M89

AT Commands Manual

GSM/GPRS Module Series

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Quectel Wireless Solutions Co., Ltd.
7th Floor, Hongye Building, No.1801 Hongmei Road, Xuhui District, Shanghai 200233, China
Tel: +86 21 5108 6236
Email: info@quectel.com

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About the Document

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1 Introduction

1.1. Scope of the Document

This document presents the AT Commands Set for Quectel cellular engine M89.

1.2. AT Command Syntax

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

The AT Commands Set implemented by M89 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**", which 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 will be used if it is missing.

- **S parameter syntax**

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

- **Extended syntax**

These commands can be operated in several modes, as 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, the "**AT**" or "**at**" prefix is not needed to be typed before every command. Instead, it only needs to be typed at the beginning of the command line. Please note that a semicolon should be used as a command delimiter.

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

1.2.2. Entering Successive AT Commands on Separate Lines

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

1.3. Supported Character Sets

The M89 AT command interface defaults to the GSM character set. The M89 supports the following character sets:

- GSM
- UCS2
- HEX
- IRA
- PCCP437
- 8859-1

The character set can be configured and interrogated using the **AT+CSCS** command (*GSM 07.07*). The character set 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 (U)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 call or data, 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. M89 supports both of them.

In multiplex mode, it is recommended to use the hardware flow control. The flow control function of M89 is disabled by default.

1.4.1. Software Flow Control (XON/XOFF Flow Control)

Software flow control sends different characters to stop (XOFF, decimal 19) and resume (XON, decimal 17) data flow. It is quite useful in some applications that only use three wires on the serial interface.

The software flow control function of M89 is disabled by default. Please type the following AT command to enable software flow control in the DTE interface and within GSM engine:

AT+IFC=1,1<CR>

This setting is stored in volatile memory and take effect after restart. **AT+IFC=1,1<CR>** should be stored to the user profile with **AT&W<CR>**.

Ensure that all communication software packages (e.g. ProComm Plus, Hyper Terminal or WinFax Pro) use software flow control.

NOTE

Software flow control should not be used for data calls where binary data will be transmitted or received (e.g. TCP/IP), because the DTE interface may interpret binary data as flow control characters.

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

The hardware flow control function of M89 is disabled by default. Please type the following AT command to enable hardware flow control (RTS/CTS flow control) in the DTE interface and within GSM engine:

AT+IFC=2,2<CR>

This setting is stored in volatile memory and take effect after restart. **AT+IFC=2,2<CR>** should be stored to the user profile with **AT&W<CR>**.

Hardware flow control enables 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 has been 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

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

Typical URCs may be information about incoming calls, received SMS messages, changing temperature, status of the battery, etc. A summary of URCs is listed in ***Chapter 16.6***.

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

ATI Display Product Identification Information	
Execution Command **ATI**	Response TA issues product 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_M89
Revision: M89FAR01A01

OK
```

2.2. AT+GMI Request Manufacturer Identification

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: MTK 0828** **OK**
Maximum Response Time	300ms
Reference V.25ter	

Parameter

<Object Id>	Identifier of device type

2.3. AT+GMM Request TA Model Identification

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 Revision Identification of Software Release

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

Parameter

<revision>	Identification text of product software version

Example

```
AT+GMR
Revision: M89FAR01A01

OK
```

2.5. AT+GOI Request 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 permit

	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

NOTE

See X.208, 209 for the format of **<Object Id>**. For example, in M89 module, string “M89” is displayed.

2.6. AT+CGMI Request Manufacturer Identification

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: MTK 0828** **OK**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<Object Id>	Identifier of device type

2.7. AT+CGMM Request Model Identification

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 Revision Identification of Software Release

AT+CGMR Request TA Revision Identification of Software Release	
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 (IMEI)

AT+GSN Request International Mobile Equipment Identity (IMEI)	
Test Command **AT+GSN=?**	Response **OK**
Execution Command **AT+GSN**	Response TA reports the IMEI (International Mobile Equipment Identity) 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 the individual ME device.

2.10. AT+CGSN Request Product Serial Number Identification

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

AT+CGSN Request Product Serial Number Identification	
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 the individual ME device.

2.11. AT+QGSN Request Product Serial Number Identification

AT+QGSN Request Product Serial Number Identification	
Test Command **AT+QGSN=?**	Response **OK**
Execution Command **AT+QGSN**	Response **+QGSN: <sn>** **OK**
Maximum Response Time	300ms
Reference	

Parameter

<sn>	A string parameter which indicates the IMEI of the ME

NOTE

The serial number (IMEI) varies with the individual ME device.

Example

```
AT+QGSN                          //Query the IMEI
+QGSN: "865734020000749"

OK
```

2.12. AT&F Set all Current Parameters to Manufacturer Defaults

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
Reference V.25ter	

Parameter

<value>	0	Set all TA parameters to manufacturer defaults

2.13. AT&V Display Current Configuration

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

Parameter

<n>	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
+QMIC: 4,9,8
+QSIDET(NORMAL_AUDIO): 80
```

```
+QSIDET(HEADSET_AUDIO): 144
+QCLIP: 0
+QCOLP: 0
+CSNS: 0
OK
```

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

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
Reference V.25ter	

Parameter

<n>	0	Profile number to store current parameters

NOTE

The profile defined by the user is stored in nonvolatile memory.

2.15. ATQ Set Result Code Presentation Mode

ATQ Set Result Code Presentation Mode	
Execution Command **ATQ[<n>]**	Response This parameter setting 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
Reference V.25ter	

Parameter

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

2.16. ATV TA Response Format

ATV TA Response Format	
Execution Command **ATV[<value>]**	Response This parameter setting determines the contents of the header and trailer transmitted with result codes and information responses. When **<value>**=0 **0** When **<value>**=1 **OK**
Maximum Response Time	300ms
Reference V.25ter	

Parameter

<value>	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>**

NOTE

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

Example

```
ATV1                                    //Set <value>=1
OK
AT+CSQ
+CSQ: 30,0

OK                                      //When <value>=1, the result code is OK
ATV0                                    //Set <value>=0
0
AT+CSQ
+CSQ: 30,0
0                                       //When <value>=0, the 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 mode to data mode
RING	2	The DCE has detected an incoming call signal from network
NO CARRIER	3	The connection has been terminated or the attempt to establish a connection 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

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

ATX Set CONNECT Result Code Format and Monitor Call Progress	
Execution Command **ATX[<value>]**	Response This parameter setting 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
Reference V.25ter	

Parameter

<value>	0	**CONNECT** result code returned only; dial tone and busy signal detection are both disabled
	1	**CONNECT<text>** result code returned only; 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

NOTES

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

2.18. ATZ Set all Current Parameters to 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
Reference V.25ter	

Parameter

<value>	0	Reset to profile number 0

NOTES

1. Profile defined by user is stored in nonvolatile memory.
2. If the user profile is invalid, it will default to the factory default profile.
3. Any additional commands on the same command line are ignored.

2.19. AT+CFUN Set ME Functionality

AT+CFUN Set ME Functionality	
Test Command **AT+CFUN=?**	Response **+CFUN:** (list of supported **<fun>**s)**[,**(list of supported **<rst>**s)**]** **OK**
Read Command **AT+CFUN?**	Response **+CFUN: <fun>** **OK**
Write Command **AT+CFUN=<fun>[,<rst>]**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	15s, determined by network.
Reference GSM 07.07	

Parameter

<fun>	0	Minimum functionality
	1	Full functionality (Default)

	4	Disable the ME from both transmitting and receiving RF signals
<rst>	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 the ME to minimum functionality
+CPIN: NOT READY

OK
AT+COPS?
+COPS: 0                                   //Not registered to any operator

OK
AT+CPIN?
+CME ERROR: 13                             //(U)SIM failure
AT+CFUN=1                                  //Switch the ME 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"                  //Registered to an operator

OK
```

2.20. AT+QPOWD Power off

AT+QPOWD Power off	
Write Command **AT+QPOWD=<n>**	Response When **<n>**=0 **OK**

	When **<n>**=1 **NORMAL POWER DOWN**
Maximum Response Time	300ms
Reference	

Parameter

<n>	0	Urgent power off (Do not send out URC **NORMAL POWER DOWN**)
	1	Normal power off (Send out URC **NORMAL POWER DOWN**)

Example

```
AT+QPOWD=0
OK                          //Urgent power off, returns OK
AT+QPOWD=1
NORMAL POWER DOWN           //Normal power off: sends out URC NORMAL POWER DOWN
```

2.21. AT+CMEE Report Mobile Equipment Error

AT+CMEE Report Mobile Equipment Error	
Test Command **AT+CMEE=?**	Response **+CMEE:** (list of supported **<n>**s) **OK**
Read Command **AT+CMEE?**	Response **+CMEE: <n>** **OK**
Write Command **AT+CMEE=[<n>]**	Response 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>	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
```

2.22. 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
Reference GSM 07.07	

Parameter

<chset>	"GSM"	GSM default alphabet
	"HEX"	Character strings consist only of hexadecimal numbers from 00 to FF
	"IRA"	International reference alphabet
	"PCCP437"	PC character set code
	"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
```

2.23. AT+GCAP Request Complete TA Capabilities List

AT+GCAP Request Complete TA Capabilities List	
Test Command **AT+GCAP=?**	Response **OK**
Execution Command **AT+GCAP**	Response TA reports a list of additional capabilities. **+GCAP: <name>** **OK**
Maximum Response Time	300ms
Reference V.25ter	

Parameter

<name>	+CGSM	GSM function is supported
	+FCLASS	Fax function is supported

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
Reference V.25ter	

Parameter

<value>	0	DCD (data carrier detection) function is always ON
	1	DCD (data carrier detection) function 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 low to high level during data mode. **OK**
Maximum Response Time	300ms
Reference V.25ter	

Parameter

<value>	0	TA ignores status on DTR
	1	Low→High on DTR: Change to command mode while remaining the connected call
	2	Low→High on DTR: Disconnect data call, and then change to command mode. When DTR is in high level, 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:** (list of supported **<format>**s)**,**(list of supported **<parity>**s) **OK**
Read Command **AT+ICF?**	Response **+ICF: <format>,<parity>** **OK**
Write Command **AT+ICF=<format>[,<parity>]**	Response This parameter setting determines the serial interface character framing format and parity received by TA from TE. **OK**
Maximum Response Time	300ms
Reference V.25ter	

Parameter

<format>	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>	0	Odd
	1	Even
	2	Mark
	3	Space

NOTE

1. The command is applied for command mode.
2. The **<parity>** field is ignored if the **<format>** field specifies no parity.

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:** (list of supported **<dce_by_dte>**s),(list of supported **<dte_by_dce>**s) **OK**
Read Command **AT+IFC?**	Response **+IFC: <dce_by_dte>,<dte_by_dce>** **OK**
Write Command **AT+IFC=<dce_by_dte>,<dte_by_dce>**	Response This parameter setting determines the data flow control on the serial interface for data mode. **OK**
Maximum Response Time	300ms
Reference V.25ter	

Parameter

<dce_by_dte>	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>	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                    //Open the 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 setting 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
Reference V.25ter	

Parameter

<rate>	Baud rate per second 0 (Autobaud) 300 600 1200 2400 4800 9600 14400 19200 28800 38400

	57600 115200

NOTE

1. The default configuration of **AT+IPR** is adaptive baud rate enabled (**AT+IPR=0**).
2. If a fixed baud rate is set, make sure that both TE (DTE, usually external processor) and TA (DCE, Quectel GSM module) are configured to the same rate. If adaptive baud rate is enabled, the TA could 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 not 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, that is, the serial
                                   communication speed is 115200bps after restart
                                   module
OK
AT+IPR?
+IPR: 115200

OK
```

3.5.1. Adaptive Baud Rate

To take advantage of 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 synchronized simply by using an "**AT**" or "**at**" string. This is necessary after customers activate adaptive baud rate or when customers power on the module with adaptive baud rate enabled.
   - It is recommended to wait for 4 to 5 seconds before sending the first "**AT**" or "**at**" string after the module is powered on with adaptive baud rate enabled. Otherwise undefined characters might be returned.

2. Restriction on adaptive baud rate operation.

   - The serial interface shall be used with 8 data bits, no parity and 1 stop bit (factory setting).
   - The command "**A/**" cannot be used.
   - Only the string "**AT**" or "**at**" can be detected (neither "**At**" nor "**aT**").
   - URCs that may be issued before the TA detects 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, loss of synchronization between TE and TA would 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 switch TE's baud rate when adaptive baud rate is enabled. Especially, this operation is forbidden in data mode.

3. Adaptive baud rate and baud rate after restarting.

   - In the 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. This must be taken into account when adaptive baud rate and auto-answer mode (**ATS0≠0**) are enabled at the same time, especially if (U)SIM PIN 1 authentication is done automatically and the setting **ATS0≠0** is stored to the user profile with **AT&W**.
   - Until 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 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 setting up a dial-up GPRS/CSD connection. However, some Windows modem drivers switch TE's baud rate 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 assure reliable communication and avoid any problem caused by undetermined baud rate between DCE and DTE, it is strongly recommended to configure a fixed baud rate and save the configuration to flash memory after start-up.

3.6. AT+CMUX Multiplexer Control

AT+CMUX Multiplexer Control	
Test Command **AT+CMUX=?**	Response **+CMUX:** (list of supported **<mode>**s),(**<subset>**s),(**<port_speed>**s),(**<N1>**s),(**<T1>**s),(**<N2>**s),(**<T2>**s),(**<T3>**s),(**<k>**s) **OK**
Read Command **AT+CMUX?**	Response **+CMUX: <mode>,0,5,127,10,3,30,10,2** **OK**
Write Command **AT+CMUX=[<mode>[,<subset>[,<port_speed>[,<N1>[,<T1>[,<N2>[,<T2>[,<T3>[,<k>]]]]]]]]]**	Response **OK** If there is any error: **ERROR** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<mode>	Multiplexer transparency mechanism 0 Basic option
<subset>	The way by which the multiplexer control channel is set up 0 UIH frames used only
<port_speed>	Transmission rate 5 115200bit/s
<N1>	Maximum frame size 127
<T1>	Acknowledgement timer in a unit of ten milliseconds 10
<N2>	Maximum number of re-transmissions 3
<T2>	Response timer for the multiplexer control channel in a unit of ten milliseconds 30
<T3>	Wake up response timers in seconds

<k>	10 Window size, for Advanced operation with Error Recovery options 2

NOTE

1. Advanced option with Error Recovery options is 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 as follows:

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)**,<debug port>** **OK**
Read Command **AT+QEAUART?**	Response **+QEAUART: <mode>,<debug port>** **OK** If there is any error: **ERROR**
Write Command **AT+QEAUART=<mode>,<debug port>**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<mode>	0	Disable dual UART function
	1	Enable dual UART function
<debug port>	2	UART1 as debug port
	99	No UART port used is as debug port

NOTE

When dual UART function is enabled, the debug UART can be used to execute AT commands. About more details, please refer to ***document [9]***.

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 **<baudrate>**s),(list of supported **<databits>**s),(list of supported **<stopbits>**s),(list of supported **<parity>**s) **OK**
Read Command **AT+QSEDCB?**	Response **+QSEDCB: <baudrate>,<databits>,<stopbits>,<parity>** **OK** If there is any error: **ERROR**
Write Command **AT+QSEDCB=<baudrate>,<databits>,<stopbits>,<parity>**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<baudrate>	Baud rate	
	1200	
	2400	
	4800	
	9600	
	14400	
	19200	
	28800	
	38400	
	57600	
	115200	
<databits>	Data bits	
	5	
	6	
	7	
	8	
<stopbits>	Stop bits	
	1	
	2	
	3	
<parity>	Parity	
	0	None
	1	Odd
	2	Even
	3	Mark

NOTE

1. This command can be saved by **AT&W**.
2. When dual UART port function is enabled, the **AT+QSEDCB** command will be executed successfully; otherwise it will return an error.

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 ***Table 12***. 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 in ***Chapter 16.9***.

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                    //Established a call 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
```

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 there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

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

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                                    //An incoming call is 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 RI Indication When Using URC

AT+QINDRI RI Indication 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
Reference Quectel	

Parameter

<status>	0	Off
	1	On

4.4. AT+QMOSTAT Show State of Mobile Originated Calls

AT+QMOSTAT Show State of Mobile Originated Calls	
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
Reference Quectel	

Parameter

<mode>	0	Do not show call state of mobile originated call
	1	Show call state of a mobile originated call. After dialing call numbers, the URC string of **MO RING** will be sent if the called party is alerted; and the URC string of **MO CONNECTED** will be sent if the call is established

Example

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

MO RING                         //The called party is alerted
```

MO CONNECTED	//The call is established

4.5. AT+QREFUSECS Receive SMS Messages/Incoming Calls or Not

AT+QREFUSECS Receive SMS Messages/Incoming Calls 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**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<refuse_sms>	0	Receive the new SMS message
	1	Refuse to receive the new SMS Message
<refuse_call>	0	Receive the incoming call
	1	Refuse to receive the incoming call

4.6. AT+QIURC Enable/Disable Initial URC Presentation

AT+QIURC Enable/Disable Initial URC Presentation	
Test Command **AT+QIURC=?**	Response **+QIURC:** (list of supported **<mode>**s) **OK**
Read Command	Response

AT+QIURC?	**+QIURC: <mode>** **OK**
Write Command **AT+QIURC=<mode>**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<mode>	0	Disable URC presentation
	1	Enable URC presentation

NOTE

When the module powers on and initialization procedure is over. URC **Call Ready** will be presented if **<mode>** is 1.

4.7. 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
Reference Quectel	

Parameter

<extunsol>	String type. Values currently reserved by the present document	
	"SQ"	Signal Quality Report. Displays signal strength and channel bit error rate (similar to **AT+CSQ**) in form **+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 message (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 is shown in the form 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>**, **<other>** contain the number of waiting messages (with '0' defined as clear indication, non-zero for one or more waiting messages) or blank for not specified in this message.
	"UR"	Unsolicited result code. Produces an unsolicited indication in the following call state transition. Multiple notifications may occur for the same transition **+QGURC: <event>**, where **<event>** describes the current call state: **<event>:** 0 Terminated active call, at least one held call remaining 1 Attempt to make a Mobile Originated Call 2 Mobile Originated Call has failed for some reason 3 Mobile Originated Call is ringing 4 Mobile Terminated Call is queued (Call waiting) 5 Mobile Originated Call now has been connected 6 Mobile Originated or Mobile Terminated Call has been disconnected 7 Mobile Originated or Mobile Terminated Call is hung up. 8 Mobile Originated Call dialed 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. Displays battery connection status and battery charge level (similar to **AT+CBC**) in form **+CBCN: <bcs>,<bcl>** when values change.
	"BM"	Band mode. Displays band mode (similar to **AT+QBAND**) in form **+QBAND: <band>** when value changes.
	"SM"	Additional SMS Information. Displays additional information about SMS events in the form of unsolicited messages of the following format **+TSMSINFO: <CMS error info>** where **<CMS error info>** 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. Displays the disconnected call ID and the remaining call numbers after one of the call is disconnected. **+CCINFO: <Call id disconnected>,<Remain calls>**
<mode>	0	Disable
	1	Enable

	2	Query

4.8. AT+QINISTAT Query State of Initialization

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

Parameter

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

NOTE

When **<state>** is 3, it also means initialization of (U)SIM card related functions has been finished.

4.9. AT+QNSTATUS Query GSM Network Status

AT+QNSTATUS Query GSM Network Status	
Test Command **AT+QNSTATUS=?**	Response **OK**
Execution Command **AT+QNSTATUS**	Response **+QNSTATUS: <status>** **OK**

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

Parameter

<status>	255	Not ready to retrieve network status
	0	Work in normal state
	1	No available cell
	2	Only limited service is available

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

Parameter

<enable>	0	Disable to synchronize time from GSM network
	1	Enable to synchronize time from GSM network
	If the function is enabled, on receiving network time message, an unsolicited indication is shown in the form: **+QNITZ: <time>,<ds>**	

<time>	String type value. Format is "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 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 equals to “04/05/06,22:10:00+08”
<ds>	Daylight Saving Time. When it is zero, the format will be "04/05/06,22:10:00+08,0"

NOTE

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

4.11. AT+QLTS Obtain Latest Network Time Synchronized

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

Parameter

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

4.12. AT+CTZU Network Time Synchronization and Update the RTC Time

AT+CTZU Network Time Synchronization and Update the RTC Time	
Test Command **AT+CTZU=?**	Response **+CTZU:** (list of supported **<mode>**s) **OK**
Read Command **AT+CTZU?**	Response **+CTZU: <mode>** **OK**
Write Command **AT+CTZU=<mode>**	Response **OK** If there is error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference	

Parameter

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

NOTE

This function needs support of local GSM network. After setting the **AT+CTZU**, the value will be automatically saved into flash. The function takes effect after the module is restarted.

4.13. AT+CTZR Network Time Synchronization Report

AT+CTZR Network Time Synchronization Report	
Test Command **AT+CTZR=?**	Response **+CTZR:** (list of supported **<mode>**s) **OK**
Read Command **AT+CTZR?**	Response **+CTZR: <mode>** **OK**
Write Command **AT+CTZR=<mode>**	Response **OK** If there is error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference	

Parameter

<mode>	0	Disable time zone change event reporting
	1	Enable time zone change event reporting by unsolicited result code **+CTZV: <tz>**
	2	Enable extended time zone reporting by unsolicited result code **+CTZE: <tz>,<dst>,[<time>]**

NOTE

This function needs support of local GSM network. After setting the **AT+CTZU**, the value will be automatically saved into flash. The function takes effect after the module is restarted.

4.14. AT+QSIMDET Enable/Disable (U)SIM Card Detection

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

	OK
Read Command **AT+QSIMDET?**	Response **+QSIMDET: <enable>,<insert_level>** **OK**
Write Command **AT+QSIMDET=<enable>,<insert_level>**	Response **OK** If there is error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference	

Parameter

<enable>	Enable/Disable (U)SIM card detection function 0 Disable 1 Enable
<insert_level>	Configure pin level when (U)SIM card is inserted 0 Low level 1 High level

NOTE

1. This command can be saved by **AT&W**.
2. The pin of SIM_PRESENCE and DTR are multiplexed in M89, and M89 only supports DTR pin as (U)SIM card detection pin. If turning on the (U)SIM detection function, it is recommended to set **<pin_choice>** to 1.

4.15. AT+QSIMSTAT (U)SIM Inserted Status Reporting

AT+QSIMSTAT (U)SIM Inserted Status Reporting	
Test Command **AT+QSIMSTAT=?**	Response **+QSIMSTAT:** (list of supported **<enable>**s) **OK**
Read Command	Response

AT+QSIMSTAT?	**+QSIMSTAT: <enable>,<insert_status>** **OK**
Write Command **AT+QSIMSTAT=<enable>**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference	

Parameter

<enable>	Enable or disable (U)SIM card insertion status report. If it is enabled, when (U)SIM card is removed or inserted, the URC **+QSIMSTAT: <enable>,<insert_status>** will be reported. 0 Disable 1 Enable
<insert_status>	Indicates whether (U)SIM card is inserted or removed 0 Low level of pin indicates (U)SIM card is present 1 High level of pin indicates (U)SIM card is present

NOTE

This command can be saved by **AT&W.**

4.16. AT+QCGTIND Circuit Switched Call or GPRS PDP Context Termination Indication

AT+QCGTIND Circuit Switched Call or GPRS PDP Context Termination Indication	
Test Command **AT+QCGTIND=?**	Response **+QCGTIND:** (list of supported **<n>**s) **OK**
Read Command **AT+QCGTIND?**	Response **+QCGTIND: <n>** **OK**

Write Command **AT+QCGTIND=<n>**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<n>	A numeric parameter which indicates whether to enable an unsolicited event code indicating whether a circuit switched voice call, circuit switched data call or GPRS session has been terminated 0 Disable 1 Enable
<type>	Connection type 0 Circuit switched voice call 1 Circuit switched data call 2 PPP connection

NOTE

When enabled, an unsolicited result code **+QCGTIND: <type>** is returned after the connection has been terminated.

Example

```
ATD10086;
OK

+QCGTIND: 0                //A circuit switched voice call has been terminated

NO CARRIER
```

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 (U)SIM which is attached to ME. **<IMSI>** **OK** If there is any error 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 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 perform 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 set successful: **OK** If **<mode>=2** and command is successful: **+CLCK: <status>[,<class1>]** **…** **OK**
Maximum Response Time	5s
Reference GSM 07.07	

Parameter

<fac>	"PS"	PH-SIM (lock Phone to (U)SIM card) (ME asks password when other than the current (U)SIM card inserted; ME may remember certain amount of previously used cards thus not requiring password when they are inserted)
	"SC"	(U)SIM (lock (U)SIM card) ((U)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 to Home Country) (refer to *GSM02.88[6]* ***clause 1***)
	"AI"	BAIC (Bar All Incoming Calls) (refer to *GSM02.88[6]* ***clause 2***)
	"IR"	BIC-Roam (Bar Incoming Calls when Roaming outside the home country) (refer to *GSM02.88 [6]* ***clause 2***)

	"AB"	All Barring services (refer to *GSM02.30[19]*) (applicable only for **<mode>**=0)
	"AG"	All out Going barring services (refer to *GSM02.30[19]*) (applicable only for **<mode>**=0)
	"AC"	All in Coming barring services (refer to *GSM02.30[19]*) (applicable only for **<mode>**=0)
	"FD"	(U)SIM fixed dialing memory: If the mobile is locked to "FD", only the phone numbers stored to the "FD" memory can be dialed
	"PF"	Lock Phone to the very first (U)SIM card
	"PN"	Network Personalization (refer to *GSM 02.22*)
	"PU"	Network subset Personalization (refer to *GSM 02.22*)
	"PP"	Service Provider Personalization (refer to *GSM 02.22*)
	"PC"	Corporate Personalization (refer to *GSM 02.22*)
<mode>	0	Unlock
	1	Lock
	2	Query status
<passwd>	Password	
<class>	1	Voice
	2	Data
	4	FAX
	7	All telephony except SMS (Default)
	8	Short message service
	16	Data circuit sync
	32	Data circuit async
<status>	0	Off
	1	On

Example

```
AT+CLCK="SC", 2
+CLCK: 0                          //Query the status of (U)SIM card lock: unlock

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

OK
AT+CLCK="SC",0,"1234"             //Unlock the (U)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 some password is required. **+CPIN: <code>** **OK**
Write Command **AT+CPIN=<pin>[,<new pin>]**	Response TA stores a password, such as (U)SIM PIN, (U)SIM PUK, PH-SIM PIN, etc., which is necessary before it can be operated. If the PIN is to be entered twice, the TA shall automatically repeat the PIN. If no PIN request is pending, no action is taken and an error message **+CME ERROR** is returned to TE. If the PIN required is (U)SIM PUK or (U)SIM PUK2, the second pin is required. This second pin **<new pin>** is used to replace the old pin in the (U)SIM. **OK**
Maximum Response Time	5s
Reference GSM 07.07	

Parameter

<code>	READY	No further entry needed
	SIM PIN	ME is waiting for (U)SIM PIN
	SIM PUK	ME is waiting for (U)SIM PUK
	PH_SIM PIN	ME is waiting for phone to (U)SIM card (antitheft)
	PH_SIM PUK	ME is waiting for (U)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; if the PIN required is (U)SIM PUK or (U)SIM PUK2: new password	

Example

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

OK
AT+CPIN=1234                            //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),(**<pwdlength>**s) **OK**
Write Command **AT+CPWD=<fac>,<oldpwd>,<newpwd>**	Response TA sets a new password for the facility lock function. **OK**
Maximum Response Time	5s

Reference	
GSM 07.07	

Parameter

<fac>	"PS"	Phone locked to (U)SIM (device code). The "PS" password may either be individually specified by the client or, depending on the subscription, supplied from the provider (e.g. with a prepaid mobile)
	"SC"	(U)SIM (lock (U)SIM card) ((U)SIM asks password in ME power-up and when this lock Command 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 to Home Country) (refer to *GSM02.88[6]* ***clause 1***)
	"AI"	BAIC (Bar All Incoming Calls) (refer to *GSM02.88[6]* ***clause 2***)
	"IR"	BIC-Roam (Bar Incoming Calls when Roaming outside the home country) (refer to *GSM02.88 [6]* ***clause 2***)
	"AB"	All Baring services (refer to *GSM02.30[19]*) (applicable only for **<mode>**=0)
	"AG"	All outgoing barring services (refer to *GSM02.30[19]*) (applicable only for **<mode>**=0
	"AC"	All incoming barring services (refer to *GSM02.30[19]*) (applicable only for **<mode>**=0)
	"FD"	(U)SIM fixed dialing memory feature
	"P2"	(U)SIM PIN2
<pwdlength>	Integer. Max length of password	
<oldpwd>	Password specified for the facility from the user interface or with command	
<newpwd>	New passwordhe facility from the user interface or with command	

Example

```
AT+CPIN?
+CPIN: READY

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

AT+CRSM Restricted (U)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 there is error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<Command>	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. This is the identifier for an elementary data file on (U)SIM. Mandatory for every command except STATUS.	
<P1>,<P2>,<P3>	Integer type. Parameters passed on by the ME to the (U)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 (U)SIM (hexadecimal character format)	
<sw1>,<sw2>	Integer type. Information from the (U)SIM about the execution of the actual command. These parameters are delivered to the TE in both cases, on successful or failed execution of the command.	
<response>	Response of a successful completion of the command previously issued (hexadecimal character format). STATUS and GET RESPONSE return data, which gives information	

	about the current elementary data field. This 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. The parameter is not returned after a successful UPDATE BINARY or UPDATE RECORD command.

Example

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

OK                                  //<sw1>=145,<sw2>=211,"000000007F100200000000000
                                      A13000C0400838A808A" is the content which is returned
                                      from (U)SIM card (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 there is error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
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 (U)SIM Command sent from the ME to the (U)SIM
<response>	String type (string should be included in quotation marks);

hex format: GSM11.11 (U)SIM Command sent from the (U)SIM to **<command>**

5.7. AT+QCSPWD Change PS Super Password

AT+QCSPWD Change PS Super Password	
Test Command **AT+QCSPWD=?**	Response **OK**
Write Command **AT+QCSPWD=<oldpwd>,<newpwd>**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<oldpwd>	String type. Old password and length should be 8 bytes
<newpwd>	String type. New password and length should be 8 bytes

NOTE

1. Default value of **<oldpwd>** is "12345678".
2. If the module is locked to a specific (U)SIM card through **AT+CLCK** and password lost or (U)SIM state is PH-SIM PUK, then the super password can be used to unlock it.

5.8. 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 (U)SIM card.

Example

```
AT+CCID                                  //Query CCID of the (U)SIM card
+CCID: "898600220909A0206023"

OK
```

5.9. 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 (U)SIM card.

Example

```
AT+QCCID                                 //Query CCID of the (U)SIM card
898600220909A0206023

OK
```

5.10. AT+QGID Get (U)SIM Card Group Identifier

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

Parameter

<gid1>	Integer type of (U)SIM card group identifier 1
<gid2>	Integer type of (U)SIM card group identifier 2

NOTE

If the (U)SIM supports GID files, the GID values are retuned. Otherwise **0xff** is retuned.

5.11. AT+QSIMVOL Select (U)SIM Card Operating Voltage

AT+QSIMVOL Select (U)SIM Card Operating Voltage	
Test Command **AT+QSIMVOL=?**	Response **+QSIMVOL:** (list of supported **<mode>**s) **OK**
Read Command **AT+QSIMVOL?**	Response **+QSIMVOL: <mode>** **OK**
Write Command **AT+QSIMVOL=<mode>**	Response **OK** If there is any error:

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

Parameter

<mode>	0	Recognize 1.8V and 3.0V (U)SIM card (Default)
	1	Recognize 1.8V (U)SIM card only
	2	Recognize 3.0V (U)SIM card only

NOTE

AT+QSIMVOL can take effect only when the command is set successfully and after the module is restarted.

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

AT+QSPN Get Service Provider Name from (U)SIM	
Read Command **AT+QSPN?**	Response **+QSPN:** (**<spn>**s)**,**(list of supported **<display mode>**s) **OK** If there is error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<spn>	String type; service provider name on (U)SIM	
<display mode>	0	Do not display PLMN. Already registered on PLMN
	1	Display PLMN

NOTE

CME errors are possible if (U)SIM is not inserted.

5.13. AT+QTRPIN Times Remain to Input (U)SIM PIN/PUK

AT+QTRPIN Times Remain to Input (U)SIM PIN/PUK	
Execution Command **AT+QTRPIN**	Response Times remain to input (U)SIM PIN. **+QTRPIN: <chv1>,<chv2>,<puk1>,<puk2>** **OK**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<chv1>	Times remain to input CHV 1
<chv2>	Times remain to input CHV 2
<puk1>	Times remain to input PUK1
<puk2>	Times remain 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 list of quadruplets, each representing an operator present in the network. Any of the formats may be unavailable and should then be an empty field. The list of operators shall be in the order of: home network, networks referenced in (U)SIM and other networks. **+COPS:** (list of supported **<stat>,**long alphanumeric **<oper>,** short alphanumeric **<oper>,**numeric **<oper>**s)**[,,**(list of supported **<mode>**s)**,**(list of supported **<format>**s)**]** **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Read Command **AT+COPS?**	Response 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 there is any error 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 commands (**AT+COPS?**).

	OK If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	75s, determined by network.
Reference GSM 07.07	

Parameter

<stat>	0	Unknown
	1	Operator available
	2	Operator current
	3	Operator forbidden
<oper>	Operator in format as per **<mode>**	
<mode>	0	Automatic mode; **<oper>** field is ignored
	1	Manual operator selection; **<oper>** field shall be present
	2	Manual deregister from network
	3	Set only **<format>** (for read command **+COPS?**) – not shown in read command response
	4	Manual/automatic selected; if manual selection fails, automatic mode (**<mode>**=0) is entered
<format>	0	Long format alphanumeric **<oper>**; can be up to 16 characters long
	1	Short format alphanumeric **<oper>**
	2	Numeric **<oper>**; GSM Location Area Identification number

NOTE

1. The 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 selection **<oper>**. If the **<oper>** is invalid, the ME remains unregistered; until **<mode>**=0, the ME can register. If restart module, the ME is still under **<mode>**=1 and there is no RPLMN. The ME will also be Not Registered to network condition, until the mode is changed via the command to automatic registration mode.
   - When **<mode>**=4, if the ME fails to register to this operator, then it starts to select another operator automatically.
2. This command setting is saved to NVRAM 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 the 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:** (list 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 on the network. **+CREG: <n>,<stat>[,<lac>,<ci>]** **OK** If there is any error 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
Reference GSM 07.07	

Parameter

<n>	0	Disable network registration unsolicited result code
	1	Enable network registration unsolicited result code **+CREG: <stat>**
	2	Enable network registration unsolicited result code with location information

<stat>	0	Not registered, ME is not currently searching a new operator to register on
	1	Registered, home network
	2	Not registered, but ME is currently searching a new operator to register on
	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

Unsolicited result code
If **<n>**=1 and there is a change in the ME network registration status: **+CREG: <stat>**
If **<n>**=2 and there is a change in the ME network registration status or a change of the network cell: **+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 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=?**	The Test Command returns values supported by the TA. Response **+CSQ:** (list of supported **<rssi>**s),(list of supported **<ber>**s) **OK**
Execution Command **AT+CSQ**	Execution Command returns received signal strength indication **<rssi>** and channel bit error rate **<ber>** from the ME. Response **+CSQ: <rssi>,<ber>**

	OK If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<rssi>	0	-113dBm or less
	1	-111dBm
	2...30	-109dBm... -53dBm
	31	-51dBm or greater
	99	Not known or not detectable
<ber>	(in percent):	
	0...7	As RXQUAL values in the table in *GSM 05.08* ***subclause 8.2.4***
	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 channel 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),(list of supported **<format>**s) **OK**

Read Command **AT+CPOL?**	Response **+CPOL: <index1>,<format>,<oper1> […]]** **...** **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+CPOL=<index>[,<format>[,<oper>]]**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<index>	I	Integer type: order number of operator in (U)SIM preferred operator list
<format>	0	Long format alphanumeric **<oper>**
	1	Short format alphanumeric **<oper>**
	2	Numeric **<oper>**
<oper>	String type: **<format>** indicates either alphanumeric or numeric format is used (see **AT+COPS** command)	

NOTE

(U)SIM card does not allow editing of the list of the preferred operators.

6.5. AT+COPN Read Operator Names

AT+COPN Read Operator Names	
Test Command **AT+COPN=?**	Response **OK**
Execution Command **AT+COPN**	Response **+COPN: <numeric1>,<alpha1 >** **…** **OK**

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

6.6. AT+QBAND Get and Set Mobile Operation Bands

AT+QBAND Get and Set Mobile Operation Bands	
Test Command **AT+QBAND=?**	Response **+QBAND:** (list of supported **<op_band>**s) **OK**
Read Command **AT+QBAND?**	Response **+QBAND: <op_band>** **OK**
Write Command **AT+QBAND=<op_band>**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	30s, determined by network.
Reference Quectel	

Parameter

<op_band>	"EGSM_MODE" "DCS_MODE" "PCS_MODE" "GSM850_MODE" "EGSM_DCS_MODE" "GSM850_PCS_MODE"

	"GSM850_EGSM_DCS_PCS_MODE"

NOTE

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

6.7. AT+QENG Switch on or off Engineering Mode

AT+QENG Switch on or off Engineering Mode	
Test Command **AT+QENG=?**	Response **+QENG:** (list of supported **<mode>**s),(list 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>,<rxq_sub>,<rxq_full>** 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:

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

Parameter

<mode>	0	Switch off engineering mode
	1	Switch on engineering mode
	2	Switch on engineering mode, and activate the URC report of network information
<dump>	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>	TimeSlots	
<maio>	MAIO value	
<hsn>	HSN value	
<tch>	ARFCN of TCH, ‘h’ figure hopping	
<ta>	Timing Advance, range 0-63	
<rxq_sub>	RX quality(sub), range 0-7	
<rxq_full>	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 in hex format, and these parameters are in decimal.
3. If the cell information is not detected, the parameter is replaced by 'x' char.
4. If the detecting is not expert mode, the **<tch>**, **<ts>**, **<maio>**, **<hsn>**, **<ta>**, **<rxq_sub>** and **<rxq_full>** parameter do not display the value of the parameter while are replaced by 'x' char.
5. During the network connecting, if the hopping frequency is supported by the network, the channel of TCH is instable. Using the 'h' figure **<tch>** under this mode.
6. Under expert mode, when the **<c1>** and **<c2>** of the serving cell cannot be updated, using the '-1' figure to display the illegal value. At the same time, the **<txp>** and **<rla>** parameter cannot be updated in a certain condition, all the same holding the value of idle mode. This is because ME cannot be updated in this mode. ME cannot update the selection of cell and reselection of the parameter. When the connecting is over, mobile device goes back idle mode and gives out the correct value.
7. If TA can report the information of the neighboring cell, the URCs of six neighboring cell should be reported. If some cells cannot be measured, the 'x' char will be filled in the parameter of these cells.
8. Under the special mode, the **<c1>** and **<c2>** parameters of the neighboring cell may be measured, and then an unmeaning value will be reported. When the **<mcc>**, **<mnc>**, **<lac>** and **<cellid>** parameter 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 **AT+QSPCH** command can be used to re-query the type of the voice channel during calling (FR, HR, EFR, AMR_FR, AMR_HR).
11. 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:** (list of supported **<band>**s),(list of supported **<freq>**s) **OK**
Write Command **AT+QSCANF=<band>,<freq>**	Response If **<freq>=9999** and command is successful: **+QSCANF:** **1, CH113, -63.5** **2, CH80, -64.2** **4, CH22, -64.5** **…..** **20, CH116, -74.2** **OK** If **<freq>** is fixed frequency and command is successful: **+QSCANF:** **CH<freq>,<dbm>** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<band>	0	BAND 900
	1	BAND 1800
	2	BAND 1900
	3	BAND 850
<freq>	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 equipment functionality level is 0 or 4. About how to change the functionality level, please refer to **AT+CFUN**.

6.9. AT+QLOCKF Lock GSM Frequency

AT+QLOCKF Lock GSM Frequency	
Test Command **AT+QLOCKF=?**	Response **+QLOCKF:** (list of supported **<mode>**s)**,**(list of supported **<band1900>**s)**,**(list 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 there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<mode>	0	Disable lock frequency
	1	Enable lock frequency
	2	Enable lock frequency and auto switch to saved frequency after powered on
<band1900>	0	Not a cell ID of 1900 band
	1	Cell ID of 1900 band
	2	Auto distinguish whether is a cell ID of 1900 band
<arfcn>	0-1024	ARFCN information
<status>	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	

NOTE

1. Any additional commands on the same command line are ignored.
2. This command may be aborted generally by receiving a character during execution. 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                                         //Accept the voice call with ATA
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 no dial tone and (parameter setting **ATX2** or **ATX4**): **NO DIALTONE** If busy and (parameter setting **ATX3** or **ATX4**): **BUSY** If a connection cannot be established: **NO CARRIER** If the connection is successful and 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 needed)
<mgsm>	String of **GSM** modifiers: **I** Actives **CLIR** (Disables presentation of own number to called party) **i** Deactivates **CLIR** (Enable presentation of own number to called party) **G** Activates closed user group invocation for this call only **g** Deactivates closed user group invocation for this call only
<;>	Only required to set up voice call, return to command state

NOTE

1. This command may be aborted generally by receiving an **ATH** command or a character during execution. The aborting is not possible during some states of connection establishment such as handshaking.

2. Parameter "**I**" and "**i**" are applicable for cases where there is no "*****" or "#" code 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 voice call, two different responses modes can be determined. TA returns **OK** immediately either after dialing was completed or after the call was established. The setting is controlled by **AT+COLP**. Factory default is **AT+COLP=0**, which causes the TA returns **OK** immediately after dialing was completed; otherwise TA will return **OK**, **BUSY**, **NO DIAL TONE**, or **NO CARRIER**.
7. Using **ATD** during an active voice call:
   - When a user originates a second voice call while there is already an active voice call, the first call will be automatically put on hold.
   - The current states of all calls can be easily checked at any time by using the **AT+CLCC** command.

Example

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

7.3. ATH Disconnect Existing Connection

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

Parameter

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

NOTE

OK is issued after circuit 109 (DCD) is turned off, if it was 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. This allows you 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	

NOTE

1. To prevent the **+++** escape sequence from being misinterpreted as data, it should comply to following sequence:
   - No characters entered for T1 time (0.5 seconds).
   - **+++** characters entered with no characters in between. For PPP online mode, the interval between two **+** MUST should be less than 1 second and for a transparent TCPIP connection, the interval MUST be less than 20ms.
   - No characters entered for T1 time (0.5 seconds).
   - Switch to command mode, otherwise go to step 1.
2. To return from command mode back to data or PPP online mode: Enter **ATO**
   - Another way to change to command mode is through DTR, see **AT&D** command for the 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 connection is not successfully resumed: **NO CARRIER** If connection is successfully resumed, TA returns to data

	mode from command mode **CONNECT <text>**
Maximum Response Time	300ms
Reference V.25ter	

Parameter

<n>	0	Switch from command mode to data mode

NOTE

TA returns to data mode from command mode **CONNECT <text>**, **<text>** only if parameter setting is X>0.

7.6. ATP Select Pulse Dialing

ATP Select Pulse Dialing	
Execution Command **ATP**	Response **OK**
Maximum Response Time	300ms
Reference V.25ter	

NOTE

No effect in GSM network.

7.7. ATS0 Set Number of Rings before Automatically Answering a Call

ATS0 Set Number of Rings before Automatically Answering a Call	
Read Command **ATS0?**	Response **<n>** **OK**
Write Command	Response

ATS0=<n>	This parameter setting determines the number of rings before auto-answer. **OK**
Maximum Response Time	300ms
Reference V.25ter	

Parameter

<n>	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 coming
RING	
RING	//Automatically answering the call after three rings

7.8. ATS6 Set Pause before Blind Dialing

ATS6 Set Pause before Blind Dialing	
Read Command **ATS6?**	Response **<n>** **OK**
Write Command **ATS6=<n>**	Response **OK**
Maximum Response Time	300ms
Reference V.25ter	

Parameter

<n>	0-2-10	Number of seconds to wait before blind dialing

NOTE

No effect in GSM network.

7.9. ATS7 Set the Time to Wait for Connection Completion

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

Parameter

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

NOTE

1. If the 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: call may fail if **ATS7=30** and **ATS0=20**.
3. **ATS7** is only applicable to data call.

7.10. ATS8 Set the Time to Wait for Comma Dial Modifier

ATS8 Set theTime to Wait for Comma Dial Modifier	
Read Command **ATS8?**	Response **<n>** **OK**
Write Command **ATS8=<n>**	Response **OK**
Maximum Response Time	300ms
Reference V.25ter	

Parameter

<n>	0	No pause when comma encountered in dial string
	1-2-255	Number of seconds to wait

NOTE

No effect in GSM network.

7.11. ATS10 Set Disconnect Delay after Indicating the Absence of Data Carrier

ATS10 Set Disconnect Delay after Indicating the Absence of Data Carrier	
Read Command **ATS10?**	Response **<n>** **OK**
Write Command **ATS10=<n>**	Response This parameter setting 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

Reference V.25ter	

Parameter

<n>	1-15-254	Number of delay in 100ms

7.12. ATT Select Tone Dialing

ATT Select Tone Dialing	
Execution Command **ATT**	Response **OK**
Maximum Response Time	300ms
Reference V.25ter	

NOTE

No effect in GSM network.

7.13. AT+CSTA Select Type of Address

AT+CSTA Select Type of Address	
Test Command **AT+CSTA=?**	Response **+CSTA:** (list of supported **<type>**s) **OK**
Read Command **AT+CSTA?**	Response **+CSTA: <type>** **OK**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<type>	Current address type setting.	
	129	Unknown type (IDSN format number)
	145	International number type (ISDN format)
	161	National number type (IDSN format)

7.14. AT+CLCC List Current Calls of ME

AT+CLCC List Current Calls of ME	
Test Command **AT+CLCC=?**	Response **OK**
Execution Command **AT+CLCC**	Response TA returns a list of current calls of ME. If command succeeds but no calls are available, no information response is sent to TE. **[+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,""]]** **...** **OK** If there is any error 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***; this number can be used in **AT+CHLD** Command operations	
<dir>	0	Mobile originated (MO) call
	1	Mobile terminated (MT) call
<stat>	State of the call	
	0	Active
	1	Held
	2	Dialing (MO call)
	3	Alerting (MO call)
	4	Incoming (MT call)

	5	Waiting (MT call)
<mode>	Bearer/tele service	
	0	Voice
	1	Data
	2	Fax
	9	Unknown
<mpty>	0	Call is not one of multiparty (conference) call parties
	1	Call is one of multiparty (conference) call parties
<number>	Phone number in string type in format specified by **<type>**	
<type>	Type of address of octet in integer format	
	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
```

7.15. AT+CR Service Reporting Control

AT+CR Service Reporting Control	
Test Command **AT+CR=?**	Response **+CR:** (list of supported **<mode>**s) **OK**
Read Command **AT+CR?**	Response **+CR: <mode>** **OK**
Write Command **AT+CR=[<mode>]**	Response TA controls whether or not intermediate result code **+CR: <serv>** is returned from the TA to the TE when a call set up. **OK**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<mode>	0	Disable
	1	Enable
<serv>	ASYNC	Asynchronous transparent
	SYNC	Synchronous transparent
	REL ASYNC	Asynchronous non-transparent
	REL SYNC	Synchronous non-transparent

NOTE

Intermediate result code:
If it is enabled, an intermediate result code is transmitted at a point during link negotiation. At the same time, the TA has determined which speed and quality of service will be used, before any error control or data compression reports are transmitted, and before any final result code (e.g. **CONNECT**) is transmitted.

7.16. 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
Reference GSM 07.07	

Parameter

<mode>	0	Disable extended format
	1	Enable extended format

NOTE

Unsolicited result code:
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

Example

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

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

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

7.17. AT+CSNS Single Numbering Scheme

AT+CSNS Single Numbering Scheme	
Test Command **AT+CSNS=?**	Response **+CSNS:** (list of supported **<mode>**s) **OK**
Read Command **AT+CSNS?**	Response **+CSNS: <mode>** **OK**
Write Command **AT+CSNS=[<mode>]**	Response **OK**

	If there is any error: **ERROR**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<mode>	0	Voice
	1	Alternating voice/FAX, voice first
	2	FAX
	3	Alternating voice/data, voice first
	4	Data
	5	Alternating voice/FAX, FAX first
	6	Alternating voice/data, data first
	7	Voice followed by data

7.18. AT+QSFR Preference Speech Coding

AT+QSFR Preference Speech Coding	
Test Command **AT+QSFR=?**	Response **+QSFR:** (list of supported **<mode>**s) **OK**
Read Command **AT+QSFR?**	Response **+QSFR: <mode>** **OK**
Write Command **AT+QSFR=<mode>**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<mode>	0	Automatic mode
	1	FR
	2	HR
	3	EFR
	4	AMR_FR
	5	AMR_HR
	6	FR and EFR, FR priority
	7	EFR and FR, EFR priority
	8	EFR and HR, EFR priority
	9	EFR and AMR_FR, EFR priority
	10	AMR_FR and FR, AMR_FR priority
	11	AMR_FR and HR, AMR_FR priority
	12	AMR_FR and EFR, AMR_FR priority
	13	AMR_HR and FR, AMR_HR priority
	14	AMR_HR and HR, AMR_HR priority
	15	AMR_HR and EFR, AMR_HR priority

NOTE

This setting is stored in the non-volatile memory and will be used whenever the module is powered up again.

7.19. AT+QSPCH Speech Channel Type Report

AT+QSPCH Speech Channel Type Report	
Test Command **AT+QSPCH=?**	Response **+QSPCH:** (list of supported **<mode>**s) **OK**
Read Command **AT+QSPCH?**	Response **+QSPCH: <mode>,<speech channel>** **OK**
Write Command **AT+QSPCH=<mode>**	Response **OK** If there is any error: **ERROR**

Maximum Response Time	300ms
Reference Quectel	

Parameter

<mode>	0	Disable report speech channel type
	1	Enable report speech channel type
<speech channel>	Speech channel type	
	0	NO SPEECH TCH
	1	FR
	2	HR
	3	EFR
	4	AMR_FR
	5	AMR_HR

NOTE

URC **+QSPCH: <mode>,<speech channel>** will be indicated when speech channel type changes.

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

Parameter

<disableath>	Disable ATH	
	0	Enable ATH command
	1	Disable ATH command

8 SMS Related 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 there is any error related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.05	

Parameter

<service>	0	GSM 03.40 and 03.41 (the syntax of SMS AT commands 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 only used for ending/receiving SMSs
<mt>	Mobile Terminated Messages	
	0	Type not supported
	1	Type supported
<mo>	Mobile Originated Messages	

	0	Type not supported
	1	Type supported
<bm>	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
Reference GSM 07.05	

Parameter

<mode>	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 SMS are transmitted. In text mode, setting is used by sending and writing commands. In PDU mode, setting is used by the same commands, but only when the length of the SMSC address coded into **<pdu>** parameter equals zero. **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.05	

Parameter

<sca>	GSM 04.11 RP SC 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 **+CSCS** in *TS 07.07*); type of address given by **<tosca>**
<tosca>	Service center address format GSM 04.11 RP SC address Type-of-Address octet in integer format (default refer to **<toda>**)

NOTE

The command writes the parameters in non-volatile memory.

Example

```
AT+CSCA="+8613800210500",145          //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 there is any error related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.05	

Parameter

<mem1>	Messages to be read and deleted from this memory storage "SM" (U)SIM message storage "ME" Mobile Equipment message storage "MT" Sum of "SM" and "ME" storages
<mem2>	Messages will be written and sent to this memory storage "SM" (U)SIM message storage "ME" Mobile Equipment message storage "MT" Sum of "SM" and "ME" storages
<mem3>	Received messages will be placed in this memory storage if routing to PC is not set ("**+CNMI**") "SM" (U)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 (U)SIM and ME message storages offer maximum space for 50 and 10 messages, respectively. The (U)SIM message storage is selected in priority.

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 Messages

AT+CMGD Delete SMS Messages	
Test Command **AT+CMGD=?**	Response **+CMGD:** (list of supported **<index>**s),(list of supported **<delflag>**s) **OK**
Write Command **AT+CMGD=<index>[,<delflag>]**	Response TA deletes message from preferred message storage **<mem1>** location **<index>**. **OK** If there is any error: **ERROR** If there is any error related to ME functionality: **+CMS ERROR:<err>**
Maximum Response Time	300ms. Note: Operation of **<delflag>** depends on the storage of deleted messages.
Reference	

GSM 07.05	

Parameter

<index>	Integer type; value in the range of location numbers supported by the associated memory	
<delflag>	0	Delete message 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 message 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 status of the message is 'received unread', status in the storage changes to 'received read'. 1) In text mode (**AT+CMGF=1**) and when the command is successful: For SMS-SUBMITs and/or SMS-DELIVERs: **+CMGL: <index>,<stat>,<oa/da>,[<alpha>],[<scts>][,<toa/toda>,<length>]<CR><LF><data>[<CR><LF>** **...**

	For SMS-STATUS-REPORTs: **+CMGL: <index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>[<CR><LF>** **...** For SMS-COMMANDs: **+CMGL: <index>,<stat>,<fo>,<ct>[<CR><LF>** **...** For CBM storage: **+CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages><CR><LF><data>[<CR><LF>** **...** **OK** 2) If PDU mode (**AT+CMGF=0**) and when the command is successful: **+CMGL: <index>,<stat>,[<alpha>],<length><CR><LF><pdu><CR><LF>** **...** **OK** 3) If there is any error related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	300ms. Note: Operation of **<stat>** depends on the storage of listed messages.
Reference GSM 07.05	

Parameter

<stat>	1) If 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
	2) If PDU mode	
	0	Received unread messages

	1	Received read messages
	2	Stored unsent messages
	3	Stored sent messages
	4	All messages
<mode>	0	Normal (default)
	1	Not change 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 specific; used character set should be the one selected with command select TE character set **AT+CSCS** (see definition of this command in *TS 07.07*)

<da> 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 (refer to command **AT+CSCS** in *TS 07.07*); type of address given by **<toda>**

<data> In the case of SMS: GSM 03.40 TP-User-Data in text mode responses; format:

- If **<dcs>** indicates that GSM 03.38 default alphabet is used and **<fo>** indicates that GSM 03.40 TPUser-Data-Header-Indication is not set
- If TE character set other than "HEX" (refer to Command Select TE character set **+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 number (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 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 CBM Content of Message in text mode responses; format:

- If **<dcs>** indicates that GSM 03.38 default alphabet is used
- If TE character set 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 number
- If **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number

<length> Integer type value indicating in the text mode (**AT+CMGF=1**) the length of the message body **<data>** (or **<cdata>**) in characters; or in PDU mode (**AT+CMGF=0**), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)

<index> Integer type; value in the range of location numbers supported by the associated memory

<oa> GSM 03.40 TP-Originating-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer to command **AT+CSCS** in *TS 07.07*); type of address 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 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
<scts>	GSM 03.40 TP-Service-Center-Time-Stamp in time-string format (refer to **<dt>**)
<toda>	GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of **<da>** is + (IRA 43) default value is 145, otherwise default value is 129)
<tooa>	GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format (refer to **<toda>**)

NOTE

If these parameters are omitted, the command returns the 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 Messages

AT+CMGR Read SMS Messages	
Test Command **AT+CMGR=?**	Response **OK**
Write Command **AT+CMGR=<index>[,<mode>]**	Response TA returns SMS message with location value **<index>** from message storage **<mem1>** to the TE. If status of the message is 'received unread', status in the storage changes to 'received read'. 1) If text mode (**AT+CMGF=1**) and when the command is executed successfully: For SMS-DELIVER: **+CMGR: <stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pi**

	d>,<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>** 2) If PDU mode (**AT+CMGF=0**) and when command is executed successful: **+CMGR: <stat>,[<alpha>],<length><CR><LF><pdu>** **OK** 3) If there is any error related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	Depends on the length of message content.
Reference GSM 07.05	

Parameter

<index>	Integer type; value in the range of location numbers supported by the associated memory
<mode>	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 specific
<da>	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*); type of address given by **<toda>**
<data>	In the case of SMS: GSM 03.40 TP-User-Data in text mode responses; format: − If **<dcs>** indicates that GSM 03.38 default alphabet is used and **<fo>** indicates that GSM 03.40 TPUser-Data-Header-Indication is not set

- If TE character set 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 number (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 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 CBM Content of Message in text mode responses; format

- If **<dcs>** indicates that GSM 03.38 default alphabet is used
- If TE character set 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 number
- If **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number

<dcs> Depending 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> Depending 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) in integer format

<length> Integer type value indicating in the text mode (**AT+CMGF=1**) the length of the message body **<data>** (or **<cdata>**) in characters; or in PDU mode (**AT+CMGF=0**), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)

<mid> GSM 03.41 CBM Message Identifier in integer format

<oa> GSM 03.40 TP-Originating-Address Address-Value field in string format; 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*); type of address 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 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

<pid> GSM 03.40 TP-Protocol-Identifier in integer format (default value is 0)

<sca> GSM 04.11 RP SC 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*); type of address given by **<tosca>**

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

<stat> PDU mode Text mode Explanation

	0	"REC UNREAD"	Received unread messages
	1	"REC READ"	Received read messages
	2	"STO UNSENT"	Stored unsent messages
	3	"STO SENT"	Stored sent messages
	4	"ALL"	All messages
<toda>	GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of **<da>** is + (IRA 43) default value is 145, otherwise default is 129)		
<tooa>	GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format (default refer to **<toda>**)		
<tosca>	GSM 04.11 RP SC address Type-of-Address octet in integer format (default refer to **<toda>**)		
<vp>	Depending on SMS-SUBMIT **<fo>** setting: GSM 03.40 TP-Validity-Period either in integer format (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 the message
+CMGR: "REC UNREAD","+8615021012496","","2010/09/25 15:06:37+32",145,4,0,241,"+86138002
10500",145,27
This is a test from Quectel

OK
```

8.8. AT+CMGS Send SMS Messages

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

	2) If PDU mode (**AT+CMGF=0**) and when the command is sent successfully: **+CMGS: <mr>** **OK** 3) If there is any error related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	120s, determined by network.
Reference GSM 07.05	

Parameter

<da>	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*); type of address given by **<toda>**
<toda>	GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of **<da>** is + (IRA 43) default value is 145, otherwise default value is 129)
<length>	Integer type value indicating in the text mode (**AT+CMGF=1**) the length of the message body **<data>** (or **<cdata>**) in characters; or in PDU mode (**AT+CMGF=0**), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)
<mr>	GSM 03.40 TP-Message-Reference in integer format

Example

```
AT+CMGF=1                          //Set SMS message format as text mode
OK
AT+CSCS="GSM"                      //Set character set as GSM which is used by the TE
OK
AT+CMGS="15021012496"
> This is a test from Quectel      //Enter in text, <CTRL+Z> send message, <ESC> quits
                                   without sending

+CMGS: 247

OK
```

8.9. AT+CMGW Write SMS Messages to Memory

AT+CMGW Write SMS Messages to Memory	
Test Command **AT+CMGW=?**	Response **OK**
Write Command 1) In text mode (**AT+CMGF=1**): **AT+CMGW[=<oa/da>[,<tooa/toda>[,<stat>]]]**<CR> **text is entered** **<Ctrl+Z/ESC>** **<ESC>** quits without sending 2) In PDU mode (**AT+CMGF=0**): **AT+CMGW=<length>[,<stat>]**<CR> **PDU is given <Ctrl+Z/ESC>**	Response TA transmits SMS message (either SMS-DELIVER or SMS-SUBMIT) from TE to memory storage **<mem2>**. Memory location **<index>** of the stored message is returned. By default message status will be set to 'stored unsent', but parameter **<stat>** also allows other status values to be given. If writing is successful: **+CMGW: <index>** **OK** If there is any error related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.05	

Parameter

<oa>	GSM 03.40 TP-Originating-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*); type of address given by **<tooa>**		
<da>	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*); type of address given by **<toda>**		
<tooa>	GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format (default refer to **<toda>**)		
<toda>	GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of **<da>** is + (IRA 43) default value is 145, otherwise default value is 129) 129 Unknown type (IDSN format number) 145 International number type (ISDN format)		
<stat>	PDU mode	Text mode	Explanation
	0	"REC UNREAD"	Received unread messages
	1	"REC READ"	Received read messages
	2	"STO UNSENT"	Stored unsent messages
	3	"STO SENT"	Stored sent messages

	4	"ALL"	All messages
<length>	Integer type value indicating in the text mode (**AT+CMGF=1**) the length of the message body **<data>** (or **<cdata>**) in characters; or in PDU mode (**AT+CMGF=0**), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)		
<pdu>	In the case of SMS: 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 as text mode
OK
AT+CSCS="GSM"                              //Set character set as GSM which is used by the TE
OK
AT+CMGW="15021012496"
> This is a test from Quectel              //Enter in text. Use <CTRL+Z> to write message or <ESC>
                                             to quit without sending
+CMGW: 4

OK
```

8.10. AT+CMSS Send SMS Messages from Storage

AT+CMSS Send SMS Messages from Storage	
Test Command **AT+CMSS=?**	Response **OK**
Write Command **AT+CMSS=<index>[,<da>[,<toda>]]**	Response TA sends a message with location value **<index>** from message storage **<mem2>** to the network (SMS-SUBMIT). If new recipient address **<da>** is given, it shall be used instead of the one stored with the message. Reference value **<mr>** is returned to the TE on successful message delivery. Values can be used to identify message upon unsolicited delivery status report result code. 1) In text mode (**AT+CMGF=1**) and when the command is sent successfully: **+CMSS: <mr>[,<scts>]**

	OK 2) In PDU mode (**AT+CMGF=0**) and the command is sent successfully: **+CMSS: <mr>[,<ackpdu>]** **OK** 3) If there is any error related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	120s, determined by network.
Reference GSM 07.05	

Parameter

<index>	Integer type; value in the range of location numbers supported by the associated memory
<da>	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*); type of address given by **<toda>**
<toda>	GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of **<da>** is + (IRA 43) default value is 145, otherwise default value is 129)
<mr>	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

8.11. AT+CMGC Send SMS Command

AT+CMGC Send SMS Command	
Test Command **AT+CMGC=?**	Response **OK**
Write Command 1) In text mode (**AT+CMGF=1**): **AT+CMGC=<fo>[,<ct>,<pid>,<mn>,<da>,<toda>]**<CR> **text is entered** **<Ctrl-Z/ESC>**	Response TA transmits SMS command message from a TE to the network (SMS-COMMAND). Message reference value **<mr>** is returned to the TE on successful message delivery. Value can be used to identify message upon unsolicited delivery status report result code.

ESC quits without sending 2) In PDU mode (**AT+CMGF=**0): **AT+CMGC=<length>**<CR> **PDU is given <Ctrl-Z/ESC>**	1) In text mode (**AT+CMGF=1**) and when the command is sent successfully: **+CMGC: <mr>[,<scts>]** **OK** 2) In PDU mode (**AT+CMGF=0**) and when the command is sent successfully: **+CMGC: <mr>[,<ackpdu>]** **OK** 3) If there is any error related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.05	

Parameter

<fo>	First octet of GSM 03.40 SMS-COMMAND (default value is 2) in integer format
<ct>	GSM 03.40 TP-Command-Type in integer format (default value is 0)
<pid>	GSM 03.40 TP-Protocol-Identifier in integer format (default value is 0)
<mn>	GSM 03.40 TP-Message-Number in integer format
<da>	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*); type of address given by **<toda>**
<toda>	GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of **<da>** is + (IRA 43) default value is 145, otherwise default value is 129) 129 Unknown type (IDSN format number) 145 International number type (ISDN format)
<length>	Integer type value indicating 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>	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:** (list of supported **<mode>**s),(list of supported **<mt>**s),(list of supported **<bm>**s),(list of supported **<ds>**s),(list of supported **<bfr>**s) **OK**
Read Command **AT+CNMI?**	Response **+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>** **OK**
Write Command **AT+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]]**	Response 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), receiving message should be done as specified in *GSM 03.38*. **OK** If there is any error related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.05	

Parameter

<mode>	0	Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications
	1	Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (e.g. in data mode). Otherwise forward them directly to the TE
	2	Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE
	3	Forward unsolicited result codes directly to the TE. TA-TE link specific inband technique used to embed result codes and data when TA is in data mode
<mt>	(The rules for storing received SMS depend on its data coding scheme (refer to *GSM 03.38*	

	[2]), preferred memory storage (**AT+CPMS**) setting and this value): 0 No SMS-DELIVER indications are routed to the TE 1 If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE by using unsolicited result code: **+CMTI: <mem>,<index>** 2 SMS-DELIVERs (except class 2) are routed directly to the TE using unsolicited result code: **+CMT: [<alpha>],<length><CR><LF><pdu>** (PDU mode enabled) or **+CMT: <oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data>** (Text mode enabled; about parameters in italics, refer to Command Show Text Mode Parameters **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>	(The rules for storing received CBMs depend on its data coding scheme (refer to *GSM 03.38 [2]*), the setting of Select CBM Types (**AT+CSCB**) and this value): 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 enabled) or **+CBM: <sn>,<mid>,<dcs>,<page>,<pages>**<CR><LF>**<data>** (Text mode 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>	0 No SMS-STATUS-REPORTs are 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 enabled) or **+CDS: <fo>,<mr>,[<ra>], [<tora>],<scts>,<dt>,<st>** (Text mode enabled)
<bfr>	0 TA buffer of unsolicited result codes defined in this command is flushed to the TE when **<mode>** 1...3 is entered (**OK** response shall be given before flushing the codes) 1 TA buffer of unsolicited result codes defined within this command is cleared when **<mode>**1…3 is entered

NOTE

Unsolicited result code

+CMTI: <mem>,<index>	Indicates that new message has been received
+CMT: [<alpha>],<length><CR><LF><pdu>	Short message is output directly
+CBM: <length><CR><LF><pdu>	Cell broadcast message is output 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, indication of the
                                         memory location is routed to the TE
OK

+CMTI: "SM",5                          //Indicate that new message has been received
AT+CNMI=2,2                            //Set 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            //Short message is output directly
```

8.13. AT+CRES Restore SMS Settings

AT+CRES Restore SMS Settings	
Test Command **AT+CRES=?**	Response **+CRES:** (list of supported **<profile>**s) **OK**
Write Command **AT+CRES[=<profile>]**	Response TA restores SMS settings from non-volatile memory to active memory. A TA can contain several profiles of settings. Settings specified in commands service centre address **AT+CSCA**, set message parameters **AT+CSMP** and select cell broadcast message types **AT+CSCB** (if implemented) are restored. Certain settings may not be supported by the storage (e.g. (U)SIM SMS parameters) and therefore cannot be restored. **OK** If there is any error related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.05	

Parameter

<profile>	0-3	Manufacturer specific profile number where settings are to be stored

8.14. AT+CSAS Save SMS Settings

AT+CSAS Save SMS Settings	
Test Command **AT+CSAS=?**	Response **+CSAS:** (list of supported **<profile>**s) **OK**
Write Command **AT+CSAS[=<profile>]**	Response TA saves active message service settings to non-volatile memory. A TA can contain several profiles of settings. Settings specified in commands service centre address **AT+CSCA,** Set Message Parameters **AT+CSMP** and Select cell broadcast message Types **AT+CSCB** (if implemented) are saved. Certain settings may not be supported by the storage (e.g. (U)SIM SMS parameters) and therefore cannot be saved. **OK** If there is any error related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.05	

Parameter

<profile>	0-3	Manufacturer specific profile number where settings are to be stored

8.15. 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 which types of CBMs are to be received by the ME. **OK** If there is any error related to ME functionality: **+CMS ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.05	

Parameter

<mode>	0	Message types specified in **<mids>** and **<dcss>** are accepted
	1	Message types specified in **<mids>** and **<dcss>** are not accepted
<mids>	String type; all different possible combinations of CBM message identifiers (refer to **<mid>**) (default is empty string) e.g. "0,1,5,320-478,922"	
<dcss>	String type; all different possible combinations of CBM data coding schemes (refer to **<dcs>**) (default is empty string) e.g. "0-3,5"	

NOTE

The command writes the parameters in non-volatile memory.

8.16. 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
Reference GSM 07.05	

Parameter

<show>	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
```

8.17. 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 when the SM is received by the SMSC (**<vp>** is in range 0... 255) or define the absolute time of the validity period termination (**<vp>** is a string). **OK**
Maximum Response Time	300ms
Reference GSM 07.05	

Parameter

<fo>	Depending 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) in integer format. SMS status report is supported under text mode if **<fo>** is set to 49
<vp>	Depending 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>	GSM 03.40 TP-Protocol-Identifier in integer format (default value is 0)
<dcs>	GSM 03.38 SMS Data Coding Scheme in integer format

NOTE

The command writes the parameters in non-volatile memory.

8.18. AT+QCLASS0 Store Class 0 SMS to (U)SIM when Receiving Class 0 SMS

AT+QCLASS0 Store Class 0 SMS to (U)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
Reference Quectel	

Parameter

<mode>	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

```
When 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 output directly
AT+QCLASS0=1                    //Enable to store SMS when receiving Class 0 SMS
OK

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

OK
```

8.19. AT+QMGDA Delete All SMS Messages

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

Parameter

<type>	1) In text mode:	
	"DEL READ"	Delete all read messages
	"DEL UNREAD"	Delete all unread messages
	"DEL SENT"	Delete all sent SMS messages
	"DEL UNSENT"	Delete all unsent SMS messages
	"DEL INBOX"	Delete all received SMS messages
	"DEL ALL"	Delete all SMS messages
	2) In PDU mode:	
	1	Delete all read messages
	2	Delete all unread messages
	3	Delete all sent SMS messages
	4	Delete all unsent SMS messages
	5	Delete all received SMS messages
	6	Delete all SMS messages

8.20. AT+QSMSCODE Configure SMS Code Mode

AT+QSMSCODE Configure SMS Code Mode	
Test Command **AT+QSMSCODE=?**	Response **+QSMSCODE:** (list of supported **<mode>**s) **OK**
Read Command **AT+QSMSCODE?**	Response **+QSMSCODE: <mode>** **OK**
Write Command **AT+QSMSCODE=<mode>**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<mode>	0	Code mode according with NOKIA
	1	Code mode according with SIEMENS
	2	Code mode according with NOKIA, and hexadecimal 0x11 treated as "_" hexadecimal 0x02 treated as "$"

9 Phonebook Commands

9.1. AT+CPBS Select Phonebook Memory Storage

AT+CPBS Select Phonebook Memory Storage	
Test Command **AT+CPBS=?**	Response **+CPBS:** (list of supported **<storage>**s) **OK**
Read Command **AT+CPBS?**	Response **+CPBS: <storage>[,<used>,<total>]** **OK**
Write Command **AT+CPBS=<storage>**	Response TA selects current phone book memory storage, which is used by other phone book commands. **OK**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<storage>	"MC"	ME missed (unanswered) calls list
	"RC"	ME received calls list
	"DC"	ME dialed calls list **(AT+CPBW** may not be applicable or this storage)(same as LD)
	"LA"	Last Number All list (LND/LNM/LNR)
	"ME"	ME phonebook
	"BN"	(U)SIM barred dialed number
	"SD"	(U)SIM service dial number
	"VM"	(U)SIM voice mailbox
	"FD"	(U)SIM fix dialing-phone book
	"LD"	(U)SIM last-dialing-phone book
	"ON"	(U)SIM (or ME) own numbers (MSISDNs) list

	"SM" (U)SIM phonebook
<used>	Integer type value indicating the total number of used locations in selected memory
<total>	Integer type value indicating the total number of locations in selected memory

NOTE

(U)SIM phonebook record can stores up to 250pcs and ME phonebook record can store up to 100pcs.

9.2. AT+CPBW Write Phonebook Entry

AT+CPBW Write Phonebook Entry	
Test Command **AT+CPBW=?**	Response TA returns location range supported by the current storage, the maximum length of **<number>** field, supported number formats of the storage, and the maximum length of **<text>** field. **+CPBW:** (The range of supported **<index>**s)**,<nlength>,**(list of supported **<type>**s)**,<tlength>** **OK**
Write Command **AT+CPBW=<index>[,<number>[,<type>[,<text>]]]**	Response TA writes phone book entry in location number **<index>** in the current phone book memory storage selected with **AT+CPBS**. Entry fields written are phone number **<number>** (in the format **<type>**) and text **<text>** associated with the number. If those fields are omitted, phone book entry is deleted. If **<index>** is left out, but **<number>** is given, entry is written to the first free location in the phone book. **OK**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<**nlength**>	Maximum length of phone number
<**tlength**>	Maximum length of text for number
<**index**>	Location number
<**number**>	Phone number

<**type**>	Type of number 129 Unknown type (IDSN format number) 145 International number type (ISDN format)
<**text**>	Text for phone number in current TE character set specified by **AT+CSCS**

NOTE

1. If the current memory storage is "MC", "RC", "DC", "LA" or "LD", **<number>, <type>** and **<text>** parameter must be the default value, **AT+CPBW** command only supports settings **<index>** delete the number of current phone book.
2. **<number>** cannot be empty.
3. The following characters in **<text>** must be entered via the escape sequence:

GSM char	Seq.Seq.(hex)	Note
\	\5C 5C 35 43	(backslash)
"	\22 5C 32 32	(string delimiter)
BSP	\08 5C 30 38	(backspace)
NULL	\00 5C 30 30	(GSM null)

'0' (GSM null) may cause problems for application layer software when reading string lengths.

Example

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

9.3. AT+CPBR Read Current Phonebook Entries

AT+CPBR Read Current Phonebook Entries	
Test Command **AT+CPBR=?**	Response TA returns location range supported by the current storage as a compound value and the maximum lengths of **<number>** and **<text>** fields. **+CPBR:** (list of supported **<index>**s),**<nlength>**,**<tlength>** **OK**
Write Command **AT+CPBR=<index1>[,<index2>]**	Response TA returns phone book entries in location number range **<index1>... <index2>** from the current phone book memory

	storage selected with **AT+CPBS**. If **<index2>** is left out, only location **<index1>** is returned. **+CPBR:<index1>,<number>,<type>,<text>[<CR><LF>** **...** **OK**
Maximum Response Time	300ms. Note: Operation of **<index2>**depends on the storage of read phonebook entries.
Reference GSM 07.07	

Parameter

<index>	Location number
<nlength>	Maximum length of phone number
<tlength>	Maximum length of name for number
<index1>	The first phone book record to read
<index2>	The last phonebook record to read
<number>	Phone number
<type>	Type of number
<text>	Text name for phone number in current TE character set specified by **AT+CSCS**

Example

```
AT+CSCS="GSM"
OK
AT+CPBR=10                                  //Query phone book entries in location 10
+CPBR: 10,"15021012496",129,"QUECTEL"

OK
```

9.4. AT+CPBF Find Phonebook Entries

AT+CPBF Find Phonebook Entries	
Test Command **AT+CPBF=?**	Response **+CPBF: <nlength>,<tlength>** **OK**
Write Command **AT+CPBF=[<findtext>]**	Response TA returns phone book entries (from the current phone book

	memory storage selected with **AT+CPBS**) which contain alphanumeric string **<findtext>**. **+CPBF: <index1>,<number>,<type>,<text>** **…** **OK**
Maximum Response Time	Depends on the storage of phonebook entries.
Reference GSM 07.07	

Parameter

<findtext>	String type field of maximum length **<tlength>** in current TE character set specified by **AT+CSCS**.
<index1>	Integer type values in the range of location numbers of phone book memory
<index2>	Integer type values in the range of location numbers of phone book memory
<number>	Phone number in string type of format **<type>**
<type>	Type of address octet in integer format: 129 Unknown type (IDSN format number) 145 International number type (ISDN format)
<text>	String type field of maximum length **<tlength>** in current TE character set specified by **AT+CSCS**
<nlength>	Integer type value indicating the maximum length of field **<number>**
<tlength>	Integer type value indicating the maximum length of field **<text>**

9.5. AT+CNUM Subscriber Number

AT+CNUM Subscriber Number	
Test Command **AT+CNUM=?**	Response **OK**
Execution Command **AT+CNUM**	Response **+CNUM: [<alpha1>],<number1>,<type1>** **...** **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms

Reference	
GSM 07.07	

Parameter

<alpha*x*>	Optional alphanumeric string associated with **<numberx>**; used character set should be the one selected with command. Select TE character set **AT+CSCS**
<number*x*>	Phone number in string type of format specified by **<type*x*>**
<type*x*>	Type of address octet in integer format (refer to *GSM 04.08* ***subclause 10.5.4.7***)

10 GPRS Commands

10.1. 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 there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	75s, determined by network.
Reference GSM 07.07	

Parameter

<state>	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 the current GPRS service state
+CGATT: 0 OK	

10.2. AT+CGDCONT Define PDP Contexts

AT+CGDCONT Define PDP Contexts	
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>** **…** **OK**
Write Command **AT+CGDCONT=<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[,<d_comp>[,<h_comp>]]]]]**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<cid>	(PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value=1) is returned by the test form of the command
<PDP_type>	(Packet Data Protocol type) a string parameter 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>	Access Point Name, a string parameter that is a logical name that is used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested

<PDP_addr>	A string parameter identifies the MT in the address space applicable to the PDP. If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, failing that, a dynamic address will be requested. The allocated address may be read using the **AT+CGPADDR** command
<d_comp>	A numeric parameter that controls PDP data compression 0 Off (default if value is omitted) Other values are reserved
<h_comp>	A numeric parameter that controls PDP header compression 0 Off (default if value is omitted) Other values are reserved

Example

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

10.3. 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>** **…** **OK**
Write Command **AT+CGQREQ=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

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

10.4. 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>** **…** **OK**
Write Command **AT+CGQMIN=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<cid>	A numeric parameter which specifies a particular PDP context definition (see **AT+CGDCONT** command)
The following parameters are defined in *GSM 03.60*.	

<precedence>	A numeric parameter which specifies the precedence class
<delay>	A numeric parameter which specifies the delay class
<reliability>	A numeric parameter which specifies the reliability class
<peak>	A numeric parameter which specifies the peak throughput class
<mean>	A numeric parameter which specifies the mean throughput class

10.5. AT+CGACT Activate or Deactivate PDP Contexts

AT+CGACT Activate or Deactivate PDP Contexts	
Test Command **AT+CGACT=?**	Response **+CGACT:** (list of supported **<state>**s) **OK**
Read Command **AT+CGACT?**	Response **+CGACT: <cid>,<state>** **…** **OK**
Write Command **AT+CGACT=<state>[,<cid>]**	Response **OK** If context is deactivated successfully, return: **NO CARRIER** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	150s, determined by network.
Reference GSM 07.07	

Parameter

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

Example

```
AT+CGDCONT=1,"IP","CMNET"          //Define a PDP context
OK
AT+CGACT=1,1                       //Activated the PDP
OK
AT+CGACT=0,1                       //Deactivated the PDP
NO CARRIER
```

10.6. AT+CGDATA Enter Data Mode

AT+CGDATA Enter Data Mode	
Test Command **AT+CGDATA=?**	Response **+CGDATA:** (list of supported **<L2P>**s) **OK**
Write Command **AT+CGDATA=<L2P>[,<cid>[,<cid>[,…]]]**	Response **OK** If enter data mode successfully, return: **NO CARRIER** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<L2P>	A string parameter that indicates the layer 2 protocol to be used between the TE and MT: PPP - Point to Point protocol for a PDP such as IP Other values are not supported and will result in an **ERROR** response to the execution command
<cid>	A numeric parameter which specifies a particular PDP context definition (see **AT+CGDCONT** command)

10.7. 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: **ERROR**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<cid>	A numeric parameter which specifies a particular PDP context definition (see **AT+CGDCONT** command)
<PDP_addr>	A string that identifies the MT in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the **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_address>** 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. browser.

Example

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

OK

10.8. AT+CGCLASS GPRS Mobile Station Class

AT+CGCLASS GPRS Mobile Station Class	
Test Command **AT+CGCLASS=?**	Response **+CGCLASS:** (list of supported **<class>**s) **OK**
Read Command **AT+CGCLASS?**	Response **+CGCLASS: <class>** **OK**
Write Command **AT+CGCLASS=<class>**	Response **OK** If there is any error: **ERROR** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	30s, determined by network.
Reference GSM 07.07	

Parameter

<class>	A string parameter which indicates the GPRS mobile class (Functionality in descending order) "B" Class B "CG" Class C in GPRS only mode "CC" Class C in circuit switched only mode

10.9. AT+CGEREP Control Unsolicited GPRS Event Reporting

AT+CGEREP Control Unsolicited GPRS Event Reporting	
Test Command	Response

AT+CGEREP=?	**+CGEREP:** (list of supported **<mode>**s) **OK**
Read Command **AT+CGEREP?**	Response **+CGEREP: <mode>** **OK**
Maximum Response Time	300ms
Write Command **AT+CGEREP=<mode>**	Response **OK** If there is any error: **ERROR**
Reference GSM 07.07	

Parameter

<mode>	0	Buffer unsolicited result codes in the MT; if MT result code buffer is full, the oldest one can be discarded. No codes are forwarded to the TE
	1	Discard unsolicited result codes when MT-TE link is reserved (e.g. in on-line data mode); otherwise forward them directly to the TE

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)

10.10. AT+CGREG Network Registration Status

AT+CGREG Network Registration Status	
Test Command	Response

AT+CGREG=?	**+CGREG:** (list 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: **ERROR**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<n>	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>	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 195 in decimal)	
<ci>	String type; two-byte cell ID in hexadecimal format	

NOTE

Only **<stat>** values of 0 and 1 are supported.

Example

```
AT+CGATT=0
NO CARRIER

+CGREG: 0,"1878","0873"
```

```
AT+CGATT=1
OK

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

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

10.11. AT+CGSMS Select Service for MO SMS Messages

AT+CGSMS Select Service for MO SMS Messages	
Test Command **AT+CGSMS=?**	Response **+CGSMS:** (list of currently available **<service>**s) **OK**
Read Command **AT+CGSMS?**	Response **+CGSMS: <service>** **OK**
Write Command **AT+CGSMS=[<service>]**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<service>	A numeric parameter which indicates the service or service preference to be used	
	0	GPRS
	1	Circuit switch
	2	GPRS preferred (use circuit switched if GPRS not available)
	3	Circuit switch preferred (use GPRS if circuit switched not available)

NOTE

The circuit switched service route is the default method.

10.12. AT+QGPCLASS Change GPRS Multi-slot Class

AT+QGPCLASS Change GPRS Multi-slot Class	
Test Command **AT+QGPCLASS=?**	Response **MULTISLOT CLASS:** (list 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: **ERROR**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<class>	GPRS multi-slot class 1-12 Default value is 12

NOTE

The command takes effect after the module is restarted.

11 TCP/IP Commands

11.1. AT+QIOPEN Start up TCP or UDP Connection

AT+QIOPEN Start up TCP or UDP Connection	
Test Command **AT+QIOPEN=?**	Response **+QIOPEN:** (list of supported **<mode>**)s,(**IP address range**),(**port**) **…** **OK**
Write Command **AT+QIOPEN=[<index>,]<mode>,<IP address>/<domain name>,<port>**	Response If format is right, respond: **OK** Otherwise respond: **ERROR** If the connection has already existed, respond: **ALREADY CONNECT** And then if connection is successful, respond: **[<index>,] CONNECT OK** Otherwise respond: **[<index>,] CONNECT FAIL**
Maximum Response Time	75s, determined by network.
Reference Quectel	

Parameter

<index>	A numeric indicates which socket opens the connection. M89 supports at most 6 sockets at the same time. This parameter is necessary only if **AT+QIMUX** was set as 1 (refer to **AT+QIMUX**). When **AT+QIMUX** was set as 0, the parameter MUST be

	omitted
<mode>	A string parameter which indicates the connection type "TCP" Establish a TCP connection "UDP" Establish a UDP connection
<IP address>	A string parameter that gives the address of the remote server in dotted decimal style.
<port>	The port of the remote server 0-65535
<domain name>	A string parameter which represents the domain name address of the remote server

NOTE

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 as 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.

11.2. 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** response**>**, then type data to send, tap **CTRL+Z** to send, 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 sending succeeds: **SEND OK** If sending fails: **SEND FAIL**
Write Command 1)When **AT+QIMUX=0** **AT+QISEND=<length>** 2)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 connection is not established or disconnected: **ERROR** If sending succeeds:

	SEND OK If sending fails: **SEND FAIL**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<index>	The index of the socket for sending data. This parameter is necessary only if **AT+QIMUX** was set as 1 (refer to **AT+QIMUX**). When **AT+QIMUX** was set as 0, the parameter MUST be omitted
<length>	A numeric parameter which indicates the length of data to be sent, it MUST be less than 1460

NOTE

1. This command is used to send data on the TCP or UDP connection that has been established already. **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 bytes.
3. Only send data at the status of connection, otherwise respond with **ERROR**.
4. **SEND OK** means the data have been put into the send window to send rather than it has received the ACK message for the data from the remote node. It is necessary to execute the command **AT+QISACK** to check whether the data has been sent to the remote node.

11.3. 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 close succeeds: **CLOSE OK** If close fails: **ERROR**
Write Command **AT+QICLOSE=<index>**	Response If close succeeds: **<index>,CLOSE OK**

	If close fails: **ERROR**
Maximum Response Time	300ms
Reference Quectel	

Parameter

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

NOTE

1. Execution Command **AT+QICLOSE**:
   - If **QISRVC** is 1 (please refer to **AT+QISRVC**) and **QIMUX** is 0 (please refer to **AT+QIMUX**), this command will close the connection in which the module is used as a client.
   - If **QISRVC** is 1 and **QIMUX** is 1, it will return ERROR.
   - If **QISRVC** is 2, **QIMUX** equals 0, 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 **QISRVC** is 2, **QIMUX** is 0 and the module is in listening state without any client, this command will cause the module to quit the listening state.
   - If **QISRVC** is 2, **QIMUX** is 1 and the module is used as a server, this command will close all the income connection and cause the module to quit the listening state.
2. Write Command **AT+QICLOSE=<index>**:
   - This command is valid only if **QIMUX** is 1.
   - If **QISRVC** is 1 and **QIMUX** is 1, this command will close the corresponding connection according to **<index>** and the module used as a client in the connection.
   - If **QISRVC** is 2 and **QIMUX** is 1, this command will close the incoming connection according to **<index>**.
3. If **QISRVC** is 1 and **QIMUX** is 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**.

11.4. AT+QIDEACT Deactivate GPRS/CSD PDP Context

AT+QIDEACT Deactivate GPRS/CSD PDP Context	
Test Command	Response

AT+QIDEACT=?	OK
Execution Command **AT+QIDEACT**	Response If close succeeds: **DEACT OK** If close fails: **ERROR**
Maximum Response Time	40s, determined by network.
Reference Quectel	

NOTE

1. Except at the status of IP INITIAL, the GPRS/CSD PDP context can be deactivated by **AT+QIDEACT**. After closing the connection, the status becomes to **IP INITIAL** again.
2. CSD context is not supported at present.

11.5. AT+QILPORT Set Local Port

AT+QILPORT Set Local Port	
Test Command **AT+QILPORT=?**	Response **+QILPORT:** (list of supported **<port>**s) **OK**
Read Command **AT+QILPORT?**	Response **<mode>: <port>** **...** **OK**
Write Command **AT+QILPORT=<mode>,<port>**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<mode>	A string parameter which indicates the connection type	
	"TCP"	TCP local port
	"UDP"	UDP local port
<port>	0-65535	A numeric parameter which indicates the local port

NOTE

This command is used to set the port for listening.

11.6. AT+QIREGAPP Start TCP/IP Task and Set APN, User Name and Password

AT+QIREGAPP Start TCP/IP 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>,<user name>,<password>** **OK**
Write Command **AT+QIREGAPP=<apn>,<user name>,<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
Reference Quectel	

Parameter

<apn>	A string parameter which indicates the GPRS access point name or the call number of CSD
<user name>	A string parameter which indicates the GPRS/CSD user name
<password>	A string parameter which indicates the GPRS/CSD password
<rate>	The speed of data transmit for CSD

NOTE

1. The Write Command and Execution Command are valid only at the status of **IP INITIAL**. After operating this command, the status will become to **IP START**.
2. The value of **QICSGP** (please refer to **AT+QICSGP**) defines what kind of bearer (GPRS or CSD) the parameters are used for.
3. CSD function and related configuration are not supported at present.

11.7. 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.
Reference Quectel	

NOTE

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

11.8. AT+QILOCIP Get Local IP Address

AT+QILOCIP Get Local IP Address	
Test Command **AT+QILOCIP=?**	Response **OK**
Execution Command **AT+QILOCIP**	Response If execution successful, respond: **<IP address>** Otherwise respond: **ERROR**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<IP address>	A string parameter which indicates the IP address assigned from GPRS or CSD network

NOTE

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

11.9. 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**, respond: **OK** **STATE: <state>**

	When **AT+QIMUX=1**, respond: **+QISTAT: <index>,<mode>,<addr>,<port>** **…** **OK**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<state>	A string parameter to indicate 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 was deactivated because of unknown reason
	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>	The index of the connection, the range is 0-5	
<mode>	The type of the connection	
	"TCP"	TCP connection
	"UDP"	UDP connection
<addr>	The IP address of the remote	

<port>	The port of the remote

NOTE

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

11.10. 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**, respond: **OK** **STATE: <state>** When **AT+QIMUX=1**, respond: **OK** **STATE: <state>** **+QISTATE: <index>,<mode>,<addr>,<port>,<socketstate>** **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<state>	A string parameter to indicate the status of the connection When **AT+QIMUX=0**: "IP INITIAL" The TCP/IP stack is in idle state. "IP START" The TCP/IP 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 was deactivated because of unknown reason.
	When **AT+QIMUX=1**:	
	"IP INITIAL"	The TCP/IP stack is in idle state.
	"IP START"	The TCP/IP 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**.
	“IP PROCESSING”	Data phase. Processing the existing connection now.
	"PDP DEACT"	GPRS/CSD context was deactivated because of unknown reason.
<index>	The index of the connection, the range is 0-5	
<mode>	The type of the connection	
	"TCP"	TCP connection
	"UDP"	UDP connection
<addr>	The IP address of the remote	
<port>	The port of the remote	
<socketstate>	A string parameter to indicate the status of the access connection, including **INITIAL** and **CONNECTED**.	

11.11. AT+QISSTAT Query the Current Server Status

AT+QISSTAT Query the Current Server Status	
Test Command **AT+QISSTAT=?**	Response **OK**
Execution Command **AT+QISSTAT**	Response When **AT+QIMUX=0**, respond: **OK** **S: <ServerState>** When **AT+QIMUX=1**, respond:

	OK **S: <ServerState>** **C: <index>,<mode>,<addr>,<port>** If there is any error: **ERROR**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<ServerState>	A string parameter to indicate the status of the connection "INITIAL" The TCP/IP stack is in idle state "OPENNING" The TCP/IP stack has been registered "LISTENING" Listening to server port "CLOSING" Closing connection now
<index>	The index of the connection, the range is 0-4
<mode>	The type of the connection "TCP" TCP connection "UDP" UDP connection
<addr>	The IP address of the remote
<port>	The port of the remote

11.12. AT+QIDNSCFG Configure Domain Name Server

AT+QIDNSCFG Configure Domain Name Server	
Test Command **AT+QIDNSCFG=?**	Response **OK**
Read Command **AT+QIDNSCFG?**	Response **PrimaryDns: <pri_dns>** **SecondaryDns: <sec_dns>** **OK**
Write Command **AT+QIDNSCFG=<pri_dns>[,<sec_dns>]**	Response **OK** If there is any error:

	ERROR
Maximum Response Time	300ms
Reference Quectel	

Parameter

<pri_dns>	A string parameter which indicates the IP address of the primary domain name server
<sec_dns>	A string parameter which indicates the IP address of the secondary domain name server

NOTE

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 it is necessary.
2. CSD function and configuration are not supported currently.

11.13. 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 succeeds, return: **<IP address>** If fails, return: **ERROR: <err>** **STATE: <state>**
Maximum Response Time	14s, determined by network.
Reference Quectel	

Parameter

<domain name>	A string parameter which indicates the domain name
<IP address>	A string parameter which indicates the IP address corresponding to the domain name
<err>	A numeric parameter which indicates 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**

11.14. 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
Reference Quectel	

Parameter

<mode>	A numeric parameter 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

11.15. 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
Reference Quectel	

Parameter

<mode>	A numeric parameter which 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, and the format is "**IPD(data length):**"

11.16. 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	Response

AT+QIAUTOS?	**+QIAUTOS: <mode>,<time>** **OK**
Write Command **AT+QIAUTOS=<mode>[,<time>]**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<mode>	A numeric parameter which 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>	A numeric parameter which indicates a time in seconds After the time expires since **AT+QISEND**, the input data will be sent automatically

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

AT+QIPROMPT Set Prompt of '>' when Sending Data	
Test Command **AT+QIPROMPT=?**	Response **+QIPROMPT:** (list 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
Reference Quectel	

Parameter

<send prompt>	A numeric parameter which indicates whether or not to echo prompt ">" after issuing **AT+QISEND** Command 0 No prompt **>** and show **SEND OK** when sending successes 1 Echo prompt **>** and show **SEND OK** when sending successes 2 No prompt and not show **SEND OK** when sending successes 3 Echo prompt **>** and show socket ID and **SEND OK** when sending successes

11.18. 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 configured as server successfully, return: **SERVER OK** If configured as server unsuccessfully, return: **CONNECT FAIL**
Write Command **AT+QISERVER=<type>[,<max>]**	Response **OK** If there is any error: **ERROR** If configured as server successfully, return: **SERVER OK** If configured as server unsuccessfully, return: **CONNECT FAIL**

Maximum Response Time	150s, determined by network.
Reference Quectel	

Parameter

<mode>	0	NOT configured as server
	1	Configured as server
<num>	The number of clients that have been connected in. The range is 0-5	
<type>	A numeric indicates the type of the server	
	0	TCP server
	1	UDP server
<max>	The maximum number of clients allowed to connect in. The default value is 1. The range is 1-5	

NOTE

1. 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**.

11.19. 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

Reference Quectel	

Parameter

<mode>	A numeric parameter 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>	A string parameter which indicates the access point name
<user name>	A string parameter which indicates the user name
<password>	A string parameter which indicates the password
CSD parameters:	
<dial number>	A string parameter which indicates the CSD dial numbers
<user name>	A string parameter which indicates the CSD user name
<password>	A string parameter which indicates the CSD password
<rate>	A numeric parameter which indicates the CSD connection rate 0 2400 1 4800 2 9600 3 14400

NOTE

CSD configuration is not supported at present.

11.20. 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
Reference Quectel	

Parameter

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

NOTE

There could 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 which connection data will be sent through.

11.21. AT+QISHOWRA Set Whether or Not to Display the Address of Sender

AT+QISHOWRA Set Whether or Not 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

Reference Quectel	

Parameter

<mode>	A numeric parameter which indicates whether or not to show the address (including IP address in dotted decimal style of the remote end) when receiving data. 0 DO NOT show the address. Default 1 Show the address; the format to show the address is like: **RECV FROM: <IP ADDRESS>:<PORT>**

11.22. AT+QISCON Save TCP/IP Application Context

AT+QISCON Save TCP/IP Application Context	
Test Command **AT+QISCON=?**	Response **OK**
Read Command **AT+QISCON?**	Response TA returns TCP/IP application context, which consists of the following AT command parameters. **SHOW APPTCPIP CONTEXT** **+QIDNSIP:<mode>** **+QIPROMPT:<sendprompt>** **+QIHEAD:<iphead>** **+QISHOWRA:<srip>** **+QICSGP:<csgp>** **Gprs Config APN:<apn>** **Gprs Config UserId:<gusr>** **Gprs Config Password:<gpwd>** **Gprs Config inactivityTimeout:<timeout>** **CSD Dial Number:<cnum>** **CSD Config UserId:<cusr>** **CSD Config Password:<cpwd>** **CSD Config rate:<crate>** **App Tcpip Mode:<mode>** **In Transparent Transfer Mode** **Number of Retry:<nmRetry>** **Wait Time:<waitTm>** **Send Size:<sendSz>** **esc:<esc>** **OK**

Execution Command **AT+QISCON**	Response **OK**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<mode>	See **AT+QIDNSIP**
<sendprompt>	See **AT+QIPROMPT**
<iphead>	See **AT+QIHEAD**
<srip>	See **AT+QISHOWRA**
<csgp>	See **AT+QICSGP**
<apn>	See **AT+QICSGP**
<gusr>	See **AT+QICSGP**
<gpwd>	See **AT+QICSGP**
<timeout>	See **AT+QICSGP**
<cnum>	See **AT+QICSGP**
<cusr>	See **AT+QICSGP**
<cpwd>	See **AT+QICSGP**
<crate>	See **AT+QICSGP**
The following configurations are only for transparent transfer mode.	
<nmRetry>	See **AT+QITCFG**
<waitTm>	See **AT+QITCFG**
<sendSz>	See **AT+QITCFG**
<esc>	See **AT+QITCFG**

NOTE

1. The Execution Command makes TA save TCP/IP Application Context which consists of the following AT Command parameters, and when the system is rebooted, the parameters will be loaded automatically: **AT+QIDNSIP**, **AT+QIPROMPT**, **AT+QIHEAD**, **AT+QISHOWRA**, **AT+QICSGP**, **AT+QITCFG**.
2. The Execution Command only saves the corresponding parameters of the foreground context (refer to **AT+QIFGCNT**).
3. CSD configuration is not supported at present.

11.23. 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
Reference Quectel	

Parameter

<mode>	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 has been 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.

11.24. 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	Response

AT+QITCFG?	**+QITCFG: <NmRetry>,<WaitTm>,<SendSz>,<esc>** **OK**
Write Command **AT+QITCFG=<NmRetry>,<WaitTm>,<SendSz>,<esc>**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<NmRetry>	Number of times to retry to send an IP packet
<WaitTm>	Number of 100ms intervals to wait for serial input before sending the packet
<SendSz>	Size in bytes of data block to be received from serial port before sending
<esc>	Whether to turn on the escape sequence or not, default is TRUE

NOTE

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 TCP/IP 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 TCP/IP stack will send all the data in the buffer to the remote.
4. This command is invalid when **AT+QIMUX=1**.

11.25. AT+QISHOWPT Control Whether or Not to Show the Protocol Type

AT+QISHOWPT Control Whether or Not 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
Reference Quectel	

Parameter

<mode>	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=0**.

11.26. AT+QIMUX Control Whether or Not to Enable Multiple TCP/IP Session

AT+QIMUX Control Whether or Not 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
Reference Quectel	

Parameter

<mode>	0	DO NOT enable multiple TCP/IP session at the same time
	1	Enable multiple TCP/IP session at the same time

11.27. AT+QISHOWLA Control Whether or Not to Display Local IP Address

AT+QISHOWLA Control Whether or Not 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
Reference Quectel	

Parameter

<mode>	A numeric parameter indicates whether or not to show the destination address before receiving data.	
	0	DO NOT show the destination address
	1	Show the destination address: **TO:<IP ADDRESS>**

NOTE

Because M89 can activate two GPRS contexts at the same time, i.e. M89 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.

11.28. AT+QIFGCNT Select a Context as Foreground Context

AT+QIFGCNT Select a Context as 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
Reference Quectel	

Parameter

<id>	A numeric indicates which context will be set as foreground context. The range is 0-1	
<channel>	A numeric 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 CMUX function is enabled, 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**.

11.29. AT+QISACK Query the Sent Data Information

AT+QISACK Query the Sent Data Information	
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
Reference Quectel	

Parameter

<n>	The index for querying the connection
<sent>	A numeric indicates the total length of the data that has been sent through the session
<acked>	A numeric indicates the total length of the data that has been acknowledged by the remote
<nAcked>	A numeric indicates the total length of the data that has been sent but not acknowledged by the remote

NOTE

1. Write command is invalid when **AT+QIMUX=0**.
2. This command could 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 M89 serves as a client. If the **AT+QISRVC=2**, this command is used to query the data information for sending during the session in which M89 serves as a server.

11.30. 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:** (list 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
Reference Quectel	

Parameter

<m>	A numeric 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** and **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>	A numeric points out which context the connection for the received data is based on. Please refer to the parameter **<id>** in the command **AT+QIFGCNT**. The range is 0-1.
<sc>	A numeric points out the role of M89 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>	A numeric indicates the index of the connection for the received data. The range is 0-5 When **AT+QIMUX=0**, this parameter will be always 0.
<num>	The number of packets received in the buffer.
<len>	The length of the current package in the buffer.
<tlen>	The sum of the length of all packages received in the buffer.

NOTE

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

11.31. 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: <ipAddr>:<port>,<type>,<length><CR><LF><data>]** **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<id>	A numeric points out which context the connection for the received data is based on. Please refer to the parameter **<id>** in the command **AT+QIFGCNT**. The range is 0-1
<sc>	A numeric points out the role of M89 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>	A numeric indicates the index of the connection for the received data. The range is 0-5. When **AT+QIMUX=0**, this parameter will be always 0.
<len>	The maximum length of data to be retrieved. The range is 1-1500
<ipAddr>	The address of the remote end. It is a dotted-decimal IP
<port>	The port of the remote end
<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>	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.

11.32. AT+QISDE Control Whether or Not to Echo the Data for AT+QISEND

AT+QISDE Control Whether or Not to Echo the Data for AT+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
Reference Quectel	

Parameter

<m>	A numeric indicates whether or not to echo the data for **AT+QISEND** 0 DO NOT echo the data 1 Echo the data

11.33. AT+QPING Ping a Remote Server

AT+QPING Ping a Remote Server	
Test Command **AT+QPING=?**	Response **+QPING: "HOST",**(list of supported **<timeout>**s)**,**(list of supported **<pingnum>**s) **OK**
Write Command **AT+QPING="<host>"[,[<timeout>][,<pingnum>]]**	Response **OK** **[+QPING: <result>[,<ipAddr>,<bytes>,<time>,<ttl>]** **…** If there is any error: **ERROR**
Maximum Response Time	Depends on **<timeout>**.
Reference Quectel	

Parameter

<host>	The host address in string style. It could be a domain name or a dotted decimal IP address
<timeout>	A numeric gives the maximum time to wait for the response of each ping request. Unit: second. Range: 1-255. Default: 1
<pingnum>	A numeric indicates the maximum time of ping request. Range: 1-10. Default: 4
<result>	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 it
<ipAddr>	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 it 4 Do NOT find the host. In the case, no other information follows it 5 Failed to activate PDP context. In the case, no other information follows it
<sent>	Total number of sending the ping requests
<rcvd>	Total number of the ping requests that received the response

<lost>	Total number of the ping requests that were timeout
<min>	The minimum response time. Unit: ms
<max>	The maximum response time. Unit: ms
<avg>	The average response time. Unit: ms

11.34. AT+QNTP Synchronize the Local Time Via NTP

AT+QNTP Synchronize the 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: **ERROR**
Maximum Response Time	120s, determined by network.
Reference Quectel	

Parameter

<server>	The address of the Time Server in string style. It could be a domain name or a dotted decimal IP address
<port>	The port of the Time Server
<result>	The result of time synchronization 0 Successfully synchronize the local time 1 Failed to synchronize the local time because of unknown reason 2 Failed to receive the response from the Time Server

3	The TCP/IP stack is busy now
4	Do Not find the Time Server
5	Failed 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 port is 123.

11.35. AT+QIKALIVE Set TCP/IP Keep Alive Parameter

AT+QIKALIVE Set TCP/IP Keep Alive Parameter	
Test Command **AT+QIKALIVE=?**	Response **+QIKALIVE:** (list of supported **<switch>**s)**[,**(list of supported **<idle_value>**s)**,**(list of supported **<interval_value>**s)] **OK**
Read Command **AT+QIKALIVE?**	Response **+QIKALIVE: <switch>,<idle_value>,<interval_value>** **OK**
Write Command **AT+QIKALIVE=<switch>[,<idle_value>,<interval_value>]**	Response **OK** If there is any error: **ERROR**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<switch>	0	Disable the function
	1	Enable the function
<idle_value>	The interval between heartbeat packets sent. The range is 60-1800 seconds, the default value is 60 seconds.	
<interval_value>	If the heartbeat package sending failed, the package will be send again. The range is 10-20 seconds. The default value is 10 seconds.	

NOTE

These parameters will not be saved after reset.

12 Supplementary Service Commands

12.1. AT+CCFC Call Forwarding Number and Conditions Control

AT+CCFC Call Forwarding Number and Conditions Control	
Test Command **AT+CCFC=?**	Response **+CCFC:** (list 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 (0-2,4). If **<mode>** is not equal to 2 and command is executed successful: **OK** If **<mode>**=2 and command is executed successful (only in connection with **<reads>** 0-3) For registered call forwarding numbers: **+CCFC: <status>,<class1>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]]** **...** **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 there is any error related to ME functionality:

	+CME ERROR: <err>
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<reads>	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>	0	Disable
	1	Enable
	2	Query status
	3	Registration
	4	Erasure
<number>	Phone number in string type of forwarding address in format specified by **<type>**	
<type>	Type of address in integer format; 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>	Type of sub-address in integer	
<class>	1	Voice
	2	Data
	4	Fax
	7	All telephony except SMS
	8	Short message service
	16	Data circuit sync
	32	Data circuit async
<time>	1…30	When "no reply" (**<reads>**=no reply) is enabled or queried, this gives the time in seconds to wait before call is forwarded, default value is 20
<status>	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
```

12.2. AT+CCUG Closed User Group Control

AT+CCUG Closed User Group Control	
Test Command **AT+CCUG=?**	Response **OK**
Read Command **AT+CCUG?**	Response **+CCUG: <n>,<index>,<info>** **OK**
Write Command **AT+CCUG=[<n>][,<index>[,<info>]]**	Response TA sets the closed user group supplementary service parameters as a default adjustment for all following calls. **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<n>	0	Disable CUG
	1	Enable CUG
<index>	0...9	CUG index
	10	No index (preferred CUG taken from subscriber data)

<info>	0	Bo information
	1	Suppress OA (Outgoing Access)
	2	Suppress preferential CUG
	3	Suppress OA and preferential CUG

12.3. AT+CCWA Call Waiting Control

AT+CCWA Call Waiting Control	
Test Command **AT+CCWA=?**	Response **+CCWA:** (list of supported **<n>**s) **OK**
Read Command **AT+CCWA?**	Response **+CCWA: <n>** **OK**
Write Command **AT+CCWA=[<n>][,<mode>[,<class>]]**	Response TA controls the call waiting supplementary service. Activation, deactivation and status query are supported. If **<mode>** is not equal to 2 and command is executed successful: **OK** If **<mode>**=2 and command is executed successful: **+CCWA: <status>,<class1>[<CR><LF>** **…** **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<n>	0	Disable presentation of an unsolicited result code
	1	Enable presentation of an unsolicited result code
<mode>	When **<mode>** parameter is not given, network is not interrogated	

	0	Disable
	1	Enable
	2	Query status
<class>	A sum of integers, each integer represents a class of information	
	1	Voice (telephony)
	2	Data (bearer service)
	4	Fax (facsimile)
	16	Data circuit sync
	32	Data circuit async
<status>	0	Disable
	1	Enable

NOTE

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 waiting classes will be reported. In this mode the command is available by pressing any key.
3. Unsolicited result code:
   When the presentation call waiting at the TA is enabled (and call waiting 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
```

12.4. AT+CHLD Call Hold and Multiparty

AT+CHLD Call Hold 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 hold, multiparty and explicit call transfer. Calls can be put on hold, recovered, released, added to conversation and transferred. **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<n>	0	Terminate all held calls or UDUB (User Determined User Busy) for a waiting call. If a call is waiting, terminate the waiting call. Otherwise, terminate all held calls (if any)
	1	Terminate all active calls (if any) and accept the other call (waiting call or held call). 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 available to the 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
```

12.5. 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 there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	15s, determined by network.
Reference GSM 07.07	

Parameter

<n>	0	Suppress unsolicited result codes
	1	Display unsolicited result codes
<m>	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
```

12.6. AT+QCLIP Control Whether or Not to Show the Name of Incoming Call Number

AT+QCLIP Control Whether or Not to Show the Name of Incoming Call Number	
Test Command **AT+QCLIP=?**	Response **+QCLIP:** (list of supported **<n>**s) **OK**
Read Command **AT+QCLIP?**	Response **+QCLIP: <n>** **OK**
Write Command **AT+QCLIP=<n>**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<n>	Enable or disable the function of show the name of incoming call number	
	0	Enable
	1	Disable

NOTE

This AT command should be used in conjunction with **AT+CLIP** command.

Example

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

```
OK
AT+QCLIP=1
OK
AT+CLIP=1
OK

RING

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

12.7. 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 there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	15s, determined by network
Reference GSM 07.07	

Parameter

<n>	(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>	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

12.8. 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.
Reference GSM 07.07	

Parameter

<n>	Parameter sets/shows the result code presentation status in the TA	
	0	Disable
	1	Enable
<m>	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* ***subclause 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
```

12.9. AT+QCOLP Show Alpha Field in +COLP String

AT+QCOLP Show Alpha Field in +COLP String	
Test Command **AT+QCOLP=?**	Response **+QCOLP:** (list of supported **<mode>**s) **OK**
Read Command **AT+QCOLP?**	Response **+QCOLP: <mode>** **OK**
Write Command **AT+QCOLP=<mode>**	Response **OK**

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

Parameter

<mode>	Whether or not to show alpha field in **+COLP** string	
	0	NOT show alpha field in **+COLP** string
	1	Show alpha field in **+COLP** string

NOTE

This command setting only works under **AT+COLP=1**.

Example

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

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

OK
```

12.10. 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	Response

AT+CUSD?	**+CUSD: <n>** **OK**
Write Command **AT+CUSD=[<n>[,<str>[,<dcs>]]**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	120s, determined by network.
Reference GSM 07.07	

Parameter

<n>	A numeric parameter which indicates control of the unstructured supplementary service data
	0 Disable the result code presentation in the TA
	1 Enable the result code presentation in the TA
	2 Cancel session (not applicable to read command response)
<str>	String type USSD-string
<dcs>	Cell Broadcast Data Coding Scheme in integer format (default 0)

Example

```
AT+CSCS="UCS2"
OK
AT+CUSD=1,"002A0031003000300023"
+CUSD:
1,"0031002E59296C14000A0032002E65B095FB000A0033002E8BC15238000A0034002E5F6979680
00A0035002E751F6D3B000A0036002E5A314E50000A0037002E5E385DDE98CE91C7000A002A002
E900051FA000A",72

OK
```

12.11. AT+CSSN Supplementary Services Notification

AT+CSSN Supplementary Services Notification	
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 there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<n>	A numeric parameter which indicates whether to show the **+CSSI: <code1>[,<index>]** result code presentation status after a mobile originated call setup	
	0	Disable
	1	Enable
<m>	A numeric parameter which 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>	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 rejected
<index>	Closed user group index	
<code2>	0	This is a forwarded call

13 Audio Commands

13.1. ATL Set Monitor Speaker Loudness

ATL Set Monitor Speaker Loudness	
Execution Command **ATL<value>**	Response **OK**
Maximum Response Time	300ms
Reference V.25ter	

Parameter

<value>	0	Low speaker volume
	1	Low speaker volume
	2	Medium speaker volume
	3	High speaker volume

NOTE

The two commands **ATL** and **ATM** are implemented only for V.25 compatibility reasons and have no effect.

13.2. ATM Set Monitor Speaker Mode

ATM Set Monitor Speaker Mode	
Execution Command **ATM<value>**	Response **OK**
Maximum Response Time	300ms
Reference V.25ter	

Parameter

<value>	0	Speaker is always off
	1	Speaker is on until TA inform TE that carrier has been detected
	2	Speaker is always on when TA is off-hook

NOTE

The two commands **ATL** and **ATM** are implemented only for V.25 compatibility reasons and have no effect.

13.3. AT+VTD Tone Duration

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

Parameter

<internalduration>	1-255	Duration between two tones, unit is 100ms
<duration>	0	Do not set duration of every single tone.
	1-100000	Duration of every single tone, unit is 1ms

13.4. AT+VTS DTMF and Tone Generation

AT+VTS DTMF and Tone Generation	
Test Command **AT+VTS=?**	Response **+VTS:** (list of supported **<dtmf>**s),(list 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 there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	Depends on the length of **<dtmf-string>**.
Reference GSM 07.07	

Parameter

<dtmf-string>	It has a max length of 20 characters, must be entered between double quotes (" ") and consists of combinations of the following separated by commas. But a single character does not require 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 **+VTD** command 2) **{<dtmf>, <duration>}** This is interpreted as a DTMF tone whose duration is determined by **<duration>**
<duration>	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
```

13.5. 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 there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

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

13.6. AT+CRSL Ringer Sound Level

AT+CRSL Ringer Sound Level	
Test Command **AT+CRSL=?**	Response **+CRSL:** (list of supported **<level>**s) **OK**
Read Command **AT+CRSL?**	Response **+CRSL: <level>** **OK**
Write Command **AT+CRSL=<level>**	Response **OK**

	If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<level>	Integer type value (0-100) with manufacturer specific range (Smallest value represents the lowest sound level)

13.7. AT+CLVL Loud Speaker Volume Level

AT+CLVL Loud Speaker Volume Level	
Test Command **AT+CLVL=?**	Response **+CLVL:** (list of supported **<level>**s) **OK**
Read Command **AT+CLVL?**	Response **+CLVL: <level>** **OK**
Write Command **AT+CLVL=<level>**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<level>	Integer type value (0-100) with manufacturer specific range (Smallest value represents the lowest sound level)

13.8. 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 there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<n>	0	Mute off
	1	Mute on

NOTE

This command is used to mute the uplink.

13.9. 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),(list of supported **<gainlevel>**s) **OK**
Read Command	Response

AT+QMIC?	**+QMIC: <gainlevel(Normal_Mic)>,<gainlevel(Headset_Mic)>,<gainlevel(Loudspeaker_Mic)>** **OK**
Write Command **AT+QMIC=<channel>,<gainlevel>**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<channel>	0	Normal microphone
	1	Headset microphone
	2	Loudspeaker microphone
<gainlevel>	Range is 0-15. The default values are 4, 9, and 8 for each channel.	

NOTE

Only **<channel>**=2 is supported.

13.10. AT+QLDTMF Generate Local DTMF Tones

AT+QLDTMF Generate Local DTMF Tones	
Test Command **AT+QLDTMF=?**	Response **+QLDTMF:** (list of supported **<durations>**s),(list of supported **<DTMF string>**s) **OK**
Write Command **AT+QLDTMF=<durations>[,<DTMF string>]**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Execution Command **AT+QLDTMF**	Response **OK**

Maximum Response Time	Depends on the length of **<DTMF string>**.
Reference Quectel	

Parameter

<durations>	A numeric parameter (1-1000) which indicates the duration of all DTMF tones in **<DTMF string>** in 1/10 seconds
<DTMF string>	A string parameter which has a max length of 20 DTMF characters (single ASCII chars in the set **0-9**, #, *****, **A-D**), separated by commas

NOTE

Abort any DTMF tones that are generated currently and any DTMF tones sequence.

13.11. AT+QAUDCH Swap the Audio Channels

AT+QAUDCH Swap the Audio Channels	
Test Command **AT+QAUDCH=?**	Response **+QAUDCH:** (list of supported **<n>**s) **OK**
Read Command **AT+QAUDCH?**	Response **+QAUDCH: <n>** **OK**
Write Command **AT+QAUDCH=[<n>]**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<n>	0	Normal audio channel

	1	Headset audio channel
	2	Loudspeaker audio channel

NOTE

Only **<n>**=2 is supported.

13.12. 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),(list of supported **<type>**s) **OK**
Write Command **AT+QAUDLOOP=<state>[,<type>]**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<state>	0	Test is off
	1	Test is on
<type>	0	Normal audio channel
	1	Headset audio channel
	2	Loudspeaker audio channel

NOTE

Only **<type>**=2 is supported.

13.13. 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 **<periodOn>**s),(list of supported **<periodOff>**s),(list of supported **<duration>**s) **OK**
Write Command **AT+QLTONE=<mode>,<frequency>,<periodOn>,<periodOff>,<duration>**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	Depends on the content of the play.
Reference Quectel	

Parameter

<mode>	0	Stop playing tone
	1	Start playing tone
<frequency>	The frequency of tone to be generated	
<periodOn>	The period of generating tone	
<periodOff>	The period of stopping tone	
<duration>	Duration of tones in milliseconds	

NOTE

When playing tone of a specified frequency, the module will continuously play for **<periodOn>**, and then stop playing for **<periodOff>** in a cycle. The total time of the cycles is **<duration>**.

13.14. AT+QTONEP Set DTMF Output Path

AT+QTONEP Set DTMF Output Path	
Test Command **AT+QTONEP=?**	Response **+QTONEP:** (list of supported **<outputpath>**s) **OK**

Read Command **AT+QTONEP?**	Response **+QTONEP: <outputpath>** **OK**
Write Command **AT+QTONEP=<outputpath>**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<outputpath>	Output path	
	0	Output DTMF or tone from Normal speaker
	1	Output DTMF or tone from Headset speaker
	2	Output DTMF or tone from Loudspeaker
	3	Auto

NOTES

1. Only **<outputpath>** values of 2 and 3 are supported.
2. Set **AT+QTONEP=3**, output DTMF or tone from default speak path. For more details, please refer to **AT+QAUDCH**.

13.15. AT+QTDMOD Set Tone Detection Mode

AT+QTDMOD Set Tone Detection Mode	
Test Command **AT+QTDMOD=?**	Response **+QTDMOD:** (list of supported **<operatefuntion>**s),(list of supported **<funtionstatus>**s) **OK**
Read Command **AT+QTDMOD?**	Response **+QTDMOD: <operatefuntion>,<funtionstatus>** **OK**
Write Command	Response

AT+QTDMOD=<operatefuntion>,<funtionstatus>	**OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<operatefuntion> Operate function

1	Set detection range
2	Set detection mode

<funtionstatus> Function status

0	When set **<operatefuntion>**=1, detect all DTMF, including 1400Hz and 2300Hz handshake signal. When set **<operatefuntion>**=2, detect DTMF tone by normal arithmetic
1	When set **<operatefuntion>**=1, only detect 1400Hz and 2300Hz handshake signal by using optimal arithmetic. When set **<operatefuntion>**=2, detect long continuous DTMF tone by using optimal arithmetic
2	When set **<operatefuntion>**=1, not detected 1400Hz and 2300Hz handshake signal.

NOTE

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

13.16. AT+QTONEDET Detect DTMF

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

Read Command **AT+QTONEDET?**	Response **+QTONEDET: <mode>** **OK**
Write Command **AT+QTONEDET=<mode>[,<operate >][,<prefixpause>][,<lowthreshold>][,<highthreshold>]**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>** Open after successful DTMF tone is detected, report: **+QTONEDET: <dtmfcode>[,<persistencetime>]**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<mode>	Mode function	
	0	Close tone detection
	1	Open tone detection
	2	Configure 1400Hz or 2300Hz detection threshold, duration of which is 100ms
	3	Configure 1400Hz and 2300Hz 400ms detection threshold
	4	Configure DTMF detection threshold
	5	Open debug
<operate>	Operate value	
	When **<mode>**=2, **<operate>** set as follows	
	0	Query threshold values, these values are 1400Hz and 2300Hz detection threshold, each duration of which is 100ms
	1	Set threshold values, these values are 1400Hz and 2300Hz 100ms detection threshold
	When **<mode>**=3, **<operate>** set as follows	
	0	Query threshold values, these values are 1400Hz and 2300Hz 400ms detect threshold
	1	Set threshold values, these values are 1400Hz and 2300Hz 400ms detect threshold.
	When **<mode>**=4, **<operate>** set as follows	
	0	Query threshold values, these values are detection threshold
	1	Set threshold values, these values are DTMF detection threshold
	When **<mode>**=5, **<param1>** set as follows	
	0	Working status, default value, report **+QTONEDET: x,x,** please 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) and **+QTONEDET: x,x,** please refer to Note
<prefixpause>	Prefix pause number	
<lowthreshold>	Low threshold value	
<highthreshold>	High threshold value	
<dtmfcode>	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
<persistencetime>		
	100	100ms of the tone is detected, only 1400Hz and 2300Hz
	400	400ms of the tone is detected, only 1400Hz and 2300Hz

NOTE

1. 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 is 20ms.
3. When in debug mode, report **+QTONEDTD: <dtmfcode>,<weak>,,<pause_f7>, <pause_dtmf>,<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. Refer to **AT+QTDMOD**.

13.17. AT+QWDTMF Play DTMF Tone During the Call

AT+QWDTMF Play DTMF Tone During the Call	
Test Command **AT+QWDTMF=?**	Response **+QWDTMF:** (list of supported **<ul_volume>**s),(list of supported**<dl_volume>**s),("**<dtmfcode>,<continuancetime>,<mutetime>**"),(list of supported **<channel>**s),(list of supported **<mode>**s) **OK**
Write Command **AT+QWDTMF=<ul_volume>,<dl_volume>,("<dtmfcode>,<continuancetime>,<mutetime>")[,<channel>][,<mode>]**	Response If command is executed successfully: **+QWDTMF: 5** **OK** If it fails to execute the command: **+QWDTMF: <playcode>** **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	Depends on the content of the play.
Reference Quectel	

Parameter

<ul_volume>	0-7, uplink channel of the volume
<dl_volume>	0-7, downlink channel of the volume, recommended to be set as 0
<dtmfcode>	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
<continuancetime>	Duration of each DTMF tone, unit is ms	
<mutetime>	Mute time, unit is ms	
<channel>	0	Normal audio channel
	1	Headset audio channel
	2	Loudspeaker audio channel
<mode>	0	Algorithm 1 (Default)
	1	Algorithm 2
<playcode>	Indicate status of sending DTMF	
	If **<playcode>** is 5, it means sending DTMF successfully	
	If **<playcode>** is not 5, it means sending DTMF unsuccessfully	

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 available for non-call, and only **<channel>**=2 is supported.

14 Hardware Related Commands

14.1. 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 there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

<time>	String type value; format is "yy/MM/dd,hh:mm:ss±zz", where characters indicate year (two last digits),month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range -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
```

14.2. AT+QALARM Set Alarm

AT+QALARM Set Alarm	
Test Command **AT+QALARM=?**	Response **+QALARM:** (list of supported **<state>**s)**,<time>,**(list 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 there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<state>	An integer parameter which indicates whether or not to enable alarm 0 Clear alarm 1 Set alarm
<time>	A string parameter which indicates the time when an alarm arises. The format is "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, ranging from -47 to +48
<repeat>	An integer parameter which indicates the repeat mode 0 None 1 Daily 2 Weekly 3 Monthly
<power>	An integer parameter which indicates the method of controlling power when alarm arises 0 None. Only send **ALARM RING** to 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

In alarm mode, protocol stack and (U)SIM protocol are closed, only a few AT command 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 power key is pressed, the system will be powered down immediately.

14.3. AT+CBC Battery Charge

AT+CBC Battery Charge	
Test Command **AT+CBC=?**	Response **+CBC:** (list of supported **<bcs>**s),(list of supported **<bcl>**s),(**voltage**) **OK**
Execution Command **AT+CBC**	Response **+CBC: <bcs>,<bcl>,<voltage>** **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference GSM 07.07	

Parameter

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

NOTE

As M89 does not support battery charge, the **<bcs>** and **<bcl>** is invalid while the **<voltage>** still represents the correct voltage of VBAT.

14.4. AT+QADC Read ADC

AT+QADC Read ADC	
Test Command **AT+QADC=?**	Response **+QADC:** (list of supported **<status>**s),(list of supported **<value>**s) **OK**
Execution Command **AT+QADC?**	Response **+QADC: <status>,<value>** **OK**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<status>	Status	
	0	Fail
	2	Success
<value>	0-2800	Voltage

14.5. AT+QSCLK Configure Slow Clock

AT+QSCLK Configure Slow Clock	
Test Command **AT+QSCLK=?**	Response **+QSCLK:** (list of supported **<n>**s) **OK**
Read Command **AT+QSCLK?**	Response **+QSCLK: <n>** **OK**
Write Command **AT+QSCLK=<n>**	Response **OK**
Maximum Response Time	300ms
Reference	

Quectel	

Parameter

<n>	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, the module will enter into sleep mode. Otherwise, it will exit from sleep mode.

NOTE

In mode 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.

14.6. AT+QLEDMODE Configure the Network Indication LED Patterns

AT+QLEDMODE Configure the Network Indication LED Patterns	
Test Command **AT+QLEDMODE=?**	Response **+QLEDMODE:** (list of supported **<ledmode>**s) **OK**
Read Command **AT+QLEDMODE?**	Response **+QLEDMODE: <ledmode>** **OK**
Write Command **AT+QLEDMODE=<ledmode>**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<ledmode>	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 reported until the ringing ends

NOTE

Please restart the module after the command is set.

14.7. 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 right, response **OK** Else if **<threshold>** is omitted and **<threshold_type>** is legal, this command is used to query the value of the corresponding parameter, and response: **+QVBATT: <threshold_type>,<threshold>,<state>** **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<threshold_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>	Voltage threshold. Unit: mV
<state>	The corresponding function of **<threshold_type>** parameter 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

NOTES

1. When the battery voltage reaches the setting threshold, reported the URC as follows:
   UNDER_VOLTAGE WARNING
   UNDER_VOLTAGE POWER DOWN
   OVER_VOLTAGE WARNING
   OVER_VOLTAGE POWER DOWN
2. This command can be saved by **AT&W**.

Example

```
AT+QVBATT=?                          //Test command, 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 is 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 means that the function of the low voltage power warning is enabled.
OK	
AT+QVBATT=1,3300,0	//The functon of the low voltagel poweroff is disabled.
OK	
AT+QVBATT=1	//Query the threshold of the low voltage power off and the state
+QVBATT: 1,3300,0	//1 means 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 disabled.
OK	

15 Others Commands

15.1. A/ Re-issues the Last Command Given

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

NOTE

This command does not work when the serial multiplexer is active. It does not have to end with terminating character.

Example

```
AT
OK
A/                                  //Re-issues the previous command
OK
```

15.2. 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
Reference V.25ter	

Parameter

<value>	0	Echo mode off
	1	Echo mode on

15.3. 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 setting 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
Reference V.25ter	

Parameter

<n>	0-13-127	Command line termination character (Default 13=**<CR>**)

15.4. ATS4 Set Response Formatting Character

ATS4 Set Response Formatting Character	
Read Command **ATS4?**	Response **<n>** **OK**
Write Command **ATS4=<n>**	Response This parameter setting determines the character generated by the TA for result code and information text. **OK**
Maximum Response Time	300ms

Reference V.25ter	

Parameter

<n>	0-10-127	Response formatting character (Default 10=**<LF>**)

15.5. 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 setting determines the character recognized by TA as a request to delete the immediately preceding character from the command line. **OK**
Maximum Response Time	300ms
Reference V.25ter	

Parameter

<n>	0-8-127	Response editing character (Default 8=**<Backspace>**)

15.6. AT+QRIMODE Set RI Time

AT+QRIMODE Set RI Time	
Test Command **AT+QRIMODE=?**	Response **+QRIMODE:** (list of supported **<timemode>**s) **OK**
Read Command **AT+QRIMODE?**	Response **+QRIMODE: <timemode>**

	OK
Write Command **AT+QRIMODE=<timemode>**	Response **OK** If there is any error related to ME functionality: **+CME ERROR: <err>**
Maximum Response Time	300ms
Reference Quectel	

Parameter

<timemode>	Time mode	
	0	120ms low pulse for RI when receiving SMS or other URCs
	1	120ms low pulse for RI when receiving SMS; 50ms low pulse when receiving other URCs
	2	When a new SMS is received, RI changes to LOW and holds low level for 120ms; when other URCs are received, it takes no effect on RI

16 Appendixes

16.1. 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_M89_Hardware_Design	M89 Hardware Design

16.2. Terms and Abbreviations

Table 5: Terms and Abbreviations

Abbreviation	Description
AMR	Adaptive Multi-Rate
CSD	Circuit Switch Data
DCD	Dynamic Content Delivery
DCE	Data Communication Equipment
DTE	Data Terminal Equipment
DTR	Data Terminal Ready
GPRS	General Packet Radio Service
ME	Mobile Equipment
MS	Mobile Station
PDP	Packet Data Protocol
PSC	Primary Synchronization Code
RTS/CTS	Request To Send/Clear To Send
TA	Terminal Adapter
TCP	Transmission Control Protocol
TE	Terminal Equipment
UDP	User Datagram Protocol

16.3. 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
ATS6	<n>	2
ATS7	<n>	60
ATS8	<n>	2
ATS10	<n>	15
ATV	<value>	1
ATX	<value>	4
AT&C	<value>	1
AT&D	<value>	0
AT+ILRR	<value>	0
AT+CREG	<n>	0
AT+CCUG	<n>,<index>,<info>	0,0,0
AT+CCWA	<n>	0
AT+CSCS	<chset>	“GSM”
AT+CSTA	<type>	129
AT+CLIP	<n>	0
AT+CLIR	<n>	0

AT+CMEE	<n>	1
AT+COLP	<n>	0
AT+CR	<mode>	0
AT+QDISH	<disableath>	0
AT+CRLP	<iws>,<mws>,<T1>,<N2>,<Ver1>,<T4>	61,61,128,6,0,3
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+CSNS	<mode>	0
AT+CMOD	<mode>	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	<gainlevel>	When AT+QAUDCH=0, the default value <gainlevel>=80; When AT+QAUDCH=1, the default value <gainlevel>=144;
AT+QMIC	<gainlevel(Normal_Mic)>,<gainlevel(Headset_Mic)>,<gainlevel(Loudspeaker_Mic)>	4,9,8
AT+QSCLK	<n>	0
AT+QCLIP	<n>	0
AT+QCOLP	<n>	0
AT+QIURC	<mode>	1

AT+QEXTUNSOL	<mode>	0
AT+QRIMODE	<timemode>	0
AT+QSIMDET	<enable>,<insert_level>	0,0
AT+QSIMSTAT	<enable>	0

16.4. 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
ATS6	<n>	Yes
ATS7	<n>	Yes
ATS8	<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+ILRR	<value>	Yes
AT+IPR	<rate>	Yes
AT+CREG	<n>	Yes
AT+CCUG	<n>,<index>,<info>	Yes
AT+CCWA	<n>	Yes
AT+CSCS	<chset>	Yes
AT+CSTA	<type>	Yes
AT+CLIP	<n>	Yes
AT+CLIR	<n>	Yes
AT+CMEE	<n>	Yes
AT+COLP	<n>	Yes
AT+CR	<mode>	Yes
AT+QDISH	<disableath>	No
AT+CRLP	<iws>,<mws>,<T1>,<N2>,<Ver1>,<T4>	Yes
AT+CRSL	<level>	No
AT+CLVL	<level>	No
AT+CUSD	<n>	Yes
AT+CSNS	<mode>	Yes
AT+CMGF	<mode>	Yes
AT+CNMI	<mode>,<mt>,<bm>,<ds>,<bfr>	Yes
AT+CSDH	<show>	Yes
AT+QSIDET	<gainlevel>	Yes
AT+QMIC	<gainlevel(Normal_Mic)>,<gainlevel(Headset_Mic)>,<gainlevel(Loudspeaker_Mic)>	Yes
AT+QSCLK	<n>	No

AT+QCLIP	<n>	Yes
AT+QCOLP	<n>	Yes
AT+QIURC	<mode>	No
AT+QEXTUNSOL	<mode>	No
AT+QRIMODE	<timemode>	No
AT+QSIMDET	<enable>,<insert_level>	Yes
AT+QSIMSTAT	<enable>	Yes

16.5. 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
ATS6	<n>	2
ATS7	<n>	60
ATS8	<n>	2
ATS10	<n>	15
ATV	<value>	1
ATX	<value>	4
AT&C	<value>	1

AT&D	<value>	0
AT+ILRR	<value>	0
AT+CREG	<n>	0
AT+CCUG	<n>,<index>,<info>	0,0,0
AT+CCWA	<n>	0
AT+CSCS	<chset>	“GSM”
AT+CSTA	<type>	129
AT+CLIP	<n>	0
AT+CLIR	<n>	0
AT+CMEE	<n>	1
AT+COLP	<n>	0
AT+CR	<mode>	0
AT+QDISH	<disableath>	0
AT+CRLP	<iws>,<mws>,<T1>,<N2>,<Ver1>,<T4>	61,61,128,6,0,3
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+CSNS	<mode>	0
AT+CMOD	<mode>	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	<gainlevel>	When AT+QAUDCH=0, the default value <gainlevel>=80; When AT+QAUDCH=1, the default value <gainlevel>=144;
AT+QMIC	<gainlevel(Normal_Mic)>,<gainlevel(Headset_Mic)>,<gainlevel(Loudspeaker_Mic)>	4,9,8
AT+QSCLK	<n>	0
AT+QCLIP	<n>	0
AT+QCOLP	<n>	0
AT+QIURC	<mode>	1
AT+QEXTUNSOL	<mode>	0
AT+QRIMODE	<timemode>	0
AT+QSIMDET	<enable>,<insert_level>	0,0
AT+QSIMSTAT	<enable>	0

16.6. Summary of URCs

Table 9: Summary of URCs

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><dat	New CBM is received and output directly to TE (Text mode)	AT+CNMI=2,2

	a>		
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_addr>[,<cid>]	GPRS ME detach	AT+CGEREP=1
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	+QCGTIND	A CS voice call, CS data, fax call or GPRS session termination indicator	AT+QCGTIND=1
17	+CSQN: <rssi>,<ber>	Signal quality change	AT+QEXTUNSOL="SQ",1
18	+FPLMN: <status>	Forbidden network is available only	AT+QEXTUNSOL="FN",1
19	+CMWT: <store>,<index>,<voice>,<fax>,<email>,<other>	Message waiting	AT+QEXTUNSOL="MW",1
20	+QGURC: <event>	Unsolicited result code follows particular call state transition	AT+QEXTUNSOL="UR",1
21	+CBCN: <bcs>,<bcl>	Display battery connection status and battery charge level	AT+QEXTUNSOL="BC",1
22	+QBAND: <band>	Band mode display	AT+QEXTUNSOL="BM",1
23	+TSMSINFO: <CMS error info>	Additional SMS information	AT+QEXTUNSOL="SM",1
24	+CCINFO: <Call is Disconnected>,<remain calls>	Displays the disconnected call ID and the remain call numbers after one of the call is disconnected	AT+QEXTUNSOL="CC",1
25	RING	Indicates incoming call	N/A

26	Call Ready	Device is ready to make/receive calls	N/A
27	UNDER_VOLTAGE POWER DOWN	Under voltage shutdown indication	N/A
28	UNDER_VOLTAGE WARNIN G	Under voltage warning	N/A
29	OVER_VOLTAGE POWER D OWN	Over voltage shutdown indication	N/A
30	OVER_VOLTAGE WARNING	Over voltage warning	N/A
31	NORMAL POWER DOWN	Normal power down	N/A
32	+COLP: <number>,<type>[,<s ubaddr>,<satype>[CLI validit y]],	The presentation of the COL(connected line) at the TE for a mobile originated call	AT+COLP=1
33	+CLIP: <number>,<type>,"",,< alphaID>,<CLI validity>	Mobile terminating call indication	AT+CLIP=1
34	+CRING: <type>	An incoming call is indicated to the TE with unsolicited result code instead of the normal RING	AT+CRC=1
35	+CREG: <stat>	Indicate registration status of the ME	AT+CREG=1
36	+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
37	+CCWA: <number>,<type>,<cl ass>[,<alpha>]	Call waiting indication	AT+CCWA=1,1
38	RDY	ME initialization is successful	N/A
39	+CFUN: 1	All function of the ME is available	N/A
40	+CPIN: <state>	SIM card pin state	N/A
41	MO RING	MO call ringing	AT+QMOSTAT=1
42	MO CONNECTED	MO call connected	AT+QMOSTAT=1
43	ALARM RING	Alarm event is triggered	AT+QALARM=1,<t ime>,<repeat>,0/1
44	ALARM MODE	ME is switched on by alarm	AT+QALARM=1,<t ime>,<repeat>,2

16.7. 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
8	PH_SIM_PUK_REQUIRED
10	(U)SIM not inserted
11	(U)SIM PIN required
12	(U)SIM PUK required
13	(U)SIM failure
14	(U)SIM busy
15	(U)SIM wrong
16	Incorrect password

17	(U)SIM PIN2 required
18	(U)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
48	Long dial-number storage is full
100	Unknow
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 (U)SIM C person PIN required
154	Link (U)SIM C person PUK required
302	Command conflict
600	No Error
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 (U)SIM
3517	SM not ready
3518	Invalid parameter
3519	Incomplete concatenate SMS
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
3777	Invalid SMS character
3778	The length of SMS is zero
3779	No enough length for sc
3780	Incorrect data length
3790	Empty destination address
3791	Call is in progress

16.8. 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	(U)SIM not inserted
311	(U)SIM pin necessary
312	PH SIM pin necessary
313	(U)SIM failure
314	(U)SIM busy
315	(U)SIM wrong
316	(U)SIM PUK required
317	(U)SIM PIN2 required
318	(U)SIM PUK2 required
320	Memory failure
321	Invalid memory index

322	Memory full
330	SMSC address unknown
331	No network
332	Network timeout
500	Unknown
512	(U)SIM not ready
513	Message length exceeds
514	Invalid request parameters
515	ME storage failure
517	Invalid service mode
528	More message to send state error
529	MO SMS is not allowed
530	GPRS is suspended
531	ME storage full
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	(U)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

16.9. Summary of Causes for Extended Error Report

16.9.1. 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

16.9.2. 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	(U)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 allowed
530	GPRS is suspended
531	ME storage full
532	Doing (U)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	Synchronization 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 information
2145	Message type not existed
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
(U)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 (U)SIM file full
3376	ACL add entry failed
3377	ACL del entry failed
3378	ACL set entry failed
3379	ACL (U)SIM read failed
3380	ACL (U)SIM write failed

16.9.3. 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	(U)SIM inserted
118	(U)SIM removed
119	(U)SIM absent
120	(U)SIM invalid for PS
121	(U)SIM invalid for CS
122	(U)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

16.9.4. 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