ECx00x&EG800AK&EG800K&EG810M&EG91xN&EG915K&EG950A Series
AT Commands Manual

LTE Standard Products

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Quectel Wireless Solutions Co., Ltd.
No. 8 Waipojing Road, Sijing Town, Songjiang District, Shanghai 201601, China
Tel: +86 21 5108 6236
Email: info@quectel.com

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

Revision History

Revision	Date	Author	Description
1.0	2019-03-01	Jensen Fang/ Adolph Wang	First official release
1.1	2021-09-05	Yule Deng/ Isaac Shi	1. Updated the EC200T-CN to EC200x series, and added EC600x-CN and EG912Y-EU. 2. Updated the description related to AT commands (Chapter 1). 3. Added AT+QPPPDROP. (Chapter 2.26). 4. Updated AT+QCFG="band". (Chapter 4.3.6). 5. Added AT+QCFG ="usbnet". (Chapter 4.3.10). 6. Added AT+QCFG="ppp/termframe" (Chapter 4.3.11). 7. Added AT+QCFG="airplanecontrol" (Chapter 4.3.12). 8. Added AT+QCFG="urc/ri/ring". (Chapter 4.3.13). 9. Added AT+QCFG="risignaltype". (Chapter 4.3.14). 10. Added AT+QCFG="uart2ipr". (Chapter 4.3.15). 11. Added AT+QCFG="nat". (Chapter 4.3.16). 12. Added AT+QCELL. (Chapter 6.10). 13. Added Call Related Commands. (Chapter 7). 14. Update the range of parameters of AT+CGEQREQ (Chapter 10.5). 15. Update the range of parameters of AT+CGEQMIN (Chapter 10.6). 16. Update the range of the parameter of AT+ QAUGDCNT (Chapter 10.16). 17. Added AT+QNETDEVCTL. (Chapter 10.17).
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			3. Deleted AT+QCELL. 4. Added the note that E200A series currently do not support the command for enabling/disabling URC cache function (Chapter 4.3.9). 5. Updated the value of <urctype> of AT+QINDCFG (Chapter 4.4). 6. Deleted <tone_info> of AT^DSCI (Chapter 7.10). 7. Updated the example of AT+CPBW (Chapter 8.5). 8. Updated the value of <mem1> of AT+CMGD (Chapter 9.5, 9.6 and 9.7). 9. Updated the parameters of AT+CMGL (Chapter 9.6). 10. Updated the range of <uid> of AT+QCMGR (Chapter 9.18). 11. Updated the default value of the parameter <service> of AT+CGSMS to 3 (Chapter 10.13). 12. Updated Summary of URC (Chapter 12.7).
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			8. Updated the maximum response time of AT+COPS to 300 s (Chapter 6.1). 9. Added the following commands: ● AT+QCFG="ims" (Chapter 4.3.17) ● AT+QCFG="fota/times" (Chapter 4.3.18) ● AT+QDSIM (Chapter 5.12) ● AT+QCEERCATCFG (Chapter 10.18) ● AT+CBC (Chapter 11.4) ● AT+QADC (Chapter 11.5) 10. Added the parameters <NG-RAN> and <RESERVE> of AT+CPOL (Chapter 6.4). 11. Added a note about the condition that the IPV6 address cannot be transmit among routers (Chapter 10.9). 12. Added notes that some software versions do not support the following commands: ● AT+QPPPDROP (Chapter 2.25) ● AT+CPAS (Chapter 4.1) ● AT+QCFG (Chapter 4.3) ● AT+COPN (Chapter 6.5)） ● ATD (Chapter 7.2) ● AT+COLP (Chapter 7.3) ● AT+CHUP (Chapter 7.5) ● AT+CLCC (Chapter 7.9) ● AT^DSCI (Chapter 7.10) ● AT+CPBF (Chapter 8.2) ● AT+CPBR (Chapter 8.3) ● AT+CPBS (Chapter 8.4) ● AT+CPBW (Chapter 8.5) ● Short message service commands (Chapter 9) ● AT+CGQREQ (Chapter 10.3) ● AT+CGQMIN（(Chapter 10.4) ● AT+CGEQREQ (Chapter 10.5) ● AT+CGEQMIN (Chapter 10.6) ● AT+CGCLASS (Chapter 10.10) ● AT+CGSMS (Chapter 10.13)
1.4	2025-07-21	Ford Zhang/ Yule Deng	1. Added the applicable modules EG800AK series and EG915K-EU. 2. Added the value "all" to the parameter <urc_port_value> in AT+QURCCFG and added a note to explain whether the module supports this value (Chapter 2.24). 3. Updated the parameters supported by

			AT+QCFG="gprsattach" (Chapter 4.3.1). 4. Added a note for <roam_modeex> in AT+QCFG="roamserviceex" (Chapter 4.3.4). 5. Updated the value range of <time> in AT+QCFG="urcdelay" and added relevant notes (Chapter 4.3.8). 6. Updated the value description of <net> in AT+QCFG="usbnet" (Chapter 4.3.10). 7. Added a note about the value of the parameter <IMS_conf> in AT+QCFG="ims" (Chapter 4.3.17). 8. Added the following commands: ● AT+QCFG="BIP" (Chapter 4.3.19) ● AT+QCFG="sleepind/drx" (Chapter 4.3.20) 9. Added a note that some software versions do not support call related commands (Chapter 7). 10. Updated the maximum response time of AT+CMGL (Chapter 9.6).
1.5	2026-06-30	Mike Lu/ Chew Yong Wan/ Zuhairi Bin Yusri	1. Updated EG915K-EU to EG915K series. 2. Deleted EOL product EC200N-LA. 3. Updated the responses for the following read command: ● AT+GSN=? (Chapter 2.8). ● AT+CGSN=? (Chapter 2.9). 4. Added an example for AT+QCFG="band" (Chapter 4.3.6). 5. Updated the characteristics description of AT+QCFG="urc/cache"(Chapter 4.3.9). 6. Updated the default value of <flag> in the AT+QCFG="ppp/termframe" (Chapter 4.3.11). 7. Added the AT+QNWCFG="lte_band_priority" (Chapter 4.5). 8. Added a description of the default value for the <fo> in the AT+CSMP (Chapter 9.16). 9. Updated the AT+QSCLK command (Chapter 11.3). 10. Updated the read command description of AT+QADC (Chapter 11.5).

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1 Introduction

This document introduces the AT Commands Set for the following Quectel ECx00x family, EG800AK series, EG800K series, EG810M series, EG91xN family, EG915K series and EG950A series modules.

1.1. Applicable Modules

Table 1: Applicable Modules

Module Family	Module
ECx00x	EC200A Series
	EC600M Series
	EC800K-CN
	EC800M-CN
-	EG800AK Series
-	EG800K Series
-	EG810M Series
EG91xN	EG912N-EN
	EG915N Series
-	EG915K Series
-	EG950A Series

1.2. 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 omitted in a command, the module retains the previously-set value or the default settings, unless otherwise specified.
- **Underline** Default setting of a parameter.

1.3. AT Command Syntax

AT commands implemented by module falls into three categories syntactically: “Basic”, “S Parameter” and “Extended”, as listed below:

1.3.1. Basic Syntax

Basic command format is **AT<x><n>**, or **AT&<x><n>**, where **<x>** is the command, and **<n>** is/are the argument(s) of the command. For example, **ATE<n>** tells the DCE (Data Circuit-terminating Equipment) whether to echo the received characters back to the DTE (Data Terminal Equipment) according to the value of **<n>**. If **<n>** is omitted the default value will be used.

1.3.2. S Parameter Syntax

S Parameter command format is **ATS<n>=<m>**, where **<n>** is the index of the **S** register to be set, and **<m>** is the value to be assigned to it.

1.3.3. Extended Syntax

Extended commands are categorized as shown in the following table.

Table 2: Types of Extended AT Commands

Command Type	Syntax	Description
Test Command	**AT+<cmd>=?**	Test the existence of the command and return information about its parameter type, value, or range.

Read Command	**AT+<cmd>?**	Check the current parameter value of the corresponding command.
Write Command	**AT+<cmd>=<p1>[,<p2>[,<p3>[...]]]**	Set user-defined parameter value.
Execution Command	**AT+<cmd>**	Return specific information or perform a specific action.

1.3.4. Input of AT Commands

All command lines must start with **AT** or **at** and end with **<CR>**. In command and response tables throughout this document, only the commands and responses are presented, while **<CR>** and **<LF>** are deliberately omitted.

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

Optional parameters, unless explicitly stated, need to be provided in sequence up to the last optional parameter.

1.3.4.1.Single Command Input

AT commands must follow the format **AT[+Command][=Parameters]<CR>**. On a command line, AT is case-insensitive and parameters are comma-separated.

1.3.4.2.Multi-Command Input

You can enter multiple AT commands on a single line by separating them with a semi-colon (**;**). In such cases, only the first command requires the **AT** prefix. Commands are case-insensitive.

1.3.4.3.Space Handling Rules

Spaces in AT commands are 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 **=?**.

1.4. AT Command Responses

When the AT command processor has completed processing a line, it will output **OK**, **ERROR** or **+CME ERROR: <err>** to indicate that it is ready to accept a new command. Solicited information responses are sent before the final **OK**, **ERROR** or **+CME ERROR: <err>**.

The responses are in the format of:

<CR><LF>+CMD: <parameter1>,<parameter2>…,<parameterN><CR><LF>
<CR><LF>OK<CR><LF>

Or

<CR><LF><parameters><CR><LF>
<CR><LF>OK<CR><LF>

In tables presenting commands and responses throughout this document, only the commands and responses are presented, and **<CR>** and **<LF>** are deliberately omitted.

1.5. Supported Character Sets

The AT command interface of the module uses the **GSM** character set by default and supports the following character sets:

- GSM format
- UCS2
- IRA

The character set can be configured and interrogated by using the **AT+CSCS** command (*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 entries text field.

1.6. AT Command Interface

The AT command interface of the module includes the main UART port and two USB ports (USB modem port and USB AT port), all of which support AT command communication and data transfer.

1.7. Unsolicited Result Code

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

1.8. Turn off Procedure

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

After sending **AT+QPOWD**, do not enter any other AT commands. The module outputs message, **POWERED DOWN** and sets the STATUS pin as low to enter into the shutdown state. In order to avoid data loss, it is suggested to wait for 3 s to switch off the VBAT after the STATUS pin is set as low and the URC **POWERED DOWN** is outputted. If **POWERED DOWN** has not been received within 65 s, the power supply shall be switched off compulsorily.

1.9. Declaration of AT Command Examples

The AT command examples in this document are provided to help you learn to use outlined AT commands. 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 Product Identification Information

The command delivers a product information text.

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

Example

```
ATI
Quectel
EG912NEN
Revision: EG912NENAAR03A03M16

OK
```

2.2. AT+GMI Request Manufacturer Identification

This command returns a manufacturer identification text. It is identical with **AT+CGMI** in ***Chapter 2.5***.

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 a product model identification text. It is identical with **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. Identifier of device type.

2.4. AT+GMR Request TA Revision Identification of Software Release

This command delivers a product firmware version identification text. It is identical with **AT+CGMR** in ***Chapter 2.7***.

AT+GMR Request TA Revision Identification of Software Release	
Test Command **AT+GMR=?**	Response **OK**
Execution Command **AT+GMR**	Response **<revision>** **OK**
Maximum Response Time	300 ms
Characteristics	-
Reference V.25ter	

Parameter

<revision>	String type. Identification text of software version, including line terminators, which should not exceed 2048 characters in the information text.

Example

```
AT+GMR
EG912NENAAR03A03M16_01.001.01.001

OK
```

2.5. AT+CGMI Request Manufacturer Identification

This command returns a manufacturer identification text. It is identical with above **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 Model Identification

This command returns a product model identification text. It is identical with above **AT+GMM**.

AT+CGMM Request 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. Identifier of device type.

2.7. AT+CGMR Request TA Revision Identification of Software Release

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

AT+CGMR Request TA Revision Identification of Software Release	
Test Command **AT+CGMR=?**	Response **OK**
Execution Command **AT+CGMR**	Response **<revision>**

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

Parameter

<revision>	String type. Identification text of software version, including line terminators, which should not exceed 2048 characters in the information text.

2.8. AT+GSN Request International Mobile Equipment Identity (IMEI)

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

AT+GSN Request International Mobile Equipment Identity (IMEI)	
Test Command **AT+GSN=?**	Response **+GSN: (**list of supported **<enable>**s**)** **OK**
Execution Command **AT+GSN**	Response **<IMEI>** **OK**
Write Command **AT+GSN=<enable>**	Response If **<enable>** is 1: **+GSN: <IMEI>** **OK** If **<enable>** is 0: **+GSN: <SN>** **OK**
Maximum Response Time	300 ms
Characteristics	-

Reference V.25ter	

Parameter

<enable>	Integer type. Query the IMEI or SN of the ME. 0 Query SN 1 Query IMEI
<SN>	String type. SN of the ME.
<IMEI>	String type. IMEI number of the ME.

NOTE

1. The IMEI is unique to each ME, so it can be used to identify an ME.
2. Some module models do not support querying SN, that is, when **<enable>** is set to 0, no SN data is returned.

2.9. AT+CGSN Request International Mobile Equipment Identity (IMEI)

This command returns International Mobile Equipment Identity (IMEI) number or SN of ME. It is identical with above **AT+GSN**.

AT+CGSN Request International Mobile Equipment Identity (IMEI)	
Test Command **AT+CGSN=?**	Response **+CGSN: (**list of supported **<enable>**s**)** **OK**
Execution Command **AT+CGSN**	Response **<IMEI>** **OK**
Write Command **AT+CGSN=<enable>**	Response If **<enable>** is 1: **+CGSN: <IMEI>** **OK** If **<enable>** is 0: **+CGSN: <SN>**

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

Parameter

<enable>	Integer type. Query the IMEI or SN of the ME. 0 Query SN 1 Query IMEI
<SN>	String type. SN of the ME.
<IMEI>	String type. IMEI number of the ME.

NOTE

1. The IMEI is unique to each ME, so it can be used to identify an ME.
2. Some module models do not support querying SN, that is, when **<enable>** is set to 0, no SN data is returned.

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

This command resets AT command settings to the default values specified by the manufacturer (see ***Table 7***).

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. 0 Reset all AT command settings to factory defaults.

2.11. AT&V Display Current Configuration

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

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

Table 3: AT&V Response

AT&V
&C: 1 &D: 2 &F: 0 &W: 0 E: 1 Q: 0 V: 1 X: 4 Z: 0 S0: 0 S3: 13 S4: 10 S5: 8 S6: 2 S7: 0 S8: 2 S10: 15 OK

2.12. AT&W Store Current Parameters to User Defined Profile

This command stores the current AT command settings to a user-defined profile in non-volatile memory (see ***Table 8***). 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 Parameters to User Defined Profile	
Execution Command **AT&W[<n>]**	Response **OK**
Maximum Response Time	300 ms
Characteristics	-
Reference V.25ter	

Parameter

<n>	Integer type. 0 Profile number to store current parameters.

2.13. ATZ Set All Current Parameters to User Defined Profile

This command first resets the AT command settings to the default values specified by the manufacturer, similar to **AT&F**. Afterwards the AT command settings are restored from the user-defined profile in non-volatile memory, if they have been stored with **AT&W** before (See ***Table 8***).

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

ATZ Set All Current Parameters to User Defined Profile	
Execution Command **ATZ[<value>]**	Response **OK**
Maximum Response Time	300 ms
Characteristics	-
Reference V.25ter	

Parameter

<value>	Integer type. 0 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	This command takes effect immediately. The configuration is saved with **AT&W**.
Reference V.25ter	

Parameter

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

2.15. ATV TA Response Format

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

The numeric equivalents and brief descriptions of results code are listed in the ***Table 4***.

ATV TA Response Format	
Execution Command **ATV<value>**	Response When **<value>** = 0

	0 When **<value>** = 1 **OK**
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is saved with **AT&W**.
Reference V.25ter	

Parameter

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

Example

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

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

Table 4: The Numeric Equivalents and Brief Description of ATV0&ATV1

ATV1	ATV0	Description
OK	0	Acknowledges execution of a command.
CONNECT	1	A connection has been established. The DCE is moving from command mode to data mode.
RING	2	The DCE has detected an incoming call signal from network.
NO CARRIER	3	The connection has been terminated or the attempt to

		establish a connection failed.
ERROR	4	Command not recognized caused by command line maximum length exceeded, parameter value invalid, or other problem with processing the command line.
NO DIALTONE	6	No dial tone detected.
BUSY	7	Engaged (busy) signal detected.
NO ANSWER	8	"@" (Wait for Quiet Answer) dial modifier was used, but remote ringing followed by five seconds of silence was not detected before expiration of the connection timer (S7).

2.16. ATE Set Command Echo Mode

This command controls whether the module echoes characters received from TE or not during AT command mode.

ATE Set Command Echo Mode	
Execution Command **ATE<value>**	Response **OK**
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is saved with **AT&W**.
Reference V.25ter	

Parameter

<value>	Integer type. 0 Echo mode OFF 1 Echo mode ON

2.17. ATS3 Set Command Line Termination Character

This command determines the character recognized by the module to terminate an incoming command line. It is also generated for result codes and information text, along with character 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	-
Reference V.25ter	

Parameter

<n>	Integer type. Command line termination character. Range: 0–127. (Default 13 = **<CR>**)

2.18. ATS4 Set Response Formatting Character

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

ATS4 Set Response Formatting Character	
Read Command **ATS4?**	Response **<n>** **OK**
Write Command **ATS4=<n>**	Response **OK**
Maximum Response Time	300 ms
Characteristics	-
Reference V.25ter	

Parameter

<n>	Integer type. Response formatting character. Range: 0–127. (Default 10 = **<LF>**)

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	-
Reference V.25ter	

Parameter

<n>	Integer type. Response editing character. Range: 0–127. (Default 8 = **<Backspace>**)

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

This command determines whether TA transmits particular result codes to 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	This command takes effect immediately. The configuration is saved with **AT&W**.
Reference V.25ter	

Parameter

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

2.21. AT+CFUN Set Phone Functionality

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

AT+CFUN Set Phone 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	-
Reference	

3GPP TS 27.007	

Parameter

<fun>	Integer type. 0 Minimum functionality 1 Full functionality 3 Disable the ME from receiving RF signals 4 Disable the ME from both transmitting and receiving RF signals 5 Disable (U)SIM
<rst>	Integer type. 0 Do not reset the ME before setting it to **<fun>** functionality level. (This is the default setting when **<rst>** is not given.) 1 Reset the ME. The device is fully functional after the reset. This value is available only for **<fun>** = 1.
<err>	Error code. See ***Chapter 12.5*** for details.

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>**.

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	-
Reference 3GPP TS 27.007	

Parameter

<n>	Integer type.	
	0	Disable result code
	1	Enable result code with numeric values
	2	Enable result code with verbose values

Example

```
AT+CMEE=0                                    //Disable result code
OK
AT+CPIN?
```

```
ERROR                                   //Only ERROR will be displayed
AT+CMEE=1                               //Enable error result code with numeric values
OK
AT+CPIN?
+CME ERROR: 10
AT+CMEE=2                               //Enable error result code with verbose (string)
                                          values
OK
AT+CPIN?
+CME ERROR: SIM not inserted
```

2.23. AT+CSCS Select TE Character Set

This command informs the module which character set is used by the TE. This enables the UE to convert character strings correctly between TE and UE 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	-
Reference 3GPP TS 27.007	

Parameter

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

Example

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

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

OK
```

2.24. AT+QURCCFG Configure URC Indication Option

This command configures the output port of URC.

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>]**	If the optional parameter is omitted, query the current configuration: **+QURCCFG: "urcport",<urc_port_value>** **OK** If the optional parameter is specified, configure the output port of URC. **OK** Or **ERROR**
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is saved automatically.

Parameter

<urc_port_value>	String type. Set URC output port.

	"usbat"	USB AT port
	"usbmodem"	USB modem port
	"uart1"	Main UART
	"all"	All ports

NOTE

Some modules do not support the parameter value "all". Please use **AT+QURCCFG=?** to check whether the module supports the parameter value "all" before configuring **<urc_port_value>**. For details, please contact Quectel Technical Support.

Example

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

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

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

OK
```

2.25. AT+QPPPDROP Terminate PPP Connection

This command terminates the PPP connection.

AT+QPPPDROP Terminate PPP Connection	
Test Command **AT+QPPPDROP=?**	Response **+QPPPDROP: (**list of supported **<op>**s**)** **OK**
Write Command **AT+QPPPDROP[=<op>]**	Response **OK**
Maximum Response Time	300 ms

Characteristics	This command takes effect immediately. The configuration is not saved.

Parameter

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

NOTE

1. This command will return **OK** immediately and then perform following procedures:
   Step 1: Check if PPP link exists. Run step 2 if exists.
   Step 2: Hang up PPP link and then output **NO CARRIER** to the port that's used for dialling 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.
4. Some software versions do not support this command. Please contact Quectel Technical Support for details.

Example

```
AT+QPPPDROP //Send command from USB_AT port
OK          //Receive result from USB_AT port

//MCU's dial-up port receives 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,
              the module will output 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 relates to the detection of received line signal from the distant end.

AT&C Set DCD Function Mode	
Execution Command **AT&C[<value>]**	Response **OK**
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is 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 function is always ON 1 DCD function 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 during data mode.

AT&D Set DTR Function Mode	
Execution Command **AT&D[<value>]**	Response **OK**
Maximum Response Time	300 ms

Characteristics	This command takes effect immediately. The configuration is saved with **AT&W**.
Reference V.25ter	

Parameter

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

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

This command determines the flow control behavior of the serial port.

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	This command takes effect immediately. The configurations are saved by **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

1. The value of **AT+IFC** can be restored with **AT&F**, **ATZ** and **AT&W**.
2. The values of **<dce_by_dte>** and **<dte_by_dce>** must be the same.

Example

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

OK
```

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

This command queries and sets the baud rate of the UART. The default baud rate value (**<rate>**) is 115200 bps. The setting of **<rate>** will not be restored with **AT&F**.

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	This command takes effect immediately. The configuration is saved by **AT&W**.
Reference V.25ter	

Parameter

<rate>	Integer type. Baud rate per second on the serial port. Unit: bps. 0 (Adaptive baud rate) 4800 9600 19200 38400 57600 115200 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. The value of **AT+IPR** cannot be restored with **AT&F**, **ATZ** and **AT&W**.
3. A selected baud rate takes effect after the Write Commands are executed and acknowledged by **OK**.

Example

```
AT+IPR=115200                //Set fixed baud rate to 115200 bps.
OK
AT&W                         //Store current setting, that is, the serial communication speed is
                              115200 bps after restarting the module.
OK
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 Query Mobile Equipment Activity Status

This command queries the activity status of mobile equipment.

AT+CPAS Query 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. 0 Ready 2 Unknown 3 Ringing 4/6 Call in progress or call hold
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

Some software versions do not support this command. Please contact Quectel Technical Support for details.

Example

```
AT+CPAS
+CPAS: 0                                    //The module is ready to handle requests

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 Report Extended Error

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

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

The release cause **<text>** is a text to describe the cause information given by the network.

AT+CEER Report Extended Error	
Test command **AT+CEER=?**	Response **OK**
Execution command **AT+CEER**	Response **+CEER: <text>** **OK** Or **ERROR** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300 ms
Characteristics	-

Parameter

<text>	Sting type. Release cause text. Reason for the last call failure to setup or release (listed in ***Chapter 12.9***). 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 code. See ***Chapter 12.5*** for details.

4.3. AT+QCFG Configure Extended Settings

This command queries and configures various settings of UE.

AT+QCFG Configure Extended Settings	
Test Command **AT+QCFG=?**	Response **+QCFG: "gprsattach",(**list of supported **<attach_mode>**s**)** **+QCFG: "nwscanmode"**,(list of supported **<scan_mode>**s**)** **+QCFG: "nwscanseq",(**list of supported **<scanseq>**s**)** **+QCFG: "roamserviceex",(**list of supported **<roam_modeex>**s**)** **+QCFG: "servicedomain",(**list of supported **<service>**s**),(**list of supported **<effect>**s**)** **+QCFG: "band",(**list of supported **<bandval>**s**),(**list of supported **<ltebandval>**s**)** **+QCFG: "urc/ri/other",(**list of supported **<typeRI>**s**),(**list of supported **<pulse_duration>**s**),(**list of supported

	<pulse_count>s) **+QCFG: "urcdelay",(**list of supported **<time>**s) **+QCFG: "urc/cache",(**list of supported **<enable>**s) **+QCFG: "usbnet",(**list of supported **<net>**s) **+QCFG: "ppp/termframe",(**list of supported **<flag>**s) **+QCFG: "airplanecontrol",(**list of supported **<enable>**s) **+QCFG: "urc/ri/ring",(**list of supported **<typeRI>**s),(list of supported **<pulse_duration>**s),(list of supported **<pulse_count>**s), **+QCFG: "risignaltype", (**list of supported **<RI_signal_type>**s) **+QCFG: "uart2ipr",(**list of supported **<ipr>**s) **+QCFG: "nat",(**list of supported **<nat>**s) **+QCFG: "ims",(**list of supported **<IMS_conf>**s),(list of supported **<VoLTE_cap>**s) **+QCFG: "fota/times",(**list of supported **<timeout>**s) **+QCFG: "BIP",(**list of supported **<enable>**s) **+QCFG: "sleepind/drx",(**list of supported **<enable>**s)
Maximum Response Time	300 ms

NOTE

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

4.3.1. AT+QCFG="gprsattach" Configure GPRS Attach Mode

The command specifies the mode to attach GPRS when UE is powered on.

AT+QCFG="gprsattach" Configure GPRS Attach Mode	
Write Command **AT+QCFG="gprsattach"[,<attach_mode>]**	Response If the optional parameter is omitted, query current configuration: **+QCFG: "gprsattach",<attach_mode>** **OK** If the optional parameter is specified, configure the GPRS attach mode: **OK** Or **ERROR**

	If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	150 s
Characteristics	This command takes effect after the module is rebooted. The configurations are saved automatically.

Parameter

<attach_mode>	Integer type. The mode to attach GRPS when UE is powered on. 0 Manual attach 1 Auto attach
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

1. This configuration will affect the supported network mode of the module. For example, when setting **<attach_mode>**=0, LTE mode will be removed if the current network mode includes it, but the mode will be restored when setting **<attach_mode>**=1.
2. Some software versions do not support this command. Please contact Quectel Technical Support for details.

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

The command specifies the network mode to be searched.

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

Maximum Response Time	150 s
Characteristics	This command takes effect immediately. The configurations are saved automatically.

Parameter

<scan_mode>	Integer type. Network searching mode. 0 Automatic (LTE/WCDMA/GSM) 1 GSM only 2 WCDMA only 3 LTE only
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

If the mode conflicts with the current configuration, an error will be returned. For example, if the module is currently configured as CS only when LTE is set only, it will return an error.

4.3.3. AT+QCFG="nwscanseq" Configure Network Searching Sequence

The command specifies the sequence of searching network.

AT+QCFG="nwscanseq" Configure Network Searching Sequence	
Write Command **AT+QCFG="nwscanseq"[,<scanseq>]**	Response If the optional parameter is omitted, query current configuration: **+QCFG: "nwscanseq",<scanseq>** **OK** If the optional parameter is specified, specify the network searching sequence: **OK** Or **ERROR** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	150 s
Characteristics	This command takes effect after the module is rebooted. The configurations are saved automatically.

Parameter

<scanseq>	Integer type. Network searching sequence. 0 Automatic (LTE/WCDMA/GSM) 1 GSM only 2 WCDMA only 3 LTE only 4 GSM/WCDMA/LTE 5 WCDMA/GSM/LTE 6 LTE/WCDMA 7 LTE/GSM 8 WCDMA/LTE 9 WCDMA/GSM 10 GSM/LTE 11 GSM/WCDMA 12 LTE/WCDMA/GSM
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

1. If the mode is changed, the configuration will take effect immediately. Otherwise, it takes effect only after the module is restarted.
2. If the mode conflicts with the current configuration, an error will be returned. For example, if the module is currently configured as CS only when LTE is set only, it will return an error.
3. Some software versions do not support this command. Please contact Quectel Technical Support for details.

4.3.4. AT+QCFG="roamserviceex" Configure Relevant Functions in Roaming State

This command configures the relevant functions in roaming state.

AT+QCFG="roamserviceex" Configure Relevant Functions in Roaming State	
Write Command **AT+QCFG="roamserviceex"[,<roam_modeex>**	Response If the optional parameter is omitted, query the current configuration: **+QCFG: "roamserviceex",<roam_modeex>** **OK** If the optional parameter is specified, configure the relevant functions in roaming state : **OK**

	Or **ERROR** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	150 s
Characteristics	This command takes effect after the module is rebooted. The configuration is saved automatically.

Parameter

<roam_modeex>	Integer type. Roaming operating mode. Range: 0–3. Default value: 0. Each bit corresponds to a feature. Set the bit to 1 indicates enabling the corresponding function. 0 Normal operating mode, unlimited service Bit 1 Disable dial-up internet access function when UE is in roaming state Bit 2 Disable voice call function when UE is in roaming state The above reports can be combined at will.
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

1. When **<roam_modeex>** is set to 3, it means that Bit 1 and Bit 2 are both set to 1, that is, the dial-up internet access function and voice call function are disabled at the same time in roaming state.
2. Some software versions do not support this command. Please contact Quectel Technical Support for details.

4.3.5. AT+QCFG="servicedomain" Configure Service Domain

The command specifies the registered service domain.

AT+QCFG="servicedomain" Configure Service Domain	
Write Command **AT+QCFG="servicedomain"[,<service>[,<effect>]]**	Response If the optional parameter is omitted, query the current configuration: **+QCFG: "servicedomain",<service>,<effect>** **OK** If the optional parameter is specified, configure the service domain of UE: **OK**

	Or **ERROR** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	150 s
Characteristics	This command takes effect immediately. The configurations are saved automatically.

Parameter

<service>	Integer type. Service domain of UE. 0 CS only 1 PS only 2 CS & PS
<effect>	Integer format. When to take effect 0 Take effect after UE reboots (currently not supported) 1 Take effect immediately
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

1. This configuration will affect the supported network mode of the module. For example, when setting module as CS, LTE mode will be removed if the current network mode includes it, but the mode will be restored when setting PS only or both CS&PS.
2. Some software versions do not support this command. Please contact Quectel Technical Support for details.

4.3.6. AT+QCFG="band" Configure Band

The command specifies the preferred frequency bands to be searched of UE.

AT+QCFG="band" Configure Band	
Write Command **AT+QCFG="band"[,<bandval>,<lteband val>]**	Response If the optional parameters are omitted, query the current configuration: **+QCFG: "band",<bandval>,<lteband val>** **OK** If the optional parameters are specified, configure the preferred frequency bands to be searched:

	OK Or **ERROR** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	150 s
Characteristics	This command takes effect immediately. The configurations are saved automatically.

Parameter

<bandval>	A hexadecimal value that specifies the GSM and WCDMA frequency band. If it is set to 0, it means to clear the current band selection to default value. (e.g. 00000013=00000001(GSM900)+00000002(GSM1800)+00000010 (WCDMA 2100) 00000000 No change 00000001 GSM900 00000002 GSM1800 00000010 WCDMA 2100 00000020 WCDMA 1900 00000040 WCDMA 850 00000080 WCDMA 900 0000FFFF Any frequency band
<ltebandval>	A hexadecimal value that specifies the LTE frequency band. If it is set to 0, it means to clear the current band selection to default value. (e.g. 0x15=0x1(LTE B1)+0x4(LTE B3)+0x10(LTE B5) 0x1 (CM_BAND_PREF_LTE_EUTRAN_BAND1) LTE B1 0x2 (CM_BAND_PREF_LTE_EUTRAN_BAND2) LTE B2 0x4 (CM_BAND_PREF_LTE_EUTRAN_BAND3) LTE B3 0x8 (CM_BAND_PREF_LTE_EUTRAN_BAND4) LTE B4 0x10 (CM_BAND_PREF_LTE_EUTRAN_BAND5) LTE B5 0x40 (CM_BAND_PREF_LTE_EUTRAN_BAND7) LTE B7 0x80 (CM_BAND_PREF_LTE_EUTRAN_BAND8) LTE B8 0x80000 (CM_BAND_PREF_LTE_EUTRAN_BAND20) LTE B20 0x8000000 (CM_BAND_PREF_LTE_EUTRAN_BAND28) LTE B28 0x40000000 (CM_BAND_PREF_LTE_EUTRAN_BAND31) LTE B31 0x200000000(CM_BAND_PREF_LTE_EUTRAN_BAND34) LTE B34 0x2000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND38) LTE B38 0x4000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND39) LTE B39 0x8000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND40) LTE B40 0x10000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND41) LTE B41 0x20000000000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND66) LTE B66

	0x800000000000000000 (CM_BAND_PREF_LTE_EUTRAN_BAND72) LTE B72 0x0 (CM_BAND_PREF_ANY) Any frequency band
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

If setting a band that is not supported by the module, an error will be returned.

Example

```
AT+QCFG="band"          //Query the current frequency bands supported by the module.
+QCFG: "band",0x3,0x800C5

OK
AT+QCFG="band",1,5      //Set the frequency bands supported by the module to GSM900 and LTE B1 +
                          LTE B3.
OK
AT+QCFG="band"          /Query the current frequency bands supported by the module.
+QCFG: "band",0x1,0x5

OK
AT+QCFG="band",0,0      //Restore all frequency bands supported by the module
OK
AT+QCFG="band"          //Query the current frequency bands supported by the module.
+QCFG: "band",0x3,0x800C5

OK
```

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

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

AT+QCFG="urc/ri/other" Specify 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 configuration: **+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 configurations are saved automatically.

Parameter

<typeRI>	String type. RI behavior when URCs are presented. "off" No change. Ring indicator keeps inactive "pulse" Pulse. Pulse width determined by **<pulse_duration>**
<pulse_duration>	Integer type. The width of pulse. This parameter is effect only when **<typeRI>** is "pulse". Range: 5–2000. Default value: 120. Unit: ms.
<pulse_count>	Integer type. The count of pulse. This parameter is only meaningful when **<typeRI>** is "pulse". The interval time between two pulses is equal to **<pulse_duration>**. Range: 1–5. Default value: 1. Unit: s.
<err>	Error code. See ***Chapter 12.5*** for details.

4.3.8. AT+QCFG="urcdelay" Set Delay Time of URC Indication

This command sets the delay time of URC indication from the time that ring indicator pulse starts.

AT+QCFG="urcdelay" Set Delay Time of URC Indication	
Write Command **AT+QCFG="urcdelay"[,<time>]**	Response If the optional parameter is omitted, query the current configuration: **+QCFG: "urcdelay",<time>** **OK** If the optional parameter is specified, set when the URC indication will be outputted: **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

<time>	Integer type. Set the delay time of URC indication when ring indicator pulse starts. RI behavior when URCs are presented. Range: see the note below for details. Default value: 0 (indicates no delay). Unit: ms.
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

1. Different modules differ in their support for the value range of **<time>**. For example, for EC200A series and EG950A series modules, the value range of **<time>** is 0–10000; for EG810M series, EC800K-CN, EG800K series and EG800AK series modules, the value range of **<time>** is 0–100000. The specific value range is subject to actual query.
2. Some software versions do not support this command. Please contact Quectel Technical Support for details.

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

AT+QCFG="urc/cache" Enable/Disable URC Cache Function	
Write Command **AT+QCFG="urc/cache"[,<enable>]**	Response If the optional parameter is omitted, query the current configuration: **+QCFG: "urc/cache",<enable>** **OK** If the optional parameter is specified, enable/disable URC cache function: **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.

Parameter

<enable>	Integer type. 0 Disable URC cache 1 Enable URC cache
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

Some software versions do not support this command. Please contact Quectel Technical Support for details.

Example

```
AT+QCFG="urc/cache"
+QCFG: "urc/cache",0            //URC cache function is disabled

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

RING                            //Output cached URC

NO CARRIER                      //Output cached URC

+CMTI: "ME",0                   //Output cached URC

+CMTI: "ME",1                   //Output cached URC
AT+QCFG="urc/cache"
+QCFG: "urc/cache",0            //URC cache function is disabled

OK
```

4.3.10. AT+QCFG="usbnet" Configure the Network Card Type Interface

This command configures the network card type interface.

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

Parameter

<net>	Integer type. The protocol of net port. 1 ECM interface protocol 3 RNDIS interface protocol
<err>	Error code. See ***Chapter 12.5*** for details.

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

This command enables/disables the PPP TERM frame sending when PPP is hung up by module itself.

AT+QCFG="ppp/termframe" Enable/Disable the PPP TERM Frame Sending	
Write Command **AT+QCFG="ppp/termframe"[,<flag>]**	Response If the optional parameter is omitted, query the current configuration: **+QCFG: "ppp/termframe",<flag>** **OK**

	If the configuration parameter is specified, enable/disable the PPP TERM frame sending: **OK** Or **ERROR** If error is related to ME functionality: **+CME ERROR:<err>**
Maximum Response Time	300 ms
Characteristics	This command takes effect after the module is rebooted. The configuration is saved automatically.

Parameter

<flag>	Integer type. 0 Disable TERM frame sending when hang up PPP by module itself. 1 Enable TERM frame sending when hang up PPP by module itself.
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

1. If **AT+QPPPDROP** hangs up PPP with TERM frame, module will send TERM frame to MCU no matter whether **<flag>** is 0 or 1.
2. Some software versions do not support this command. Please contact Quectel Technical Support for details.

Example

```
AT+QCFG="ppp/termframe",1
OK
AT+QCFG="ppp/termframe"
+QCFG: "ppp/termframe",1

OK
```

4.3.12. AT+QCFG="airplanecontrol" Enable/Disable Airplane Mode Control via W_DISABLE#

This command enables/disables airplane mode control via the W_DISABLE# pin.

AT+QCFG="airplanecontrol" Enable/Disable Airplane Mode Control via W_DISABLE#	
Write Command **AT+QCFG="airplanecontrol"[,<enable>]**	Response If the optional parameter is omitted, query the current configuration: **+QCFG: "airplanecontrol",<enable>,<status>** **OK** If the configuration parameter is specified, configure whether to enable the airplane mode control via W_DISABLE# 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

<enable>	Integer type. Enable/disable the airplane mode control via W_DISABLE# pin. 0 Disable the airplane mode control via W_DISABLE# pin 1 Enable the airplane mode control via W_DISABLE# pin. The module enters airplane mode when W_DISABLE# pin is active and exit airplane mode when it is inactive. **AT+CFUN=1** is not allowed to be used to enable the module to exit airplane mode when the W_DISABLE# pin is active. Unsolicited result code **+QIND: airplanestatus,<status>** is reported when the status of W_DISABLE# pin changes
<status>	Integer type. 0 Exit airplane mode 1 Enter airplane mode
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

1. The W_DISABLE# pin is pulled up by default and can be active by driving it to low level.
2. For more information about W_DISABLE# pin, see the hardware design of the corresponding module.
3. Some software versions do not support this command. Please contact Quectel Technical Support for details.

Example

```
AT+QCFG="airplanecontrol"
+QCFG: "airplanecontrol",0,0      //Disable the airplane mode control via W_DISABLE# pin.

OK

//Set W_DISABLE# pin to active.
AT+QCFG="airplanecontrol",1       //Enable the airplane mode control via W_DISABLE# pin.
OK

+QIND: airplanestatus,1           //Enter airplane mode because W_DISABLE# pin is active.
AT+CFUN?
+CFUN: 4                          //In airplane mode.

OK

//Set W_DISABLE# pin to inactive.
+QIND: airplanestatus,0           //Exit airplane mode.
AT+CFUN?
+CFUN: 1                          //In normal mode.

OK

//Reboot modem
AT+QCFG="airplanecontrol"
+QCFG: "ariplanecontrol",1,0      //This setting still takes effect after reboot.

OK

//Set W_DISABLE# pin to active.
+QIND: airplanestatus,1           //Enter airplane mode.
AT+CFUN?
+CFUN: 4                          //In airplane mode.

OK
```

4.3.13. AT+QCFG="urc/ri/ring" Ring Line Behavior of RING

The command specifies the behavior of ring line when RING is presented to indicate an incoming call.

AT+QCFG="urc/ri/ring" Ring Line Behavior of RING	
Write Command **AT+QCFG="urc/ri/ring"[,<typeRI>[,<pulse_duration>[,<pulse_count>]]]**	Response If the optional parameters are omitted, query the current configuration: **+QCFG: "urc/ri/ring",<typeRI>,<pulse_duration>,<pulse_count>** **OK** If any of the optional parameters is specified, specify the behavior of ring line when RING is presented to indicate an incoming call: **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 configurations are saved automatically.

Parameter

<typeRI>	String type. The behavior of the ring line when URCs are presented. "off" No change. Ring line keeps inactive. "pulse" Pulse. Pulse width is determined by **<pulse_duration>**
<pulse_duration>	Integer type. The width of pulse. This parameter is meaningful only when **<typeRI>** is "pulse". If this parameter is not needed, you can set it to null. Range: 5–2000. Default value: 120. Unit: ms.
<pulse_count>	Integer type. The count of pulse. This parameter is meaningful only when **<typeRI>** is "pulse". The interval time between two pulse is equal to **<pulse_duration>**. Range: 1–5. Default value: 1.
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

Some software versions do not support this command. Please contact Quectel Technical Support for

details.

4.3.14. AT+QCFG="risignaltype" RI Signal Output Carrier

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

AT+QCFG="risignaltype" RI Signal Output Carrier	
Write Command **AT+QCFG="risignaltype"[,<RI_signal_type>]**	Response If the optional parameter is omitted, query the current setting: **+QCFG: "risignaltype",<RI_signal_type>** **OK** If the optional parameter is specified, configure 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>	String type. RI signal output carrier. "respective" The ring indicator behaves on the port where URC is presented. For example, if a URC is presented on UART port, it is physical ring indicator. If the URC is presented on USB port, it is virtual ring indicator. If the URC is presented on USB AT port, and the port does not support ring indicator, then there will be no ring indicator. **AT+QURCCFG="urcport"** can get the port on which URC is presented. "physical" No matter which port URC is presented on, URC only causes the behavior of physical ring indicator.
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

Some software versions do not support this command. Please contact Quectel Technical Support for details.

Example

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

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

OK
```

4.3.15. AT+QCFG="uart2ipr" Configure Baud Rate

This command configures the baud rate of UART2.

AT+QCFG="uart2ipr" Configure Baud Rate	
Write Command **AT+QCFG="uart2ipr"[,<ipr>]**	Response If the optional parameter is omitted, query the current configuration: **+QCFG: "uart2ipr",<ipr>** **OK** If the optional parameter is specified, configure the baud rate of UART2: **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 after the module is rebooted. The configuration is saved automatically.

Parameter

<ipr>	Integer type. Baud rate of UART2. 4800 9600 19200 38400 57600 115200 230400 460800 921600
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

Some software versions do not support this command. Please contact Quectel Technical Support for details.

4.3.16. AT+QCFG="nat" Configure Working Mode of NIC

This command configures the working mode of NIC.

AT+QCFG="nat" Configure Working Mode of NIC	
Write Command **AT+QCFG="nat"[,<nat>]**	Response If the optional parameter is omitted, query the current configuration: **+QCFG: "nat",<nat>** **OK** If the optional parameter is specified, configure the working mode of NIC: **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 after the module is rebooted. The configuration is saved automatically.

Parameter

<nat>	Integer type. The working mode of NIC. 0 Routing mode 1 NIC mode
<err>	Error code. See ***Chapter 12.5*** for details.

Example

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

4.3.17. AT+QCFG="ims" Configure IMS Function

This command configures IMS function.

AT+QCFG="ims" Configure IMS Function	
Write Command **AT+QCFG="ims"[,<IMS_conf>]**	Response If the optional parameter is omitted, query the current configuration: **+QCFG: "ims",<IMS_conf>,<VoLTE_cap>** **OK** If the optional parameter is specified, configure the IMS function: **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 after the module is rebooted. The configuration is saved automatically.

Parameter

<IMS_conf>	Integer type. IMS function configuration. 0 IMS function is not configured 1 Enable IMS function 2 Disable IMS function

<VoLTE_cap>	Integer type. Whether VoLTE is supported. 0 VoLTE is not supported 1 VoLTE is supported
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

1. The value range of **<IMS_conf>** varies from module to module. For example, for EC200A series and EG950A series modules, the value range of **<IMS_conf>** is 1–2; for EG810M series, EC800K-CN, EG800K series and EG800AK series modules, the value range of **<IMS_conf>** is 0–2. The specific value range is subject to actual query.
2. Some software versions do not support this command. Please contact Quectel Technical Support for details.

Example

```
AT+QCFG="ims",1          //Enable IMS function.
OK
```

4.3.18. AT+QCFG="fota/times" Configure Connection Expiration Time in HTTP FOTA Download

This command configures the connection expiration time in HTTP FOTA download.

AT+QCFG="fota/times" Configure Connection Expiration Time in HTTP FOTA Download	
Write Command **AT+QCFG="fota/times"[,<timeout>]**	Response If the optional parameter is omitted, query the current setting: **+QCFG:"fota/times",<timeout>** **OK** If the optional parameter is specified, configure the connection expiration time in HTTP 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

<timeout>	Integer type. The connection expiration time in HTTP FOTA download. Range: 10–180. Default value: 60. Unit: second.
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

Some software versions do not support this command. Please contact Quectel Technical Support for details.

4.3.19. AT+QCFG="BIP" Configure BIP Function

This command configures BIP function.

AT+QCFG="BIP" Configure BIP Function	
Write Command **AT+QCFG="BIP"[,<enable>]**	Response If the optional parameter is omitted, query the current configuration: **+QCFG: "BIP",<enable>** **OK** If the optional parameter is specified, configure the BIP function: **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 after the module is rebooted. The configuration is saved automatically.

Parameter

<enable>	Integer type. BIP function configuration. 0 Disable BIP function

	1 Enable BIP function
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

Some software versions do not support this command. Please contact Quectel Technical Support for details.

4.3.20. AT+QCFG="sleepind/drx" Set Whether the SLEEP IND Pin Is Affected by DRX Sleep

This command sets whether the SLEEP IND pin is affected by DRX sleep.

AT+QCFG="sleepind/drx" Set Whether the SLEEP IND Pin Is Affected by DRX Sleep	
Write Command **AT+QCFG="sleepind/drx"[,<enable>]**	Response If the optional parameter is omitted, query the current configuration: **+QCFG: "sleepind/drx",<enable>** **OK** If the optional parameter is specified, set whether the SLEEP IND pin is affected by DRX sleep: **OK** Or **ERROR** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	120 ms
Characteristics	This command takes effect immediately. The configuration is not saved.

Parameter

<enable>	Integer type. Function configuration. 0 Disable. The SLEEP IND pin state is not affected by DRX cycle transitions 1 Enable. The SLEEP IND pin will toggle in response to brief wake-up states during DRX cycles
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

Whether the module supports this feature depends on the availability of the corresponding hardware pin. For details, please refer to the hardware design of each module. Some software versions do not support this command. For more information on the support of the modules, please contact Quectel Technical Support.

4.4. AT+QINDCFG Control URC Indication

This command controls URC indication.

AT+QINDCFG Control URC Indication	
Test command **AT+QINDCFG=?**	Response **+QINDCFG: (**list of supported **<urctype>**s**),(**list of supported **<enable>**s**),(**list of supported **<savetonvram>**s**)** **OK**
Write command **AT+QINDCFG=<urctype>[,<enable>[,<savetonvram>]]**	Response If the optional parameters are omitted, query the current configuration: **+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
Characteristics	This command takes effect immediately. The configurations are saved after configuring **<savetonvram>**.

Parameter

<urctype>	String type. The type of URC. "all" Main switch of all URCs. Default is ON.

"csq"	Indication of signal strength and channel bit error rate change (similar to **AT+CSQ**). Default is OFF. If this configuration is ON, present: **+QIND: "csq",<rssi>,<ber>**
"datastatus"	Indication of data service status. Default is OFF. If this configuration is ON, present: **+QIND: "datastatus",<suspended>,<reason>** **<reason>** is number format as below: 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"	Indication of network main mode and sub mode. Default is OFF. If this configuration is ON, present: **^MODE:<main_mode>,<sub_mode>** **<main_mode>** is an integer type listed as below: 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>** is an integer type listed as below: 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 is OFF. If this configuration is ON, present: **+QIND: "smsfull",<storage>**
"smsincoming"	Incoming message indication. Default is ON. Related URC list: **+CMTI**, **+CMT**, **+CDS**
"act"	Indication of network access technology change. Default is OFF. If this configuration is ON, present: **+QIND: "act",<actvalue>** **<actvalue>** is string format. The values are as below: "GSM" "EGPRS"

		"WCDMA" "HSDPA" "HSUPA" "HSDPA&HSUPA" "LTE" "UNKNOWN" The examples of URC are as below: **+QIND: "act","HSDPA&HSUPA"** **+QIND: "act","UNKNOWN"** The description of "act" is as below: 1. If module does not register on network, **<actvalue>** would be "UNKNOWN". 2. If this configuration is ON, the URC of "act" will be reported immediately. Only when the network access technology changes, a new URC will be reported.
	"sqi"	Indication of reference signal receiving power, reference signal receiving quality and signal to interference plus noise ratio change. Default is OFF. If this configuration is ON, present: **+QIND: "SQI",<RSRP>,<RSRQ>,<SINR>** **<RSRP>** Integer type. Reference signal receiving power. Unit: dBm. (See *3GPP 36.214* Chapter 5.1.1). **<RSRQ>** Integer type. Reference signal receiving quality. Unit: dB. (See *3GPP 36.214* Chapter 5.1.3). **<SINR>** Integer type. Signal to interference plus noise ratio. Range: -20–30. Unit: dB.
	"phonebook"	Incoming phonebook indication. Default is ON. Related URC list: **+QIND: PB DONE**
	"ring"	Incoming call indication. Default is ON. Related URC list: **RING**
	"nocarrier"	Incoming hang up call indication. Default is ON. Related URC list: **NO CARRIER**
<enable>	Integer type. URC indication is ON or OFF. 0 OFF 1 ON	
<savetonvram>	Integer type. Whether to save configuration into NV. 0 Not save 1 Save	
<err>	Error code. See ***Chapter 12.5*** for details.	

4.5. AT+QNWCFG="lte_band_priority" Set LTE Band Priority

This command configures the LTE band priority (for example, allowing access to other LTE bands while prioritizing LTE B72).

AT+QNWCFG="lte_band_priority" Set LTE Band Priority	
Write command **AT+QNWCFG="lte_band_priority"[,<band_list>]**	Response If the optional parameter is omitted, query current configuration: 1) If the LTE band priority feature is enabled: **+QNWCFG: "lte_band_priority",<band_list>** **OK** 2) If the LTE band priority feature is disabled: **+QNWCFG: "lte_band_priority",0** **OK** If the optional parameter is specified, set the LTE band priority: **OK** Or **ERROR** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	100 s
Characteristics	This command takes effect after the module is rebooted. The configuration is saved automatically.

Parameter

<band_list>	String type without double quotes. The LTE band priority is separated by the separator ":" from high priority to low priority. Range of the actual configurable band: 0–255. For specific supported bands, see 3GPP 36.101. if 0 is specified, the LTE band priority feature is disabled. If the configured band is invalid, the priority will be skipped.
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

1. If the LTE band priority is not set before or the feature is disabled, 0 will be returned when you execute **AT+QNWCFG="lte_band_priority"**.
2. Executing **AT+QNWCFG="lte_band_priority"[,<band_list>]** writes data to NVM. Please proceed with caution.
3. This Write Command updates the NV configuration in EFS, storing it to non-volatile storage after 90 seconds.

Example

```
AT+QNWCFG="lte_band_priority"                    //Query the current LTE band priority.
+QNWCFG: "lte_band_priority",72:31:1:3:5:7:8:20:28

OK

AT+QNWCFG="lte_band_priority",72:28:20:31:1:3:5:7:8    //Set LTE band priority to
                                                        72,28,20,31,1,3,5,7,8 where 72 is the
                                                        highest priority and 8 is the lowest.
OK

AT+QNWCFG="lte_band_priority",72:28:20:31:1:3:5:7:8
+CME ERROR: 100                  //Return +CME ERROR: 100 if the same LTE band priority is set.

AT+QNWCFG="lte_band_priority",0  //Disable LTE band priority feature.
OK
```

5 (U)SIM Related Commands

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

The command requests the International Mobile Subscriber Identity (IMSI) which is intended to permit the TE to identify the individual (U)SIM card or active application in the UICC (GSM or 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 **<IMSI>** **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

<IMSI>	International Mobile Subscriber Identity (string without double quotes).
<err>	Error code. See ***Chapter 12.5*** for details.

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. Password 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>**. The factory default password of PF, PN, PU, PP and PC lock is "12341234".

AT+CLCK Facility Lock	
Test Command **AT+CLCK=?**	Response **+CLCK:** (list of supported **<fac>**s) **OK**
Write Command **AT+CLCK=<fac>,<mode>[,<passwd>[,<class>]]**	Response If **<mode>** is not equal to 2 and the command is set successfully: **OK** If **<mode>**=2 and command is set successfully: **+CLCK: <status>[,<class>]** **[+CLCK: <status>[,<class>]]** **[…]** **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	5 s
Characteristics	-
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 asks password in MT power-up and when this lock command issued).
	"AO"	BAOC (Bar All Outgoing Calls) (see *3GPP TS 22.088 clause 1*).
	"OI"	BOIC (Bar Outgoing International Calls) (see *3GPP TS 22.088 clause 1*).
	"OX"	BOIC-exHC (Bar Outgoing International Calls except to Home Country) (see *3GPP TS 22.088 clause 1*).

	"AI"	BAIC (Bar All Incoming Calls) (see *3GPP TS 22.088 clause 2*).
	"IR"	BIC-Roam (Bar Incoming Calls when Roaming outside the home country) (see *3GPP TS 22.088 clause 2*).
	"AB"	All Barring services (see *3GPP TS 22.030*) (applicable only for **<mode>**=0).
	"AG"	All outgoing barring services (see *3GPP TS 22.030*) (applicable only for **<mode>**=0).
	"AC"	All incoming barring services (see *3GPP TS 22.030*) (applicable only for **<mode>**=0).
	"FD"	(U)SIM card or active application in the UICC (GSM or USIM) fixed dialing memory feature (If PIN2 authentication has not been done during the current session, PIN2 is required as **<passwd>**).
	"PF"	Lock Phone to the very first inserted SIM/UICC card (also referred in the present document as PH-FSIM) (MT asks password when other SIM/UICC cards are inserted).
	"PN"	Network Personalization (see *3GPP TS 22.022*).
	"PU"	Network Subset Personalization (see *3GPP TS 22.022*).
	"PP"	Service Provider Personalization (see *3GPP TS 22.022*).
	"PC"	Corporate Personalization (see *3GPP TS 22.022*).
<mode>	Integer type.	
	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.	
	0	Off
	1	On
<err>	Error code. See ***Chapter 12.5*** for details.	

Example

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

OK
AT+CLCK="SC",1,"1234"             //Lock (U)SIM card, and the password is 1234
OK
```

```
AT+CLCK="SC",2                    //Query the status of (U)SIM card
+CLCK: 1                          //The (U)SIM card is locked (ON)

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

5.3. AT+CPIN Enter PIN

This command enters a password or queries whether or not the module requires a password which is necessary before it can be operated. The password may be (U)SIM PIN, (U)SIM PUK, PH-SIM PIN, etc. If the PIN is to be entered twice, the TA shall automatically repeat the PIN. If no PIN request is pending, no action is taken 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 **<newpin>** is required. This second 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 TA returns an alphanumeric string indicating whether or not some password is required. **+CPIN: <code>** **OK**
Write Command **AT+CPIN=<pin>[,<newpin>]**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	5 s
Characteristics	-
Reference 3GPP TS 27.007	

Parameter

<code>	String type.	
	READY	MT is not pending for any password

	SIM PIN	MT is waiting for (U)SIM PIN to be given
	SIM PUK	MT is waiting for (U)SIM PUK to be given
	SIM PIN2	MT is waiting for (U)SIM PIN2 to be given
	SIM PUK2	MT is waiting for (U)SIM PUK2 to be given
	PH-NET PIN	MT is waiting for network personalization password to be given
	PH-NET PUK	MT is waiting for network personalization unblocking password to be given
	PH-NETSUB PIN	MT is waiting for network subset personalization password to be given
	PH-NETSUB PUK	MT is waiting for network subset personalization unblocking password to be given
	PH-SP PIN	MT is waiting for service provider personalization password to be given
	PH-SP PUK	MT is waiting for service provider personalization unblocking password to be given
	PH-CORP PIN	MT is waiting for corporate personalization password to be given
	PH-CORP PUK	MT is waiting for corporate personalization unblocking password to be given
<pin>	String type. Password. If the requested password is a PUK, such as (U)SIM PUK1, PH-FSIM PUK or other passwords, then **<pin>** must be followed by **<newpin>**.	
<newpin>	String type. A new password required if the requested code is a PUK.	
<err>	Error code. See ***Chapter 12.5*** for details.	

Example

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

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                    //Query PUK code is locked

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

```
OK

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

OK
```

5.4. AT+CPWD Change Password

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

AT+CPWD Change Password	
Test Command **AT+CPWD=?**	Response **+CPWD: (**list of supported **<fac>**s**),<pwdlength>** **OK**
Write Command **AT+CPWD=<fac>,<oldpwd>,<newpwd>**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	5 s
Characteristics	-
Reference 3GPP TS 27.007	

Parameter

<fac>	String type. "SC" (U)SIM (lock SIM/UICC card) (SIM/UICC asks password in MT power-up and when this lock command is issued) "AO" BAOC (Bar All Outgoing Calls, see *3GPP TS 22.088 clause 1*) "OI' BOIC (Bar Outgoing International Calls, see *3GPP TS 22.088 clause 1*) "OX" BOIC-exHC (Bar Outgoing International Calls except to Home Country, see *3GPP TS 22.088 clause 1*) "AI' BAIC (Bar All Incoming Calls, see *3GPP TS 22.088 clause 2*) "IR" BIC-Roam (Bar Incoming Calls when Roaming outside the home country, see *3GPP TS 22.088 clause 2*)

	"AB"	All barring services (see *3GPP TS 22.030*, applicable only for **<mode>**=0)
	"AG"	All outgoing barring services (see *3GPP TS 22.030*, applicable only for **<mode>**=0)
	"AC'	All incoming barring services (see *3GPP TS 22.030*, applicable only for **<mode>**=0)
	"P2"	(U)SIM PIN2
<pwdlength>	Integer type. Maximum length of password.	
<oldpwd>	String type. Password specified for the facility from the user interface or with command.	
<newpwd>	String type. New password.	
<err>	Error code. See ***Chapter 12.5*** for details.	

Example

```
AT+CPIN?
+CPIN: READY

OK
AT+CPWD="SC","1234","4321"          //Change (U)SIM card password to “4321”
OK
//Restart module or re-activate the (U)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

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

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

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

Parameter

<length>	Integer type. Length of **<command>** or **<response>** string.
<command>	Command transferred by the MT to the (U)SIM in the format as described in *3GPP TS 51.011*.
<response>	Response to the command transferred by the (U)SIM to the MT in the format as described in *3GPP TS 51.011*.
<err>	Error code. See ***Chapter 12.5*** for details.

5.6. AT+CRSM Restricted (U)SIM Access

The 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** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300 ms
Characteristics	-
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 for an elementary data file on (U)SIM, if used by **<command>**.
<P1>, **<P2>**, **<P3>**	Integer type. Parameters transferred by the MT to the (U)SIM. These parameters are mandatory for every command, except GET RESPONSE and STATUS. The values are described in *3GPP TS 51.011*.
<data>	Information which shall be written to the (U)SIM (hexadecimal character format; see **AT+CSCS**).
<pathId>	The directory path of an elementary file on a 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; see **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 (see *3GPP TS 51.011*). 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 code. See ***Chapter 12.5*** for details.

5.7. AT+QCCID Show ICCID

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

AT+QCCID Show ICCID	
Test Command **AT+QCCID=?**	Response **OK**
Execution Command **AT+QCCID**	Response **+QCCID: <ICCID>** **OK** Or

	ERROR
Maximum Response Time	300 ms
Characteristics	-

Parameter

<ICCID>	Integer type. 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 the password of PIN. Range: 0–3.
<PUK_counter>	Integer type. Number of attempts left to enter the password of PUK. Range: 0–10.
<err>	Error code. See ***Chapter 12.5*** for details.

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

The command is used to query 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 kinds (e.g. 7=1+2+4 means CPIN READY & SMS DONE & PB DONE). 0 Initial state 1 CPIN READY. Operation like lock/unlock PIN is allowed 2 SMS initialization completed 4 Phonebook initialization completed

5.10. AT+QSIMDET (U)SIM Card Detection

The 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 the (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>,<insertlevel>**	Response **OK** Or **ERROR**
Maximum Response Time	300 ms
Characteristics	This command takes effect after the module is rebooted. The configurations are saved automatically.

Parameter

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

NOTE

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

Example

```
AT+QSIMDET=1,0          //Set (U)SIM card detection pin level as low when (U)SIM card is inserted
OK
```

```
<Remove (U)SIM card>
+CPIN: NOT READY
<Insert (U)SIM card>
+CPIN: READY            //If PIN1 of the (U)SIM card is unlocked
```

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

The command queries (U)SIM card insertion status or determines whether (U)SIM card insertion status report is enabled.

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	This command takes effect after the module is rebooted. The configuration is saved automatically.

Parameter

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

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

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

+CPIN: READY
```

5.12. AT+QDSIM Select (U)SIM Card

This command selects the (U)SIM card to be used for current scenario.

AT+QDSIM Select (U)SIM Card	
Test Command **AT+QDSIM=?**	Response **+QDSIM:** (list of supported **<simID>**s) **OK**
Read Command **AT+QDSIM?**	Response **+QDSIM: <simID>** **OK**
Write Command **AT+QDSIM=<simID>**	Response **OK**

	Or **ERROR** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	50 s
Characteristics	This command takes effect immediately. The configuration is saved automatically.

Parameter

<simID>	Integer type. (U)SIM card ID. 0 SIM1 1 SIM2
<err>	Error codes. See ***Chapter 12.5*** for details.

Example

```
AT+QDSIM=0          //Select SIM1.
OK
AT+QDSIM?           //Query the current (U)SIM card.
+QDSIM: 0

OK
```

NOTE

1. After you switch the (U)SIM card by **AT+QDSIM**, if there is no (U)SIM card inserted in the slot or the (U)SIM card is not identified, the switch of (U)SIM card fails and an error is reported.
2. When UE starts up, if there is no (U)SIM card in the current slot or the (U)SIM card cannot be identified, the system will automatically switch to another (U)SIM card (this (U)SIM card must exist and have been initialized successfully).
3. You can determine whether the (U)SIM card is switched successfully according to the result returned by **AT+QDSIM?**.
4. The command is implemented synchronously. After the command is executed, the channel is blocked before the response is returned.
5. Some module models do not support this command. Please contact Quectel Technical Support for details.

6 Network Service Commands

6.1. AT+COPS Operator Selection

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

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

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

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

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	300 s, determined by network.
Characteristics	-
Reference 3GPP TS 27.007	

Parameter

<stat>	Integer type. 0 Unknown 1 Operator available 2 Current operator 3 Operator forbidden
<oper>	String type. Operator in format as per **<format>**.
<mode>	Integer type. 0 Automatic mode. **<oper>** field is ignored 1 Manual operator selection. **<oper>** field shall be 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 the response of Read Command. 4 Manual/automatic selection. **<oper>** field shall be presented. If manual selection fails, automatic mode (**<mode>**=0) is entered
<format>	Integer type. 0 Long format alphanumeric **<oper>** which can be up to 16 characters long 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 response of Read Command while MS is in data service state and is not intended for the **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 8 UTRAN HSPA+

<err>	Error code. See ***Chapter 12.5*** for details.

Example

```
AT+COPS=?                                   //List all current network operators
+COPS: (1,"CHN-UNICOM","UNICOM","46001",2),(1,"CHN-UNICOM","UNICOM","46001",0),(2,"CHN-UNICOM","UNICOM","46001",7),(1,"CHN-CT","CT","46011",7),(3,"CHINA MOBILE","CMCC","46000",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 CS Domain Network Registration Status

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

The Write Command sets whether to present URC or not. It controls the presentation of an unsolicited result code **+CREG: <stat>** when **<n>**=1 and there is a change in the ME network registration status.

AT+CREG CS Domain Network Registration Status	
Test Command **AT+CREG=?**	Response **+CREG: (**list of supported **<n>**s**)** **OK**
Read Command **AT+CREG?**	Response **+CREG: <n>,<stat>[,<lac>,<ci>[,<Act>]]** **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+CREG[=<n>]**	Response **OK**
Maximum Response Time	300 ms

Characteristics	This command takes effect immediately. The configuration is saved (should execute **AT&W** after this command is issued).
Reference 3GPP TS 27.007	

Parameter

<n>	Integer type. 0 Disable network registration unsolicited result code 1 Enable network registration unsolicited result code: **+CREG: <stat>** 2 Enable network registration unsolicited result code with location information: **+CREG: <stat>[,<lac>,<ci>[,<Act>]]**
<stat>	Integer type. 0 Not registered. ME is not currently searching a new operator to register to 1 Registered, home network 2 Not registered, but ME is currently searching a new operator to register to 3 Registration denied 4 Unknown 5 Registered, roaming
<lac>	String type. Two bytes location area code in hexadecimal format
<ci>	String type. 16-bit (GSM) or 28-bit (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 8 UTRAN HSPA+
<err>	Error code. See ***Chapter 12.5*** for details.

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

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

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

This Test Command returns values supported as compound values.

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

Parameter

<rssi>	Integer type.	
	0	-113 dBm or less
	1	-111 dBm
	2–30	-109 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 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 *3GPP TS 45.008 subclause 8.2.4* 99 Not known or not detectable
<err>	Error code. See ***Chapter 12.5*** for details.

Example

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

OK
AT+CSQ
+CSQ: 28,99          //The current signal strength indication is 28 and channel bit error rate is 99

OK
```

NOTE

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

6.4. AT+CPOL Preferred Operator List

The 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>,<NG-RAN>,<RESERVE>]** **[+CPOL: <index>,<format>,<oper>[,<GSM>,<GSM_compact>,<UTRAN>,<E-UTRAN>,<NG-RAN>,<RESERVE>]]** **[…]** **OK**

Write Command **AT+CPOL=<index>[,<format>[,<oper>[<GSM>,<GSM_compact>,<UTRAN>,<E-UTRAN>]]]**	Response Edit the list of preferred operators: **OK** Or **ERROR** If the **<index>** is given but the **<oper>** is omitted, the entry is deleted.
Maximum Response Time	300 ms
Characteristics	-
Reference 3GPP TS 27.007	

Parameter

<index>	Integer type. The order number of operator in the (U)SIM preferred operator list.
<format>	Integer type. 0 Long format alphanumeric **<oper>** 1 Short format alphanumeric **<oper>** 2 Numeric **<oper>**
<oper>	String type. **<format>** indicates the format is alphanumeric or numeric (see **AT+COPS**).
<GSM>	Integer type. GSM access technology. 0 Access technology is not selected 1 Access technology is selected
<GSM_compact>	Integer type. GSM compact access technology. 0 Access technology is not selected 1 Access technology is selected
<UTRAN>	Integer type. UTRAN access technology. 0 Access technology is not selected 1 Access technology is selected
<E-UTRAN>	Integer type. E-UTRAN access technology. 0 Access technology is not selected 1 Access technology is selected
<NG-RAN>	Integer type. NG-RAN access technology (not supported currently). 0 Access technology is not selected 1 Access technology is selected
<RESERVE>	Integer type. Reserved. 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 SIM cards or UICC's containing PLMN selector with access technology.

6.5. AT+COPN Read Operator Names

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

AT+COPN Read Operator Names	
Test Command **AT+COPN=?**	Response **OK**
Execution Command **AT+COPN**	Response **+COPN: <numeric1>,<alpha1>** **[+COPN: <numeric2>,<alpha2>** **[…]]** **OK** If there is 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

<numericn>	String type. Operator in numeric format (see **AT+COPS**).
<alphan>	String type. Operator in long alphanumeric format (see **AT+COPS**).
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

Some software versions do not support this command. Please contact Quectel Technical Support for details.

6.6. AT+CTZU Automatic Time Zone Update

The Write Command enables and disables automatic time zone update via NITZ.

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

Parameter

<onoff>	Integer type. The mode of automatic time zone update. 0 Disable automatic time zone update via NITZ 1 Enable automatic time zone update via NITZ and update GMT time to URC 3 Enable automatic time zone update via NITZ and update LOCAL time to RTC

Example

```
AT+CTZU?
+CTZU: 1

OK
AT+CTZU=?
+CTZU: (0,1,3)

OK
AT+CTZU=0
OK
```

```
AT+CTZU?
+CTZU: 0

OK
```

6.7. AT+CTZR Time Zone Reporting

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

AT+CTZR Time Zone Reporting	
Test Command **AT+CTZR=?**	Response **+CTZR: (**list of supported **<reporting>**s**)** **OK**
Write Command **AT+CTZR=<reporting>**	Response **OK** Or **ERROR** If there is any error related to ME functionality: **+CME ERROR: <err>**
Read Command **AT+CTZR?**	Response **+CTZR: <reporting>** **OK**
Maximum Response Time	300 ms
Characteristics	This command takes effect after the module is rebooted. The configuration is saved automatically.
Reference 3GPP TS 27.007	

Parameter

<reporting>	Integer type. The mode of time zone reporting. 0 Disable time zone reporting of changed event 1 Enable time zone reporting of changed event by unsolicited result code: **+CTZV: <tz>** 2 Enable extended time zone reporting by unsolicited result code: **+CTZE: <tz>,<dst>,<time>**
<tz>	String type. The sum of the local time zone (difference between the local time and GMT

	is expressed in quarters of an hour) plus daylight saving time. The format is "±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. The local time. The format is "YYYY/MM/DD,hh:mm:ss", expressed as integers representing year (YYYY), month (MM), date (DD), hour (hh), minute (mm) and second (ss). This parameter can be provided by the network when delivering time zone information and will be presented in the unsolicited result code of extended time zone reporting if provided by the network.
<err>	Error code. See ***Chapter 12.5*** for details.

Example

```
AT+CTZR=2
OK
AT+CTZR?
+CTZR: 2

OK

+CTZE: "+32",0,"2017/11/04,06:51:13"          //<reporting> is 2
```

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

This command obtains the latest time synchronized through 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 any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300 ms
Characteristics	-

Parameter

<mode>	Integer type. Query network time mode. 0 Query the latest time that has been synchronized through network 1 Query the current GMT time calculated from the latest time that has been synchronized through network 2 Query the current LOCAL time calculated from the latest time that has been synchronized through network
<time>	String type. Format is "YYYY/MM/DD,hh:mm:ss±zz", where characters indicate year, 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 "2004/05/06,22:10:00+08".
<dst>	Daylight saving time.
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

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

Example

```
AT+QLTS=?                //Query supported network time modes
+QLTS: (0-2)

OK
AT+QLTS                  //Query the latest time synchronized through network
+QLTS: "2019/01/13,03:40:48+32,0"
OK
AT+QLTS=0                //Query the latest time synchronized through network. It offers the same
                           function as Execution Command AT+QLTS.
```

```
+QLTS: "2019/01/13,03:40:48+32,0"

OK
AT+QLTS=1                //Query the current GMT time calculated from the latest time that has been
                           synchronized through network
+QLTS: "2019/01/13,03:41:22+32,0"

OK
AT+QLTS=2                //Query the current LOCAL time calculated from the latest time that has been
                           synchronized through network
+QLTS: "2019/01/13,11:41:23+32,0"

OK
```

6.9. AT+QNWINFO Query Network Information

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

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

Parameter

<Act>	String type. The access technology selected. "NONE" "GSM" "GPRS" "EDGE" "WCDMA" "HSDPA" "HSUPA" "HSPA+"

	"TDD LTE"
	"FDD LTE"
<oper>	String type. The operator in numeric format.
<band>	String type. The band selected.
	"GSM 1800"
	"GSM 900"
	"WCDMA 2100"
	"WCDMA 850"
	"WCDMA 900"
	"LTE BAND 1"
	"LTE BAND 3"
	"LTE BAND 5"
	"LTE BAND 7"
	"LTE BAND 8"
	"LTE BAND 20"
	"LTE BAND 28"
	"LTE BAND 34"
	"LTE BAND 38"
	"LTE BAND 39"
	"LTE BAND 40"
	"LTE BAND 41"
<channel>	Integer type. Channel ID.

Example

```
AT+QNWINFO=?
OK
AT+QNWINFO
+QNWINFO: "FDD LTE",46001,"LTE BAND 3",1650

OK
```

7 Call Related Commands

NOTE

Some software versions do not support call related commands. Please contact Quectel Technical Support for details.

7.1. ATA Answer an Incoming Call

This command connects the module to an incoming voice or data call indicated by a **RING** URC.

ATA Answer an Incoming Call	
Execution Command **ATA**	Response TA sends off-hook to the remote station. Response in case of data call, if successfully connected: **CONNECT <text>** And TA switches to data mode. Note: **<text>** outputs only when **<value>** is greater than 0 in **ATX <value>** parameter setting. When TA returns to command mode after call release: **OK** Response in case of voice call, if successfully connected: **OK** Response if no connection: **NO CARRIER**
Maximum Response Time	90 s, determined by network.
Characteristics	-
Reference V.25ter	

NOTE

1. Any additional commands on the same command line are ignored.
2. This command may be aborted generally by receiving a character during execution and will not be aborted during some connection establishments such as handshaking.
3. See also **ATX** in ***Chapter 2.20***.

Example

```
RING                                  //A voice call is ringing
AT+CLCC
+CLCC: 1,0,0,1,0,"",128               //PS call in LTE mode

AT+CLCC
+CLCC: 2,1,4,0,0,"02154450290",129    //Incoming call

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

7.2. ATD Mobile Originated Call to Dial a Number

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

ATD Mobile Originated Call to Dial a Number	
Execution Command **ATD<n>[<mgsm>][;]**	Response If there is no dial tone and **ATX2** or **ATX4** is set: **NO DIALTONE** If busy and **ATX3** or **ATX4** is set: **BUSY** If a connection cannot be established: **NO CARRIER** If connection is successful and there is a non-voice call. **CONNECT <text>** And TA switches to data mode. Note: **<text>** outputs only when **<value>** is greater than 0 in **ATX<value>** parameter setting.

	When TA returns to command mode after call release: **OK** If connection is successful and there is a voice call: **OK**
Maximum Response Time	5 s, determined by network (**AT+COLP=0**).
Characteristics	-
Reference V.25ter	

Parameter

<n>	String of dialing digits and optionally V.25ter modifiers. Dialing digits: 0–9, * , #, +, A, B, C Following V.25ter modifiers are ignored: ,(comma), T, P, !, W, @
<mgsm>	String of **GSM** modifiers: I Activate **CLIR** (Disable presentation of own number to the called party) i Deactivate **CLIR** (Enable presentation of own number to the called party) G Activate closed user group invocation for this call only g Deactivate closed user group invocation for this call only
<;>	It is required when setting up voice call, and will return to command state after call.

NOTE

1. This command may be aborted generally by receiving **ATH** or a character during execution and will not be aborted during some connection establishments such as handshaking.
2. Parameter "**I**" and "**i**" can be omitted only when there is no "*" or "**#**" code within the dial string.
3. See **ATX** for setting result code and call monitoring parameters.
4. Responses returned after dialing with **ATD**:
   For a voice call, two different responses mode can be determined. TA returns **OK** immediately either after dialing is completed or after the call is established. The setting is controlled by **AT+COLP**. Factory default is **AT+COLP=0**, which causes the TA to return **OK** immediately after dialing is completed. Otherwise, TA will return **OK**, **BUSY**, **NO DIAL TONE**, or **NO CARRIER**.
5. Using **ATD** during an active voice call:
   - When a user originates a second voice call while there is already an active voice call, the first call will be automatically put on hold.
   - The current states of all calls can be easily checked at any time with **AT+CLCC**.

Example

```
ATD10086;                    //Dialing out the party's number.
OK
```

7.3. AT+COLP Connected Line Identification Presentation

This command refers to the GSM/UMTS supplementary service COLP (Connected Line Identification Presentation) that enables a calling subscriber to get the connected line identity (COL) of the called party after setting up a mobile originated call. The command enables or disables the presentation of the COL at the TE. It has no effect on the execution of the supplementary service COLR in the network.

Intermediate result code **OK** is returned from TA to TE before any +CR or V.25ter responses.

AT+COLP Connected Line Identification Presentation	
Test Command **AT+COLP=?**	Response **+COLP: (**list of supported **<n>**s**)** **OK**
Read Command **AT+COLP?**	Response **+COLP: <n>,<m>** **OK**
Write Command **AT+COLP[=<n>]**	Response **OK**
Maximum Response Time	15 s, determined by network.
Characteristics	This command takes effect immediately. The configuration is not saved.
Reference 3GPP TS 27.007	

Parameter

<n>	Integer type. Sets/shows the result code presentation status in the TA. 0 Disable 1 Enable
<m>	Integer type. Shows the subscriber COLP service status in the network. 0 COLP not provisioned 1 COLP provisioned 2 Unknown (e.g. no network, etc.)
<number>	String type. Phone number, the format is specified by **<type>**.
<type>	Integer type. Type of address of octet (see *3GPP TS 24.008 subclause 10.5.4.7* for details). 128 Unknown type (Number length is 0) 129 Unknown type (IDSN format) 145 International number type (ISDN format)
<subaddr>	String type. Sub-address of format specified by **<satype>**.

<satype>	Integer type. Type of sub-address octet (see *3GPP TS 24.008 subclause 10.5.4.8*)
<alpha>	Optional string type alphanumeric representation of **<number>** corresponding to the entry found in phone book.

NOTE

Intermediate result code:
When enabled (**<n>**=1) and called subscriber allows, an intermediate result code is returned before any +CR or V.25ter responses:
+COLP: <number>,<type>,[<subaddr>],[<satype>],[<alpha>]

Example

```
AT+CPBW=1,"02151082965",129,"QUECTEL"
OK
AT+COLP=1
OK
ATD02151082965;
+COLP: "02151082965",129,,,"QUECTEL"

OK
```

7.4. ATH Disconnect Existing Connection

This command disconnects circuit switched data calls or voice calls. **AT+CHUP** is also used to disconnect the voice call. For more details about **AT+CHUP**, see ***Chapter 7.5***.

ATH Disconnect Existing Connection	
Execution Command **ATH[n]**	Response Disconnect existing call by local TE from command line and terminate the call. **OK**
Maximum Response Time	90 s, determined by network.
Characteristics	-
Reference V.25ter	

Parameter

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

7.5. AT+CHUP Hang up Voice Call

This command cancels all voice calls in the state of Active, Waiting and Held. For data disconnections, use **ATH**.

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

Example

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

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

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

+++ Switch from Data Mode to Command Mode	
Execution Command **+++**	Response **OK**
Maximum Response Time	300 ms

Characteristics	-
Reference V.25ter	

NOTE

1. To prevent **+++** escape sequence from being misinterpreted as data, the following requirements should be followed:
   a) Do not input any character within 1 second before inputting **+++**.
   b) Input **+++** within 1 second during which no other characters can be inputted.
   c) Do not input any character within 1 s after **+++** is inputted.
   d) Normally it will switch to command mode successfully; otherwise return to ***Step a***.
2. To return back to data mode from command mode, enter **ATO**.
3. Another way to change to command mode is to change the pin level through DTR, and see **AT&D** for details.

7.7. ATO Switch from Command Mode to Data Mode

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

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

Parameter

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

NOTE

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

7.8. ATS0 Set Number of Rings before Automatic Answering

This command controls automatic answering mode for the incoming calls.

ATS0 Set Number of Rings before Automatic Answering	
Read Command **ATS0?**	Response **<n>** **OK**
Write Command **ATS0=<n>**	Response **OK**
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is saved with **AT&W**.
Reference V.25ter	

Parameter

<n>	Integer type. This parameter setting determines the number of rings before automatic answering. 0 Automatic answering is disabled 1–255 Enable automatic answering on the ring number specified

NOTE

1. If **<n>** is set too high, the calling party may hang up before the call is answered automatically.
2. For VoLTE calls, it only supports **<n>**=0.

Example

```
ATS0=3                    //Set three rings before automatically answering a call.
OK

RING                      //A call is coming.
```

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

7.9. AT+CLCC List Current Calls of ME

This execution command returns the list of all current calls. If the command is executed successfully, but no calls existed, no information will be responded but **OK** is sent to TE.

AT+CLCC List Current Calls of ME	
Test Command **AT+CLCC=?**	Response **OK**
Execution Command **AT+CLCC**	Response **[+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]]** **[+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]]** **[...]** **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300 ms
Characteristics	-

Parameter

<idx>	Integer type. The call identification number as described in *3GPP TS 22.030 subclause 4.5.5.1*.
<dir>	Integer type. Call direction. 0 Mobile originated (MO) call 1 Mobile terminated (MT) call
<stat>	Integer type. State of the call. 0 Active 1 Held 2 Dialing (MO call) 3 Alerting (MO call) 4 Incoming (MT call)

	5	Waiting (MT call)
<mode>	Integer type. Bearer/teleservice.	
	0	Voice
	1	Data
	2	FAX
<mpty>	Integer type.	
	0	Call is not one of multiparty (conference) call parties
	1	Call is one of multiparty (conference) call parties
<number>	String type. Phone number in format specified by **<type>**.	
<type>	Integer type. Type of address of octet (see *3GPP TS 24.008 subclause 10.5.4.7* for details).	
	129	Unknown type (IDSN format)
	145	International number type (ISDN format)
	161	National type
<alpha>	Alphanumeric representation of **<number>** corresponding to the entry found in phonebook.	
<err>	Error code. See ***Chapter 12.5*** for details.	

Example

```
ATD10086;                                  //Establish a call.
OK
AT+CLCC
+CLCC: 1,0,0,1,0,"",128                    //PS call in LTE mode.
+CLCC: 2,0,0,0,0,"10086",129               //Establish a call, and the call has been answered.

OK
```

7.10. AT^DSCI Call Status Indication

This command configures whether TA enables the presentation of the DSCI at the TE.

AT^DSCI Call Status Indication	
Test Command **AT^DSCI=?**	Response **^DSCI: (**list of supported **<n>**s**)** **OK**
Read Command **AT^DSCI?**	Response **^DSCI: <n>** **OK**
Write Command **AT^DSCI=<n>**	Response **OK**

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

Parameter

<n>	Integer type. 0 DSCI not provisioned 1 DSCI provisioned
<id>	Integer type. Call ID.
<dir>	Integer type. Call direction. 0 Mobile originated (MO) call 1 Mobile terminated (MT) call
<stat>	Integer type. State of the call. 1 CALL_HOLD 2 CALL_ORIGINAL 3 CALL_CONNECT 4 CALL_INCOMING 5 CALL_WAITING 6 CALL_END 7 CALL_ALERTING
<type>	Integer type. Call type. 0 Voice call 1 PS call
<number>	String type. Phone number.
<num_type>	Type of phone number.
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

When the presentation of the DSCI at the TE is enabled (**<n>**=1), an unsolicited result code is returned after the action:

^DSCI: <id>,<dir>,<stat>,<type>,<number>,<num_type>

Example

```
//Dial a call.
AT^DSCI=1                    //Enable DSCI.
OK
ATD10086;                    //Dial 10086.
OK

^DSCI: 1,0,2,0,10086,129     //A call is originated.
```

```
^DSCI: 1,0,7,0,10086,129          //The call is alerting.

^DSCI: 1,0,3,0,10086,129          //The call is connected.

ATH
OK

^DSCI: 1,0,6,0,10086,129          //The call is ended.

//A call is incoming
RING

^DSCI: 1,1,4,0,13022100000,129    //A call is coming.

RING

^DSCI: 1,1,6,0,13022100000,129    //The call is ended.

NO CARRIER
```

8 Phonebook Commands

8.1. AT+CNUM Subscriber Number

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

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

Parameter

<alpha>	Optional alphanumeric string associated with **<number>**. The used character set should be the one selected with **AT+CSCS** command
<number>	String type. Phone number in format specified by **<type>**
<type>	Integer type. Type of address of octet (see *3GPP TS 24.008 subclause 10.5.4.7* for details). 129 Unknown type (IDSN format) 145 International number type (ISDN format) 161 National type
<err>	Error code. See ***Chapter 12.5*** for details.

8.2. AT+CPBF Find Phonebook Entries

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

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

Parameter

<nlength>	Integer type. Indicates the maximum length of field **<number>**.
<tlength>	Integer type. Indicates the maximum length of field **<text>**.
<findtext>	String type field of maximum length **<tlength>** in current TE character set specified by **AT+CSCS**.
<index>	Integer type. Value in the range of location numbers of phonebook memory.
<number>	String type. The phone number in format specified by **<type>**.
<type>	Integer type. Type of address of octet (see *3GPP TS 24.008 subclause 10.5.4.7* for details). 129 Unknown type (IDSN format) 145 International number type (ISDN format) 161 National type
<text>	String type field of maximum length **<tlength>** in current TE character set specified by **AT+CSCS**.

<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

Some software versions do not support this command. Please contact Quectel Technical Support for details.

8.3. AT+CPBR Read Phonebook Entries

This command returns phonebook entries in location number range **<index1>... <index2>** from the current phonebook memory storage selected with **AT+CPBS**. If **<index2>** is left out, only location **<index1>** is returned.

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

Parameter

<index>	Integer type. Value in the range of location numbers of phonebook memory.
<number>	String type. The phone number in format specified by **<type>**.
<nlength>	Integer type. Indicates the maximum length of field **<number>**.
<tlength>	Integer type. Indicates the maximum length of field **<text>**.

<index1>	Integer type. The first phonebook record to read.
<index2>	Integer type. The last phonebook record to read.
<type>	Integer type. Type of address of octet (see *3GPP TS 24.008 subclause 10.5.4.7* for details). 129 Unknown type (IDSN format) 145 International number type (ISDN format) 161 National type
<text>	String type field of maximum length **<tlength>** in current TE character set specified by **AT+CSCS**.
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

Some software versions do not support this command. Please contact Quectel Technical Support for details.

8.4. AT+CPBS Select Phonebook Memory Storage

This command selects phonebook memory storage, which is used by other phonebook commands. The Read Command returns currently selected memory, the number of used locations and the total number of locations in the memory when supported by manufacturer. The Test Command returns supported storages as compound value.

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

	+CME ERROR: <err>
Write Command **AT+CPBS=<storage>**	Response **OK** Or **ERROR** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300 ms
Characteristics	-
Reference 3GPP 27.007	

Parameter

<storage>	String type. "SM" (U)SIM phonebook "DC" ME dialed calls list (**AT+CPBW** may not be applicable to this storage) "FD" (U)SIM fix dialing-phone book (**AT+CPBW** operation need the authority of PIN2) "LD" (U)SIM last-dialing-phone book (**AT+CPBW** may not be applicable to this storage) "EN" (U)SIM (or ME) emergency number (**AT+CPBW** may not be applicable to this storage) "ON" (U)SIM own numbers (MSISDNs) list "AP" Selected application phonebook. If a UICC with an active USIM application is present, the application phonebook, DFPHONEBOOK under ADFUSIM is selected "SDN" Service Dialing Number
<used>	Integer type. Indicates the total number of used locations in selected memory.
<total>	Integer type. Indicates the total number of locations in selected memory.
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

Some software versions do not support this command. Please contact Quectel Technical Support for details.

8.5. AT+CPBW Write Phonebook Entry

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

AT+CPBW Write Phonebook Entry	
Test Command **AT+CPBW=?**	Response **+CPBW: (**range of supported **<index>**s)**,<nlength>,(**list of supported **<type>**s)**,<tlength>** **OK** Or **ERROR** If there is any error related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+CPBW=[<index>][,<number>[,<type>[,<text>]]]**	Response **OK** Or **ERROR** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300 ms
Characteristics	-
Reference 3GPP 27.007	

Parameter

<index>	Integer type. Value in the range of location numbers of phone book memory. If **<index>** is not given, the first free entry will be used. If **<index>** is given as the only parameter, the phonebook entry specified by location is deleted.
<number>	String type. Phone number in format specified by **<type>**.
<nlength>	Integer type. Indicates the maximum length of field **<number>**.
<tlength>	Integer type. Indicates the maximum length of field **<text>**.
<type>	Integer type. Type of address of octet (see *3GPP TS 24.008 subclause 10.5.4.7* for details). 129 Unknown type (IDSN format) 145 International number type (ISDN format) 161 National type

<text>	String type field of maximum length **<tlength>** in current TE character set specified by **AT+CSCS**.
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

Some software versions do not support this command. Please contact Quectel Technical Support for details.

Example

```
AT+CSCS="GSM"
OK
AT+CPBW=10,"15021012496",129,"QUECTEL"
OK                                          //Make a new phonebook entry at location 10
AT+CPBR=10                                  //Read phonebook entries
+CPBR: 10,"15021012496",129,"QUECTEL"

OK
AT+CPBW=10                                  //Delete entry at location 10
OK
```

9 Short Message Service Commands

NOTE

Some software versions do not support short message service commands. Please contact Quectel Technical Support for details.

9.1. 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	-
Reference 3GPP TS 27.005	

Parameter

<service>	Integer type. Type of message service.	
	0	*3GPP TS 23.040* and *3GPP TS 23.041* (the syntax of SMS AT commands is compatible with *3GPP TS 27.005 Phase 2 version 4.7.0*; Phase 2+ features which do not require new command syntax may be supported, e.g. correct routing of messages with new Phase 2+ data coding schemes)
	1	*3GPP TS 23.040* and *3GPP TS 23.041* (the syntax of SMS AT commands is compatible with *3GPP TS 27.005 Phase 2+ version*; the requirement of **<service>** setting 1 is mentioned 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 code. See ***Chapter 12.5*** for details.	

Example

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

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

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

OK
```

9.2. AT+CMGF Message Format

This command specifies the input and output format of the short messages. **<mode>** indicates the format of messages used with the 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 parameter **<chset>** specified by **AT+CSCS** 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 which kind of I/O format of messages is used. **OK**
Maximum Response Time	300 ms
Characteristics	-
Reference 3GPP TS 27.005	

Parameter

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

9.3. AT+CSCA Service Center Address

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

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

	OK
Write Command **AT+CSCA=<sca>[,<tosca>]**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300 ms
Characteristics	-
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 (default see **<toda>**).
<err>	Error code. See ***Chapter 12.5*** for details.

Example

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

OK
```

9.4. AT+CPMS Preferred Message Storage

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

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

	OK
Read Command **AT+CPMS?**	Response **+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	-
Reference 3GPP TS 27.005	

Parameter

<mem1>	String type. Messages to be read and deleted from this memory storage. "SM" (U)SIM message storage "ME" Mobile equipment message storage
<mem2>	String type. Messages will be written and sent to this memory storage. "SM" (U)SIM message storage "ME" Mobile equipment message storage
<mem3>	String type. Received messages will be placed in this memory storage if routing to PC is not set (**AT+CNMI**). "SM" (U)SIM message storage "ME" Mobile equipment message storage
<usedx>	Integer type. Number of current messages in **<memx>**.
<totalx>	Integer type. Total number of messages which can be stored in **<memx>**.
<err>	Error code. See ***Chapter 12.6*** for details.

Example

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

OK
AT+CPMS?                        //Query the current SMS message storage
```

```
+CPMS: "SM",0,50,"SM",0,50,"SM",0,50

OK
```

9.5. AT+CMGD Delete Message

This command deletes short messages from the preferred message storage **<mem1>** location **<index>**. If **<delflag>** is presented and not set to 0, the ME shall ignore **<index>** and follow the rules of **<delflag>** shown as 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	-
Reference 3GPP TS 27.005	

Parameter

<index>	Integer type. Value in the range of 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, sent and unsent mobile originated messages from **<mem1>** storage
	4	Delete all messages from **<mem1>** storage

<mem1>	String type. Messages to be read and deleted from this memory storage. "SM" (U)SIM message storage "ME" Mobile equipment message storage
<err>	Error code. See ***Chapter 12.6*** for details.

Example

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

9.6. AT+CMGL List Messages

This 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 Messages	
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>][,<toa/toda>,<length>]<CR><LF><data>[<CR><LF>** **+CMGL: <index>,<stat>,<da/oa>,[<alpha>],[<scts>][,<toa/toda>,<length>]<CR><LF><data>[...]]** For SMS-STATUS-REPORTs: **+CMGL: <index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>[<CR><LF>** **+CMGL: <index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>[...]]** For SMS-COMMANDs: **+CMGL: <index>,<stat>,<fo>,<ct>[<CR><LF>**

	+CMGL: <index>,<stat>,<fo>,<ct>[...]] For CBM storage: **+CMGL:<index>,<stat>,<sn>,<mid>,<page>,<pages><CR><LF><data>[<CR><LF>** **+CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages><CR><LF><data>[...]]** **OK** If in PDU mode (**AT+CMGF=0**) and the command is executed successfully: **+CMGL:<index>,<stat>,[<alpha>],<length><CR><LF><pdu>[<CR><LF>** **+CMGL: <index>,<stat>,[<alpha>],<length><CR><LF><pdu>[...]]** **OK** If there is any error related to ME functionality: **+CMS ERROR: <err>**
Execution Command **AT+CMGL**	Response List all messages with “REC UNREAD” status from message storage **<mem1>**, and then the status in the storage changes to “REC READ”.
Maximum Response Time	Depends on the length and number of message content. Note: Operation of **<stat>** depends on the storage of listed messages.
Characteristics	-
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. 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>**.

<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** (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-Recipient-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. Indicating 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> In the case of SMS: *3GPP TS 23.040* TP-User-Data in text mode responses; format:

- If **<dcs>**, indicates that *3GPP TS 23.038* GSM 7 bit default alphabet is used and **<fo>** indicates that *3GPP TS 23.040* TP-User-Data-Header-Indication is not set.
- If TE character set other than “HEX” (see **AT+CSCS** in *3GPP TS 27.007*): ME/TA converts GSM alphabet into current TE character set according to rules of *Annex A* in *3GPP TS 27.007*.
- If TE character set is “HEX”: ME/TA converts each 7-bit character of 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 the case of CBS: *3GPP TS 23.041* CBM Content of Message in text mode responses; format:

- If **<dcs>**, 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 **<dcs>**, 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.
<fo>	Integer type. Depending on the command or result code: First octet of *3GPP TS 23.040* SMS-DELIVER, SMS-SUBMIT (default value: 17), SMS-STATUS-REPORT, or SMS-COMMAND (default value: 2).
<mr>	Integer type. Message reference. *3GPP TS 23.040* TP-Message-Reference.
<ra>	String type. Recipient address. *3GPP TS 23.040* TP-Recipient-Address Address-Value field. BCD numbers (or GSM 7 bits default alphabet characters) are converted to characters of the currently selected TE character set (see **AT+CSCS**). The type of address is given by **<tora>**.
<tora>	Integer type. Type of recipient address. *3GPP TS 24.011* TP-Recipient-Address Type-of-Address octet (default refer **<toda>**).
<scts>	Service center time stamp. *3GPP TS 23.040* TP-Service-Centre-Time-Stamp in time-string format (see **<dt>**).
<dt>	*3GPP TS 23.040* TP-Discharge-Time in time-string format: "yy/MM/dd,hh:mm:ss+zz", during which characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone. E.g. 6th of May 1994, 22:10:00 GMT+2 hours equals "94/05/06,22:10:00+08".
<st>	Integer type. *3GPP TS 23.040* TP-Status.
<ct>	Integer type. The TP Command Type is an 8 bit field specifying the type of operation that the SC is to perform. See *3GPP 23.040* for details.
<sn>	Integer type. Serial number. See *3GPP TS 23.041* for details.
<mid>	Integer type. Message ID. See *3GPP TS 23.041* for details.
<page>	Integer type. Page. See *3GPP TS 23.041* for details.
<pages>	Integer type. Total pages. See *3GPP TS 23.041* for details.
<pdu>	In the 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*.
<mem1>	String type. Messages to be read and deleted from this memory storage. "SM" (U)SIM message storage "ME" Mobile equipment message storage
<err>	Error code. See ***Chapter 12.6*** for details.

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
```

9.7. AT+CMGR Read Message

This Read Command returns SMS message 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>**	Response If in text mode (**AT+CMGF=1**) and the command is executed successfully: For SMS-DELIVER: **+CMGR: <stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data>** **OK** For SMS-SUBMIT: **+CMGR: <stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcs>,[<vp>],<sca>,<tosca>,<length>]<CR><LF><data>** **OK** For SMS-STATUS-REPORTs: **+CMGR: <stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>** **OK** For SMS-COMMANDs: **+CMGR: <stat>,<fo>,<ct>[,<pid>,[<mn>],[<da>],[<toda>],<length><CR><LF><cdata>]** **OK** For CBM storage: **+CMGR: <stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR>**

	<LF><data> **OK** If in PDU mode (**AT+CMGF=0**) and command is executed successfully: **+CMGR: <stat>,[<alpha>],<length><CR><LF><pdu>** **OK** If there is any error related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	Depends on the length of message content.
Characteristics	-
Reference 3GPP TS 27.005	

Parameter

<index>	Integer type. Value in the range of location numbers supported by the associated memory.
<stat>	String type. In text mode: "REC UNREAD" Received unread messages "REC READ" Received read messages "STO UNSENT" Stored unsent messages "STO SENT" Stored sent messages "ALL" All messages Integer type. In PDU mode: 0 Received unread messages 1 Received read messages 2 Stored unsent messages 3 Stored sent messages 4 All messages
<alpha>	String type alphanumeric representation of **<da>** or **<oa>** corresponding to the entry found in MT phonebook. Implementation of this feature is manufacturer specified. The used character set should be the one selected with **AT+CSCS** (see definition of this command in *3GPP TS 27.007*).
<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>**.
<scts>	Service center time stamp. *3GPP TS 23.040* TP-Service-Centre-Time-Stamp in time-string format (see **<dt>**).
<fo>	First octet. Depending on the command or result code: First octet of *3GPP TS 23.040* SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND 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 (default 0).
<dcs>	Data coding scheme. Depending on the command or result code: *3GPP TS 23.038* SMS Data Coding Scheme (default 0), 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 (see **<dt>**).
<mn>	Message number. *3GPP TS 23.040* TP-Message-Number in integer format.
<mr>	Message reference. *3GPP TS 23.040* TP-Message-Reference in integer format.
<ra>	Recipient address. *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 (see **AT+CSCS**). The type of address is given by **<tora>**.
<tora>	Type of recipient address. *3GPP TS 24.011* TP-Recipient-Address Type-of-Address octet in integer format (default refer **<toda>**).
<toda>	Type of destination 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>**).
<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 (default see **<toda>**).
<length>	Message length. Integer type. Indicating 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>	The text of short message. See ***Chapter 12.8*** for details.
<pdu>	In the 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)).
<dt>	*3GPP TS 23.040* TP-Discharge-Time in time-string format: “yy/MM/dd,hh:mm:ss zz”,

	during which characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone. E.g. 6th of May 1994, 22:10:00 GMT+2 hours equals "94/05/06,22:10:00+08".
<st>	*3GPP TS 23.040* TP-Status in integer format.
<ct>	The TP Command Type is an 8 bit field specifying the type of operation that the SC is to perform. See *3GPP 23.040* for details.
<cdata>	The TP Command Data field contains data relating to the operation requested by the MS which is to be performed at the SC. The maximum length of this field is 157 octets. The usage and provision of the optional TP Command Data field shall be determined by the function selected by the TP Command Type field. See *3GPP 23.040* for details.
<sn>	Integer type. Serial number.
<mid>	Integer type. Message ID.
<page>	Integer type. Page.
<pages>	Integer type. Total pages.
<mem1>	String type. Messages to be read and deleted from this memory storage. "SM" (U)SIM message storage "ME" Mobile equipment message storage
<err>	Error code. See ***Chapter 12.6*** for details.

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",,"18/12/15,15:06:37+32",145,4,0,0,"+8613800210500",
145,27
<This is a test from Quectel>

OK
```

9.8. AT+CMGS Send Messages

This Write 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 giving **<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 Messages	
Test Command **AT+CMGS=?**	Response **OK**
Write Command 1) If in text mode (**AT+CMGF=1**): **AT+CMGS=<da>[,<toda>]<CR>** **>**Text is entered. **<Ctrl+Z/ESC>** Send the message/Quit the sending 2) If in PDU mode (**AT+CMGF=0**): **AT+CMGS=<length><CR>** PDU is given. **<Ctrl+Z/ESC>** Send the message/Quit the sending	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 the message is sent successfully: **+CMGS: <mr>** **OK** If in PDU mode (**AT+CMGF=0**) and the message is 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	-
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>**.
<toda>	Type of recipient address. *3GPP TS 24.011* TP-Recipient-Address Type-of-Address octet in integer format.
<length>	Message length. Integer type. Indicating 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).

<mr>	Message reference. *3GPP* TS 23.040 TP-Message-Reference in integer format.
<err>	Error code. See ***Chapter 12.6*** for details.

Example

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

OK
```

9.9. AT+CMMS Send More Messages

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 Send More Messages	
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	This command takes effect immediately.
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 seconds (the exact value is up to ME implementation), and then ME shall close the 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 seconds (the exact value is up to ME implementation), ME shall close the link but TA will not switch **<n>** back to 0 automatically).
<err>	Error code. See ***Chapter 12.6*** for details.

NOTE

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

9.10. AT+CMGW Write Message to Memory

The Write command store short messages (either SMS-DELIVER or SMS-SUBMIT) from TE to memory storage **<mem2>**, and then the memory location **<index>** of the stored message is returned. Message status will be set to "STO UNSENT" by default, but parameter **<stat>** also allows other status values to be given.

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

AT+CMGW Write Message to Memory	
Test Command **AT+CMGW=?**	Response **OK**
Write Command 1) If text mode (**AT+CMGF=1**): **AT+CMGW=<oa/da>[,<tooa/toda>[,<stat>]]<CR>** **>**Text is entered. **<Ctrl+Z/ESC>** Send the message/Quit the sending.	Response If writing is successful: **+CMGW: <index>** **OK** If there is any error related to ME functionality:

2) If PDU mode (**AT+CMGF=0**): **AT+CMGW=<length>[,<stat>]<CR>** PDU is given. **<Ctrl+Z/ESC>** Send the message/Quit the sending.	**+CMS ERROR: <err>**
Maximum Response Time	300 ms
Characteristics	-
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** command 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** command in *3GPP TS 27.007*). The type of address given by **<tooa>**.
<tooa>	Type of originating address. *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>	Type of recipient address. *3GPP TS 24.011* TP-Recipient-Address Type-of-Address octet in integer format.
<length>	Message length. Integer type, indicating 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).
<pdu>	In the case of SMS: *3GPP TS 24.011* SC address followed by *3GPP TS 23.04* 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)).
<index>	Index of message in selected storage **<mem2>**.
<mem2>	String type. Messages will be written and sent to this memory storage. "SM" (U)SIM message storage

	"ME" Mobile equipment message storage
<err>	Error code. See ***Chapter 12.6*** for details.

Example

```
AT+CMGF=1                                   //Set SMS message format as text mode.
OK
AT+CSCS="GSM"                               //Set character set as GSM which is used by the TE.
OK
AT+CMGW="15021012496"

> <This is a test from Quectel>             //Text is entered. 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
```

9.11. AT+CMSS Send Message from Storage

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

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

	+CMSS: <mr> [,<ackpdu>] **OK** Or **ERROR** If there is any error related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	120 s, determined by network.
Characteristics	-
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** command in *3GPP TS 27.007*). The type of address is given by **<toda>**.
<toda>	Type of recipient address. *3GPP TS 24.011* TP-Recipient-Address Type-of-Address octet in integer format.
<mr>	Message reference. *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 **<pdu>** in case of SMS, but without *3GPP TS 24.011* SC address field and the parameter shall be bounded by double quote characters like a normal string type parameter.
<mem2>	String type. Messages will be written and sent to this memory storage. "SM" (U)SIM message storage "ME" Mobile equipment message storage
<err>	Error code. See ***Chapter 12.6*** for details.

Example

```
AT+CMGF=1                    //Set SMS message format as text mode.
OK
AT+CSCS="GSM"                //Set character set as GSM which is used by the TE.
OK
AT+CMGW="15021012496"
> Hello                      // Text is entered. Use <CTRL+Z> to send message or <ESC> to quit the
                               sending.
+CMGW: 4
```

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

OK
```

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

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. See ***Chapter 12.6*** for details.

NOTE

The Execution and Write Commands shall 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",,"18/12/15,17:07:21+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                     //The second time to return error. It needs ACK only once.
```

9.13. AT+CNMI SMS Event Reporting Configuration

The 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 receiving should be done as specified in *3GPP TS 23.038*.

AT+CNMI SMS Event Reporting Configuration	
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	-
Reference 3GPP TS 27.005	

Parameter

<mode> Integer type.

0 Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications.

1 Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE.

2 Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE.

<mt> Integer type. The rules for storing received SMS depend on its data coding scheme (see *3GPPTS 23.038*) and preferred memory storage (**AT+CPMS**) setting, and the value is:

0 No SMS-DELIVER indications are routed to the TE

1 If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE by using unsolicited result code: **+CMTI: <mem>,<index>**

2 SMS-DELIVERs (except class 2) are routed directly to the TE using unsolicited result code: **+CMT: [<alpha>],<length><CR><LF><pdu>** (PDU mode enabled) or **+CMT:<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data>** (text mode enabled; about the parameters in italics, see **AT+CSDH**) 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:

0 No CBM indications are routed to the TE

2 New CBMs are routed directly to the TE using unsolicited result code: **+CBM: <length><CR><LF><pdu>** (PDU mode); or **+CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data>** (text mode)

<ds> Integer type.

0 No SMS-STATUS-REPORTs are routed to the TE

1 SMS-STATUS-REPORTs are routed to the TE using unsolicited result code:
+CDS: <length><CR><LF><pdu> (PDU mode)
+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.

0 TA buffer of unsolicited result codes defined within this command is flushed to the TE when **<mode>** 1 or 2 is entered (**OK** response shall be given before flushing the codes)

1 TA buffer of unsolicited result codes defined within this command is cleared when **<mode>** 1 or 2 is entered

<err> Error codes. See ***Chapter 12.6*** for details.

NOTE

Unsolicited result code:

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

Example

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

+CMT: "+8615021012496",,"18/12/15,17:07:21+32",145,4,0,0,"+8613800551500",145,28
This is a test from Quectel.    //Short message is outputted directly when an SMS is incoming.
```

9.14. AT+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 It returns supported modes as a compound value. **+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	This command takes effect immediately. The configurations are saved automatically.
Reference 3GPP TS 27.005	

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 (see **<mid>**), e.g. “0,1,5,320-478,922”.
<dcss>	String type. All different possible combinations of CBM data coding schemes (see **<dcs>**) (default is empty string), e.g. “0-3,5”.
<err>	Error code. See ***Chapter 12.6*** for details.

9.15. AT+CSDH Show SMS Text Mode Parameters

The 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	This command takes effect immediately. The configuration is not saved.
Reference 3GPP TS 27.005	

Parameter

<show>	Integer type.	
	0	Do not show header values defined in commands **+CSCA**, **+CSMP** (**<sca>**, **<tosca>**, **<fo>**, **<vp>**, **<pid>**, **<dcs>**) and **<length>**, **<toda>** or **<tooa>** in **+CMT**, **+CMGL**, **+CMGR** result codes for SMS-DELIVERs and SMS-SUBMITs in text mode
	1	Show the values in result codes

Example

```
AT+CSDH=0
OK
AT+CMGR=2
+CMGR: "STO UNSENT","",
<This is a test from Quectel>
OK
AT+CSDH=1
OK
```

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

9.16. 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 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 the validity period termination (**<vp>** is a string).

AT+CSMP Set SMS Text Mode Parameters	
Test Command **AT+CSMP=?**	Response **OK**
Read Command **AT+CSMP?**	Response **+CSMP: <fo>,<vp>,<pid>,<dcs>** **OK**
Write Command **AT+CSMP=<fo>[,<vp>[,<pid>[,<dcs>]]]**	Response **OK** Or **ERROR** If there is any error related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configurations are not saved.
Reference 3GPP TS 27.005	

Parameter

<fo>	First octet. Depending on the command or result code: First octet of *3GPP TS 23.040* SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, SMS-COMMAND in integer format. If a valid value has been entered once, parameter can be omitted. Default value: 33.
<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 (see **<dt>**). Default value: 167.
<pid>	Protocol identifier. *3GPP TS 23.040* TP-Protocol-Identifier in integer format (default 0).
<dcs>	Data coding scheme. Depending on the command or result code: *3GPP TS 23.038*

	SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme in integer format.
<err>	Error code. See ***Chapter 12.6*** for details.

9.17. AT+QCMGS Send Concatenated Messages

The command is used to send concatenated massages. 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 in text mode (**AT+CMGF=1**): **AT+QCMGS=<da>[,<toda>][,<uid>,<msg_seg>,<msg_total>]<CR>** **>**Text is entered. **<Ctrl+Z/ESC>** Send the message/Quit the sending.	Response If in text mode (**AT+CMGF=1**) and sent successfully: **+QCMGS: <mr>** **OK** Or **ERROR** If there is any error related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	120 s, determined by network.
Characteristics	This command takes effect immediately. The configurations are 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>	See **AT+CMGS**.
<toda>	See **AT+CMGS**.
<mr>	See **AT+CMGS**.
<err>	Integer type. Error code. See ***Chapter 12.6*** for details.

NOTE

1. For concatenated messages, the maximum length will be reduced by the length of the user data header (UDH). *3GPP TS 23.040* defines two kinds of UDH length: 6 bytes and 7 bytes, so the two kinds of **<uid>** are 8-bit (6 bytes) and 16-bit (7 bytes). **AT+QCMGS** uses 8-bit **<uid>**.
   - In the case of GSM 7 bit default alphabet data coding scheme, the maximum length of each segment of a concatenated message is (140 octets - 6) × 8 / 7 = 153 characters.
   - In the case of 16 bit UCS2 data coding scheme, the maximum length of each segment is (140 - 6) / 2 = 67 characters.
   - In the case of 8-bit data coding scheme, the maximum length of each segment is 140 - 6 = 134 characters.
2. **<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.
3. **AT+QCMGS** does not support to send message in PDU mode (**AT+CMGF=0**).

Example

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

OK

AT+QCMGS="15056913384",120,2,2     //Send the second segment of the concatenated SMS.
>EFGH                              //Text is entered. Use <Ctrl+Z> to send the message,
                                     or <ESC> to quit the sending.
+QCMGS: 191
```

OK

9.18. 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>**	Response If in text mode (**AT+CMGF=1**) and command is executed successfully: For SMS-DELIVER: **+QCMGR: <stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>][,<uid>,<msg_seg>,<msg_total>]<CR><LF><data>** **OK** For SMS-SUBMIT: **+QCMGR: <stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcs>,[<vp>],<sca>,<tosca>,<length>][,<uid>,<msg_seg>,<msg_total>]<CR><LF><data>** **OK** For SMS-STATUS-REPORTs: **+QCMGR: <stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>** **OK** For SMS-COMMANDs: **+QCMGR: <stat>,<fo>,<ct>[,<pid>,[<mn>],[<da>],[<toda>],<length><CR><LF><cdata>]** **OK** Else, if there is any error related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	Depends on the length of message content.

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

Parameter

<uid>	Integer type. Message identification in the user data header (UDH). Range: 0–255 (see the **NOTE** below). 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. See **AT+CMGR** for details of other parameters.
<err>	Error code. See ***Chapter 12.6*** for details.

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",,"18/12/20,14:44:37+32",120,1,2
ABCD

OK
AT+QCMGR=4          //Read the second segment of the concatenated message
+QCMGR: "REC UNREAD","+8615056913384",,"18/12/20,14:44:37+32",120,2,2
EFGH

OK
```

10 Packet Domain Commands

10.1. AT+CGATT Attachment/Detachment of PS

The Write Command is used to attach the MT to, or detach 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 is 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/Detachment of PS	
Test Command **AT+CGATT=?**	Response **+CGATT:** (list of supported **<state>**s) **OK**
Read Command **AT+CGATT?**	Response **+CGATT: <state>** **OK**
Write Command **AT+CGATT=<state>**	Response **OK** Or **ERROR** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	140 s, determined by network.
Characteristics	This command takes effect immediately. 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 code. See ***Chapter 12.6*** for details.

Example

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

OK
```

10.2. AT+CGDCONT Define PDP Context

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

The 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 **<IPv4AddrAlloc>**s),(list of supported **<request_type>**s),(list of supported **<P-CSCF_discovery>**s),(list of supported **<IM_CN_Signalling_Flag_Ind>**s) **OK**
Read Command **AT+CGDCONT?**	Response **+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<data_comp>,<head_comp>[…]** **OK**
Write Command **AT+CGDCONT=<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[,<data_comp>[,<head_comp>[,<IPv4AddrAlloc>[,<reque**	Response **OK** Or **ERROR**

st_type>[,<P-CSCF_discovery>[,<IM_CN_Signalling_Flag_Ind>]]]]]]]]	
Maximum Response Time	3 s
Characteristics	This command takes effect immediately. The configurations are saved automatically.
Reference 3GPP TS 27.007	

Parameter

<cid> PDP context identifier. Range: 1–15. 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" Point to Point Protocol (*IETF STD 51*).
"IPV6" Internet Protocol, version 6
"IPV4V6" Virtual **<PDP_type>** introduced to handle dual IP stack UE capability

<APN> 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> A string parameter 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 using the **AT+CGPADDR** command.

<data_comp> A numeric parameter that controls PDP data compression (applicable for SNDCP only) (see *3GPP TS 44.065*).

0 Off (Default if value is omitted)
1 On (Manufacturer preferred compression)
2 V.42bis
3 V.44 (Not supported currently)

<head_comp> A numeric parameter that controls PDP header compression (see *3GPP TS 44.065* and *3GPP TS 25.323*).

0 Off
1 On
2 RFC1144
3 RFC2507
4 RFC3095

<IPv4AddrAlloc> Numeric type. Control how the MT/TA requests to get the IPv4 address information.

0 IPv4 address allocated through NAS signalling
1 IPv4 address allocated through DHCP

<request_type>	Numeric type. Indicate the type of PDP context activation request for the PDP context. Please see *3GPP TS 24.301 (subclause 6.5.1.2)* and *3GPP TS 24.008 (subclause 10.5.6.17)*. If the initial PDP context is supported *(subclause 10.1.0)*, it is not allowed to assign **<cid>**=0 for emergency bearer services. According to *3GPP TS 24.008 (subclause 4.2.4.2.2 and 4.2.5.1.4)* and *3GPP TS 24.301 (subclause 5.2.2.3.3 and 5.2.3.2.2)*, a separate PDP context must be established for emergency bearer services.
<P-CSCF_discovery>	Numeric type. Affect how the MT/TA requests to get the P-CSCF address, (see *3GPP TS 24.229* ***annex B*** *and* ***L***). 0 Preference of P-CSCF address discovery not affected by **AT+CGDCONT** 1 Preference of P-CSCF address discovery through NAS signaling 2 Preference of P-CSCF address discovery through DHCP
<IM_CN_Signalling_Flag_Ind>	Numeric type. Indicates to the network whether the PDP context is for IM CN subsystem-related signaling only or not. 0 UE indicates that the PDP context is not for IM CN subsystem-related signaling only 1 UE indicates that the PDP context is for IM CN subsystem-related signaling only

NOTE

Currently the PDP context parameters can be saved after power-off.

10.3. AT+CGQREQ Quality of Service Profile (Requested)

This command allows the TE to specify the quality of service profile that is used when the MT activates a PDP context.

The Write Command specifies a profile for the context **<cid>**. A special form of the Write Command, **AT+CGQREQ=<cid>** causes the requested profile for context number **<cid>** to become undefined. The Read Command returns the current settings for each defined context. Details can be found in *3GPP TS 23.107* and all parameters are saved in NV automatically.

AT+CGQREQ Quality of Service Profile (Requested)	
Test Command **AT+CGQREQ=?**	Response **+CGQREQ: <PDP_type>,**(list of supported **<precedence>**s)**,**(list of supported **<delay>**s)**,**(list of supported **<reliability>**s),(list of supported **<peak>**s)**,**(list of supported **<mean>**s)

	OK
Read Command **AT+CGQREQ?**	Response **[+CGQREQ: <cid>,<precedence>,<delay>,>reliability>,<peak>,<mean>]** **[+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>]** **[…]** **OK**
Write Command **AT+CGQREQ=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]**	Response **OK** 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 configurations are not saved.
Reference 3GPP TS 27.007	

Parameter

<cid>	A numeric parameter which specifies a particular PDP context definition (see **AT+CGDCONT** command).
<PDP_type>	String type. Packet Data Protocol type. "IP" Internet Protocol (*IETF STD 5*) "PPP" Point to Point Protocol (*IETF STD 51*). "IPV6" Internet Protocol, version 6 "IPV4V6" Virtual **<PDP_type>** introduced to handle dual IP stack UE capability
<precedence>	A numeric parameter which specifies the precedence class. 0 Network subscribed value 1 High Priority. Service commitments shall be maintained ahead of precedence classes 2 and 3 2 Normal priority. Service commitments shall be maintained ahead of precedence class 3 3 Low priority. Service commitments shall be maintained
<delay>	A numeric parameter which specifies the delay class. This parameter defines the end-to-end transfer delay incurred in the transmission of SDUs through the network.

	For the details, see ***Table 5***. 0 Network subscribed value
<reliability>	A numeric parameter which specifies the reliability class. 0 Network subscribed value 1 Non real-time traffic, error-sensitive application that cannot cope with data loss 2 Non real-time traffic, error-sensitive application that can cope with infrequent data loss 3 Non real-time traffic, error-sensitive application that can cope with data loss, GMM/SM, and SMS 4 Real-time traffic, error-sensitive application that can cope with data loss 5 Real-time traffic, error non-sensitive application that can cope with data loss
<peak>	A numeric parameter which specifies the peak throughput class, in octets per second. 0 Network subscribed value 1 Up to 1 000 (8 kbit/s) 2 Up to 2 000 (16 kbit/s) 3 Up to 4 000 (32 kbit/s) 4 Up to 8 000 (64 kbit/s) 5 Up to 16 000 (128 kbit/s) 6 Up to 32 000 (256 kbit/s) 7 Up to 64 000 (512 kbit/s) 8 Up to 128 000 (1024 kbit/s) 9 Up to 256 000 (2048 kbit/s)
<mean>	A numeric parameter which specifies the mean throughput class, in octets per hour. 0 Network subscribed value 1 100 (~0.22 bit/s) 2 200 (~0.44 bit/s) 3 500 (~1.11 bit/s) 4 1 000 (~2.2 bit/s) 5 2 000 (~4.4 bit/s) 6 5 000 (~11.1 bit/s) 7 10 000 (~22 bit/s) 8 20 000 (~44 bit/s) 9 50 000 (~111 bit/s) 10 100 000 (~0.22 kbit/s) 11 200 000 (~0.44 kbit/s) 12 500 000(~1.11 kbit/s) 13 1000 000 (~2.2 kbit/s) 14 2 000 000 (~4.4 kbit/s) 15 5 000 000 (~11.1 kbit/s) 16 10 000 000 (~22 kbit/s) 17 20 000 000 (~44 kbit/s) 18 50 000 000 (~111 kbit/s) 31 Best effort
<err>	Error code. See ***Chapter 12.5*** for details.

Table 5: Delay Class

SDU Size	Delay Class	Mean Transfer Delay	95 Percentile
128 octets	1 (Predictive)	< 0.5	< 1.5
	2 (Predictive)	< 5	< 25
	3 (Predictive)	< 50	< 250
	4 (Best Effort)	Unspecified	-
1024 octets	1 (Predictive)	< 0.5	< 1.5
	2 (Predictive)	< 5	< 25
	3 (Predictive)	< 50	< 250
	4 (Best Effort)	Unspecified	-

NOTE

Some software versions do not support this command. Please contact Quectel Technical Support for details.

10.4. AT+CGQMIN Quality of Service Profile (Minimum Acceptable)

This command allows the TE to specify a minimum acceptable profile which is checked by the MT against the negotiated profile when the PDP context is activated. The Write Command specifies a profile for the context identified by the context identification parameter **<cid>**.

A special form of the Write Command, **AT+CGQMIN=<cid>** causes the minimum acceptable profile for context number **<cid>** to become undefined. In this case no check is made against the negotiated profile.

The Read Command returns the current settings for each defined context. Details can be found in *3GPP TS 23.107* and all parameters are saved in NV automatically.

AT+CGQMIN Quality of Service Profile (Minimum Acceptable)	
Test Command **AT+CGQMIN=?**	Response **+CGQMIN: <PDP_type>,** (list of supported **<precedence>**s),(list of supported **<delay>**s),(list of supported **<reliability>**s),(list of supported **<peak>**s), (list of supported **<mean>**s)

	OK
Read Command **AT+CGQMIN?**	Response **[+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>]** **[+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>]** **[…]** **OK**
Write Command **AT+CGQMIN=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]**	Response **OK** 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 configurations are not saved.
Reference 3GPP TS 27.007	

Parameter

<cid>	A numeric parameter which specifies a particular PDP context definition (see **AT+CGDCONT** command).
<PDP_type>	String type. Packet Data Protocol type. "IP" Internet Protocol (*IETF STD 5*) "PPP" Point to Point Protocol (*IETF STD 51*) "IPV6" Internet Protocol, version 6 "IPV4V6" Virtual **<PDP_type>** introduced to handle dual IP stack UE capability
<precedence>	A numeric parameter which specifies the precedence class. 0 Network subscribed value 1 High Priority. Service commitments shall be maintained ahead of precedence classes 2 and 3 2 Normal priority. Service commitments shall be maintained ahead of precedence class 3 3 Low priority. Service commitments shall be maintained
<delay>	A numeric parameter which specifies the delay class. This parameter defines the end-to-end transfer delay incurred in the transmission of SDUs through the network. For

	more detail see ***Table 5***. Range: 0–4. Unit: second. 0 Network subscribed value
<reliability>	A numeric parameter which specifies the reliability class. 0 Network subscribed value 1 Non real-time traffic, error-sensitive application that cannot cope with data loss 2 Non real-time traffic, error-sensitive application that can cope with infrequent data loss 3 Non real-time traffic, error-sensitive application that can cope with data loss, GMM/SM, and SMS 4 Real-time traffic, error-sensitive application that can cope with data loss 5 Real-time traffic, error non-sensitive application that can cope with data loss
<peak>	A numeric parameter which specifies the peak throughput class, in octets per second. 0 Network subscribed value 1 Up to 1 000 (8 kbit/s) 2 Up to 2 000 (16 kbit/s) 3 Up to 4 000 (32 kbit/s) 4 Up to 8 000 (64 kbit/s) 5 Up to 16 000 (128 kbit/s) 6 Up to 32 000 (256 kbit/s) 7 Up to 64 000 (512 kbit/s) 8 Up to 128 000 (1024 kbit/s) 9 Up to 256 000 (2048 kbit/s)
<mean>	A numeric parameter which specifies the mean throughput class, in octets per hour. 0 Network subscribed value 1 100 (~0.22 bit/s) 2 200 (~0.44 bit/s) 3 500 (~1.11 bit/s) 4 1 000 (~2.2 bit/s) 5 2 000 (~4.4 bit/s) 6 5 000 (~11.1 bit/s) 7 10 000 (~22 bit/s) 8 20 000 (~44 bit/s) 9 50 000 (~111 bit/s) 10 100 000 (~0.22 kbit/s) 11 200 000 (~0.44 kbit/s) 12 500 000(~1.11 kbit/s) 13 1000 000 (~2.2 kbit/s) 14 2 000 000 (~4.4 kbit/s) 15 5 000 000 (~11.1 kbit/s) 16 10 000 000 (~22 kbit/s) 17 20 000 000 (~44 kbit/s) 18 50 000 000 (~111 kbit/s) 31 Best effort
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

Some software versions do not support this command. Please contact Quectel Technical Support for details.

10.5. AT+CGEQREQ 3G Quality of Service Profile (Requested)

This command allows the TE to specify a UMTS Quality of Service Profile that is used when the MT activates a PDP context. Details can be found in *3GPP TS 23.107*.

AT+CGEQREQ 3G Quality of Service Profile (Requested)	
Test Command **AT+CGEQREQ=?**	Response **+CGEQREQ: <PDP_type>,**(list of supported **<Traffic class>**s),(list of supported **<Maximum bitrate UL>**s),(list of supported **<Maximum bitrate DL>**s),(list of supported **<Guaranteed bitrate UL>**s),(list of supported **<Guaranteed bitrate DL>**s),(list of supported **<Delivery order>**s),(list of supported **<Maximum SDU size>**s),(list of supported **<SDU error ratio>**s),(list of supported **<Residual bit error ratio>**s),(list of supported **<Delivery of erroneous SDUs>**s),(list of supported **<Transfer delay>**s),(list of supported **<Traffic handling priority>**s),(list of supported **<Source statistics descriptor>**s),(list of supported **<Signalling indication>**s) **OK**
Read Command **AT+CGEQREQ?**	Response **[+CGEQREQ: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>, <Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic handling priority>,<Source statistics descriptor>,<Signalling indication>]** **[...]** **OK**
Write Command **AT+CGEQREQ=<cid>[,<Traffic class>[,<Maximum bitrate UL>[,<Maximum bitrate DL>[,<Guaranteed bitrate UL>**	Response **OK** Or **ERROR**

[,<Guaranteed bitrate DL>[,<Delivery order>[,<Maximum SDU size>[,<SDU error ratio>[,<Residual bit error ratio>[,<Delivery of erroneous SDUs>[,<Transfer delay>[,<Traffic handling priority>[,<Source statistics descriptor>[,<Signalling indication>]]]]]]]]]]]]]]	If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300 s
Characteristics	This command takes effect immediately. The configurations are not saved.
Reference 3GPP TS 27.007	

Parameter

<cid>	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. The type of packet data protocol. "IP" Internet Protocol (*IETF STD 5*) "PPP" Point to Point Protocol (*IETF STD 51*). "IPV6" Internet Protocol, version 6 "IPV4V6" Virtual **<PDP_type>** introduced to handle dual IP stack UE capability The following parameters are defined in *3GPP TS 23.107*
<Traffic class>	Integer type. Indicates the type of application for which the UMTS bearer service is optimized (see *3GPP TS 24.008 subclause 10.5.6.5*). If the parameter is specified as conversational or streaming, then the Guaranteed and Maximum bitrate parameters should also be provided. 0 Conversational 1 Streaming 2 Interactive 3 Background 4 Subscribed value
<Maximum bitrate UL>	Integer type. Indicates the maximum number of kbits/s delivered to UMTS (up-link traffic) at a SAP. As an example, a bit rate of 32 kbit/s would be specified as '32' (e.g. **AT+CGEQREQ=…,32, …**). Range: 0–256000. 0 Subscribed value 0–64

	64–568 (value needs to be a multiple of 8) 568–8640 (value needs to be a multiple of 64) 8640–16000 (value needs to be a multiple of 100) 16000–128000 (value needs to be a multiple of 1000) 128000–256000 (value needs to be a multiple of 2000)
<Maximum bitrate DL>	Integer type. Indicates the maximum number of kbits/s delivered by UMTS (down-link traffic) at a SAP. As an example, a bitrate of 32 kbit/s would be specified as '32' (e.g. **AT+CGEQREQ=…,32, …**). Range: 0–256000. 0 Subscribed value 0–64 64–568 (value needs to be a multiple of 8) 568–8640 (value needs to be a multiple of 64) 8640–16000 (value needs to be a multiple of 100) 16000–128000 (value needs to be a multiple of 1000) 128000–256000 (value needs to be a multiple of 2000)
<Guaranteed bitrate UL>	Integer type. Indicates the guaranteed number of kbits/s delivered to UMTS (up-link traffic) at a SAP (provided that there is data to deliver). As an example, a bitrate of 32 kbit/s would be specified as '32' (e.g. **AT+CGEQREQ=…,32, …**). Range: 0–256000. 0 Subscribed value 0–64 64–568 (value needs to be a multiple of 8) 568–8640 (value needs to be a multiple of 64) 8640–16000 (value needs to be a multiple of 100) 16000–128000 (value needs to be a multiple of 1000) 128000–256000 (value needs to be a multiple of 2000)
<Guaranteed bitrate DL>	Integer type. Indicates the guaranteed number of kbits/s delivered by UMTS (down-link traffic) at a SAP (provided that there is data to deliver). As an example, a bitrate of 32 kbit/s would be specified as '32' (e.g. **AT+CGEQREQ=…,32, …**). Range: 0–256000. 0 Subscribed value 0–64 64–568 (value needs to be a multiple of 8) 568–8640 (value needs to be a multiple of 64) 8640–16000 (value needs to be a multiple of 100) 16000–128000 (value needs to be a multiple of 1000) 128000–256000 (value needs to be a multiple of 2000)
<Delivery order>	Integer type. Indicates whether the UMTS bearer shall provide in sequence SDU delivery or not (see *3GPP TS 24.008 subclause 10.5.6.5*). 0 No 1 Yes

	2 Subscribed value
<Maximum SDU size>	Integer type. (1,2,3,…) indicates the maximum allowed SDU size in octets. If the parameter is set to '0' the subscribed value will be requested (see *3GPP TS 24.008 subclause 10.5.6.5*). 0 Subscribed value 10–520 (Value needs to be divisible by 10 without remainder) 1520
<SDU error ratio>	String type. Indicates the target value for the fraction of SDUs lost or detected as erroneous. SDU error ratio is defined only for conforming traffic. The value is specified as 'mEe'. As an example a target SDU error ratio of 5 × 10^{-3} would be specified as "5E3" (e.g. **AT+CGEQREQ=…,"5E3",…**). "0E0" Subscribed value "1E1" "1E2" "7E3" "1E3" "1E4" "1E5" "1E6"
<Residual bit error ratio>	String type. Indicates the target value for the undetected bit error ratio in the delivered SDUs. If no error detection is requested, Residual bit error ratio indicates the bit error ratio in the delivered SDUs. The value is specified as "mEe". As an example, a target residual bit error ratio of 5 × 10^{-3} would be specified as "5E3" (e.g. **AT+CGEQREQ=…,"5E3",…**). "0E0" Subscribed value "5E2" "1E2" "5E3" "4E3" "1E3" "1E4" "1E5" "1E6" "6E8"
<Delivery of erroneous SDUs>	Integer type. Indicates whether SDUs detected as erroneous shall be delivered or not (see *3GPP TS 24.008 subclause 10.5.6.5*). 0 No 1 Yes 2 No detect 3 Subscribed value
<Transfer delay>	Integer type. (0,1,2,…) indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP, in

	milliseconds. If the parameter is set to '0' the subscribed value will be requested (see *3GPP TS 24.008 subclause 10.5.6.5*). 0 Subscribed value 100–150 (value needs to be divisible by 10 without remainder) 200–950 (value needs to be divisible by 50 without remainder) 1000–4000 (value needs to be divisible by 100 without remainder)
<Traffic handling priority>	Integer type. (1,2,3,…) specifies the relative importance for handling of all SDUs belonging to the UMTS bearer compared to the SDUs of other bearers. If the parameter is set to '0' the subscribed value will be requested (see *3GPP TS 24.008 subclause 10.5.6.5*). 0 Subscribed 1 2 3
<Source statistics descriptor>	Integer type. Specifies characteristics of the source of the submitted SDUs for a PDP context. 0 Characteristics of SDUs is unknown 1 Characteristics of SDUs correspond to a speech source
<Signalling indication>	Integer type. Indicates signaling content of submitted SDUs for a PDP context. 0 PDP context is not optimized for signaling 1 PDP context is optimized for signaling
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

Some software versions do not support this command. Please contact Quectel Technical Support for details.

10.6. AT+CGEQMIN 3G Quality of Service Profile (Minimum Acceptable)

This command allows the TE to specify a minimum acceptable profile, which is checked by the MT against the negotiated profile returned in the PDP context establishment and PDP context modification procedures. Details can be found in *3GPP TS 23.107*.

AT+CGEQMIN 3G Quality of Service Profile (Minimum Acceptable)	
Test Command **AT+CGEQMIN=?**	Response **+CGEQMIN: <PDP_type>,**(list of supported **<Traffic class>**s),(list of supported **<Maximum bitrate UL>**s),(list of supported **<Maximum bitrate DL>**s),(list of supported **<Guaranteed bitrate UL>**s),(list of supported **<Guaranteed**

	bitrate DL>s),(list of supported **<Delivery order>**s),(list of supported **<Maximum SDU size>**s),(list of supported **<SDU error ratio>**s),(list of supported **<Residual bit error ratio>**s),(list of supported **<Delivery of erroneous SDUs>**s),(list of supported **<Transfer delay>**s),(list of supported **<Traffic handling priority>**s),(list of supported **<Source statistics descriptor>**s),(list of supported **<Signalling indication>**s) **OK**
Read Command **AT+CGEQMIN?**	Response **[+CGEQMIN: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic handling priority>,<Source statistics descriptor>,<Signalling indication>]** **[…]** **OK**
Write Command **AT+CGEQMIN=<cid>[,<Traffic class>[,<Maximum bitrate UL>[,<Maximum bitrate DL>[,<Guaranteed bitrate UL>[,<Guaranteed bitrate DL>[,<Delivery order>[,<Maximum SDU size>[,<SDU error ratio>[,<Residual bit error ratio>[,<Delivery of erroneous SDUs>[,<Transfer delay>[,<Traffic handling priority>[,<Source statistics descriptor>[,<Signalling indication>]]]]]]]]]]]]]]**	Response **OK** Or **ERROR** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configurations are not saved.
Reference 3GPP TS 27.007	

Parameter

<cid>	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. The type of packet data protocol. "IP" Internet Protocol (*IETF STD 5*) "PPP" Point to Point Protocol (*IETF STD 51*). "IPV6" Internet Protocol, version 6 "IPV4V6" Virtual **<PDP_type>** introduced to handle dual IP stack UE capability.
	The following parameters are defined in *3GPP TS 23.107*
<Traffic class>	Integer type. Indicates the type of application for which the UMTS bearer service is optimized (see *3GPP TS 24.008 subclause 10.5.6.5*). If the parameter is specified as conversational or streaming, then the Guaranteed and Maximum bitrate parameters should also be provided. 0 Conversational 1 Streaming 2 Interactive 3 Background 4 Subscribed value
<Maximum bitrate UL>	Integer type. Indicates the maximum number of kbits/s delivered to UMTS (up-link traffic) at a SAP. As an example, a bitrate of 32 kbit/s would be specified as '32' (e.g. **AT+CGEQREQ=…,32, …**). Range: 0–256000. 0 Subscribed value 0–64 64–568 (value needs to be a multiple of 8) 568–8640 (value needs to be a multiple of 64) 8640–16000 (value needs to be a multiple of 100) 16000–128000 (value needs to be a multiple of 1000) 128000–256000 (value needs to be a multiple of 2000)
<Maximum bitrate DL>	Integer type. Indicates the maximum number of kbits/s delivered by UMTS (down-link traffic) at a SAP. As an example, a bitrate of 32 kbit/s would be specified as '32' (e.g. **AT+CGEQREQ=…,32, …**). Range: 0–256000. 0 Subscribed value 0–64 64–568 (value needs to be a multiple of 8) 568–8640 (value needs to be a multiple of 64) 8640–16000 (value needs to be a multiple of 100) 16000–128000 (value needs to be a multiple of 1000) 128000–256000 (value needs to be a multiple of 2000)
<Guaranteed bitrate UL>	Integer type. Indicates the guaranteed number of kbits/s delivered to UMTS (up-link traffic) at a SAP (provided that there is data to

	deliver). As an example, a bitrate of 32 kbit/s would be specified as '32' (e.g. **AT+CGEQREQ=…,32, …**). Range: 0–256000. 0 Subscribed value 0–64 64–568 (value needs to be a multiple of 8) 568–8640 (value needs to be a multiple of 64) 8640–16000 (value needs to be a multiple of 100) 16000–128000 (value needs to be a multiple of 1000) 128000–256000 (value needs to be a multiple of 2000)
<Guaranteed bitrate DL>	Integer type. Indicates the guaranteed number of kbits/s delivered by UMTS (down-link traffic) at a SAP (provided that there is data to deliver). As an example, a bitrate of 32 kbit/s would be specified as '32' (e.g. **AT+CGEQREQ=…,32, …**). Range: 0–256000. 0 Subscribed value 0–64 64–568 (value needs to be a multiple of 8) 568–8640 (value needs to be a multiple of 64) 8640–16000 (value needs to be a multiple of 100) 16000–128000 (value needs to be a multiple of 1000) 128000–256000 (value needs to be a multiple of 2000)
<Delivery order>	Integer type. Indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not (see *3GPP TS 24.008 subclause 10.5.6.5*). 0 No 1 Yes 2 Subscribed value
<Maximum SDU size>	Integer type. (1,2,3,…) indicates the maximum allowed SDU size in octets. If the parameter is set to '0' the subscribed value will be requested (see *3GPP TS 24.008 subclause 10.5.6.5*). 0 Subscribed value 10–1520 (value needs to be divisible by 10 without remainder) 1502
<SDU error ratio>	String type. Indicates the target value for the fraction of SDUs lost or detected as erroneous. SDU error ratio is defined only for conforming traffic. The value is specified as 'mEe'. As an example, a target SDU error ratio of 5×10^{-3} would be specified as "5E3" (e.g. **AT+CGEQREQ=…,"5E3",…**). "0E0" Subscribed value "1E2" "7E3" "1E3" "1E4" "1E5" "1E6"

	"1E1"
<Residual bit error ratio>	String type. Indicates the target value for the undetected bit error ratio in the delivered SDUs. If no error detection is requested, Residual bit error ratio indicates the bit error ratio in the delivered SDUs. The value is specified as “mEe”. As an example, a target residual bit error ratio of 5 × 10^{-3} would be specified as "5E3" (e.g. **AT+CGEQREQ=…,"5E3",…**). "0E0" Subscribed value "5E2" "1E2" "5E3" "4E3" "1E3" "1E4" "1E5" "1E6" "6E8"
<Delivery of erroneous SDUs>	Integer type. Indicates whether SDUs detected as erroneous shall be delivered or not (see *3GPP TS 24.008 subclause 10.5.6.5*). 0 No 1 Yes 2 No detect 3 Subscribed value
<Transfer delay>	Integer type. (0,1,2,…) indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP, in milliseconds. If the parameter is set to ‘0’ the subscribed value will be requested (see *3GPP TS 24.008 subclause 10.5.6.5*). 0 Subscribed value 100–150 (value needs to be divisible by 10 without remainder) 200–950 (value needs to be divisible by 50 without remainder) 1000–4000 (value needs to be divisible by 100 without remainder)
<Traffic handling priority>	Integer type. (1,2,3,…) specifies the relative importance for handling of all SDUs belonging to the UMTS bearer compared to the SDUs of other bearers. If the parameter is set to ‘0’ the subscribed value will be requested (see *3GPP TS 24.008 subclause 10.5.6.5*). 0 Subscribed 1 2 3
<Source statistics descriptor>	Integer type. Specifies characteristics of the source of the submitted SDUs for a PDP context. 0 Characteristics of SDUs are unknown 1 Characteristics of SDUs corresponds to a speech source
<Signalling indication>	Integer type. Indicates signaling content of submitted SDUs for a

	PDP context. 0 PDP context is not optimized for signaling 1 PDP context is optimized for signaling
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

Some software versions do not support this command. Please contact Quectel Technical Support for details.

10.7. AT+CGACT Activate/Deactivate PDP Context

The Write Command activates or deactivates the specified PDP context(s). After the command has been 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/Deactivate PDP Context	
Test Command **AT+CGACT=?**	Response **+CGACT:** (list of supported **<state>**s) **OK**
Read Command **AT+CGACT?**	Response **+CGACT: <cid>,<state>[<CR><LF>** **+CGACT: <cid>,<state>…]** **OK**
Write Command **AT+CGACT=<state>,<cid>**	Response **OK** Or **ERROR** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	150 s, determined by network.
Characteristics	This command takes effect immediately. The configurations are not saved.
Reference 3GPP TS 27.007	

Parameter

<state>	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>	A numeric parameter which specifies a particular PDP context definition (see **AT+CGDCONT**).
<err>	Error code. See ***Chapter 12.5*** for details.

Example

```
AT+CGDCONT=1,"IP","UNINET"          //Define PDP context
OK
AT+CGACT=1,1                        //Activate PDP
OK
AT+CGACT=0,1                        //Deactivate PDP
OK
```

10.8. 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. Commands following the **AT+CGDATA** command in the AT command line will not be processed by the MT.

If the **<L2P>** parameter 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	-
Reference 3GPP TS 27.007	

Parameter

<L2P>	String type. The layer 2 protocol to be used between the TE and MT: PPP (Point to Point protocol) for a PDP such as IP Other values are not supported and will result in an **ERROR** response to the execution command
<cid>	Integer type. The particular PDP context definition (see **AT+CGDCONT**).
<err>	Error code. See ***Chapter 12.5*** for details.

10.9. AT+CGPADDR Show PDP Address

The 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	-
Reference 3GPP TS 27.007	

Parameter

<cid>	Integer type. The particular PDP context definition (see **AT+CGDCONT**).
<PDP_addr>	String type. 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 is 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.

NOTE

The IPV6 address will be displayed in the form of FE80 with suffix (e.g., FE80::1) when it does not obtain the prefix. It is a link local address and cannot be transmit among routers.

Example

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

OK
```

10.10. AT+CGCLASS GPRS Mobile Station Class

The command sets the MT to operate according to the specified mode of operation. See *3GPP TS 23.060*.

AT+CGCLASS GPRS Mobile Station Class	
Test Command **AT+CGCLASS=?**	Response **+CGCLASS:** (list of supported **<class>**s) **OK**
Read Command **AT+CGCLASS?**	Response **+CGCLASS: <class>** **OK**
Write Command **AT+CGCLASS=<class>**	Response **OK** Or

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

Parameter

<class>	String type. GPRS mobile class (Functionality in descending order). "A" Class-A mode of operation (A/Gb mode), or CS/PS mode of operation (Iu mode) (highest mode of operation)
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

Some software versions do not support this command. Please contact Quectel Technical Support for details.

10.11. AT+CGREG PS Domain Network Registration Status

The command queries the PS domain network registration status and controls the presentation of an unsolicited result code **+CGREG: <stat>** when **<n>**=1 and there is a change in network registration status in PS domain, or unsolicited result code **+CGREG: <stat>[,<lac>,<ci>[,<AcT>]]** when **<n>**=2 and there is a change of the network cell in PS domain.

AT+CGREG PS Domain Network Registration Status	
Test Command **AT+CGREG=?**	Response **+CGREG: (**list of supported **<n>**s**)** **OK**
Read Command **AT+CGREG?**	Response **+CGREG: <n>,<stat>[,<lac>,<ci>[,<Act>]]** **OK**
Write Command **AT+CGREG[=<n>]**	Response **OK**

	Or **ERROR**
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is saved by executing **AT&W**.
Reference 3GPP TS 27.007	

Parameter

<n>	Integer type. 0 Disable network registration unsolicited result code 1 Enable network registration unsolicited result code **+CGREG: <stat>** 2 Enable network registration and location information unsolicited result code **+CGREG: <stat>[,<lac>,<ci>[,<Act>]]**
<stat>	Integer type. Network registration status. 0 Not registered. MT is not currently searching an operator to register to. The UE is in GMM state GMM-NULL or GMM-DEREGISTERED-INITIATED. The network service is disabled, but the UE is allowed to attach to the network if requested by the user. 1 Registered, home network. The UE is in GMM state GMM-REGISTERED or GMM-ROUTING-AREA-UPDATING-INITIATED INITIATED on the home PLMN. 2 Not registered, but MT is currently trying to attach or searching an operator to register to. The UE is in GMM state GMM-DEREGISTERED or GMM-REGISTERED-INITIATED. The network service is enabled, but an allowable PLMN is currently not available. The UE will start a network attachment as soon as an allowable PLMN is available. 3 Registration denied. The UE is in GMM state GMM-NULL. The network service is disabled, and the UE is not allowed to attach to the network 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. 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
```

10.12. 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 is entered.

AT+CGEREP Packet Domain Event Reporting	
Test Command **AT+CGEREP=?**	Response **+CGEREP: (**range of supported **<mode>**s**),(**list of supported **<bfr>**s**)** **OK**
Read Command **AT+CGEREP?**	Response **+CGEREP: <mode>,<bfr>** **OK**
Write Command **AT+CGEREP=<mode>[,<bfr>]**	Response **OK** Or **ERROR**
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configurations are not saved.
Reference 3GPP TS 27.007	

Parameter

<mode>	Integer type. 0 Buffer unsolicited result codes in the MT; if MT result code buffer is full, the oldest ones can be discarded. No codes are forwarded to the TE. 1 Discard unsolicited result codes when MT-TE link is reserved (e.g. in on-line data mode), otherwise forward them directly to the TE. 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. 0 MT buffer of unsolicited result codes defined within this command is cleared when **<mode>** 1 or 2 is entered. 1 MT buffer of unsolicited result codes defined within this command is flushed to the TE when **<mode>** 1 or 2 is entered (**OK** response shall be given before flushing the codes).

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: ME PDN ACT <cid>**: Activated a context. The context represents a PDN connection in LTE or a Primary PDP context in GSM/UMTS.
10. **+CGEV: ME 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
```

10.13. AT+CGSMS Select Service for MO SMS Messages

The command specifies the service or service preference that the MT will use to send MO (mobile originated) SMS messages.

AT+CGSMS Select Service for MO SMS Messages	
Test Command **AT+CGSMS=?**	Response **+CGSMS: (**list of currently available **<service>**s**)** **OK**
Read Command **AT+CGSMS?**	Response **+CGSMS: <service>** **OK**
Write Command **AT+CGSMS=[<service>]**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is saved automatically.
Reference 3GPP TS 27.007	

Parameter

<service>	Integer type. Service or service preference to be used. 0 GPRS 1 Circuit switch

	2 GPRS preferred (use circuit switched if GPRS not available) 3 Circuit switch preferred (use GPRS if circuit switched not available)
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

Some software versions do not support this command. Please contact Quectel Technical Support for details.

10.14. AT+CEREG EPS Network Registration Status

The 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	This command takes effect immediately. The configuration is saved by executing **AT&W**.
Reference 3GPP TS 27.007	

Parameter

<n>	Integer type. 0 Disable network registration unsolicited result code 1 Enable network registration unsolicited result code **+CEREG: <stat>**

	2 Enable network registration and location information unsolicited result code **+CEREG: <stat>[,<tac>,<ci>[,<Act>]]**
<stat>	Integer type. EPS registration status. 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

10.15. AT+QGDCNT Packet Data Counter

The command allows the application to check how many bytes are sent to or received by the module.

AT+QGDCNT Packet Data Counter	
Test Command **AT+QGDCNT=?**	Response **+QGDCNT: (**list of supported **<op>**s**)** **OK**
Read Command **AT+QGDCNT?**	Response **+QGDCNT: <bytes_sent>,<bytes_recv>** **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	-

Parameter

<op>	Integer type. The operation about data counter. 0 Reset the data counter 1 Save the results of data counter to NV If the results need to be automatically saved, see **AT+QAUGDCNT**.
<bytes_sent>	Integer type. The amount of sent bytes.
<bytes_recv>	Integer type. The amount of received bytes.
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

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

Example

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

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

OK
AT+QGDCNT=1        //Save the results to NV
OK
AT+QGDCNT =0       //Reset counter
OK
```

10.16. AT+QAUGDCNT Auto Save Packet Data Counter

The command allows **AT+QGDCNT** to save results to NV automatically.

AT+QAUGDCNT Auto Save Packet Data Counter	
Test Command **AT+QAUGDCNT=?**	Response **+QAUGDCNT: (**list of supported **<value>**s**)**

	OK
Read Command **AT+QAUGDCNT?**	Response **+QAUGDCNT: <value>** **OK**
Write Command **AT+QAUGDCNT=<value>**	Response **OK** Or **ERROR** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is not saved.

Parameter

<value>	Integer type. The time-interval for **AT+QGDCNT** to save results to NV automatically. If it is set to 0, auto-save feature would be disabled. Range: 0, 30–65535. Default value: 0. Unit: second.
<err>	Error code. See ***Chapter 12.5*** for details.

Example

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

OK
AT+QAUGDCNT=35           //Set time-interval for AT+QGDCNT to save results to NV automatically
OK
AT+QAUGDCNT?             //Query the interval of auto-save
+QAUGDCNT: 35

OK
```

10.17. AT+QNETDEVCTL Connect USB Netcard to Network

This command connects USB netcard to network.

AT+QNETDEVCTL Connect USB Netcard to Network	
Test Command **AT+QNETDEVCTL=?**	Response **+QNETDEVCTL: (**list of supported **<type>**s**),(**range of supported **<cid>**s**),(**list of supported **<URC_en>**s**)** **OK**
Read Command **AT+QNETDEVCTL?**	Response **+QNETDEVCTL: <type>,<cid>,<URC_en>,<state>** **OK**
Write Command **AT+QNETDEVCTL=<type>,<cid>[,<URC_en>]**	Response **OK** Or **ERROR** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	2 s
Characteristics	This command takes effect immediately. The configurations are saved automatically if **<type>**=3.

Parameter

<type>	Integer type. Operation mode. 0 Do not connect to network 1 Connect to network for once 3 Connect to network automatically
<cid>	Integer type. PDP context identifier. Range: 1–15. 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.
<URC_en>	Integer type. Whether to enable the URC **+QNETDEVSTATUS: <status>** showing the netcard status. 0 Disable 1 Enable
<status>	Integer type. Netcard status. 0 The netcard is disconnected from the network 1 The netcard is connected to the network

<state>	Integer type. The result of connecting network. 0 Failed 1 Successful
<err>	Error code. See ***Chapter 12.5*** for details.

Example

```
AT+QNETDEVCTL=?                 //Test command.
+QNETDEVCTL: (0-3),(1–15),(0,1)

OK
AT+QNETDEVCTL=1,1               //Set USB netcard connecting to network through context ID 1.
OK
AT+QNETDEVCTL?                  //Query USB netcard status.
+QNETDEVCTL: 1,1,1,1

OK
```

10.18. AT+QCEERCATCFG Configure Response Format of AT+CEER in 2G/4G Test

This command configures the response format of **AT+CEER** in 2G/4G test.

AT+ QCEERCATCFG Configure Response Format of AT+CEER in 2G/4G Test	
Test Command **AT+QCEERCATCFG=?**	Response **+QCEERCATCFG: (**list of supported **<mode>**s**)** **OK**
Write Command **AT+QCEERCATCFG=<mode>**	Response **OK** Or **ERROR** If there is any error related to ME functionality: **+CME ERROR: <err>**
Read Command **AT+QCEERCATCFG?**	Response **+QCEERCATCFG: <mode>** **OK**
Maximum Response Time	300 ms

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

Parameter

<mode>	Integer type. Return format of **AT+CEER**. 0 The return format of **AT+CEER** is **+CEER: <text>** 1 The return format of **AT+CEER** is **+CEER: <category>,<cause>,<description>**
<text>	String type. The error code number and error content of the network rejection value. For example: "15 No Suitable Cells In Tracking Area".
<category>	String type. Network rejection strategy. For example, if the request is rejected during the registration process, the prompt "EMM attach error" is displayed.
<cause>	Integer type. Network rejection error code. For example: 15.
<description>	String type. The error reason for the network rejection, and it is a description of **<cause>**.
<err>	Error code. See ***Chapter 12.5*** for details.

NOTE

Some module models do not support this command. Please contact Quectel Technical Support for details.

Example

```
AT+QCEERCATCFG=0
OK
AT+CFUN=0
OK
AT+CFUN=1
OK
AT+CEER
+CEER: "15 No Suitable Cells In tracking Area"

OK
AT+QCEERCATCFG=1
OK
AT+CFUN=0
OK
AT+CFUN=1
OK
AT+CEER
+CEER: ""EMM attach error",15,"No Suitable Cells In tracking Area #15""

OK
```

11 Hardware Related Commands

11.1. AT+QPOWD Power Off

The 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 seconds. To avoid data loss, UE is not allowed to turn power off before the module's STATUS pin is set low or the URC **POWERED DOWN** is outputted.

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

Parameter

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

11.2. AT+CCLK Clock

The command sets and queries the real time clock (RTC) of the module. The current setting is retained until the module is totally shut down.

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	This command takes effect immediately. The configuration is not saved after the module is rebooted.
Reference 3GPP TS 27.007	

Parameter

<time>	String type. The format is "YY/MM/DD,hh:mm:ss±zz", indicating year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range: -48 to +56), e.g. May 6th, 1994, 22:10:00 GMT+2 hours equals to "94/05/06,22:10:00+08".
<err>	Error code. See ***Chapter 12.5*** for details.

Example

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

OK
```

11.3. AT+QSCLK Enable/Disable Sleep Mode

The command controls whether the module can enter into sleep mode. When sleep mode is enabled with both DTR pin and WAKEUP_IN pin are pulled up, the module directly enters into sleep mode. If sleep mode is enabled with both DTR pin and WAKEUP_IN pin are pulled down, there is a need to pull the DTR pin and the WAKEUP_IN pin up first before the module can enter into sleep mode.

AT+QSCLK Enable/Disable Sleep Mode	
Test Command **AT+QSCLK=?**	Response **+QSCLK: (**list of supported **<n>**s**),(**list of supported **<time>**s**),(**list of supported **<dtr_isp>**s**)** **OK**
Read Command **AT+QSCLK?**	Response **+QSCLK: <n>** **OK**
Write Command **AT+QSCLK=<n>,<time>,<dtr_isp>**	Response **OK**
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is not saved.
Reference Quectel	

Parameter

<n>	Integer type. 0 Disable 1 Enable. It is controlled by DTR pin and WAKEUP_IN pin.
<time>	Integer type. Sleep delay duration. Range: 1–255. Unit: Second.
<dtr_isp>	Integer type. Enable or disable the DTR interrupt wake-up from sleep feature. 0 Enable DTR wake-up interrupt 1 Disable DTR wake-up interrupt

NOTE

Some module models do not support this command. Please contact Quectel Technical Support for details.

11.4. AT+CBC Query/Read Battery Charge Information

This command queries or reads battery charge information.

AT+CBC Query/Read Battery Charge Information	
Test Command **AT+CBC=?**	Response **+CBC: (**list of supported **<bcs>**s**),(**list of supported **<bcl>**s**),<voltage>** **OK**
Execution Command **AT+CBC**	Response **+CBC: <bcs>,<bcl>,<voltage>** **OK**
Maximum Response Time	300 ms
Characteristics	This command takes effect immediately. The configuration is not saved.

Parameter

<bcs>	Integer type. Battery charge status. 0 Not charging 1 Charging 2 Charging has been finished
<bcl>	Integer type. Battery charge level. 0–100 Remaining capacity percentage
<voltage>	Integer type. Battery voltage. Unit: mA.

Example

```
AT+CBC
+CBC: 0,0,3899        //The current battery voltage of the module is 3899mV

OK
```

NOTE

1. Some software versions do not support this command. For more information on the support of the modules, please contact Quectel Technical Support.
2. After executing the command, there may be great error between the value that is read and the actual value.

11.5. 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: <port>,<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
<value>	Integer type. The voltage of specified ADC channel. Unit: mV.

NOTE

1. Some software versions do not support this command. For more information on the support of the modules, please contact Quectel Technical Support.
2. After executing the command, there may be great error between the value that is read and the actual value.

12 Appendixes

12.1. Terms and Abbreviations

Table 6: Terms and Abbreviations

Abbreviation	Description
3GPP	3rd Generation Partnership Project
ACK	Acknowledgement
AMR	Adaptive Multi-Rate
APN	Access Point Name
ASCII	American Standard Code for Information Interchange
BAIC	Bar All Incoming Calls
BAOC	Bar All Outgoing Calls
BCD	Binary-Coded Decimal
BIC Roam	Bar Incoming Calls when Roaming outside the home country
BIP	Bearer Independent Protocol
BOIC	Bar Outgoing International Calls
BOIC-exHC	Bar Outgoing International Calls except to Home Country
CBM	Cell Broadcast Message
CBS	Cell Broadcast Service
COL	Connected Line
CS	Circuit Switching

CSD	Circuit Switch Data
CUG	Closed User Group
DCD	Data Carrier Detection
DCE	Data Communication Equipment
DCS	Data Coding Scheme
DHCP	Dynamic Host Configuration Protocol
DTE	Data Terminal Equipment
DTR	Data Terminal Ready
ECT	Explicit Call Transfer supplementary service
EDGE	Enhanced Data Rates for GSM Evolution
EGPRS	Enhanced General Packet Radio Service
EPS	Evolved Packet System
E-UTRAN	Evolved UMTS Terrestrial Radio Access Network
FDD	Frequency Division Duplex
GGSN	Gateway GPRS Support Node
GMM	GPRS Mobility Management
GMT	Greenwich Mean Time
GPIO	General-Purpose Input/Output
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
HLR	Home Location Register
HSDPA	High Speed Downlink Packet Access
HSPA+	High Speed Packet Access
HSUPA	High Speed Uplink Packet Access
ICCID	Integrated Circuit Card Identifier

IMEI	International Mobile Equipment Identity
IMS	IP Multimedia Subsystem
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
IRA	International Reference Alphabet
LLC	Logical Link Control
LTE	Long-Term Evolution
ME	Mobile Equipment
MO	Mobile Originated
MS	Mobile Station
MSISDN	Mobile Subscriber Integrated Services Digital Network
MT	Mobile Terminated
NAS	Non-Access Stratum
NITZ	Network Identity and Time Zone
NIC	Network Interface Controller
NSAPI	Network Service Access Point Identifier
NV	Non-Volatile Random Access Memory
P-CSCF	Proxy-Call Session Control Function
PDN	Packet Data Network
PDP	Packet Data Protocol
PDU	Packet Data Unit
PIN	Personal Identification Number
PLMN	Public Land Mobile Network

PPP	Point to Point Protocol
PS	Packet Switching
PSC	Primary Synchronization Code
PUK	PIN Unlock Key
RDI	Remote Defect Indication
RF	Radio Frequency
RI	Ring Indicator
RRC	Radio Resource Control
RSCP	Received Signal Code Power
RTC	Real-Time Clock
RTS/CTS	Request To Send/Clear To Send
RXQUAL	Receive Quality
SAP	Service Access Point
SDU	Service Data Unit
SMS	Short Message Service
SMSC	Short Message Service Center
SNDCP	SubNetwork Dependent Convergence Protocol
TA	Terminal Adapter
TCP	Transmission Control Protocol
TDD	Time Division Duplex
TE	Terminal Equipment
TFT	Traffic Flow Template
UART	Universal Asynchronous Receiver/Transmitter
UCS2	Universal Character Set 2
UDH	User Data Header

UDP	User Datagram Protocol
UE	User Equipment
UICC	Universal Integrated Circuit Card
UIM	User Identity Module
UMTS	Universal Mobile Telecommunications System
URC	Unsolicited Result Code
USB	Universal Serial Bus
(U)SIM	(Universal) Subscriber Identity Module
UTRAN	UMTS Terrestrial Radio Access Network
VBAT	Voltage at Battery (Pin)
VLR	Visitor Location Register
WCDMA	Wideband Code Division Multiple Access

12.2. Factory Default Settings Restorable with AT&F

Table 7: Factory Default Settings Restorable with AT&F

AT Command	Parameters	Factory Defaults
ATE	<value>	1
ATQ	<n>	0
ATS0	<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+IFC	<dce_by_dte>,<dte_by_dce>	0,0
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>,<dcs>	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+COLP	<n>	0
AT+CTZR	<reporting>	0
AT+CPBS	<storage>	SM
AT+CGEREP	<mode>,<brf>	0,0
AT+CEREG	<n>	0

12.3. AT Command Settings Storable with AT&W

Table 8: AT Command Settings Storable with AT&W

AT Command	Parameters	Display with AT&V
ATE	<value>	Yes
ATQ	<n>	Yes
ATS0	<n>	Yes
ATV	<value>	Yes
ATX	<value>	Yes
AT&C	<value>	Yes
AT&D	<value>	Yes
AT+IFC	<dce_by_dte>,<dte_by_dce>	No
AT+IPR	<rate>	No
AT+CREG	<n>	No
AT+CGREG	<n>	No
AT+CEREG	<n>	No

12.4. AT Command Settings Storable with ATZ

Table 9: AT Command Settings Storable with ATZ

AT Command	Parameters	Factory Defaults
ATE	<value>	1
ATQ	<n>	0
ATS0	<n>	0

ATV	<value>	1
ATX	<value>	4
AT&C	<value>	1
AT&D	<value>	2
AT+IFC	<dce_by_dte>,<dte_by_dce>	0,0
AT+CREG	<n>	0
AT+CGREG	<n>	0
AT+CEREG	<n>	0

12.5. Summary of CME ERROR Codes

Final result code **+CME ERROR: <err>** indicates an error related to mobile equipment or network. The operation of **+CME ERROR: <err>** final result code is similar to the regular **ERROR** result code: if **+CME ERROR: <err>** is the result code for any of the commands in a command line, none of the following commands in the same command line is executed (neither **ERROR** nor **OK** result code shall be returned as a result of a completed command line execution). The format of **<err>** can be either numeric or verbose. This is set with **AT+CMEE**.

<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 10: Different Coding Schemes of +CME ERROR: <err>

Numeric <err> Value	Verbose <err> Value
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

12.6. Summary of CMS ERROR Codes

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

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

Table 11: Different Coding Schemes of +CMS ERROR: <err>

Numeric <err> Value	Verbose <err> Value
300	ME failure
301	SMS ME reserved
302	operation not allowed
303	operation not supported
304	invalid PDU mode
305	invalid text mode

310	(U)SIM not inserted
311	(U)SIM PIN required
312	PH-(U)SIM PIN required
313	(U)SIM failure
314	(U)SIM busy
315	(U)SIM wrong
316	(U)SIM PUK required
317	(U)SIM PIN2 required
318	(U)SIM PUK2 required
320	memory failure
321	invalid memory index
322	memory full
330	SMSC address unknown
331	no network service
332	network timeout
500	unknown
512	(U)SIM not ready
513	message length exceeds
514	invalid request parameters
515	ME storage failure
517	invalid service mode
528	more message to send state error
529	MO SMS is not allowed
530	GPRS is suspended
531	ME storage full

12.7. Summary of URC

Table 12: 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	**+CEREG: <stat>**	Indicates EPS network registration status	**AT+CEREG=1**
6	**+CEREG: <stat>[,<tac>,<ci>[,<Act>]]**	Indicates change of E-UTRAN network cell	**AT+CEREG=2**
7	**+CTZV: <tz>**	Time zone reporting	**AT+CTZR=1**
8	**+CTZE: <tz>,<dst>,<time>**	Extended time zone reporting	**AT+CTZR=2**
9	**+CMTI: <mem>,<index>**	New message is received, and saved to memory	**AT+CNMI**
10	**+CMT: [<alpha>],<length><CR><LF><pdu>**	New short message is received and output directly to TE (PDU mode)	**AT+CNMI**
11	**+CMT: <oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data>**	New short message is received and output directly to TE (Text mode)	**AT+CNMI**
12	**^HCMT: <oa>,<scts>,<lang>, <fmt>,<length>,<prt>,<prv>,<type>,<stat><CR><LF><data>**	New short message is received and output directly to TE	**AT+CNMI**
13	**+CBM: <length><CR><LF><pdu>**	New CBM is received and output directly (PDU mode)	**AT+CNMI**

14	**+CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data>**	New CBM is received and output directly to TE (Text mode)	**AT+CNMI**
15	**+CDS: <length><CR><LF><pdu>**	New CDS is received and output directly (PDU mode)	**AT+CNMI**
16	**+CDS: <fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>**	New CDS is received and output directly to TE (Text mode)	**AT+CNMI**
17	**+CDSI: <mem>,<index>**	New message status report is received, and saved to memory	**AT+CNMI**
18	**+COLP: <number>,<type>,[<subaddr>],[<satype>],[<alpha>]**	The presentation of the COL (connected line) at the TE for a mobile originated call	**AT+COLP=1**
19	**NO CARRIER**	PPP has been terminated	**ATV1**
20	**+CRING**	Indicates incoming call to TE through unsolicited result code instead of normal **RING**	N/A
21	**RING**	Incoming call tone	N/A
22	**+CFUN: 1**	All function of the ME is available	N/A
23	**+CPIN: <state>**	(U)SIM card pin state	N/A
24	**+QIND: SMS DONE**	SMS initialization finished	N/A
25	**+QIND: PB DONE**	Phonebook initialization finished	N/A
26	**+QIND: airplanestatus,<status>**	W_DISABLE# pin state change	**AT+QCFG="airplanecontrol",1**
27	**+QIND: "csq",<rssi>,<ber>**	Signal strength and channel bit error rate change	**AT+QINDCFG="csq",1**
28	**+QIND: "datastatus",<suspended>,<reason>**	Data service status change	**AT+QINDCFG="datastatus",1**
29	**^MODE:<main_mode>,<sub_mode>**	Indicates network main mode and sub mode	**AT+QINDCFG="mode",1**
30	**+QIND: "smsfull",<storage>**	SMS storage is full	**AT+QINDCFG="smsfull",1**
31	**+QIND: "act",<actvalue>**	Changes in network access technology	**AT+QINDCFG="act",1**
32	**+QIND: "SQI",<RSRP>,<RSRQ>,<SINR>**	Changes in reference signal receiving power,reference signal receiving quality and signal to interference plus	**AT+QINDCFG="sqi",1**

		noise ratio	
33	**+QIND: PB DONE**	Incoming phonebook	**AT+QINDCFG="phonebook",1**
34	**+QSIMSTAT: <enable>,<inserted_status>**	(U)SIM card removed or inserted	**AT+QSIMSTAT=1**
35	**^DSCI: <id>,<dir>,<stat>,<type>,<number>,<num_type>**	Indicate call status	**AT^DSCI=1**
36	**POWERED DOWN**	Module power down	**AT+QPOWD**
37	**+CGEV: REJECT <PDP_type>,<PDP_addr>**	A network request for PDP activation, and was automatically rejected.	**AT+CGEREP=2,1**
38	**+CGEV: NW REACT <PDP_type>,<PDP_addr>, [<cid>]**	The network request PDP reactivation	**AT+CGEREP=2,1**
39	**+CGEV: NW DEACT <PDP_type>,<PDP_addr>, [<cid>]**	The network has forced a context deactivation	**AT+CGEREP=2,1**
40	**+CGEV: ME DEACT <PDP_type>,<PDP_addr>, [<cid>]**	The ME has forced a context deactivation.	**AT+CGEREP=2,1**
41	**+CGEV: NW DETACH**	The network has forced a Packet Domain detach.	**AT+CGEREP=2,1**
42	**+CGEV: ME DETACH**	The mobile equipment has forced a Packet Domain detach.	**AT+CGEREP=2,1**
43	**+CGEV: NW CLASS <class>**	The network has forced a change of MS class.	**AT+CGEREP=2,1**
44	**+CGEV: ME CLASS <class>**	The mobile equipment has forced a change of MS class.	**AT+CGEREP=2,1**
45	**+CGEV: PDN ACT <cid>**	Primary PDP context in GSM/UMTS is activated	**AT+CGEREP=2,1**
46	**+CGEV: PDN DEACT <cid>**	Primary PDP context in GSM/UMTS is deactivated	**AT+CGEREP=2,1**
47	**+QNETDEVSTATUS: <status>**	NIC dialing status	**AT+QNETDEVCTL=<type>,<cid>,1**
48	**+QUSIM: <status>**	Indicate (U)SIM card initialization status	N/A

12.8. SMS Character Sets Conversions

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

Table 13: 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 converts IRA characters to GSM characters. Output: UE converts 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 converts the UCS2 hex string to GSM characters. Output: UE converts 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 14: 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 15: 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 16: 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 17: 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 18: 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 19: 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 20: 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. See ***Table 13*** for more details.

12.9. Release Cause Text List of AT+CEER

Table 21: Release Cause Text List of AT+CEER

CS Internal Cause
No cause information available (default)
Phone is offline
No service available
Network release, no reason given
Received incoming call
Client ended call
UIM not present
Access attempt already in progress
Access failure, unknown source
Concur service not supported by network
No response received from network
GPS call ended for user call
SMS call ended for user call
Data call ended for emergency call
Rejected during redirect or handoff
Lower-layer ended call
Call origination request failed
Client rejected incoming call
Client rejected setup indication
Network ended call
No funds available
No service available

Full service not available
Maximum packet calls exceeded
Video connection lost
Video protocol closed after setup
Video protocol setup failure
Internal error
CS Network Cause
Unassigned/unallocated number
No route to destination
Channel unacceptable
Operator determined barring
Normal call clearing
User busy
No user responding
User alerting, no answer
Call rejected
Number changed
Non selected user clearing
Destination out of order
Invalid/incomplete number
Facility rejected
Response to status enquiry
Normal, unspecified
No circuit/channel available
Network out of order
Temporary failure

Switching equipment congestion
Access information discarded
Requested circuit/channel not available
Resources unavailable, unspecified
Quality of service unavailable
Requested facility not subscribed
Incoming calls barred within the CUG
Bearer capability not authorized
Bearer capability not available
Service/option not available
Bearer service not implemented
ACM >= ACM max
Requested facility not implemented
Only RDI bearer is available
Service/option not implemented
Invalid transaction identifier value
User not member of CUG
Incompatible destination
Invalid transit network selection
Semantically incorrect message
Invalid mandatory information
Message non-existent/not implemented
Message type not compatible with state
IE non-existent/not implemented
Conditional IE error
Message not compatible with state

Recovery on timer expiry
Protocol error, unspecified
Interworking, unspecified
CS Network Reject
IMSI unknown in HLR
Illegal MS
IMSI unknown in VLR
IMEI not accepted
Illegal ME
GPRS services not allowed
GPRS and non GPRS services not allowed
MS identity cannot be derived
Implicitly detached
PLMN not allowed
Location area not allowed
Roaming not allowed
GPRS services not allowed in PLMN
No suitable cells in location area
MSC temporary not reachable
Network failure
MAC failure
Synch failure
Congestion
GSM authentication unacceptable
Service option not supported
Requested service option not subscribed

Service option temporary out of order
Call cannot be identified
No PDP context activated
Semantically incorrect message
Invalid mandatory information
Message type non-existent
Message type not compatible with state
Information element non-existent
Message not compatible with state
RR release indication
RR random access failure
RRC release indication
RRC close session indication
RRC open session failure
Low level failure
Low level failure no redial allowed
Invalid SIM
No service
Timer T3230 expired
No cell available
Wrong state
Access class blocked
Abort message received
Other causes
Timer T303 expired
No resources

Release pending
Invalid user data
PS Internal Cause
Invalid connection identifier
Invalid NSAPI
Invalid primary NSAPI
PDP establish timeout
Invalid field
SNDCP failure
RAB setup failure
No GPRS context
PDP activate timeout
PDP modify timeout
PDP inactive max timeout
PDP lower layer error
PDP duplicate
Access technology change
PDP unknown reason
CS PS Network Cause
LLC or SNDCP failure
Insufficient resources
Missing or unknown APN
Unknown PDP address or PDP type
User authentication failed
Activation rejected by GGSN
Activation rejected, unspecified

Service option not supported
Requested service option not subscribed
Service option temporary out of order
NSAPI already used (not sent)
Regular deactivation
QoS not accepted
Network failure
Reactivation required
Feature not supported
Semantic error in the TFT operation
Syntactical error in the TFT operation
Unknown PDP context
PDP context without TFT already activated
Semantic errors in packet filter
Syntactical errors in packet filter
Invalid transaction identifier
Semantically incorrect message
Invalid mandatory information
Message non-existent/not implemented
Message type not compatible with state
IE non-existent/not implemented
Conditional IE error
Message not compatible with state
Protocol error, unspecified