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M35

AT Commands Manual

GSM/GPRS Module Series

Rev. M35_AT_Commands_Manual_V1.0

Date: 2013-07-11

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About the Document

History

Revision	Date	Author	Description
1.0	2013-07-11	Bonnie ZHAO	Initial

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1 Introduction

1.1. Scope of the Document

This document presents the AT Commands Set for Quectel cellular engine M35.

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 M85 is a combination of GSM07.05, GSM07.07 and ITU-T recommendation V.25ter and the AT Commands developed by Quectel.

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

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

You can enter several AT Commands on the same line. In this case, you do not need to type the "**AT**" or "**at**" prefix before every command. Instead, you only need type "**AT**" or "**at**" at the beginning of the command line. Please note that use a semicolon as command delimiter.

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

1.2.2. Entering Successive AT Commands on Separate Lines

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

1.3. Supported Character Sets

The M35 AT Command interface defaults to the **IRA** character set. The M35 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, the entry and display of phone book entries text field and SIM Application Toolkit alpha strings.

1.4. Flow Control

Flow control is very important for correct communication between the GSM engine and DTE. For example, in the case such as a data or FAX call, the sending device is transferring data faster than the receiving side is ready to accept. When the receiving buffer reaches its capacity, the receiving device should be capable 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. M35 supports both two kinds of flow control.

In Multiplex mode, it is recommended to use the hardware flow control.

The default flow control approach of M35 is closed.

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 default flow control approach of M35 is closed, to enable software flow control in the DTE interface and within GSM engine, type the following AT command:
AT+IFC=1, 1<CR>

This setting is stored volatile, for use after restart, **AT+IFC=1, 1<CR>** should be stored to the user profile with **AT&W<CR>**.

Ensure that any communication software package (e.g. ProComm Plus, Hyper Terminal or WinFax Pro) uses 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 default flow control approach of M3 is closed,   to enable hardware flow control (RTS/CTS flow control) in the DTE interface and within GSM engine, type the following AT command:
AT+IFC=2, 2<CR>.

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

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

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

1.5. Unsolicited Result Code

A URC is a report message sent from the ME to the TE. An unsolicited result code can either be delivered automatically when an event occurs, to reflect change in system state or as a result of a query the ME received before, often 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, changing temperature, status of the battery etc. A summary of URCs is listed in Appendix A.

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 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** **Quectel_M35** **Revision: M85EARxxAxxW64** **OK**
Reference **V.25ter**	

Example

> **ATI**
> **Quectel_Ltd**
> **Quectel_M35**
> **Revision: M85EAR21A01W64**
>
> **OK**

2.2. AT+GMI Request Manufacture Identification

AT+GMI Request Manufacture 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**

	Quectel_M35
	Revision: MTK 1132
	OK
Reference	
V.25ter	

2.3. AT+GMM Request TA Model Identification

AT+GMM Request TA Model Identification	
Test Command	Response
AT+GMM=?	**OK**
Execution Command	Response
AT+GMM	TA returns a product model identification text.
	Quectel_M35
	OK
Reference	
V.25ter	

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

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

Parameter

<revision>   Revision of software release

Example

> **AT+GMR**
> **Revision: M85EAR21A01W64**
>
> **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**
Reference **V.25ter**	

Parameter

<Object Id>   Identifier of device type

> **NOTE**
>
> See X.208, 209 for the format of <Object Id>. For example, in M35 wireless module, string "M35" is displayed.

2.6. AT+CGMI   Request Manufacturer Identification

AT+CGMI Request Manufacture Identification	
Test Command **AT+CGMI=?**	Response **OK**
Execution Command	Response

AT+CGMI	TA returns manufacturer identification text.
	Quectel_Ltd
	Quectel_M35
	Revision: MTK 1132
	OK
Reference	
GSM 07.07	

2.7. AT+CGMM   Request Model Identification

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

Parameter

<model>   Product model identification text

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

AT+CGMR Request TA Revision Identification of Software Release	
Test Command	Response
AT+CGMR=?	**OK**
Execution Command	Response
AT+CGMR	TA returns product software version identification text.
	Revision: <revision>
	OK
Reference	
GSM 07.07	

Parameter

<revision>	Product software version identification text

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 permit the user to identify the individual ME device. **<sn>** **OK**
Reference **V.25ter**	

Parameter

<sn>	IMEI of the telephone

NOTE
The serial number (IMEI) is varied with the individual ME device.

2.10. AT+CGSN   Request Product Serial Number Identification

AT+CGSN Request Product Serial Number Identification (Identical with +GSN)	
Test Command **AT+CGSN=?**	Response **OK**
Execution Command **AT+CGSN**	Response **<sn>** **OK**

Reference	
GSM 07.07	

> **NOTE**
>
> See **AT+GSN**.

2.11. 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**
Reference **V.25ter**	

Parameter

<value>	0	Set all TA parameters to manufacturer defaults

2.12. 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**
Reference **V.25ter**	

Parameter

<n>	0	Profile number

Table 2: AT&V Display Current Configuration List

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
+QECHO(NORMAL_AUDIO): 253,96,16388,57351,0
+QECHO(Earphone_AUDIO): 253,0,10756,57351,1
+QECHO(LoudSpk_AUDIO): 224,96,5256,57351,2
+QSIDET(NORMAL_AUDIO): 80
+QSIDET(HEADSET_AUDIO): 144
+QCLIP: 0
+QCOLP: 0
+CSNS: 0

OK

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

AT&W Store Current Parameter to User Defined Profile	
Execution Command **AT&W[<n>]**	Response TA stores the current parameter setting in the user defined profile. **OK**
Reference **V.25ter**	

Parameter

<n>	0	Profile number to store to

NOTE

The profile defined by user is stored in non volatile memory.

2.14. 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)
Reference **V.25ter**	

Parameter

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

2.15. 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
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 result code is OK
ATV0	// Set **<value>**=0
0	
AT+CSQ	
+CSQ: 30,0	
0	// When **<value>**=0 result code is 0

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

ATV1	ATV0	Description
OK	0	Acknowledges execution of a command
CONNECT	1	A connection has been established; the DCE is moving from command state to online data state
RING	2	The DCE has detected an incoming call signal from network
NO CARRIER	3	The connection has been terminated or the attempt to establish a connection failed
ERROR	4	Command not recognized, command line maximum length exceeded, parameter value invalid, or other problem with processing the command line
NO DIALTONE	6	No dial tone detected
BUSY	7	Engaged (busy) signal detected
NO ANSWER	8	"@" (Wait for Quiet Answer) dial modifier was used, but remote ringing followed by five seconds of silence was not detected before expiration of the connection timer (S7)
PROCEEDING	9	An AT command is being processed
CONNECT <text>	Manufacturer-specific	Same as **CONNECT**, but includes manufacturer-specific text that may specify DTE speed, line speed, error control, data compression, or other status

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

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 dial tone and busy signal and whether or not TA transmits particular result codes. **OK**
Reference **V.25ter**	

Parameter

\<value\>	0	**CONNECT** result code only returned, dial tone and busy detection are both disabled
	1	**CONNECT\<text\>** result code only returned, dial tone and busy detection are both disabled
	2	**CONNECT\<text\>** result code returned, dial tone detection is enabled, busy detection is disabled
	3	**CONNECT\<text\>** result code returned, dial tone detection is disabled, busy detection is enabled
	<u>4</u>	**CONNECT\<text\>** result code returned, dial tone and busy detection are both enabled

2.17. 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**
Reference **V.25ter**	

Parameter

\<value\>	<u>0</u>	Reset to profile number 0

NOTES

1. Profile defined by user is stored in non volatile 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.

2.18. AT+CFUN   Set Phone Functionality

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

Parameter

<fun>	0	Minimum functionality
	1	Full functionality (Default)
	4	Disable phone both transmit and receive RF circuits
<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 phone to minimum functionality
+CPIN: NOT READY

OK

```
AT+COPS?
+COPS: 0                                              // No operator is registered

OK
AT+CPIN?
+CME ERROR: 13                                        // SIM failure
AT+CFUN=1                                             // Switch phone 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"                            // Operator is registered

OK
```

2.19. AT+QPOWD   Power off

AT+QPOWD Power off	

Write Command
AT+QPOWD=\<n>
	Response
	   When **\<n>**=0
	OK
	   When **\<n>**=1
	NORMAL POWER DOWN

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, returned OK
AT+QPOWD=1	
NORMAL POWER DOWN	// Normal power off, send out URC"**NORMAL POWER DOWN**"

2.20. AT+CMEE   Report Mobile Equipment Error

AT+CMEE Report Mobile Equipment Error	
Test Command **AT+CMEE=?**	Response **+CMEE:** (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**
Reference GSM 07.07	

Parameter

<n>	0	Disable result code
	<u>1</u>	Enable result code and use numeric values
	2	Enable result code and use verbose values

Example

AT+CMEE=0	// Disable result code
OK	
AT+CPIN=1234	
ERROR	// Only "**ERROR**" will be displayed
AT+CMEE=1	// Enable error result code with numeric values
OK	
AT+CPIN=1234	

+CME ERROR: 10
AT+CMEE=2   // Enable error result code with verbose (string)
                                                         values

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

2.21. AT+CSCS   Select TE Character Set

AT+CSCS Select TE Character Set	
Test Command AT+CSCS=?	Response +CSCS: (list of supported **<chset>**s) OK
Read Command AT+CSCS?	Response +CSCS: **<chset>** OK
Write Command AT+CSCS=**<chset>**	Response Set character set **<chset>** which is used by the TE. The TA can then convert character strings correctly between the TE and ME character sets. OK
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

2.22. 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>**s **OK**
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**
Reference V.25ter	

Parameter

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

3.2. AT&D   Set DTR Function Mode

AT&D Set DTR Function Mode	
Execution Command **AT&D[<value>]**	Response This parameter determines how the TA responds when circuit 108/2(DTR) is changed from the ON to the OFF condition during data mode. **OK**
Reference V.25ter	

Parameter

<value>	0	TA ignores status on DTR
	1	ON->OFF on DTR: Change to command mode with remaining the connected call

2	ON->OFF on DTR: Disconnect data call, change to command mode. During state DTR = OFF auto-answer is off

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**
Reference V.25ter	

Parameter

<format>	1	8 data 0 parity 2 stop
	2	8 data 1 parity 1 stop
	<u>3</u>	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 (1)
	<u>3</u>	Space (0)

NOTES

1. The command is applied for command state.
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**
Reference V.25ter	

Parameter

<dce_by_dte>	Specifies the method will be used by TE when receiving data from TA
	<u>0</u> None
	1 XON/XOFF, do not pass characters on to data stack
	2 RTS flow control
<dte_by_dce>	Specifies the method will be used by TA when receiving data from TE
	<u>0</u> None
	1 XON/XOFF
	2 CTS flow control

NOTE

This flow control is applied for data mode.

Example

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

OK

3.5. AT+ILRR   Set TE-TA Local Data Rate Reporting Mode

AT+ILRR Set TE-TA Local Data Rate Reporting Mode	
Test Command **AT+ILRR=?**	Response **+ILRR:** (list of supported **<value>**s) **OK**
Read Command **AT+ILRR?**	Response **+ILRR: <value>** **OK**
Write Command **AT+ILRR=[<value>]**	Response This parameter setting determines whether or not an intermediate result code of local rate is reported when the connection is established. The rate is applied after the final result code of the connection is transmitted to TE. **OK**
Reference V.25ter	

Parameter

<value>	<u>0</u>	Disables reporting of local port rate
	1	Enables reporting of local port rate

NOTE

If the **<value>** is set to 1, the following intermediate result will come out on connection to indicate the port rate settings.

+ILRR:<rate>

<rate>	Port rate setting on call connection in Baud per second
	300
	1200
	2400
	4800
	9600
	14400
	19200
	28800

38400
57600
115200

3.6. 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 of command takes effect. **OK**
Reference V.25ter	

Parameter

\<rate\>	Baud rate per second
	0 (Autobauding)
	75
	150
	300
	600
	1200
	2400
	4800
	9600
	14400
	19200
	28800
	38400

57600	
115200	

NOTES

1. The default configuration of **AT+IPR** is adaptive baud 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 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 commands are 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 115200 after restart module
OK	
AT+IPR?	
+IPR: 115200	
OK	

3.6.1. Adaptive Baud

To take advantage of adaptive baud mode, specific attention must be paid to the following requirements:
1. Adaptive baud 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. To allow the baud rate to be synchronized simply use an "**AT**" or "**at**" string. This is necessary after customer activates adaptive baud or when customer starts up the module with adaptive baud enabled.
   - It is recommended to wait for 2 to 3 seconds before sending the first "**AT**" or "**at**" string after the module is started up with adaptive baud enabled. Otherwise undefined characters might be returned.
2. Restriction on adaptive baud operation.
   - The serial interface shall be used with 8 data bits, no parity and 1 stop bit (factory setting).

- The command "**A/**" can't be used.
- Only the string "**AT**" or "**at**" can be detected (either "AT" or "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 is enabled. Especially, this operation is forbidden in data mode.

3. Adaptive baud and baud rate after restarting.
   - In the adaptive baud 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 can't be accepted. This must be taken into account when adaptive baud and auto-answer mode (**ATS0 $\neq$ 0**) are enabled at the same time, especially if SIM PIN 1 authentication is done automatically and the setting **ATS0 $\neq$ 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 is enabled.

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

5. Adaptive baud 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 mode.
   - Based on the same considerations, it is also not recommended to establish the FAX connection in adaptive baud 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 it instead of using adaptive baud after start-up.

3.7. AT+CMUX   Multiplexer Control

AT+CMUX Multiplexer Control	
Test Command **AT+CMUX=?**	Response **+CMUX:** (list of supported **<mode>**s), (**<subset>**s),

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**
Reference GSM 07.07	

Parameter

<locationID>	Location ID as number code. Location IDs are listed in Section 8.3.1. Each ID is related with anther table that contains a list of **<cause>**s.
<cause>	Reason for last call release as number code. The number codes are listed in several tables, sorted by different categories. The tables can be found proceeding from the Location ID given in Section 8.3.1

Example

AT+CEER   // Query error reporting in normal state, return "**No error**"
+CEER: 0,0

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

OK

NO CARRIER	// 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 error is related to ME functionality: **+CME ERROR: \<err\>**
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	// Module is idle
OK	
ATD10086;	
OK	

```
AT+CLCC
+CLCC: 1,0,3,0,0,"10086",129,""

OK
AT+CPAS
+CPAS: 3                              // Module is incoming call (ringing)

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

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

OK
```

4.3. AT+QINDRI   Indicate RI when Using URC

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

Parameter

\<status>	0	Off
	1	On

4.4. AT+QMOSTAT Show State of Mobile Originated Call

AT+QMOSTAT Show State of Mobile Originated Call	
Test Command AT+QMOSTAT=?	Response +QMOSTAT: (list of supported **<mode>**s) **OK**
Read Command AT+QMOSTAT?	Response +QMOSTAT: **<mode>** **OK**
Write Command AT+QMOSTAT=**<mode>**	Response **OK** **ERROR**
Reference	

Parameter

<mode>	0	Do not show call state of mobile originated call
	1	Show call state of mobile originated call. After dialing call numbers, the URC strings of **MO RING** will be sent if the other call side is alerted and the URC strings 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 other call side is alerted

MO CONNECTED                    // The call is established
```

4.5. AT+QIURC Enable or Disable Initial URC Presentation

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

	OK
Read Command **AT+QIURC?**	Response **+QIURC: <mode>** **OK**
Write Command **AT+QIURC=<mode>**	Response **OK** **ERROR**
Reference	

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.

4.6. AT+QEXTUNSOL Enable/Disable Proprietary Unsolicited Indications

AT+QEXTUNSOL Enable/Disable Proprietary Unsolicited Indications	
Test Command **AT+QEXTUNSOL=?**	Response **+QEXTUNSOL:** (list of supported **<exunsol>**s) **OK**
Write Command **AT+QEXTUNSOL=<exunsol>,<mode>**	Response **OK** **ERROR**
Reference	

Parameter

<exunsol>	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 (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 an 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 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

4.7. 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**
Reference	

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 SIM card related functions has been finished.

4.8. 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 error is related to ME functionality: **+CME ERROR: <err>**
Reference	

Parameter

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

4.9. AT+QSIMDET   Switch on or off Detecting SIM Card

AT+QSIMDET Switch on or off Detecting SIM Card	
Test Command **AT+QSIMDET=?**	Response **+QSIMDET: (0,1),(0,1)** **OK**
Read Command **AT+QSIMDET?**	Response **+QSIMDET: <mode>,<active>** **OK**
Write Command **AT+QSIMDET=<mode>[,<active>]**	Response **OK** **ERROR**
Reference	

Parameter

<mode>	0	Switch off detecting SIM card
	1	Switch on detecting SIM card
<active>	0	Low level of SIM_PRESENCE pin indicates SIM card is present
	1	High level of SIM_PRESENCE pin indicates SIM card is present

5 SIM Related Commands

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

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

Parameter

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

Example

AT+CIMI
460023210226023   // Query IMSI number of 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 a ME or a network facility **<fac>**. Password is normally needed to do such actions. When querying the status of a network service (**<mode>**=2) the response line for 'not active' case (**<status>**=0) should be returned only if service is not active for any **<class>**. If **<mode><>2** and command is successful **OK** If **<mode>=2** and command is successful **+CLCK: <status>[,<class1>[<CR><LF>** **+CLCK: <status>, class2....]]** **OK**
Reference GSM 07.07	

Parameter

<fac>	"PS"	PH-SIM (lock Phone to SIM card) (ME asks password when other than current SIM card inserted; ME may remember certain amount of previously used cards thus not requiring password when they are inserted)
	"SC"	SIM (lock SIM card) (SIM asks password in ME power-up and when this lock command is issued)
	"AO"	BAOC (Barr All Outgoing Calls) (refer to GSM02.88[6] clause 1)
	"OI"	BOIC (Barr Outgoing International Calls) (refer to GSM02.88[6] clause 1)
	"OX"	BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer to GSM02.88[6] clause 1)
	"AI"	BAIC (Barr All Incoming Calls) (refer to GSM02.88[6] clause 2)
	"IR"	BIC-Roam (Barr 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"	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 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
	<u>2</u>	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 SIM card lock,0-unlock

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

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

5.3. AT+CPIN   Enter PIN

AT+CPIN Enter PIN	
Test Command	Response
AT+CPIN=?	**OK**
Read Command	Response
AT+CPIN?	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 which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.). If the PIN is to be entered twice, the TA shall automatically repeat the PIN. If no PIN request is pending, no action is taken and an error message, **+CME ERROR**, is returned to TE. If the PIN required is SIM PUK or SIM PUK2, the second pin is required. This second pin, **<new pin>**, is used to replace the old pin in the SIM **OK**
Reference GSM 07.07	

Parameter

<code>	READY	No further entry needed
	SIM PIN	ME is waiting for SIM PIN
	SIM PUK	ME is waiting for SIM PUK
	PH_SIM PIN	ME is waiting for phone to SIM card (antitheft)
	PH_SIM PUK	ME is waiting for SIM PUK (antitheft)
	SIM PIN2	PIN2, 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 SIM PUK or SIMPUK2: 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**
Reference GSM 07.07	

Parameter

<fac>	"PS"	Phone locked to 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"	SIM (lock SIM card) (SIM asks password in ME power-up and when this lock Command issued)
	"AO"	BAOC (Barr All Outgoing Calls) (refer to GSM02.88[6] clause 1)
	"OI"	BOIC (Barr Outgoing International Calls) (refer to GSM02.88[6] clause 1)

"OX"	BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer to GSM02.88[6] clause 1)	
"AI"	BAIC (Barr All Incoming Calls) (refer to GSM02.88[6] clause 2)	
"IR"	BIC-Roam (Barr 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 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"	SIM fixed dialing memory feature	
"P2"	SIM PIN2	

<pwdlength> Integer. Max. length of password

<oldpwd> Password specified for the facility from the user interface or with command

<newpwd> New password

Example

AT+CPIN?
+CPIN: READY

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

+CPIN: SIM PIN

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

OK

5.5. AT+CRSM   Restricted SIM Access

AT+CRSM Restricted SIM Access	
Test Command **AT+CRSM=?**	Response **OK**
Write Command **AT+CRSM=<Command>[,<fileId>[,<P1>,<P2>,<P3>[,<data>]]]**	Response **+CRSM: <sw1>, <sw2> [,<response>]**

	OK ERROR +CME ERROR: \<err>
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 SIM. Mandatory for every Command except STATUS	
\<P1>,\<P2>,\<P3>	Integer type; parameters passed on by the ME to the SIM. These parameters are mandatory for every command, except GET RESPONSE and STATUS. The values are described in GSM 11.11	
\<data>	Information which shall be written to the SIM (hexadecimal character format)	
\<sw1>,\<sw2>	Integer type; information from the SIM about the execution of the actual command. These parameters are delivered to the TE in both cases, on successful or failed execution of the command	
\<response>	Response of a successful completion of the command previously issued (hexadecimal character format). STATUS and GET RESPONSE return data, which gives information about the current elementary data field. 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,"000000007F100200000000000A13000C0400838A808A" which is the command previously return data, refer to GSM 11.11

5.6. AT+CSIM　Generic SIM Access

AT+CSIM　Generic SIM Access	
Test Command **AT+CSIM=?**	Response **+CSIM:** (list of supported **<operation>**s),**<file_id>,<offset>/<record_id>,<len>/"data** **"** **OK**
Write Command **AT+CSIM=<operation>,<file_id>,<offset>,<record_id>,<len>,<data>**	Response **+CSIM: <command>,<response>** **OK** **ERROR**
Reference GSM 07.07	

Parameter

<operation>	<u>0</u>	Read operation
	1	Write operation
<file_id>	Integer type: SIM elementary file ID	
<offset>	Integer type: offset for reading and writing SIM	
<len>	Integer type: length of parameter	
<data>	String type: hex format: parameter is sent or received from the ME to the SIM	

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** **ERROR**
Reference	

Parameter

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

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

NOTES

1. Default value of <oldpwd> is "12345678".
2. If the module is locked to a specific SIM card through +CLCK and password lost or SIM state is PH-SIM PUK, you can use the super password to unlock it.

5.8. AT+QCCID   Show ICCID

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

Example

AT+QCCID **898600220909A0206023** **OK**	// Query ICCID of the SIM card

5.9. AT+QGID   Get SIM Card Group Identifier

AT+QGID Get SIM Card Group Identifier	
Execution Command **AT+QGID**	Response **+QGID: <gid1> <gid2>** **OK** **ERROR**
Reference	

Parameter

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

NOTE

If the SIM supports GID files, the GID values are returned. Otherwise 0xff is returned.

5.10. AT+QSIMVOL   Select SIM Card Operating Voltage

AT+QSIMVOL Select 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** **ERROR** **+CME ERROR: <err>**
Reference	

Parameter

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

NOTE

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

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 order: home network, networks referenced in 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 error is related to ME functionality: **+CME ERROR: <err>**
Read Command **AT+COPS?**	Response TA returns the current mode and the currently selected operator. If no operator is selected, **<format>** and **<oper>** are omitted. **+COPS: <mode>[,<format>[,<oper>]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+COPS** **=<mode>[,<format>[,<oper>]]**	Response TA forces an attempt to select and register the GSM network operator. If the selected operator is not available, no other operator shall be selected (except **<mode>**=4). The format of selected operator name shall apply to further read commands (**+COPS?**). **OK** If error is related to ME functionality:

	+CME ERROR: <err>	
Reference
GSM 07.07		57 / 186

Parameter

<stat>	0	Unknown
	1	Operator available
	2	Operator current
	3	Operator forbidden
<oper>	Operator in format as per **<mode>**	
<mode>	<u>0</u>	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>	<u>0</u>	Long format alphanumeric **<oper>**;can be up to 16 characters long
	1	Short format alphanumeric **<oper>**
	2	Numeric **<oper>**; GSM Location Area Identification number

Example

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

AT+CREG Network Registration	
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 in the network. **+CREG: <n>,<stat>[,<lac>,<ci>]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+CREG=<n>**	Response TA controls the presentation of an unsolicited result code **+CREG: <stat>** when **<n>**=1 and there is a change in the ME network registration status. **OK**
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 to
	1	Registered, home network
	2	Not registered, but ME is currently searching a new operator to register to
	3	Registration denied
	4	Unknown
	5	Registered, roaming
<lac>		String type; two byte location area code in hexadecimal format
<ci>		String type; two byte cell ID in hexadecimal format

NOTES

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=?**	Response **+CSQ: (list of supported <rssi>s),(list of supported <ber>s)** **OK**
Execution Command **AT+CSQ**	Response **+CSQ: <rssi>,<ber>** **OK** **+CME ERROR: <err>** Execution Command returns received signal strength indication **<rssi>** and channel bit error rate **<ber>** from the ME. Test Command returns values supported by the TA.
Reference GSM 07.07	

Parameter

<rssi>	0	-113 dBm or less
	1	-111 dBm
	2...30	-109... -53 dBm
	31	-51 dBm or greater
	99	Not known or not detectable
<ber>	(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   // Query the current signal strength indication is 28 and
                                        the bit error rate is 0

OK

6.4. AT+CPOL   Preferred Operator List

AT+CPOL Preferred Operator List	
Test Command **AT+CPOL=?**	Response **+CPOL:** (list of supported **<index>**s),(list of supported **<format>**s) **OK**
Read Command **AT+CPOL?**	Response **+CPOL: <index1>,<format>,<oper1>** **[<CR><LF>+CPOL: <index2>,<format>,<oper2>** **[…]]** **OK** **+CME ERROR: <err>**
Write Command **AT+CPOL=<index>[,<format>[,<oper>]]**	Response **OK** **+CME ERROR: <err>**
Reference GSM 07.07	

Parameter

<index>	l	Integer type: order number of operator in 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 **+COPS** command)

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 >** **[<CR><LF>+COPN: <numeric2>,<alpha2>** **[…]]** **OK** **+CME ERROR: <err>**
Reference GSM 07.07	

Parameter

<numericn>	String type: operator in numeric format (see **+COPS**)
<alphan>	String type: operator in long alphanumeric format (see **+COPS**)

6.6. AT+QBAND   Get and Set Mobile Operation Band

AT+QBAND Get and Set Mobile Operation Band	
Test Command **AT+QBAND=?**	Response **+QBAND: (list of supported <op_band>s)** **OK**
Read Command **AT+QBAND?**	Response **+QBAND: <op_band>** **OK**
Write Command **AT+QBAND=<op_band>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Reference	

Parameter

<op_band>   "EGSM_MODE"
                             "DCS_MODE"
                             "PCS_MODE"
                             "GSM350_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.