cache.

OK
AT+QCFG="urc/cache",1    //Enable URC cache.
OK
AT+QCFG="urc/cache"
+QCFG: "urc/cache",1

OK

//Make a call and send two messages to the module.
AT+QCFG="urc/cache",0    //Disable URC cache.
OK

```

4.4.9. AT+QCFG="urc/port" Set URC Output Port

AT+QCFG="urc/port" Set URC Output Port	
Write Command AT+QCFG="urc/port"[,<URC_port_value>]	Response if the optional parameter is omitted, query the current setting: +QCFG: "urc/port",<URC_port_value> OK If the optional parameter is specified, set URC output port: OK Or ERROR
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is not saved.

Parameter

<URC_port_value>	String type .URC output port. "usbat" USB AT port
------------------	---

"usbmodem"	USB Modem port
"uart1"	UART port
"all"	all port

Example

AT+QCFG=?

+QCFG: "urc/port",("usbat","usbmodem","uart1","all")

OK

AT+QCFG="urcport"

//Query the current URC output port.

+QCFG: "urc/port","usbat"

OK

AT+QCFG="urc/port","usbmodem"

//Set the URC output port to USB Modem port.

OK

AT+QCFG="urc/port"

+QCFG: "urc/port","usbmodem"

OK

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

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

AT+QCFG="risignalttype" RI Signal Output Carrier	
Write Command AT+QCFG="risignalttype",[<RI_signal_type>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "risignalttype",<RI_signal_type> OK If the optional parameter is specified, set the RI signal output carrier: OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms

Characteristics

This command takes effect immediately.
The configuration is saved automatically.

Parameter

<RI_signal_type>	<p>String type. RI signal output carrier.</p> <p><u>"respective"</u> Ring indicator is sent over the port through which URC is presented and the port can be queried with AT+QURCCFG="urcport". See Chapter 2.24 for details about the command.</p> <p>If URC is presented on UART port, it is a physical ring line. If URC is presented on USB modem port, it is a virtual ring line. If URC is presented on USB AT port, no ring line for USB AT port because it does not support ring lines.</p> <p>"physical" No matter which port URC is presented on, the RI pin will have a ring jump.</p>
<err>	Error codes. For more details, see Chapter 12.4 .

Example

```
AT+QCFG="risignalttype"
+QCFG: "risignalttype","respective"

OK
AT+QCFG="risignalttype","physical"
OK
AT+QCFG="risignalttype"
+QCFG: "risignalttype","physical"

OK
```

4.4.11. AT+QCFG="roamservice" Enable/Disable Roaming Service

This command enables or disables the roaming service.

AT+QCFG="roamservice" Enable/Diable Roaming Service

Write Command

AT+QCFG="roamservice"[,<roam_mode>[,<effect>]]

Response

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

+QCFG: "roamservice",<roam_mode>

OK

	<p>If any of the optional parameters are specified, enable/disable the roaming service:</p> <p>OK</p> <p>Or</p> <p>ERROR</p> <p>If there is any error related to ME functionality:</p> <p>+CME ERROR: <err></p>
Maximum Response Time	300 ms
Characteristics	<p><effect> determines when will the command take effect. The configuration is saved automatically.</p>

Parameter

<roam_mode>	<p>Integer type. Whether to enable/disable roaming service.</p> <p>1 Disable roaming service</p> <p>2 Enable roaming service</p> <p><u>255</u> Auto mode</p>
<effect>	<p>Integer type. When the command take effect.</p> <p>0 Take effect after UE reboots</p> <p><u>1</u> Take effect immediately</p>
<err>	Error codes. For more details, see Chapter 12.4 .

4.4.12. AT+QCFG="band" Configure Band

This command specifies the preferred frequency bands for UE network searching.

AT+QCFG="band" Configure Band

<p>Write Command</p> <p>AT+QCFG="band"[,<bandval>,<ltebandval></p>	<p>Response</p> <p>If the optional parameters are omitted, query the current setting:</p> <p>+QCFG: "band",<bandval>,<ltebandval></p> <p>OK</p> <p>If the optional parameters are specified, set the band:</p> <p>OK</p> <p>Or</p> <p>ERROR</p> <p>If there is any error related to ME functionality:</p> <p>+CME ERROR: <err></p>
---	---

Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is saved automatically.

Parameter

<bandval>	A hexadecimal value that specifies the LTE frequency bands.	
0	No change	
<ltebandval>	A hexadecimal value that specifies the LTE frequency band. If it is set to 0 or 0x40000000, it means not to change LTE frequency band. (e.g.: 0x15 = 0x1 (LTE B1) + 0x4 (LTE B3) + 0x10 (LTE B5))	
0		No change
0x1 (CM_BAND_PREF_LTE_EUTRAN_BAND1)		LTE B1
0x2 (CM_BAND_PREF_LTE_EUTRAN_BAND2)		LTE B2
0x4 (CM_BAND_PREF_LTE_EUTRAN_BAND3)		LTE B3
0x8 (CM_BAND_PREF_LTE_EUTRAN_BAND4)		LTE B4
0x10 (CM_BAND_PREF_LTE_EUTRAN_BAND5)		LTE B5
0x40 (CM_BAND_PREF_LTE_EUTRAN_BAND7)		LTE B7
0x80 (CM_BAND_PREF_LTE_EUTRAN_BAND8)		LTE B8
0x800 (CM_BAND_PREF_LTE_EUTRAN_BAND12)		LTE B12
0x1000 (CM_BAND_PREF_LTE_EUTRAN_BAND13)		LTE B13
0x2000 (CM_BAND_PREF_LTE_EUTRAN_BAND14)		LTE B14
0x20000 (CM_BAND_PREF_LTE_EUTRAN_BAND18)		LTE B18
0x40000 (CM_BAND_PREF_LTE_EUTRAN_BAND19)		LTE B19
0x80000 (CM_BAND_PREF_LTE_EUTRAN_BAND20)		LTE B20
0x1000000 (CM_BAND_PREF_LTE_EUTRAN_BAND25)		LTE B25
0x2000000 (CM_BAND_PREF_LTE_EUTRAN_BAND26)		LTE B26
0x8000000 (CM_BAND_PREF_LTE_EUTRAN_BAND28)		LTE B28
0x200000000 (CM_BAND_PREF_LTE_EUTRAN_BAND34)		LTE B34
0x2000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND38)		LTE B38
0x4000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND39)		LTE B39
0x8000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND40)		LTE B40
0x10000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND41)		LTE B41
0x 200000000000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND66)		LTE B66
0x400000000000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND71)		LTE B71
0x7FFFFFFFFFFFFFFFFF (CM_BAND_PREF_ANY)		Any frequency band
<err>	Error codes. For more details, see Chapter 12.4 .	

4.4.13. AT+QCFG="nwoptmz/acq" Save Searched Cell Database to NV Automatically

This command saves the searched sell database to NV automatically.

AT+QCFG="nwoptmz/acq" Save Searched Cell Database to NV Automatically

Write Command

AT+ QCFG="nwoptmz/acq"[,<flag>,<interval>]

Response

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

+QCFG: "nwoptmz/acq",<flag>,<interval>

OK

If any of the optional parameter is specified, enable/disable saving of the searched cell database to NV automatically:

OK

Or

ERROR

Characteristics

This command takes effect immediately.
The configuration is saved automatically.

Parameter

<flag>	Integer type. Enable/Disable saving of searched cell database to NV automatically. 0 Disable 1 Enable
<interval>	Integer type. Interval for checking for database changes. Range: 60–16777200. Default value: 3600. Unit: second.

NOTE

1. If **<flag>** is set to 0, it will disable saving of searched cell database to NV automatically and the database will be cleared.
2. If this function is enabled, the module prefers to select one cell in database to register after power-on. If all cells in the database are exhausted and the module still fails to register to the network, the module will search the network by scanning the full frequency.

Example

AT+QCFG="nwoptmz/acq",1,3600

OK

AT+QCFG="nwoptmz/acq"

+QCFG: "nwoptmz/acq",1,3600

OK

4.4.14. AT+QCFG="usbnet" Set Network Card Interface Type

This command sets the network card interface type.

AT+QCFG="usbnet" Set Network Card Interface Type	
Write Command AT+QCFG="usbnet"[,<net>]	<p>Response</p> <p>If the optional parameter is omitted, query the current setting: +QCFG: "usbnet",<net></p> <p>OK</p> <p>If the optional parameter is specified, set the network card interface type: OK Or ERROR</p> <p>If error is related to ME functionality: +CME ERROR:<err></p>
Maximum Response Time	300 ms
Characteristics	<p>The command takes effect after rebooting;</p> <p>The configuration is saved automatically.</p>

Parameter

<net>	Integer type. Network card interface type. 1 ECM interface 3 RNDIS interface
<err>	Error codes. For more details, see Chapter 12.4 .

4.4.15. AT+QCFG="aprstlevel" Set AP Dump Level

This command queries or sets AP dump level.

AT+QCFG="aprstlevel" Set AP Dump Level	
Write Command AT+QCFG="aprstlevel"[,<level>]	<p>Response</p> <p>If the optional parameter is omitted, query the current setting: +QCFG: "aprstlevel",<level></p> <p>OK</p> <p>If the optional parameter is specified, set AP dump level:</p>

	OK Or ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect after the module is rebooted. The configuration is saved automatically.

Parameter

<level>	Integer type. AP dump level.
0	Open AP dump. Module reboots and enters dump mode when an AP dump happens.
1	Close AP dump. Module only reboots when an AP dump happens.

4.4.16. AT+QCFG="modemrstlevel" Set CP Dump Level

This command queries or sets CP (i.e., Modem) dump level.

AT+QCFG="modemrstlevel" Set CP Dump Level	
Write Command AT+QCFG="modemrstlevel"[,<level>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "modemrstlevel",<level> OK If the optional parameter is specified, set CP dump level: OK Or ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect after the module is rebooted. The configuration is saved automatically.

Parameter

<level>	Integer type. CP dump level.
0	Open CP dump. Module reboots and enters dump mode when a CP dump happens.
1	Close CP dump. Module only reboots when a CP dump happens.

NOTE

To ensure the module enters dump mode when either AP dump or CP dump happens, you must reboot the module after both **AT+QCFG="aprstlevel",0** and **AT+QCFG="modemrstlevel",0** are executed

successfully.

4.4.17. AT+QCFG="ntp" Set Maximum NTP Re-transmission Count and Interval

This command sets the maximum re-transmission times and the interval of NTP.

AT+QCFG="ntp" Set Maximum NTP Re-transmission Count and Interval

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

Parameter

<cnt>	Integer type. NTP re-transmission count. Range: 1–10. Default value: 3.
<interval>	Integer type. NTP re-transmission interval. Range: 5–60. Default value: 15.

Example

```

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

OK
AT+QCFG="ntp",5,20      //Set NTP re-transmission count and interval.
OK
AT+QCFG="ntp"           //Query the current setting.
+QCFG: "ntp",5,20

OK

```

4.4.18. AT+QCFG="ledmode" Set NET_STATUS Output Mode

This command queries or sets the output mode of NET_STATUS pin.

AT+QCFG="ledmode" Set NET_STATUS Output Mode	
Write Command AT+QCFG="ledmode"[,<mode>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "ledmode",<mode> OK If the optional parameter is specified, set the output mode of NET_STATUS pin: OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristic	The command takes effect immediately. The configuration is saved automatically.

Parameter

<mode>	Integer type. Output mode of NET_STATUS pin. <u>0</u> Flicker mode. Network searching: LED is on for 200 ms (high level); LED is off for 1800 ms (low level) Idle: LED is on for 1800 ms (high level); LED is off for 200 ms (low level) Data transmission: LED is on for 125 ms (high level); LED is off for 125 ms (low level) 1 Output high level when attaching to the network and low level in other cases. 2 Custom setting of output mode of NET_STATUS pin.
<err>	Integer type. Error code. For more details, see Chapter 12.4 .

Example

```

AT+QCFG="ledmode",1 //Output high level when attaching to the network and low level in other
                    cases.

OK
AT+QCFG="ledmode"   //Query the current setting.
+QCFG: "ledmode",1

```

OK

4.4.19. AT+QCFG="nat" Set NIC Working Mode

This command sets the NIC working mode.

AT+QCFG="nat" Set NIC Working Mode	
Write Command AT+QCFG="nat",<nat>	<p>Response</p> <p>If the optional parameter is omitted, query the current setting: +QCFG: "nat",<nat></p> <p>OK</p> <p>If the optional parameter is specified, set the NIC working mode: OK Or ERROR</p> <p>If there is any error related to ME functionality: +CME ERROR: <err></p>
Maximum Response Time	300 ms
Characteristics	The command takes effect after rebooting; The configuration is saved automatically.

Parameter

<nat>	Integer type. NIC working mode. <u>0</u> Routing mode 1 NIC mode
<err>	Integer type. Error code. For more details, see Chapter 12.4 .

Example

```
AT+QCFG="nat",1 //Set NIC working mode to NIC mode.
OK
```

4.4.20. AT+QCFG="netmaskset" Enable/Disable Customized Netmask

This command enables or disables setting of the netmask.

AT+QCFG="netmaskset" Enable/Disable Customized Netmask

Write Command AT+QCFG="netmaskset"[,<enable>[,<netmask>]]	Response If the optional parameters are omitted, query the current setting: +QCFG: "netmaskset",<enable> OK If any of the optional parameters is specified, enable or disable customized netmask: OK Or ERROR
Maximum Response Time	300 ms
Characteristic	This command takes effect after reconnecting the network card. The configurations is saved automatically.

Parameter

<enable>	Integer type. Enable/disable customized netmask. <u>0</u> Disable. Netmask is set by the rule inside the module. 1 Enable. Netmask is set by <netmask> .
<netmask>	String type. Customized netmask. It is valid only when <enable>=1 . Example: "255.255.255.0".

Example

```

AT+QCFG="netmaskset"           //Query the current setting.
+QCFG: "netmaskset",0          //Customized netmask is disabled.

OK
AT+QCFG="netmaskset",1,"255.255.255.0" //Enable customized netmask and set netmask.
OK
AT+QCFG="netmaskset"
+QCFG: "netmaskset",1

OK
AT+QCFG="netmaskset",0          //Disable customized netmask and set netmask.
OK

```

4.4.21. AT+QCFG="ppp/termframe" Enable/Disable PPP TERM Frame Sending

This command enables/disables the PPP TERM frame sending when PPP connection is terminated by

the module.

AT+QCFG="ppp/termframe" Enable/Disable PPP TERM Frame Sending	
Write Command AT+QCFG="ppp/termframe"[,<flag>]	<p>Response</p> <p>If the optional parameter is omitted, query the current setting: +QCFG: "ppp/termframe",<flag></p> <p>OK</p> <p>If the optional parameter is specified, enable/disable PPP TERM frame sending: OK Or ERROR</p> <p>If there is any error related to ME functionality: +CME ERROR:<err></p>
Maximum Response Time	300 ms
Characteristics	<p>The command takes effect after rebooting.</p> <p>The configuration is saved automatically.</p>

Parameter

<flag>	Integer type. Enable/disable TERM frame sending when PPP connection is terminated by the module . <div> <div>0</div> <div>Disable</div> </div> <div> <div>1</div> <div>Enable</div> </div>
<err>	Integer type. Error code. For more details, see Chapter 12.4 .

NOTE

If **AT+QPPPDROP** hangs up the PPP connection with a TERM frame, module sends the TERM frame to MCU regardless of whether **<flag>** is 0 or 1.

Example

```

AT+QCFG="ppp/termframe",1 //Enable PPP TERM frame sending:
OK
AT+QCFG="ppp/termframe" //Query the current setting.
+QCFG: "ppp/termframe",1
OK

```

4.4.22. AT+QCFG="rf/tuner_cfg" Set Mapping Between RF Tuner and RF Bands

This command sets the mapping between RF tuner and RF bands.

AT+QCFG="rf/tuner_cfg" Set Mapping Between RF Tuner and RF Bands	
Write Command AT+QCFG="rf/tuner_cfg" [<index>,<ltebands>]	<p>Response</p> <p>If the optional parameters are omitted, query the current setting: +QCFG: "rf/tuner_cfg",<index>,<ltebands></p> <p>OK</p> <p>If the optional parameters are specified, set the mapping between RF tuner and RF bands: OK Or ERROR</p>
Maximum Response Time	300 ms
Characteristics	This command takes effect after rebooting. The configuration is saved automatically.

Parameter

<index>	Integer type. Pin level status. Range: 0–3 <u>0</u> FEM6 at low level, FEM5 at low level 1 FEM6 at low level, FEM5 at high level 2 FEM6 at high level, FEM5 at low level 3 FEM6 at high level, FEM5 at high level
<ltebands>	String type. LTE bands, separated by commas. (e.g., "1,3,5", etc.)

NOTE

- For EG800Q series module, FEM5 corresponds to pin 105 and FEM6 corresponds to pin 104.
- For EG91xQ family modules, FEM5 corresponds to pin 76 and FEM6 corresponds to pin 77.

Example

```

AT+QCFG="rf/tuner_cfg" //Query the current setting.
+QCFG: "rf/tuner_cfg",0,"1,2,3,4,8,25,39"
"rf/tuner_cfg",1,"5,18,19,20,26"
"rf/tuner_cfg",2,"12,13,28"
"rf/tuner_cfg",3,"7,38,40,41"

```

OK

//Set the LTE bands, i.e., FEM 6 at high level and FEM 5 at low level.

AT+QCFG="rf/tuner_cfg",2,"2,12,13,25,28"

OK

AT+QCFG="rf/tuner_cfg" //Query the current setting.

+QCFG: "rf/tuner_cfg",0,"1,3,4,8,39"

"rf/tuner_cfg",1,"5,18,19,20,26"

"rf/tuner_cfg",2,"2,12,13,25,28"

"rf/tuner_cfg",3,"7,38,40,41"

OK

4.4.23. AT+QCFG="tcp/windowsize" Set TCP Window Available Size

This command sets the available size of TCP window when sending/receiving data.

AT+QCFG="tcp/windowsize" Set TCP Window Available Size	
Write Command AT+QCFG="tcp/windowsize",<buffer>[,<window_size>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "tcp/windowsize",<buffer>,<window_size> OK If the optional parameter is specified, set TCP window available size: OK Or ERROR
Maximum Response Time	300 ms
Characteristic	The command takes effect immediately. The configuration is not saved.

Parameter

<buffer>	Integer type. Set whether to receive or sending buffer size. 0 Receive buffer size 1 Send buffer size
<window_size>	Integer type. Available TCP window size. Range: 16–100. Default value: 16.
<err>	Error codes. For more details, see Chapter 12.4 .

4.4.24. AT+QCFG="TCP/SendMode" Set TCP Sending Mode

This command configures TCP sending mode.

AT+QCFG="TCP/SendMode" Set TCP Sending Mode	
Write Command AT+QCFG="TCP/SendMode"[,<mode>]	Response If optional parameter is omitted, query the current setting: +QCFG: "TCP/SendMode",<mode> OK If the optional parameter is specified, set TCP sending mode: OK Or ERROR If error is related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristic	The command takes effect immediately. The configuration is not saved.

Parameter

<mode>	Integer type. Set when to send SEND OK . 0 SEND OK is sent immediately after TCP socket sends data from serial port. 1 SEND OK is sent after receiving an ACK from the remote TCP socket. 2 <SocketID>,SEND OK is sent after receiving an ACK from the remote TCP socket.
<err>	Error codes. For more details, see Chapter 12.4 .

Example

```
AT+QCFG="TCP/SendMode"
+QCFG: "TCP/SendMode",0

OK
AT+QCFG="TCP/SendMode",1
OK
```

4.4.25. AT+QCFG="fast/poweroff" Enable/Disable Fast Power-Off

This command enables or disables fast power-off.

AT+QCFG="fast/poweroff" Enable/Disable Fast Power-Off	
Write Command AT+QCFG="fast/poweroff",<n>	Response If the optional parameter is omitted, query the current setting: +QCFG: "fast/poweroff",<n> OK If the optional parameter is specified, enable/disable fast power-off: OK Or ERROR
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is saved automatically.

Parameter

<n>	Integer type. Enable/disable fast power-off. <u>0</u> Disable 1 Enable
<err>	Integer type. Error code. For more details, see Chapter 12.4 .

Example

```

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

OK
AT+QCFG="fast/poweroff",1         //Enable fast power-off.
OK
AT+QCFG="fast/poweroff"
+QCFG: "fast/poweroff",1         //Fast power-off is enabled.

OK

```

4.4.26. AT+QCFG="fota/cid" Set PDP Context ID for FOTA Download

This command sets the PDP context ID for FOTA download.

AT+QCFG="fota/cid" Set PDP Context ID for FOTA Download	
Write Command AT+QCFG="fota/cid"[,<contextID>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "fota/cid",<contextID> OK If the optional parameter is specified, set PDP context ID for FOTA download: OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is not saved.

Parameter

<contextID>	Integer type. Context ID. Range: 1–15. Default value: 1.
<err>	Integer type. Error code. For more details, see Chapter 12.4 .

4.4.27. AT+QCFG="qcautoconnect" Disable/enable Auto Connect Function in ECM Mode

This command disable/enable the auto connect function (data call) when USB mode is ECM.

AT+QCFG="qcautoconnect" Set Auto Connect Function in ECM Mode	
Write Command AT+QCFG="qcautoconnect"[,<data_format>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "qcautoconnect",<data_format> OK

	<p>If the optional parameter is specified, set the auto connect function in ECM mode:</p> <p>OK</p> <p>Or</p> <p>ERROR</p>
Maximum Response Time	300 ms
Characteristics	/

Parameter

<data_format>	Integer type. Disable/enable auto connect function in ECM mode.
0	Disable auto connect
1	Enable auto connect

4.4.28. AT+QCFG="sms/listmsgmap" List Message Map

This command lists the message map with **<msgtype>** in the memory storage **<mem1>** specified by **AT+CPMS**.

AT+QCFG="sms/listmsgmap" List Message Map	
<p>Write Command</p> <p>AT+QCFG="sms/listmsgmap",<msgtype></p>	<p>Response</p> <p>+QCFG: "sms/listmsgmap",<msgtype>,<msgmap></p> <p>OK</p> <p>Or</p> <p>ERROR</p> <p>If there is any error related to ME functionality:</p> <p>+CME ERROR: <err></p>
Maximum Response Time	300 ms
Characteristics	/

Parameter

<msgtype>	String type. Message type.
"REC UNREAD"	Received unread messages
"REC READ"	Received read messages
"STO UNSENT"	Stored unsent messages
"STO SENT"	Stored sent messages
<msgmap>	String type. Bit map of all messages in the storage specified by <mem1> of AT+CPMS .

If the bit is 1, it means the message is on the type specified by **<msgtype>**. If the bit is 0, it means the message is not on the type specified by **<msgtype>**;

The position of the bit in bit map specified by **<msgtype>** indicates the message index in the storage specified by **<mem1>** of **AT+CPMS**.

<err> Integer type. Error code. For more details, see **Chapter 12.4**.

Example

AT+CPMS?

+CPMS: "ME",0,255,"ME",0,255,"ME",0,255

OK

AT+QCFG="sms/listmsgmap","REC UNREAD" //List the received unread message map.

+QCFG: "sms/listmsgmap","REC UNREAD","000F5B0000"

OK

4.4.29. AT+QCFG="sms/MeNum" Set the Number of Short Messages Stored by ME

This command sets the number of short messages that can be stored by ME.

AT+QCFG="sms/MeNum" Set the Number of Short Messages Stored by ME

Write Command AT+QCFG="sms/MeNum"[,<value>]	Response If the optional parameter is omitted, query the current setting: +QCFG: "sms/MeNum",<value> OK If the optional parameter is specified, set the number of messages stored by ME. OK Or ERROR
Maximum Response Time	300 ms
Characteristic	The command takes effect after the module is rebooted. The configuration is saved after power-off.

Parameter

<value> Integer type. Number of messages stored by ME. Range: 0–255. Default value: 255.

Example

```
AT+QCFG="sms/MeNum" //Query the setting of sms/MeNum.  
+QCFG: "sms/MeNum",255  
  
OK
```

5 (U)SIM Related Commands

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

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

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

Parameter

<IMSI>	International Mobile Subscriber Identity (string without double quotes)
<err>	Error codes. For more details, see Chapter 12.4 .

Example

```

AT+CIMI
460023210226023           //Query IMSI number of (U)SIM which is attached to ME
OK

```

5.2. AT+CLCK Facility Lock

This command locks, unlocks or interrogates a MT or a network facility **<fac>**. It can be aborted when network facilities are being set or interrogated. The factory default password of PF, PN, PU, PP and PC lock is "12341234". For Write Command, **<passwd>** is normally needed to do such actions. When querying the status of network service (**<mode>**=2), the response line for 'not active' case (**<status>**=0) should be returned only if service is not active for any **<class>**.

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

Parameter

<fac>	String type. "SC" (U)SIM (lock SIM/UICC card installed in the currently selected card slot) (SIM/UICC requests password at MT power-up and when this lock command issued).
<mode>	Integer type. Network service status. 0 Unlock 1 Lock 2 Query status
<passwd>	String type. Password.

<class>	Integer type.
1	Voice
2	Data
4	FAX
7	All telephony except SMS
8	Short message service
16	Data circuit synchronization
32	Data circuit asynchronization
<status>	Integer type. Current status of the specified <class> .
0	Off
1	On

Example

```

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

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

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

```

5.3. AT+CPIN Enter PIN

This command is used to enter a password or queries if the module requires a password before it can be operated. The password may be (U)SIM PIN, (U)SIM PUK, PH-SIM PIN, etc.

Read Command returns an alphanumeric string indicating whether or not some password is required.

TA stores the password, such as (U)SIM PIN, (U)SIM PUK, etc., which is necessary for operating. If the PIN is to be entered twice, the TA automatically repeats the PIN. If no PIN request is pending, no action is taken and an error message **+CME ERROR** is returned to TE.

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

AT+CPIN Enter PIN	
Test Command AT+CPIN=?	Response OK
Read Command AT+CPIN?	Response +CPIN: <code> OK
Write Command AT+CPIN=<pin>[,<new_pin>]	Response OK If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	5 s
Characteristics	The command takes effect immediately. The configuration is saved automatically.
Reference 3GPP TS 27.007	

Parameter

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

Example

```
//Enter PIN.
AT+CPIN?
+CPIN: SIM PIN //MT is waiting for SIM PIN to be given.

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

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

```

+CPIN: READY

OK
//Enter PUK and PIN.
AT+CPIN?
+CPIN: SIM PUK                                //MT is waiting for SIM PUK to be given.

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

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

OK

```

5.4. AT+CPWD Change Password

This command sets a new password for the facility lock function defined by **AT+CLCK**.

This Test Command returns a list of pairs that are present the available facilities and the maximum length of their passwords.

AT+CPWD Change Password	
Test Command AT+CPWD=?	Response +CPWD: ("SC",8) OK
Write Command AT+CPWD=<fac>,<oldpwd>,<newpwd>	Response OK
Maximum Response Time	5 s
Characteristics	The command takes effect immediately. The configuration is saved automatically.
Reference 3GPP TS 27.007	

Parameter

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

Example

```

AT+CPIN?
+CPIN: READY

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

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

+CPIN: READY

```

5.5. AT+CSIM Generic (U)SIM Access

This command allows a direct control of the (U)SIM installed in the selected card slot by a distant application on the TE. The TE keeps the processing (U)SIM information within the frame specified with GSM/UMTS.

AT+CSIM Generic (U)SIM Access	
Test Command AT+CSIM=?	Response OK
Write Command AT+CSIM=<length>,<command>	Response +CSIM: <length>,<response> OK Or

	ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved automatically.
Reference 3GPP TS 27.007	

Parameter

<length>	Integer type. Length of <command> or <response> string.
<command>	Command transferred by the MT to the (U)SIM in the format described in <i>3GPP TS 51.011</i> .
<response>	Response to the command transferred by the (U)SIM to the MT in the format described in <i>3GPP TS 51.011</i> .
<err>	Error codes. For more details, see Chapter 12.4 .

5.6. AT+CRSM Restricted (U)SIM Access

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

AT+CRSM Restricted (U)SIM Access	
Test Command AT+CRSM=?	Response OK
Write Command AT+CRSM=<command>[,<fileId>[,<P1>[,<P2>[,<P3>[,<data>]][,<pathId>]]]	Response +CRSM: <sw1>,<sw2>[,<response>] OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristic	The command takes effect immediately. The configuration is saved automatically.

Reference
 3GPP TS 27.007

Parameter

<command>	Integer type. (U)SIM command number. 176 READ BINARY 178 READ RECORD 192 GET RESPONSE 214 UPDATE BINARY 220 UPDATE RECORD 242 STATUS
<fileId>	Integer type. Identifier of an elementary data file on (U)SIM, if used by <command> .
<P1>, <P2>, <P3>	Integer type. Parameters passed on by the MT to the (U)SIM. These parameters are mandatory for every command, except GET RESPONSE and STATUS. The values are described in <i>3GPP TS 51.011</i> .
<data>	Information to be written to the (U)SIM (hexadecimal character format; refer to AT+CSCS).
<pathId>	String type. Path of an elementary file on a SIM/UICC in hexadecimal format.
<sw1>, <sw2>	Integer type. Information from the (U)SIM about the execution of the actual command. These parameters are delivered to the TE in both cases, on successful or failed execution of the command.
<response>	Response of a successful completion of the command previously issued (hexadecimal character format; refer to AT+CSCS). STATUS and GET RESPONSE return data, which gives information about the current elementary data field. The information includes the type of file and its size (refer to <i>3GPP TS 51.011</i>). After READ BINARY, READ RECORD or RETRIEVE DATA command, the requested data will be returned. <response> is not returned after a successful UPDATE BINARY, UPDATE RECORD or SET DATA command.
<err>	Error codes. For more details, see Chapter 12.4 .

5.7. AT+QCCID Show ICCID

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

AT+QCCID Show ICCID	
Test Command	Response
AT+QCCID=?	OK
Execution Command	Response

AT+QCCID	+QCCID: <ICCID> OK Or ERROR
Maximum Response Time	300 ms
Characteristics	/

Parameter

<ICCID>	String without double quotes. ICCID (Integrated Circuit Card Identifier) number of the (U)SIM card.
---------	---

Example

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

OK
```

5.8. AT+QPINC Display PIN Remainder Counter

This command queries the number of attempts left to enter the password of (U)SIM PIN/PUK.

AT+ QPINC Display PIN Remainder Counter	
Test Command AT+QPINC=?	Response +QPINC: (list of supported <facility>s) OK
Read Command AT+QPINC?	Response +QPINC: "SC",<PIN_counter>,<PUK_counter> +QPINC: "P2",<PIN_counter>,<PUK_counter> OK
Write Command AT+QPINC=<facility>	Response +QPINC: <facility>,<PIN_counter>,<PUK_counter> OK Or ERROR

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

Parameter

<facility>	String type. "SC" (U)SIM PIN "P2" (U)SIM PIN2
<PIN_counter>	Integer type. Number of attempts left to enter PIN. Maximum value: 3.
<PUK_counter>	Integer type. Number of attempts left to enter PUK. Maximum value: 10.
<err>	Error codes. For more details, see Chapter 12.4 .

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

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

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

Parameter

<status>	Integer type. Initialization status of (U)SIM card. Actual value is the sum of several of the following four states (e.g. 7 = 1 + 2 + 4 means CPIN READY & SMS DONE & PB DONE). Default: 7. 0 Initial state 1 CPIN READY. Operation like PIN locking/unlocking is allowed 2 SMS DONE. SMS initialization completed
-----------------------	---

4 PB DONE. Phonebook initialization completed

5.10. AT+QSIMDET (U)SIM Card Detection

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

AT+QSIMDET (U)SIM Card Detection	
Test Command AT+QSIMDET=?	Response +QSIMDET: (list of supported <enable>s),(list of supported <insert_level>s) OK
Read Command AT+QSIMDET?	Response +QSIMDET: <enable> , <insert_level> OK
Write Command AT+QSIMDET=<enable>,<insert_level> >	Response OK Or ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect after module is rebooted. The configuration is saved automatically.

Parameter

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

NOTE

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

Example

```

AT+QSIMDET=1,0           //Set (U)SIM card detection pin level as low when (U)SIM card is inserted.
OK
<Remove (U)SIM card>      //Remove (U)SIM card
+CPIN: NOT READY
<Insert (U)SIM card>      //Insert (U)SIM card.
+CPIN: READY              //PIN1 of (U)SIM card is unlocked.
    
```

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

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

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

Parameter

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

2 Unknown, before (U)SIM initialization

Example

```

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

OK
AT+QSIMDET=1,0
OK
AT+QSIMSTAT=1           //Enable (U)SIM card insertion status report.
OK
AT+QSIMSTAT?
+QSIMSTAT: 1,1

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

CPIN: NOT READY
AT+QSIMSTAT?
+QSIMSTAT: 1,0

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

+CPIN: READY
    
```

5.12. AT+CCHO Open Logical Channel

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

AT+CCHO Open Logical Channel	
Test Command AT+CCHO=?	Response OK
Write Command AT+CCHO=<dfname>	Response <sessionID> OK Or

	ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.

Parameter

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

NOTE

The logical channel number is contained in the CLASS byte of an APDU command, and implicitly contained in all APDU commands sent to a UICC. MT manages the logical channel part of the APDU CLASS byte and to ensures that the chosen logical channel is relevant for **<sessionID>** indicated in the AT command. See *3GPP TS 31.101 [65]* for further information on logical channels in APDU command protocol.

Example

```
AT+CCHO=? //Test command.
OK
AT+CCHO="A0000000871002FF86FFFF89FFFFFFFF" //<dfname> is made up of AID strings.
+CCHO: 1 //The session ID is 1.
OK
```

5.13. AT+CGLA UICC Logical Channel Access

This command accesses a UICC logical channel.

AT+CGLA UICC Logical Channel Access

Test Command AT+CGLA=?	Response OK
Write Command AT+CGLA=<sessionID>,<length>,<command>	Response +CGLA: <length>,<response>

	OK Or ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.

Parameter

<sessionID>	Integer type. Identifier of the session for sending the APDU commands to the UICC. The commands to the UICC when targeting applications on the smart card using a logical channel other than the default channel (channel "0").
<length>	Integer type. Length of the characters that are sent to TE in <command> or <response> (Twice the actual length of the command or response).
<command>	Command passed on by the MT to the UICC in the format described in 3GPP TS 31.101 [65] (hexadecimal character format; refer to AT+CSCS)
<response>	Response to the command passed on by the UICC to the MT in the format as described in 3GPP TS 31.101 [65] (hexadecimal character format; refer to AT+CSCS).

Example

```

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

```

5.14. AT+CCHC Close Logical Channel

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

AT+CCHC Close Logical Channel	
Test Command AT+CCHC=?	Response OK
Write Command AT+CCHC=<sessionID>	Response OK Or ERROR

Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.

Parameter

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

Example

```

AT+CCHC=?           //Test command.
OK
AT+CCHC=1           //Close logical channel: 1.
OK

```

6 Network Service Commands

6.1. AT+COPS Operator Selection

This command returns the current operators and their status, and allows setting automatic or manual network selection.

The Test Command returns a set of five parameters, each representing an operator present in the network. Any of the formats may be unavailable and should be an empty field. The list of operators will be ordered as follows: home network, networks referenced in (U)SIM and other networks.

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

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

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

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

Parameter

<stat>	Integer type. 0 Unknown 1 Operator available 2 Current operator 3 Operator forbidden
<oper>	Operator in format as per<format>.
<mode>	Integer type. Determines whether <oper> is present or not. 0 Automatic mode. <oper> field is omitted 1 Manual operator selection. <oper> field is present and <Act> optionally 2 Manually deregister from network 3 Set only <format> (for AT+COPS? Read Command), and do not attempt registration/deregistration (<oper> and <Act> fields are ignored). This value is invalid in Read Command response. 4 Manual/automatic selection. <oper> field is present. If manual selection fails, automatic mode (<mode>=0) is entered
<format>	Integer type. Indicates the format of <oper>. 0 Long format alphanumeric <oper> up to 16 characters 1 Short format alphanumeric <oper> 2 Numeric <oper>. GSM location area identification number
<Act>	Integer type. Access technology selected. Values 3, 4, 5 and 6 occur only in the Read Command response while MS is in data service state and is not intended for AT+COPS Write Command. 0 GSM 2 UTRAN 3 GSM W/EGPRS 4 UTRAN W/HSDPA 5 UTRAN W/HSUPA 6 UTRAN W/HSDPA and HSUPA 7 E-UTRAN 100 CDMA

<err> Error codes. For more details, see **Chapter 12.4**.

Example

```

AT+COPS=?                                     //List all current network operators.
+COPS: (1,"CHN-UNICOM","UNICOM","46001",2),(1,"CHN-UNICOM","UNICOM","46001",0),(2,"CH
N-UNICOM","UNICOM","46001",7),(1,"46011","46011","46011",7),(3,"CHINA MOBILE","CMCC","46
000",0),(0,1,2,3,4),(0,1,2)

OK
AT+COPS?                                     //Query the currently selected network operator.
+COPS: 0,0,"CHN-UNICOM",7

OK

```

6.2. AT+CREG Network Registration Status

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

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

AT+CREG Network Registration Status	
Test Command AT+CREG=?	Response +CREG: (list of supported <n>s) OK
Read Command AT+CREG?	Response +CREG: <n>,<stat>[,<LAC>,<ci>[,<Act>]] OK If there is any error related to ME functionality: +CME ERROR: <err>
Write Command AT+CREG[=<n>]	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.

Reference
3GPP TS 27.007

Parameter

<n>	Integer type. Whether to enable related registration network. 0 Disable network registration URC 1 Enable network registration URC +CREG: <stat> 2 Enable network registration URC with location information: +CREG: <stat>[,<LAC>,<ci>[,<Act>]]
<stat>	Integer type. Registration network status. 0 Not registered. ME is not currently searching a new operator to register to 1 Registered, home network 2 Not registered, but ME is currently searching a new operator to register to 3 Registration denied 4 Unknown 5 Registered, roaming
<LAC>	String type. Two-byte location area code in hexadecimal format.
<ci>	String type. 16-bit (GSM) or 28-bit (UMTS/LTE) cell ID in hexadecimal format.
<Act>	Integer type. Access technology selected. 0 GSM 2 UTRAN 3 GSM W/EGPRS 4 UTRAN W/HSDPA 5 UTRAN W/HSUPA 6 UTRAN W/HSDPA and HSUPA 7 E-UTRAN
<err>	Error codes. For more details, see Chapter 12.4 .

Example

```

AT+CREG=1
OK

+CREG: 1 //URC reports that ME has registered on network.
AT+CREG=2 //Activate extended URC mode.
OK

+CREG: 1,"D509","80D413D",7 //URC reports that operator has found location area code
                                and cell ID.

```

6.3. AT+CSQ Signal Quality Report

The command returns the received signal strength **<rss>** and the channel bit error rate **<ber>**.

The Test Command returns values supported by MT.

The Execution Command returns received signal strength indication **<rss>** and channel bit error rate **<ber>** from MT.

AT+CSQ Signal Quality Report	
Test Command AT+CSQ=?	Response +CSQ: (list of supported <rss> s),(list of supported <ber> s) OK
Execution Command AT+CSQ	Response +CSQ: <rss> , <ber> OK If there is error related to MT functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	/
Reference 3GPP TS 27.007	

Parameter

<rss>	Integer type. Received signal strength indication.
0	-113 dBm or less
1	-111 dBm
2–30	-109 dBm to -53 dBm
31	-51 dBm or greater
99	Not known or not detectable
100	-116 dBm or less
101	-115 dBm
102...190	-114 dBm to -26 dBm
191	-25 dBm or greater
199	Not known or not detectable
100–199	Extended to be used in TD-SCDMA indicating received signal code power (RSCP)

<ber>	Integer type. Channel bit error rate (in percent).
0–7	As RxQual values in the table in <i>3GPP TS 45.008 subclause 8.2.4</i>
99	Not known or not detectable

Example

AT+CSQ=?

+CSQ: (0-31,99),(0-7,99)

OK

AT+CSQ

+CSQ: 28,99 //Received signal strength indication is 28 dBm and channel bit error rate is 99 dBm.

OK

6.4. AT+CPOL Preferred Operator List

This command edits and queries the list of preferred operators.

AT+CPOL Preferred Operator List	
Test Command AT+CPOL=?	Response +CPOL: (list of supported <index>s),(list of supported <format>s) OK
Read Command AT+CPOL?	Response Query the list of preferred operators: +CPOL: <index>,<format>,<oper>[,<GSM>,<GSM_compact>,<UTRAN>,<E-UTRAN>] [+CPOL: <index>,<format>,<oper>[,<GSM>,<GSM_compact>,<UTRAN>,<E-UTRAN> ...] OK
Write Command AT+CPOL=<index>[,<format>[,<oper>[,<GSM>,<GSM_compact>,<UTRAN>,<E-UTRAN>]]]	Response Edit the list of preferred operators: OK Or ERROR If <index> is given but <oper> is omitted, the entry is deleted.

Maximum Response Time	300 ms
Characteristics	The command takes effect immediately.
Reference 3GPP TS 27.007	

Parameter

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

NOTE

The access technology selection parameters **<GSM>**, **<GSM_compact>**, **<UTRAN>** and **<E-UTRAN>** are required for (U)SIM cards or UICC's containing PLMN selector with access technology.

6.5. AT+COPN Read Operator Names

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

AT+COPN Read Operator Names	
Test Command AT+COPN=?	Response OK
Execution Command AT+COPN	Response +COPN: <numeric1>,<alpha1> [+COPN: <numeric2>,<alpha2> ...] OK If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	Depends on the number of operator names.
Characteristics	/
Reference 3GPP TS 27.007	

Parameter

<numeric>	String type. Operator in numeric format (see AT+COPS).
<alphan>	String type. Operator in long alphanumeric format (see AT+COPS).
<err>	Error codes. For more details, see Chapter 12.4 .

6.6. AT+CTZU Automatic Time Zone Update

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

AT+CTZU Automatic Time Zone Update	
Test Command AT+CTZU=?	Response +CTZU: (list of supported <enable>s) OK
Write Command AT+CTZU=<enable>	Response OK Or ERROR
Read Command AT+CTZU?	Response +CTZU: <enable>

	OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved automatically.
Reference	
3GPP TS 27.007	

Parameter

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

Example

```

AT+CTZU?           //Read command.
+CTZU: 0

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

OK
AT+CTZU=1          //Enable automatic time zone update.
OK
AT+CTZU?
+CTZU: 1

OK

```

6.7. AT+CTZR Time Zone Reporting

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

AT+CTZR Time Zone Reporting

Test Command	Response
AT+CTZR=?	+CTZR: (list of supported <reporting>s)

	OK
Write Command AT+CTZR=<reporting>	Response OK Or ERROR
Read Command AT+CTZR?	Response +CTZR: <reporting> OK
Maximum Response Time	300 ms
Characteristics	The command takes effect after module is rebooted. The configuration is saved automatically.
Reference 3GPP TS 27.007	

Parameter

<reporting>	Integer type. Mode of time zone reporting. 0 Disable time zone change event reporting 1 Enable time zone change event reporting by URC +CTZV: <tz> 2 Enable extended time zone reporting by URC +CTZE: <tz>,<dst>,<time>
<tz>	String type. Sum of the local time zone (difference between the local time and GMT is expressed in quarters of an hour) plus daylight saving time. The format is " ±zz ", expressed as a fixed width, two-digit integer with the range -48 to +56. To maintain a fixed width, numbers in the range -9 to +9 are expressed with a leading zero, e.g. "-09", "+00" and "+09".
<dst>	Integer type. Indicates whether <tz> includes daylight savings adjustment. 0 <tz> includes no adjustment for daylight saving time 1 <tz> includes +1 hour (equals 4 quarters in <tz>) adjustment for daylight saving time 2 <tz> includes +2 hours (equals 8 quarters in <tz>) adjustment for daylight saving time
<time>	String type. Local time. The format is "YYYY/MM/DD,hh:mm:ss", expressed as integers representing year (YYYY), month (MM), date (DD), hour (hh), minute (mm) and second (ss). This parameter can be provided by the network when delivering time zone information and will be present in the unsolicited result code of extended time zone reporting if provided by the network.

Example

```
AT+CTZR=2
OK
```

AT+CTZR?

+CTZR: 2

OK

+CTZE: "+32",0,"2017/11/04,06:51:13"

//Extended time zone and local time reporting by URC.

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

This command obtains the latest time synchronized through network.

The Execution Command returns the latest time synchronized through the network.

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

Parameter

<mode>	Integer type. Network time obtaining mode.
0	Query the latest time that has been synchronized through network
1	Query the current GMT time calculated from the latest time that has been synchronized through network
2	Query the current LOCAL time calculated from the latest time that has been

	synchronized through network
<time>	String type. Format is "YYYY/MM/dd, hh:mm:ss±zz", where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; Range: -48 to +48). E.g. 6th of May 2004, 22:10:00 GMT+2 hours equals to "04/05/06,22:10:00+08"
<dst>	Integer type. Daylight saving time. Range: 0–2. Default: 0.
<err>	Error codes. For more details, see Chapter 12.4 .

NOTE

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

Example

```

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

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

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

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

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

OK

```

6.9. AT+QNWINFO Query Network Information

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

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

Parameter

<Act>	String type. Selected access technology. "NONE" "TDD LTE" "FDD LTE"
<oper>	String type. Operator in numeric format.
<band>	String type. Selected band. "LTE BAND 1" "LTE BAND 2" "LTE BAND 3" "LTE BAND 4" "LTE BAND 5" "LTE BAND 7" "LTE BAND 8" "LTE BAND 12" "LTE BAND 13" "LTE BAND 14" "LTE BAND 18" "LTE BAND 19" "LTE BAND 20" "LTE BAND 25" "LTE BAND 26" "LTE BAND 28" "LTE BAND 34" "LTE BAND 38" "LTE BAND 39" "LTE BAND 40"

	"LTE BAND 41"
	"LTE BAND 66"
	"LTE BAND 71"
<channel>	Integer type. Channel ID.

NOTE

See the product specification of all applicable modules for specific frequency bands supported by each module.

Example

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

6.10. AT+QSPN Display Name of Registered Network

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

Parameter

<FNN>	String type. Full network name.
<SNN>	String type. Abbreviated network name.
<SPN>	String type. Service provider name.
<alphabet>	Integer type. Alphabet of full network names and abbreviated network name. 0 GSM 7-bit default alphabet 1 UCS2

<RPLMN>	String type. Registered PLMN.
---------	-------------------------------

NOTE

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

Example

AT+QSPN //Query the EONS information of RPLMN.

+QSPN: "CHN-UNICOM","UNICOM","",0,"46001"

OK

6.11. AT+QENG Switch on/off Engineering Mode

Engineering mode is designed to report the information of serving cells, neighbour cells and packet switch parameters. The command switches on/off the mode.

AT+QENG Switching on/off Engineering Mode

Test Command

AT+QENG=?

Response

+QENG: (list of supported <cell_type>s)

OK

AT+QENG="servingcell"

Query the information of serving cells

Response

+QENG: "servingcell",<state>,"LTE",<is_tdd>,<mcc>,<mnc>,<cellid>,<earfcn>,<pcid>,<freq_band_ind>,<ul_b andwidth>,<dl_bandwidth>,<tac>,<rsrp>,<rsrq>,<rssi>,<sinr>,<s_rxlev>

OK

AT+QENG="neighbourcell"

Query the information of neighbour cells

Response

[+QENG: "neighbourcell intra","LTE",<earfcn>,<pcid>,<rsrq>,<rsrp>,-,-,-,-,-
[...]]

Or

[+QENG: "neighbourcell inter","LTE",<earfcn>,<pcid>,<rsrq>,<rsrp>,-,-,-,-,-

	[...]
	OK
Maximum Response Time	300 ms
Characteristics	/

Parameter

<cell_type>	String format. The information of different cells. "servingcell" Information of 4G serving cells "neighbourcell" Information of 4G neighbour cells
<state>	String format. UE state. "SEARCH" UE is searching but could not (yet) find a suitable 4G cell. "LIMSRV" UE is camping on a cell but has not registered on the network. "NOCONN" UE is camping on a cell and has registered on the network, and it is in idle mode. "CONNECT" UE is camping on a cell and has registered on the network, and a call is in progress.
<is_tdd>	String format. Communication mode. "TDD" Time division duplex mode "FDD" Frequency division duplex mode
<mcc>	Integer type. Mobile country code (first part of PLMN code). "_" Invalid
<mnc>	Integer type. Mobile network code (second part of PLMN code). "_" Invalid
<cellID>	Hexadecimal format. Cell ID. Range: 0-0xFFFFFFFF. "_" Invalid
<earfcn>	Integer type. E-UTRA-ARFCN of the scanned cell.
<pcid>	Physical cell ID.
<freq_band_ind>	Integer type. E-UTRA band (see 3GPP 36.101).
<ul_bandwidth>	Integer type. UL bandwidth. 0 1.4 MHz 1 3 MHz 2 5 MHz 3 10 MHz 4 15 MHz 5 20 MHz
<dl_bandwidth>	Integer type. DL bandwidth. 0 1.4 MHz 1 3 MHz 2 5 MHz 3 10 MHz

	4	15 MHz
	5	20 MHz
<ta>	Tracking area code (see 3GPP 23.003 Chapter 19.4.2.3).	
<rsrp>	Reference signal received power (see 3GPP 36.214 Chapter 5.1.1).	
<rsrq>	Reference signal received quality (see 3GPP 36.214 Chapter 5.1.2).	
<rssi>	Integer type. Received signal strength indication.	
<sinr>	Integer type. Logarithmic value of SINR. Range: -20 to +30. Unit: dB.	
<s_rxlev>	Suitable receive level of Inter-frequency cell.	
<arfcn>	Integer type. Determines the ARFCN of the scanned cell. Range: 0-1023.	

NOTE

If "-" or - is returned, it indicates the parameter is invalid under current condition.

Example

```
AT+QENG="servingcell"
```

```
+QENG: "servingcell","SEARCH"
```

```
OK
```

```
AT+QENG="servingcell"
```

```
+QENG:
```

```
"servingcell","NOCONN","LTE","FDD",460,01,B57DE33,63,1850,3,5,5,B504,-85,-10,-54,17,38
```

```
OK
```

```
AT +QENG="neighbourcell" //Get neighbour cell information in LTE mode.
```

```
+QENG: "neighbourcell inter","LTE",575,-,-,-,-,-,-,-,-
```

```
+QENG: "neighbourcell inter","LTE",300,-,-,-,-,-,-,-,-
```

```
+QENG: "neighbourcell inter","LTE",500,-,-,-,-,-,-,-,-
```

```
+QENG: "neighbourcell inter","LTE",525,-,-,-,-,-,-,-,-
```

```
+QENG: "neighbourcell inter","LTE",1650,-,-,-,-,-,-,-,-
```

```
+QENG: "neighbourcell inter","LTE",1850,-,-,-,-,-,-,-,-
```

```
+QENG: "neighbourcell inter","LTE",2452,-,-,-,-,-,-,-,-
```

```
+QENG: "neighbourcell inter","LTE",3745,-,-,-,-,-,-,-,-
```

```
OK
```

6.12. AT+CIND Command of Control Indicator

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

Parameter

<descr>	String type. Indicator description. See the following notes for details.
<ind>	Integer types. Indicator. Related to the value of <descr> . see the following notes for details.
<err>	Error codes. For more details, see Chapter 12.4 .

NOTE

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

<descr>	<ind>
"call"	Call in progress indication. 0 No call in progress 1 Call in progress
"roam"	Roaming indicator. 0 Registered to home network or not registered 1 Registered to other network
"signal"	Signal quality indication. 0–5: Signal is divided into five levels. The larger the value, the better the signal.
"service"	Service availability indicator. 0 Not registered on the network 1 Registered to home network

"GPRS coverage"	PS domain registration indicator.	
	0	Not registered on PS domain
	1	Registered on PS domain
"message"	Message received indicator.	
	0	Turn off
	1	Turn on

Example

AT+CIND=?

+CIND: ("call",(0,1)),("roam",(0,1)),("signal",(0-5)),("service",(0,1)),("GPRS coverage",(0,1)),("message",(0,1))

OK

AT+CIND?

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

OK

7 Dial Related Commands

7.1. ATD PPP Dial

This command sets up a PPP dial. Supplementary services can also be controlled with this command.

ATD PPP Dial	
Execution Command ATD<n>	Response If a connection cannot be established: NO CARRIER If connection is successful: CONNECT
Maximum Response Time	5 s, determined by network (AT+COLP=0).
Characteristics	/
Reference V.25ter	

Parameter

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

NOTE

This command can only be used in PPP.

Example

```
ATD*99#           //Start PPP dialing.
OK
```

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

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

+++ Switch from Data Mode to Command Mode

Execution Command +++	Response OK
Maximum Response Time	300 ms
Characteristics	/
Reference V.25ter	

NOTE

- To prevent +++ escape sequence from being misinterpreted as data, the following sequence should be followed:
 - Do not input any character for at least 1s before and after inputting +++.
 - Input +++ within 1s, and wait until OK is returned.
 - Switch to command mode successfully; otherwise return to Step 1.
- To return back to data mode from AT command mode, enter **ATO**.
- Another way to change to command mode is through DTR level change, and please refer to **AT&D** command for details.

7.3. ATO Switch from Command Mode to Data Mode

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

ATO Switch from Command Mode to Data Mode

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

Characteristics	/
Reference V.25ter	

Parameter

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

NOTE

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

8 Short Message Service Commands

8.1. AT+CSMS Select Message Service

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

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

Parameter

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

	1	3GPP TS 23.040 and 3GPP TS 23.041 (the syntax of SMS AT commands is compatible with 3GPP TS 27.005 Phase 2+ version; the requirement of <service> setting 1 is mentioned under corresponding command descriptions).
<mt>	Integer type. Mobile terminated messages.	
	0	Type not supported
	1	Type supported
<mo>	Integer type. Mobile originated messages.	
	0	Type not supported
	1	Type supported
<bm>	Integer type. Broadcast type messages.	
	0	Type not supported
	1	Type supported
<err>	Error codes. For more details, see Chapter 12.5 .	

Example

```

AT+CSMS=?                                //Test command.
+CSMS: (0,1)

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

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

OK

```

8.2. AT+CMGF Message Format

This command specifies the input and output format of the short messages. **<mode>** indicates the format of messages used with Test, Read, Write and Execution Commands and unsolicited result codes resulting from received messages.

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

AT+CMGF Message Format	
Test Command AT+CMGF=?	Response +CMGF: (list of supported <mode>s) OK
Read Command AT+CMGF?	Response +CMGF: <mode> OK
Write Command AT+CMGF[=<mode>]	Response TA sets parameter to denote I/O format of messages to use. OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is saved automatically.
Reference 3GPP TS 27.005	

Parameter

<mode>	Integer type.
<u>0</u>	PDU mode
1	Text mode

8.3. AT+CSCA Service Center Address

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

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

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

Parameter

<sca>	Service center address. 3GPP TS 24.011 RP SC address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (see AT+CSCS in 3GPP TS 27.007). The type of address is given by <tosca> .
<tosca>	Type of service center address. 3GPP TS 24.011 RP SC address Type-of-Address octet in integer format (see <toda>).
<err>	Error codes. For more details, see Chapter 12.4 .

Example

```

AT+CSCA="+8613800210500",145 //Set SMSC address.
OK
AT+CSCA? //Query SMSC address.
+CSCA: "+8613800210500",145
OK

```

8.4. AT+CPMS Preferred Message Storage

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

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

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

Parameter

<mem1>	String type. Memory from which messages are read and deleted. "SM" (U)SIM message storage "ME" Mobile equipment message storage
<mem2>	String type. Memory to which writing and sending operations are made. "SM" (U)SIM message storage "ME" Mobile equipment message storage
<mem3>	String type. Memory to which received SMs are preferred to be stored (unless forwarded directly to TE (AT+CNMI)). "SM" (U)SIM message storage "ME" Mobile equipment message storage
<usedx>	Integer type. Number of messages currently in <memx> .
<totalx>	Integer type. Total number of message locations in <memx> .
<err>	Error codes. For more details, see Chapter 12.5 .

Example

```

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

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

```

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

8.5. AT+CMGD Delete Message

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

AT+CMGD Delete Message	
Test Command AT+CMGD=?	Response +CMGD: (list of supported <index> s),(list of supported <delflag> s) OK
Write Command AT+CMGD=<index>[,<delflag>]	Response TA deletes message from preferred message storage <mem1> location <index> . OK If there is any error related to ME functionality: +CMS ERROR: <err>
Maximum Response Time	300 ms. Note: Operation of <delflag> depends on the storage of deleted messages.
Characteristics	The command takes effect immediately. The configuration is not saved.
Reference 3GPP TS 27.005	

Parameter

<index>	Integer type. Location numbers supported by the associated memory.
<delflag>	Integer type.
0	Delete the message specified in <index>
1	Delete all read messages from <mem1> storage
2	Delete all read messages from <mem1> storage and sent mobile originated

	messages
3	Delete all read messages from <mem1> storage, sent and unsent mobile originated messages
4	Delete all messages from <mem1> storage
<mem1>	String type. Memory from which messages are read and deleted.
"SM"	(U)SIM message storage
"ME"	Mobile equipment message storage
<err>	Error codes. For more details, see Chapter 12.5 .

Example

```

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

```

8.6. AT+CMGL List Message

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

AT+CMGL List Message	
Test Command AT+CMGL=?	Response +CMGL: (list of supported <stat> s) OK
Write Command AT+CMGL=[<stat>]	Response If in text mode (AT+CMGF=1) and the command is executed successfully: For SMS-SUBMITs and/or SMS-DELIVERs: +CMGL: <index>,<stat>,<oa/da>,<[alpha]>,<[scts]> [,<tooa/toda>,<length>]<CR><LF><data>[<CR><LF> +CMGL: <index>,<stat>,<da/oa>,<[alpha]>,<[scts]>, [<tooa/toda>,<length>]<CR><LF><data>[...]] For SMS-STATUS-REPORTs: +CMGL: <index>,<stat>,<fo>,<mr>,<[ra]>,<[tora]>, <scts>,<dt>,<st>[<CR><LF>

	<p>+CMGL: <index>,<stat>,<fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st>[...]]</p> <p>For SMS-COMMANDs:</p> <p>+CMGL: <index>,<stat>,<fo>,<ct>[<CR><LF></p> <p>+CMGL: <index>,<stat>,<fo>,<ct>[...]]</p> <p>For CBM storage:</p> <p>+CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages></p> <p><CR><LF><data>[<CR><LF></p> <p>+CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages></p> <p><CR><LF><data>[...]]</p> <p>OK</p> <p>If in PDU mode (AT+CMGF=0) and the command is executed successfully:</p> <p>+CMGL: <index>,<stat>,<alpha>,<length><CR><LF></p> <p><pdu><CR><LF></p> <p>+CMGL: <index>,<stat>,<alpha>,<length><CR><LF></p> <p><pdu>[...]]</p> <p>OK</p> <p>If there is any error related to ME functionality:</p> <p>+CMS ERROR: <err></p>
Execution Command AT+CMGL	<p>Response</p> <p>List all messages with "REC UNREAD" status from message storage <mem1>, and then the status in the storage changes to "REC READ".</p>
Maximum Response Time	300 ms.
Characteristics	<p>The command takes effect immediately.</p> <p>The configurations are not saved.</p>
Reference 3GPP TS 27.005	

Parameter

<stat>	String type. In text mode:
"REC UNREAD"	Received unread messages
"REC READ"	Received read messages
"STO UNSENT"	Stored unsent messages
"STO SENT"	Stored sent messages

	"ALL"	All messages
	Integer type. In PDU mode:	
	0	Received unread messages
	1	Received read messages
	2	Stored unsent messages
	3	Stored sent messages
	4	All messages
<index>	Integer type. Location numbers supported by the associated memory.	
<da>	Destination Address. 3GPP TS 23.040 TP-Destination-Address Address-Value field in string format. BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (see AT+CSCS in 3GPP TS 27.007). The type of address is given by <toda>.	
<oa>	Originating address. 3GPP TS 23.040 TP-Originating-Address Address-Value field in string format. BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (see AT+CSCS in 3GPP TS 27.007). The type of address is given by <tooa>.	
<alpha>	String type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook. Implementation of this feature is manufacturer specified. The used character set should be the one selected with AT+CSCS command (see definition of this command in 3GPP TS 27.007).	
<scts>	Service center time stamp. 3GPP TS 23.040 TP-Service-Centre-Time-Stamp in time-string format (see <dt>).	
<toda>	Type of recipient address. 3GPP TS 24.011 TP-Destination-Address Type-of-Address octet in integer format.	
<tooa>	Type of originating address. 3GPP TS 24.011 TP-Originating-Address Type-of-Address octet in integer format (default see <toda>).	
<length>	Integer type. Message length. Indicate the length of the message body <data> (or <cdata>) in characters in the text mode (AT+CMGF=1), or the length of the actual TP data unit in octets in PDU mode (AT+CMGF=0) (i.e. the RP layer SMSC address octets are not counted in the length).	
<data>	<p>In case of SMS: 3GPP TS 23.040 TP-User-Data in text mode responses; format:</p> <ul style="list-style-type: none"> - If <dcs> (see Chapter 9.7), indicates that 3GPP TS 23.038 GSM 7 bit default alphabet is used and <fo> (see Chapter 9.7) indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is not set. - If TE character set other than "HEX" (refer to AT+CSCS in 3GPP TS 27.007): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A in 3GPP TS 27.007. - If TE character set is "HEX": ME/TA converts each 7-bit character of GSM 7 bit default alphabet into two IRA character long hexadecimal number (e.g. character Π (GSM 7 bit default alphabet 23) is presented as 17 (IRA 49 and 55)). - If <dcs>, indicates that 8-bit or UCS2 data coding scheme is used, or <fo> indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 	

	65)).
	In case of CBS: 3GPP TS 23.041 CBM Content of Message in text mode responses; format:
	<ul style="list-style-type: none"> - If <dc>, indicates that 3GPP TS 23.038 GSM 7 bit default alphabet is used: - If TE character set other than "HEX" (see AT+CSCS in 3GPP TS27.007): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A in 3GPP TS 27.007. - If TE character set is "HEX": ME/TA converts each 7-bit character of the GSM 7 bit default alphabet into two IRA character long hexadecimal number. - If <dc>, indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number.
<pdu>	In case of SMS: 3GPP TS 24.011 SC address followed by 3GPP TS 23.040 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)) 3GPP TS 27.007.
<fo>	Depending on the command or result code: first octet of 3GPP TS 23.040 [3] SMS-DELIVER, SMS-SUBMIT (17 by default), SMS-STATUS-REPORT, or SMS-COMMAND (2 by default) in integer format.
<mr>	3GPP TS 23.040 [3] TP-Message-Reference in integer format.
<ra>	3GPP TS 23.040 [3] TP-Recipient-Address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (see +CSCS in 3GPP TS 27.007 [9]); type of address given by <tora> .
<tora>	3GPP TS 24.011 [6] TP-Recipient-Address Type-of-Address octet in integer format (default see <toda>).
<scts>	3GPP TS 23.040 [3] TP-Service-Centre-Time-Stamp in time-string format (see <dt>)
<dt>	3GPP TS 23.040 [3] TP-Discharge-Time in time-string format: "yy/MM/dd,hh:mm:ss+zz", where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone. E.g. 6th of May 1994, 22:10:00 GMT+2 hours equals "94/05/06,22:10:00+08".
<st>	3GPP TS 23.040 [3] TP-Status in integer format.
<ct>	3GPP TS 23.040 [3] TP-Command-Type in integer format (0 by default).
<sn>	3GPP TS 23.041 [4] CBM Serial Number in integer format.
<mid>	3GPP TS 23.041 [4] CBM Message Identifier in integer format.
<page>	3GPP TS 23.041 [4] CBM Page Parameter bits 4-7 in integer format.
<pages>	3GPP TS 23.041 [4] CBM Page Parameter bits 0-3 in integer format.
<mem1>	Memory from which messages are read and deleted
	"SM" (U)SIM message storage
	"ME" Mobile equipment message storage
<err>	Error codes. For more details, see Chapter 12.5 .

Example

```
AT+CMGF=1 //Set SMS message format as text mode.
```

```
OK
AT+CMGL="ALL"                                     //List all messages from message storage.
+CMGL: 1,"STO UNSENT","",,
<This is a test from Quectel>
+CMGL: 2,"STO UNSENT","",,
<This is a test from Quectel>
OK
```

NOTE

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

8.7. AT+CMGR Read Message

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

AT+CMGR Read Message	
Test Command AT+CMGR=?	Response OK
Write Command AT+CMGR=<index>	<p>Response</p> <p>In Non-CDMA mode:</p> <p>If in text mode (AT+CMGF=1) and the command is executed successfully:</p> <p>For SMS-DELIVER:</p> <p>+CMGR: <stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcsc>,<sca>,<tosca>,<length>]<CR><LF><data></p> <p>OK</p> <p>For SMS-SUBMIT:</p> <p>+CMGR: <stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcsc>,[<vp>],<sca>,<tosca>,<length>]<CR><LF><data></p> <p>OK</p> <p>For SMS-STATUS-REPORTs:</p> <p>+CMGR: <stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<</p>

	<p><st></p> <p>OK</p> <p>For SMS-COMMANDs:</p> <p>+CMGR: <stat>,<fo>,<ct>[,<pid>,<mn>],[<da>],[<toda>],<length><CR><LF><cdata></p> <p>OK</p> <p>For CBM storage:</p> <p>+CMGR: <stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data></p> <p>OK</p> <p>If in PDU mode (AT+CMGF=0) and command is executed successfully:</p> <p>+CMGR: <stat>,<alpha>,<length><CR><LF><pdu></p> <p>OK</p> <p>In CDMA Text mode:</p> <p>+CMGR: <stat>,<oa/da>,<scts>,<alpha>,<tooa/toda>,<lang>,<fmt>,<length>,<prt>,<prv>,<type><CR><LF><data></p> <p>OK</p> <p>If there is any error related to ME functionality:</p> <p>+CMS ERROR: <err></p>
Maximum Response Time	Depends on the length of message content.
Characteristics	<p>The command takes effect immediately.</p> <p>The configurations are not saved.</p>
Reference	
3GPP TS 27.005	

Parameter

<index>	Integer type. Value in the range of location numbers supported by the associated memory.
<stat>	String type. In text mode.
	<p>"REC UNREAD" Received unread messages</p> <p>"REC READ" Received read messages</p> <p>"STO UNSENT" Stored unsent messages</p> <p>"STO SENT" Stored sent messages</p>

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

	format. BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (refer to AT+CSCS command in <i>3GPP TS 27.007</i>). The type of address is given by <tosca> .
<tosca>	3GPP TS 24.011 RP SC address Type-of-Address octet in integer format (default see <toda>).
<length>	Integer type. Message length. In the text mode (AT+CMGF=1) the length of the message body <data> (or <cdata>) in characters, or in PDU mode (AT+CMGF=0) the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length).
<data>	User-Data in text mode responses. See Chapter 12.8 for details.
<pdu>	In case of SMS: 3GPP TS 24.011 SC address followed by 3GPP TS 23.040 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)).
<prt>	Priority. 0 Normal 1 Interactive 2 Urgent 3 Emergency
<fmt>	Format. 0 GSM 7-bit 1 ASCII 6 UNICODE
<prv>	Privacy. 0 Normal 1 Restricted 2 Confidential 3 Secret
<lang>	Language. 0 Unspecified 1 English 2 French 3 Spanish 4 Japanese 5 Korean 6 Chinese 7 Hebrew
<type>	0 Normal 1 CPT 2 Voice Mail 3 SMS Report
<mem1>	String type. Memory storage from which messages are to be read and deleted. "SM" (U)SIM message storage "ME" Mobile equipment message storage

<err> Error codes. For more details, see **Chapter 12.5**.

Example

```
+CMTI: "SM",3 //Indicates that new message has been received and saved
                to <index>=3 of "SM".
AT+CSDH=1
OK
AT+CMGR=3 //Read message.
+CMGR: "REC UNREAD","+8615021012496",,"13/12/13,15:06:37+32",145,4,0,0,"+861380021050
0",145,27
<This is a test from Quectel>
OK
```

8.8. AT+CMGS Send Message

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

AT+CMGS Send Message

Test Command	Response
AT+CMGS=?	OK
Write Command 1) If text mode (AT+CMGF=1): AT+CMGS=<da>[,<tda>]<CR> text is entered <Ctrl+Z/ESC> ESC quits without sending 2) If PDU mode (AT+CMGF=0): AT+CMGS=<length><CR> PDU is given <Ctrl+Z/ESC>	Response TA sends message from TE to the network (SMS-SUBMIT). Message reference value <mr> is returned to the TE on successful message delivery. Optionally (when AT+CSMS <service> value is 1 and network supports) <scts> is returned. Values can be used to identify message upon unsolicited delivery status report result code. If in text mode (AT+CMGF=1) and sent successfully: +CMGS: <mr> OK If in PDU mode (AT+CMGF=0) and sent successfully: +CMGS: <mr>

	OK If there is any error related to ME functionality: +CMS ERROR: <err>
Maximum Response Time	120 s, determined by network.
Characteristics	The command takes effect immediately. The configurations are not saved.
Reference	3GPP TS 27.005

Parameter

<da>	Destination address. 3GPP TS 23.040 TP-Destination-Address Address-Value field in string format. BCD numbers (or GSM 7-bit default alphabet characters) are converted to characters of the currently selected TE character set (refer to AT+CSCS in 3GPP TS 27.007). The type of address is given by <toda> .
<toda>	Type of destination address. 3GPP TS 24.011 TP-Destination-Address Type-of-Address octet in integer format.
<length>	Integer type. Message length. In the text mode (AT+CMGF=1) the length of the message body <data> (or <cdata>) in characters, or in PDU mode (AT+CMGF=0), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length). Maximum length in text mode: 160 bytes. Maximum length in PDU mode: 140 bytes.
<mr>	3GPP TS 23.040 TP-Message-Reference in integer format.
<err>	Error codes. For more details, see Chapter 12.5 .

NOTE

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

<uid> The field of UDH. It is a message identification of the concatenated SMS, which is different from **<mr>**. Each segment in a concatenated message should have the same **<uid>**, but **<mr>** must be incremented for each segment of a concatenated message.

3. **AT+QCMGS** does not support sending messages in PDU mode (**AT+CMGF=0**).

Example

```
AT+CMGF=1 //Set SMS message format as text mode.
OK
AT+CSCS="GSM" //Set character set used by the TE as GSM.
OK
AT+CMGS="15021012496"
> <This is a test from Quectel> //Enter text. Use <CTRL+Z> to send messages, or
                                <ESC> to quit without sending.
+CMGS: 247
OK
```

8.9. AT+CMMS More Messages to Send

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

AT+CMMS More Messages to Send	
Test Command AT+CMMS=?	Response +CMMS: (list of supported <n>s) OK
Read Command AT+CMMS?	Response +CMMS: <n> OK
Write Command AT+CMMS=<n>	Response OK Or ERROR If there is any error related to ME functionality: +CMS ERROR: <err>
Maximum Response Time	120 s, determined by network.

Characteristics	The command takes effect immediately. The configuration is saved automatically.
Reference 3GPP TS 27.005	

Parameter

<n>	Integer type. 0 Feature disabled 1 Keep enabled until the time between the response of the latest message send command (AT+CMGS , AT+CMSS , etc.) and the next send command exceeds 1-5 s (the exact value is up to ME implementation), and then ME closes link and TA switches <n> back to 0 automatically 2 Feature enabled (if the time between the response of the latest message send command and the next send command exceeds 1-5 s (the exact value is up to ME implementation), ME closes the link but TA does not switch <n> back to 0 automatically)
<err>	Error codes. For more details, see Chapter 12.5 .

NOTE

Once Read Command is executed, a delay of 5-10 s is required before issuing the Write Command. Otherwise **+CMS ERROR: 500** may be returned.

8.10. AT+CMGW Write Message to Memory

This Write and Execution Commands store short messages from TE to memory storage **<mem2>**, and then the memory location **<index>** of the stored message is returned. Message status is set to "stored unsent" by default, but **<stat>** allows other status values to be given, as well.

The syntax of input text is the same as the one specified in **AT+CMGS** Write Command.

AT+CMGW Write Message to Memory

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

<ESC> quits without sending 2) If PDU mode (AT+CMGF=0): AT+CMGW=<length>[,<stat>]<CR> PDU is given <Ctrl+Z/ESC>	If there is any error related to ME functionality: +CMS ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are not saved.
Reference	3GPP TS 27.005

Parameter

<da>	Destination address. 3GPP TS 23.040 TP-Destination-Address Address-Value field in string format. BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (see AT+CSCS in 3GPP TS 27.007). The type of address is given by <toda> .		
<oa>	Originating address. 3GPP TS 23.040 TP-Originating-Address Address-Value field in string format. BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (see AT+CSCS in 3GPP TS 27.007). The type of address given by <tooa> .		
<tooa>	3GPP TS 24.011 TP-Originating-Address Type-of-Address octet in integer format (default see <toda>).		
<stat>	PDU mode	Text mode	Explanation
	0	"REC UNREAD"	Received unread messages
	1	"REC READ"	Received read messages
	2	"STO UNSENT"	Stored unsent messages
	3	"STO SENT"	Stored sent messages
	4	"ALL"	All messages
<toda>	3GPP TS 24.011 TP-Destination-Address Type-of-Address octet in integer format.		
<length>	Integer type. Message length. Length of the message body <data> (or <cdata>) in characters in the text mode (AT+CMGF=1), or the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length) in PDU mode (AT+CMGF=0),.		
<pdu>	In case of SMS: 3GPP TS 24.011 SC address followed by 3GPP TS 23.04TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)).		
<index>	Integer type. Index of message in selected storage <mem2> .		
<err>	Error codes. For more details, see Chapter 12.5 .		

Example

```

AT+CMGF=1                                     //Set SMS message format as text mode.
OK
AT+CSCS="GSM"                                 //Set character set used by the TE as GSM.
OK
AT+CMGW="15021012496"
> <This is a test from Quectel>               //Enter in text. Use <CTRL+Z> to write message or
                                              <ESC> to quit without sending.

+CMGW: 4

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

+CMGW: 5

OK

```

8.11. AT+CMSS Send Message from Storage

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

AT+CMSS Send Message from Storage

Test Command AT+CMSS=?	Response OK
Write Command AT+CMSS=<index>[,<da>[,<toda>]]	Response If in text mode (AT+CMGF=1) and sent successfully: +CMSS: <mr>[,<scts>] OK If in PDU mode (AT+CMGF=0) and sent successfully: +CMSS: <mr> [,<ackpdu>] OK

	If there is any error related to ME functionality: +CMS ERROR: <err>
Maximum Response Time	120 s, determined by network.
Characteristics	The command takes effect immediately. The configurations are not saved.
Reference 3GPP TS 27.005	

Parameter

<index>	Integer type. Value in the range of location numbers supported by the associated memory.
<da>	Destination Address. 3GPP TS 23.040 TP-Destination-Address Address-Value field in string format. BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (see AT+CSCS in 3GPP TS 27.007). The type of address is given by <toda> .
<toda>	Type of destination address. 3GPP TS 24.011 TP-Destination-Address Type-of-Address octet in integer format.
<mr>	3GPP TS 23.040 TP-Message-Reference in integer format.
<scts>	Service center time stamp. 3GPP TS 23.040 TP-Service-Centre-Time-Stamp in time-string format (see <dt>).
<ackpdu>	The format is the same as for <pdu> in case of SMS, but without 3GPP TS 24.011 SC address field and the parameter is bound by double quote characters like a normal string type parameter.
<err>	Error codes. For more details, see Chapter 12.5 .

Example

```

AT+CMGF=1           //Set SMS message format as text mode.
OK
AT+CSCS="GSM"       //Set character set used by the TE as GSM.
OK
AT+CMGW="15021012496"
> Hello             //Enter in text. Use <CTRL+Z> to send message or
                    //<ESC> to quit without sending.

+CMGW: 4

OK
AT+CMSS=4           //Send the message of index 4 from memory storage.
+CMSS: 54

OK
    
```

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

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

AT+CNMA New Message Acknowledgement to UE/TE	
Test Command AT+CNMA=?	Response +CNMA: (list of supported <n>s) OK
Execution Command AT+CNMA	Response OK Or ERROR If there is any error related to ME functionality: +CMS ERROR: <err>
Write Command AT+CNMA=<n>	Response OK Or ERROR If there is any error related to ME functionality: +CMS ERROR: <err>
Maximum Response Time	300 ms
Characteristics	/
Reference 3GPP TS 27.005	

Parameter

<n>	Integer type. Parameter required only for PDU mode. 0 Command operates similarly as in text mode 1 Send positive (RP-ACK) acknowledgement to the network. Accepted only in PDU mode 2 Send negative (RP-ERROR) acknowledgement to the network. Accepted only in PDU mode
<err>	Error code. For more details, see Chapter 12.5 .

NOTE

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

+CMT for **<mt>**=2 incoming message classes 0,1,3 and none;

+CMT for **<mt>**=3 incoming message classes 0 and 3;

+CDS for **<ds>**=1.

Example

AT+CSMS=1

+CSMS: 1,1,1

OK

AT+CNMI=1,2,0,0,0

OK

+CMT: "+8615021012496",,"13/03/18,17:07:21+32",145,4,0,0,"+8613800551500",145,28

This is a test from Quectel.

//Short message is outputted directly when an SMS is incoming.

AT+CNMA

//Send ACK to the network.

OK

AT+CNMA

+CMS ERROR: 340

// Returned error for the second time. It needs ACK only once.

8.13. AT+CNMI SMS Event Reporting Configuration

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

AT+CNMI New Message Indications to TE

Test Command

AT+CNMI=?

Response

+CNMI: (list of supported **<mode>**s),(list of supported **<mt>**s),(list of supported **<bm>**s),(list of supported **<ds>**s),(list of supported **<bfr>**s)

OK

Read Command

AT+CNMI?

Response

+CNMI: **<mode>**,**<mt>**,**<bm>**,**<ds>**,**<bfr>**

	OK
Write Command AT+CNMI[=<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]]	Response OK Or ERROR If there is any error related to ME functionality: +CMS ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are not saved automatically.
Reference 3GPP TS 27.005	

Parameter

<mode>	Integer type. <ul style="list-style-type: none"> 0 Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications. 1 Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE. <u>2</u> Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE.
<mt>	Integer type. The rules for storing received SMS depend on its data coding scheme (refer to 3GPPTS 23.038) and preferred memory storage (AT+CPMS) setting, and the value is: <ul style="list-style-type: none"> 0 No SMS-DELIVER indications are routed to the TE. <u>1</u> If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE by using unsolicited result code: +CMTI: <mem>,<index> 2 SMS-DELIVERs (except class 2) are routed directly to the TE using unsolicited result code: +CMT: [<alpha>],<length><CR><LF><pdu> (PDU mode enabled) or +CMT: <oa>,<alpha>,<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data> (text mode enabled; about the parameters in italics, see AT+CSDH) or ^HCMT: <oa>,<scts>,<lang>,<fmt>,<length>,<prt>,<prv>,<type>,<stat><CR><LF><data> (text mode for CDMA SMS). Class 2 messages result in indication as defined in <mt>=1. 3 Class 3 SMS-DELIVERs are routed directly to TE by using unsolicited result codes defined in <mt>=2. Messages of other classes result in indication as defined in <mt>=1.
<bm>	Integer type. The rules for storing received CBMs depend on its data coding scheme (see

	3GPP TS 23.038) and the setting of Select CBM Types (AT+CSCB), and the value is:
<u>0</u>	No CBM indications are routed to the TE.
2	New CBMs are routed directly to the TE using unsolicited result code: +CBM: <length><CR><LF><pdu> (PDU mode); or +CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> (text mode)
<ds>	Integer type.
<u>0</u>	No SMS-STATUS-REPORTs are routed to the TE.
1	SMS-STATUS-REPORTs are routed to the TE using unsolicited result code: +CDS: <length><CR><LF><pdu> (PDU mode) +CDS: <fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> (text mode)
2	If SMS-STATUS-REPORT is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CDSI: <mem>,<index>
<bfr>	Integer type.
<u>0</u>	TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1 or 2 is entered (OK response should be given before flushing the codes).
1	TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1 or 2 is entered.
<err>	Error codes. For more details, see Chapter 12.5 .

NOTE

Unsolicited result code:

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

Example

```

AT+CMGF=1           //Set SMS message format as text mode.
OK
AT+CSCS="GSM"       //Set character set used by the TE as GSM.
OK
AT+CNMI=1,2,0,1,0   //Set SMS-DELIVERs are routed directly to the TE.
OK

+CMT: "+8615021012496" ,"13/03/18,17:07:21+32",145,4,0,0,"+8613800551500",145,28
This is a test from Quectel.           //Short message is outputted when an SMS is incoming.

```

8.14. AT+CSCB Select Cell Broadcast Message Types

The Write Command selects which types of CBMs are to be received by the ME.

AT+CSCB Select Cell Broadcast Message Types	
Test Command AT+CSCB=?	Response +CSCB: (list of supported <mode>s) OK
Read Command AT+CSCB?	Response +CSCB: <mode> , <mids> , <dcss> OK
Write Command AT+CSCB=<mode>[,<mids>[,<dcss>]]	Response OK If there is any error related to ME functionality: +CMS ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are saved automatically.
Reference 3GPP TS 27.005	

NOTE

The configuration is stored to NVM.

Parameter

<mode>	Integer type. 0 Message types specified in <mids> and <dcss> are accepted 1 Message types specified in <mids> and <dcss> are not accepted
<mids>	String type. All different possible combinations of CBM message identifiers (refer to <mid>) (default is empty string), e.g. "0,1,5,320-478,922".
<dcss>	String type. All different possible combinations of CBM data coding schemes (refer to <dc>) (default is empty string), e.g. "0-3,5".
<err>	Error codes. For more details, see Chapter 12.5 .

8.15. AT+CSDH Show SMS Text Mode Parameters

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

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

Parameter

<show>	Integer type.
	<p>0 Do not show header values defined in commands +CSCA, +CSMP (<sca>, <tosca>, <fo>, <vp>, <pid>, <dc>) or <length>, <toda> or <tooa> in +CMT, +CMGL, +CMGR result codes for SMS-DELIVERs and SMS-SUBMITs in text mode. For SMS-COMMANDs in +CMGR result code, do not show <pid>,<mn>,<da>, <toda>,<length> or<cdata>.</p> <p>1 Show the values in result codes</p>

Example

```

AT+CSDH=0
OK
AT+CMGR=2
+CMGR: "STO UNSENT", "",
<This is a test from Quectel>
OK

```

```

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

```

8.16. AT+CSMP Set SMS Text Mode Parameters

This command sets values for additional parameters needed when a short message is sent to the network or placed in a storage in text mode.

AT+CSMP Set SMS Text Mode Parameters	
Test Command AT+CSMP=?	Response OK
Read Command AT+CSMP?	Response +CSMP: <fo>,<vp>,<pid>,<dc> OK
Write Command AT+CSMP=<fo>[,<vp>[,<pid>[,<dc>]]	Response TA selects values for additional parameters needed when SM is sent to the network or placed in a storage when text mode is selected (AT+CMGF=1). It is possible to set the validity period starting from when the SM is received by the SMSC (<vp> ranges from 0 to 255) or define the absolute time of validity period termination (<vp> is a string). OK
Maximum Response Time	300 ms
Characteristics	/
Reference 3GPP TS 27.005	

Parameter

<fo>	Depending on the command or result code: first octet of 3GPP TS 23.040 SMS-DELIVER, SMS-SUBMIT (17 by default), SMS-STATUS-REPORT, SMS-COMMAND in integer format. If a valid value has been entered once, parameter can be omitted.
<vp>	Validity period. Depending on SMS-SUBMIT <fo> setting: 3GPP TS 23.040

<pid>	TP-Validity-Period either in integer format or in time-string format (refer to <dt>). Protocol identifier. 3GPP TS 23.040 TP-Protocol-Identifier in integer format (0 by default).
<dc>	Data coding scheme. Depending on the command or result code: 3GPP TS 23.038 SMS Data Coding Scheme (0 by default), or Cell Broadcast Data Coding Scheme in integer format.

8.17. AT+QCMGS Send Concatenated Messages

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

AT+QCMGS Send Concatenated Messages	
Test Command AT+QCMGS=?	Response OK
Write Command If text mode (+CMGF=1): AT+QCMGS=<da>[,<toda>],<uid>,<msg_seg>,<msg_total><CR> text is entered <Ctrl+Z/ESC>	Response If in text mode (AT+CMGF=1) and sent successfully: +QCMGS: <mr> OK Or ERROR If there is any error related to ME functionality: +CMS ERROR: <err>
Maximum Response Time	120 s, determined by network.
Characteristics	This command takes effect immediately. The configuration is not saved.

Parameter

<uid>	Integer type. Message identification in the user data header (UDH). Range: 0–255. This parameter is defined and inputted by the user. All segments of a same concatenated message must have the same <uid> . Different concatenated messages should have different <uid> .
<msg_seg>	Integer type. Sequence number of a concatenated message. Range: 0–7. <msg_seg>=0 means: ignore the value and regard it as a non-concatenated message.

<msg_total>	Integer type. The total number of the segments of one concatenated message. Range: 0–7. <msg_total> =0 or 1 means: ignore the value and regard it as a non-concatenated message.
<da>	Refer to AT+CMGS .
<tda>	Refer to AT+CMGS .
<mr>	Refer to AT+CMGS .
<err>	Error codes. For more details, see Chapter 12.5 .

NOTE

- For concatenated messages, the maximum length will be reduced by the length of the user data header (UDH). 3GPP TS 23.040 defines two kinds of UDH length: 6 bytes and 7 bytes, so the two kinds of **<uid>** are 8-bit (6 bytes) and 16-bit (7 bytes). **AT+QCMGS** uses 8-bit **<uid>**.
 - In case of GSM 7-bit default alphabet data coding scheme, the maximum length of each segment of a concatenated message is $(140 \text{ octets} - 6) \times 8/7 = 153$ characters.
 - In case of 16-bit UCS2 data coding scheme, the maximum length of each segment is $(140-6)/2=67$ characters.
 - In case of 8-bit data coding scheme, the maximum length of each segment is $140-6=134$ characters.
- <mr>** Message-Reference field gives an integer representation of a reference number of the SMS-SUBMIT or SMS-COMMAND submitted to the SC by the MS, and it is used to confirm whether the SMS-DELIVER has been received from SC duplicate or not.
<uid> The field of UDH. It is message identification of the concatenated SMS, which is different from **<mr>**. Each segment in a concatenated message should have the same **<uid>**, but **<mr>** must be incremented for each segment of a concatenated message.
- AT+QCMGS** does not support sending messages in PDU mode (**AT+CMGF=0**).

Example

```

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

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

OK

```

8.18. AT+QCMGR Read Concatenated Messages

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

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

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

Parameter

<uid>	Integer type. Message identification in the user data header (UDH). Range: 0–65535 (see NOTES). All segments of a same concatenated message have same <uid> . Different concatenated messages should have different <uid> .
<msg_seg>	Integer type. Sequence number of a concatenated message. Range: 1–7.
<msg_total>	Integer type. The total number of the segments of one concatenated message. Range: 2–7.
	Other parameters please refer to AT+CMGR
<err>	Error codes. For more details, see Chapter 12.5 .

NOTE

1. The **<uid>** in **AT+QCMGR** is different from the **<uid>** in **AT+QCMGS**. It is possible that UE receives concatenated messages with 8-bit or 16-bit **<uid>**. So its maximal value is 255 with 8-bit and 65535 with 16-bit.
2. If the message to be read is not a concatenated message, **<uid>**, **<msg_seg>** and **<msg_total>** would not be shown in the result.

Example

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

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

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

OK
```


9 Packet Domain Commands

9.1. AT+CGATT Attachment or Detachment of PS

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

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

Parameter

<state>	Integer type. Indicates the state of PS attachment. 0 Detached 1 Attached Other values are reserved and will result in an ERROR response to the Write Command.
<err>	Error codes. For more details, see Chapter 12.4 .

Example

```

AT+CGATT=1           //Attach to PS service.
OK
AT+CGATT=0           //Detach from PS service.
OK
AT+CGATT?            //Query the current PS service state.
+CGATT: 0
OK

```

9.2. AT+CGDCONT Define PDP Context

This command specifies PDP context parameters for a specific context **<cid>**. A special form of the Write Command (**AT+CGDCONT=<cid>**) causes the values for context **<cid>** to become undefined. It is not allowed to change the definition of an already activated context.

This Read Command returns the current settings for each defined PDP context.

AT+CGDCONT Define PDP Context	
Test Command AT+CGDCONT=?	Response +CGDCONT: (list of supported <cid> s), <PDP_type> , <APN> , <PDP_addr> ,(list of supported <data_comp> s),(list of supported <head_comp> s),(list of supported <IPv4_addr_alloc> s),(list of supported <request_type> s) OK
Read Command AT+CGDCONT?	Response +CGDCONT: <cid> , <PDP_type> , <APN> , <PDP_addr> , <data_comp> , <head_comp> , <IPv4_addr_alloc> , <request_type> [...] OK
Write Command AT+CGDCONT=<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[,<data_comp>[,<head_comp>[,<IPv4_addr_alloc>[,<request_type>]]]]]]]	Response OK Or ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately.

	The configurations are saved automatically.
Reference 3GPP TS 27.007	

Parameter

<cid>	Integer type. PDP context identifier. A numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value = 1) is returned by the test form of the command.
<PDP_type>	String type. Packet data protocol type, a string parameter which specifies the type of packet data protocol. "IP" Internet Protocol (IETF STD 5) "PPP" "IPV6" "IPV4V6"
<APN>	String type. Access point name, a string parameter that is a logical name used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested.
<PDP_addr>	String type. Identifies the MT in the address space applicable to the PDP. If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, failing that, a dynamic address will be requested. The allocated address may be read with AT+CGPADDR .
<data_comp>	Integer type. Controls PDP data compression (applicable for SNDCP only) (refer to 3GPP TS 44.065). 0 Off (Default if value is omitted) 1 On (Manufacturer preferred compression) 2 V.42bis
<head_comp>	Integer type. Controls PDP header compression (refer to 3GPP TS 44.065 and 3GPP TS 25.323). 0 Off (Default if value is omitted) 1 On 2 RFC1144 3 RFC2507 4 RFC3095
<IPv4_addr_alloc>	Integer type. Controls how the MT/TA requests to get the IPv4 address information. 0 IPv4 address allocation through NAS signaling 1 IPv4 address allocated through DHCP
<request_type>	Integer type. Indicate the type of PDP context activation request for the PDP context. 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).
1	PDP context is for emergency bearer services

9.3. AT+CGACT Activate or Deactivate PDP Context

This Write Command activates or deactivates the specified PDP context(s). After the command has completed, the MT remains in V.250 command state. If any PDP context is already in the requested state, the state for that context remains unchanged. If the MT is not PS attached when the activation form of the command is executed, the MT first performs a PS attach and then attempts to activate the specified contexts. If no **<cid>**s specify the activation/deactivation form of the command, it will activate or deactivate all defined contexts.

AT+CGACT Activate or Deactivate PDP Context	
Test Command AT+CGACT=?	Response +CGACT: (list of supported <state> s) OK
Read Command AT+CGACT?	Response +CGACT: <cid> , <state> [+CGACT: <cid> , <state> ...] OK
Write Command AT+CGACT=<state>,<cid>	Response OK Or NO CARRIER If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	150 s, determined by network.
Characteristics	Whether the command takes effect is determined by network. The configurations are not saved.
Reference 3GPP TS 27.007	

Parameter

<state>	Integer type. 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
<cid>	Integer type. Specifies a particular PDP context definition (see AT+CGDCONT).
<err>	Error codes. For more details, see Chapter 12.4 .

Example

```

AT+CGDCONT=1,"IP","UNINET" //Define PDP context.
OK
AT+CGACT=1,1 //Activated PDP.
OK
AT+CGACT=0,1 //Deactivated the PDP.
OK

```

9.4. AT+CGDATA Enter Data State

This Write Command causes the MT to perform whatever actions that are necessary to establish communication between the TE and the network using one or more packet domain PDP types. This may include performing a PS attach and one or more PDP context activations. Any command following the **AT+CGDATA** in the AT command line will not be processed by the MT.

If the **<L2P>** value is unacceptable to the MT, the MT shall return an **ERROR** or **+CME ERROR** response. Otherwise, the MT issues the intermediate result code **CONNECT** and enters V.250 online data state. After data transfer is completed, and the layer 2 protocol termination procedure has been completed successfully, the command state is reentered and the MT returns the final result code **OK**.

AT+CGDATA Enter Data State	
Test Command AT+CGDATA=?	Response +CGDATA: (list of supported <L2P> s) OK
Write Command AT+CGDATA=<L2P>[,<cid>[,<cid>[,...]]]	Response CONNECT Or ERROR If there is any error related to ME functionality:

	+CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	Whether the command takes effect is determined by network. The configurations are not saved.
Reference	
3GPP TS 27.007	

Parameter

<L2P>	String type. Indicates the layer 2 protocol to be used between the TE and MT: PPP Point to Point protocol for a PDP such as IP Other values Not supported and will result in an ERROR response to the Execution Command
<cid>	Integer type. Specifies a particular PDP context definition (see AT+CGDCONT).
<err>	Error codes. For more details, see Chapter 12.4 .

9.5. AT+CGPADDR Show PDP Address

This Write Command returns a list of PDP addresses for the specified context identifiers. If no **<cid>** is specified, the addresses for all defined contexts are returned.

AT+CGPADDR Show PDP Address	
Test Command AT+CGPADDR=?	Response +CGPADDR: (list of defined <cid>s) OK
Write Command AT+CGPADDR[=<cid>[,<cid>[,...]]]	Response +CGPADDR: <cid>,<PDP_addr> [+CGPADDR: <cid>,<PDP_addr> ...] OK Or ERROR
Maximum Response Time	300 ms
Characteristics	Whether the command takes effect is determined by network. The configurations are not saved.
Reference	
3GPP TS 27.007	

Parameter

<cid>	Integer type. Specifies a particular PDP context definition (see AT+CGDCONT).
<PDP_addr>	String type. 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 AT+CGDCONT when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to by <cid> . <PDP_address> is omitted if none is available.

Example

```

AT+CGDCONT=1,"IP","UNINET"           //Define PDP context.
OK
AT+CGACT=1,1                           //Activated PDP.
OK
AT+CGPADDR=1                           //Show PDP address.
+CGPADDR: 1,"10.76.51.180"
OK

```

9.6. AT+CGREG Network Registration Status

This command queries the network registration status and controls the presentation of an unsolicited result code **+CGREG: <stat>** when **<n>=1** and there is a change in the MT's GPRS network registration status in GERAN/UTRAN, or unsolicited result code **+CGREG: <stat>[,<lac>[,<ci>[,<AcT>]]** when **<n>=2** and there is a change of the network cell in GERAN/UTRAN.

AT+CGREG Network Registration Status	
Test Command AT+CGREG=?	Response +CGREG: (Range of supported <n>s) OK
Read Command AT+CGREG?	Response +CGREG: <n>,<stat>[,<lac>,<ci>[,<AcT>]] OK
Write Command AT+CGREG[=<n>]	Response OK Or ERROR
Maximum Response Time	300 ms

Characteristics	The command takes effect immediately. The configuration is saved automatically.
Reference 3GPP TS 27.007	

Parameter

<n>	Integer type. Control the presentation of the specified URC. <ul style="list-style-type: none"> 0 Disable network registration unsolicited result code 1 Enable network registration unsolicited result code +CGREG: <stat> 2 Enable network registration and location information unsolicited result code +CGREG: <stat>[,<lac>,<ci>[,<AcT>]]
<stat>	Integer type. Network registration status. <ul style="list-style-type: none"> 0 Not registered. MT is not currently searching an operator to register to. The UE is in GMM state GMM-NULL or GMM-DEREGISTERED-INITIATED. The GPRS service is disabled, but the UE is allowed to attach for GPRS if requested by the user. 1 Registered, home network. The UE is in GMM state GMM-REGISTERED or GMM-ROUTING-AREA-UPDATING-INITIATED on the home PLMN. 2 Not registered, but MT is currently trying to attach or searching an operator to register to. UE is in GMM state GMM-DEREGISTERED or GMM-REGISTERED-INITIATED. The GPRS service is enabled, but an allowable PLMN is currently not available. The UE will start a GPRS attach as soon as an allowable PLMN is available. 3 Registration denied. The UE is in GMM state GMM-NULL. The GPRS service is disabled, and the UE is not allowed to attach for GPRS if requested by the user. 4 Unknown 5 Registered, roaming
<lac>	String type. Two-byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal).
<ci>	String type. 16 bit (GSM) or 28 bit (UMTS/LTE) cell ID in hexadecimal format.
<AcT>	Integer type. Access technology selected. <ul style="list-style-type: none"> 0 GSM 2 UTRAN 3 GSM W/EGPRS 4 UTRAN W/HSDPA 5 UTRAN W/HSUPA 6 UTRAN W/HSDPA and HSUPA 7 E-UTRAN

Example

```

AT+CGREG=2
OK
AT+CGATT=0
OK

```



```
+CGREG: 2
AT+CGATT=1
OK

+CGREG: 1,"D504","80428B5",7
```

9.7. AT+CGEREP Packet Domain Event Reporting

This Write 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**.

AT+CGEREP Packet Domain Event Reporting	
Test Command AT+CGEREP=?	Response +CGEREP: (list of supported <mode>s),(list of supported <bfr>s) OK
Read Command AT+CGEREP?	Response +CGEREP: <mode> , <bfr> OK
Write Command AT+CGEREP=mode[,<bfr>]	Response OK Or ERROR
Execution Command AT+CGEREP	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are saved automatically.
Reference 3GPP TS 27.007	

Parameter

<mode>	Integer type. Controls the processing of unsolicited result codes specified within this command.
<u>0</u>	Buffer unsolicited result codes in the MT; if MT result code buffer is full, the oldest ones can be discarded. No code is 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.
2	Buffer unsolicited result codes in the MT when MT-TE link is reserved (e.g. in on-line data mode) and flush them to the TE when MT-TE link becomes available. Otherwise forward them directly to the TE.
<bfr>	Integer type. Controls the effect on buffered codes.
<u>0</u>	MT buffer of unsolicited result codes defined within this command is cleared when <mode> 1 or 2 is specified.
1	MT buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1 or 2 is specified (OK response shall be given before flushing the codes).

NOTE

The unsolicited result codes and the corresponding events are defined as follows:

1. **+CGEV: REJECT <PDP_type>, <PDP_addr>**: A network request for PDP context activation occurred when the MT was unable to report it to the TE with a **+CRING** unsolicited result code and was automatically rejected.
Note: This event is not applicable for EPS.
2. **+CGEV: NW REACT <PDP_type>, <PDP_addr>,[<cid>]**: The network has requested a context reactivation. The **<cid>** used to reactivate the context is provided if known to the MT.
Note: This event is not applicable for EPS.
3. **+CGEV: NW DEACT <PDP_type>, <PDP_addr>,[<cid>]**: The network has forced a context deactivation. The **<cid>** used to activate the context is provided if known to the MT.
4. **+CGEV: ME DEACT <PDP_type>, <PDP_addr>,[<cid>]**: The mobile equipment has forced a context deactivation. The **<cid>** used to activate the context is provided if known to the MT.
5. **+CGEV: NW DETACH**: The network has forced a Packet Domain detach. This implies that all active contexts have been deactivated. These are not reported separately.
6. **+CGEV: ME DETACH**: The mobile equipment has forced a Packet Domain detach. This implies that all active contexts have been deactivated. These are not reported separately.
7. **+CGEV: NW CLASS <class>**: The network has forced a change of MS class. The highest available class is reported (see **AT+CGCLASS**).
8. **+CGEV: ME CLASS <class>**: The mobile equipment has forced a change of MS class. The highest available class is reported (see **AT+CGCLASS**).
9. **+CGEV: PDN ACT <cid>**: Activated a context. The context represents a PDN connection in LTE or a Primary PDP context in GSM/UMTS.
10. **+CGEV: PDN DEACT <cid>**: Deactivated a context. The context represents a PDN connection in LTE or a Primary PDP context in GSM/UMTS.

Example

```

AT+CGEREP=?
+CGEREP: (0-2),(0,1)

OK
AT+CGEREP?
+CGEREP: 0,0

OK

```

9.8. AT+CEREG EPS Network Registration Status

This command queries the network registration status and controls the presentation of an unsolicited result code **+CEREG: <stat>** when **<n>=1** and there is a change in the MT's EPS network registration status in E-UTRAN, or unsolicited result code **+CEREG: <stat>[,<tac>,<ci>,<AcT>]** when **<n>=2** and there is a change of the network cell in E-UTRAN.

AT+CEREG EPS Network Registration Status	
Test Command AT+CEREG=?	Response +CEREG: (list of supported <n>s) OK
Read Command AT+CEREG?	Response +CEREG: <n> , <stat> [, <tac> , <ci> [, <AcT>]] OK
Write Command AT+CEREG[=<n>]	Response OK Or ERROR
Maximum Response Time	300 ms
Characteristics	
Reference 3GPP TS 27.007	

Parameter

<n>	Integer type. Controls the presentation of an unsolicited result code +CEREG: <stat> .
<u>0</u>	Disable network registration unsolicited result code

- 1 Enable network registration unsolicited result code **+CEREG: <stat>**
 - 2 Enable network registration and location information unsolicited result code **+CEREG: <stat>[,<tac>,<ci>[,<AcT>]]**
- <stat>** Integer type.
- 0 Not registered. MT is not currently searching an operator to register to
 - 1 Registered, home network
 - 2 Not registered, but MT is currently trying to attach or searching an operator to register to
 - 3 Registration denied
 - 4 Unknown
 - 5 Registered, roaming
- <tac>** String type. Two-byte tracking area code in hexadecimal format.
- <ci>** String type. 28-bit E-UTRAN cell ID in hexadecimal format.
- <AcT>** Integer type. Access technology selected.
- 0 GSM
 - 2 UTRAN
 - 3 GSM W/EGPRS
 - 4 UTRAN W/HSDPA
 - 5 UTRAN W/HSUPA
 - 6 UTRAN W/HSDPA and HSUPA
 - 7 E-UTRAN

9.9. AT+QGDCNT Packet Data Counter

This command allows the application to check how much bytes are sent to or received by the module.

AT+QGDCNT Packet Data Counter	
Test Command AT+QGDCNT=?	Response +QGDCNT: (list of supported <op>s) OK
Read Command AT+QGDCNT?	Response +QGDCNT: <bytes_sent>,<bytes_rcv> OK
Write Command AT+QGDCNT=<op>	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>

Maximum Response Time	300 ms
Characteristics	Whether the command takes effect is determined by network. The configuration is not saved.

Parameter

<op>	Integer type. The operation about data counter. 0 Reset the data counter 1 Save the results of data counter to NVM If results need to be automatically saved, refer to AT+QAUGDCNT .
<bytes_sent>	Integer type. The amount of sent bytes.
<bytes_recv>	Integer type. The amount of received bytes.
<err>	Error codes. For more details, see Chapter 12.4 .

NOTE

When the MT is powered on, **<bytes_sent>** and **<bytes_recv>** are loaded from results of data counter in NVM. The default result in NVM is 0.

Example

```

AT+QGDCNT=?           //Test command.
+QGDCNT: (0,1)

OK
AT+QGDCNT?           //Query the current bytes sent and received.
+QGDCNT: 3832,4618

OK
AT+QGDCNT=1          //Save the results to NVM.
OK
AT+QGDCNT=0          //Reset the data counter.
OK

```

9.10. AT+QAUGDCNT Auto Save Packet Data Counter

This command allows **AT+QGDCNT** to save results to NVM automatically.

AT+QAUGDCNT Auto Save Packet Data Counter	
Test Command AT+QAUGDCNT=?	Response +QAUGDCNT: (list of supported <value>s) OK
Read Command AT+QAUGDCNT?	Response +QAUGDCNT: <value> OK
Write Command AT+QAUGDCNT=<value>	Response OK Or ERROR If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	Whether the command takes effect is determined by network. The configuration is not saved.

Parameter

<value>	Integer type. This parameter is the time-interval for AT+QGDCNT to save results to NVM automatically. Range: 0, 30–65535. Default: 0. Unit: second. If it is set to 0, auto-save feature is disabled.
<err>	Error code. For more details, see Chapter 12.4 .

Example

```

AT+QAUGDCNT=?           //Test command.
+QAUGDCNT: (0,30-65535)

OK
AT+QGDCNT=35           //Set <value> to 35.
OK
AT+QAUGDCNT?           //Query the interval of auto-save.
+QAUGDCNT: 35
OK
    
```

9.11. AT+QNETDEVSTATUS Query USBNet Device Status

This command can query USBNet device status.

AT+QNETDEVSTATUS Query USBNet Device Status	
Test Command AT+QNETDEVSTATUS=?	Response +QNETDEVSTATUS: (list of supported <on_off>s) OK
Read Command AT+QNETDEVSTATUS?	Response If an USBNet call exists, <state>, <IP_type> and <instance> will be included. +QNETDEVSTATUS: <on_off>[,<state>[,<IP_type>[,<instance>]]] OK
Write Command AT+QNETDEVSTATUS=<on_off>	Response OK Or ERROR
Maximum Response Time	300 ms
Characteristics	/

Parameter

<on_off>	Integer type. 0 Disable USBNet device status URC 1 Enable USBNet device status URC
<state>	Integer type. 0 Enable USBNet device status URC 1 A USBNet call is ready and MCU can get IP addresses by DHCP or QMI 2 A USBNet call is connected
<IP_type>	Integer type. 4 IPv4 call 6 IPv6 call Other value is invalid.
<instance>	Integer type. USBNet call instance. It is always 1.

Example

```

AT+QNETDEVSTATUS=?           //Test command.
+QNETDEVSTATUS: (0,1)

OK
AT+QNETDEVSTATUS?           //Query command.
+QNETDEVSTATUS: 0

OK
AT+QNETDEVSTATUS=1         //Enable USBNet device status URC.
OK
AT+QNETDEVSTATUS?           //Query command.
+QNETDEVSTATUS: 1

OK
AT$QCRMCall=1,1,1,2,1      //Start an IPv4 USBNet call.
$QCRMCall: 1,4

OK

+QNETDEVSTATUS: 1,1,4,1     //USBNet call is ready URC.

+QNETDEVSTATUS: 1,2,4,1     //MCU get IP addresses from module.

AT+QNETDEVSTATUS?           //Query the current configuration.
+QNETDEVSTATUS: 1,2,4,1

OK
AT$QCRMCall=0,1,1,2,1      //Stop an IPv4 USBNet call.
OK

+QNETDEVSTATUS: 1,0,4,1     //Module report USBNet call disconnect URC.
AT+QNETDEVSTATUS?           //Query the current configuration.
+QNETDEVSTATUS: 1

OK

```


9.12. AT+CGCONTRDP PDP Context Read Dynamic Parameters

AT+CGCONTRDP PDP Context Read Dynamic Parameters	
Test Command AT+CGCONTRDP=?	Response +CGCONTRDP: (list of supported <cid>s) OK
Write Command AT+CGCONTRDP[=<cid>]	Response +CGCONTRDP: <cid>,<bearer_id>,<APN>[,<local_addr and subnet_mask>,<gw_addr>,<DNS_prim_addr>,<DNS_sec_addr>,<P-CSCF_prim_addr>,<P-CSCF_sec_addr>,<IM_CN_Signalling_Flag>,<LIPA_indication>,<IPv4_MTU>,<WLAN_Ofload>,<Local_Addr_Ind>,<Non-IP_MTU>,<Serving_PLMN_rate_control_value>]]]]]]]]]]]]] [+CGCONTRDP: <cid>,<bearer_id>,<APN>[,<local_addr and subnet_mask>,<gw_addr>,<DNS_prim_addr>,<DNS_sec_addr>,<P-CSCF_prim_addr>,<P-CSCF_sec_addr>,<IM_CN_Signalling_Flag>,<LIPA_indication>,<IPv4_MTU>,<WLAN_Ofload>,<Local_Addr_Ind>,<Non-IP_MTU>,<Serving_PLMN_rate_control_value>]]]]]]]]]]]]] [...] OK Or ERROR
Maximum Response Time	300 ms
Characteristics	/

Parameter

<cid>	Integer type. Specifies a particular non secondary PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related command.
<bearer_id>	Integer type. Identifies the bearer, i.e. the EPS bearer in EPS and the NSAPI in UMTS/GPRS. 1 A RmNet call is ready and MCU can get IP addresses by DHCP or QMI 2 A RmNet call is connected
<APN>	String type. A logical name that was used to select the GGSN or the

	external packet data network.
<local_addr and subnet_mask>	String type. Shows the IP address and subnet mask of the MT. 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.
<gw_addr>	String type. Shows the Gateway Address of the MT. The string is given as dot-separated numeric (0–255) parameters.
<DNS_prim_addr>	String type. Shows the IP address of the primary DNS server.
<DNS_sec_addr>	String type. Shows the IP address of the secondary DNS server.
<P_CSCF_prim_addr>	String type. Shows the IP address of the primary P-CSCF server.
<P_CSCF_sec_addr>	String type. Shows the IP address of the secondary P-CSCF server.
<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 <i>3GPP TS 24.008 [8] subclause 10.5.6.20</i> . 0 Offloading the traffic of the PDN connection via a WLAN when in S1 mode or when in lu mode is not acceptable. 1 Offloading the traffic of the PDN connection via a WLAN when in S1 mode is acceptable, but not acceptable in lu mode. 2 Offloading the traffic of the PDN connection via a WLAN when in lu mode is acceptable, but not acceptable in S1 mode. 3 Offloading the traffic of the PDN connection via a WLAN when in S1 mode or when in lu mode is acceptable.
<Local_Addr_Ind>	Integer type. Indicates whether or not the MS and the network support local IP address in TFTs (see <i>3GPP TS 24.301 [83]</i> and <i>3GPP TS 24.008 [8] subclause 10.5.6.3</i>) 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_cont	Integer type. Indicates the maximum number of uplink messages the UE

rol_value>	is allowed to send in a 6-minute interval. This refers to octet 3 to 4 of the Serving PLMN rate control IE as specified in <i>3GPP TS 24.301 [8] subclause 9.9.4.28</i> .
----------------------	---

9.13. AT+QNETDEVCTL Make/Disconnect PDP Call

This command makes or disconnects a PDP call.

AT+QNETDEVCTL Make/Disconnect PDP Call	
Test Command AT+QNETDEVCTL=?	Response +QNETDEVCTL: (list of supported <op>s),(list of supported <contextID>),(list of supported <URC_enable>s),(list of supported <state>s) OK
Read Command AT+QNETDEVCTL?	Response +QNETDEVCTL: <op>,<contextID>,<URC_enable>,<state> OK
Write Command Make a call through a specified PDP context AT+QNETDEVCTL=<op>,<contextID>[,<URC_enable>]	Response OK Or ERROR
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configurations are saved automatically.

Parameter

<op>	Integer type. Make or disconnect a call. 0 Disconnect a call 1 Make a call 3 Make a call and automatically remake a call after disconnecting from the network, and automatically make a call after startup
<contextID>	Integer type. PDP context ID. Range: 1–15.
<URC_enable>	Integer type. Whether to enable URC that reports the call status. 0 Disable 1 Enable
<state>	Integer type. Call status. 0 Failed

1 Successful

NOTE

You can configure **<op>** as 0/1 to disable automatically making a call after startup as needed.

Example

```
AT+QNETDEVCTL=3,1,1 //Configure <contextID>=1 to make a call.
OK
```

10 Hardware Related Commands

10.1. AT+QPOWD Power off

This command shuts down the module. The UE returns **OK** immediately when the command is executed. Then the UE deactivates the network. After it is completed, the UE outputs **POWERED DOWN** and enters into the shutdown state. The maximum time for unregistering network is 60 s. The UE is not allowed to turn off the power before the module's STATUS pin is set low or the URC **POWERED DOWN** is outputted to avoid data loss.

AT+QPOWD Power off	
Test Command AT+QPOWD=?	Response +QPOWD: (list of supported <n>s) OK
Execution Command AT+QPOWD[=<n>]	Response OK POWERED DOWN
Maximum Response Time	300 ms
Characteristics	/

Parameter

<n>	Integer type. Power down the module.
	0 Immediately power down
	1 Normal power down

10.2. AT+CCLK Clock

This command sets and queries the real time clock (RTC) of the module. The current setting is retained until the module is totally disconnected from power.

AT+CCLK Clock	
Test Command AT+CCLK=?	Response OK
Read Command AT+CCLK?	Response +CCLK: <time> OK
Write Command AT+CCLK=<time>	Response OK If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately. The configuration is not saved.
Reference 3GPP TS 27.007	

Parameter

<time>	String type. The format is "yy/MM/dd,hh:mm:ss±zz", indicating year (last two digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range: -48 to +56). E.g. May 6 th , 1994, 22:10:00 GMT+2 hours equals to "94/05/06,22:10:00+08".
<err>	Error codes. For more details, see Chapter 12.4 .

Example

```

AT+CCLK?                                //Query the local time.
+CCLK: "08/01/04,00:19:43+00"

OK

```

10.3. AT+CBC Battery Charge

This command returns battery charge status **<bc>** and battery charge level **<bcl>** of the MT.

AT+CBC Battery Charge	
Test Command AT+CBC=?	Response +CBC: (list of supported <bc> s),(list of supported <bcl> s), <voltage> OK
Execution Command AT+CBC	Response +CBC: <bc> , <bcl> , <voltage> OK If there is any error related to ME functionality: +CME ERROR: <err>
Maximum Response Time	300 ms
Characteristics	/
Reference 3GPP TS 27.007	

Parameter

<bc>	Integer type. Battery charge status. 0 ME is not charging 1 ME is charging 2 Charging has been finished
<bcl>	Integer type. Battery charge level. 0–100 Remaining capacity of battery.
<voltage>	Battery voltage (Mv).
<err>	Error codes. For more details, see Chapter 12.4 .

10.4. AT+QADC Read ADC Value

This command reads the voltage value of ADC channel.

AT+QADC Read ADC Value	
Test Command AT+QADC=?	Response +QADC: (list of supported <port>s) OK
Read Command AT+QADC=<port>	Response +QADC: <status>,<value> OK
Maximum Response Time	300 ms
Characteristics	/

Parameter

<port>	Integer type. Channel number of the ADC.
	0 ADC Channel 0
	1 ADC Channel 1
<status>	Integer type. Whether the ADC value is read successfully.
	0 Fail
	1 Success
<value>	The voltage of specified ADC channel. Unit: mV.

10.5. AT+QSCCLK Enable/Disable Low Power Mode

This command enables or disables low power mode. When low power mode is enabled, and both DTR and WAKEUP_IN are pulled up, the module directly enters into sleep mode. If low power mode is enabled, but both DTR and WAKEUP_IN are pulled down, only after the DTR and the WAKEUP_IN are pulled up, can the module enter into low power mode.

AT+QSCCLK Enable/Disable Low Power Mode	
Test Command AT+QSCCLK=?	Response +QSCCLK: (list of supported <n>s) OK
Read Command AT+QSCCLK?	Response +QSCCLK: <n> OK
Write Command AT+QSCCLK=<n>	Response OK
Maximum Response Time	300 ms
Characteristics	The command takes effect immediately The configuration is not saved
Reference Quectel	

Parameter

<n>	Integer type. Disable or enable low power mode.	
	<u>0</u>	Disable
	1	Enable. It is controlled by DTR pin and WAKEUP_IN pin.

11 Other Related Commands

11.1. GNSS Related AT Commands (Not Supported Currently)

Please refer to *Quectel_EG800Q&EG91xQ_Series_GNSS_Application_Note* for details of GNSS function.

Table 4: GNSS Related AT Commands

Commands	Description
AT+QGPSCFG	GNSS configurations
AT+QGPSDEL	Deletes assistance data
AT+QGPS	Turns on GNSS
AT+QGPSEND	Turns off GNSS
AT+QGPSLOC	Acquires positioning information
AT+QGPSGNMEA	Acquires NMEA sentences
AT+QGPSXTRA	Enables gpsOneXTRA assistance function
AT+QGPSXTRATIME	Injects gpsOneXTRA time
AT+QGPSXTRADATA	Injects gpsOneXTRA data file

11.2. DFOTA Related AT Command

See *Quectel_EG800Q&EG91xQ_Series_DFOTA_Upgrade_Guide* for details of DFOTA function.

Table 5: DFOTA Related AT Command

Command	Description
AT+QFOTADL	Upgrades firmware via DFOTA

11.3. FTP(S) Related AT Commands

See *Quectel_EG800Q&EG91xQ_Series_FTP(S)_Application_Note* for details of FTP(S) function.

Table 6: FTP(S) Related AT Commands

Commands	Description
AT+QFTPCFG	Configures parameters for FTP(S) server
AT+QFTPOPEN	Logins to FTP(S) server
AT+QFTPCWD	Configures the current directory on FTP(S) server
AT+QFTPPWD	Gets the current directory on FTP(S) server
AT+QFTPPUT	Uploads a file to FTP(S) server
AT+QFTPGET	Downloads a file from FTP(S) server
AT+QFTPSIZE	Gets the file size on FTP(S) server
AT+QFTPDEL	Deletes a file on FTP(S) server
AT+QFTPMKDIR	Creates a folder on FTP(S) server
AT+QFTPRMDIR	Deletes a folder on FTP(S) server
AT+QFTPLIST	Lists content of a directory on FTP(S) server
AT+QFTPNLIST	Lists file names of a directory on FTP(S) server
AT+QFTPMLSD	Lists standardized file and directory information

AT+QFTPMDTM	Gets the file modification time on FTP(S) server
AT+QFTPFILENAME	Renames a file or folder on FTP(S) server
AT+QFTPLEN	Gets the length of transferred data
AT+QFTPSTAT	Gets the status of FTP(S) server
AT+QFTPCLOSE	Logs out from FTP(S) server

11.4. HTTP(S) Related AT Commands

Please refer to *Quectel_EG800Q&EG91xQ_Series_HTTP(S)_Application_Note* for details of HTTP(S) function.

Table 7: HTTP(S) Related AT Commands

Commands	Description
AT+QHTTPCFG	Configures parameters for HTTP(S) server
AT+QHTTTPURL	Sets URL of HTTP(S) server
AT+QHTTTPGET	Sends GET request to HTTP(S) server
AT+QHTTTPGETEX	Sends range GET request to HTTP(S) server
AT+QHTTTPPOST	Sends POST request to HTTP(S) server via UART/USB
AT+QHTTTPPOSTFILE	Sends POST request to HTTP(S) server via file
AT+QHTTTPREAD	Reads response from HTTP(S) server via UART/USB
AT+QHTTTPREADFILE	Reads response from HTTP(S) server via file
AT+QHTTTPSTOP	Cancels HTTP(S) request

11.5. TCP(IP) Related AT Commands

Please refer to *Quectel_EG800Q&EG91xQ_Series_TCP(IP)_Application_Note* for details of TCP(IP) function.

Table 8: TCP(IP) Related AT Commands

Commands	Description
AT+QICSGP	Configures parameters of a TCP/IP context
AT+QIACT	Activates a PDP context
AT+QIDEACT	Deactivates a PDP context
AT+QIOPEN	Opens a socket service
AT+QICLOSE	Closes a socket service
AT+QISTATE	Queries socket service status
AT+QISEND	Sends data
AT+QIRD	Retrieves the received TCP/IP data
AT+QISENDEX	Sends hex string
AT+QISWTMD	Switches data access modes
AT+QPING	Pings a remote server
AT+QNTP	Synchronizes local time with NTP server
AT+QIDNSCFG	Configures address of DNS server
AT+QIDNSGIP	Gets IP address by domain name
AT+QICFG	Configures optional parameters
AT+QISDE	Controls whether to echo the data for AT+QISEND
AT+QIGETERROR	Queries the last error code

11.6. SSL Related AT Commands

Please refer to *Quectel_EG800Q&EG91xQ_Series_SSL_Application_Note* for details of SSL function.

Table 9: SSL Related AT Commands

Commands	Description
AT+QSSLCFG	Configures Parameters of an SSL Context
AT+QSSLOPEN	Opens an SSL Socket to Connect a Remote Server
AT+QSSLSEND	Sends Data via SSL Connection
AT+QSSLRECV	Receives Data via SSL Connection
AT+QSSLCLOSE	Closes an SSL Connection
AT+QSSLSTATE	Queries the State of SSL Connection

12 Appendix References

Table 10: Related Documents

SN	Document Name
[1]	V.25ter
[2]	3GPP TS 27.007
[3]	3GPP TS 27.005
[4]	Quectel_EG800Q&EG91xQ_Series_GNSS_Application_Note
[5]	Quectel_EG800Q&EG91xQ_Series_DFOTA_Upgrade_Guide
[6]	Quectel_EG800Q&EG91xQ_Series_FTP(S)_Application_Note
[7]	Quectel_EG800Q&EG91xQ_Series_HTTP(S)_Application_Note
[8]	Quectel_EG800Q&EG91xQ_Series_TCP(IP)_Application_Note
[9]	Quectel_EG800Q&EG91xQ_Series_SSL_Application_Note

Table 11: Terms and Abbreviations

Abbreviation	Description
3GPP	3 rd Generation Partnership Project
ACDB	Audio Calibration Database
ACK	Acknowledge Character
ACL	Access Control List
ADC	Analog-to-Digital Converter
AMR	Adaptive Multi-Rate
APN	Access Point Name

ARFCN	Absolute Radio-Frequency Channel Number
ASCII	American Standard Code for Information Interchange
BCD	Binary-Coded Decimal
CBM	Cell Broadcast Message
CCH	Control Channel
CDMA	Code Division Multiple Access
CFU	Call Forwarding Unconditional
CLI	Calling Line Identity
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
COL	Connected Line
COLP	Connected Line Identification Presentation
COLR	Connected Line Identification Restriction
CPT	Communication Production Technology
CS	Circuit Switching
CSD	Circuit Switch Data
DCD	Dynamic Content Delivery
DCD	Data Carrier Detection
DCE	Data Circuit-terminating Equipment
DCH	Data Channel
DCS	Data Coding Scheme
DEC	Decode
DFOTA	Delta Firmware Over-The-Air
DNS	Domain Name Server
DPCH	Dedicated Physical Channel

DRX	Discontinuous Reception
DTE	Data Terminal Equipment
DTMF	Dual Tone Multi Frequency
DTR	Data Terminal Ready
ECC	Emergency Call
ECT	Explicit Call Transfer supplementary service
EFS	Embedded File System
EGPRS	Enhanced General Packet Radio Service
EMM	EPS Mobility Management
ENC	Encode
EONS	Enhanced Operator Name String
EPS	Evolved Packet System
ESM	EPS Session Management
E-UTRAN	Evolved UMTS Terrestrial Radio Access Network
EVDO	Evolution, Data Only
FDD	Frequency Division Duplexing
FDPCH	Fraction-Dedicated Physical Channel
FEM	Front-end Module
FPLMN	Forbidden PLMN
FTM	Factory Test Mode
FTP(S)	File Transfer Protocol over SSL
GBK	Chinese Internal Code Specification
GERAN	GSM EDGE Radio Access Network
GGSN	Gateway GPRS Support Node
GMT	Greenwich Mean Time

GNSS	Global Navigation Satellite System
GPIO	General-Purpose Input/Output
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
HDR	High-Dynamic Range
HSDPA	High Speed Downlink Packet Access
HSUPA	High Speed Uplink Packet Access
HTTP(S)	Hypertext Transfer Protocol over SSL
ICCID	Integrated Circuit Card Identifier
IDSN	Integrated Services Digital Network
IETF	The Internet Engineering Task Force
IIC	Inter-Integrated Circuit
IMEI	International Mobile Equipment Identity
IMS	IP Multimedia Subsystem
IMSI	International Mobile Subscriber Identity
Ipv4	Internet Protocol version 4
Ipv6	Internet Protocol version 6
IRA	International Reference Alphabet
IRAT	Inter-Radio Access Technology
IWF	Interactive Website Framework
LIPA	Local IP Access
LTE	Long Term Evolution
MBN	Modem Software Configuration
MCC	Mobile Country Code
MCU	Microprogrammed Control Unit

ME	Mobile Equipment
MMS	Multimedia Messaging Service
MNC	Mobile Network Code
MO	Mobile Originated
MPTY	Multi-party
MS	Mobile Station
MSC	Mobile Services Switching Center
MSISDN	Mobile Subscriber International ISDN/PSTN number
MT	Mobile Terminal
MTU	Maximum Transmission Unit
NMEA	National Marine Electronics Association
NIC	Network Interface Card
NITZ	Network Identity and Time Zone / Network Informed Time Zone. It is a mechanism for provisioning local time and date, time zone and DST offset, as well as network provider identity information, to mobile devices via a wireless network.
NSAPI	Network Service Access Point Identifier
NVM	Non-Volatile Random Access Memory
OIR	Originating Identification Restriction
PCM	Pulse Code Modulation
PDN	Public Data Network
PDP	Packet Data Protocol
PDU	Protocol Data Unit
PIN	Personal Identification Number
PLMN	Public Land Mobile Network
PPP	Point to Point Protocol
PSC	Primary Synchronization Code

PUK	Personal Identification Number Unlock Key
QCI	QoS Class Identifier
QMI	Qualcom Message Interface
QoS	Quality of Service
RAT	Radio Access Technology
RDI	Remote Defect Indication
RI	Ring Indicator
RLP	Radio Link Protocol
RPLMN	Registered PLMN
RTC	Real Time Clock
RTS/CTS	Request To Send/Clear To Send
RSCP	Received Signal Code Power
RxQual	Received Signal Quality
SAP	Service Access Point
SDU	Service Data Unit
SMS	Short Message Service
SMSC	Short Message Service Center
SMTP	Simple Mail Transfer Protocol
SN	Serial Number
SNDCP	Subnetwork Dependent Convergence Protocol
SSL	Secure Sockets Layer
TA	Terminal Adapter
TCP	Transmission Control Protocol
TDD	Time Division Duplexing
TDSCDMA	Time Division-Synchronous Code Division Multiple Access

TE	Terminal Equipment
TFT	Traffic Flow Template
TTS	Text To Speech
UARFCN	UTRA Absolute Radio Frequency Channel Number
UART	Universal Asynchronous Receiver/Transmitter
UAC	USB Audio Class
UCS2	Unicode
UDH	User Data Header
UDI	Unique Device Identification
UDP	User Datagram Protocol
UDUB	User Determined User Busy
UE	User Equipment
UFS	User File System
UMTS	Universal Mobile Telecommunications System
UICC	Universal Integrated Circuit Card
URC	Unsolicited Result Code
USB	Universal Serial Bus
(U)SIM	Universal Subscriber Identity Module
USSD	Unstructured Supplementary Service Data
UTRAN	UMTS Terrestrial Radio Access Network
VoLTE	Voice (voice calls) over LTE. A standard high-speed wireless communication for mobile phones and data terminals, including Internet of things devices and wearables.
WCDMA	Wideband Code Division Multiple Access
WLAN	Wireless Local Area Network

12.1. Factory Default Settings Restorable with AT&F

Table 12: Factory Default Settings Restorable with AT&F

AT Command	Parameters	Factory Defaults
ATE	<value>	1
ATQ	<n>	0
ATS3	<n>	13
ATS4	<n>	10
ATS5	<n>	8
ATV	<value>	1
ATX	<value>	4
AT&C	<value>	1
AT&D	<value>	2
AT+CREG	<n>	0
AT+CGREG	<n>	0
AT+CMEE	<n>	1
AT+CSCS	<chset>	"GSM"
AT+CSMS	<service>	0
AT+CMGF	<mode>	0
AT+CSMP	<fo>,<vp>,<pid>,<dc>	17,167,0,0
AT+CSDH	<show>	0
AT+CSCB	<mode>	0
AT+CPMS	<mem1>,<mem2>,<mem3>	"ME","ME","ME"

AT+CNMI	<mode>,<mt>,<bm>,<ds>,<bfr>	2,1,0,0,0
AT+CMMS	<n>	0
AT+CTZR	<reporting>	0
AT+CGEREP	<mode>,<brf>	0,0
AT+CEREG	<n>	0

12.2. AT Command Settings Storable with AT&W

Table 13: AT Command Settings Storable with AT&W

AT Command	Parameters	Display with AT&V
ATE	<value>	Yes
ATQ	<n>	Yes
ATV	<value>	Yes
ATX	<value>	Yes
AT&C	<value>	Yes
AT&D	<value>	Yes
AT+IPR	<rate>	No
AT+CREG	<n>	No
AT+CGREG	<n>	No
AT+CEREG	<n>	No

12.3. AT Command Settings Storable with ATZ

Table 14: AT Command Settings Storable with ATZ

AT Command	Parameters	Factory Defaults
ATE	<value>	1
ATQ	<n>	0
ATV	<value>	1
ATX	<value>	4
AT&C	<value>	1
AT&D	<value>	2
AT+CREG	<n>	0
AT+CGREG	<n>	0
AT+CEREG	<n>	0

12.4. 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 are mostly used by common message commands. The following table lists most of general and GRPS related **ERROR** codes. For some GSM protocol failure cause described in GSM specifications, the corresponding **ERROR** codes are not included.

Table 15: Different Coding Schemes of +CME ERROR: <err>

Code of <err>	Meaning
0	Phone failure
1	No connection to phone
2	Phone-adaptor link reserved
3	Operation not allowed
4	Operation not supported
5	PH-SIM PIN required
6	PH-FSIM PIN required
7	PH-FSIM PUK required
10	SIM not inserted
11	SIM PIN required
12	SIM PUK required
13	SIM failure
14	SIM busy
15	SIM wrong
16	Incorrect password
17	SIM PIN2 required
18	SIM PUK2 required
20	Memory full
21	Invalid index
22	Not found
23	Memory failure
24	Text string too long
25	Invalid characters in text string

26	Dial string too long
27	Invalid characters in dial string
30	No network service
31	Network timeout
32	Network not allowed - emergency calls only
40	Network personalization PIN required
41	Network personalization PUK required
42	Network subset personalization PIN required
43	Network subset personalization PUK required
44	Service provider personalization PIN required
45	Service provider personalization PUK required
46	Corporate personalization PIN required
47	Corporate personalization PUK required
901	Audio unknown error
902	Audio invalid parameters
903	Audio operation not supported
904	Audio device busy

12.5. Summary of CMS ERROR Codes

Final result code **+CMS ERROR: <err>** indicates an error related to mobile equipment or network. The operation is similar to ERROR result code. None of the following commands in the same command line is executed. Neither **ERROR** nor **OK** result code shall be returned.

<err> values are mostly used by common message commands:

Table 16: Different Coding Schemes of +CMS ERROR: <err>

Code of <err>	Meaning
107	Other General problems
300	ME failure
301	SMS ME reserved
302	Operation not allowed
303	Operation not supported
304	Invalid PDU mode
305	Invalid text mode
310	SIM not inserted
311	SIM pin necessary
312	PH SIM pin necessary
313	SIM failure
314	SIM busy
315	SIM wrong
316	SIM PUK required
317	SIM PIN2 required
318	SIM PUK2 required
320	Memory failure
321	Invalid memory index
322	Memory full
330	SMSC address unknown
331	No network
332	Network timeout
340	No +CNMA acknowledgement expected

350	Unknown
500	Unknown
510	Message blocked

12.6. Summary of URC

Table 17: Summary of URC

Index	URC Display	Meaning	Condition
1	+CREG: <stat>	Indicate registration status of the ME	AT+CREG=1
2	+CREG: <stat>[,<lac>,<ci>[,<Act>]]	After cell neighborhood changing shows whether the network has currently indicated the registration of the ME, with location area code	AT+CREG=2
3	+CGREG: <stat>	Indicate network registration status of the ME	AT+CGREG=1
4	+CGREG: <stat>[,<lac>,<ci>[,<Act>]]	Indicate network registration and location information of the ME	AT+CGREG=2
5	+CTZV: <tz>	Time zone reporting	AT+CTZR=1
6	+CTZE: <tz>,<dst>,<time>	Extended time zone reporting	AT+CTZR=2
7	+CMTI: <mem>,<index>	New message is received, and saved to memory	See AT+CNMI
8	+CMT: [<alpha>],<length><CR><LF><pdu>	New short message is received and output directly to TE (PDU mode)	See AT+CNMI
9	+CMT: <oa>,<alpha>,<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sc a>,<tosca>,<length>]<CR><LF><data>	New short message is received and output directly to TE (Text mode)	See AT+CNMI
10	^HCMT: <oa>,<scts>,<lang>,<fmt>,<length>,<pri>,<prv>,<type>,<stat><CR><LF><data>	New short message is received and output directly to TE	See AT+CNMI
11	+CBM: <length><CR><LF><pdu>	New CBM is received and output directly (PDU mode)	See AT+CNMI

12	+CBM: <sn>,<mid>,<dc>,<page>,<pages><CR><LF><data>	New CBM is received and output directly to TE (Text mode)	See AT+CNMI
13	+CDS: <length><CR><LF>< pdu>	New CDS is received and output directly (PDU mode)	See AT+CNMI
14	+CDS: <fo>,<mr>,<ra>,<tor a>,<scts>,<dt>,<st>	New CDS is received and output directly to TE (Text mode)	See AT+CNMI
15	+CDSI: <mem>,<index>	New message status report is received, and saved to memory	See AT+CNMI
16	^HCDS: <oa>,<scts>,<lang>,<fmt>,<length>,<pri>,<prv>,<type>,<stat><CR><LF><data>	New CDS is received and output directly to TE	See AT+CNMI
17	RDY	ME initialization is successful	N/A
18	+CFUN: 1	All function of the ME is available	N/A
19	+CPIN: <state>	SIM card pin state	N/A
20	+QIND: SMS DONE	SMS initialization finished	N/A
21	+QIND: PB DONE	Phonebook initialization finished	N/A
22	POWERED DOWN	Module power down	AT+QPOWD
23	+CGEV: REJECT <PDP_type>,<PDP_addr>	A network request for PDP activation, and was automatically rejected.	AT+CGEREP=2,1
24	+CGEV: NW REACT <PDP_type>,<PDP_addr>,<cid>	The network request PDP reactivation	AT+CGEREP=2,1
25	+CGEV: NW DEACT <PDP_type>,<PDP_addr>,<cid>	The network has forced a context deactivation	AT+CGEREP=2,1
26	+CGEV: ME DEACT <PDP_type>,<PDP_addr>,<cid>	The ME has forced a context deactivation.	AT+CGEREP=2,1
27	+CGEV: NW DETACH	The network has forced a Packet Domain detach.	AT+CGEREP=2,1
28	+CGEV: ME DETACH	The mobile equipment has forced a Packet Domain detach.	AT+CGEREP=2,1
29	+CGEV: NW CLASS <class>	The network has forced a change of MS class.	AT+CGEREP=2,1
30	+CGEV: ME CLASS <class>	The mobile equipment has forced a change of MS class.	AT+CGEREP=2,1
31	+USIM: 0	Use SIM card	N/A
32	+USIM: 1	Use USIM card	N/A

12.7. SMS Character Sets Conversions

In 3GPP TS 23.038 DCS (Data Coding Scheme) defined three kinds of alphabets in SMS, GSM 7 bit default alphabet, 8 bit data and UCS2(16 bit). **AT+CSMP** can set the DCS in text mode (**AT+CMGF=1**). In text mode, DCS (Data Coding Scheme) and **AT+CSCS** determine the way of SMS text input or output.

Table 18: The Way of SMS Text Input or Output

DCS	AT+CSCS	The Way of SMS Text Input or Output
GSM 7 bit	GSM	Input or output GSM character sets.
GSM 7 bit	IRA	Input or output IRA character sets. Input: UE will convert IRA characters to GSM characters. Output: UE will convert GSM characters to IRA characters.
GSM 7 bit	UCS2	Input or output a hex string similar to PDU mode. So only support characters 0–9 and A–F. Input: UE will convert the UCS2 hex string to GSM characters. Output: UE will convert the GSM characters to UCS2 hex string.
UCS2	-	Ignore the value of AT+CSCS, input or output a hex string similar to PDU mode. So only support characters 0–9 and A–F .
8 bit	-	Ignore the value of AT+CSCS, input or output a hex string similar to PDU mode. So only support characters 0–9 and A–F.

When DCS = GSM 7 bit, the input or output needs conversion. The detailed conversion tables are shown as below.

Table 19: The Input Conversions Table (DCS = GSM 7 bit and AT+CSCS="GSM")

	0	1	2	3	4	5	6	7
0	00	10	20	30	40	50	60	70
1	01	11	21	31	41	51	61	71
2	02	12	22	32	42	52	62	72
3	03	13	23	33	43	53	63	73
4	04	14	24	34	44	54	64	74
5	05	15	25	35	45	55	65	75

6	06	16	26	36	46	56	66	76
7	07	17	27	37	47	57	67	77
8	08	18	28	38	48	58	68	78
9	09	19	29	39	49	59	69	79
A	0A	Submit	2A	3A	4A	5A	6A	7A
B	0B	Cancel	2B	3B	4B	5B	6B	7B
C	0C	1C	2C	3C	4C	5C	6C	7C
D	0D	1A	2D	3D	4D	5D	6D	7D
E	0E	1E	2E	3E	4E	5E	6E	7E
F	0F	1F	2F	3F	4F	5F	6F	7F

Table 20: The Output Conversions Table (DCS = GSM 7 bit and AT+CSCS="GSM")

	0	1	2	3	4	5	6	7
0	00	10	20	30	40	50	60	70
1	01	11	21	31	41	51	61	71
2	02	12	22	32	42	52	62	72
3	03	13	23	33	43	53	63	73
4	04	14	24	34	44	54	64	74
5	05	15	25	35	45	55	65	75
6	06	16	26	36	46	56	66	76
7	07	17	27	37	47	57	67	77
8	08	18	28	38	48	58	68	78
9	09	19	29	39	49	59	69	79
A	0D0A		2A	3A	4A	5A	6A	7A
B	0B		2B	3B	4B	5B	6B	7B
C	0C	1C	2C	3C	4C	5C	6C	7C

D	0D	1A	2D	3D	4D	5D	6D	7D
E	0E	1E	2E	3E	4E	5E	6E	7E
F	0F	1F	2F	3F	4F	5F	6F	7F

Table 21: GSM Extended Characters

	0	1	2	3	4	5	6	7
0					1B40			
1								
2								
3								
4		1B14						
5								
6								
7								
8			1B28					
9			1B29					
A								
B								
C				1B3C				
D				1B3D				
E				1B3E				
F			1B2F					

Table 22: The Input Conversions Table (DCS = GSM 7 bit and AT+CSCS="IRA")

	0	1	2	3	4	5	6	7
0		20	20	30	00	50	20	70
1	20	20	21	31	41	51	61	71
2	20	20	22	32	42	52	62	72
3	20	20	23	33	43	53	63	73
4	20	20	02	34	44	54	64	74
5	20	20	25	35	45	55	65	75
6	20	20	26	36	46	56	66	76
7	20	20	27	37	47	57	67	77
8	backspace	20	28	38	48	58	68	78
9	20	20	29	39	49	59	69	79
A	0A	Submit	2A	3A	4A	5A	6A	7A
B	20	Cancel	2B	3B	4B	1B3C	6B	1B28
C	20	20	2C	3C	4C	1B2F	6C	1B40
D	0D	20	2D	3D	4D	1B3E	6D	1B29
E	20	20	2E	3E	4E	1B14	6E	1B3D
F	20	20	2F	3F	4F	11	6F	20

Table 23: IRA Extended Characters

	A	B	C	D	E	F
0	20	20	20	20	7F	20
1	40	20	20	5D	20	7D
2	20	20	20	20	20	08
3	01	20	20	20	20	20
4	24	20	5B	20	7B	20

5	03	20	0E	20	0F	20
6	20	20	1C	5C	1D	7C
7	5F	20	09	20	20	20
8	20	20	20	0B	04	0C
9	20	20	1F	20	05	06
A	20	20	20	20	20	20
B	20	20	20	20	20	20
C	20	20	20	5E	07	7E
D	20	20	20	20	20	20
E	20	20	20	20	20	20
F	20	60	20	1E	20	20

Table 24: The Output Conversions Table (DCS = GSM 7 bit and AT+CSCS="IRA")

	0	1	2	3	4	5	6	7
0	40	20	20	30	A1	50	BF	70
1	A3	5F	21	31	41	51	61	71
2	24	20	22	32	42	52	62	72
3	A5	20	23	33	43	53	63	73
4	E8	20	A4	34	44	54	64	74
5	E9	20	25	35	45	55	65	75
6	F9	20	26	36	46	56	66	76
7	EC	20	27	37	47	57	67	77
8	F2	20	28	38	48	58	68	78
9	C7	20	29	39	49	59	69	79
A	0D0A		2A	3A	4A	5A	6A	7A
B	D8		2B	3B	4B	C4	6B	E4

C	F8	C6	2C	3C	4C	D6	6C	F6
D	0D	E6	2D	3D	4D	D1	6D	F1
E	C5	DF	2E	3E	4E	DC	6E	FC
F	E5	C9	2F	3F	4F	A7	6F	E0

Table 25: GSM Extended Characters

	0	1	2	3	4	5	6	7
0					7C			
1								
2								
3								
4		5E						
5								
6								
7								
8			7B					
9			7D					
A								
B								
C				5B				
D				7E				
E				5D				
F			5C					

Because the low 8 bit of UCS2 character is the same as the IRA character:

The conversion table of DCS = GSM 7 bit and **AT+CSCS="UCS2"** is similar to **AT+CSCS="IRA"**.

The conversion table of fmt = GSM 7 bit and **AT+CSCS="GSM"** is similar to **AT+CSCS="GSM"**.

The conversion table of fmt = GSM 7 bit and **AT+CSCS="IRA"** is similar to **AT+CSCS="IRA"**.
The conversion table of fmt = GSM 7 bit and **AT+CSCS="UCS2"** is similar to **AT+CSCS="IRA"**.

The difference is the way of SMS text input or output. Please refer to **Table 17**: Summary of URC for more details.

12.8. Release Cause Text List of AT+CEER

Table 26: List of Location ID List

Location ID	Meaning
0	CS internal cause
1	CS network cause
2	CS network reject
3	PS internal cause
4	PS network cause
5	PS LTE cause
6	PS LTE local cause

Table 27: List of Cause

CS Internal Cause	Meaning
-1	No cause information available (default)
0	Phone is offline
21	No service available
25	Network release, no reason given
27	Received incoming call
29	Client ended call

34	UIM not present
35	Access attempt already in progress
36	Access failure, unknown source
38	Concur service not supported by network
39	No response received from network
45	GPS call ended for user call
46	SMS call ended for user call
47	Data call ended for emergency call
48	Rejected during redirect or handoff
100	Lower-layer ended call
101	Call origination request failed
102	Client rejected incoming call
103	Client rejected setup indication
104	Network ended call
105	No funds available
106	No service available
108	Full service not available
109	Maximum packet calls exceeded
301	Video connection lost
302	Video call setup failure
303	Video protocol closed after setup
304	Video protocol setup failure
305	Internal error
CS Network Cause	Meaning
1	Unassigned/unallocated number

3	No route to destination
6	Channel unacceptable
8	Operator determined barring
16	Normal call clearing
17	User busy
18	No user responding
19	User alerting, no answer
21	Call rejected
22	Number changed
26	Non selected user clearing
27	Destination out of order
28	Invalid/incomplete number
29	Facility rejected
30	Response to status enquiry
31	Normal, unspecified
34	No circuit/channel available
38	Network out of order
41	Temporary failure
42	Switching equipment congestion
43	Access information discarded
44	Requested circuit/channel not available
47	Resources unavailable, unspecified
49	Quality of service unavailable
50	Requested facility not subscribed
55	Incoming calls barred within the CUG

57	Bearer capability not authorized
58	Bearer capability not available
63	Service/option not available
65	Bearer service not implemented
68	ACM >= ACM max
69	Requested facility not implemented
70	Only RDI bearer is available
79	Service/option not implemented
81	Invalid transaction identifier value
87	User not member of CUG
88	Incompatible destination
91	Invalid transit network selection
95	Semantically incorrect message
96	Invalid mandatory information
97	Message non-existent/not implemented
98	Message type not compatible with state
99	IE non-existent/not implemented
100	Conditional IE error
101	Message not compatible with state
102	Recovery on timer expiry
111	Protocol error, unspecified
127	Interworking, unspecified
CS Network Reject	Meaning
2	IMSI unknown in HLR
3	Illegal MS

4	IMSI unknown in VLR
5	IMEI not accepted
6	Illegal ME
7	GPRS services not allowed
8	GPRS and non GPRS services not allowed
9	MS identity cannot be derived
10	Implicitly detached
11	PLMN not allowed
12	Location area not allowed
13	Roaming not allowed
14	GPRS services not allowed in PLMN
15	No suitable cells in location area
16	MSC temporary not reachable
17	Network failure
20	MAC failure
21	Synch failure
22	Congestion
23	GSM authentication unacceptable
32	Service option not supported
33	Requested service option not subscribed
34	Service option temporary out of order
38	Call cannot be identified
40	No PDP context activated
95	Semantically incorrect message
96	Invalid mandatory information

97	Message type non-existent
98	Message type not compatible with state
99	Information element non-existent
101	Message not compatible with state
161	RR release indication
162	RR random access failure
163	RRC release indication
164	RRC close session indication
165	RRC open session failure
166	Low level failure
167	Low level failure no redial allowed
168	Invalid SIM
169	No service
170	Timer T3230 expired
171	No cell available
172	Wrong state
173	Access class blocked
174	Abort message received
175	Other cause
176	Timer T303 expired
177	No resources
178	Release pending
179	Invalid user data
PS Internet Cause	Meaning
0	Invalid connection identifier

1	Invalid NSAPI
2	Invalid primary NSAPI
7	PDP establish timeout
3	Invalid field
4	SNDTCP failure
5	RAB setup failure
6	No GPRS context
8	PDP activate timeout
9	PDP modify timeout
10	PDP inactive max timeout
11	PDP lower layer error
12	PDP duplicate
13	Access technology change
14	PDP unknown reason
PS Network Cause	Meaning
25	LLC or SNDTCP failure
26	Insufficient resources
27	Missing or unknown APN
28	Unknown PDP address or PDP type
29	User authentication failed
30	Activation rejected by GGSN
31	Activation rejected, unspecified
32	Service option not supported
33	Requested service option not subscribed
34	Service option temporary out of order

35	NSAPI already used (not sent)
36	Regular deactivation
37	QoS not accepted
38	Network failure
39	Reactivation required
40	Feature not supported
41	Semantic error in the TFT operation
42	Syntactical error in the TFT operation
43	Unknown PDP context
44	PDP context without TFT already activated
45	Semantic errors in packet filter
46	Syntactical errors in packet filter
81	Invalid transaction identifier
95	Semantically incorrect message
96	Invalid mandatory information
97	Message non-existent/not implemented
98	Message type not compatible with state
99	IE non-existent/not implemented
100	Conditional IE error
101	Message not compatible with state
111	Protocol error, unspecified
PS LTE Cause	Meaning
8	Operator determined barring
26	Insufficient Resources
27	Missing or unknown APN

28	Unknown PDP address or PDP type
29	User Authentication failure
30	Activation rejected by Servicing GW or PDN GW
31	Activation rejected, unspecified
32	Service option not supported
33	Requested service option not subscribed
34	Service option temporarily out of order
35	PTI already In use
36	Regular deactivation
37	QoS not accepted
38	Network failure
39	Reactivation required
40	Feature not supported
41	Semantic error in the TFT operation
42	Syntactical error in the TFT operation
43	Unknown Bearer context
44	Semantic errors in packet filter
45	Syntactical errors in packet filter
46	Bearer Context without TFT already Active
47	PTI mismatch
49	PDN disconnected, not allowed
50	PDN type IPV4 only Allowed
51	PDN type IPV6 only Allowed
52	Single ADR bearers only Allowed
53	ESM info not received

54	PDN connection does not exist
55	Multiple PDN connection for given APN not allowed
56	Collision with network init request
59	Unsupported QCI value
81	Invalid PTI value
95	Symantically invalid message
96	Invalid mandatory information
97	Message non-existent/not implemented
98	Message type not compatible with state
99	Info Element non-existent
100	Conditional IE error
101	Message type not compatible with state
111	Protocol error, unspecified
112	APN restrict value incompatible with ACT context
PS LTE Local Cause	Meaning
3	Illegal UE
6	Illegal ME
7	EPS services not allowed
9	UE id can't be driven by network
10	Implicitly Detached
11	PLMN not allowed
12	tracking area not allowed
13	Roaming not allowed in this tracking area
15	No Suitable cells in tracking area
18	CS Domain Not available

25	Not Authorized for this CSG
38	CS fallback call EST not allowed
39	CS domain temporarily not allowed
43	Unknown EPS bearer context
256	Released AT RRC
257	Signal Connection Released
258	EMM detached
259	EMM attach failed
260	EMM attach started
261	NAS service request failed
262	ESM activate dedicated bearer reactivater by network
263	Lower layer failure
264	Lower layer failure
265	Network activater dedicated bearer with ID of deffered bearer
266	BAD OTA message
267	DS rejected the call
268	Context transferred due to IRAT
269	DS explicit deactivation
270	ESM MSGR failure
271	Local Cause not Available
272	Rejected due to connected state
273	Nas Service request failed, no throttle
274	ACL failure
275	Nas Service request failed, DS disallow
276	EMM T3417 expired

277	EMM T3417 ext expired
278	Nas LRRc UL data CNF failure TXN
279	Nas LRRc UL data CNF failure HO
280	Nas LRRc UL data CNF failure Conn release
281	Nas LRRc UL data CNF failure RLF
282	Nas LRRc UL data CNF failure control Not CONN
283	NAS LRRc connection EST success
284	NAS LRRc connection EST failure
285	NAS LRRc connection EST failure, aborted
286	NAS LRRc connection EST failure, access barrer
287	NAS LRRc connection EST failure, CELL resel
288	NAS LRRc connection EST failure, config failure
289	NAS LRRc connection EST failure, timer expired
290	NAS LRRc connection EST failure, link failure
291	NAS LRRc connection EST failure, not camped
292	NAS LRRc connection EST failure, SI failure
293	NAS LRRc connection EST failure, CONN reject
294	NAS LRRc connection release normal
295	NAS LRRc connection release RLF
296	NAS LRRc connection release CRE failure
297	NAS LRRc connection release QOS during CRE
298	NAS LRRc connection release aborted
299	NAS LRRc connection release SIB read error
300	NAS LRRc connection release aborted IRAT Success
301	Nas Reject LRRc radio link failure

302	Nas service request failure, LTE network reject
303	Nas detach with reattach, LTE network detach
304	NAS detach without reattach, LTE network detach