M65&M08-R

AT Commands Manual

GSM/GPRS Module Series

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About the Document

History

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1 Introduction

1.1. Scope of the Document

This document presents the AT Commands Set for Quectel cellular engine M65&M08-R modules.

1.2. AT Command Syntax

The "**AT**" or "**at**" prefix must be set at the beginning of each command line. Entering **<CR>** will terminate a command line. Commands are usually followed by a response that includes "**<CR><LF><response><CR><LF>**". Throughout this document, only the responses are presented, "**<CR><LF>**" are omitted intentionally.

The AT Commands Set implemented by M65&M08-R is a combination of *GSM07.05*, *GSM07.07* and *ITU-T recommendation V.25ter* as well as the AT Commands developed by Quectel.

All these AT commands can be split into three categories syntactically: "basic", "S parameter", and "extended". They are listed as follows:

- **Basic syntax**

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

- **S parameter syntax**

These AT commands have the format of "**ATS<n>=<m>**", where "**<n>**" is the index of the **S** register to set, and "**<m>**" is the value to assign to it. "**<m>**" is optional and a default value is assigned if it is null.

- **Extended syntax**

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

Table 1: Types of AT Commands and Responses

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

1.2.1. Combining AT Commands on the Same Command Line

Several AT commands can be entered on the same line. In this case, typing **AT** or **at** prefix before every command is not necessary. Please type **AT** or "**at**" at the beginning of the command line and use a semicolon as the command delimiter.

The command line buffer can accept a maximum of 256 characters. If the input characters exceed the maximum, no command will be executed and TA will return **ERROR**.

1.2.2. Entering Successive AT Commands on Separate Lines

When it is necessary to enter a series of AT commands on separate lines, please wait the final response (for example **OK**, **CME error**, **CMS error**) of the last AT command before entering the next AT command.

1.3. Supported Character Sets

M65&M08-R AT command interface defaults to use the GSM character set. The M65&M08-R modules support the following character sets:

- GSM
- UCS2
- HEX
- 8859-1

The character set can be configured and queried by using the **AT+CSCS** command (*GSM 07.07*) and it is defined in *GSM specification 07.05*. 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 and SIM Application Toolkit alpha strings.

1.4. Flow Control

Flow control is very important for correct communication between the GSM engine and the DTE. In cases such as a data or FAX call, the sending device is transferring data faster than the receiving side ready to accept. When the receiving buffer reaches its capacity, the receiving device should be able to cause the sending device to pause until it catches up.

There are basically two approaches to achieve data flow control: software flow control and hardware flow control. M65&M08-R only supports hardware flow control.

1.4.1. Hardware Flow Control (RTS/CTS Flow Control)

The default flow control approach of M65&M08-R is disabled. To enable hardware flow control (RTS/CTS flow control) in the DTE interface and within GSM engine, please type AT command **AT+IFC=2,2<CR>**.

This setting is stored volatile, for use after restart. **AT+IFC=2,2<CR>** should be stored to the user profile with **AT&W<CR>**.

Hardware flow control achieves the data flow control by controlling the RTS/CTS line. When the data transfer is suspended, the CTS line is set inactive until the transfer from the receiving buffer is completed. When the receiving buffer is ready to receive more data, CTS goes active once again.

To achieve hardware flow control, ensure that the RTS/CTS lines are available on the application platform.

1.5. Unsolicited Result Codes

As an unsolicited result code, URC is a report message sent from the ME to the TE. It can be delivered automatically when an event occurs, reflect changes in system state, or act as the result of the read command that ME received before. It is often delivered due to occurrences of errors in executing the read command. However, URC is not issued as a direct response to an executed AT command. AT commands have specific implementations to validate inputs such as **OK** or **ERROR**.

Typical URCs may be information about incoming calls, received SMS, changing temperature, status of the battery, etc. A summary of URCs is listed in ***Chapter 15.6***.

When sending a URC, the ME activates its Ring Interrupt (Logic "l"), i.e. the line goes active low for a few milliseconds. If an event which delivers a URC coincides with the execution of an AT command, the URC will be output after command execution has been completed.

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 TA issues producte information text. **Quectel_Ltd** **<Object Id>** **Revision: <revision>** **OK**
Maximum Response Time	300ms
Reference V.25ter	

Parameter

<Object Id>	Identifier of device type
<revision>	Identification text of product software version

Example

```
ATI
Quectel_Ltd
Quectel_M65
Revision: M65MAR01A01

OK
```

2.2. AT+GMI Request Manufacturer Identification

The command returns the manufacturer identification text.

AT+GMI Request Manufacturer Identification	
Test Command **AT+GMI=?**	Response **OK**
Execution Command AT+GMI	Response TA reports one or more lines of information text which permit the user to identify the manufacturer. **Quectel_Ltd** **<Object Id>** Revision: <revision> **OK**
Maximum Response Time	300ms
Reference V.25ter	

Parameter

<Object Id>	Identifier of device type
<revision>	Identification text of the manufacturer information

2.3. AT+GMM Request TA Model Identification

The command returns TA model identification text.

AT+GMM Request TA Model Identification	
Test Command **AT+GMM=?**	Response **OK**
Execution Command AT+GMM	Response TA returns a product model identification text. **<Object Id>** **OK**
Maximum Response Time	300ms
Reference V.25ter	

Parameter

<Object Id>	Identifier of device type

2.4. AT+GMR Request TA Identification of Software Version

The command returns TA identification of the software version.

AT+GMR Request TA Identification of Software Version	
Test Command **AT+GMR=?**	Response **OK**
Execution Command AT+GMR	Response TA reports one or more lines of information text which permits the user to identify the software version. **Revision: <revision>** **OK**
Maximum Response Time	300ms
Reference V.25ter	

Parameter

<revision>	Identification text of product software version

Example

```
AT+GMR
Revision: M65MAR01A01

OK
```

2.5. AT+GOI Request Global Object Identification

The command returns a global object identification.

AT+GOI Request Global Object Identification	
Test Command **AT+GOI=?**	Response **OK**
Execution Command AT+GOI	Response TA reports one or more lines of information text which permits the user to identify the device based on the ISO system for registering unique object identifiers. **<Object Id>** **OK**
Maximum Response Time	300ms
Reference V.25ter	

Parameter

<Object Id>	Identifier of device type

2.6. AT+CGMI Request Manufacturer Identification

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

AT+CGMI Request Manufacturer Identification	
Test Command **AT+CGMI=?**	Response **OK**
Execution Command AT+CGMI	Response TA returns manufacturer identification text. **Quectel_Ltd** **<Object Id>** **Revision: <revision>** **OK**
Maximum Response Time	300ms
Reference	

GSM 07.07	

Parameter

<Object Id>	Identifier of device type
<revision>	Identification text of the manufacturer information

2.7. AT+CGMM Request Model Identification

The command returns product model identification text. It is identical with AT+GMM.

AT+CGMM Request Model Identification	
Test Command **AT+CGMM=?**	Response **OK**
Execution Command AT+CGMM	Response TA returns product model identification text. **<Object Id>** **OK**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<Object Id>	Identifier of device type

2.8. AT+CGMR Request TA Identification of Software Version

The command returns TA identification of the software version. It is identical with AT+GMR.

AT+CGMR Request TA Identification of Software Version	
Test Command **AT+CGMR=?**	Response **OK**
Execution Command AT+CGMR	Response TA returns product software version identification text.

	Revision: <revision> **OK**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<revision>	Identification text of product software version

2.9. AT+GSN Request International Mobile Equipment Identity

The command returns the International Mobile Equipment Identity (IMEI).

AT+GSN Request International Mobile Equipment Identity	
Test Command **AT+GSN=?**	Response **OK**
Execution Command AT+GSN	Response TA reports the IMEI number in information text which permits the user to identify the individual ME device. **<sn>** **OK**
Maximum Response Time	300ms
Reference V.25ter	

Parameter

<sn>	IMEI of the ME

NOTE

The serial number (IMEI) varies with different ME devices.

2.10. AT+CGSN Request Product Serial Number

The command returns the International Mobile Equipment Identity (IMEI). It is identical with **AT+GSN**.

AT+CGSN Request Product Serial Number	
Test Command **AT+CGSN=?**	Response **OK**
Execution Command AT+CGSN	Response **<sn>** **OK**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<sn>	IMEI of the ME

NOTE

The serial number (IMEI) varies with different ME devices.

2.11. AT&F Set All Current Parameters to Manufacturer Defaults

The command sets all current AT command settings to manufacturer default values.

AT&F Set All Current Parameters to Manufacturer Defaults	
Execution Command AT&F[<value>]	Response TA sets all current parameters to the manufacturer defined profile. **OK**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference V.25ter	

Parameter

<value>	Integer type. 0 Set all TA parameters to manufacturer defaults

2.12. AT&V Display Current Configuration

The command displays the current settings of several AT command parameters, including the single-letter AT command parameters which are not readable otherwise.

AT&V Display Current Configuration	
Execution Command AT&V[<n>]	Response TA returns the current parameter setting. Please refer to ***Table 2*** for details. **ACTIVE PROFILE** <current configurations text> **OK**
Maximum Response Time	300ms
Reference V.25ter	

Parameter

<n>	Integer type. 0 Profile number

Table 2: Current Configuration List When Executing AT&V Command

AT&V or AT&V0
AT&V ACTIVE PROFILE E: 1 Q: 0 V: 1 X: 4 S0: 0 S2*: 43

S3: 13
S4: 10
S5: 8
S6*: 2
S7*: 60
S8*: 2
S10*: 15
+CR*: 0
+FCLASS*: 0
+CMGF: 0
+CSDH: 0
+ILRR*: 0
+CMEE: 1
+CBST*: 7,0,1
+IFC: 0,0
+ICF: 3,3
+CNMI: 2,1,0,0,0
+CSCS: "GSM"
+IPR: 0
&C: 1
&D: 0
+CSTA*: 129
+CRLP*: 61,61,128,6,0,3
+CCWE*: 0
+QSIMSTAT*: 0
+CMUX*: -1
+CCUG*: 0,0,0
+CLIP: 0
+COLP: 0
+CCWA: 0
+CAOC*: 1
+CLIR: 0
+CUSD: 0
+CREG: 0
+QSIMDET*: 0,0,0
+QMIC*: 4,9,8
+QECHO*(NORMAL_AUDIO): 253,96,16388,57351,0
+QECHO*(Earphone_AUDIO): 253,0,10756,57351,1
+QECHO*(LoudSpk_AUDIO): 224,96,5256,57351,2
+QSIDET*(NORMAL_AUDIO): 80
+QSIDET*(HEADSET_AUDIO): 144
+QCLIP*: 0
+QCOLP*: 0
+CSNS*: 0

OK

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

The command stores the current AT command settings to a user defined profile in nonvolatile memory.

AT&W Store Current Parameters to User Defined Profile	
Execution Command AT&W[<n>]	Response TA stores the current parameter setting in the user defined profile. **OK**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference V.25ter	

Parameter

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

2.14. ATQ Set Result Code Presentation Mode

This command sets the result code presentation mode.

ATQ Set Result Code Presentation Mode	
Execution Command ATQ[<n>]	Response This parameter determines whether or not the TA transmits any result code to the TE. Information text transmitted in response is not affected by this setting. If **<n>**=0: **OK** If **<n>**=1: (none)
Maximum Response Time	300ms

Characteristics	Take effect immediately. Invalid after powering down.
Reference V.25ter	

Parameter

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

2.15. ATV TA Response Format

The command configures the TA response format. The result codes, their numeric equivalents and brief descriptions of the use of each are listed in the following table.

ATV TA Response Format	
Execution Command ATV[<value>]	Response This parameter determines the contents of the header and trailer transmitted with result codes and information responses. If **<value>**=0: **0** If **<value>**=1: **OK**
Maximum Response Time	300ms
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: 30,0

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

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

ATV1	ATV0	Description
OK	0	Acknowledges execution of a command
CONNECT	1	A connection has been established; the DCE is moving from command state to online data state
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 is failed
ERROR	4	Command not recognized, command line maximum length exceeded, parameter value invalid, or other problem with processing the command line
NO DIALTONE	6	No dial tone detected
BUSY	7	Engaged (busy) signal detected
NO ANSWER	8	"@" (Wait for Quiet Answer) dial modifier was used, but remote ringing followed by five seconds of silence was not detected before expiration of the connection timer (S7)
PROCEEDING	9	An AT command is being processed
CONNECT <text>	Manufacturer-specific	Same as **CONNECT**, but includes manufacturer-specific text that may specify DTE speed, line speed, error control, data compression, or other status

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

The command sets CONNECT result code format and monitors call progress.

ATX Set CONNECT Result Code Format and Monitor Call Progress	
Execution Command ATX[<value>]	Response This parameter determines whether or not the TA detected the presence of a dial tone or busy signal, and whether or not the TA transmits particular result codes. **OK**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference V.25ter	

Parameter

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

NOTE

1. If the parameter **<value>** is omitted, the command has the same behavior as **ATX0**.
2. The factory default is **<value>**=4.

2.17. ATZ Set all Current Parameters to User Defined Profile

The command sets all current parameters to the user defined profile.

ATZ Set all Current Parameters to User Defined Profile	
Execution Command ATZ[<value>]	Response TA sets all current parameters to the user defined profile. **OK**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Remain valid after powering down.
Reference V.25ter	

Parameter

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

NOTES

1. If the user profile is invalid, it will default to the factory default profile.
2. Any additional commands on the same command line are ignored.

2.18. AT+CFUN Set Module Functionality

AT+CFUN Set Module 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	Response

AT+CFUN=<fun>[,<rst>]	**OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	15s, determined by network.
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<fun>	Integer type.	
	0	Minimum functionality
	1	Full functionality (Default)
	4	Disable phone from both transmitting and receiving RF signals
<rst>	Integer type.	
	0	Do not reset the ME before setting it to **<fun>** power level This is default when **<rst>** is not given
	1	Reset the ME before setting it to **<fun>** power level

Example

```
AT+CFUN=0                    //Switch module to minimum functionality.
+CPIN: NOT READY

OK
AT+COPS?
+COPS: 0                     //No operator is registered.

OK
AT+CPIN?
+CME ERROR: 13               //SIM failure.
AT+CFUN=1                    //Switch module to full functionality.
OK

+CPIN: SIM PIN
AT+CPIN=1234
+CPIN: READY

OK

Call Ready
```

```
AT+CPIN?
+CPIN: READY

OK
AT+COPS?
+COPS: 0,0,"CHINA MOBILE"                    //The operator is registered.

OK
```

2.19. AT+QPOWD Power off

AT+QPOWD Power off	
Write Command AT+QPOWD=<n>	Response If **<n>**=0 **OK** If **<n>**=1 **NORMAL POWER DOWN**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference	

Parameter

<n>	Integer type.	
	0	Power off immediately (Do not send out URC **NORMAL POWER DOWN**)
	1	Normal power off (Send out URC **NORMAL POWER DOWN**)

Example

```
AT+QPOWD=0
OK                                   //Power off immediately, returned OK.
AT+QPOWD=1
NORMAL POWER DOWN                    //Normal power off, send out URC NORMAL
                                       POWER DOWN.
```

2.20. AT+CMEE Report Mobile Equipment Error

AT+CMEE Report Mobile Equipment Error	
Test Command AT+CMEE=?	Response **+CMEE: (**range of supported **<n>**s**)** **OK**
Read Command **AT+CMEE?**	Response **+CMEE: <n>** **OK**
Write Command **AT+CMEE=[<n>]**	Response TA disables or enables the use of result code **+CME ERROR: <err>** as an indication of an error related to the functionality of the ME. **OK**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

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

Example

```
AT+CMEE=0                    //Disable result code.
OK
AT+CPIN=1234
ERROR                        //Only ERROR will be displayed.
AT+CMEE=1                    //Enable error result code with numeric values.
OK
AT+CPIN=1234
+CME ERROR: 10
AT+CMEE=2                    //Enable error result code with verbose (string)
                               values.
OK
```

```
AT+CPIN=1234
+CME ERROR: SIM not inserted
```

2.21. AT+CSCS Select TE Character Set

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 Set character set **<chset>** which is used by the TE. The TA can then convert character strings correctly between the TE and ME character sets. **OK**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Remain valid after powering down (AT&W executed first).
Reference GSM 07.07	

Parameter

<chset>	String type.	
	"GSM"	GSM default alphabet
	"HEX"	Character strings consist only of hexadecimal numbers from 00 to FF
	"UCS2"	UCS2 alphabet
	"8859-1"	ISO 8859 Latin 1 character set

Example

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

OK
AT+CSCS="UCS2"                    //Set the character set to "UCS2".
```

```
OK
AT+CSCS?
+CSCS: "UCS2"

OK
```

3 Serial Interface Control Commands

3.1. AT&C Set DCD Function Mode

AT&C Set DCD Function Mode	
Execution Command **AT&C[<value>]**	Response This parameter determines how the state of circuit 109 (DCD) relates to the detection of received line signal from the distant end. **OK**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Remain valid after powering down (AT&W executed first).
Reference V.25ter	

Parameter

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

3.2. AT&D Set DTR Function Mode

AT&D Set DTR Function Mode	
Execution Command **AT&D[<value>]**	Response This parameter determines how the TA responds when circuit 108/2 (DTR) is changed from ON to OFF during data mode. **OK**
Maximum Response Time	300ms

Characteristics	Take effect immediately. Invalid after powering down.
Reference V.25ter	

Parameter

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

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

AT+ICF Set TE-TA Control Character Framing	
Test Command **AT+ICF=?**	Response **+ICF: (**range of supported **<format>**s**),(**range of supported **<parity>**s**)** **OK**
Read Command **AT+ICF?**	Response **+ICF: <format>,<parity>** **OK**
Write Command **AT+ICF=<format>[,<parity>]**	Response This parameter determines the serial interface character framing format and parity received by TA from TE. **OK**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Remain valid after powering down (AT&W executed first).
Reference V.25ter	

Parameter

<format>	Integer type. 1 8 data 0 parity 2 stop

	2	8 data 1 parity 1 stop
	3	8 data 0 parity 1 stop
	4	7 data 0 parity 2 stop
	5	7 data 1 parity 1 stop
	6	7 data 0 parity 1 stop
<parity>	Integer type.	
	0	Odd
	1	Even
	2	Mark
	3	Space

NOTE

1. The command is applied for command mode.
2. The **<parity>** field will be ignored if no parity is specified in the **<format>** field.

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

AT+IFC Set TE-TA Local Data Flow Control	
Test Command **AT+IFC=?**	Response **+IFC: (**range of supported **<dce_by_dte>**s**),(**range 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 This parameter setting determines the data flow control on the serial interface for data mode. **OK**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Remain valid after powering down (AT&W executed first).
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 1 XON/XOFF 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 1 XON/XOFF 2 CTS flow control

Example

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

OK
```

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

AT+IPR Set TE-TA Fixed Local Rate	
Test Command **AT+IPR=?**	Response **+IPR: (**list of supported auto detectable **<rate>**s**),(**list of supported fixed-only **<rate>**s**)** **OK**
Read Command **AT+IPR?**	Response **+IPR: <rate>** **OK**
Write Command **AT+IPR=<rate>**	Response This parameter determines the data rate of the TA on the serial interface. After the delivery of any result code associated with the current command line, the rate set by the command takes effect. **OK**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Remain valid after powering down (AT&W executed first).

Reference
V.25ter

Parameter

<rate>	Integer type. Baud rate per second 0 (Adaptive baud rate) 2400 4800 9600 14400 19200 28800 33600 38400 57600 115200 230400 460800 921600

NOTE

1. The default configuration of **AT+IPR** is an adaptive baud rate enabled by **AT+IPR=0**.
2. If a fixed baud rate is set, make sure that both TE (DTE, usually an external processor) and TA (DCE, Quectel GSM module) are configured to the same rate. If an adaptive baud rate is enabled, the TA can automatically recognize the baud rate currently used by the TE after receiving **AT** or **at** string.
3. The value of **AT+IPR** cannot be restored with **AT&F** and **ATZ**, but it is still storable with **AT&W** and visible in **AT&V**.
4. In multiplex mode, the baud rate cannot be changed by the Write Command **AT+IPR=<rate>**, and the setting is invalid and cannot be stored even if **AT&W** is executed after the Write Command.
5. A selected baud rate takes effect after the Write Command is executed and acknowledged by **OK**.

Example

```
AT+IPR=115200                 //Set fixed baud rate to 115200.

OK
AT&W                          //Store current setting. The serial communication speed is
                                115200 after module reboot.
OK
AT+IPR?
+IPR: 115200
```

OK

3.5.1. Adaptive Baud Rate

To take advantage of the adaptive baud rate mode, specific attention must be paid to the following requirements:

1. Adaptive baud rate synchronization between TE and TA.
   - Ensure that TE and TA are correctly synchronized and the baud rate used by the TE is detected by the TA. The baud rate can be simply synchronized by inputting a string of **AT** or **at**. It is necessary to input a string of **AT** or **at**, after the adaptive baud rate is activated or when the module is started up with adaptive baud rate enabled.
   - It is recommended to wait for 2s to 3s before sending the first **AT** or **at** string after the module is started up with adaptive baud rate enabled. Otherwise undefined characters will be returned.

2. Restriction on adaptive baud rate operation.
   - The serial interface shall be used with the factory setting of 8 data bits, no parity and 1 stop bit.
   - The command **A/** cannot be used.
   - Only the string **AT** or **at** can be detected.
   - URCs that may be issued before the TA detect a new baud rate by receiving the first **AT** character, and they will be sent at the previously detected baud rate.
   - If TE's baud rate is changed after TA has recognized the earlier baud rate, the loss of synchronization between TE and TA will be encountered and an **AT** or **at** string must be re-sent by TE to regain synchronization on baud rate. To avoid undefined characters during baud rate resynchronization and the possible malfunction of resynchronization, it is not recommended to change the baud rate of TE when adaptive baud rate is enabled, especially when this operation is forbidden in data mode.

3. Adaptive baud rate and baud rate after restarting.
   - In adaptive baud rate mode, the detected baud rate is not saved. Therefore, resynchronization is required after restarting the module.
   - Unless the baud rate is determined, an incoming CSD call cannot be accepted. It must be taken into account when adaptive baud rate and auto-answer mode (**ATS0≠0**) are enabled at the same time, especially when SIM PIN 1 authentication is done automatically and the setting **ATS0≠0** is stored to the user profile with **AT&W**.
   - Before the baud rate is synchronized, URCs after restarting will not be output when adaptive baud rate is enabled.

4. Adaptive baud rate and multiplex mode.
   If an adaptive baud rate is active, it is not recommended to switch to multiplex mode.

5. Adaptive baud rate and Windows modem.
   - The baud rate used by Windows modem can be detected while a dial-up GPRS/CSD connection

is set up. However, some Windows modem drivers switch the baud rate of TE to default value automatically after the GPRS call is terminated. In order to prevent no response to the Windows modem when it happens, it is not recommended to establish the dial-up GPRS/CSD connection in adaptive baud rate mode.

- Based on the same considerations, it is also not recommended to establish the FAX connection in adaptive baud rate mode for PC FAX application, such as WinFax.

NOTE

To ensure reliable communication and avoid problem caused by undetermined baud rate between DCE and DTE, it is strongly recommended to configure and save a fixed baud rate instead of using adaptive baud rate after module start-up.

3.6. AT+CMUX Multiplexer Control

AT+CMUX Multiplexer Control	
Test Command **AT+CMUX=?**	Response **+CMUX: (**list of supported **<mode>**s**),(**list of supported **<subset>**s**),(**list of supported **<port_speed>**s**),(**list of supported **<N1>**s**),(**list of supported **<T1>**s**),(**list of supported **<N2>**s**),(**list of supported **<T2>**s**),(**list of supported **<T3>**s**),(**list of supported **<k>**s**)** **OK**
Read Command **AT+CMUX?**	Response **+CMUX: <mode>,<subset>,<port_speed>,<N1>,<T1>,<N2>,<T2>,<T3>,<k>** **OK** If there is any error: **ERROR**
Write Command **AT+CMUX=[<mode>[,<subset>[,<port_speed>[,<N1>[,<T1>[,<N2>[,<T2>[,<T3>[,<k>]]]]]]]]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.

Reference
GSM 07.07

Parameter

<mode>	Integer type. Multiplexer transparency mechanism 0 Basic option
<subset>	Integer type. The way by which the multiplexer control channel is set up 0 UIH frames used only
<port_speed>	Integer type. Transmission rate 5 115200bit/s
<N1>	Integer type. Maximum frame size 127
<T1>	Integer type. Acknowledgement timer in 10ms 10
<N2>	Integer type. Maximum number of re-transmissions 3
<T2>	Integer type. Response timer for the multiplexer control channel in 10ms 30
<T3>	Integer type. Wake up response timers in seconds 10
<k>	Integer type. Window size, for Advanced operation with Error Recovery options 2

NOTES

1. Advanced operation with Error Recovery options not supported.
2. The multiplexing transmission rate is fixed according to the current serial baud rate. It is recommended to enable multiplexing protocol under 115200 bit/s baud rate.
3. Multiplexer control channels are listed below:

Channel Number	Type	DLCI
None	Multiplexer Control	0
1	07.07 and 07.05	1
2	07.07 and 07.05	2
3	07.07 and 07.05	3
4	07.07 and 07.05	4

3.7. AT+QEAUART Configure Dual UART Function

AT+QEAUART Configure Dual UART Function	
Test Command **AT+QEAUART=?**	Response **+QEAUART: (**list of supported **<mode>**s**)** **OK**
Read Command **AT+QEAUART?**	Response **+QEAUART: <mode>** **OK** If there is any error: **ERROR**
Write Command **AT+QEAUART=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<mode>	Integer type. 0 Disable dual UART function 1 Enable dual UART function

NOTES

1. When dual UART function is enabled, the auxiliary UART port can be used to execute AT commands. About UART 3, please refer to *Quectel_M65_Hardware_Design* and *Quectel_M08-R_Hardware_Design* .
2. The auxiliary UART port cannot be used to execute data transmission-related AT commands, such as TCPIP, GPRS data transmission-related AT commands.

3.8. AT+QSEDCB Configure Parameters of the Dual UART

AT+QSEDCB Configure Parameters of the Dual UART	
Test Command **AT+QSEDCB=?**	Response **+QSEDCB: (**list of supported **<baud_rate>**s**),(**list of supported **<data_bits>**s**),(**list of supported **<stop_bits>**s**),(**range of supported **<parity>**s**) [,(<port>)]** **OK**
Read Command **AT+QSEDCB?**	Response **+QSEDCB:** **<baud_rate>,<data_bits>,<stop_bits>,<parity>** **OK** If there is any error: **ERROR**
Write Command **AT+QSEDCB=<baud_rate>,<data_bits>,<stop_bits>,<parity>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Remain valid after powering down (AT&W executed first).
Reference Quectel	

Parameter

<baud_rate>	Integer type. Baud rate 2400 4800 9600 14400 19200 28800 33600 38400 57600 115200

	230400	
	460800	
	921600	
<data_bits>	Integer type. Data bits	
	7	
	8	
<stop_bits>	Integer type. Stop bits	
	1	
	2	
<parity>	Parity	
	0	None
	1	Odd
	2	Even
	3	Mark
<port>	3	select UART3

NOTE

If auxiliary UART port is used as dual UART port, the **AT+QSEDCB** command will be executed successfully; otherwise an error will be returned.

4 Status Control Commands

4.1. AT+CEER Extended Error Report

AT+CEER Extended Error Report	
Test Command **AT+CEER=?**	Response **OK**
Execution Command **AT+CEER**	Response TA returns an extended report of the reason for the last call release. **+CEER: <locationID>,<cause>** **OK**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<locationID>	Location ID as number code. Location IDs are listed in ***Chapter 15.9.1***. Each ID is related with another table that contains a list of **<cause>**s.
<cause>*	Reason for last call release as number code. The number codes are listed in several tables, sorted by different categories. The tables can be found proceeding from the Location ID given in ***Chapter 15.9.1***.

Example

```
AT+CEER                    //Query error reporting in normal state, return No error.
+CEER: 0,0

OK
ATD10086;
OK
AT+CLCC
```

+CLCC: 1,0,0,0,0,"10086",129

OK

NO CARRIER //A call is established, and the remote party hangs up the call.
AT+CEER //Query error reporting, the **<locationID>**=1 means "Cause for protocol stack (PS) layer", **<cause>**=16 means "Normal call clearing".

+CEER: 1,16

OK

NOTE

"*" means under development.

4.2. AT+CPAS Mobile Equipment Activity Status

AT+CPAS Mobile Equipment Activity Status	
Test Command **AT+CPAS=?**	Response **+CPAS: (**list of supported **<pas>**s**)** **OK**
Execution Command **AT+CPAS**	Response TA returns the activity status of ME. **+CPAS: <pas>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<pas>	Integer type.

0	Ready
2	Unknown (ME is not guaranteed to respond to instructions)
3	Ringing
4	Call in progress or call holding

Example

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

OK
ATD10086;
OK
AT+CLCC
+CLCC: 1,0,3,0,0,"10086",129

OK
AT+CPAS
+CPAS: 3                          //There is an incoming call (ringing).

OK
AT+CLCC
+CLCC: 1,0,0,0,0,"10086",129

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

OK
```

4.3. AT+QINDRI Indicate RI When Using URC

This command enables/disables RI indication when URC is reported.

AT+QINDRI Indicate RI When Using URC	
Test Command **AT+QINDRI=?**	Response **+QINDRI: (**list of supported **<status>**s**)** **OK**
Read Command **AT+QINDRI?**	Response **+QINDRI: <status>**

	OK
Write Command **AT+QINDRI=<status>**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<status>	Integer type.	
	0	Disables RI indication
	1	Enables RI indication

4.4. AT+QMOSTAT Show Status of Mobile Originated Call

AT+QMOSTAT Show Status of Mobile Originated Call	
Test Command **AT+QMOSTAT=?**	Response **+QMOSTAT: (**list of supported **<mode>**s**)** **OK**
Read Command **AT+QMOSTAT?**	Response **+QMOSTAT: <mode>** **OK**
Write Command **AT+QMOSTAT=<mode>**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<mode>	Integer type.	
	0	Do not show call status of mobile originated call
	1	Show call status of mobile originated call. After dialing the mobile number, URC string **MO RING** will be sent if the mobile terminated is alerted; and URC string **MO CONNECTED** will be sent if the call is established.

Example

```
AT+QMOSTAT=1                    //Show call status of mobile originated call.
OK
ATD10086;
OK

MO RING                         //The mobile terminated is alerted.

MO CONNECTED                    //The call is established.
```

4.5. AT+QREFUSECS* Refuse to Receive SMS/Incoming Call or Not

AT+QREFUSECS* Refuse to Receive SMS/Incoming Call or Not	
Test Command **AT+QREFUSECS=?**	Response **+QREFUSECS: (**list of supported **<refuse_SMS>**s**)[,(**list of supported **<refuse_call>**s**)]** **OK**
Read Command **AT+QREFUSECS?**	Response **+QREFUSECS: <refuse_SMS>,<refuse_call>** **OK**
Write Command **AT+QREFUSECS=<refuse_SMS>[,<refuse_call>]**	Response **OK** If there is any error: **ERROR**
Characteristics	Take effect immediately. Invalid after powering down.
Maximum Response Time	300ms

Reference Quectel	

Parameter

<refuse_SMS>	Integer type.	
	0	Receive new SMS
	1	Refuse to receive new SMS
<refuse_call>	Integer type.	
	0	Receive incoming calls
	1	Refuse to receive incoming calls

NOTE

"*" means under development.

4.6. AT+QEXTUNSOL* Enable/Disable Proprietary Unsolicited Indications

AT+QEXTUNSOL* Enable/Disable Proprietary Unsolicited Indications	
Test Command **AT+QEXTUNSOL=?**	Response **+QEXTUNSOL: (**list of supported **<extunsol>**s**)** **OK**
Write Command **AT+QEXTUNSOL=<exunsol>,<mode>**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<extunsol> String type. Values currently reserved by the present document

"SQ" Signal Quality Report. It displays signal strength and channel bit error rate (similar to **AT+CSQ**) in form of **+CSQN: <rssi>, <ber>** when values change.

"FN" Forbidden network available only. When returning to a non-registered state, this indicates whether all the available PLMNs are forbidden.

"MW" SMS Message waiting. On receiving an SMS (as indicated by the **+CMTI** indication), the SMS is decoded and checked to see if it contains one or more of the message waiting indications (i.e. voicemail, email, fax, etc.). If so, an unsolicited indication will be shown in the form below for each message type:
+QMWT: <store>,<index>,<voice>,<fax>,<email>,<other>, where **<store>** is the message store containing the SM; **<index>** is the message index and **<voice>**, **<email>**, **<fax>** and **<other>** contain the number of waiting messages (with 0 defined as clear indication, non-zero values as one or more waiting messages or blank as not specified in this message).

"UR" Unsolicited result code. It produces an unsolicited indication in the following call state transition. Multiple notifications may occur on the same transition **+QGURC: <event>**, where **<event>** describes the current call state:
<event>:

0 Terminate the active call, at least one held call remaining
1 Attempt to make a Mobile Originated Call
2 Mobile Originated Call fails for certain reason
3 Mobile Originated Call is ringing
4 Mobile Terminated Call is queuing (Call holding)
5 Mobile Originated Call now is connected
6 Mobile Originated or Mobile Terminated Call is disconnected
7 Mobile Originated or Mobile Terminated Call hangs up.
8 Mobile Originated Call dials a non-emergency number in emergency mode
9 No answer for Mobile Originated Call
10 Remote number busy for Mobile Originated Call

"BC" Battery Charge. It displays battery connection status and battery charge level (similar to **AT+CBC**) in form of **+CBCN: <bcs>,<bcl>** when values change.

"BM" Band mode. It displays band mode (similar to **AT+QBAND**) in form of **+QBAND: <band>** when value changes.

"SM" Additional SMS Information. It displays additional information about SMS events in the form of unsolicited messages of the following format:
+TSMSINFO: <CMS_errorinfo> where **<CMS_errorinfo>** is a standard CMS error in the format defined by the **AT+CMEE** command i.e. either a number or a string.

"CC" Call information. It displays the disconnected call ID and the remaining call numbers after one of the calls is disconnected. **+CCINFO: <CallID_ disconnected>,<remain_calls>**

<mode> Integer type.

	0	Disable proprietary unsolicited indications
	1	Enable proprietary unsolicited indications
	2	Query proprietary unsolicited indications

NOTE

"*" means under development.

4.7. AT+QINISTAT* Query Initialization State

AT+QINISTAT* Query Initialization State	
Test Command **AT+QINISTAT=?**	Response **OK**
Execution Command **AT+QINISTAT**	Response **+QINISTAT: <state>** **OK**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<state>	Integer type.	
	0	No initialization
	1	Ready to execute AT command
	2	Phonebook has finished initialization
	3	SMS has finished initialization

NOTES

1. When **<state>** is 3, it also means that the initialization of SIM card related functions has been finished.
2. "*" means under development.

4.8. AT+QNITZ Network Time Synchronization

AT+QNITZ Network Time Synchronization	
Test Command **AT+QNITZ=?**	Response **+QNITZ: (**list of supported **<enable>**s**)** **OK**
Read Command **AT+QNITZ?**	Response **+QNITZ: <enable>** **OK**
Write Command **AT+QNITZ=<enable>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<enable>	Integer type. If the function is enabled, on receiving network time message, an unsolicited indication will be shown in the form: **+QNITZ: <time>,<ds>** 0 Disable to synchronize time from GSM network 1 Enable to synchronize time from GSM network
<time>	String type. Format: "yy/MM/dd,hh:mm:ss±zz,ds", where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the time difference, expressed in quarters of an hour, between the local time and GMT; range: -47~+48). E.g. 6th of May 2004, 22:10:00 GMT+2 hours equal to "04/05/06,22:10:00+08".
<ds>	Integer type. Daylight Saving Time. When it is 0, the format will be "04/05/06,22:10:00+08,0".

NOTE

This function needs support from local GSM network. And the unsolicited indication also can be read by **AT+QLTS** command later.

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

AT+QLTS Obtain the Latest Time Synchronized Through Network	
Test Command **AT+QLTS=?**	Response **OK**
Execution Command **AT+QLTS**	Response **+QLTS: <time>,<ds>** **OK** If error is related to ME functionality: **+CME ERROR: <err>** Execution Command returns the latest time synchronized through network.
Maximum Response Time	300ms
Reference Quectel	

Parameter

<time>	String type. Format: "yy/MM/dd,hh:mm:ss±zz", where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range: -47~+48). E.g. 6th of May 2004, 22:10:00 GMT+2 hours equal to “04/05/06,22:10:00+08”.
<ds>	Integer type. Daylight Saving Time. When it is 0, the format will be "04/05/06,22:10:00+08,0"

4.10. AT+CTZU Network Time Synchronization and RTC Time Update

AT+CTZU Network Time Synchronization and RTC Time Update	
Test Command **AT+CTZU=?**	Response **+CTZU: (**range of supported **<mode>**s**)** **OK**
Read Command **AT+CTZU?**	Response **+CTZU: <mode>**

	OK
Write Command **AT+CTZU=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Remain valid after powering down.
Reference	

Parameter

<mode>	Integer type.	
	0	Disable automatic update RTC time via NITZ.
	1	Update network synchronized time to RTC and save time zone to NVRAM.
	2	Update GMT time with time zone to RTC, save time zone to NVRAM, ignore daylight saving time.
	3	Update localized time and time zone to RTC, and save time zone to NVRAM.
	4	Same as **<mode>**=2

NOTE

This function needs support from local GSM network.

4.11. AT+QSIMDET* Switch On or Off Detecting SIM Card

AT+QSIMDET* Switch On or Off Detecting SIM Card	
Test Command **AT+QSIMDET=?**	Response **+QSIMDET: (**list of supported **<enable>**s**),(**list of supported **<insert_level>**s**),(**list of supported **<pin_choice>**s**)** **OK**
Read Command **AT+QSIMDET?**	Response **+QSIMDET: <enable>,<insert_level>,<pin_choice>** **OK**

Write Command **AT+QSIMDET=<enable>,<insert_level>,<pin_choice>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Remain valid after powering down (AT&W executed first)
Reference	

Parameter

<enable>	Integer type. Configure whether to open the SIM detection function 0 Switch off 1 Switch on
<insert_level>	Integer type. Configure Pin level when SIM card inserted 0 Low level 1 High level
<pin_choice>	Integer type. Configure SIM card detection pin 0 Configure SIM_PRESENCE as SIM card detection pin 1 Configure DTR as SIM card detection pin

NOTES

1. The pin of SIM_PRESENCE and DTR are multiplexed in M65, and M65 only supports DTR pin as SIMCARD detection pin. If SIM detection function is turned on, it is recommended to set **<pin_choice>** to 1.
2. "*" means under development.

4.12. AT+QSIMSTAT* (U)SIM Card Insertion/ Removal Reporting

AT+QSIMSTAT* (U)SIM Card Insertion/ Removal Reporting	
Test Command **AT+QSIMSTAT=?**	Response **+QSIMSTAT: (**list of supported **<enable>**s**)** **OK**
Read Command **AT+QSIMSTAT?**	Response **+QSIMSTAT: <enable>,<insert_status>**

	OK
Write Command **AT+QSIMSTAT=<enable>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Remain valid after powering down (AT&W executed first)
Reference	

Parameter

<enable>	Integer type. Enable or disable the reporting of (U)SIM card insertion or removal. 0 Enable 1 Disable
<insert_status>	Integer type. Indicates whether SIM card has been inserted 0 Low level of pin indicates the SIM card is not inserted 1 High level of pin indicates that SIM card is inserted

NOTE

"*" means under development.

5 (U)SIM Related Commands

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

AT+CIMI Request International Mobile Subscriber Identity (IMSI)	
Test Command **AT+CIMI=?**	Response **OK**
Execution Command **AT+CIMI**	Response TA returns **<IMSI>** for identifying the individual SIM card which is attached to ME. **<IMSI>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

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

Example

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

OK
```

5.2. AT+CLCK Facility Lock

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 This command is used to lock, unlock or interrogate the ME or the network facility **<fac>**. Password is normally needed to do such actions. When querying the status of a network service (**<mode>**=2), the response line for 'not active' case (**<status>**=0) should be returned only if service is not active for any **<class>**. If **<mode>** is not equal to 2 and the command is executed successfully: **OK** If **<mode>**=2 and the command is executed successfully: **+CLCK: <status>[,<class1>[<CR><LF>** **+CLCK: <status>, class2....]]** **OK**
Maximum Response Time	5s
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<fac>	String type.	
	"SC"	SIM (lock SIM card) (SIM asks password in ME power-up and when this lock command is issued.)
	"AO"	BAOC (Bar All Outgoing Calls) (refer to *GSM02.88[6]* ***clause 1***)
	"OI"	BOIC (Bar Outgoing International Calls) (refer to *GSM02.88[6]* ***clause 1***)
	"OX"	BOIC-exHC (Bar Outgoing International Calls except Home Country) (refer to *GSM02.88[6]* ***clause 1***)
	"FD"	SIM card fixed dialing memory: If the mobile is locked to "FD", only the phone numbers stored in "FD" memory can be dialed.

<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 (Default)
	8	Short message service
	16	Data circuit synchronization
	32	Data circuit asynchronization
<status>	Integer type.	
	0	OFF
	1	ON

Example

```
AT+CLCK="SC",2                  //Query the status of SIM card lock.
+CLCK: 0                        //The SIM card is unlocked.

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

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

5.3. AT+CPIN Enter PIN

AT+CPIN Enter PIN	
Test Command **AT+CPIN=?**	Response **OK**
Read Command **AT+CPIN?**	Response TA returns an alphanumeric string indicating whether or not a password is required. **+CPIN: <code>**

	OK
Write Command **AT+CPIN=<pin>[,<new_pin>]**	Response TA stores a password, such as SIM PIN, SIM PUK, PH-SIM PIN, etc., which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.). If the PIN is to be entered twice, the TA shall automatically repeat the PIN. If no PIN request is pending, no action will be taken and an error message, **+CME ERROR**, will be returned to TE. If the PIN required is SIM PUK or SIM PUK2, the second pin will be required. This second pin, **<new_pin>**, is used to replace the old pin in the SIM **OK**
Maximum Response Time	5s
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<code>	READY	No further entry needed
	SIM PIN	ME is waiting for SIM PIN
	SIM PUK	ME is waiting for SIM PUK
	PH_SIM PIN	ME is waiting for phone to SIM card (antit-heft)
	PH_SIM PUK	ME is waiting for SIM PUK (antitheft)
	SIM PIN2	PIN 2, e.g. it is possible to edit the FDN book only if preceding command was acknowledged with **+CME ERROR:17**
	SIM PUK2	Possible only if preceding command was acknowledged with error **+CME ERROR: 18**
<pin>	String type. Password	
<new_pin>	String type. A new password is required If the required PIN is SIM PUK or SIMPUK2.	

Example

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

OK
AT+CPIN=1234                      //Enter PIN.
+CPIN: READY
```

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

OK
AT+CPIN?
+CPIN: SIM PUK                            //Query PUK code is locked

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

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

OK
```

5.4. AT+CPWD Change Password

AT+CPWD Change Password	
Test Command **AT+CPWD=?**	Response TA returns a list of pairs which present the available facilities and the maximum length of their password. **+CPWD: (**list of supported **<fac>**s**),(**range of supported **<pwd_length>**s**)** **OK**
Write Command **AT+CPWD=<fac>,<old_pwd>,<new_pwd>**	Response TA sets a new password for the facility lock function. **OK**
Maximum Response Time	5s
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<fac>	String type. "SC" (U)SIM card lock, ((U)SIM card password is needed when powering up ME "P2" SIM PIN2
<pwd_length>	Integer type. Max length of password. Range: 4-8.
<old_pwd>	String type. Password specified for the facility from the user interface or with command
<new_pwd>	String type. New password

Example

```
AT+CPIN?
+CPIN: READY

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

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

OK
```

5.5. AT+CRSM Restricted SIM Access

AT+CRSM Restricted SIM Access	
Test Command **AT+CRSM=?**	Response **OK**
Write Command **AT+CRSM=<command>[,<fileID>[,<P1>,<P2>,<P3>[,<data>]]]**	Response **+CRSM: <sw1>, <sw2>[,<response>]** **OK** If there is any error: **ERROR** If error is related to ME functionality:

	+CME ERROR: <err>
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<command>	Integer type 176 READ BINARY 178 READ RECORD 192 GET RESPONSE 214 UPDATE BINARY 220 UPDATE RECORD 242 STATUS All other values are reserved; refer to *GSM 11.11*.
<fileID>	Integer type. Identifier for an elementary data file on SIM. Mandatory for every command except STATUS.
<P1>,<P2>,<P3>	Integer type. Parameters transferred by the ME to the SIM. These parameters are mandatory for every command, except GET RESPONSE and STATUS. The values are described in *GSM 11.11*.
<data>	Information which shall be written to the SIM (hexadecimal character format)
<sw1>,<sw2>	Integer type. Information from the SIM about the execution of the actual command. These parameters are delivered to the TE in both cases, on successful or failed execution of the command.
<response>	Response of a successful completion of the command previously issued (hexadecimal character format). STATUS and GET RESPONSE return data, which gives information about the current elementary data field. The information includes the type of file and its size (refer to *GSM 11.11*). After READ BINARY or READ RECORD command, the requested data will be returned. **<response>** will not be returned after a successful UPDATE BINARY or UPDATE RECORD command.

Example

```
AT+CRSM=242
+CRSM: 145,211,"000000007F100200000000000A13000C0400838A808A"

OK                                  //<sw1>=145; <sw2>=211; "000000007F100200000000000A13000C0400838A808A" is the command previously return data, refer to GSM 11.11.
```

5.6. AT+CSIM Generic (U)SIM Access

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: **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<length>	Integer type. Length of characters sent to the TE in **<command>** or **<response>** (i.e. two times of octets in the raw data)
<command>	String type (string should be included in quotation marks). Hex format: GSM11.11 SIM Command sent from the ME to the SIM
<response>	String type (string should be included in quotation marks). Hex format: GSM11.11 SIM Command sent from the SIM to **<command>**

5.7. AT+CCID Show CCID

AT+CCID Show CCID	
Test Command **AT+CCID=?**	Response **OK**
Execution Command **AT+CCID**	Response **+CCID: <CCID_data>**

	OK
Maximum Response Time	300ms
Reference Quectel	

Parameter

<CCID_data>	CCID number for the current SIM card.

Example

```
AT+CCID                          //Query CCID of the SIM card.
+CCID: "898600220909A0206023"

OK
```

5.8. AT+QCCID Show CCID

AT+QCCID Show CCID	
Test Command **AT+QCCID=?**	Response **OK**
Execution Command **AT+QCCID**	Response **<CCID_data>** **OK**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<CCID_data>	CCID number for the current SIM card.

Example

```
AT+QCCID                         //Query CCID of the SIM card.
```

```
898600220909A0206023

OK
```

5.9. AT+QGID Get SIM Card Group Identifier (GID)

AT+QGID Get SIM Card Group Identifier (GID)	
Execution Command **AT+QGID**	Response **+QGID: <gid1> <gid2>** **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<gid1>	GID1
<gid2>	GID2

NOTE

If the (U)SIM supports GID files, the GID values will be returned. Otherwise **0xFF** will be returned.

5.10. AT+QSPN Get Service Provider Name from (U)SIM

AT+QSPN Get Service Provider Name from (U)SIM	
Read Command **AT+QSPN?**	Response **+QSPN: (**list of supported **<spn>**s**),(**list of supported **<display_mode>**s**)** **OK**

	If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<spn>	String type. Service provider name on SIM
<display mode>	Integer type. 0 Do not display PLMN. Already registered on PLMN 1 Display PLMN

NOTE

If SIM is not inserted, it may return **+CME ERROR: <err>**.

5.11. AT+QTRPIN Times Remained to Input SIM PIN/PUK

AT+QTRPIN Times Remained to Input SIM PIN/PUK	
Execution Command **AT+QTRPIN**	Response It returns remaining times to input SIM PIN. **+QTRPIN: <chv1>,<chv2>,<puk1>,<puk2>** **OK**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<chv1>	Times remained to input chv1
<chv2>	Times remained to input chv2
<puk1>	Times remained to input puk1
<puk2>	Times remained to input puk2

6 Network Service Commands

6.1. AT+COPS Operator Selection

AT+COPS Operator Selection	
Test Command **AT+COPS=?**	Response TA returns a set of four parameters, each representing an operator present in the network. Any of the formats may be unavailable and should then be an empty field. The list of operators shall be in order of home network, networks referenced in SIM and other networks. **+COPS: (**range of supported**<stat>**s, long alphanumeric **<oper>**s, short alphanumeric **<oper>**s, numeric **<oper>**s**)[,,(**range of supported **<mode>**s**),(**range of supported **<format>**s**)]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Read Command **AT+COPS?**	Response TA returns the current mode and the currently selected operator. If no operator is selected, **<format>** and **<oper>** are omitted. **+COPS: <mode>[,<format>[,<oper>]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+COPS=<mode>[,<format>[,<oper>]]**	Response TA forces an attempt to select and register the GSM network operator. If the selected operator is not available, no other operator shall be selected (except **<mode>**=4). The format of selected operator name shall apply to further Read Command

	(**AT+COPS?**). **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	75s, determined by network.
Characteristics	Take effect immediately. Remain valid after powering down (AT&W executed first).
Reference GSM 07.07	

Parameter

<stat>	Integer type.	
	0	Unknown
	1	Operator available
	2	Current operator
	3	Operator forbidden
<oper>	String type. Operator in format as per **<mode>**	
<mode>	Integer type.	
	0	Automatic mode. **<oper>** field is ignored
	1	Manual operator selection; **<oper>** field shall be presented
	2	Manual deregister from network
	3	Set only **<format>** (for Read Command **AT+COPS?**). The value is not shown in the response of Read Command
	4	Manual/automatic selection. 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
	1	Short format alphanumeric **<oper>**
	2	Numeric **<oper>**. GSM location area identification number

NOTE

This Write Command is used to choose and register the GSM network operator. The setting of **<mode>** allows ME to determine whether automatic or manual network selection shall be used.

- When **<mode>**=0, the ME searches for the operator which shall be used automatically.
- When **<mode>**=1, the ME forces to register the selected **<oper>**. If the **<oper>** is invalid, the ME remains unregistered. When **<mode>**=0, the ME can register. If module is restarted, the ME is still under **<mode>**=1 and there is no RPLMN. The ME will not be in registration network condition until the mode is changed using the command to automatic registration mode.
- When **<mode>**=4, if the ME fails to register to this operator, it will start to select another operator

automatically.

Example

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

OK
AT+COPS?                                    //Query currently selected network operator.
+COPS: 0,0,"CHINA MOBILE"

OK
```

6.2. AT+CREG Network Registration Status

AT+CREG Network Registration Status	
Test Command **AT+CREG=?**	Response **+CREG: (**range of supported **<n>**s**)** **OK**
Read Command **AT+CREG?**	Response TA 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 to the network. **+CREG: <n>,<stat>[,<lac>,<ci>]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+CREG=<n>**	Response TA controls the presentation of an unsolicited result code **+CREG: <stat>** when **<n>**=1 and there is a change in the ME network registration status. **OK**
Maximum Response Time	300ms

Characteristics	Take effect immediately. Remain valid after powering down (AT&W executed first).
Reference GSM 07.07	

Parameter

<n>	Integer type.	
	0	Disable network registration URC
	1	Enable network registration URC **+CREG: <stat>**
	2	Enable network registration URC with location information
<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-byte location area code in hexadecimal format	
<ci>	String type. Two-byte cell ID in hexadecimal format	

NOTE

For URC, if **<n>**=1 and there is a change in the ME network registration status, it will return **+CREG: <stat>**; If **<n>**=2 and there is a change in the ME network registration status or a change of the network cell, it will return **+CREG: <stat>[,<lac>,<ci>]**.

Example

```
AT+CREG=1
OK

+CREG: 1                          //URC reports that operator has been found.
AT+CREG=2                         //Activates extended URC mode.
OK

+CREG: 1,"1878","0873"            //URC reports that an operator has been found with location
                                    area code and cell ID.
```

6.3. AT+CSQ Signal Quality Report

AT+CSQ Signal Quality Report	
Test Command **AT+CSQ=?**	Response The Test Command returns values supported by the TA. **+CSQ: (**list of supported **<rssi>**s**),(**list of supported **<ber>**s**)** **OK**
Execution Command **AT+CSQ**	Response The Execution Command returns received signal strength indication **<rssi>** and channel bit error rate **<ber>** from the ME. **+CSQ: <rssi>,<ber>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<rssi>	Integer type. Received signal strength	
	0	-113dBm or less
	1	-111dBm
	2-30	-109~-53dBm
	31	-51 dBm or greater
	99	Not known or not detectable
<ber>	Integer type. Channel bit error rate (in percent):	
	0-7	As RxQual values in the table in *GSM 05.08 subclause 7.2.4*
	99	Not known or not detectable

Example

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

```
OK
AT+CSQ
+CSQ: 28,0          //The current signal strength indication is 28 and the bit error rate is 0.

OK
```

6.4. AT+CPOL Preferred Operator List

AT+CPOL Preferred Operator List	
Test Command **AT+CPOL=?**	Response **+CPOL: (**list of supported **<index>**s**),(**range of supported **<format>**s**)** **OK**
Read Command **AT+CPOL?**	Response **+CPOL: <index1>,<format>,<oper1>** **[<CR><LF>+CPOL: <index2>,<format>,<oper2>** **[…]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+CPOL=<index>[,<format>[,<oper>]]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<index>	Integer type. The order number of operators in 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 of **<oper>** is either alphanumeric or numeric (see **AT+COPS**)	

NOTE

The SIM card does not allow editing the list of the preferred operators.

6.5. AT+COPN Read Operator List

AT+COPN Read Operator List	
Test Command **AT+COPN=?**	Response **OK**
Execution Command **AT+COPN**	Response **+COPN: <numeric1>,<alpha1 >** **[<CR><LF>+COPN: <numeric2>,<alpha2>** **[…]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<numericn>	String type. Operator in numeric format (see **AT+COPS**).
<alphan>	String type. Operator in long alphanumeric format (see **AT+COPS**).

NOTES

1. After executing **AT+COPN**, the operator list will be returned as well as OK.
2. During the execution of **AT+COPN**, executing this command repeatedly or other commands is not allowed, or else, an error will occur.

6.6. AT+QBAND Get and Set Mobile Operation Band

AT+QBAND Get and Set Mobile Operation Band	
Test Command **AT+QBAND=?**	Response **+QBAND: (**list of supported **<opband>**s**)** **OK**
Read Command **AT+QBAND?**	Response **+QBAND: <opband>** **OK**
Write Command **AT+QBAND=<opband>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	30s, determined by network.
Characteristics	Take effect immediately. Remain valid after powering down.
Reference Quectel	

Parameter

<opband>	String type. The mobile operation band. "EGSM_MODE" "DCS_MODE" "PCS_MODE" "GSM850_MODE" "EGSM_DCS_MODE" "GSM850_PCS_MODE" "GSM850_EGSM_DCS_PCS_MODE"

6.7. AT+QENG Switch On or Off Engineering Mode

AT+QENG Switch On or Off Engineering Mode	
Test Command **AT+QENG=?**	Response **+QENG: (**range of supported **<mode>**s**),(**range of supported **<dump>**s**)** **OK**
Read Command **AT+QENG?**	Response The corresponding information is reported selectively according to **<dump>**. **+QENG: <mode>,<dump>** URCs of the serving cell information: **+QENG: 0,<mcc>,<mnc>,<lac>,<cellID>,<bcch>,<bsic>,<dbm>,<c1>,<c2>,<txp>,<rla>,<tch>,<ts>,<maio>,<hsn><ta>,<rxqsub>,<rxqfull>** URCs of 1-6 neighboring cell information: **[+QENG: 1,list of (<ncell>,<bcch>,<dbm>,<bsic>,<c1>,<c2>,<mcc>,<mnc>,<lac>,<cellID>)…]** URCs of cell frequency list (CA) of the serving cell: **[+QENG: 2,list of (<arfcn>)…]** BA measured result list: **[+QENG: 4,record number of the list, list of (<bcch>,<dbm>,<bsic>)]** **OK**
Write Command **AT+QENG=<mode>[,<dump>]**	Response **OK** If there is any error, response: **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.

Reference
Quectel

Parameter

<mode>	Integer type. 0 Switch off engineering mode 1 Switch on engineering mode 2 Switch on engineering mode, and activate the URC report of network information
<dump>	Integer type. 0 Only display the serving cell information 1 Display the serving cell information, 1-6 neighboring cells information 2 Display the serving cell information and list of serving cell carrier list 3 Display the serving cell information,1-6 neighboring cell information and list of serving cell carrier list 4 Display the serving cell information,1-6 neighboring cell information, list of serving cell carrier list and BA measured result list.
<mcc>	Mobile country code
<mnc>	Mobile network code
<lac>	Location area code in hex format
<cellID>	Cell ID in hex format
<bcch>	Absolute Radio Frequency Channel Number of Broadcast Control Channel (BCCH)
<bsic>	Base station identity code
<dbm>	Receive signal level in dBm unit
<c1>	C1 value
<c2>*	C2 value
<txp>	Maximum TX power level when accessing on a CCH
<rla>	Minimum receiving level permitted to access the system
<ts>	Time Slots
<maio>	MAIO value
<hsn>	HSN value
<tch>	ARFCN of TCH. The 'h' figure is used.
<ta>	Timing advance. Range: 0-63
<rxqsub>	RX quality(sub). Range 0-7
<rxqfull>	RX quality(full). Range 0-7
<ncell>	Number of neighboring six cell ID 1~6
<arfcn>	Absolute radio frequency channel number

NOTE

The following radio setting to be updated is stored in non-volatile memory.

1. When **<mode>** is 2, auto URCs are reported per 5 seconds.
2. The **<lac>** and **<cellID>** parameters are in hex format, other parameter is in decimal.

3. If the cell information is not detected, the parameter is replaced by 'x' char.
4. If the detecting is not in expert mode, the **<tch>**, **<ts>**, **<maio>**, **<hsn>**, **<ta>**, **<rxqsub>** and **<rxqfull>** do not display their values but are replaced by 'x' char.
5. During network connecting, if the hopping frequency is supported by the network, the channel of TCH is unstable. The 'h' figure **<tch>** will be used under this mode.
6. Under expert mode, when **<c1>** and **<c2>** of the serving cell cannot be updated, use the '-1' figure to display the illegal value. At the same time, **<txp>** and **<rla>** cannot be updated in a certain condition with all holding the value of idle mode. This is because ME cannot be updated in this mode. ME cannot update the selection of cells or the reselection of the parameter. When the connecting is over, the mobile device switches to idle mode and gives out the correct value.
7. If TA can report the information of a neighboring cell, the URCs of six neighboring cells should be reported. If some cells cannot be measured, the ‘x’ char will be filled in the parameters of these cells.
8. Under the special mode, **<c1>** and **<c2>** of a neighboring cell may be measured, and then a meaningless value will be reported. When **<mcc>**, **<mnc>** ,**<lac>** and **<cellID>** of the neighboring cell cannot be measured, the 'x' char will be filled in these parameters of all the six cells.
9. The command does not report the RX level and the RX quality. The "**AT+CSQ**" command can be used to query the values of RX level and RX quality.
10. The maximum record number of BA measured result list is 32. If any of the BCCH cannot get the BSIC value, the BSIC will show 'x' instead. The measured list only includes the measured BCCH in the BA list, not the whole BA list.

Example

```
//Idle mode.
AT+QENG=2
OK

+QENG: 0,460,00,1806,2602,64,46,-72,119,119,5,8,x,x,x,x,x,x,x

//Dedicated mode.
AT+QENG=2,3
OK

+QENG: 0,460,00,1806,2031,17,41,-73,-1,-1,5,8,h,7,0,24,1,0,1

+QENG:
1,1,17,-74,41,111,95,460,00,1806,2031,2,2,-74,45,110,94,460,00,1878,151,3,22,-77,40,100,84,460,00,1806,2012,4,24,-77,45,97,81,460,00,1806,2013,5,25,-81,40,83,67,460,00,1806,2032,6,532,-92,48,-1,-1,x,x,x,x
```

6.8. AT+QSCANF Scan Power of GSM Frequency

AT+QSCANF Scan Power of GSM Frequency	
Test Command **AT+QSCANF=?**	Response **+QSCANF: (**range of supported **<band>**s**),(**list of supported **<freq>**s**)** **OK**
Write Command **AT+QSCANF=<band>,<freq>**	Response If **<freq>**=9999 and the command is executed successfully: **+QSCANF:** **1,CH113,-63.5** **2,CH80,-64.2** **4,CH22,-64.5** **…..** **20, CH116, -74.2** **OK** If **<freq>** is fixed frequency and the command is executed successful: **+QSCANF:** **CH<freq>, <dbm>** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<band>	Integer type.	
	0	BAND 900
	1	BAND 1800
	2	BAND 1900
	3	BAND 850
<freq>	Integer type.	
	9999	Scan all frequency in specified band
	0-1023	Scan a fixed frequency in specified band

<dbm>	The signal strength indication in dBm value for a specified frequency

NOTE

Before using this AT command, RF function of system MUST be disabled. Please make sure CFUN state is 0 or 4. Please refer to AT command **AT+CFUN** to change CFUN state.

6.9. AT+QLOCKF Lock GSM Frequency

AT+QLOCKF Lock GSM Frequency	
Test Command **AT+QLOCKF=?**	Response **+QLOCKF: (**range of supported **<mode>**s**),(**range of supported **<band1900>**s**),(**range of supported **<arfcn>**s**)** **OK**
Read Command **AT+QLOCKF?**	Response **+QLOCKF: <status>** **OK**
Write Command **AT+QLOCKF=<mode>,<band1900>,<arfcn1>[,<arfcn2>[,<arfcn3>]]**	Response **OK** If there is any error: **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<mode>	Integer type.	
	0	Disable lock frequency
	1	Enable lock frequency

	2	Enable lock frequency and auto switch to saved frequency after powered on
<band1900>	Integer type.	
	0	Not a cell ID of 1900 band
	1	Cell ID of 1900 band
	2	Automatically distinguish whether it is a cell ID of 1900 band
<arfcn>	Integer type.	
	0-1024	ARFCN information
<status>	Integer type.	
	0	ME did not lock a certain ARFCN
	1	ME has locked a certain ARFCN

7 Call Related Commands

7.1. ATA Answer an Incoming Call

ATA Answer an Incoming Call	
Execution Command **ATA**	Response TA sends off-hook to the remote station. Response in case of voice call if successfully connected: **OK** Response if no connection: **NO CARRIER**
Maximum Response Time	1s, determined by network.
Reference V.25ter	

NOTES

1. Any additional commands on the same command line are ignored.
2. This command may be aborted if a character is received during execution. The aborting is not possible during some states of connection establishment such as handshaking.
3. See also **ATX**.

Example

```
RING                                    //A voice call is ringing.
AT+CLCC
+CLCC: 1,1,4,0,0,"02154450290",129

OK
ATA                                     //Answer the voice call
OK
```

7.2. ATD Mobile Originated Call to Dial a Number

ATD Mobile Originated Call to Dial a Number	
Execution Command **ATD<n>[<mgsm>][;]**	Response This command can be used to set up outgoing voice, data or FAX calls. It also serves to control supplementary services. If there is no dial tone and (**ATX2** or **ATX4** is set): **NO DIALTONE** If the called party is busy and (**ATX3** or **ATX4** is set): **BUSY** If a connection cannot be established: **NO CARRIER** If the connection is successful and it is a voice call: **OK**
Maximum Response Time	1s, determined by network.
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, @	
Emergency call:		
<n>	Standardized emergency number **112** (no (U)SIM card needed)	
<mgsm>	String of **GSM** modifiers:	
	I	Activates **CLIR** (Disable presentation of own number to called party)
	i	Deactivates **CLIR** (Enable presentation of own number to called party)
	G	Activates closed user group invocation for this call only
	g	Deactivates closed user group invocation for this call only
<;>	Only requires to set up a voice call, returns to command state	

NOTES

1. This command may be aborted if **ATH** command or a character is received during execution. The aborting is not possible during some states of connection establishment such as handshaking.
2. **<mgsm>**=I and i are applicable only if no *# code is within the dial string.
3. **<n>** is default value for last number that can be dialed by **ATDL**.
4. *# codes sent with **ATD** are treated as voice calls. Therefore, the command must be terminated with a semicolon ";".
5. See **ATX** command for setting result code and call monitoring parameters.
6. Responses returned after dialing with **ATD**:
   - For a voice call, two different response modes can be determined. The TA returns **OK** immediately either after a dialing is completed or after a call is established. The setting is controlled by **AT+COLP**. Factory default is **AT+COLP=0** which causes the TA returns **OK** immediately after a dialing is completed; otherwise the TA will return **OK**, **BUSY**, **NO DIAL TONE**, **NO CARRIER**.
7. Use **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 by using the **AT+CLCC** command.

Example

```
ATD10086;                    //Dial out the number of the called party
OK
```

7.3. ATH Disconnect Existing Connection

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

Parameter

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

NOTE

OK is issued after circuit 109 (DCD) is turned off, if it is previously on.

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

+++ Switch from Data Mode to Command Mode	
Execution Command **+++**	Response This command is only available during TA is in data mode, such as a GPRS connection and a transparent TCPIP connection. The **+++** character sequence causes the TA to cancel the data flow over the AT interface and switch to command mode. It allows to enter AT command while maintaining the data connection with the remote server or, accordingly, the GPRS connection. **OK**
Maximum Response Time	300ms
Reference V.25ter	

NOTES

1. To prevent **+++** escape sequence from being misinterpreted as data, it should comply to following sequence:
   - No character is entered for T1 time (0.5 seconds) before entering **+++**.
   - **+++** is entered with no characters in between. For PPP online mode, the interval between two "**+**" MUST be less than 1 second. For a transparent TCPIP connection, the interval MUST be less than 20ms.
   - No character is entered for T1 time (0.5 seconds) after entering **+++**.
   - Switch to command mode, otherwise go to ***Step 1***.
2. Enter **ATO** to switch from command mode back to data or PPP online mode:
   - Another way to change to command mode is through DTR. See **AT&D** command for more

details.

7.5. ATO Switch from Command Mode to Data Mode

ATO Switch from Command Mode to Data Mode	
Execution Command **ATO[<n>]**	Response TA resumes the connection and switches back from command mode to data mode. If the connection is not successfully resumed: **NO CARRIER** else TA returns to data mode from command mode **CONNECT <text>**.
Maximum Response Time	300ms
Characteristics	Take effect immediately.
Reference V.25ter	

Parameter

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

NOTES

1. TA returns to data mode from command mode **CONNECT <text>**, **<text>** is returned only when **<value>** is greater than 0 in command **ATX<value>**.
2. **<text>** can be the rate, error control etc

7.6. ATS0 Set Number of Rings Before Automatically Answering Call

ATS0 Set Number of Rings Before Automatically Answering Call	
Read Command **ATS0?**	Response **<n>** **OK**
Write Command **ATS0=<n>**	Response This parameter determines the number of rings before auto-answer. **OK**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Remain valid after powering down (AT&W executed first).
Reference V.25ter	

Parameter

<n>	Integer type.	
	0	Automatic answering is disabled
	1-255	Enable automatic answering on the ring number specified

NOTE

If **<n>** is set too high, the calling party may hang up before the call can be answered automatically.

Example

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

RING                      //A call is incoming.
RING
RING                      //Automatically answering the call after three rings.
```

7.7. ATS7* Set the Time to Wait for Connection Completion

ATS7* Set Number of Seconds to Wait for Connection Completion	
Read Command **ATS7?**	Response **<n>** **OK**
Write Command **ATS7=<n>**	Response This parameter determines the amount of time to wait for the connection completion in case of answering or originating a call. **OK**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference V.25ter	

Parameter

<n>	Integer type. Number of seconds to wait for connection completion 1-60-255

NOTES

1. If a called party has specified a high value for **ATS0=<n>**, call setup may fail.
2. The correlation between **ATS7** and **ATS0** is important. For example, a call may fail if **ATS7=30** and **ATS0=20**.
3. **ATS7** is only applicable to data calls.
4. "*" means under development.

7.8. ATS10* Set Disconnect Delay After Indicating Absence of Data Carrier

ATS10* Set Disconnect Delay after Indicating Absence of Data Carrier	
Read Command **ATS10?**	Response **<n>** **OK**
Write Command **ATS10=<n>**	Response This parameter determines the amount of time that the TA will remain connected in absence of data carrier. If the data carrier is once more detected before disconnection, the TA remains connected. **OK**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference V.25ter	

Parameter

<n>	Integer type. Number of delays in 100ms 1-15-254

NOTE

"*" means under development.

7.9. AT+CLCC List Current Calls of ME

AT+CLCC List Current Calls of ME	
Test Command **AT+CLCC=?**	Response **OK**
Execution Command	Response

AT+CLCC	TA returns a list of current calls of ME. If the command succeeds but no call is available, no information response will be sent to TE. **[+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,""]]** **[<CR><LF>+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,""]]** **[...]]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<idx>	Integer type. Call identification number as described in *GSM 02.30* ***subclause 4.5.5.1***. The number can be used in **AT+CHLD**.
<dir>	Integer type. 0 Mobile originated (MO) call 1 Mobile terminated (MT) call
<stat>	Integer type. State of the call 0 Active 1 Hold 2 Dialing (MO call) 3 Alerting (MO call) 4 Incoming (MT call) 5 Waiting (MT call)
<mode>	Integer type. Bearer/telecommunication service 0 Voice 1 Data 2 FAX 9 Unknown
<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 string type in format specified by **<type>**
<type>	Integer type. Type of address of octet in integer format 129 Unknown type (IDSN format number) 145 International number type (ISDN format)

Example

```
AT+CLCC
+CLCC: 1,0,0,0,0,"10086",129        //List the current call of ME.

OK
```

7.10. AT+CRC* Set Cellular Result Code for Incoming Call Indication

AT+CRC* Set Cellular Result Code for Incoming Call Indication	
Test Command **AT+CRC=?**	Response **+CRC: (**list of supported **<mode>**s**)** **OK**
Read Command **AT+CRC?**	Response **+CRC: <mode>** **OK**
Write Command **AT+CRC=[<mode>]**	Response TA controls whether or not the extended format of incoming call indication is used. **OK**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<mode>	Integer type.	
	0	Disable extended format
	1	Enable extended format

NOTE

1. For URC:
   When it is enabled, an incoming call is indicated to the TE with unsolicited result code **+CRING: <type>** instead of the normal RING.

Parameter		
<type>	ASYNC	Asynchronous transparent
	SYNC	Synchronous transparent
	REL ASYNC	Asynchronous non-transparent
	REL SYNC	Synchronous non-transparent
	FAX	Facsimile
	VOICE	Voice

2. "*" means under development.

Example

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

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

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

7.11. AT+QDISH Disable ATH

AT+QDISH Disable ATH	
Test Command **AT+QDISH=?**	Response **+QDISH: (**list of supported **<disableATH>**s**)** **OK**
Read Command **AT+QDISH?**	Response **+QDISH: <disableATH>** **OK**
Write Command **AT+QDISH=<disableATH>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**

Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<disableATH>	Integer type. Disable **ATH**	
	0	Enable **ATH** command
	1	Disable **ATH** command

8 SMS Commands

8.1. AT+CSMS Select Message Service

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 error is related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.05	

Parameter

<service>	Integer type.	
	0	GSM 03.40 and 03.41 (the syntax of SMS AT command is compatible with *GSM 07.05 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))
	128	SMS PDU mode - TPDU is only used for ending/receiving SMSs

<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

8.2. AT+CMGF Select SMS Message Format

AT+CMGF Select SMS 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	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.05	

Parameter

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

8.3. AT+CSCA SMS Service Center Address

AT+CSCA SMS 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 TA updates the SMSC address, through which mobile originated SMSs are transmitted. In text mode, the setting is used by sending and writing commands. In PDU mode, the setting is used by the same commands, but only when the length of the SMSC address coded into **<pdu>** parameter equals zero. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Remain valid after powering down.
Reference GSM 07.05	

Parameter

<sca>	String type. GSM 04.11 RP SC address Address-Value field. BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **AT+CSCS** in *TS 07.07*). Type of address is given by **<tosca>**.
<tosca>	Integer type. Service center address format GSM 04.11 RP SC address Type-of-Address octet (default refer to **<toda>**).

Example

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

OK

8.4. AT+CPMS Preferred SMS Message Storage

AT+CPMS Preferred SMS 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 TA selects memory storages **<mem1>**, **<mem2>** and **<mem3>** to be used for reading, writing, etc. **+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3>** **OK** If error is related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Remain valid after powering down.
Reference GSM 07.05	

Parameter

<mem1>	String type. Messages to be read and deleted from this memory storage "SM" SIM message storage "ME" Mobile Equipment message storage "MT" Sum of "SM" and "ME" storages
<mem2>	String type. Messages will be written and sent to this memory storage

	"SM" SIM message storage "ME" Mobile Equipment message storage "MT" Sum of "SM" and "ME" storages
<mem3>	String type. Received messages will be placed in this memory storage if routing to PC is not set ("**+CNMI**") "SM" SIM message storage "ME" Mobile Equipment message storage "MT" Sum of "SM" and "ME" storages
<usedx>	Integer type. Number of messages currently in **<memx>**
<totalx>	Integer type. Number of messages storable in **<memx>**

NOTE

The message storages of SIM and ME offer maximum space of 60 messages. The SIM message storage will be stored first. The SIM storage offers maximum space of 50 messages. The ME storage offers maximum space of 10 messages.

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
```

8.5. AT+CMGD Delete SMS Message

AT+CMGD Delete SMS Message	
Test Command **AT+CMGD=?**	Response **+CMGD: (**list of supported **<index>**s**),(**range 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: **ERROR** If error is related to ME functionality: **+CMS ERROR:<err>**
Maximum Response Time	300ms. Note: Operation of **<delflag>** depends on the storage of deleted messages.
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.05	

Parameter

<index>	Integer type. Value in the range of location numbers supported by the associated memory	
<delflag>	Integer type.	
	0	Delete messages specified in **<index>**
	1	Delete all read messages from **<mem1>** storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched
	2	Delete all read messages from **<mem1>** storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched
	3	Delete all read messages from **<mem1>** storage, sent and unsent mobile originated messages, leaving unread messages untouched
	4	Delete all messages from **<mem1>** storage

Example

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

8.6. AT+CMGL List SMS Messages from Preferred Storage

AT+CMGL List SMS Messages from Preferred Storage	
Test Command **AT+CMGL=?**	Response **+CMGL: (**list of supported **<stat>**s**)** **OK**
Write Command **AT+CMGL=<stat>[,<mode>]**	Response TA returns messages with status value **<stat>** from message storage **<mem1>** to the TE. If the status of the message is "REC UNREAD", the status in the storage changes to "REC READ". 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><pd**

	u><CR><LF> **+CMGL: <index>,<stat>,[alpha],<length><CR><LF><pdu>[...]]** **OK** If error is related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	300ms. Note: Operation of **<stat>** depends on the storage of listed messages.
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.05	

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
<mode>	Integer type.	
	0	Normal (default)
	1	Not change the status of the specified SMS record
<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 by command **AT+CSCS** which is used to select TE character set (see definition of command **AT+CSCS** in *TS 07.07*)	
<da>	String type. Destination Address. GSM 03.40 TP-Destination-Address Address-Value field. BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer to command **AT+CSCS** in *TS 07.07*). Type of address is given by **<toda>**.	
<data>	In the case of SMS: GSM 03.40 TP-User-Data in text mode responses. The format is defined as follows:	

- If **<dcs>** indicates that GSM 03.38 default alphabet is used and **<fo>** indicates that GSM 03.40 TP-User-Data-Header-Indication is not set.
- If TE character set is other than "HEX" (refer to Command Select TE character set **AT+CSCS** in TS 07.07): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A.
- If TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal numbers (e.g. character P (GSM 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 GSM 03.40 TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal numbers (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)).

In the case of CBS: GSM 03.41 CBM Content of Message in text mode responses. The format is defined as follows:

- If **<dcs>** indicates that GSM 03.38 default alphabet is used.
- If TE character set is other than "HEX" (refer to Command **AT+CSCS** in GSM 07.07): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A.
- If TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal numbers.
- 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 numbers.

<length> Integer type. Indicates in 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).

<index> Integer type. Value in the range of location numbers supported by the associated memory.

<oa> String type. Originating Address. GSM 03.40 TP-Originating-Address Address-Value field. BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer to command **AT+CSCS** in TS 07.07); The type of address is given by **<tooa>**.

<pdu> In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal numbers (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)). In the case of CBS: GSM 03.41 TPDU in hexadecimal format.

<scts> GSM 03.40 TP-Service-Center-Time-Stamp in time-string format (refer to **<dt>**).

<toda> Integer type. GSM 04.11 TP-Destination-Address Type-of-Address octet (when the first character of **<da>** is + (IRA 43), the default value is 145; otherwise the default value is 129).

<tooa> Integer type. GSM 04.11 TP-Originating-Address Type-of-Address octet (refer to **<toda>**).

NOTE

If **AT+CMGL** is executed, it will return a list of SMS with "REC UNREAD" status.

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,once again.

OK
```

8.7. AT+CMGR Read SMS Message

AT+CMGR Read SMS Message	
Test Command **AT+CMGR=?**	Response **OK**
Write Command **AT+CMGR=<index>[,<mode>]**	Response TA returns SMS messages with location value **<index>** from message storage **<mem1>** to the TE. If the status of the message is "REC UNREAD", the status in the storage changes to "REC READ". 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>** for SMS-SUBMIT: **+CMGR: <stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcs>,[<vp>],<sca>,<tosca>,<length>]<CR><LF><data>** for SMS-STATUS-REPORTs: **+CMGR: <stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>** for SMS-COMMANDs: **+CMGR: <stat>,<fo>,<ct>[,<pid>,[<mn>],[<da>],[<toda>],<length><CR><LF><cdata>]**

	for CBM storage: **+CMGR: <stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data>** If in PDU mode (**AT+CMGF=0**) and the command is executed successfully: **+CMGR: <stat>,[<alpha>],<length><CR><LF><pdu>** **OK** If error is related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	Depends on the length of message content.
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.05	

Parameter

<index>	Integer type. Value in the range of location numbers supported by the associated memory.
<mode>	Integer type. 0 Normal 1 Not change the status of the specified SMS record.
<alpha>	String type alphanumeric representation of **<da>** or **<oa>** corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specified.
<da>	String type. Destination Address. GSM 03.40 TP-Destination-Address Address-Value field. BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **AT+CSCS** in TS 07.07). The type of address is given by **<toda>**
<data>	In the case of SMS: GSM 03.40 TP-User-Data in text mode responses. The format is defined as follows: − If **<dcs>** indicates that GSM 03.38 default alphabet is used and **<fo>** indicates that GSM 03.40 TP-User-Data-Header-Indication is not set. − If TE character set is other than "HEX" (refer to command select TE character set **AT+CSCS** in TS 07.07): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A. − If TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal numbers (e.g. character P (GSM 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 GSM 03.40 TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit

octet into two IRA character long hexadecimal numbers (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)).

In the case of CBS: GSM 03.41 CBM Content of Message in text mode responses. The format is defined as follows:

- If **<dcs>** indicates that GSM 03.38 default alphabet is used.
- If TE character set is other than "HEX" (refer to command **AT+CSCS** in GSM 07.07): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A.
- If TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal numbers.
- 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 numbers.

<dcs> Integer type. Depends on the command or result code: GSM 03.38 SMS Data Coding Scheme (default value is 0), or Cell Broadcast Data Coding Scheme in integer format.

<fo> Integer type. Depends on the command or result code: first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default value is 17), SMS-STATUS-REPORT, or SMS-COMMAND (default value is 2).

<length> Integer type. Indicates 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)

<mid> Integer type. GSM 03.41 CBM Message Identifier.

<oa> String type. Originating Address. GSM 03.40 TP-Originating-Address Address-Value field. BCD numbers (or GSM default alphabet characters) are converted characters of the currently selected TE character set (specified by **AT+CSCS** in TS 07.07). The type of address is given by **<tooa>**.

<pdu> In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal numbers (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)).

In the case of CBS: GSM 03.41 TPDU in hexadecimal format.

<pid> Integer type. GSM 03.40 TP-Protocol-Identifier (default value is 0).

<sca> String type. GSM 04.11 RP SC address Address-Value field. BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **AT+CSCS** in TS 07.07). The type of address is given by **<tosca>**.

<scts> GSM 03.40 TP-Service-Centre-Time-Stamp in time-string format (refer to **<dt>**)

<stat> 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

In PDU mode:

0	Received unread messages

	1	Received read messages
	2	Stored unsent messages
	3	Stored sent messages
	4	All messages
<toda>	Integer type. GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when the first character of **<da>** is + (IRA 43), the default value is 145; otherwise the default is 129).	
<tooa>	Integer type. GSM 04.11 TP-Originating-Address Type-of-Address octet (default refer to **<toda>**).	
<tosca>	Integer type. GSM 04.11 RP SC address Type-of-Address octet (default refer to **<toda>**).	
<vp>	Integer type. Depending on SMS-SUBMIT **<fo>** setting: GSM 03.40 TP-Validity-Period either (default value is 167) or in time-string format (refer to **<dt>**).	

Example

```
+CMTI: "SM",3                          //Indicates that new message has been received and saved
                                         to <index>=3 of "SM".
AT+CMGR=3                              //Read message.
+CMGR: "REC UNREAD","+8615021012496","","2010/09/25 15:06:37+32",145,4,0,241,"+8
613800210500",145,27
This is a test from Quectel

OK
```

8.8. AT+CMGS Send SMS Message

AT+CMGS Send SMS Message	
Test Command **AT+CMGS=?**	Response **OK**
Write Command If in text mode (**AT+CMGF=1**): **AT+CMGS=<da>[,<toda>]**<CR> **text is entered** Tap **Ctrl+Z** to send the message Quit by tapping **ESC**. If in PDU mode (**AT+CMGF=0**): **AT+CMGS=<length><CR>** **PDU is given** Tap **Ctrl+Z** to send the message Quit by tapping **ESC**.	Response TA sends messages from TE to network (SMS-SUBMIT). The message reference **<mr>** is returned to the TE on successful message delivery. Optionally (when **AT+CSMS <service>** value is 1 and network supports) **<scts>** is returned. The 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 error is related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	120s, determined by network.
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.05	

Parameter

<da>	String type. Destination Address. GSM 03.40 TP-Destination-Address Address-Value field. BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **AT+CSCS** in TS 07.07). The type of address is given by **<toda>.**
<toda>	Integer type. GSM 04.11 TP-Destination-Address Type-of-Address octet (when the first character of **<da>** is + (IRA 43), the default value is 145; otherwise the default value is 129).
<length>	Integer type. It indicates 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>	Integer type. GSM 03.40 TP-Message-Reference.

Example

```
AT+CMGF=1                          //Set SMS message format to text mode.
OK
AT+CSCS="GSM"                      //Set character to GSM which is used by the TE.
OK
AT+CMGS="15021012496"
> <This is a test from Quectel>    //Enter in text, tap Ctrl+Z to send the message, and tap ESC
                                     to quit sending the message.
+CMGS: 247

OK
```

8.9. AT+CMGW Write SMS Message to Memory

AT+CMGW Write SMS Message to Memory	
Test Command **AT+CMGW=?**	Response **OK**
Write Command If text mode (**AT+CMGF=1**): **AT+CMGW[=<oa/da>[,<tooa/toda>[,<stat>]]]** **<CR> text is entered** Tap **Ctrl+Z** to write the message Quit writing by tapping **ESC**. If PDU mode (**AT+CMGF=0**): **AT+CMGW=<length>[,<stat>]<CR>** **PDU is given** Tap **Ctrl+Z** to write the message Quit writing by tapping **ESC**.	Response TA transmits SMS messages (either SMS-DELIVER or SMS-SUBMIT) from TE to memory storage **<mem2>**, and the memory location **<index>** of the stored message is returned. By default the message status will be set to "STO SENT", but parameter **<stat>** also allows other status values to be given. If message writing is successful: **+CMGW: <index>** **OK** If error is related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.05	

Parameter

<oa>	String type. Originating Address. GSM 03.40 TP-Originating-Address Address-Value field. BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **AT+CSCS** in TS 07.07). The type of address is given by **<tooa>**.
<da>	String type. Destination Address. GSM 03.40 TP-Destination-Address Address-Value field. BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **AT+CSCS** in TS 07.07). The type of address is given by **<toda>**.
<tooa>	Integer type. GSM 04.11 TP-Originating-Address Type-of-Address octet (default refer to **<toda>**).
<toda>	Integer type. GSM 04.11 TP-Destination-Address Type-of-Address octet (when the first character of **<da>** is + (IRA 43) the default value is 145; otherwise the default value is 129). 129 Unknown number type (IDSN format) 145 International number type (ISDN format)

<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
<length>	Integer type. Indicates in the text mode (**+CMGF=1**) the length of the message body **<data>** (or **<cdata>**) in characters, or in PDU mode (**+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: GSM 04.11 SC address followed by GSM 03.40 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)). In the case of CBS: GSM 03.41 TPDU in hexadecimal format.
<index>	Index of message in selected storage **<mem2>**.

Example

```
AT+CMGF=1                          //Set SMS message format to text mode.
OK
AT+CSCS="GSM"                      //Set character set to GSM which is used by the TE.
OK
AT+CMGW="15021012496"
> <This is a test from Quectel>    //Enter in text, tap CTRL+Z to write the message and tap
                                     ESC to quit sending the message.
+CMGW: 4

OK
```

8.10. AT+CMSS Send Message from Storage

AT+CMSS Send Message from Storage	
Test Command **AT+CMSS=?**	Response **OK**
Write Command	Response

AT+CMSS=<index>[,<da>[,<toda>]]	TA sends messages with location value **<index>** from message storage **<mem2>** to the network (SMS-SUBMIT). If new destination address **<da>** is given, it shall be used instead of the one stored with the message. Message reference **<mr>** is returned to the TE on successful message delivery. 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: **+CMSS: <mr>[,<scts>]** **OK** If in PDU mode(**AT+CMGF=0**) and the message is sent successfully: **+CMSS: <mr>[,<ackpdu>]** **OK** If error is related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	120s, determined by network.
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.05	

Parameter

<index>	Integer type. Value in the range of location numbers supported by the associated memory.
<da>	String type. Destination Address. GSM 03.40 TP-Destination-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 (specified by **AT+CSCS** in TS 07.07). The type of address is given by **<toda>**.
<toda>	Integer type. GSM 04.11 TP-Destination-Address Type-of-Address octet (when the first character of **<da>** is + (IRA 43) the default value is 145; otherwise the default value is 129).
<mr>	Integer type. GSM 03.40 TP-Message-Reference in integer format.
<scts>	GSM 03.40 TP-Service-Centre-Time-Stamp in time-string format (refer to **<dt>**).
<ackpdu>	In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal numbers (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)). In the case of CBS: GSM 03.41 TPDU in hexadecimal format.

8.11. AT+CMGC Send SMS Command

AT+CMGC Send SMS Command	
Test Command **AT+CMGC=?**	Response **OK**
Write Command If in text mode (**AT+CMGF=1**): **AT+CMGC=<fo>[,<ct>,<pid>,<mn>,<da>,<toda>]<CR>** **text is entered** Tap **Ctrl+Z** to send the message Quit by tapping **ESC**. If in PDU mode (**AT+CMGF=**0): **AT+CMGC=<length><CR>** **PDU is given** Tap **Ctrl+Z** to send the message Quit by tapping **ESC**.	Response TA transmits SMS command message from TE to network (SMS-COMMAND). Message reference **<mr>** is returned to the TE on successful message delivery. 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: **+CMGC: <mr>[,<scts>]** **OK** If in PDU mode (**AT+CMGF=0**) and the message is sent successfully: **+CMGC: <mr>[,<ackpdu>]** **OK** If error is related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.05	

Parameter

<fo>	Integer type. First octet of GSM 03.40 SMS-COMMAND (default value is 2).
<ct>	Integer type. GSM 03.40 TP-Command-Type (default value is 0).
<pid>	Integer type. GSM 03.40 TP-Protocol-Identifier (default value is 0).
<mn>	Integer type. GSM 03.40 TP-Message-Number.
<da>	String type. Destination Address. GSM 03.40 TP-Destination-Address Address-Value field. BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **AT+CSCS** in TS 07.07). The type of address is given by **<toda>.**

<toda>	Integer type. GSM 04.11 TP-Destination-Address Type-of-Address octet (when the first character of **<da>** is + (IRA 43) the default value is 145; otherwise the default value is 129). 129 Unknown number type (IDSN format) 145 International number type (ISDN format)
<length>	Integer type. Indicates in PDU mode (**+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>	Integer type. GSM 03.40 TP-Message-Reference in integer format.
<scts>	GSM 03.40 TP-Service-Centre-Time-Stamp in time-string format (refer to **<dt>**)
<ackpdu>	In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 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)). In the case of CBS: GSM 03.41 TPDU in hexadecimal format

8.12. AT+CNMI New SMS Message Indications

AT+CNMI New SMS Message Indications	
Test Command **AT+CNMI=?**	Response **+CNMI: (**range of supported **<mode>**s**),(**range 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 TA selects the procedure on how the received new messages from the network are indicated to the TE when TE is active, e.g. DTR signal is ON. If TE is inactive (e.g. DTR signal is OFF), message receiving should be done as specified in *GSM 03.38*. **OK** If error is related to ME functionality: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Remain valid after powering down (AT&W executed first).

Reference
GSM 07.05

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 places 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 on-line data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE.

3 Forward unsolicited result codes directly to the TE. Specific TA-TE link inband technique can be used to embed result codes and data into TE when TA is in on-line data mode.

<mt> Integer type. The rules for storing received SMS depend on its data coding scheme (refer to *GSM 03.38 [2]*), and on preferred memory storage (**AT+CPMS**) setting, and the values are as follows:

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 is enabled) or **+CMT: <oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>, <length>]<CR><LF><data>** (Text mode is enabled; about parameters in italics, refer to **AT+CSDH**). Class 2 messages result in indication as defined in **<mt>**=1.

3 Class 3 SMS-DELIVERs are routed directly to TE by using unsolicited result codes defined in **<mt>**=2. Messages of other classes result in indication as defined in **<mt>**=1.

<bm> Integer type. The rules for storing received CBMs depend on its data coding scheme (refer to *GSM 03.38 [2]*), and the setting of Select CBM Types (**AT+CSCB**), and the values are as follows:

0 No CBM indications are routed to the TE.

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

3 Class 3 CBMs are routed directly to TE by using unsolicited result codes defined in <**bm**>=2. If CBM storage is supported, messages of other classes result in indication as defined in <**bm**>=1.

<ds> Integer type.

	0	No SMS-STATUS-REPORT is routed to the TE.
	1	SMS-STATUS-REPORTs are routed to the TE by using unsolicited result code: **+CDS: <length><CR><LF><pdu>** (PDU mode is enabled) or **+CDS: <fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>** (Text mode is enabled).
<bfr>	Integer type.	
	0	TA buffer of unsolicited result codes defined in this command is flushed to the TE when **<mode>**=1-3 (**OK** response shall be given before flushing the codes).
	1	TA buffer of unsolicited result codes defined within this command is cleared when **<mode>**=1-3.

NOTE

URC:

+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=2,1                        //SMS-DELIVER is stored into ME/TA, and indication of the
                                     memory location is routed to the TE.
OK

+CMTI: "SM",5                      //Indicate that a new message has been received.
AT+CNMI=2,2                        //SMS-DELIVERs are routed directly to the TE.
OK

+CMT: "+8615021012496"," ","2010/09/25 17:25:01+32",145,4,0,241,"+8613800210500",145,27
This is a test from Quectel        //A short message is outputted directly.
```

8.13. AT+CSCB Select Cell Broadcast SMS Messages

AT+CSCB Select Cell Broadcast SMS Messages	
Test Command **AT+CSCB=?**	Response **+CSCB: (**list of supported **<mode>**s**)**

	OK
Read Command **AT+CSCB?**	Response **+CSCB: <mode>,<mids>,<dcss>** **OK**
Write Command **AT+CSCB=<mode>[,mids>[,<dcss>]]**	Response TA selects the types of CBMs to be received by the ME. **OK** If error is related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Remain valid after powering down.
Reference GSM 07.05	

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 identifiers (refer to **<mid>**) (default is an empty string), e.g. "0,1,5,320-478,922"
<dcss>	String type. All different possible combinations of CBM data coding schemes (refer to **<dcs>**) (default is an empty string), e.g. "0-3,5"

NOTE

This command writes the parameters in non-volatile memory.

8.14. AT+CSDH Show SMS Text Mode Parameters

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 TA determines whether detailed header information is shown in text mode result codes. **OK**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Remain valid after powering down (AT&W executed first).
Reference GSM 07.05	

Parameter

<show>	Integer type.	
	0	Do not show header values defined in commands **AT+CSCA** and **AT+CSMP** (**<sca>**, **<tosca>**, **<fo>**, **<vp>**, **<pid>** and **<dcs>**) nor **<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=3
+CMGR: "REC READ","+8615021012496","","2010/09/25 15:06:37+32"
This is a test from Quectel

OK
AT+CSDH=1
OK
AT+CMGR=3
+CMGR: "REC READ","+8615021012496", ,"2010/09/25 15:06:37+32",145,4,0,241,"+861
3800210500",145,27
This is a test from Quectel

OK
```

8.15. AT+CSMP Set SMS Text Mode Parameters

AT+CSMP Set SMS Text Mode Parameters	
Test Command **AT+CSMP=?**	Response **+CSMP: (**list of supported **<fo>**s**),(**list of supported **<vp>**s**),(**list of supported **<pid>**s**),(**list of supported **<dcs>**s**)** **OK**
Read Command **AT+CSMP?**	Response **+CSMP: <fo>,<vp>,<pid>,<dcs>** **OK**
Write Command **AT+CSMP=[<fo>[,<vp>[,<pid>[,<dcs>]]]]**	Response TA selects values for additional parameters needed when SM is sent to the network or placed in a storage when text mode is selected (**AT+CMGF=1**). It is possible to set the validity period starting from the time that SM is received by the SMSC (**<vp>** is in range 0-255) or to define the absolute time of the validity period termination (**<vp>** is a string). **OK**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Remain valid after powering down.
Reference GSM 07.05	

Parameter

<fo>	Integer type. Depends on the command or result code: first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default value is 17), SMS-STATUS-REPORT, or SMS-COMMAND (default value is 2). A SMS status report is supported under text mode if **<fo>** is set to 49.
<vp>	Depends on SMS-SUBMIT **<fo>** setting: GSM 03.40 TP-Validity-Period either in integer format (default 167) or in time-string format (refer to **<dt>**).
<pid>	Integer type. GSM 03.40 TP-Protocol-Identifier. Default value: 0.
<dcs>	Integer type. GSM 03.38 SMS Data Coding Scheme.

NOTE

This command writes the parameters in non-volatile memory.

8.16. AT+QCLASS0 Store Class 0 SMS to SIM when Receiving Class 0 SMS

AT+QCLASS0 Store Class 0 SMS to SIM when Receiving Class 0 SMS	
Test Command **AT+QCLASS0=?**	Response **+QCLASS0: (**list of supported **<mode>**s**)** **OK**
Read Command **AT+QCLASS0?**	Response **+QCLASS0: <mode>** **OK**
Write Command **AT+QCLASS0=<mode>**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<mode>	Integer type.	
	0	Disable to store Class 0 SMS when receiving Class 0 SMS
	1	Enable to store Class 0 SMS when receiving Class 0 SMS

Example

```
//Message in text mode:
AT+CPMS?
+CPMS: "SM",6,50,"SM",6,50,"SM",6,50

OK
AT+QCLASS0=0                    //Disable to store SMS when receiving Class 0 SMS.
OK
```

```
+CMT: "+8615021012496",,"2010/09/26 09:55:37+32"
TEST1 from Quectel                    //Short message is outputted directly.
AT+QCLASS0=1                          //Enable to store SMS when receiving Class 0 SMS.
OK

+CMTI: "SM",7                         //Indicate that a new message has been received.
AT+CMGR=7
+CMGR: "REC UNREAD","+8615021012496","","2010/09/26 09:56:17+32"
TEST2 from Quectel

OK
```

8.17. AT+QMGDA Delete All SMS

AT+QMGDA Delete All SMS	
Test Command **AT+QMGDA=?**	Response **+QMGDA: (**listed of supported **<type>**s**)** **OK**
Write Command **AT+QMGDA=<type>**	Response **OK** Or **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	Depends on the storage of deleted messages.
Characteristics	Take effect immediately.
Reference Quectel	

Parameter

<type>	In text mode:	
	"DEL READ"	Delete all read messages
	"DEL UNREAD"	Delete all unread messages
	"DEL SENT"	Delete all sent SMS
	"DEL UNSENT"	Delete all unsent SMS
	"DEL INBOX"	Delete all received SMS

	"DEL ALL"	Delete all SMS
	In PDU mode:	
	1	Delete all read messages
	2	Delete all unread messages
	3	Delete all sent SMS
	4	Delete all unsent SMS
	5	Delete all received SMS
	6	Delete all SMS

9 GPRS Commands

9.1. AT+CGATT Attach to/Detach from GPRS Service

AT+CGATT Attach to/Detach from GPRS Service	
Test Command **AT+CGATT=?**	Response **+CGATT: (**list of supported **<state>**s**)** **OK**
Read Command **AT+CGATT?**	Response **+CGATT: <state>** **OK**
Write Command **AT+CGATT=<state>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	75s, determined by network.
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<state>	Integer type. Indicates the state of GPRS attachment 0 Detached 1 Attached Other values are reserved and will result in an **ERROR** response to the Write Command.

Example

```
AT+CGATT=1                    //Attach to GPRS service.
```

```
OK
AT+CGATT=0                    //Detach from GPRS service.
OK
AT+CGATT?                     //Query current GPRS service state.
+CGATT: 0

OK
```

9.2. AT+CGDCONT Define PDP Context

AT+CGDCONT Define PDP Context	
Test Command **AT+CGDCONT=?**	Response **+CGDCONT: (**range of supported **<cid>**s**),<PDP_type>,APN>,<PDP_addr>,(**list of supported **<data_comp>**s**),(**list of supported **<head_comp>**s**)** **OK**
Read Command **AT+CGDCONT?**	Response **+CGDCONT:<cid>,<PDP_type>,<APN>,<PDP_addr>,<data_comp>,<head_comp>** **<CR><LF>+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>]]]]]**	Response **OK** If there is any error, response: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<cid>	Integer type. PDP context identifier 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. Range: 1-3.
<PDP_type>	String type. Packet data protocol type which specifies the type of packet data protocol X25 ITU-T/CCITT X.25 layer 3 IP Internet Protocol (IETF STD 5) OSPIH Internet Hosted Octet Stream Protocol PPP Point to Point Protocol (IETF STD 51).
<APN>	String type. Access point name. A logical name used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested.
<PDP_addr>	String type. Identifies the MT in the address space applicable to the PDP. If the value is null or omitted, 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>	Integer type. Controls PDP data compression. 0 OFF (Default value if the parameter is omitted) Other values are reserved.
<head_comp>	Integer type. Controls PDP header compression. 0 OFF (Default value if the parameter is omitted) Other values are reserved.

Example

```
AT+CGDCONT=1,"IP","CMNET"          //Define PDP context, <cid>=1, <PDP_type>="IP",
                                   <APN>="CMNET".
OK
```

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

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>** **<CR><LF>+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>**

	… **OK**
Write Command **AT+CGQREQ=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<cid>	Integer type. Specifies a particular PDP context definition (see **AT+CGDCONT** command)
The following parameter are defined in *GSM 03.60*:	
<precedence>	Integer type. Specifies the precedence class
<delay>	Integer type. Specifies the delay class
<reliability>	Integer type. Specifies the reliability class
<peak>	Integer type. Specifies the peak throughput class
<mean>	Integer type. Specifies the mean throughput class

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

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>** **<CR><LF>+CGQMIN: <cid>,<precedence>,<delay>,<relia**

	bility>,<peak>,<mean> **…** **OK**
Write Command **AT+CGQMIN=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<cid>	Integer type. Specifies a particular PDP context definition (see **AT+CGDCONT** command)
The following parameters are defined in *GSM 03.60*:	
<precedence>	Integer type. Specifies the precedence class
<delay>	Integer type. Specifies the delay class
<reliability>	Integer type. Specifies the reliability class
<peak>	Integer type. Specifies the peak throughput class
<mean>	Integer type. Specifies the mean throughput class

9.5. AT+CGACT Activate or Deactivate PDP Context

AT+CGACT	**Activate or Deactivate PDP Context**
Test Command **AT+CGACT=?**	Response **+CGACT: (**list of supported **<state>**s**)** **OK**
Read Command **AT+CGACT?**	Response **+CGACT: <cid>,<state>[<CR><LF>+CGACT:<cid><state>…]** **OK**
Write Command	Response

AT+CGACT=<state>[,<cid>]	**OK** **NO CARRIER** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	150s, determined by network.
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<state>	Integer type. Indicates the state of PDP context activation. 0 Deactivated 1 Activated Other values are reserved and will result in an **ERROR** response to the Write Command.
<cid>	Integer type. Specifies a particular PDP context definition (see **AT+CGDCONT** command). The default value is 1.

NOTE

If the context is deactivated successfully, **NO CARRIER** will be returned.

Example

```
AT+CGDCONT=1,"IP","CMNET"          //Define PDP context.
OK
AT+CGACT=1,1                       //Activate PDP context.
OK
AT+CGACT=0,1                       //Deactivate PDP context.
NO CARRIER
```

9.6. AT+CGDATA Enter Data State

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 **OK** **NO CARRIER** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

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. Specifies a particular PDP context definition (see **AT+CGDCONT** command).

9.7. AT+CGPADDR Show PDP Address

AT+CGPADDR Show PDP Address	
Test Command **AT+CGPADDR=?**	Response **+CGPADDR: (**list of defined **<cid>**s**)** **OK**
Write Command **AT+CGPADDR=<cid>**	Response **+CGPADDR: <cid>[,<PDP_addr>]** **OK** If there is any error, response: **ERROR**
Maximum Response Time	300ms

Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<cid>	Integer type. Specifies a particular PDP context definition (see **AT+CGDCONT** command).
<PDP_addr>	String type. Identifies the MT in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the **AT+CGDCONT** command when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to **<cid>**. **<PDP_addr>** is omitted if none is available

NOTE

This command dictates the behaviour of PPP in the ME but not that of any other GPRS-enabled foreground layer, e.g. the browser.

Example

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

OK
```

9.8. AT+CGEREP Control Unsolicited GPRS Event Reporting

AT+CGEREP Control Unsolicited GPRS Event Reporting	
Test Command **AT+CGEREP=?**	Response **+CGEREP: (**list of supported **<mode>**s**)** **OK**
Read Command	Response

AT+CGEREP?	**+CGEREP: <mode>** **OK**
Write Command **AT+CGEREP=<mode>**	Response **OK** If there is any error, response: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<mode>	Integer type.	
	0	Buffer URC 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 URC when MT-TE link is reserved (e.g. in on-line data mode); otherwise forward them directly to the TE

NOTE

Unsolicited result codes supported:
+CGEV: NW DEACT <PDP_type>,<PDP_addr>[,<cid>]
+CGEV: ME DEACT <PDP_type>,<PDP_addr>[,<cid>]
+CGEV: NW DETACH
+CGEV: ME CLASS <class>
Parameters:

<PDP_type>	Packet data protocol type (see **AT+CGDCONT** command)
<PDP_addr>	Packet data protocol address (see **AT+CGDCONT** command)
<cid>	Context ID (see **AT+CGDCONT** command)
<class>	GPRS mobile class (see **AT+CGCLASS** command)

9.9. AT+CGREG Network Registration Status

AT+CGREG Network Registration Status	
Test Command	Response

AT+CGREG=?	**+CGREG: (**range of supported **<n>**s**)** **OK**
Read Command **AT+CGREG?**	Response **+CGREG: <n>,<stat>[,<lac>,<ci>]** **OK**
Write Command **AT+CGREG=[<n>]**	Response **OK** If there is any error, response: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

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>]**
<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-byte location area code in hexadecimal format (e.g. "00C3" equals to 195 in decimal).	
<ci>	String type. Two-byte cell ID in hexadecimal format.	

Example

```
AT+CGATT=0
NO CARRIER

+CGREG: 0,"1878","0873"
AT+CGATT=1
```

```
OK

+CGREG: 2,"1878","0873"

+CGREG: 1,"1878","0873"
```

9.10. AT+CGSMS Select Service for MO SMS Messages

AT+CGSMS Select Service for MO SMS Messages	
Test Command **AT+CGSMS=?**	Response **+CGSMS: (**range of currently available **<service>**s**)** **OK**
Read Command **AT+CGSMS?**	Response **+CGSMS: <service>** **OK**
Write Command **AT+CGSMS=[<service>]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<service>	Integer type. Indicates the service or service preference to be used.	
	0	GPRS
	1	Circuit switch
	2	GPRS preferred (use circuit switched if GPRS is not available)
	3	Circuit switch preferred (use GPRS if circuit switched is not available)

NOTE

The circuit switched service route is the default method.

9.11. AT+QGPCLASS* Change GPRS Multi-slot Class

AT+QGPCLASS* Change GPRS Multi-slot Class	
Test Command **AT+QGPCLASS=?**	Response **MULTISLOT CLASS: (**range of currently available **<class>**s**)** **OK**
Read Command **AT+QGPCLASS?**	Response **MULTISLOT CLASS: <class>** **OK**
Write Command **AT+QGPCLASS=<class>**	Response **OK** If there is any error, response: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect after rebooting. Invalid after powering down.
Reference Quectel	

Parameter

<class>	Integer type. GPRS multi-slot class 1-12

NOTE

"*" means under development.

10 TCPIP Commands

10.1. AT+QIOPEN Start TCP or UDP Connection

AT+QIOPEN Start TCP or UDP Connection	
Test Command **AT+QIOPEN=?**	Response **+QIOPEN: (**list of supported **<mode>**s**),<IP_addr>,(**range of supported **<port>**s) **<CR><LF>+QIOPEN: (**list of supported **<mode>**s**),<domain_name>,(**range of supported **<port>**s) **OK**
Write Command **AT+QIOPEN=[<index>,]<mode>,<IP_addr>/<domain_name>,<port>**	Response If the format is right: **OK** Or **ERROR** If the connection has already existed: **ALREADY CONNECT** And then if the connection is successful: **[<index>,] CONNECT OK** Otherwise: **[<index>,] CONNECT FAIL**
Maximum Response Time	75s, determined by network.
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<index>	Integer type. Indicates which socket opens the connection. M65&M08-R module supports at most 6 sockets at the same time. This parameter is necessary only if **AT+QIMUX** was set to 1 (refer to **AT+QIMUX**). When **AT+QIMUX** was set to 0, the parameter MUST be omitted.
<mode>	String type. The connection type. "TCP" Establish a TCP connection "UDP" Establish a UDP connection
<IP_addr>	String type. The address of the remote server in dotted decimal style.
<port>	Integer type. The port of the remote server. 0-65535
<domain_name>	String type. The domain name address of the remote server.

NOTES

1. This command is allowed to establish a TCP/UDP connection only when the state is IP INITIAL or IP STATUS or IP CLOSE. So it is necessary to process **AT+QIDEACT** or **AT+QICLOSE** before establishing a TCP/UDP connection with this command when the state is not IP INITIAL or IP STATUS or IP CLOSE.
2. If **AT+QIMUX** was set to 0 and the current state is CONNECT OK which means the connection channel is used, it will reply **ALREADY CONNECT** after issuing the Write Command.

10.2. AT+QISEND Send Data through TCP or UDP Connection

AT+QISEND Send Data through TCP or UDP Connection	
Test Command **AT+QISEND=?**	Response **+QISEND: <length>** **OK**
Execution Command **AT+QISEND** After **>** is responded, type the length data and tap **CTRL+Z** to send the data. Tap **ESC** to cancel the operation	Response This command is used to send changeable length data. If connection is not established or disconnected: **ERROR** If the length data is sent successfully: **SEND OK** If the length data fails to send: **SEND FAIL**

Write Command When **AT+QIMUX=0** **AT+QISEND=<length>** When **AT+QIMUX=1** **AT+QISEND=<index>[,<length>]**	Response This command is used to send fixed-length data or send data on the given socket (defined by **<index>**). If the connection is not established or disconnected: **ERROR** If the fixed-length data or data on the given socket is sent successfully: **SEND OK** If the fixed-length data or data on the given socket fails to send: **SEND FAIL**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<index>	Integer type. The index of the socket for sending data. Necessary only if **AT+QIMUX** is set to 1 (refer to **AT+QIMUX**). When **AT+QIMUX** is set to 0, the parameter MUST be omitted.
<length>	Integer type. The length of data to be sent. It MUST be less than 1460.

NOTES

1. This command is used to send data on the TCP or UDP connection that has been established. **Ctrl+Z** is used as a termination symbol. **ESC** is used to cancel sending data.
2. The maximum length of the data to input at a time is 1460.
3. There are at most 1460 bytes that can be sent each time.
4. Please send data at the status of connection only; otherwise it will respond with **ERROR**.
5. **SEND OK** means the data has been sent via the send window rather than it has received the ACK message for the data from the remote node. To check whether the data has been sent to the remote node, it is necessary to query via the command **AT+QISACK**.

10.3. AT+QICLOSE Close TCP or UDP Connection

AT+QICLOSE Close TCP or UDP Connection	
Test Command **AT+QICLOSE=?**	Response **OK**
Execution Command **AT+QICLOSE**	Response If TCP or UDP connection is closed successfully: **CLOSE OK** If TCP or UDP connection fails to close: **ERROR**
Write Command **AT+QICLOSE=<index>**	Response If TCP or UDP connection is closed successfully: **<index>, CLOSE OK** If TCP or UDP connection fails to close: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<index>	Integer type. The index of the socket for sending data. Necessary only if **AT+QIMUX** is set to 1 (refer to**AT+QIMUX**). When **AT+QIMUX** is set to 0, the parameter MUST be omitted

NOTES

1. For Execution Command **AT+QICLOSE**:
   - If **AT+QISRVC=1** (please refer to **AT+QISRVC**) and **AT+QIMUX=0** (please refer to **AT+QIMUX**), this command will close the connection in which the module is used as a client.
   - If **AT+QISRVC=1** and **AT+QIMUX=1**, it will return **ERROR**.
   - If **AT+QISRVC=2** and **AT+QIMUX=0** and the module is used as a server and some clients have been connected to it, this command will close the connection between the module and the remote client.
   - If **AT+QISRVC=2** and **AT+QIMUX=0** and the module is in listening state without any client, this command will cause the module to quit the listening state.

- If **AT+QISRVC=2** and **AT+QIMUX=1** and the module is used as a server, this command will close all the incoming connection and cause the module to quit the listening state.

2. For Write Command **AT+QICLOSE=<index>**:
   - This command is valid only if **AT+QIMUX=1**.
   - If **AT+QISRVC=1** and **AT+QIMUX=1**, this command will close the corresponding connection according to **<index>** and the module used as a client in the connection.
   - If **AT+QISRVC=2** and **AT+QIMUX=1**, this command will close the incoming connection according to **<index>**.
3. If **AT+QISRVC=1** and **AT+QIMUX=0**, **AT+QICLOSE** only closes the connection when the status is CONNECTING or CONNECT OK, otherwise respond with **ERROR**. After closing the connection, the status is IP CLOSE.

10.4. AT+QIDEACT Deactivate GPRS/CSD PDP Context

AT+QIDEACT Deactivate GPRS/CSD PDP Context	
Test Command **AT+QIDEACT=?**	Response **OK**
Execution Command **AT+QIDEACT**	Response If the deactivation of GPRS/CSD PDP context succeeds: **DEACT OK** If the deactivation of GPRS/CSD PDP context fails: **ERROR**
Maximum Response Time	40s, determined by network.
Characteristics	Take effect immediately.
Reference Quectel	

NOTES

1. **AT+QIDEACT** can be executed to deactivate GPRS/CSD PDP context except for the status of IP INITIAL. After closing the connection, the status switches to IP INITIAL.
2. Currently CSD context is not supported.

10.5. AT+QILPORT Set Local Port

This command is used to set the port for listening.

AT+QILPORT Set Local Port	
Test Command **AT+QILPORT=?**	Response **+QILPORT: (**range of supported **<port>**s**)** **OK**
Read Command **AT+QILPORT?**	Response **<mode>: <port>** **<CR><LF><mode>: <port>** **OK**
Write Command **AT+QILPORT=<mode>,<port>**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<mode>	String type. The connection type "TCP" TCP local port "UDP" UDP local port
<port>	Integer type. The local port. Range: 0-65535.

10.6. AT+QIREGAPP Start TCPIP Task and Set APN, User Name and Password

AT+QIREGAPP Start TCPIP Task and Set APN, User Name and Password	
Test Command **AT+QIREGAPP=?**	Response **+QIREGAPP: "APN","USER","PWD"** **OK**
Read Command **AT+QIREGAPP?**	Response **+QIREGAPP: <APN>,<username>,<password>** **OK**
Write Command **AT+QIREGAPP=<APN>,<username>,<password>[,<rate>]**	Response **OK** If there is any error: **ERROR**
Execution Command **AT+QIREGAPP**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<APN>	String type. The GPRS access point name or the call number of CSD
<username>	String type. The GPRS/CSD user name
<password>	String type. The GPRS/CSD password
<rate>	Integer type. The speed of data transmit for CSD

NOTES

1. The Write Command and Execution Command of this command are valid only at the status of IP INITIAL. After operating this command, the status will switch to IP START.

2. The value of **AT+QICSGP** (please refer to **AT+QICSGP**) defines which kind of bearer (GPRS or CSD) the parameters are used for.
3. Currently CSD function and related configuration are not supported.

10.7. AT+QIACT Activate GPRS/CSD Context

AT+QIACT Activate GPRS/CSD Context	
Test Command **AT+QIACT=?**	Response **OK**
Execution Command **AT+QIACT**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	150s, determined by network.
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

NOTES

1. **AT+QIACT** only activates GPRS/CSD context at the status of IP START. After operating this command, the status will switch to IP CONFIG. If TA accepts the activated operation, the status will switch to IP GPRSACT, respond with **OK**; otherwise respond with **ERROR**.
2. Currently CSD context is not supported.

10.8. AT+QILOCIP Get Local IP Address

AT+QILOCIP Get Local IP Address	
Test Command **AT+QILOCIP=?**	Response **OK**
Execution Command **AT+QILOCIP**	Response If it is executed successfully: **<IP_addr>**

	If there is any error: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<IP_addr>	String type. The IP address assigned from GPRS or CSD network.

NOTES

1. Only at the following status: IP GPRSACT, IP STATUS, TCP/UDP CONNECTING, CONNECT OK, IP CLOSE, can local IP address be obtained by **AT+QILOCIP**; otherwise respond **ERROR**. And if the status before executing the command is IP GPRSACT, the status will switch to IP STATUS after the command.
2. Currently CSD function is not supported.

10.9. AT+QISTAT Query Current Connection Status

AT+QISTAT Query Current Connection Status	
Test Command **AT+QISTAT=?**	Response **OK**
Execution Command **AT+QISTAT**	Response When **AT+QIMUX=0**: **OK** **STATE: <state>** When **AT+QIMUX=1**: List of **(+QISTAT: <index>,<mode>,<addr>,<port><CR><LF>)** **OK**
Maximum Response Time	300ms
Reference	

Quectel	

Parameter

<state>	String type. The status of the connection.	
	"IP INITIAL"	The TCPIP stack is in idle state.
	"IP START"	The TCPIP stack has been registered.
	"IP CONFIG"	It has been start-up to activate GPRS/CSD context.
	"IP IND"	It is activating GPRS/CSD context
	"IP GPRSACT"	GPRS/CSD context has been activated successfully
	"IP STATUS"	The local IP address has been gotten by the command **AT+QILOCIP**
	"TCP CONNECTING"	It is trying to establish a TCP connection
	"UDP CONNECTING"	It is trying to establish a UDP connection
	"IP CLOSE"	The TCP/UDP connection has been closed
	"CONNECT OK"	The TCP/UDP connection has been established successfully
	"PDP DEACT"	GPRS/CSD context is deactivated because of unknown reasons.
	If **ATV** was set to 0 by the command **ATV0**, the TCPIP stack gives the following numeric to indicate the former status	
	0	"IP INITIAL"
	1	"IP START"
	2	"IP CONFIG"
	3	"IP IND"
	4	"IP GPRSACT"
	5	"IP STATUS"
	6	"TCP CONNECTING" or "UDP CONNECTING"
	7	"IP CLOSE"
	8	"CONNECT OK"
	9	"PDP DEACT"
<index>	Integer type. The index of the connection; Range: 0-5	
<mode>	String type. The type of the connection	
	"TCP"	TCP connection
	"UDP"	UDP connection
<addr>	String type. The IP address of the remote	
<port>	Integer type. The port of the remote	

NOTES

1. Display former style of response when **QIMUX=0** and the later style of response when **QIMUX=1**.
2. Currently CSD context is not supported.

10.10. AT+QISTATE Query Connection Status of the Current Access

AT+QISTATE Query Connection Status of the Current Access	
Test Command **AT+QISTATE=?**	Response **OK**
Execution Command **AT+QISTATE**	Response When **AT+QIMUX=0**: **OK** **STATE: <state>** When **AT+QIMUX=1**: **OK** **STATE: <state>** **+QISTATE: <index>,<mode>,<addr>,<port>,<socket_state>** **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<state>	String type. The status of the connection	
	When **AT+QIMUX=0**:	
	"IP INITIAL"	The TCPIP stack is in idle state.
	"IP START"	The TCPIP stack has been registered.
	"IP CONFIG"	It has been started to activate GPRS/CSD context.
	"IP IND"	It is activating GPRS/CSD context.
	"IP GPRSACT"	GPRS/CSD context has been activated successfully.
	"IP STATUS"	The local IP address has been obtained by the command **AT+QILOCIP**.
	"TCP CONNECTING"	It is trying to establish a TCP connection.
	"UDP CONNECTING"	It is trying to establish a UDP connection.
	"IP CLOSE"	The TCP/UDP connection has been closed.
	"CONNECT OK"	The TCP/UDP connection has been established successfully.

	"PDP DEACT"	GPRS/CSD context is deactivated due to unknown reasons.
	When **AT+QIMUX=1**:	
	"IP INITIAL"	The TCPIP stack is in idle state.
	"IP START"	The TCPIP stack has been registered.
	"IP CONFIG"	It has been started to activate GPRS/CSD context.
	"IP IND"	It is activating GPRS/CSD context.
	"IP GPRSACT"	GPRS/CSD context has been activated successfully.
	"IP STATUS"	The local IP address has been obtained by the command **AT+QILOCIP**.
	"IP PROCESSING"	Data phase. Processing the existing connection now.
	"PDP DEACT"	GPRS/CSD context is deactivated due to unknown reasons.
<index>	Integer type. The index of the connection; Range: 0-5	
<mode>	String type. The type of the connection	
	"TCP"	TCP connection
	"UDP"	UDP connection
<addr>	String type. The IP address of the remote	
<port>	Integer type. The port of the remote	
<socket_state>	String type. The status of the access connection, including INITIAL, CONNECTED	

10.11. AT+QIDNSCFG Configure Domain Name Server DNS

AT+QIDNSCFG Configure Domain Name Server DNS	
Test Command **AT+QIDNSCFG=?**	Response **OK**
Read Command **AT+QIDNSCFG?**	Response **PrimaryDns: <priDNS>** **SecondaryDns: <secDNS>** **OK**
Write Command **AT+QIDNSCFG=<priDNS>[,<secDNS>]**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<priDNS>	Integer type. The IP address of the primary domain name server.
<secDNS>	Integer type. The IP address of the secondary domain name server.

NOTES

1. Because TA will negotiate to get the DNS server from GPRS/CSD network automatically when activating GPRS/CSD context, it is STRONGLY suggested to configure the DNS server at the status of IP GPRSACT, IP STATUS, CONNECT OK and IP CLOSE if necessary.
2. Currently CSD function and configuration are not supported.

10.12. AT+QIDNSGIP Query the IP Address of Given Domain Name

AT+QIDNSGIP Query the IP Address of Given Domain Name	
Test Command **AT+QIDNSGIP=?**	Response **OK**
Write Command **AT+QIDNSGIP=<domain_name>**	Response **OK** If there is any error: **ERROR** If querying the IP address of given domain name succeeds: **<IP_addr>** If querying the IP address of given domain name fails: **ERROR: <err>** **STATE: <state>**
Maximum Response Time	14s, determined by network.
Characteristics	Take effect immediately.
Reference Quectel	

Parameter

<domain_name>	String type. The domain name.
<IP_addr>	String type. The IP address corresponding to the domain name.

<err>	Integer type. The error code. 1 DNS not authorized 2 Invalid parameter 3 Network error 4 No server 5 Time out 6 No configuration 7 No memory 8 Unknown error
<state>	Refer to **AT+QISTAT**

10.13. AT+QIDNSIP Connect with IP Address or Domain Name Server

AT+QIDNSIP Connect with IP Address or Domain Name Server	
Test Command **AT+QIDNSIP=?**	Response **+QIDNSIP: (**list of supported **<mode>**s**)** **OK**
Read Command **AT+QIDNSIP?**	Response **+QIDNSIP: <mode>** **OK**
Write Command **AT+QIDNSIP=<mode>**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<mode>	Integer type. Indicates which kind of server format is used when establishing the connection: IP address server or domain name server 0 The address of the remote server is a dotted decimal IP address 1 The address of the remote server is a domain name

10.14. AT+QIHEAD Add an IP Header when Receiving Data

AT+QIHEAD Add an IP Header when Receiving Data	
Test Command **AT+QIHEAD=?**	Response **+QIHEAD: (**list of supported **<mode>**s**)** **OK**
Read Command **AT+QIHEAD?**	Response **+QIHEAD: <mode>** **OK**
Write Command **AT+QIHEAD=<mode>**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<mode>	Integer type. Indicates whether or not to add an IP header before the received data	
	0	Do not add IP header
	1	Add a header before the received data; Format: "IPD(data length):"

10.15. AT+QIAUTOS Set Auto Sending Timer

AT+QIAUTOS Set Auto Sending Timer	
Test Command **AT+QIAUTOS=?**	Response **+QIAUTOS: (**list of supported **<mode>**s**),(**list of supported **<time>**s**)** **OK**

Read Command **AT+QIAUTOS?**	Response **+QIAUTOS: <mode>,<time>** **OK**
Write Command **AT+QIAUTOS=<mode>[,<time>]**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<mode>	Integer type. Indicates whether or not to set timer when sending data. 0 Do not set timer for data sending 1 Set timer for data sending
<time>	Integer type. The time in seconds. After the time expires since **AT+QISEND**, the input data will be sent automatically.

10.16. AT+QIPROMPT Set Prompt of '>' when Sending Data

AT+QIPROMPT Set Prompt of '>' when Sending Data	
Test Command **AT+QIPROMPT=?**	Response **+QIPROMPT: (**range of supported **<send_prompt>**s**)** **OK**
Read Command **AT+QIPROMPT?**	Response **+QIPROMPT: <send_prompt>** **OK**
Write Command **AT+QIPROMPT=<send_prompt>**	Response **OK** If there is any error: **ERROR**

Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<send_prompt>	Integer type. Indicates whether or not to echo prompt ">" after issuing **AT+QISEND** Command. 0 No prompt **>** and show **SEND OK** when sending successfully 1 Echo prompt "**>**" and show **SEND OK** when sending successfully 2 No prompt **>** and not show **SEND OK** when sending successfully 3 Echo prompt **>** and show the socket ID and **SEND OK** when sending successfully

10.17. AT+QISERVER* Configured as Server

AT+QISERVER* Configured as Server	
Test Command **AT+QISERVER=?**	Response **OK**
Read Command **AT+QISERVER?**	Response **+QISERVER**: **<mode>,<num>** **OK**
Execution Command **AT+QISERVER**	Response **OK** If there is any error: **ERROR** If it is configured as a server successfully: **SERVER OK** If it fails to be configured as a server: **CONNECT FAIL**
Write Command **AT+QISERVER=<type>[,<max>]**	Response **OK**

	If there is any error: **ERROR** If it is configured as a server successfully: **SERVER OK** If it fails to be configured as a server: **CONNECT FAIL**
Maximum Response Time	150s, determined by network.
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<mode>	Integer type. 0 NOT configured as a server 1 Configured as a server
<num>	Integer type. The number of clients connected in. Range: 0-5
<type>	Integer type. The type of the server 0 TCP server 1 UDP server
<max>	Integer type. The maximum number of clients allowed to connect in. Default value: 1. Range: 1-5.

NOTES

1. The Execution Command configures the module as a TCP server and the maximum allowed client is 1.
2. The parameter **<max>** is excluded when **AT+QIMUX=0**.
3. "*" means under development.

10.18. AT+QICSGP Select CSD or GPRS as the Bearer

AT+QICSGP Select CSD or GPRS as the Bearer	
Test Command **AT+QICSGP=?**	Response **+QICSGP: 0-CSD,DIAL NUMBER,USER NAME,PASSWORD,RATE(0-3)**

	+QICSGP: 1-GPRS,APN,USER NAME,PASSWORD **OK**
Read Command **AT+QICSGP?**	Response **+QICSGP: <mode>** **OK**
Write Command **AT+QICSGP=<mode>[,(<APN>,<user_name>,<password>)/(<dial_number>,<user name>,<password>,<rate>)]**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<mode>	Integer type. A numeric which indicates the bearer type	
	0	Set CSD as the bearer for TCPIP connection
	1	Set GPRS as the bearer for TCPIP connection
GPRS parameters:		
<APN>	String type. The access point name	
<user_name>	String type. The user name	
<password>	String type. The password	
CSD parameters:		
<dial_number>	String type. The CSD dial numbers	
<user_name>	String type. The CSD user name	
<password>	String type. The CSD password	
<rate>	String type. The CSD connection rate	
	0	2400
	1	4800
	2	9600
	3	14400

NOTE

Currently CSD configuration is not supported.

10.19. AT+QISRVC Choose Connection

AT+QISRVC Choose Connection	
Test Command **AT+QISRVC=?**	Response **+QISRVC: (**list of supported **<connection>**s**)** **OK**
Read Command **AT+QISRVC?**	Response **+QISRVC: <connection>** **OK**
Write Command **AT+QISRVC=<connection>**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<connection>	A numeric parameter which indicates the chosen connection.	
	1	Choose the connection in which MS uses as a client
	2	Choose the connection in which MS uses as a server

NOTE

There can be two connections at one time: one connection is that MS connects with a remote server as a client; the other connection is that MS accepts a remote client as a server. Using this command to specify through which connection data will be sent.

10.20. AT+QISHOWRA Configure Whether to Display the Address of Sender

AT+QISHOWRA Configure Whether to Display the Address of Sender	
Test Command **AT+QISHOWRA=?**	Response **+QISHOWRA: (**list of supported **<mode>**s**)** **OK**
Read Command **AT+QISHOWRA?**	Response **+QISHOWRA**: **<mode>** **OK**
Write Command **AT+QISHOWRA=<mode>**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<mode>	Integer type. Indicates whether or not to show the address (including IP address in dotted decimal style of the remote end) when receiving the data. 0 Do not show the address. 1 Show the address. The format to show the address is like: RECV FROM:<IP ADDRESS>:<PORT>

10.21. AT+QIMODE Select TCP/IP Transfer Mode

AT+QIMODE Select TCP/IP Transfer Mode	
Test Command **AT+QIMODE=?**	Response **+QIMODE: (**list of supported **<mode>**s**)** **OK**
Read Command **AT+QIMODE?**	Response **+QIMODE: <mode>** **OK**
Write Command **AT+QIMODE=<mode>**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<mode>	Integer type.	
	0	Normal mode. In this mode, the data should be sent by the command **AT+QISEND**.
	1	Transparent mode. In this mode, UART will enter data mode after TCP/UDP connection is established. In data mode, all input data from UART will be sent to the remote end. **+++** can help to switch data mode to command mode. And then **ATO** can help to switch command mode to data mode.

10.22. AT+QITCFG Configure Transparent Transfer Mode

AT+QITCFG Configure Transparent Transfer Mode	
Test Command **AT+QITCFG=?**	Response **+QITCFG: (**list of supported **<nmretry>**s**),(**list of supported **<waittm>**s**),(**list of supported **<sendsz>**s**),(**list of supported **<esc>**s**)** **OK**
Read Command **AT+QITCFG?**	Response **+QITCFG: <nmretry>,<waittm>,<sendsz>,<esc>** **OK**
Write Command **AT+QITCFG=<nmretry>,<waittm>,<sendsz>,<esc>**	Response **OK** If there is any error, response: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<nmretry>	Integer type. Number of times to retry to send an IP packet	
<waittm>	Integer type. Number of 100ms intervals to wait for serial input before sending the packet	
<sendsz>	Integer type. Size in bytes of data block to be received from serial port before sending	
<esc>	Integer type. Whether to turn on the escape sequence or not.	
	0	Disable to turn on the escape sequence
	1	Enable to turn on the escape sequence

NOTES

1. **<waittm>** and **<sendsz>** are two conditions to send data packet.
2. Firstly, if the length of the input data from UART is greater than or equal to **<sendsz>**, the TCPIP stack will send the data by length **<sendsz>** to the remote.
3. Secondly, if the length of the input data from UART is less than **<sendsz>**, and the idle time keeps

beyond the time defined by **<waittm>**, the TCPIP stack will send all the data in the buffer to the remote.

4. This command is invalid when **AT+QIMUX=1**.

10.23. AT+QISHOWPT Control to Show the Protocol Type

AT+QISHOWPT Control to Show the Protocol Type	
Test Command **AT+QISHOWPT=?**	Response **+QISHOWPT: (**list of supported **<mode>**s**)** **OK**
Read Command **AT+QISHOWPT?**	Response **+QISHOWPT: <mode>** **OK**
Write Command **AT+QISHOWPT=<mode>**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<mode>	Integer type.	
	0	Do not show the transport protocol type at the end of header of the received TCP/UDP data
	1	Show the transport protocol type at the end of header of the received TCP/UDP data as the following format: IPD (data length) (TCP/UDP):

NOTE

This command is invalid if **AT+QIHEAD** is set to 0.

10.24. AT+QIMUX Control to Enable Multiple TCP/IP Session

AT+QIMUX Control to Enable Multiple TCP/IP Session	
Test Command **AT+QIMUX=?**	Response **+QIMUX: (**list of supported **<mode>**s**)** **OK**
Read Command **AT+QIMUX?**	Response **+QIMUX: <mode>** **OK**
Write Command **AT+QIMUX=<mode>**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<mode>	Integer type.	
	0	Do not enable multiple TCPIP session
	1	Enable multiple TCPIP session

10.25. AT+QISHOWLA Control to Display Local IP Address

AT+QISHOWLA Control to Display Local IP Address	
Test Command **AT+QISHOWLA=?**	Response **+QISHOWLA: (**list of supported **<mode>**s**)** **OK**
Read Command **AT+QISHOWLA?**	Response **+QISHOWLA: <mode>**

	OK
Write Command **AT+QISHOWLA=<mode>**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<mode>	Integer type. Indicates whether or not to show the destination address before receiving data.	
	0	Do not show the destination address
	1	Show the destination address: The format is: TO:<IP ADDRESS>

NOTE

M65&M08-R can activate two GPRS contexts at the same time, i.e. M65&M08-R can get two local IP addresses. It is necessary to point out the destination of the received data when two GPRS contexts have been activated at the same time.

10.26. AT+QIFGCNT Configure Foreground Context

AT+QIFGCNT Configure Foreground Context	
Test Command **AT+QIFGCNT=?**	Response **+QIFGCNT: (**list of supported **<id>**s**)** **OK**
Read Command **AT+QIFGCNT?**	Response **+QIFGCNT: <id>,<channel>** **OK**
Write Command **AT+QIFGCNT=<id>**	Response **OK**

	If there is any error: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<id>	Integer type. Indicates which context will be set as foreground context. Range: 0,1.	
<channel>	Integer type. Indicates which channel is controlling the context **<id>**	
	0	VIRTUAL_UART_1
	1	VIRTUAL_UART_2
	2	VIRTUAL_UART_3
	3	VIRTUAL_UART_4
	255	The context is not controlled by any channel

NOTE

When **AT+CMUX** is opened, if the status of the context defined by **<id>** is not IP_INITIAL and the context is controlled by the other channel, it will return **ERROR**.

10.27. AT+QISACK Query the Data Information for Sending

AT+QISACK Query the Data Information for Sending	
Test Command **AT+QISACK=?**	Response **OK**
Execution Command **AT+QISACK**	Response **+QISACK**: **<sent>,<acked>,<nacked>** **OK**
Write Command **AT+QISACK=<n>**	Response **+QISACK**: **<sent>,<acked>,<nacked>** **OK**
Maximum Response Time	300ms

Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<n>	Integer type. The index for querying the connection. Range: 0-5.
<sent>	Integer type. The total length of the data that has been sent through the session
<acked>	Integer type. The total length of the data that has been acknowledged by the remote
<nacked>	Integer type. The total length of the data that has been sent but not acknowledged by the remote

NOTES

1. Write command is invalid when the command **AT+QIMUX=0**.
2. This command can be affected by the command **AT+QISRVC**. If **AT+QISRVC=1**, this command is used to query the information of sending data during the session in which M65 serves as a client. If **AT+QISRVC=2**, this command is used to query the data information for sending during the session in which M65 serves as a server.

10.28. AT+QINDI Set the Method to Handle Received TCP/IP Data

AT+QINDI Set the Method to Handle Received TCP/IP Data	
Test Command **AT+QINDI=?**	Response **+QINDI: (**range of supported **<m>**s**)** **OK**
Read Command **AT+QINDI?**	Response **+QINDI**: **<m>** **OK**
Write Command **AT+QINDI=<m>**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<m> Integer type. Indicates how the mode handles the received data

0 Output the received data through UART directly. In the case, it probably includes header at the beginning of a received data packet. Please refer to the commands. **AT+QIHEAD**,**AT+QISHOWRA**, **AT+QISHOWPT**,**AT+QISHOWLA**

1 Output a notification statement **+QIRDI: <id>,<sc>,<sid>** through UART. This statement will be displayed only one time until all the received data from the connection (defined by **<id>,<sc>,<sid>**) have been retrieved by the command **AT+QIRD.**

2 Output a notification statement **+QIRDI: <id>,<sc>,<sid>,<num>,<len>,<tlen>** through UART. This statement will establish a buffer for each socket, the data received will be saved in the buffer until it has been retrieved by the command **AT+QIRD**, sum lengths of all the buffer is no more than 400K.

<id> Integer type. Points out which context the connection for the received data is based on. Please refer to the parameter **<id>** in the command **AT+QIFGCNT**. Range: 0-1.

<sc>	Integer type. Points out the role of M65&M08-R Series in the connection for the received data. 1 The module serves as the client of the connection 2 The module serves as the server of the connection
<sid>	Integer type. The index of the connection for the received data. Range: 0-5. When the command **AT+QIMUX=0**, this parameter will be always 0.
<num>	Integer type. The number of packets received in the buffer.
<len>	Integer type. The length of the current package in the buffer.
<tlen>	Integer type. The sum of the length of all packages received in the buffer.

NOTES

1. The length of a package cannot exceed 1460 bytes. If it exceeds 1460 bytes, it may be split into two or more packages.
2. The sum of length of the lengths that all packages receive cannot exceed 400K bytes.

10.29. AT+QIRD Retrieve the Received TCP/IP Data

AT+QIRD Retrieve the Received TCP/IP Data	
Test Command **AT+QIRD=?**	Response **+QIRD: (**list of supported **<id>**s**),(**list of supported **<sc>**s**),(**list of supported **<sid>**s**),(**list of supported **<len>**s**)** **OK**
Write Command **AT+QIRD=<id>,<sc>,<sid>,<len>**	Response **[+QIRD: <IP_addr>:<port>,<type>,<length><CR><LF><data>]** **OK** If there is any error, response: **ERROR**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<id>	Integer type. Points out which context the connection for the received data is based on. Please refer to the parameter **<id>** in the command **AT+QIFGCNT**. Range: 0-1.
<sc>	Integer type. Points out the role of M65 in the connection for the received data 1 The module serves as the client of the connection 2 The module serves as the server of the connection
<sid>	Integer type. Indicates the index of the connection for the received data. Range: 0-5. When the command **AT+QIMUX=0**, this parameter will be always 0.
<len>	Integer type. The maximum length of data to be retrieved. Range: 1-1500.
<IP_addr>	String type. The address of the remote end. It is a dotted-decimal IP
<port>	Integer type. The port of the remote end
<type>	String type. An alpha string without quotation marks indicates the transport protocol type TCP the transport protocol is TCP UDP the transport protocol is UDP
<length>	Integer type. The real length of the retrieved data
<data>	The retrieved data

NOTES

1. **<id>**, **<sc>** and **<sid>** are the same as the parameters in the statement **+QIRDI: <id>,<sc>,<sid>**.
2. If it replies only **OK** for the Write Command, it means there is no received data in the buffer of the connection.

10.30. AT+QISDE Control to Echo the Data for QISEND

AT+QISDE Control to Echo the Data for QISEND	
Test Command **AT+QISDE=?**	Response **+QISDE: (**list of supported **<m>**s**)** **OK**
Read Command **AT+QISDE?**	Response **+QISDE**: **<m>** **OK**
Write Command **AT+QISDE=<m>**	Response **OK** If there is any error: **ERROR**

Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<m>	Integer type. Indicates whether or not to echo the data for **AT+QISEND**.	
	0	Do not echo the data
	1	Echo the data

10.31. AT+QPING Ping Remote Server

AT+QPING Ping Remote Server	
Test Command **AT+QPING=?**	Response **+QPING: "HOST",(**range of supported **<timeout>**s**),(**list of supported **<pingnum>**s**)** **OK**
Write Command **AT+QPING="<host>"[,[<timeout>][,<pingnum>]]**	Response **OK** **[+QPING: <result>[,<IP_addr>,<bytes>,<time>,<ttl>]<CR><LF>** **…]<CR><LF>** **+QPING:<finresult>[,<sent>,<rcvd>,<lost>,<min>,<max>,<avg>]** If there is any error: **ERROR**
Maximum Response Time	Depends on **<timeout>**.
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<host>	String type. Host address. It could be a domain name or a dotted decimal IP address.
<timeout>	Integer type. The maximum time to wait for the response of each ping request. Unit: second. Range: 1-255. Default: 1.
<pingnum>	Integer type. The maximum time of ping request. Range: 1-10. Default: 4.
<result>	Integer type. The result of each ping request
	0 Received the ping response from the server. In the case, it is followed by **,<ipAddr>,<bytes>,<time>,<ttl>**
	1 Timeout for the ping request. In the case, no other information follows.
<IP_addr>	The IP address of the remote server. It is a dotted decimal IP.
<bytes>	The length of sending each ping request
<time>	The time expended to wait for the response for the ping request. Unit: ms
<ttl>	The value of time to live of the response packet for the ping request
<finresult>	The final result of the command
	2 It is finished normally. It is successful to activate GPRS and find the host. In the case, it is followed by **,<sent>,<rcvd>,<lost>,<min>,<max>,<avg>**
	3 The TCP/IP stack is busy now. In the case, no other information follows.
	4 Do not find the host. In the case, no other information follows.
	5 Fail to activate PDP context. In the case, no other information follows.
<sent>	Total number of sending the ping requests
<rcvd>	Total number of the ping requests that receives the response
<lost>	Total number of the ping requests that are timeout
<min>	The minimum response time. Unit: ms
<max>	The maximum response time. Unit: ms
<avg>	The average response time. Unit: ms

10.32. AT+QNTP Synchronize Local Time Via NTP

AT+QNTP Synchronize Local Time Via NTP	
Test Command **AT+QNTP=?**	Response **+QNTP: "SERVER",(**list of supported **<port>**s**)** **OK**
Read Command **AT+QNTP?**	Response **+QNTP: "<server>",<port>** **OK**
Execution Command **AT+QNTP**	Response **OK**

	+QNTP: <result>
Write Command **AT+QNTP="<server>"[,<port>]**	Response **OK** **+QNTP: <result>** If there is any error, response: **ERROR**
Maximum Response Time	120s, determined by network.
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<server>	String type. The address of the time server. It could be a domain name or a dotted decimal IP address.	
<port>	Integer type. The port of the time server	
<result>	Integer type. The result of time synchronization	
	0	Succeed in synchronizing local time
	1	Fail to synchronize local time due to unknown reasons
	2	Fail to receive the response from the time server
	3	The TCP/IP stack is busy now
	4	Do not find the time server
	5	Fail to activate PDP context

NOTE

The factory time server is the National Time Service Centre of China whose address is "210.72.145.44" and the port is 123.

11 Supplementary Service Commands

11.1. AT+CCFC Call Forwarding Number and Conditions Control

AT+CCFC Call Forwarding Number and Conditions Control	
Test Command **AT+CCFC=?**	Response **+CCFC: (**range of supported **<reads>**s**)** **OK**
Write Command **AT+CCFC=<reads>,<mode>[,<number>[,<type>[,<class>[,<subaddr>[,<satype>[,time]]]]]]**	Response TA controls the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported. Only **<reads>** and **<mode>** should be entered with **<mode>**= 0, 1, 2 or 4 If **<mode>** is not equal to 2 and the command is executed successfully: **OK** If **<mode>**=2 and the command is executed successfully (only in connection with **<reads>**=0, 1, 2, 3) For registered call forwarding numbers: **+CCFC: <status>,<class1>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]] [<CR><LF>+CCFC: ....]** **OK** If no call forwarding numbers are registered (and therefore all classes are inactive): **+CCFC: <status>, <class>** **OK** where **<status>**=0 and **<class>**=15

	If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<reads>	Integer type. 0 Unconditional 1 Mobile busy 2 No reply 3 Not reachable 4 All call forwarding (0-3) 5 All conditional call forwarding (1-3)
<mode>	Integer type. 0 Disable 1 Enable 2 Query status 3 Registration 4 Erasure
<number>	String type. Phone number of forwarding address in format specified by **<type>**
<type>	Integer type. Type of address. Default value is 145 when dialing string includes international access code character "**+**", otherwise 129.
<subaddr>	String type. Sub-address of format specified by **<satype>**
<satype>	Integer type. Type of sub-address in integer
<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
<time>	Integer type. When "no reply" (**<reads>**=no reply) is enabled or queried, this gives the time in seconds to wait before the call is forwarded. Range: 1-30. Default value: 20.
<status>	Integer type. 0 Not active 1 Active

Example

```
AT+CCFC=0,3,”15021012496”          //Register the destination number for unconditional call
                                     forwarding (CFU).
OK
AT+CCFC=0,2                        //Query the status of CFU without specifying <class>.
+CCFC: 1,1,"+8615021012496",145

+CCFC: 1,4,"+8615021012496",145

+CCFC: 1,32,"+8615021012496",145

+CCFC: 1,16,"+8615021012496",145

OK
AT+CCFC=0,4                        //Erase the registered CFU destination number.
OK
AT+CCFC=0,2                        //Query the status, no destination number.
+CCFC: 0,7

OK
```

11.2. AT+CCWA Call Holding Control

AT+CCWA Call Holding Control	
Test Command **AT+CCWA=?**	Response **+CCWA: (**list of supported **<n>**s**)** **OK**
Read Command **AT+CCWA?**	Response **+CCWA: <n>** **OK**
Write Command **AT+CCWA=[<n>][,<mode>[,<class>]]**	Response TA controls the call holding supplementary service. Activation, deactivation and status query are supported. If **<mode>** is not equal to 2 and the command is executed successfully: **OK** If **<mode>**=2 and the command is executed successfully:

	+CCWA: <status>,<class1>[<CR><LF>+CCWA: <status>,<class2>[...]] **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<n>	Integer type.	
	0	Disable presentation of a URC
	1	Enable presentation of a URC
<mode>	Integer type. When **<mode>** parameter is not given, network is not interrogated	
	0	Disable
	1	Enable
	2	Query status
<class>	Integer type. A sum of integers, each integer represents a class of information	
	1	Voice (telephony)
	2	Data (bearer service)
	4	FAX (facsimile)
	16	Data circuit synchronization
	32	Data circuit asynchronization
<status>	Integer type.	
	0	Disable
	1	Enable

NOTES

1. **<status>**=0 should be returned only if service is not active for any **<class>** i.e. **+CCWA: 0, 7** will be returned in this case.
2. When **<mode>**=2, all active call holding classes will be reported. In this mode the command is available by pressing any key.
3. Unsolicited result code:
   When the presentation call holding at the TA is enabled (and call holding is enabled) and a terminating call set up during an established call, an unsolicited result code is returned:
   +CCWA: <number>,<type>,<class>[,<alpha>]
   Parameters:

<number>	Phone number in string type of calling address in format specified by **<type>**
<type>	Type of address octet in integer format 129 Unknown type (IDSN format number) 145 International number type (ISDN format)
<alpha>	Optional string type alphanumeric representation of **<number>** corresponding to the entry found in phone book

Example

```
AT+CCWA=1,1                          //Enable presentation of an unsolicited result code.
OK
ATD10086;                            //Establish a call.
OK

+CCWA: "02154450293",129,1           //Indication of a call that has been waiting
```

11.3. AT+CHLD Call Holding and Multiparty

AT+CHLD Call Holding and Multiparty	
Test Command **AT+CHLD=?**	Response **+CHLD: (**list of supported **<n>**s**)** **OK**
Write Command **AT+CHLD=[<n>]**	Response TA controls the supplementary services call holding, multiparty and explicit call transfer. Calls can be put on hold, recovered, released, added to conversation and transferred. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<n>	Integer type.	
	0	Terminate all held calls or UDUB (User Determined User Busy) for a waiting call. If a call is waiting, terminate the waiting call. Otherwise, terminate all held calls (if any).
	1	Terminate all active calls (if any) and accept the other call (waiting call or held call). It cannot terminate active call if there is only one call.
	1X	Terminate the specific call number X (X=1-7) (active, waiting or held).
	2	Place all active calls on hold (if any) and accept the other call (waiting call or held call) as the active call.
	2X	Place all active calls except call X (X=1-7) on hold.
	3	Add the held call to the active calls.

NOTE

These supplementary services are only applicable to teleservice 11 (Speech: Telephony).

Example

```
ATD10086;                                  //Establish a call.
OK

+CCWA: "02154450293",129,1                 //Indication of a call that has been waiting.
AT+CHLD=2                                  //Place the active call on hold and accept the waiting call as
                                             the active call.
OK
AT+CLCC
+CLCC: 1,0,1,0,0,"10086",129               //The first call on hold.

+CLCC: 2,1,0,0,0,"02154450293",129,""      //The second call becomes active.

OK
AT+CHLD=21                                 //Place the active call except call X=1 on hold.
OK
AT+CLCC
+CLCC: 1,0,0,0,0,"10086",129               //The first call becomes active.

+CLCC: 2,1,1,0,1,"02154450293",129         //The second call on hold.

OK
AT+CHLD=3                                  //Add a held call to the active calls in order to set up a
                                             conference (multiparty) call.
```

```
OK
AT+CLCC
+CLCC: 1,0,0,0,1,"10086",129

+CLCC: 2,1,0,0,1,"02154450293",129

OK
```

11.4. AT+CLIP Calling Line Identification Presentation

AT+CLIP Calling Line Identification Presentation	
Test Command **AT+CLIP=?**	Response **+CLIP: (**list of supported **<n>**s**)** **OK**
Read Command **AT+CLIP?**	Response **+CLIP: <n>,<m>** **OK**
Write Command **AT+CLIP=[<n>]**	Response TA enables or disables the presentation of the calling line identity (CLI) at the TE. It has no effect on the execution of the supplementary service CLIP in the network. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	15s, determined by network.
Characteristics	Take effect immediately. Remain valid after powering down (AT&W executed first).
Reference GSM 07.07	

Parameter

<n>	Integer type.	
	0	Suppress unsolicited result codes
	1	Display unsolicited result codes
<m>	Integer type.	

0	CLIP not provisioned
1	CLIP provisioned
2	Unknown

NOTE

Unsolicited result code:
When the presentation of the CLI at the TE is enabled (and calling subscriber allows), an unsolicited result code is returned after every **RING** (or **+CRING: <type>**) at a mobile terminating call.
+CLIP: <number>, <type>,"",,<alphaID>,<CLI_validity>
Parameters:

<number>	Phone number in string type of calling address in format specified by **<type>**	
<type>	Type of address octet in integer format	
	129	Unknown type (IDSN format number)
	145	International number type (ISDN format)
<alphaID>	String type alphanumeric representation of **<number>** corresponding to the entry found in phone book	
<CLI_validity>	0	CLI valid
	1	CLI has been withheld by the originator
	2	CLI is not available due to interworking problems or limitations of originating network

Example

```
AT+CPBW=1,"02151082965",129,"QUECTEL"
OK
AT+CLIP=1
OK

RING

+CLIP: "02151082965",129,"",,"",0
```

11.5. AT+CLIR Calling Line Identification Restriction

AT+CLIR Calling Line Identification Restriction	
Test Command **AT+CLIR=?**	Response **+CLIR: (**list of supported **<n>**s**)** **OK**

Read Command **AT+CLIR?**	Response **+CLIR: <n>,<m>** **OK**
Write Command **AT+CLIR=[<n>]**	Response TA restricts or enables the presentation of the calling line identity (CLI) to the called party when originating a call. The command overrides the CLIR subscription (default is restricted or allowed) when temporary mode is provisioned as a default adjustment for all following outgoing calls. This adjustment can be revoked by using the opposite Command. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	15s, determined by network
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<n>	Integer type. Parameter sets the adjustment for outgoing calls	
	0	Presentation indicator is used according to the subscription of the CLIR service
	1	CLIR invocation
	2	CLIR suppression
<m>	Integer type. Parameter shows the subscriber CLIR service status in the network	
	0	CLIR not provisioned
	1	CLIR provisioned in permanent mode
	2	Unknown (e.g. no network, etc.)
	3	CLIR temporary mode presentation restricted
	4	CLIR temporary mode presentation allowed

11.6. AT+COLP Connected Line Identification Presentation

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 TA enables or disables the presentation of the COL (Connected Line) at the TE for a mobile originating a call. It has no effect on the execution of the supplementary service COLR in the network. Intermediate result code is returned from TA to TE before any +CR or V.25ter responses. **OK**
Maximum Response Time	15s, determined by network.
Characteristics	Take effect immediately. Remain valid after powering down (AT&W executed first).
Reference GSM 07.07	

Parameter

<n>	Integer type. Parameter sets/shows the result code presentation status in the TA	
	0	Disable
	1	Enable
<m>	Integer type. Parameter shows the subscriber COLP service status in the network	
	0	COLP not provisioned
	1	COLP provisioned
	2	Unknown (e.g. no network, etc.)

NOTE

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

<number>	Phone number in string type. Format specified by **<type>**
<type>	Type of address octet in integer format
	129 Unknown type (IDSN format number)
	145 International number type (ISDN format)
<subaddr>	String type sub-address of format specified by **<satype>**

<satype>	Type of sub-address octet in integer format (refer to *GSM 04.08 sub clause 10.5.4.8*)
<alpha>	Optional string type alphanumeric representation of **<number>** corresponding to the entry found in phone book

Example

```
AT+CPBW=1,"02151082965",129,"QUECTEL"
OK
AT+COLP=1
OK
ATD02151082965;
+COLP: "02151082965",129,"",0,""

OK
```

11.7. AT+CUSD Unstructured Supplementary Service Data

AT+CUSD Unstructured Supplementary Service Data	
Test Command **AT+CUSD=?**	Response **+CUSD: (**list of supported **<n>**s**)** **OK**
Read Command **AT+CUSD?**	Response **+CUSD: <n>** **OK**
Write Command **AT+CUSD=[<n>[,<str>[,<dcs>]]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	120s, determined by network.
Characteristics	Take effect immediately. Remain valid after powering down (AT&W executed first).
Reference GSM 07.07	

Parameter

<n>	Integer type. Indicates control of the unstructured supplementary service data 0 Disable the result code presentation to the TA 1 Enable the result code presentation to the TA 2 Cancel session (not applicable to Read Command response)
<str>	String type of USSD-string
<dcs>	Integer type. Cell Broadcast Data Coding Scheme. Default value: 0.

Example

```
AT+CSCS="UCS2"
OK
AT+CUSD=1,"002A0031003000300023"
+CUSD: 1,"0031002E59296C14000A0032002E65B095FB000A0033002E8BC15238000A0034002E5F
697968000A0035002E751F6D3B000A0036002E5A314E50000A0037002E5E385DDE98CE91C7000A
002A002E900051FA000A",72

OK
```

11.8. AT+CSSN Supplementary Services Notifications

AT+CSSN Supplementary Services Notifications	
Test Command **AT+CSSN=?**	Response **+CSSN: (**list of supported **<n>**s**),(**list of supported **<m>**s**)** **OK**
Read Command **AT+CSSN?**	Response **+CSSN: <n>,<m>** **OK**
Write Command **AT+CSSN=[<n>[,<m>]]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.

Reference
GSM 07.07

Parameter

<n>	Integer type. Indicates whether to show the **+CSSI:<code1>[,<index>]** result code presentation status after a mobile originated call setup. 0 Disable 1 Enable
<m>	Integer type. Indicates whether to show the **+CSSU:<code2>** result code presentation status during a mobile terminated call setup or during a call, or when a forward check supplementary service notification is received. 0 Disable 1 Enable
<code1>	Integer type. 0 Unconditional call forwarding is active 1 Some of the conditional call forwarding are active 2 Call has been forwarded 3 Call is waiting 4 This is a CUG call (also **<index>** present) 5 Outgoing calls are barred 6 Incoming calls are barred 7 CLIR suppression is rejected
<index>	Integer type. Closed user group index
<code2>	Integer type. 0 This is a forwarded call

12 Audio Commands

12.1. AT+VTD Tone Duration

AT+VTD Tone Duration	
Test Command **AT+VTD=?**	Response **+VTD: (**range of supported **<internal_duration>**s**)[,**range of supported **<duration>**s**)]** **OK**
Read Command **AT+VTD?**	Response **+VTD: <internal_duration>,<duration>** **OK**
Write Command **AT+VTD=<internal_duration>[,<duration>]**	Response This command refers to an integer **<internal_duration>** that defines the length of tones emitted as a result of the **AT+VTS** command. This does not affect the **AT+VTD** command. **OK**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<internal_duration>	Integer type. Duration between two tones. Range: 1-255. Default: 1.Unit: 100ms	
<duration>*	Integer type.	
	0	Do not set duration of every single tone.
	1-100000	Duration of every single tone. Unit: 1ms

12.2. AT+VTS DTMF and Tone Generation

AT+VTS DTMF and Tone Generation	
Test Command **AT+VTS=?**	Response **+VTS: (**list of supported **<dtmf>**s**),(**range of supported **<duration>**s**)** **OK**
Write Command **AT+VTS=<DTMF_string>**	Response This command allows the transmission of DTMF tones and arbitrary tones in voice mode. These tones may be used (for example) when announcing the start of a recording period. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	Depends on the length of **<DTMF_string>**.
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<DTMF_string>	String type. It has a max length of 20 characters. It must be entered between double quotes (" ") and consists of combinations of the following parameters separated by commas. But a single character does not require double quotes. 1) **<dtmf>** A single ASCII characters in the set 0-9, #,*, A-D. This is interpreted as a sequence of DTMF tones whose duration is set by the **AT+VTD** command. 2) **{<dtmf>,<duration>}** Interpreted as a DTMF tone whose duration is determined by **<duration>**.
<duration>	Integer type. Duration of the tone; Unit: 100ms; Range: 1-255.

Example

```
ATD10086;                    //Establish a call.
OK
AT+VTS=1                     //Send a single DTMF tone according to the prompts of voice.
OK
```

12.3. AT+CALM* Alert Sound Mode

AT+CALM* Alert Sound Mode	
Test Command **AT+CALM=?**	Response **+CALM: (**list of supported **<mode>**s**)** **OK**
Read Command **AT+CALM?**	Response **+CALM: <mode>** **OK**
Write Command **AT+CALM=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<mode>	Integer type.	
	0	Normal mode
	1	Silent mode (all sounds from ME are prevented)

NOTE

"*" means under development.

12.4. AT+CRSL Ringer Sound Level

AT+CRSL Ringer Sound Level	
Test Command	Response

AT+CRSL=?	**+CRSL: (**range of supported **<level>**s**)** **OK**
Read Command **AT+CRSL?**	Response **+CRSL: <level>** **OK**
Write Command **AT+CRSL=<level>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<level>	Integer type. Manufacturer specific range. Range: 0-100. Smallest value represents the lowest sound level.

12.5. AT+CLVL Loud Speaker Volume Level

AT+CLVL Loud Speaker Volume Level	
Test Command **AT+CLVL=?**	Response **+CLVL: (**range of supported **<level>**s**)** **OK**
Read Command **AT+CLVL?**	Response **+CLVL: <level>** **OK**
Write Command **AT+CLVL=<level>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**

Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<level>	Integer type. Manufacturer specific range. Range: 0-100. Smallest value represents the lowest sound level.

12.6. AT+CMUT Mute Control

AT+CMUT Mute Control	
Test Command **AT+CMUT=?**	Response **+CMUT: (**list of supported **<n>**s**)** **OK**
Read Command **AT+CMUT?**	Response **+CMUT: <n>** **OK**
Write Command **AT+CMUT=<n>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<n>	Integer type.	
	0	Mute off
	1	Mute on

NOTE

This command is used to mute the uplink.

12.7. AT+QSIDET Change the Side Tone Gain Level

AT+QSIDET Change the Side Tone Gain Level	
Test Command **AT+QSIDET=?**	Response **+QSIDET: (**range of supported **<gain_level>**s**)** **OK**
Read Command **AT+QSIDET?**	Response **+QSIDET(NORMAL_AUDIO): <gain_level>** **OK** **+QSIDET(HEADSET_AUDIO): <gain_level>** **OK**
Write Command **AT+QSIDET=<gain_level>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<gain_level>	Integer type. Gain level range: 0-255. It is related to specific channel.

12.8. AT+QMIC Change the Microphone Gain Level

AT+QMIC Change the Microphone Gain Level	
Test Command **AT+QMIC=?**	Response **+QMIC: (**list of supported **<channel>**s**),(**range of supported **<gain_level>**s**)** **OK**
Read Command **AT+QMIC?**	Response **+QMIC: <gainlevel(normalMIC)>,<gain_level(HeadsetMIC)>,<gain_level(LoudspeakerMIC)>** **OK**
Write Command **AT+QMIC=<channel>,<gain_level>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<channel>	Integer type. 0 Normal microphone 1 Headset microphone
<gain_level>	Integer type. Range: 0-15

NOTE

M08-R only supports normal audio channel.

12.9. AT+QLDTMF Generate Local DTMF Tones

AT+QLDTMF Generate Local DTMF Tones	
Test Command **AT+QLDTMF=?**	Response **+QLDTMF: (**range of supported **<durations>**s**),(**list of supported **<DTMF_string>**s**)** **OK**
Write Command **AT+QLDTMF=<durations>[,<DTMF_string>]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Execution Command **AT+QLDTMF**	Response **OK**
Maximum Response Time	Depends on the length of **<DTMF_string>**.
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<durations>	Integer type. The duration of all DTMF tones in **<DTMF_string>** in 1/10 seconds. Range: 1-1000.
<DTMF_string>	String type. Maximum length is 20 DTMF characters (single ASCII chars in the set 0-9,#,*,A-D). It is separated by commas.

NOTE

The **AT+QLDTMF** command aborts any DTMF tones that are generated currently and any DTMF tones sequence.

12.10. AT+QAUDCH Swap the Audio Channels

AT+QAUDCH Swap the Audio Channels	
Test Command	Response

AT+QAUDCH=?	**+QAUDCH: (**list of supported **<n>**s**)** **OK**
Read Command **AT+QAUDCH?**	Response **+QAUDCH: <n>** **OK**
Write Command **AT+QAUDCH=[<n>]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<n>	Integer type.	
	0	Normal audio channel
	1	Headset audio channel

NOTE

M08-R only supports normal audio channel.

12.11. AT+QAUDLOOP Audio Channel Loop Back Test

AT+QAUDLOOP Audio Channel Loop Back Test	
Test Command **AT+QAUDLOOP=?**	Response **+QAUDLOOP: (**list of supported **<state>**s**),(**range of supported **<type>**s**)** **OK**
Write Command **AT+QAUDLOOP=<state>[,<type>]**	Response **OK**

	If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<state>	Integer type.	
	0	The test is off
	1	The test is on
<type>	Integer type.	
	0	Normal audio channel
	1	Headset audio channel
	2	Loudspeaker audio channel

NOTE

M65 supports normal audio channel and headset audio channel. M08-R only supports normal audio channel.

12.12. AT+QLTONE Generate Local Specific Tone

AT+QLTONE Generate Local Specific Tone	
Test Command **AT+QLTONE=?**	Response **+QLTONE: (**list of supported **<mode>**s**),(**list of supported **<frequency>**s**),(**list of supported **<period_on>**s**),(**list of supported **<period_off>**s**),(**list of supported **<duration>**s**)** **OK**
Write Command **AT+QLTONE=<mode>,<frequency>,<period_on>,<period_off>,<duration>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**

Maximum Response Time	Depends on the content of the play.
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<mode>	Integer type. 0 Stop playing tone 1 Start playing tone
<frequency>	The frequency of tone to be generated
<period_on>	The period of generating tone
<period_off>	The period of stopping tone
<duration>	Duration of tones in milliseconds

NOTE

When playing tone, the module will continuously play for **<period_on>**, then stop playing for **<period_off>** in a cycle. The total time of cycles is **<duration>**.

12.13. AT+QTDMOD Set Tone Detection Mode

AT+QTDMOD Set Tone Detection Mode	
Test Command **AT+QTDMOD=?**	Response **+QTDMOD: (**list of supported **<operate_funtion>**s**),(**range of supported **<function_status>**s**)** **OK**
Read Command **AT+QTDMOD?***	Response **+QTDMOD: <operate_funtion>,<function_status>** **OK**
Write Command **AT+QTDMOD=<operate_funtion>,<function_status>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**

Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<operate_funtion>	Integer type. Operate function 1 Set detection range 2 Set detection mode
<function_status>	Integer type. Function status 0 When **<operate_funtion>**=1, detect all DTMF including 1400Hz and 2300Hz handshake signal. When **<operate_funtion>**=2, detect DTMF tone by normal arithmetic. 1 When **<operate_funtion>**=1, only detect 1400Hz and 2300Hz handshake signal by using optimal arithmetic. When **<operate_funtion>**=2, detect long continuous DTMF tone by using optimal arithmetic. 2 When **<operate_funtion>**=1, 1400Hz and 2300Hz handshake signal is not detected.

NOTES

1. When **AT+QTDMOD=1,0**, detect all DTMF, including 1400Hz and 2300Hz handshake signal.
2. When **AT+QTDMOD=1,1**, only detect 1400Hz and 2300Hz handshake signal by using optimal arithmetic.
3. When **AT+QTDMOD=1,2**, detect all DTMF, not including 1400Hz and 2300Hz handshake signal.
4. When **AT+QTDMOD=2,0**, detect DTMF tone by using normal arithmetic.
5. When **AT+QTDMOD=2,1**, detect long continuous DTMF tone by using optimal arithmetic.
6. Please refer to **AT+QTONEDET** for more information.

12.14. AT+QTONEDET Detect DTMF

AT+QTONEDET Detect DTMF	
Test Command **AT+QTONEDET=?**	Response **+QTONEDET: (**range of supported **<mode>**s**)** **OK**
Read Command	Response

AT+QTONEDET?	**+QTONEDET: <mode>** **OK**
Write Command **AT+QTONEDET=<mode>[,<operate>][,<prefix_pause>][,<low_threshold>][,<high_threshold>]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>** Open after successful DTMF tone is detected: **+QTONEDET: <DTMF_code>[,<persistence_time>]**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<mode>	Integer type. Mode function 0 Close tone detection 1 Open tone detection 2 Configure 1400Hz or 2300Hz detection threshold whose duration is 100ms 3 Configure 1400Hz and 2300Hz 400ms detection threshold 4 Configure DTMF detection threshold 5 Open debug
<operate>	Integer type. Operate value When **<mode>**=2, set **<operate>** as follows: 0 Query threshold values that are 1400Hz and 2300Hz detection threshold, whose duration is 100ms 1 Set threshold values that are 1400Hz and 2300Hz 100ms detection threshold When **<mode>**=3, set **<operate>** as follows 0 Query threshold values that are 1400Hz and 2300Hz 400ms detect threshold 1 Set threshold values that are 1400Hz and 2300Hz 400ms detect threshold When **<mode>**=4, set **<operate>** as follows: 0 Query threshold values, these values are detection threshold 1 Set threshold values, these values are DTMF detection threshold When **<mode>**=5, set **<param1>** as follows: 0 Working status, default value, report **+QTONEDET: x,x,** (refer to Note3) 1 Debug status, only report **+QTONEDTD:x,x,…** debug information (refer to Note 2) 2 Debug status and working status, report **+QTONEDTD: x,x,…** debug information (refer to Note 2 below) and **+QTONEDET:x,x,** (refer to Note 3

	below)
<prefix_pause>	Integer type. Prefix pause number
<low_threshold>	Integer type. Low threshold value
<high_threshold>	Integer type. High threshold value
<DTMF_code>	Integer type. DTMF tone code corresponding ASSCII
	48 DTMF 0
	49 DTMF 1
	50 DTMF 2
	51 DTMF 3
	52 DTMF 4
	53 DTMF 5
	54 DTMF 6
	55 DTMF 7
	56 DTMF 8
	57 DTMF 9
	65 DTMF A
	66 DTMF B
	67 DTMF C
	68 DTMF D
	42 DTMF *
	35 DTMF #
	69 1400Hz frequency
	70 2300Hz frequency
<persistence_time>	Integer type.
	100 100ms of the tone is detected, only 1400Hz and 2300 Hz
	400 400ms of the tone is detected, only 1400Hz and 2300 Hz

NOTES

1. This command is available during voice call.
2. If the duration of DTMF tone is within the value range of low and high threshold value, it is effective. Unit: 20ms.
3. When in debug mode, report **+QTONEDTD: <DTMF_code>,<weak>,,<pause_f7>, <pauseDTMF>,<pause_unkown>,<framecnt>**.
4. When report as follows:
   +QTONEDET: 50 Detected DTMF 2
   +QTONEDET: 69,100 Detected 100ms of 1400Hz
   +QTONEDET: 70,100 Detected 100ms of 2300Hz
   +QTONEDET: 69,400 Detected 400ms of 1400Hz
   +QTONEDET: 70,400 Detected 400ms of 2300Hz
5. Please refer to **AT+QTDMOD**.

12.15. AT+QWDTMF Play DTMF Tone During the Call

AT+QWDTMF Play DTMF Tone During the Call	
Test Command **AT+QWDTMF=?**	Response **+QWDTMF: (**range of supported **<UL_volume>**s**),(**range of supported**<DL_volume>**s**),("<DTMF_code>,<continuance_time>,<mute_time>"),(**range of supported **<channel>**s**),(**list of supported **<mode>**s**)** **OK**
Write Command **AT+QWDTMF=<ulvolume>,<dlvolume>,("<DTMF_code>,<continuance_time>,<mute_time>")[,<channel>][,<mode>]**	Response If success is related to ME functionality: **+QWDTMF: 5** **OK** If fail is related to ME functionality: **+QWDTMF: <playcode>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	Depends on the content of the play.
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<UL_volume>	Integer type. Uplink channel of the volume. Range: 0-7
<DL_volume>	Integer type. Downlink channel of the volume, recommended to be set as 0. Range: 0-7
<DTMF_code>	String type. The DTMF tone strings '0' DTMF 0 '1' DTMF 1 '2' DTMF 2 '3' DTMF 3 '4' DTMF 4 '5' DTMF 5

	'6'	DTMF 6
	'7'	DTMF 7
	'8'	DTMF 8
	'9'	DTMF 9
	'A'	DTMF A
	'B'	DTMF B
	'C'	DTMF C
	'D'	DTMF D
	'*'	DTMF *
	'#'	DTMF #
	'E'	Frequency of 1400Hz
	'F''	Frequency of 2300Hz
	'G'	Frequency of 1KHz
<continuance_time>	Integer type. Duration of each DTMF tone. Unit: ms	
<mute_time>	Integer type. Mute time. Unit: ms	
<channel>	Integer type.	
	0	Normal audio channel
	1	Headset audio channel
	2	Loudspeaker audio
<mode>	Integer type.	
	0	Algorithm 1
	1	Algorithm 2
<playcode>	Integer type. Indicate status of sending DTMF	
	If **<playcode>** is 5, it means sending DTMF successfully.	
	If **<playcode>** is not 5, it means it fails to send DTMF.	

NOTES

1. **AT+QWDTMF=7,0,"0A5,50,50,1,55,50,23,100,50"**
   Send DTMF '0' for 50ms, mute 50ms; send DTMF 'A' for 50ms, mute 50ms; send DTMF '5' for 50ms, mute 50ms; send DTMF '1' for 55ms, mute 50ms; send DTMF '2' for 100ms, mute 50ms; send DTMF '3' for 100ms, mute 50ms.
2. **<channel>** is not available during a call.

13 Hardware Related Commands

13.1. AT+CCLK Clock

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 error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<time>	String type. Format: "yy/MM/dd,hh:mm:ss±zz", where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range -47...+48). E.g. May 6th, 1994, 22:10:00 GMT+2 hours equals to "94/05/06,22:10:00+08".

Example

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

OK

13.2. AT+QALARM* Set Alarm

AT+QALARM* Set Alarm	
Test Command **AT+QALARM=?**	Response **+QALARM: (**list of supported **<state>**s**),<time>,(**range of supported **<repeat>**s**),(**list of supported **<power>**s**)** **OK**
Write Command **AT+QALARM=<state>,<time>,<repeat>,<power>**	Response **OK** If there is any error: **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<state>	Integer type. Indicates whether or not to enable alarm 0 Clear alarm 1 Set alarm
<time>	String type. The time when an alarm arises. Format: "yy/MM/dd,hh:mm:ss±zz" where characters indicate the last two digits of year, month, day, hour, minute, second and time zone. The time zone is expressed in quarters of an hour between the local time and GMT. Range: -47~+48.
<repeat>	Integer type. The repeat mode 0 None 1 Daily 2 Weekly 3 Monthly
<power>	Integer type. The method of controlling power when alarm arises 0 None. Only send "ALARM RING" to the serial port 1 Alarm power off. Send "ALARM RING" to serial port and power off in 5 seconds 2 Alarm power on. Send "ALARM MODE" to serial port and enter into alarm mode

NOTE

1. In alarm mode, protocol stack and SIM protocol are closed. Only a few AT commands can be executed, and system will be powered down after 90 seconds if neither power key is pressed nor functionality is changed to full functionality. If the power key is pressed, system will be powered down right now.
2. "*" means under development.

13.3. AT+CBC Battery Charging

AT+CBC Battery Charging	
Test Command **AT+CBC=?**	Response **+CBC: (**range of supported **<bcs>**s**),(**range of supported **<bcl>**s**),<voltage>** **OK**
Execution Command **AT+CBC**	Response **+CBC: <bcs>, <bcl>,<voltage>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference GSM 07.07	

Parameter

<bcs>	Integer type. Battery charging status	
	0	ME is not charging
	1	ME is charging
	2	Charging has finished
<bcl>	Integer type. Battery connection level	
	0-100	Battery has 0-100 percent of capacity remaining vent
<voltage>	Battery voltage Unit: mV.	

NOTE

As M65&M08-R do not support battery charge, **<bcs>** and **<bcl>** are invalid while **<voltage>** still represents the correct voltage of VBATT.

13.4. AT+QADC Read ADC

AT+QADC Read ADC	
Test Command **AT+QADC=?**	Response **+QADC: (**list of supported **<status>**s**),(**range of supported **<value>**s**)** **OK**
Execution Command **AT+QADC?**	Response **+QADC: <status>,<value>** **OK**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<status>	Integer type. ADC Status 0 Fail 1 Succeed
<value>	Integer type. The voltage. Range: 0-2800.

13.5. AT+QSCLK Configure Slow Clock

AT+QSCLK Configure Slow Clock

Test Command **AT+QSCLK=?**	Response **+QSCLK: (**range of supported **<n>**s**)** **OK**
Read Command **AT+QSCLK?**	Response **+QSCLK: <n>** **OK**
Write Command **AT+QSCLK=<n>**	Response **OK**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<n>	Integer type.	
	0	Disable slow clock
	1	Enable slow clock, it is controlled by DTR
	2	When there is no data on serial port in 5 seconds, module will enter into sleep mode. Otherwise, it will exit from sleep mode.

NOTE

When **<n>**=2, the first UART data module received in sleep mode will be discarded as it is used to wake up the module. It is suggested to send an extra AT command to wake up the module first, then continue to send other commands.

13.6. AT+QLEDMODE Configure the Network LED Patterns

AT+QLEDMODE Configure the Network LED Patterns	
Test Command **AT+QLEDMODE=?**	Response **+QLEDMODE: (**list of supported **<LED_mode>**s**)** **OK**
Read Command **AT+QLEDMODE?**	Response **+QLEDMODE: <LED_mode>**

	OK
Write Command **AT+QLEDMODE=<LED_mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Remain valid after powering down.
Reference Quectel	

Parameter

<LED_mode>	Integer type.	
	0	Network LED flashes rapidly when a call is ringing.
	1	No effect on the network LED when a call is ringing.
	2	No effect on the network LED when a call is ringing, and RI will not change when URC is reported until the ringing ends.
	5	Network LED flashes regularly when connected to the Internet. No effect on the network LED when a call is ringing.

NOTE

Please restart the module after the command is set.

13.7. AT+QVBATT Configure the Threshold of Voltage

AT+QVBATT Configure the Threshold of Voltage	
Test Command **AT+QVBATT=?**	Response **+QVBATT: 0,(3451-3600),(0,1)** **+QVBATT: 1,(3100-3450),(0,1)** **+QVBATT: 2,(4300-4550),(0,1)** **+QVBATT: 3,(4551-4730),(0,1)** **OK**
Read Command **AT+QVBATT?**	Response **+QVBATT: 0,<threshold>,<state>**

	+QVBATT: 1,<threshold>,<state> **+QVBATT: 2,<threshold>,<state>** **+QVBATT: 3,<threshold>,<state>** **OK**
Write Command **AT+QVBATT=<threshold_type>[,<threshold>[,<state>]]**	Response If the format is corrrect: **OK** If **<threshold>** is omitted and **<threshold_type>** is legal, query the value of the corresponding parameter,: **+QVBATT: <threshold_type>,<threshold>,<state>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Remain valid after powering down (AT&W executed first).
Reference Quectel Quectel	

Parameter

<threshold_type>	Integer type. Type of configuring voltage threshold. 0 The threshold of low voltage warning 1 The threshold of low voltage power down 2 The threshold of high voltage warning 3 The threshold of high voltage power down
<threshold>	Integer type. Voltage threshold. Unit: mV
<state>	Integer type. The corresponding function of **<threshold_type>** is turned on or off. The default low voltage warning and low voltage power down function is enabled. The default high voltage warning and high voltage power down function is disabled. 0 The function is turned off 1 The function is turned on

NOTE

When the battery voltage reaches the setting threshold, report the URCs as follows:

- *UNDER_VOLTAGE WARNING*

- *UNDER_VOLTAGE POWER DOWN*
- *OVER_VOLTAGE WARNING*
- *OVER_VOLTAGE POWER DOWN*

Example

```
AT+QVBATT=?                          //Query threshold setting range
+QVBATT: 0,(3451-3600),(0,1)
+QVBATT: 1,(3100-3450),(0,1)
+QVBATT: 2,(4300-4550),(0,1)
+QVBATT: 3,(4551-4730),(0,1)

OK
AT+QVBATT?                           //Read Command
+QVBATT: 0,3500,1
+QVBATT: 1,3100,1
+QVBATT: 2,4500,0
+QVBATT: 3,4600,0

OK
AT+QVBATT=0,3490                     //Set the low voltagel warning voltage to 3490mV.
OK
AT+QVBATT=0                          //Query the low voltage warning threshold and state.
+QVBATT: 0,3490,1                    //0 is the function type of the low voltage warning. 3490 is
                                       the threshold of the low voltage warning. 1 indicates that
                                       the function of the low voltage power warning is turned on.

OK
AT+QVBATT=1,3300,0                   //The functon of the low voltagel poweroff is turned off.
OK
AT+QVBATT=1                          //Query the threshold of the low voltage power off and the
                                       state
+QVBATT: 1,3300,0                    //1 is the function type of the low voltage poweroff. 3300 is
                                       the threshold of the low voltage poweroff. 0 is that the
                                       function of the low voltage power off is turned off.

OK
```

14 Others Commands

14.1. A/ Re-issue the Last Command Given

A/ Re-issue the Last Command Given	
Execution Command **A/**	Response Re-issue the previous command
Maximum Response Time	300ms
Reference V.25ter	

NOTE

This command is invalid when the serial multiplexer is active. It is unnecessary to end with terminating character.

Example

```
AT
OK
A/                                  //Re-issue the previous command.
OK
```

14.2. ATE Set Command Echo Mode

ATE Set Command Echo Mode	
Execution Command **ATE[<value>]**	Response This setting determines whether or not the TA echoes characters received from TE during command state. **OK**
Maximum Response Time	300ms

Characteristics	Take effect immediately. Invalid after powering down.
Reference V.25ter	

Parameter

<value>	Integer type.	
	0	Echo mode off
	1	Echo mode on

14.3. ATS3* Set Command Line Termination Character

ATS3* Set Command Line Termination Character	
Read Command **ATS3?**	Response **<n>** **OK**
Write Command **ATS3=<n>**	Response This parameter determines the character recognized by TA to terminate an incoming command line. The TA also returns this character in output. **OK**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference V.25ter	

Parameter

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

NOTE

"*" means under development.

14.4. ATS4* Set Response Formatting Character

ATS4* Set Response Formatting Character	
Read Command **ATS4?**	Response **<n>** **OK**
Write Command **ATS4=<n>**	Response This parameter determines the character generated by TA for result code and information text. **OK**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference V.25ter	

Parameter

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

NOTE

"*" means under development.

14.5. ATS5* Set Command Line Editing Character

ATS5* Set Command Line Editing Character	
Read Command **ATS5?**	Response **<n>** **OK**
Write Command **ATS5=<n>**	Response This parameter determines the character recognized by TA as a request to delete the immediately preceding character from the command line. **OK**

Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference V.25ter	

Parameter

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

NOTE

"*" means under development.

14.6. AT+QRIMODE Set RI Time

AT+QRIMODE Set RI Time	
Test Command **AT+QRIMODE=?**	Response **+QRIMODE: (**range of supported **<time_mode>**s**)** **OK**
Read Command **AT+QRIMODE?**	Response **+QRIMODE: <time_mode>** **OK**
Write Command **AT+QRIMODE=<time_mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Invalid after powering down.
Reference Quectel	

Parameter

<time_mode>	Integer type. Time mode	
	0	When a SMS is received, RI changes to LOW and holds low level for 120ms; RI holds low level for 120ms for other URC.
	1	When a SMS is received, RI changes to LOW and holds low level for 120ms; RI holds low level for 50ms for other URC.
	2	When a SMS is received, RI changes to LOW and holds low level for 120ms; Other URC RI take no effect

14.7. AT+QCFG="RFTXburst" Burst Transition Signal Indication

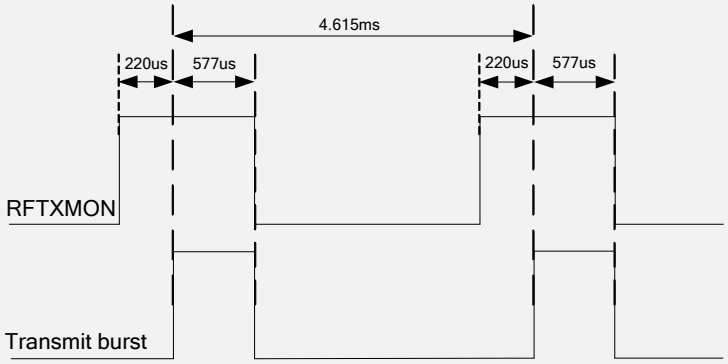
AT+QCFG="RFTXburst" Burst Transition Signal Indication	
Read Command **AT+QCFG="RFTXburst"**	Response **+QCFG: "RFTXburst",<indmode>** **OK**
Write Command **AT+QCFG=”RFTXburst",<indmode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Characteristics	Take effect immediately. Remain valid after powering down (AT&W executed first).
Reference Quectel	

Parameter

<indmode>	Integer type. Burst transition signal indication through GPIO line.	
	0	Disable TX burst indication. The pin output LOW level as GPIO function.
	1	Enable TX burst indication. The output wave are shown in the notes below.
	2	Enable TX burst indication. The pin will be HIGH during a call and the pin will become LOW after the call is released.

NOTES

1. This command will be saved by **AT&W**.
2. The output wave of **<indmode>=1** are showing below:



15 Appendix

15.1. Related Documents

Table 4: Related Documents

SN	Document Name	Remark
[1]	V.25ter	Serial asynchronous automatic dialing and control
[2]	GSM 07.07	Digital cellular telecommunications (Phase 2+); AT command set for GSM Mobile Equipment (ME)
[3]	GSM 07.05	Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE- DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)
[4]	GSM 07.10	Support GSM 07.10 multiplexing protocol
[5]	Quectel_GSM_TCPIP_Application_Note	GSM TCPIP Application Note
[6]	Quectel_GPRS_Startup_User_Guide	GPRS Startup User Guide
[7]	Quectel_GSM_MUX_Application_Note	MUX Application Note
[8]	Quectel_SMS_Application_Note	SMS Application Note
[9]	Quectel_M65_Hardware_Design	M65 Hardware Design
[10]	Quectel_M08-R_Hardware_Design	M08-R Hardware Design

15.2. Terms and Abbreviations

Table 5: Terms and Abbreviations

Abbreviation	Description
ACL	Access Control Lists
AMR	Adaptive Multi-Rate
ARFCN	Absolute Radio Frequency Channel Number
BCCH	Broadcast Control Channel
BCD	Binary Coded Decimal
BSIC	Base station identity code
CBM	Cell Broadcast Messages
CCID	Chip/Smart Card Interface Devices
CLI	Calling Line Identification
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
COL	Connected Line
COLP	Connected Line identification Presentation
CS	Circuit Switch
CSD	Circuit Switch Data
CTS	Clear To Send
DCE	Data Communication Equipment
DCD	Dynamic Content Delivery
DL	Downlink
DLCI	Data Link Connection Identifier
DTE	Data Terminal Equipment

DTMF	Dual Tone Multi Frequency
DTR	Data Terminal Ready
GPRS	General Packet Radio Service
GGSN	Gateway GPRS Support Node
GMT	Greenwich Mean Time
GSM	Global System for Mobile Communications
HLR	Home Location Register
IMSI	International Mobile Subscriber Identification
IP	Internet Protocol
IRA	International Reference Alphabet
ISDN	Integrated Services Digital Network
ISO	International Organization for Standardization
LCP	Link Control Protocol
LLC	Logical Link Control
MAC	Media Access Control
ME	Mobile Equipment
MM	Mobility Management
MO	Mobile Originated
MPTY	MultiParty
MS	Mobile Station
MT	Mobile Terminated
MTI	Message Type Indicator
NITZ	Network Identity and Time Zone
PC	Personal Computer
PDP	Packet Data Protocol

PDU	Power Distribution Unit
PIN	Personal Identification Number
PLMN	Public Land Mobile Network
PPP	Point-to-Point Protocol
PS	Protocol Stack
PSC	Primary Synchronization Code
PUK	PIN Unlocking Key
QOS	Quality of Service
RTS/CTS	Request To Send/Clear To Send
SIM	Subscriber Identity Module
SM	Short Message
SMS	Short Message Service
TA	Terminal Adapter
TCP	Transmission Control Protocol
TCPIP	Transmission Control Protocol Internet Protocol
TE	Terminal Equipment
TPDU	Transport Protocol Data Unit
UART	Universal Asynchronous Receiver/Transmitter
UDP	User Datagram Protocol
UDUB	User Determined User Busy
UL	Uplink
URC	Unsolicited result code
USSD	Unstructured Supplementary Service Data

15.3. Factory Default Settings Restorable with AT&F

Table 6: 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
ATS7*	<n>	60
ATS10*	<n>	15
ATV	<value>	1
ATX	<value>	4
AT&C	<value>	1
AT&D	<value>	0
AT+CREG	<n>	0
AT+CCWA	<n>	0
AT+CSCS	<chset>	"GSM"
AT+CLIP	<n>	0
AT+CLIR	<n>	0
AT+CMEE	<n>	1
AT+COLP	<n>	0
AT+QDISH*	<disableATH>	0
AT+CRSL	<level>	55

AT+CLVL	<level>	When **AT+QAUDCH=0**, the default value **<level>**=60; When **AT+QAUDCH=1**, the default value **<level>**=40; When **AT+QAUDCH=2**, the default value **<level>**=35.
AT+CUSD	<n>	0
AT+CSSN	<n>,<m>	0,0
AT+CMGF	<mode>	0
AT+CNMI	<mode>,<mt>,<bm>,<ds>,<bfr>	2,1,0,0,0
AT+CSDH	<show>	0
AT+CSMS	<service>	0
AT+QSIDET	<gain_level>	When **AT+QAUDCH=0**, the default value **<gain_level>**=80; When **AT+QAUDCH=1**, the default value **<gain_level>**=144;
AT+QMIC	<gain_level(normalMIC)>,<gain_level(headsetMIC)>,<gain_level(loudspeakerMIC)>	4,9,8
AT+QSCLK	<n>	0
AT+QEXTUNSOL*	<mode>	0
AT+QRIMODE	<time_mode>	0
AT+QSIMDET*	<enable>,<insert_level>,<pin_choice>	0,0,0
AT+QSIMSTAT*	<enable>	0

15.4. AT Command Settings Storable with AT&W

Table 7: AT Command Settings Storable with AT&W

AT Command	Parameters	Display with AT&V
ATE	<value>	Yes

ATQ	<n>	Yes
ATS0	<n>	Yes
ATS3	<n>	Yes
ATS4	<n>	Yes
ATS5	<n>	Yes
ATS7*	<n>	Yes
ATS10*	<n>	Yes
ATV	<value>	Yes
ATX	<value>	No
AT&C	<value>	Yes
AT&D	<value>	Yes
AT+ICF	<format>,<parity>	Yes
AT+IFC	<dce_by_dte>,<dte_by_dce>	Yes
AT+IPR	<rate>	Yes
AT+CREG	<n>	Yes
AT+CCWA	<n>	Yes
AT+CSCS	<chset>	Yes
AT+CLIP	<n>	Yes
AT+CLIR	<n>	Yes
AT+CMEE	<n>	Yes
AT+COLP	<n>	Yes
AT+QDISH*	<disableATH>	No
AT+CRSL	<level>	No
AT+CLVL	<level>	No
AT+CUSD	<n>	Yes

AT+CMGF	<mode>	Yes
AT+CNMI	<mode>,<mt>,<bm>,<ds>,<bfr>	Yes
AT+CSDH	<show>	Yes
AT+QSIDET	<gain_level>	Yes
AT+QMIC	<gain_level(normalMIC)>,<gain_level(headsetMIC)>,<gain_level(loudspeakerMIC)>	Yes
AT+QSCLK	<n>	No
AT+QEXTUNSOL*	<mode>	No
AT+QRIMODE	<time_mode>	No
AT+QSIMDET*	<enable>,<insert_level>,<pin_choice>	Yes
AT+QSIMSTAT*	<enable>	Yes

15.5. AT Command Settings Storable with ATZ

Table 8: AT Command Settings Storable with ATZ

AT Command	Parameters	Factory Defaults
ATE	<value>	1
ATQ	<n>	0
ATS0	<n>	0
ATS3	<n>	13
ATS4	<n>	10
ATS5	<n>	8
ATS7*	<n>	60
ATS10*	<n>	15

ATV	<value>	1
ATX	<value>	4
AT&C	<value>	1
AT&D	<value>	0
AT+CREG	<n>	0
AT+CCWA	<n>	0
AT+CSCS	<chset>	“GSM”
AT+CLIP	<n>	0
AT+CLIR	<n>	0
AT+CMEE	<n>	1
AT+COLP	<n>	0
AT+QDISH*	<disableATH>	0
AT+CRSL	<level>	55
AT+CLVL	<level>	When **AT+QAUDCH=0**, the default value **<level>**=60; When **AT+QAUDCH=1**, the default value **<level>**=40; When **AT+QAUDCH=2**, the default value **<level>**=35;
AT+CUSD	<n>	0
AT+CSSN	<n>,<m>	0,0
AT+CMGF	<mode>	0
AT+CNMI	<mode>,<mt>,<bm>,<ds>,<bfr>	2,1,0,0,0
AT+CSDH	<show>	0
AT+CSMS	<service>	0
AT+QSIDET*	<gain_level>	When **AT+QAUDCH=0**, the default value **<gain_level>**=80; When **AT+QAUDCH=1**, the default value **<gain_level>**=144;

AT+QMIC*	<gain_level(normalMIC)>,<gain_level(headsetMIC)>,<gain_level(loudspeakerMIC)>	4,9,8
AT+QSCLK	<n>	0
AT+QEXTUNSOL*	<mode>	0
AT+QRIMODE	<time_mode>	0
AT+QSIMDET*	<enable>,<insert_level>,<pin_choice>	0,0,0
AT+QSIMSTAT*	<enable>	0

15.6. Summary of URC

Table 9: Summary of URC

Index	URC display	Meaning	Condition
1	+CMTI:<mem>,<index>	New message is received, and saved to memory	AT+CNMI=2,1
2	+CMT:[<alpha>],<length><CR><LF><pdu>	New short message is received and output directly to TE (PDU mode)	AT+CNMI=2,2
3	+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=2,2
4	+CBM:<length><CR>	New CBM is received and output directly (PDU mode)	AT+CNMI=2,2
5	+CBM:<sn>,<mid>,<dcs>,<page>,<pages>,<CR>,<LF><data>	New CBM is received and output directly to TE (Text mode)	AT+CNMI=2,2
6	+CDS:<length><CR><LF><pdu>	New CDS is received and output directly (PDU mode)	AT+CNMI=2,2
7	+CDS:<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>	New CDS is received and output directly to TE (Text mode)	AT+CNMI=2,2
8	+CGEV:NW DEACT<PDP_type>,<PDP_addr>[,<cid>]	GPRS network detach	AT+CGEREP=1
9	+CGEV:ME DEACT<PDP_type>,<PDP_ad	GPRS ME detach	AT+CGEREP=1

	dr>[,<cid>]		
10	+CGEV:NW DETACH	GPRS network detach	AT+CGEREP=1
11	+CGEV:ME DETACH	GPRS ME detach	AT+CGEREP=1
12	+CGREG:1	Network registered	AT+CGREG=1
13	+CGREG:0	Network unregistered	AT+CGREG=1
14	+CGREG:1,<lac><ci>	Network registered, with location code	AT+CGREG=2
15	+CGREG:0,<lac><ci>	Network unregistered, with location code	AT+CGREG=2
16*	+CSQN:<rssi>,<ber>	Signal quality change	AT+QEXTUNSOL="SQ",1
17*		Forbidden network is available only	AT+QEXTUNSOL="FN",1
18*	+CMWT:<store>,<index>,<voice>,<fax>,<email>,<other>	Message waiting	AT+QEXTUNSOL="MW",1
19*	+QGURC:<event>	Unsolicited result code follows particular call state transition	AT+QEXTUNSOL="UR",1
20*	+CBCN<bcs>,<bcl>	Display battery connection status and battery charge level	AT+QEXTUNSOL="BC",1
21*	+QBAND:<band>	Band mode display	AT+QEXTUNSOL="BM",1
22*	+TSMSINFO:<CMS error info>	Additional SMS information	AT+QEXTUNSOL="SM",1
23*	+CCINFO:<CallID_disconnected>,<remain_calls>	Displays the disconnected call ID and the remain call numbers after one of the call is disconnected	AT+QEXTUNSOL="CC",1
24	RING	Indicates incoming call	N/A
25	Call Ready	Device is ready to make/receive calls	N/A
26	UNDER_VOLTAGE POWER DOWN	Under voltage shutdown indication	N/A
27	UNDER_VOLTAGE WARNING	Under voltage warning	N/A
28	OVER_VOLTAGE POWER DOWN	Over voltage shutdown indication	N/A
29	OVER_VOLTAGE WARNING	Over voltage warning	N/A
30	NORMAL POWER DOWN	Normal power down	N/A

31	+COLP:<number>,<type>[,<subaddr>,<satype>[<CLI validity>]],	The presentation of the COL(connected line) at the TE for a mobile originated call	AT+COLP=1
32	+CLIP:<number>,<type>"",,<alphaID>,<CLI_validity>	Mobile terminating call indication	AT+CLIP=1
33	+CRING:<type>	An incoming call is indicated to the TE with unsolicited result code instead of the normal RING	AT+CRC=1
34	+CREG:<stat>	Indicate registration status of the ME	AT+CREG=1
35	+CREG:<stat>[,<lac>,<ci>]	After cell neighborhood changing shows whether the network has currently indicated the registration of the ME, with location area code	AT+CREG=2
36	+CCWA:<number>,<type>,<class>[,<alpha>]	Call holding indication	AT+CCWA=1,1
37	RDY	ME initialization is successful	N/A
38	+CFUN:1	All function of the ME is available	N/A
39	+CPIN:<state>	SIM card pin state	N/A
40*	MO RING	MO call ringing	AT+QMOSTAT=1
41*	MO CONNECTED	MO call connected	AT+QMOSTAT=1
42*	ALARM RING	Alarm event is triggered	AT+QALARM=1,<time>,<repeat>,0/1
43*	ALARM MODE	ME is switched on by alarm	AT+QALARM=1,<time>,<repeat>,2

15.7. Summary of CME ERROR Codes

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

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

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

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

26	Dial string too long
27	Invalid characters in dial string
30	No network service
31	Network timeout
32	Network not allowed - emergency calls only
40	Network personalization PIN required
41	Network personalization PUK required
42	Network subset personalization PIN required
43	Network subset personalization PUK required
44	Service provider personalization PIN required
45	Service provider personalization PUK required
46	Corporate personalization PIN required
47	Corporate personalization PUK required
103	Illegal MS
106	Illegal ME
107	GPRS services not allowed
111	PLMN not allowed
112	Location area not allowed
113	Roaming not allowed in this location area
132	Service option not supported
133	Requested service option not subscribed
134	Service option temporarily out of order
148	Unspecified GPRS error
149	PDP authentication failure
150	Invalid mobile class

151	Link NS SP person PIN required
152	Link NS SP person PUK required
153	Link SIM C person PIN required
154	Link SIM C person PUK required
302	Command conflict
601	Unrecognized command
602	Return error
603	Syntax error
604	Unspecified
605	Data transfer already
606	Action already
607	Not AT command
608	Multi command too long
609	Abort COPS
610	No call disconnect
3513	Unread records on SIM
3515	PS busy
3516	Couldn't read SMS parameters from SIM
3517	SM not ready
3518	Invalid parameter
3738	CSCS mode not found
3742	CPOL operation format wrong
3765	Invalid input value
3769	Unable to get control
3771	Call setup in progress

3772	SIM powered down
3773	Invalid CFUN state
3774	Invalid ARFCN
3775	The pin is not in GPIO mode

15.8. 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>

Code of <err>	Meaning
300	ME failure
301	SMS ME reserved
302	Operation not allowed
303	Operation not supported
304	Invalid PDU mode
305	Invalid text mode
310	SIM not inserted
311	SIM pin necessary
312	PH SIM pin necessary
313	SIM failure
314	SIM busy
315	SIM wrong

316	SIM PUK required
317	SIM PIN2 required
318	SIM PUK2 required
320	Memory failure
321	Invalid memory index
322	Memory full
330	SMSC address unknown
331	No network
332	Network timeout
500	Unknown
512	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 allow
530	GPRS is suspended
531	ME storage full
3513	Unread records on SIM
3515	PS busy
3516	Couldn't read SMS parameters from SIM
3517	SM not ready
3518	Invalid parameter
3742	Incorrect <oper> format

3765	Invalid input value
3769	Unable to get control of required module
3771	Call setup in progress
3772	SIM powered down
3773	Unable to operate in this CFUN state
3774	Invalid ARFCN in this band
3775	The pin is not in GPIO mode

15.9. Summary of Causes for Extended Error Report

15.9.1. Location ID for the Extended Error Report

Table 12: Location ID for the Extended Error Report

ID	Description
0	No error (default)
1	Cause for protocol stack (PS) layer
2	Internal cause for Mobility Management (MM) layer
3	Cause for PPP/IP-Stack

15.9.2. Causes for Protocol Stack (PS) Layer

Table 13: Causes for Protocol Stack (PS) Layer

Cause	Description
CM Cause	
0	Radio link fail
1	Unassigned number

3	No route to destination
6	Channel unacceptable
8	Operator determined barring
10	Call barred
11	Reserved
16	Normal call clearing
17	User busy
18	No user responding
19	User alerting, no answer
21	Call rejected
22	Number changed
25	Pre-emption
26	Non-selected user clearing
27	Destination out of order
28	Invalid number format (incomplete number)
29	Facility rejected
30	Response to STATUS ENQUIRY
31	Normal, unspecified
34	No circuit/channel available
38	Network out of order
41	Temporary failure
42	Switching equipment congestion
43	Access information discarded
44	Requested circuit/channel not available
47	Resource unavailable, unspecified

49	Quality of service unavailable
50	Requested facility not subscribed
55	Incoming calls barred within the CUG
57	Bearer capability not authorized
58	Bearer capability not presently available
63	Service or option not available, unspecified
65	Bearer service not implemented
68	ACM equal or greater than ACM maximum
69	Requested facility not implemented
70	Only restricted digital information bearer capability is available
79	Service or option not implemented, unspecified
81	Invalid transaction identifier value
87	User not member of CUG
88	Incompatible destination
91	Invalid transit network selection
95	Semantically incorrect message
96	Invalid mandatory information
97	Message type non-existent or not implemented
98	Message type not compatible with protocol state
99	Information element non-existent or not implemented
100	Conditional information element error
101	Message not compatible with protocol
102	Recovery on timer expiry
111	Protocol error, unspecified
127	Interworking, unspecified

128	Telematic interworking not supported
129	Short message Type 0 not supported
130	Cannot replace short message
143	Unspecified TP-PID error
144	Data coding scheme (alphabet) not supported
145	Message class not supported
159	Unspecified TP-DCS error
160	Command cannot be acted
161	Command unsupported
175	Unspecified TP-Command error
176	TPDU not supported
192	SC busy
193	No SC subscription
194	SC system failure
195	Invalid SME address
196	Destination SME barred
197	SM Rejected-Duplicate SM
198	TP-VPF not supported
199	TP-VP not supported
208	SIM SMS storage full
209	No SMS storage capability in SIM
210	Error in MS
211	Memory Capacity Exceeded
212	SIM Application Toolkit Busy
213	SIM data download error

224	CP retry exceed
225	RP trim timeout
226	SMS connection broken
255	Unspecified error cause
304	Invalid PDU mode parameter
305	Invalid TEXT mode parameter
313	SIM failure
320	Memory failure
321	Invalid memory index
322	Memory full
330	SMSC address unknown
340	No +CNMA acknowledgement expected
500	Unknown error
512	SMS no error
513	Message length exceeds maximum length
514	Invalid request parameters
515	ME storage failure
516	Invalid bearer service
517	Invalid service mode
518	Invalid storage type
519	Invalid message format
520	Too many MO concatenated messages
521	SMSAL not ready
522	SMSAL no more service
523	Not support TP-Status-Report&TP-Command in storage

524	Reserved MTI
525	No free entity in RL layer
526	The port number is already registered
527	There is no free entity for port number
528	More Message to Send state error
529	MO SMS is not allow
530	GPRS is suspended
531	ME storage full
532	Doing SIM refresh
CC Cause	
768	Command not allowed
769	Illegal card ID
770	Call allocation fail
771	BC fill fail
772	Call RE EST
773	Illegal DTMF tone
774	Illegal BC
775	Modify actual mode
776	Data action fail
777	No response from network
778	Call accept not allowed
896	General cause
897	CSD call is aborted by user during call establishment or MT call abort MO call/USSD
898	CSD call is disconnected due to lower layer failure
SS Cause	

1024	Cause none
1025	Unknown subscriber
1033	Illegal subscriber
1034	Bearer service not provisioned
1035	Tele service not provisioned
1036	Illegal equipment
1037	Call barred
1040	Illegal SS operation
1041	SS error status
1042	SS not available
1043	SS subscription violation
1044	SS incompatibility
1045	Facility not supported
1051	Absent subscriber
1053	Short term denial
1054	Long term denial
1058	System failure
1059	Data missing
1060	Unexpected data value
1061	PW registration failure
1062	Negative PW check
1067	Number of PW attempts violation
1078	Position method failure
1095	Unknown alphabet
1096	USSD busy

1145	Rejected by user
1146	Rejected by network
1147	Deflection to served subscriber
1148	Special service code
1149	Invalid deflection to number
1150	Max number of MPTY participants exceeded
1151	Resources not available
1152	General problem, unrecognized component
1153	General problem, mistyped component
1154	General problem, badly structured component
1155	Invoke problem, duplicate invoked
1156	Invoke problem, unrecognized operation
1157	Invoke problem, mistyped parameter
1158	Invoke problem, resource limitation
1159	Invoke problem, initiating release
1160	Invoke problem, unrecognized linked ID
1161	Invoke problem, linked resource unexpected
1162	Invoke problem, unexpected linked operation
1163	Return result problem, RR unrecognized invoked
1164	Return result problem, RR, return result unexpected
1165	Return result problem, RR mistyped parameter
1166	Return error problem, RE, unrecognized invoked
1167	Return error problem, RE return error unexpected
1168	Return error problem, RE unrecognized error
1169	Return error problem, RE unexpected error

1170	Return error problem, RE mistyped parameter
MM Cause	
2048	Cause none
2050	IMSI unknown in HLR
2051	Illegal MS
2052	IMSI unknown in VLR
2053	IMEI not accepted
2054	Illegal ME
2055	GPRS not allowed
2056	None GPRS not allowed
2057	MS ID not derived by network
2058	Implicit detach
2059	PLMN not allowed
2060	Location area not allowed
2061	Roaming area not allowed
2062	GPRS not allowed in PLMN
2063	No suitable cells in LA
2064	MSC temp not reachable
2065	Network failure
2068	MAC failure
2069	Sync failure
2070	Congestion
2080	Serve option not supported
2081	Request serve option not subscribed
2082	Serve option temp out of order

2086	Call cannot be identified
2088	No PDP context activated
2096	Retry upon entry into a new cell
2111	Retry upon entry into a new cell
2143	Semantically incorrect message
2144	Invalid MM info
2145	Message type non existent
2146	Message type incompatible with protocol state
2147	IE not implemented
2148	Conditional MM IE error
2149	Message not compatible with protocol state
2159	Protocol error unspecified
2160	Access barred
2161	Assignment reject
2162	Random access failure
2163	RR no service
2164	PLMN search reject emergency
2165	RR connection release
2166	Authentication failure
2167	IMSI detach
2168	Abort by network
2169	Connection timeout
2170	Enqueue fail
2171	Not updated
2172	State not allowed

2173	Emergency not allowed
2174	No service
2175	Access class barred
SIM Cause	
2560	Command success
2561	Command fail
2562	Fatal error
2563	No inserted
2564	CHV not init
2565	CHV verify error
2566	CHV block
2567	Access not allow
2568	SAT command busy
2569	DL error
2570	Memory problem
2571	Technical problem
2572	PUK unlock
SM Cause	
3080	Operator determined barring
3097	LLC SND failure
3098	Insufficient resource
3099	Unknown APN
3100	Unknown PDP address or type
3101	Authentication failure
3102	Activation reject GGSN

3103	Activation reject
3104	Unsupported service option
3105	Unsubscribed service option
3106	Out of order service option
3108	Regular deactivation
3109	QOS not accepted
3110	Network fail
3111	Reactivation required
3112	Unsupported network context activation
3113	Semantic error in TFT operation
3114	Syntactical error in TFT operation
3115	Unknown PDP context
3116	Semantic error in packet filter
3117	Syntax error in packet filter
3118	PDP context WO TFT already act
3153	Invalid TI
3167	Incorrect message
3168	Invalid MAND info
3169	Unimplemented message type
3170	Incompatible message type protocol state
3171	Unimplemented IE
3172	Conditional IE error
3173	Incompatible message protocol state
3183	Unspecified
3184	Startup failure

ABM Cause	
3273	Success
3274	Invalid network account ID
3275	GPRS reactivate
3276	GPRS protocol rejection
3277	CSD reactivate
3278	CSD PPP negotiated failed
3279	CSD action failed
3280	CSD call setup failed
3283	Rejected
3284	Slot limited
3285	Abort
3286	None auto deactivation
TCM Cause	
3372	Invalid parameter
3373	NSAPI not in use
3374	ACL action not allowed
3375	ACL SIM file full
3376	ACL add entry failed
3377	ACL del entry failed
3378	ACL set entry failed
3379	ACL SIM read failed
3380	ACL SIM write failed

15.9.3. Internal Causes for MM Layer

Table 14: Internal Causes for MM Layer

Cause	Description
112	Forbidden PLMN
113	Access class barred
114	No coverage
115	GPRS service not allowed
116	Timer expiry
117	SIM inserted
118	SIM removed
119	SIM absent
120	SIM invalid for PS
121	SIM invalid for CS
122	SIM invalid for PS and CS
123	Low layer fail
124	Connection in progress
125	Not updated
126	Connection establish failure
127	Connection abort
128	Connection failure
129	Emergency not allowed
130	No GPRS coverage
131	Abnormal LU
132	Abnormal LU less than 4 times

133	Same LAI IMSI attaching

15.9.4. Causes for PPP/IP-Stack

Table 15: Causes for PPP/IP-Stack

Cause	Description
0	No error
1	LCP fail
2	Authentication fail
3	IPCP fail
4	ESC detect
5	Plug out detect
6	PPP GPRS dialup already activated
7	PPP not activated by external modem yet
8	PPP already activated by external modem
9	PPP not activated by WAP over CSD yet
10	PPP already activated by WAP over CSD
11	PPP wrong CSD mode ID
12	PPP detect AT command during dialup
13	PPP detect escape during dialup