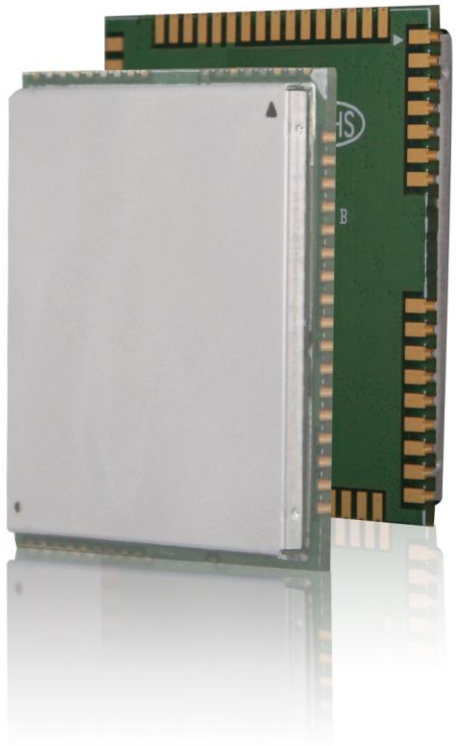
M10

Quectel Cellular Engine

AT Commands Set

M10_ATC_V1.1



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0 Revision history

Revision	Date	Author	Description
1.00	2009-05-29	Willis YANG	Initial
1.01	2009-06-05	Willis YANG	1. **AT+CGCOUNT** is not used. Remove it
	2009-06-17	Colin HU	2. Modify the property for the parameters of the command **AT+CGQMIN**. 3. Modify the property for the parameters of the command **AT+CGQREQ**.
1.02	2009-07-14	Willis YANG	1. Modify the range for parameters of the command **AT+FCLASS**. 2. Modify the range for parameters of the command **AT+CSNS**. 3. Modify the range for parameters of the command **AT+CGREG**. 4. Modify the range for parameters of the command **AT+CSAS** and **AT+CRES**. 5. Modify the definition of the AT command **AT+QCLASS**0. 6. Modify the description of the AT command **AT+CCFC**. 7. Add AT command **AT+QSFR**.
	2009-07-20	Colin HU	Modify AT_COMMAND_X to VIRTUAL_UART_X.
1.03	2009-09-25	Jay XIN	Add AT command **AT+QSPCH**.
	2009-09-29	Willis YANG	1. Modify the parameters of the AT command **AT+IFC**. 2. Add FAX related AT commands. 3. Remove **AT+QLOCTS**. 4. Extend the parameters of the cell description in **AT+QENG**. 5. Baud rate of the main UART port is set to autobauding mode from former fixed baud rate of 115200 in default configuration. 6. Add FAX related AT commands. 7. Modify the parameter of the AT command **AT+QINDRI**. 8. Add AT commands **AT+QSCANF** and **AT+QLOCKF**.

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1.04	The 1.04 version of this document applies to M10 firmware the version of which is after M10R05A01M32_SST.		
	2009-12-07	Willis YANG	1. Add AT command **AT+QGPIO**. 2. Add AT command **AT+QINISTAT**. 3. Modify the range for parameters of the command **AT+CNMI**. 4. Add AT commands for file operations. **AT+QFGR**, **AT+QFGW**, **AT+QFGL**, **AT+QFGD**, **AT+QFGW** are added. 5. Add AT command **AT+QSRT** to select ring tone. 6. Modify **AT+CEER**. 7. Add **AT+QNSTATUS**.
	2010-3-24	Colin HU	1. Add the AT command **AT+QINDI**. 2. Add the AT command **AT+QIRD**.
	2010-04-21	Jay XIN	1. Add AT command **AT+QECHOEX**. 2. Modify AT command **AT+QSFR**.
1.1	2010-05-18	Willis YANG	Following modification applies to more than **R06A02** version of the firmware. 1. Add AT command **AT+QCLKOUT**. 2. Add AT command **AT+QTTS** 3. Modify AT command **AT+QGPIO** 4. Modify the range of parameter in **AT+QADC**
	2010-05-25	Colin HU	Following modification applies to more than **R06A02** version of the firmware. 1. Add the AT command **AT+QPING** 2. Add the AT command **AT+QNTP** to synchronize the local time via NTP protocol. 3. Add the description about the response "**ALREADY CONNECT**" for the command **AT+QIOPEN**. 4. Add the detail descriptions for "**SEND OK**" 5. Add the command **AT+QISDE**
	2010-11-09	Jay XIN	Following modification applies to more than **R05A03** version of the firmware. 1. Add AT command **AT+QRIMODE** 2. Add AT command **AT+QDISH** 3. Add AT command **AT+QTUNBUF** 4. Add AT command **AT+QTONEP** 5. Add AT command **AT+QDISP**
			Following modification applies to more than **R06A02** version of the firmware. 1. Add AT command **AT+QMUXC** 2. Add AT command **AT+QTONEDET** 3. Add AT command **AT+QTDMOD**

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			4. Add AT command **AT+QWDTMF**

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1 Introduction

1.1 Scope of the document

This document presents the AT Commands Set for Quectel cellular engine M10.

1.2 Conventions and abbreviations

In this document, the GSM engines are referred to as following terms:

- ME (Mobile Equipment)
- MS (Mobile Station)
- TA (Terminal Adapter)
- DCE (Data Communication Equipment)
- Facsimile DCE(FAX modem, FAX board)

In application, controlling device controls the GSM engine by sending AT Command via its serial interface. The controlling device at the other end of the serial line is referred to as following terms:

- TE (Terminal Equipment)
- DTE (Data Terminal Equipment)
- Plainly "the application" which is running on an embedded system

1.3 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 Command Set implemented by M10 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 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 operate 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 with the corresponding Write Command or by 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

1.3.1 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 to use a semicolon as command delimiter.

The command line buffer can accept a maximum of 256 characters. If the characters entered exceeded this number then none of the command will be executed and TA will return "**ERROR**".

1.3.2 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 last AT command you entered before you enter the next AT command.

1.4 Supported character sets

The M10 AT Command interface defaults to the **IRA** character set. The M10 supports the following character sets:

- GSM format
- UCS2
- HEX
- IRA
- PCCP437
- 8859_1

The character set can be set and interrogated using the "**AT+CSCS**" command (GSM 07.07). The character set is defined in GSM specification 07.05.

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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.

1.5 Flow control

Flow control is very important for correct communication between the GSM engine and DTE. For 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. M10 support both two kinds of flow control.

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

1.5.1 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 M10 is hardware flow control (RTS/CTS flow control), to enable software flow control in the DTE interface and within GSM engine, type the following AT command:

AT+IFC=1, 1

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

Ensure that any communications 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) as the DTE interface may interpret binary data as flow control characters.

1.5.2 Hardware flow control (RTS/CTS flow control)

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.

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1.6 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.

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2 AT Commands according to V.25TER

These AT Commands are designed according to the ITU-T (International Telecommunication Union, Telecommunication sector) V.25ter document.

2.1 Overview of AT Commands according to V.25TER

Command	Description
A/	RE-ISSUES LAST AT COMMAND GIVEN
ATA	ANSWER AN INCOMING CALL
ATD	MOBILE ORIGINATED CALL TO DIAL A NUMBER
ATD><N>	ORIGINATE CALL TO PHONE NUMBER IN CURRENT MEMORY
ATDL	REDIAL LAST TELEPHONE NUMBER USED
ATE	SET COMMAND ECHO MODE
ATH	DISCONNECT EXISTING CONNECTION
ATI	DISPLAY PRODUCT IDENTIFICATION INFORMATION
ATL	SET MONITOR SPEAKER LOUDNESS
ATM	SET MONITOR SPEAKER MODE
+++	SWITCH FROM DATA MODE TO COMMAND MODE
ATO	SWITCH FROM COMMAND MODE TO DATA MODE
ATP	SELECT PULSE DIALLING
ATQ	SET RESULT CODE PRESENTATION MODE
ATS0	SET NUMBER OF RINGS BEFORE AUTOMATICALLY ANSWERING THE CALL
ATS3	SET COMMAND LINE TERMINATION CHARACTER
ATS4	SET RESPONSE FORMATTING CHARACTER
ATS5	SET COMMAND LINE EDITING CHARACTER
ATS6	SET PAUSE BEFORE BLIND DIALLING
ATS7	SET NUMBER OF SECONDS TO WAIT FOR CONNECTION COMPLETION
ATS8	SET NUMBER OF SECONDS TO WAIT FOR COMMA DIAL MODIFIER
ATS10	SET DISCONNECT DELAY AFTER INDICATING THE ABSENCE OF DATA CARRIER
ATT	SELECT TONE DIALLING
ATV	TA RESPONSE FORMAT
ATX	SET CONNECT RESULT CODE FORMAT AND MONITOR CALL PROGRESS
ATZ	SET ALL CURRENT PARAMETERS TO USER DEFINED PROFILE
AT&C	SET DCD FUNCTION MODE
AT&D	SET DTR FUNCTION MODE

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AT&F	SET ALL CURRENT PARAMETERS TO MANUFACTURER DEFAULTS
AT&V	DISPLAY CURRENT CONFIGURATION
AT&W	STORE CURRENT PARAMETER TO USER DEFINED PROFILE
AT+DR	V.42BIS DATA COMPRESSION REPORTING CONTROL
AT+DS	V.42BIS DATA COMPRESSION CONTROL
AT+GCAP	REQUEST COMPLETE TA CAPABILITIES LIST
AT+GMI	REQUEST MANUFACTURER IDENTIFICATION
AT+GMM	REQUEST TA MODEL IDENTIFICATION
AT+GMR	REQUEST TA REVISION INDENTIFICATION OF SOFTWARE RELEASE
AT+GOI	REQUEST GLOBAL OBJECT IDENTIFICATION
AT+GSN	REQUEST INTERNATIONAL MOBILE EQUIPMENT IDENTITY (IMEI)
AT+ICF	SET TE-TA CONTROL CHARACTER FRAMING
AT+IFC	SET TE-TA LOCAL DATA FLOW CONTROL
AT+ILRR	SET TE-TA LOCAL DATA RATE REPORTING MODE
AT+IPR	SET TE-TA FIXED LOCAL RATE

2.2 Detailed description of AT Commands according to V.25TER

2.2.1 A/ Re-issues the last command given

A/ Re-issues the last command given	
Execution Command **A/**	Response Re-issues the previous command Note: It does not have to end with terminating character.
	Parameter
Reference V.25ter	Note: This command does not work when the serial multiplexer is active

2.2.2 ATA Answer an incoming call

ATA Answer an incoming call	
Execution Command **ATA**	Response TA sends off-hook to the remote station. Note1: Any additional commands on the same command line are ignored. Note2: 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.

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	Response in case of data call, if successfully connected **CONNECT<text>** TA switches to data mode. Note: **<text>** output only if **ATX<value>** parameter setting with the **<value>** >0 When TA returns to command mode after call release **OK** Response in case of voice call, if successfully connected **OK** Response if no connection **NO CARRIER**
	Parameter
Reference V.25ter	Note: See also **ATX.**

2.2.3 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. Note: 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. 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 connection successful and non-voice call. **CONNECT<text>** TA switches to data mode. Note: **<text>** output only if **ATX<value>** parameter setting with the **<value>** >0 When TA returns to command mode after call release **OK** If connection successful and voice call

	OK
	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 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
Reference V.25ter	Note: ● Parameter "I" and "i" only if no *# code is within the dial string. ● **<n>** is default for last number that can be dialed by **ATDL.** ● *# codes sent with **ATD** are treated as voice calls. Therefore, the command must be terminated with a semicolon ";". ● See **ATX** command for setting result code and call monitoring parameters. Responses returned after dialing with **ATD** ● For voice call two different responses mode can be determined. **TA** returns "**OK**" immediately either after dialing was completed or after the call is established. The setting is controlled by **AT+COLP**. Factory default is **AT+COLP=0**, this cause the **TA** returns "**OK**" immediately after dialing was completed, otherwise **TA** will returns "**OK**", "**BUSY**", "**NO DIAL TONE**", "**NO CARRIER**". 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.

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2.2.4 ATD><n> Originate call to phone number in current memory

ATD><n> Originate call to phone number in current memory	
Execution Command **ATD><n> [;]**	Response This command can be used to dial a phone number from current phone book memory. Note: 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. If error is related to **ME** functionality **+CME ERROR: <err>** 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 connection successful and non-voice call. **CONNECT<text> TA** switches to data mode. Note: **<text>** output only if **ATX<value>** parameter setting with the **<value>** >0 When TA returns to command mode after call release **OK** If successfully connected and voice call **OK**
	Parameter **<n>** Integer type memory location should be in the range of locations available in the memory used **<;>** Only required to set up voice call , return to command state
Reference V.25ter	Note ● Parameter "I" and "i" only if no *# code is within the dial string. ● *# codes sent with **ATD** are treated as voice calls. Therefore, the command must be terminated with a semicolon ";". ● See **ATX** command for setting result code and call monitoring. parameters

2.2.5 ATDL Redial last telephone number used

ATDL Redial last telephone number used	
Execution Command	Response This command redials the last voice and data call number used.

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ATDL	Note: 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. If error is related to **ME** functionality **+CME ERROR: <err>** 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 connection successful and non-voice call. **CONNECT<text> TA** switches to data mode. Note: **<text>** output only if **ATX<value>** parameter setting with the **<value>** >0. When **TA** returns to command mode after call release **OK** If successfully connected and voice call **OK**
Reference V.25ter	Note: See **ATX** command for setting result code and call monitoring parameters.

2.2.6 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**
	Parameter **<value>** 0 Echo mode off 1 Echo mode on
Reference V.25ter	

2.2.7 ATH Disconnect existing connection

ATH Disconnect existing connection	
Execution	Response

Command **ATH[n]**	Disconnect existing call by local TE from command line and terminate call **OK** Note: OK is issued after circuit 109(DCD) is turned off, if it was previously on.
	Parameter **<n>** 0 Disconnect from line and terminate call
Reference V.25ter	

2.2.8 ATI Display product identification information

ATI Display product identification information	
Execution Command **ATI**	Response TA issues product information text Example: **Quectel_Ltd** **Quectel_M10** **Revision: M10R01A01M32_SST** **OK**
Reference V.25ter	

2.2.9 ATL Set monitor speaker loudness

ATL Set monitor speaker loudness		
Execution Command **ATL<value>**	Response **OK**	
	Parameter **<value>**	0 Low speaker volume 1 Low speaker volume 2 Medium speaker volume 3 High speaker volume
Reference V.25ter	Note: The two commands **ATL** and **ATM** are implemented only for V.25 compatibility reasons and have no effect.	

2.2.10 ATM Set monitor speaker mode

ATM Set Monitor Speaker Mode		
Execution Command **ATM<value>**	Response **OK**	
	Parameter **<value>**	0 Speaker is always off 1 Speaker on until TA inform TE that carrier has been detected

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	2 Speaker is always on when TA is off-hook
Reference V.25ter	Note: The two commands **ATL** and **ATM** are implemented only for V.25 compatibility reasons and have no effect.

2.2.11 +++ 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 CSD call, 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 to the remote server or, accordingly, the GPRS connection. **OK** To prevent the "+++" escape sequence from being misinterpreted as data, it should comply to following sequence: 1. No characters entered for T1 time (0.5 seconds). 2. "+++" characters entered with no characters in between. For CSD call or PPP online mode, the interval between two "+" MUST be less than 1 second and for a transparent TCPIP connection, the interval MUST be less than 20 ms. 3. No characters entered for T1 time (0.5 seconds). 4. Switch to command mode, otherwise go to step 1.
Reference V.25ter	Note: To return from command mode back to data or PPP online mode: Enter **ATO**.

2.2.12 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** else TA returns to data mode from command mode **CONNECT <text>** Note: **<text>** only if parameter setting X>0.
	Parameter **<n>** 0 Switch from Command mode to data mode
Reference V.25ter	

2.2.13 ATP Select pulse dialing

ATP Select pulse dialing	
Execution Command **ATP**	Response **OK**
	Parameter
Reference V.25ter	Note: No effect in GSM.

2.2.14 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)		
	Parameter		
	<n>	0	TA transmits result code
		1	Result codes are suppressed and not transmitted
Reference V.25ter			

2.2.15 ATS0 Set number of rings before automatically answering the call

ATS0 Set number of rings before automatically answering the call			
Read Command **ATS0?**	Response **<n>** **OK**		
Write Command **ATS0=<n>**	Response This parameter setting determines the number of rings before auto-answer. **OK**		
	Parameter		
	<n>	0	Automatic answering is disable
		1-255	Enable automatic answering on the ring number specified
Reference V.25ter	Note: If **<n>** is set too high, the calling party may hang up before the call can be answered automatically.		

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2.2.16 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**
	Parameter **<n>** 0-13-127 Command line termination character
Reference V.25ter	Note: Default 13 = CR.

2.2.17 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**
	Parameter **<n>** 0-10-127 Response formatting character
Reference V.25ter	Note: Default 10 = LF.

2.2.18 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 from the command line the immediately preceding character. **OK**
	Parameter **<n>** 0-8-127 Response formatting character

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Reference V.25ter	Note: Default 8 = Backspace.

2.2.19 ATS6 Set pause before blind dialing

ATS6 Set pause before blind dialing	
Read Command **ATS6?**	Response **<n>** **OK**
Write Command **ATS6=<n>**	Response **OK**
	Parameter **<n>** 0-2-10 Number of seconds to wait before blind dialing
Reference V.25ter	Note: No effect in GSM.

2.2.20 ATS7 Set number of seconds to wait for connection completion

ATS7 Set number of seconds to wait for connection completion	
Read Command **ATS7?**	Response **<n>** **OK**
Write Command **ATS7=<n>**	Response This parameter setting determines the amount of time to wait for the connection completion in case of answering or originating a call. **OK**
	Parameter **<n>** 1-60-255 Number of seconds to wait for connection completion
Reference V.25ter	Note: ● If called party has specified a high value for **ATS0=<n>**, call setup may fail. ● The correlation between **ATS7** and **ATS0** is important Example: Call may fail if **ATS7=3**0 and **ATS0=20**. ● ATS7 is only applicable to data call.

2.2.21 ATS8 Set number of second to wait for comma dial modifier

ATS8 Set number of second to wait for comma dial modifier	
Read Command **ATS8?**	Response **<n>** **OK**
Write Command **ATS8=<n>**	Response **OK**
	Parameter

	<n>	0	No pause when comma encountered in dial string
		1-255	Number of seconds to wait
Reference V.25ter	Note: No effect in GSM		

2.2.22 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 disconnect, the TA remains connected. **OK**		
	Parameter **<n>**	1-15-254	Number of tenths seconds of delay
Reference V.25ter			

2.2.23 ATT Select tone dialing

ATT Select tone dialing	
Execution Command **ATT**	Response **OK**
	Parameter
Reference V.25ter	Note: No effect in GSM.

2.2.24 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**		
	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> The result codes, their numeric equivalents and brief descriptions of the use of each are listed in the following table.
Reference V.25ter	

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

2.2.25 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**	
	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 4 **CONNECT<text>** result code returned, dial tone and busy detection are both enabled
Reference V.25ter	

2.2.26 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**
	Parameter **<value>** 0 Reset to profile number 0
Reference V.25ter	Note: ● The user defined profile is stored in non volatile memory. ● If the user profile is not valid, it will default to the factory default profile. ● Any additional commands on the same command line are ignored.

2.2.27 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**
	Parameter **<value>** 0 DCD line is always ON 1 DCD line is ON only in the presence of data carrier
Reference V.25ter	

2.2.28 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**
	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 is auto-answer off

Reference V.25ter	

2.2.29 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**
	Parameter **<value>** 0 Set all TA parameters to manufacturer defaults
Reference V.25ter	

2.2.30 AT&V Display current configuration

AT&V Display current configuration	
Execution Command **AT&V[<n>]**	Response TA returns the current parameter setting <current configurations text> **OK**
	Parameter **<n>** 0 Profile number
Reference V.25ter	

2.2.31 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**
	Parameter **<n>** 0 profile number to store to
Reference V.25ter	Note: The user defined profile is stored in non volatile memory.

2.2.32 AT+DR V.42bis data compression reporting control

AT+DR V.42bis data compression reporting control	
Test Command **AT+DR=?**	Response **+DR:** (list of supported <**value**>s) **OK**
	Parameter See Write Command.
Read Command	Response

AT+DR?	**+DR: <value>** **OK**
	Parameter See Write Command.
Write Command **AT+DR=[<value>]**	Response This parameter setting determines whether or not intermediate result code of the current data compressing is reported by TA to TE after a connection establishment. **OK**
	Parameter **<value>** 0 Reporting disabled
Reference V.25ter	

2.2.33 AT+DS V.42bis data compression control

AT+DS V.42bis data compression control	
Test Command **AT+DS=?**	Response **+DS:** (list of supported <**p0**>s), (list of supported <**n**>s), (list of supported <**p1**>s), (list of supported <**p2**>s) **OK**
	Parameter See Write Command.
Read Command **AT+DS?**	Response **+DS: <p0>,<n>,<p1>,<p2>** **OK**
	Parameter See Write Command.
Write Command **AT+DS=[<p0>,[<n>,[<p1>,[<p2>]]]]**	Response This parameter setting determines the possible data compression mode by TA at the compression negotiation with the remote TA after a call set up. **OK**
	Parameters **<p0>** 0 NONE **<n>** 0 Allow negotiation of p0 down 1 Do not allow negotiation of p0 - disconnect on difference **<p1>** 512-4096 Dictionary size **<p2>** 6-250 Maximum string size (Default is 6)
Reference V.25ter	Note: ● This command is only for data call. ● GSM transmits the data transparent. The remote TA may support this

	compression. ● This command must be used in conjunction with command AT+CRLP to enable compression (+CRLP=X,X,X,X,1,X).

2.2.34 AT+GCAP Request complete TA capabilities list

AT+GCAP Request complete TA capabilities list	
Test Command **AT+GCAP=?**	Response **OK**
	Parameter
Execution Command **AT+GCAP**	Response TA reports a list of additional capabilities. **+GCAP:** <**name**>s **OK**
	Parameters **<name>** +CGSM GSM function is supported +FCLASS FAX function is supported
Reference V.25ter	

2.2.35 AT+GMI Request manufacture identification

AT+GMI Request manufacture identification	
Test Command **AT+GMI=?**	Response **OK**
	Parameter
Execution Command **AT+GMI**	TA reports one or more lines of information text which permit the user to identify the manufacturer. **Quectel_Ltd** **OK**
	Parameter
Reference V.25ter	

2.2.36 AT+GMM Request TA model identification

AT+GMM Request TA model identification	
Test Command **AT+GMM=?**	Response **OK**
	Parameter

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Execution Command **AT+GMM**	TA returns a product model identification text. **Quectel_M10** **OK**
Reference V.25ter	

2.2.37 AT+GMR Request TA revision identification of software release

AT+GMR Request TA revision identification of software release	
Test Command **AT+GMR=?**	Response **OK**
	Parameter
Execution Command **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**
	Parameter **<revision>** Revision of software release
Reference V.25ter	

2.2.38 AT+GOI Request global object identification

AT+GOI Request global object identification	
Test Command **AT+GOI=?**	Response **OK**
	Parameter
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**
	Parameter **<Object Id>** Identifier of device type See X.208, 209 for the format of **<Object Id>.**
Reference V.25ter	Note: For example in M10 wireless module, string "M10" is displayed.

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2.2.39 AT+GSN Request International Mobile Equipment Identity (IMEI)

AT+GSN Request International Mobile Equipment Identity (IMEI)	
Test Command **AT+GSN=?**	Response **OK**
	Parameter
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**
	Parameter **<sn>** IMEI of the telephone
Reference V.25ter	Note: The serial number (IMEI) is varied by individual ME device.

2.2.40 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**		
	Parameter See Write Command.		
Read Command **AT+ICF?**	Response **+ICF: <format>,<parity>** **OK**		
	Parameter See Write Command.		
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**		
	Parameters		
	<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

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	2 Mark (1) 3 Space (0)
Reference V.25ter	Note: ● The command is applied for command state. ● The **<parity>** field is ignored if the **< format >** field specifies no parity.

2.2.41 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**
	Parameter See Write Command.
Read Command **AT+IFC?**	Response **+IFC: <dce_by_dte>,<dte_by_dce>** **OK**
	Parameter See Write Command.
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**
	Parameters **<dce_by_dte>** Specifies the method will be used by TE at receive of data from TA 0 None 1 XON/XOFF, don't pass characters on to data stack 2 RTS flow control 3 XON/XOFF, pass characters on to data stack **<dte_by_dce>** Specifies the method will be used by TA at receive of data from TE 0 None 1 XON/XOFF 2 CTS flow control
Reference V.25ter	Note: This flow control is applied for data mode.

2.2.42 AT+ILRR Set TE-TA local data rate reporting mode

AT+ILRR Set TE-TA local data rate reporting mode	
Test Command	Response

AT+ILRR=?	**+ILRR:** (list of supported <**value**>s) **OK**
	Parameter See Write Command.
Read Command **AT+ILRR?**	Response **+ILRR: <value>** **OK**
	Parameter See Write Command.
Write Command **AT+ILRR=[<value>]**	Response This parameter setting determines whether or not an intermediate result code of local rate is reported at connection establishment. The rate is applied after the final result code of the connection is transmitted to TE. **OK**
	Parameter **<value>** 0 Disables reporting of local port rate 1 Enables reporting of local port rate
Reference V.25ter	Note: ● If the <**value**> is set to 1, the following intermediate result will comes out on connection to indicates 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

2.2.43 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**
	Parameter See Write Command.

Read Command **AT+IPR?**	Response **+IPR: <rate>** **OK**
	Parameter See Write Command.
Write Command **AT+IPR=<rate>**	Response This parameter setting determines the data rate of the TA on the serial interface. The rate of command takes effect following the issuance of any result code associated with the current command line. **OK**
	Parameter **<rate>** Baud rate per second 0 (Autobauding) 75 150 300 600 1200 2400 4800 9600 14400 19200 28800 38400 57600 115200
Reference V.25ter	Note: ● The default configuration of **AT+IPR** is autobauding enabled (**AT+IPR=0**). ● 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 autobauding is enabled, the TA could automatically recognize the baud rate currently used by the TE after receiving "**AT**" or "**at**" string. ● The value of **AT+IPR** can't be restored with **AT&F** and **ATZ**, but it is still storable with **AT&W** and visible in **AT&V**. ● In multiplex mode, the baud rate can't 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. ● A selected baud rate takes effect after the write commands is executed and acknowledged by "**OK**".

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2.2.43.1 Autobauding

To take advantage of autobauding mode specific attention must be paid to the following requirements:

- Autobauding 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 autobauding or when customer starts up the module with autobauding 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 autobauding enabled. Otherwise undefined characters might be returned.
- Restriction on autobauding 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 (neither "**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 re-synchronization and the possible malfunction of resynchronization, it is not recommended to switch TE's baud rate when autobauding is enabled. Especially, this operation is forbidden in data mode.
- Autobauding and baud rate after restarting.
  - In the autobauding 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 autobauding and auto-answer mode (**ATS0 ≠ 0**) are enabled at the same time, especially if 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 autobauding is enabled.
- Autobauding and multiplex mode

  If autobauding is active it is not recommended to switch to multiplex mode.
- Autobauding 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 autobauding mode.
  - Based on the same considerations, it is also not recommended to establish the FAX connection in autobauding mode for PC FAX application, such as WinFax.

NOTE:

To assure reliable communication and avoid any problem caused by undetermined baud rate

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between DCE and DTE, it is strongly recommended to configure a fixed baud rate and save instead of using autobauding after start-up.

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3 AT Commands according to GSM07.07

3.1 Overview of AT Commands according to GSM07.07

Command	Description
AT+CACM	ACCUMULATED CALL METER (ACM) RESET OR QUERY
AT+CAMM	ACCUMULATED CALL METER MAXIMUM (ACM MAX) SET OR QUERY
AT+CAOC	ADVICE OF CHARGE
AT+CBST	SELECT BEARER SERVICE TYPE
AT+CCFC	CALL FORWARDING NUMBER AND CONDITIONS CONTROL
AT+CCUG	CLOSED USER GROUP CONTROL
AT+CCWA	CALL WAITING CONTROL
AT+CEER	EXTENDED ERROR REPORT
AT+CGMI	REQUEST MANUFACTURER IDENTIFICATION
AT+CGMM	REQUEST MODEL IDENTIFICATION
AT+CGMR	REQUEST TA REVISION IDENTIFICATION OF SOFTWARE RELEASE
AT+CGSN	REQUEST PRODUCT SERIAL NUMBER IDENTIFICATION (IDENTICAL WITH +GSN)
AT+CSCS	SELECT TE CHARACTER SET
AT+CSTA	SELECT TYPE OF ADDRESS
AT+CHLD	CALL HOLD AND MULTIPARTY
AT+CIMI	REQUEST INTERNATIONAL MOBILE SUBSCRIBER IDENTITY(IMSI)
AT+CKPD	KEYPAD CONTROL
AT+CLCC	LIST CURRENT CALLS OF ME
AT+CLCK	FACILITY LOCK
AT+CLIP	CALLING LINE IDENTIFICATION PRESENTATION
AT+CLIR	CALLING LINE IDENTIFICATION RESTRICTION
AT+CMEE	REPORT MOBILE EQUIPMENT ERROR
AT+COLP	CONNECTED LINE IDENTIFICATION PRESENTATION
AT+COPS	OPERATOR SELECTION
AT+CPAS	MOBILE EQUIPMENT ACTIVITY STATUS
AT+CPBF	FIND PHONEBOOK ENTRIES
AT+CPBR	READ CURRENT PHONEBOOK ENTRIES
AT+CPBS	SELECT PHONEBOOK MEMORY STORAGE
AT+CPBW	WRITE PHONEBOOK ENTRY
AT+CPIN	ENTER PIN
AT+CPWD	CHANGE PASSWORD
AT+CR	SERVICE REPORTING CONTROL

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AT+CRC	SET CELLULAR RESULT CODES FOR INCOMING CALL INDICATION
AT+CREG	NETWORK REGISTRATION
AT+CRLP	SELECT RADIO LINK PROTOCOL PARAMETER
AT+CRSM	RESTRICTED SIM ACCESS
AT+CSQ	SIGNAL QUALITY REPORT
AT+FCLASS	FAX: SELECT, READ OR TEST SERVICE CLASS
AT+VTD	TONE DURATION
AT+VTS	DTMF AND TONE GENERATION
AT+CMUX	MULTIPLEXER CONTROL
AT+CNUM	SUBSCRIBER NUMBER
AT+CPOL	PREFERRED OPERATOR LIST
AT+COPN	READ OPERATOR NAMES
AT+CFUN	SET PHONE FUNCTIONALITY
AT+CCLK	CLOCK
AT+CSIM	GENERIC SIM ACCESS
AT+CALM	ALERT SOUND MODE
AT+CRSL	RINGER SOUND LEVEL
AT+CLVL	LOUD SPEAKER VOLUME LEVEL
AT+CMUT	MUTE CONTROL
AT+CPUC	PRICE PER UNIT AND CURRENCY TABLE
AT+CCWE	CALL METER MAXIMUM EVENT
AT+CBC	BATTERY CHARGE
AT+CUSD	UNSTRUCTURED SUPPLEMENTARY SERVICE DATA
AT+CSSN	SUPPLEMENTARY SERVICES NOTIFICATION
AT+CSNS	SINGLE NUMBERING SCHEME
AT+CMOD	CONFIGRUE ALTERNATING MODE CALLS

3.2 Detailed Descriptions of AT Command According to GSM07.07

3.2.1 AT+CACM Accumulated Call Meter (ACM) reset or query

AT+CACM Accumulated Call Meter(ACM) reset or query	
Test Command **AT+CACM=?**	Response **OK** Parameter
Read Command **AT+CACM?**	Response TA returns the current value of ACM. **+CACM: <acm>** **OK** If error is related to ME functionality: **+CME ERROR: <err>** Parameter

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	<acm>	String type; three bytes of the current ACM value in hexa-decimal format (e.g. "00001E" indicates decimal value 30) 000000 - FFFFFF
Write Command **AT+CACM=[<passwd>]**	Parameter **<passwd>**	String type: SIM PIN2
	Response TA resets the advice of charge related Accumulated Call Meter (ACM) value in SIM file EF (ACM). ACM contains the total number of home units for both the current and preceding calls. **OK** If error is related to ME functionality: **+CME ERROR: <err>**	
Reference GSM 07.07		

3.2.2 AT+CAMM Accumulated Call Meter maximum (ACM max) set or query

AT+CAMM Accumulated Call Meter maximum (ACM max) set or query		
Test Command **AT+CAMM=?**	Response **OK** Parameter	
Read Command **AT+ CAMM?**	Response TA returns the current value of ACM max. **+CAMM: <acmmax>** **OK** If error is related to ME functionality: **+CME ERROR: <err>** Parameters See Write Command.	
Write Command **AT+CAMM=[<acmmax>[,<passwd>]]**	Response TA sets the advice of charge related Accumulated Call Meter maximum value in SIM file EF (ACM max). ACM max contains the maximum number of home units allowed to be consumed by the subscriber. **OK** If error is related to ME functionality: **+CME ERROR: <err>** Parameters **<acmmax>**	String type; three bytes of the max. ACM value in hex-decimal format (e.g. "00001E" indicates decimal value 30) 000000 Disable ACMmax feature

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	000001-FFFFFF **<passwd>** String type SIM PIN2
Reference GSM 07.07	

3.2.3 AT+CAOC Advice of charge

AT+CAOC Advice of charge	
Test Command **AT+CAOC=?**	Response **+CAOC**: (list of supported <**mode**>s) **OK** Parameters See Write Command.
Read Command **AT+CAOC?**	Response **+CAOC: <mode>** **OK** Parameters see Write Command
Write Command **AT+CAOC=<mode>**	Response TA sets the advice of charge supplementary service function mode. If error is related to ME functionality: **+CME ERROR: <err>** If <mode>=0, TA returns the current call meter value **+CAOC: <ccm>** **OK** If **<mode>**=1, TA deactivates the unsolicited reporting of CCM value **OK** If **<mode>**=2. TA activates the unsolicited reporting of CCM value **OK** Parameters **<mode>** 0 Query CCM value 1 Deactivate the unsolicited reporting of CCM value 2 Activate the unsolicited reporting of CCM value **<ccm>** String type; three bytes of the current CCM value in hex-decimal format (e.g. "00001E" indicates decimal value 30); bytes are similarly coded as ACMmax value in the SIM 000000-FFFFFF
Reference GSM 07.07	

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3.2.4 AT+CBST Select bearer service type

AT+CBST Select bearer service type	
Test Command **AT+CBST=?**	Response **+CBST:** (list of supported **<speed>**s) ,(list of supported **<name>**s) ,(list of supported **<ce>**s) **OK** Parameter See Write Command.
Read Command **AT+CBST?**	Response **+CBST: <speed>,<name>,<ce>** **OK** Parameter See Write Command.
Write Command **AT+CBST=[<speed>][,<name>[,<ce>]]**	Response TA selects the bearer service **<name>** with data rate **<speed>**, and the connection element **<ce>** to be used when data calls are originated. **OK** Parameters **<speed>** 0 Autobauding 4 2400 bps(V.22bis) 5 2400 bps(V.26ter) 6 4800 bps(V.32) 7 9600 bps(V.32) 12 9600 bps(V.34) 14 14400 bps(V.34) 68 2400 bps(V.110 or X.31 flag stuffing) 70 4800 bps(V.110 or X.31 flag stuffing) 71 9600 bps(V.110 or X.31 flag stuffing) 75 14400 bps(V.110 or X.31 flag stuffing) **<name>** 0 Asynchronous modem **<ce>** 0 Transparent 1 Non-transparent 2 Both, transparent preferred 3 Both, non-transparent preferred
Reference GSM 07.07	Note: GSM 02.02: lists the allowed combinations of the sub parameters.

3.2.5 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>**)

	OK
	Parameters See Write Command.
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>**<>2 and command successful **OK** If **<mode>**=2 and command successful (only in connection with **<reads>** 0 –3) For registered call forward numbers: **+CCFC: <status>, <class1>[, <number>, <type> [,<subaddr>,<satype>[,<time>]]] [<CR><LF>+CCFC: ....]** **OK** If no call forward numbers are registered (and therefore all classes are inactive): **+CCFC: <status>, <class>** **OK** where **<status>**=0 and **<class>**=15 If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<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>** String type phone number of forwarding address in format specified by **<type>** **<type>** Type of address in integer format; default 145 when dialing string includes international access code character "+", otherwise 129 **<subaddr>** String type subaddress of format specified by **<satype>** **<satype>** Type of sub-address in integer **<class>** 1 Voice 2 Data

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		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
Reference GSM07.07			

3.2.6 AT+CCUG Closed user group control

AT+CCUG Closed user group control			
Read Command **AT+CCUG?**	Response **+CCUG: <n>,<index>,<info>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**		
	Parameter See Write Command.		
Write Command **AT+CCUG=[<n>]** **[,<index>[,<info>]]]**	TA sets the closed user group supplementary service parameters as a default adjustment for all following calls. **OK** If error is related to ME functionality: **+CME ERROR: <err>**		
	Parameters		
	<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
Reference			

3.2.7 AT+CCWA Call waiting control

AT+CCWA Call waiting control	
Read Command **AT+CCWA?**	Response **+CCWA: <n>**

	OK
Test Command **AT+CCWA=?**	Response **+CCWA:** (list of supported **<n>**s) **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>**<>2 and command successful **OK** If **<mode>**=2 and command successful **+CCWA:<status>,<class1>[<CR><LF>+CCWA:<status>,<class2>[...]]** **OK** Note :**<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. When **<mode>**=2, all active call waiting classes will be reported. In this mode the command is abort able by pressing any key. If error is related to ME functionality: **+CME ERROR: <err>** Parameters **<n>** 0 Disable presentation of an unsolicited result code 1 Enable presentation of an unsolicited result code **<mode>** When **<mode>** parameter not given, network is not interrogated 0 Disable 1 Enable 2 Query status **<class>** Is a sum of integers each representing a class of information 1 Voice (telephony) 2 Data (bearer service) 4 FAX(facsimile) 16 Data circuit sync 32 Data circuit async **<status>** 0 Not active 1 Enable
	Unsolicited result code When the presentation call waiting at the TA is enabled (and call waiting is enabled) and a terminating call set up has attempted during an established call, an unsolicited result code is returned: **+CCWA: <number>,<type>,<class>[,<alpha>]**
	Parameters **<number>** String type phone number of calling address in format specified by <**type**> **<type>** Type of address octet in integer format

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	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
Reference GSM07.07	

3.2.8 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** Parameter **<locationID>** Location ID as number code. Location IDs are listed in Section 10.3.1. 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 10.3.1
Reference GSM 07.07	

3.2.9 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. **<manufacturer>** **OK** Parameter **<manufacturer>**
Reference GSM 07.07	

3.2.10 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. **<model>** **OK** Parameter **<model>** Product model identification text
Reference GSM 07.07	

3.2.11 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** Parameter **<revision>** Product software version identification text
Reference GSM 07.07	

3.2.12 AT+CGSN Request product serial number identification (Identical with +GSN)

AT+CGSN Request product serial number identification (Identical with +GSN)	
Test Command **AT+CGSN=?**	Response **OK**
Execution Command **AT+CGSN**	Response **<sn>** **OK** Parameter See **+GSN**.
Reference GSM 07.07	

3.2.13 AT+CSCS Select TE character set

AT+CSCS Select TE character set	
Test Command **AT+CSCS=?**	Response **+CSCS:** (list of supported <**chset**>s)

	OK Parameters **<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
Read Command **AT+CSCS?**	Response **+CSCS: <chset>** **OK** Parameter See Test Command.
Write Command **AT+CSCS=<chset>**	Response Sets which character set **<chset>** are used by the TE. The TA can then convert character strings correctly between the TE and ME character sets. Parameter See Test Command.
Reference GSM 07.07	

3.2.14 AT+CSTA Select type of address

AT+CSTA Select type of address	
Test Command **AT+CSTA=?**	Response **+CSTA: (129,145, 161,)** **OK**
Read Command **AT+CSTA?**	Response **+CSTA: <type>** **OK** Parameter **< type >** Current address type setting.
Reference GSM 07.07	Note: The ATD command overrides this setting when a number is dialed. 129Unknown type(IDSN format number) 161National number type(IDSN format) 145International number type(ISDN format)

3.2.15 AT+CHLD Call hold and multiparty

AT+CHLD Call hold and multiparty	
Test Command	Response

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AT+CHLD=?	**+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. Note: These supplementary services are only applicable to tele service 11 (Speech: Telephony). **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	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 can not 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
Reference	

3.2.16 AT+CIMI Request International Mobile Subscriber Identity (IMSI)

AT+CIMI Request International Mobile Subscriber Identity(IMSI)	
Test Command **AT+CIMI=?**	Response **OK** Parameter
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>** Parameter **<IMSI>** International Mobile Subscriber Identity (string without

	double quotes)
Reference GSM 07.07	

3.2.17 AT+CKPD Keypad control

AT+CKPD Keypad control	
Test Command **AT+ CKPD=?**	Response **OK** Parameters
Write Command **AT+CKPD=[<keys>[,<time>[,<pause>]]]**	Response TA emulates ME keypad by giving each keystroke as a character in a string **<keys>**. **<time>***0.1 seconds is the time to stroke each key and **<pause>***0.1 seconds is the length of pause between two strokes. Keystrokes **<keys>** are emulated. **OK** If error is related to ME functionality: **+CME ERROR: <err>** Parameters **<keys>** String of characters representing keys as listed in the following table (based on PCCA STD-101 Annex table I-3): **Char** **ASCII-Code** **Note** # 35 hash (number sign) * 42 star (*) 0... 9 48... 57 number keys : 58 escape character for manufacturer specific keys D/d 68/100 volume down E/e 69/101 connection end (END) R/r 82/114 recall last number (R/RCL/MR) S/s 83/115 connection start (SEND) U/u 85/117 volume up **<time>** 0...255 seconds(default value is manufacturer specific, but should be so long that a normal ME can handle keystrokes correctly) **<pause>** 0... 25.5 seconds (default value is manufacturer specific, but should be so long that a normal ME can handle keystrokes correctly)
Reference GSM 07.07	

3.2.18 AT+CLCC List current calls of ME

AT+CLCC List current calls of ME

Test Command **AT+CLCC=?**	Response **OK** Parameters
Execution Command **AT+CLCC**	Response TA returns a list of current calls of ME. Note: If command succeeds but no calls are available, no information response is sent to TE. **[+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[,** **<number>,<type>[,""]]** **[<CR><LF>+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[,** **<number>,<type>[,""]]** **[...]]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>** Parameters **<id*x*>** Integer type; call identification number as described in GSM 02.30 sub clause 4.5.5.1; this number can be used in +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>** String type phone number 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)
Reference GSM 07.07	

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3.2.19 AT+CLCK Facility lock

AT+CLCK Facility lock	
Test Command **AT+CLCK=?**	Response **+CLCK:** (list of supported <**fac**>s) **OK**
	Parameter See Write Command.
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**
	Parameters **<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 issued) "AO" BAOC (Barr All Outgoing Calls) (refer GSM02.88[6] clause 1) "OI" BOIC (Barr Outgoing International Calls) (refer GSM02.88[6] clause 1) "OX" BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer GSM02.88[6] clause 1) "AI" BAIC (Barr All Incoming Calls) (refer GSM02.88[6] clause 2) "IR" BIC-Roam (Barr Incoming Calls when Roaming outside the home country) (refer GSM02.88 [6] clause 2) "AB" All Barring services (refer GSM02.30[19]) (applicable only for <**mode**>=0) "AG" All out Going barring services (refer GSM02.30[19]) (applicable only for <**mode**>=0) "AC" All in Coming barring services (refer 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 GSM 02.22)
		"PU"	Network subset Personalization (refer GSM 02.22)
		"PP"	Service Provider Personalization (refer GSM 02.22)
		"PC"	Corporate Personalization (refer 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
Reference GSM 07.07			

3.2.20 AT+CLIP Calling line identification presentation

AT+CLIP Calling line identification presentation	
Read Command **AT+CLIP?**	Response **+CLIP: <n>, <m>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command.
Test Command **AT+CLIP=?**	Response **+CLIP:** (list of supported <**n**>s) **OK**
	Parameters See Write Command.
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.

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	OK If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<n>** 0 Suppress unsolicited result codes 1 Display unsolicited result codes **<m>** 0 CLIP not provisioned 1 CLIP provisioned 2 Unknown
	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>** String type phone number 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
Reference	

3.2.21 AT+CLIR Calling line identification restriction

AT+CLIR Calling line identification restriction	
Read Command **AT+CLIR?**	Response **+CLIR: <n>, <m>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command.
Test Command **AT+CLIR=?**	Response **+CLIR:** (list of supported <**n**>s) **OK**
Write Command	Response

AT+CLIR=[<n>]	TA restricts or enables the presentation of the calling line identity(CLI) to the called party when originating a call. The command overrides the CLIR subscription (default is restricted or allowed) when temporary mode is provisioned as a default adjustment for all following outgoing calls. This adjustment can be revoked by using the opposite Command. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<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
Reference	

3.2.22 AT+CMEE Report mobile equipment error

AT+CMEE Report mobile equipment error	
Test Command **AT+CMEE=?**	Response **+CMEE:** (list of supported <**n**>s) **OK**
	Parameters See Write Command.
Read Command **AT+CMEE?**	Response **+CMEE: <n>** **OK**
	Parameters See Write Command.
Write Command **AT+CMEE=[<n>]**	Response TA disables or enables the use of result code **+CME ERROR: <err>** as an indication of an error relating to the functionality of the ME. **OK**

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	Parameters **<n>** 0 Disable result code 1 Enable result code and use numeric values 2 Enable result code and use verbose values
Reference GSM 07.07	

3.2.23 AT+COLP Connected line identification presentation

AT+COLP Connected line identification presentation	
Read Command **AT+COLP?**	Response **+COLP: <n>,<m>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command
Test Command **AT+COLP=?**	Response **+COLP:** (list of supported <**n**>s) **OK**
	Parameters See Write Command.
Write Command **AT+COLP=[<n>]**	Response TA enables or disables the presentation of the COL (Connected Line) at the TE for a mobile originated 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**
	Parameters **<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.)
	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>]]**

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	Parameters **<number>** String type phone number of 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 GSM 04.08 sub clause 10.5.4.8) **<ha>** Optional string type alphanumeric representation of **<number>** corresponding to the entry found in phone book
Reference GSM 07.07	

3.2.24 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>**
	Parameters See Write Command.
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>**
	Parameters See Write Command.
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 selected operator name format shall apply to further read commands (**+COPS?**).

	OK If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<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
Reference GSM 07.07	

3.2.25 AT+CPAS Mobile equipment activity status

AT+CPAS Mobile equipment activity status	
Test Command **AT+CPAS=?**	Response **+CPAS:** (list of supported <**pas**>s) **OK**
	Parameter See Execution Command.
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>**
	Parameter **<pas>** 0 Ready 2 Unknown (ME is not guaranteed to respond to instructions) 3 Ringing

	4 Call in progress or call hold
Reference GSM 07.07	

3.2.26 AT+CPBF Find phonebook entries

AT+CPBF Find phonebook entries	
Test Command **AT+CPBF=?**	Response **+CPBF:** maximum length of field <**nlength**>,maximum length of field <**tlength**> **OK**
	Parameters See Write Command.
Write Command **AT+CPBF=[<findtext>]**	Response TA returns phone book entries (from the current phone book memory storage selected with **+CPBS**) which contain alphanumeric string **<findtext>**. **[+CPBF: <index1>, <number>,<type>, <text>[[...]** **<CR><LF>+CBPF: <index2>,<number>,<type>,<text>]** **OK**
	Parameters **<findtext>** String type field of maximum length **<tlength>** in current TE character set specified by **+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>** String type phone number 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 **+CSCS**. **<nlength>** Integer type value indicating the maximum length of field **<number>** **<tlength>** Integer type value indicating the maximum length of field **<text>**
Reference GSM 07.07	

3.2.27 AT+CPBR Read current phonebook entries

AT+CPBR Read current phonebook entries	
Test Command	Response

AT+CPBR=?	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**
	Parameters **<index>** Location number **<nlength>** Maximum length of phone number **<tlength>** Maximum length of name for number
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 **+CPBS**. If **<index2>** is left out, only location **<index1>** is returned. **+CPBR:<index1>,<number>,<type>,<text>[<CR><LF>+CPBR: .....+CPBR: <index2>, <number>, <type>, <text>]** **OK**
	Parameters **<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 **+CSCS**
Reference GSM 07.07	

3.2.28 AT+CPBS Select phonebook memory storage

AT+CPBS Select phonebook memory storage	
Test Command **AT+CPBS=?**	Response **+CPBS:** (list of supported <**storage**>s) **OK**
	Parameters See Write Command.
Read Command **AT+CPBS?**	Response **+CPBS: <storage>[,<used>,<total>]** **OK**
	Parameters See Write Command.
Write Command **AT+CPBS=<storage>**	Response TA selects current phone book memory storage, which is used by other phone book commands.

	OK
	Parameters **<storage>** "MC" ME missed (unanswered) calls list "RC" ME received calls list "DC" ME dialed calls list(**+CPBW** may not be applicable or this storage)(same as LD) "LA" Last Number All list (LND/LNM/LNR) "ME" ME phonebook "BN" SIM barred dialed number "SD" SIM service dial number "VM" SIM voice mailbox "FD" SIM fix dialing-phone book "LD" SIM last-dialing-phone book "ON" SIM (or ME) own numbers (MSISDNs) list "SM" 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
Reference GSM 07.07	

3.2.29 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**
	Parameters See Write Command.
Write Command **AT+CPBW=<index1>[, <number>, [<type>, [<text>]]]**	Response TA writes phone book entry in location number **<index>** in the current phone book memory storage selected with **+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**
	Parameters <**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 **+CSCS** Note: 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
Reference GSM 07.07	

3.2.30 AT+CPIN Enter PIN

AT+CPIN Enter PIN	
Test Command **AT+CPIN=?**	Response **OK** Parameter See Write Command.
Read Command **AT+CPIN?**	Response TA returns an alphanumeric string indicating whether some password is required or not. **+CPIN: <code>** **OK**
	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. for editing the FDN book possible only if preceding command was acknowledged with **+CME ERROR:17** SIM PUK2: Possible only if preceding command was acknowledged with error **+CME ERROR: 18**
Write Command	Response

AT+CPIN=<pin> [, <new pin>]	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**
	Parameters **<pin>** String type; password **<new pin>** String type; If the PIN required is SIM PUK or SIMPUK2: new password
Reference GSM 07.07	

3.2.31 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** Parameters **<fac>** See Write Command, without "FD" **<pwdlength>** Integer. max, length of password
Write Command **AT+CPWD = <fac>, <oldpwd>, <newpwd>**	Response TA sets a new password for the facility lock function. **OK** Parameters **<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 GSM02.88[6] clause 1) "OI" BOIC (Barr Outgoing International Calls) (refer GSM02.88[6] clause 1) "OX" BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer GSM02.88[6] clause 1) "AI" BAIC (Barr All Incoming Calls) (refer GSM02.88[6] clause 2)

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		"IR" BIC-Roam (Barr Incoming Calls when Roaming outside the home country) (refer GSM02.88 [6] clause 2) "AB" All Barring services (refer GSM02.30[19]) (applicable only for **<mode>**=0) "AG" All outgoing barring services (refer GSM02.30[19]) (applicable only for **<mode>**=0) "AC" All incoming barring services (refer GSM02.30[19]) (applicable only for **<mode>**=0) "FD" SIM fixed dialing memory feature "P2" SIM PIN2
	<oldpwd>	Password specified for the facility from the user interface or with command.
	<newpwd>	New password
Reference GSM 07.07		

3.2.32 AT+CR Service reporting control

AT+CR Service reporting control	
Test Command **AT+CR=?**	Response **+CR: (**list of supported <**mode**>s) **OK**
	Parameter See Write Command.
Read Command **AT+CR?**	Response **+CR: <mode>** **OK**
	Parameters See Write Command.
Write Command **AT+CR=[<mode>]**	Response TA controls whether or not intermediate result code **+CR: <serv>** is returned from the TA to the TE at a call set up. **OK** Parameter **<mode>** 0 Disable 1 Enable

	Intermediate result code If enabled, an intermediate result code is transmitted at the point during connect negotiation at which 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. **+CR:<serv>** Parameter **<serv>** ASYNC Asynchronous transparent SYNC Synchronous transparent REL ASYNC Asynchronous non-transparent REL SYNC Synchronous non-transparent
Reference GSM 07.07	

3.2.33 AT+CRC Set cellular result codes for incoming call indication

AT+CRC Set cellular result codes for incoming call indication	
Test Command **AT+CRC=?**	Response **+CRC:** (list of supported <**mode**>s) **OK**
	Parameters See Write Command.
Read Command **AT+CRC?**	Response **+CRC: <mode>** **OK**
	Parameter See Write Command.
Write Command **AT+CRC=[<mode>]**	Response TA controls whether or not the extended format of incoming call indication is used. OK Parameter **<mode>** 0 Disable extended format 1 Enable extended format

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	Unsolicited result code When 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
Reference GSM 07.07	

3.2.34 AT+CREG Network registration

AT+CREG Network registration	
Test Command **AT+CREG=?**	Response **+CREG:** (list of supported <**n**>s) **OK**
	Parameters See Write Command.
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**
	Parameters **<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

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	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
	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>]** Parameters See Write Command.
Reference GSM 07.07	

3.2.35 AT+CRLP Select radio link protocol parameter

AT+CRLP Select radio link protocol parameter	
Test Command **AT+CRLP=?**	Response TA returns values supported. RLP (Radio Link Protocol) versions 0 and 1 share the same parameter set. TA returns only one line for this set (where **<ver*x*>** is not present). **+CRLP:** (list of supported <**iws**>s), (list of supported <**mws**>s), (list of supported <**T1**>s), (list of supported <**N2**>s), (list of supported <**ver1**>s), (list of supported <**T4**>s) **OK**
	Parameters See Write Command.
Read Command **AT+CRLP?**	Response TA returns current settings for RLP version. RLP versions 0 and 1 share the same parameter set. TA returns only one line for this set (where <verx> is not present). **+CRLP: <iws>,<mws>,<T1>,<N2>,<ver1>,<T4>** **OK**
	Parameters See Write Command.

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Write Command **AT+CRLP=[<iws>[,<mws>[,<T1>[,<N2>[,<ver>[,<T4>]]]]]]**	Response TA sets radio link protocol (RLP) parameters used when non-transparent data calls are setup. **OK**
	Parameters **<iws>** 0-61 Interworking window size (IWF to MS) **<mws>** 0-61 Mobile window size(MS to IWF) **<T1>** 39-255 Acknowledgment timer T1 in 10 ms units **<N2>** 1-255 Retransmission attempts N2 **<verx>** 0 RLP version number in integer format. When version indication is not present it shall equal 0. **<T4>** 3-255 Re-sequencing period in integer format, in units of 10 ms
Reference GSM 07.07	

3.2.36 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>** Parameters **<command>** 176 READ BINARY 178 READ RECORD 192 GET RESPONSE 214 UPDATE BINARY 220 UPDATE RECORD 242 STATUS All other values are reserved; refer 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

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	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 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.
Reference GSM 07.07 GSM 11.11	

3.2.37 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.
	Parameters **<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
Reference GSM 07.07	

3.2.38 AT+FCLASS FAX: Select, read or test service class

AT+FCLASS FAX: Select, read or test service class

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Test Command **AT+FCLASS=?**	Response **+FCLASS:** (list of supported <**n**>s) **OK**
	Parameters See Write Command.
Read Command **AT+ FCLASS?**	Response **+FCLASS: <n>** **OK**
	Parameters See Write Command.
Write Command **AT+FCLASS= [<n>]**	Response TA sets a particular mode of operation (data FAX). This causes the TA to process information in a manner suitable for that type of information **OK**
	Parameter <**n**> 0 Data 1 FAX class 1 (TIA-578-A) 1.0 FAX class 1 (ITU-T T.31) 2 FAX (manufacturer specific) 2.0 FAX class 2 (ITU-T T.32 [12] and TIA-592)
Reference GSM 07.07	

3.2.39 AT+VTD Tone duration

AT+VTD Tone duration	
Test Command **AT+VTD=?**	Response **+VTD**: (list of supported <**n**>s) **OK**
	Parameters See Write Command.
Read Command **AT+VTD?**	Response **+VTD: <n>** **OK**
	Parameter See Write Command.
Write Command **AT+VTD = <n>**	Response This command refers to an integer **<n>** that defines the length of tones emitted as a result of the **+VTS** command. This does not affect the D command. **OK**

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	Parameter **<n>** 1-255 Duration of the tone in 1/10 seconds
Reference GSM 07.07	

3.2.40 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**
	Parameters See Write Command.
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. Note: D is used only for dialing. **OK** If error is related to ME functionality: **+CME ERROR: <err>** Note: The command is writing only. Parameters **<dtmf-string>** Which 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 in 1/10 seconds range :1-255
Reference GSM 07.07	

3.2.41 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)

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	OK
	Parameters See Write Command.
Write Command **AT+CMUX=[<mode>[,<subset>[,<port_speed>[,<N1>[,<T1>[,<N2>[,<T2>[,<T3>[,<k>]]]]]]]]]**	Response **+CME ERROR: <err>**
	Parameters **<mode>** Multiplexer transparency mechanism 0 Basic option **<subset>** The way in 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 units of ten milliseconds 10 **<N2>** Maximum number of re-transmissions 3 **<T2>** Response timer for the multiplexer control channel in units of ten milliseconds 30 <**T3**> Wake up response timers in seconds 10 **<k>** Window size, for Advanced operation with Error Recovery options 2
Read Command **AT+CMUX?**	Response: **+CMUX: (mode-1),0,5,127,10,3,30,10,2** **OK** **ERROR**
Reference GSM 07.07	Note: 1. Advanced option with Error Recovery options is not supported. 2. The multiplexing transmission rate is 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

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3.2.42 AT+CNUM Subscriber number

AT+CNUM Subscriber number	
Test Command **AT+CNUM=?**	Response **OK**
Execution Command **AT+CNUM**	Response **+CNUM:** **[<alpha1>],<number1>,<type1>[,<speed>,<service>[,<itc>]]** **[<CR><LF>+CNUM: [<alpha2>],<number2>,<type2>[,<speed>,<service> [,<itc>]]** **[...]]** **OK** **+CME ERROR: <err>**
	Parameters **<alpha*x*>** Optional alphanumeric string associated with **<number*x*>**; used character set should be the one selected with command. Select TE character set **+CSCS** **<number*x*>** String type phone number of format specified by **<type*x*>** **<type*x*>** Type of address octet in integer format (refer GSM 04.08 subclause 10.5.4.7) **<speed>** As defined by the **+CBST** command **<service>** (Service related to the phone number:) 0 Asynchronous modem 1 Synchronous modem 2 PAD Access (asynchronous) 3 Packet Access (synchronous) 4 Voice 5 FAX **<itc>** (Information transfer capability:) 0 3.1 kHz 1 UDI
Reference GSM 07.07	

3.2.43 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**
	Parameters See Write Command.

Read Command **AT+CPOL?**	Response **+CPOL: <index1>,<format>,<oper1>** **[<CR><LF>+CPOL: <index2>,<format>,<oper2>** **[…]]** **OK** **+CME ERROR: <err>**
	Parameters See Write Command.
Write Command **AT+CPOL=<index>[,<format>[,<oper>]]**	Response **+CME ERROR: <err>**
	Parameters **<index>** 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 whether alphanumeric or numeric format used (see **+COPS** command)
Reference GSM 07.07	

3.2.44 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>**
	Parameters **<numericn>** String type: operator in numeric format (see **+COPS**) **<alphan>** String type: operator in long alphanumeric format (see **+COPS**)
Reference GSM 07.07	

3.2.45 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** **+CME ERROR: <err>**
	Parameters See Write Command.
Read Command **AT+CFUN?**	Response **+CFUN: <fun>** **OK** **+CME ERROR: <err>**
	Parameters See Write Command.
Write Command **AT+CFUN=<fun>，[<rst>]**	Response **OK** **+CME ERROR: <err>**
	Parameters **<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 the default when <**rst**> is not given. 1 Reset the ME before setting it to <**fun**> power level.
Reference GSM 07.07	

3.2.46 AT+CCLK Clock

AT+CCLK Clock	
Test Command **AT+CCLK=?**	Response **OK**
	Parameters
Read Command **AT+CCLK?**	Response **+CCLK: <time>** **OK** **+CME ERROR: <err>**
	Parameter See Write Command.
Write Command **AT+CCLK=<time>**	Response **OK** **+CME ERROR: <err>**

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	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 -48...+48). E.g. 6th of May 1994, 22:10:00 GMT+2 hours equals to "94/05/06,22:10:00+08"
Reference GSM 07.07	

3.2.47 AT+CSIM Generic SIM access

AT+CSIM Generic SIM access	
Test Command **AT+CSIM=?**	Response **OK** Parameter
Write Command **AT+CSIM=<operation>,<file_index>,<offset>,<record_id>,<length>,<data>**	Response **+CSIM: <command>,<response>** **OK** **ERROR** Parameters **<operation>** 0 Read operation 1 Write operation **<file_index>** Integer type: SIM elementary file ID **<offset>** Integer type: offset for SIM read and write **<length>** Integer type: length of parameter **<data>** String type: hex format: parameter sent or received from the ME to the SIM
Reference GSM 07.07	

3.2.48 AT+CALM Alert sound mode

AT+CALM Alert sound mode	
Test Command **AT+CALM=?**	Response **+CALM:** (list of supported <**mode**>s) **OK** **+CME ERROR:** <err>
	Parameter See Write Command.

Read Command **AT+CALM?**	Response **+CALM: <mode>** **OK** **+CME ERROR: <err>**
	Parameter See Write Command.
Write Command **AT+CALM=<mode>**	Response **OK** **+CME ERROR: <err>**
	Parameter **<mode>** 0 Normal mode 1 Silent mode (all sounds from ME are prevented)
Reference GSM 07.07	

3.2.49 AT+CRSL Ringer sound level

AT+CRSL Ringer sound kevel	
Test Command **AT+CRSL=?**	Response **+CRSL:** (list of supported <**level**>s) **OK** **+CME ERROR: <err>**
	Parameter See Write Command.
Read Command **AT+CRSL?**	Response **+CRSL: <level>** **OK** **+CME ERROR: <err>**
	Parameter See Write Command.
Write Command **AT+CRSL=<level>**	Response **+CME ERROR: <err>**
	Parameter **<level>** Integer type value(0-100) with manufacturer specific range (Smallest value represents the lowest sound level)
Reference GSM 07.07	

3.2.50 AT+CLVL Loud speaker volume level

AT+CLVL Loud speaker volume level	
Test Command **AT+CLVL=?**	Response **+CLVL:** (list of supported <**level**>s)

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	OK **+CME ERROR: <err>**
	Parameter See Write Command.
Read Command **AT+CLVL?**	Response **+CLVL: <level>** **OK** **+CME ERROR: <err>**
	Parameter See Write Command
Write Command **AT+CLVL=<level>**	Response **+CME ERROR: <err>**
	Parameter **<level>** Integer type value(0-100) with manufacturer specific range (Smallest value represents the lowest sound level)
Reference GSM 07.07	

3.2.51 AT+CMUT Mute control

AT+CMUT Mute control	
Test Command **AT+CMUT=?**	Response **+CMUT:** (list of supported <**n**>s) **OK**
	Parameter See Write Command.
Read Command **AT+CMUT?**	Response **+CMUT: <n>** **OK** **+CME ERROR: <err>**
	Parameter See Write Command.
Write Command **AT+CMUT=<n>**	Response **+CME ERROR: <err>**
	Parameter **<n>** 0 Mute off 1 Mute on
Reference GSM 07.07	

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3.2.52 AT+CPUC Price per unit and currency table

AT+CPUC Price per unit and currency table	
Test Command **AT+CPUC=?**	Response **OK**
	Parameters See Write Command.
Read Command **AT+CPUC?**	Response **+CPUC: <currency>,<ppu>** **OK** **+CME ERROR: <err>**
	Parameters See Write Command.
Write Command **AT+CPUC=<currency>,<ppu>[,<passwd>]**	Response **+CME ERROR: <err>**
	Parameters **<currency>** String type; three-character currency code (e.g. "GBP", "DEM"); character set as specified by command select TE character set **+CSCS** **<ppu>** String type; price per unit; dot is used as a decimal Separator(e.g. "2.66") **<passwd>** String type; SIM PIN2
Reference GSM 07.07	

3.2.53 AT+CCWE Call meter maximum event

AT+CCWE Call meter maximum event	
Test Command AT**+CCWE=?**	Response **+CCWE:** (list of supported <**mode**>s) **OK** **+CME ERROR: <err>**
	Parameter See Write Command.
Read Command **AT+CCWE?**	Response **+CCWE: <mode>** **OK** **+CME ERROR: <err>**
	Parameter See Write Command.
Write Command **AT+CCWE=[<m**	Response **OK**

ode>]	**+CME ERROR: <err>**
	Parameter **<mode>** 0 Disable call meter warning event 1 Enable call meter warning event
	Unsolicited result codes supported: **+CCWV** Shortly before the ACM (Accumulated Call Meter) maximum value is reached, an unsolicited result code **+CCWV** will be sent, if enabled by this command. The warning is issued approximately when 5 seconds call time remains. It is also issued when starting a call if less than 5 s call time remains.
Reference GSM 07.07	Note: GSM 07.07 specifies 30 seconds, so Quectel deviate from the specification.

3.2.54 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**
	Parameters See Execution Command.
Execution Command **AT+CBC**	Response **+CBC: < bcs >, < bcl >,<voltage>** **OK** **+CME ERROR: <err>**
	Parameters **<bcs>** Charge status 0 ME is not charging 1 ME is charging 2 Charging has finished **<bcl>** Battery connection level 1...100 battery has 1-100 percent of capacity remaining vent **<voltage>** Battery voltage(mV)
Reference GSM 07.07	Note: Support for this command will be hardware dependant and only be used when battery is set to vibrator.

3.2.55 AT+CUSD Unstructured supplementary service data

AT+ CUSD Unstructured supplementary service data

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Test Command **AT+CUSD=?**	Response **+CUSD:** (<**n**>s) **OK**
	Parameter See Write Command.
Read Command **AT+CUSD?**	Response **+CUSD: <n>** **OK**
	Parameter See Write Command.
Write Command **AT+CUSD=[<n>[,<str>[,<dcs>]]**	Response **OK** **ERROR**
	Parameters **<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)
Reference GSM 03.38	

3.2.56 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**
	Parameters See Write Command.
Read Command **AT+CSSN?**	Response **+CSSN: <n>,<m>** **OK**
	Parameters See Write Command.
Write Command **AT+CSSN=[<n>[,<m>]]**	Response **OK** **ERROR**
	Parameters

	<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
Reference	

3.2.57 AT+CSNS Single numbering scheme

AT+CSNS Single numbering scheme	
Test Command **AT+CSNS =?**	Response **+CSNS:** (list of supported <**mode**>s) **OK**
	Parameter
Read Command **AT+CSNS?**	Response **+CSNS: <mode>** **OK**
	Parameter
Write Command **AT+CSNS=[<mode>]**	Response **OK** **ERROR**
	Parameter **<mode>** 0 Voice 1 Alternating voice/FAX, voice first 2 FAX

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	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
Reference	

3.2.58 AT+CMOD Configure alternating mode calls

AT+CMOD	**Configure alternating mode calls**
Test Command **AT+CMOD =?**	Response **+CMOD:** (0-3) **OK**
	Parameter
Write Command **AT+CMOD=[<mode>]**	Response **OK** **ERROR**
	Parameter **<mode>** 0 Single mode 1 Alternating voice/FAX 2 Alternating voice/data 3 Voice followed by data
Reference	

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4 AT Commands according to GSM07.05

The GSM 07.05 commands are for performing SMS and CBS related operations. Quectel modules support both text and PDU modes.

4.1 Overview of AT Commands according to GSM07.05

Command	Description
AT+CMGD	DELETE SMS MESSAGE
AT+CMGF	SELECT SMS MESSAGE FORMAT
AT+CMGL	LIST SMS MESSAGES FROM PREFERRED STORE
AT+CMGR	READ SMS MESSAGE
AT+CMGS	SEND SMS MESSAGE
AT+CMGW	WRITE SMS MESSAGE TO MEMORY
AT+CMSS	SEND SMS MESSAGE FROM STORAGE
AT+CMGC	SEND SMS COMMAND
AT+CNMI	NEW SMS MESSAGE INDICATIONS
AT+CPMS	PREFERRED SMS MESSAGE STORAGE
AT+CRES	RESTORE SMS SETTINGS
AT+CSAS	SAVE SMS SETTINGS
AT+CSCA	SMS SERVICE CENTER ADDRESS
AT+CSCB	SELECT CELL BROADCAST SMS MESSAGES
AT+CSDH	SHOW SMS TEXT MODE PARAMETERS
AT+CSMP	SET SMS TEXT MODE PARAMETERS
AT+CSMS	SELECT MESSAGE SERVICE

4.2 Detailed descriptions of AT Commands according to GSM07.05

4.2.1 AT+CMGD Delete SMS message

AT+CMGD Delete SMS Message	
Read Command **AT+CMGD=?**	Response **+CMGD：**(Range of SMS on SIM card can be deleted) **OK**
Write Command **AT+CMGD=<index>**	Response TA deletes message from preferred message storage **<mem1>** location **<index>**. **OK** **ERROR** If error is related to ME functionality: **+CMS ERROR:<err>**

	Parameter **<index>** Integer type; value in the range of location numbers supported by the associated memory
Reference GSM 07.05	

4.2.2 AT+CMGF Select SMS message format

AT+CMGF Select SMS message format	
Read Command **AT+CMGF?**	Response **+CMGF: <mode>** **OK**
	Parameter See Write Command.
Test Command **AT+CMGF=?**	Response **+CMGF:** (list of supported <**mode**>s) **OK**
Write Command **AT+CMGF=[<mode>]**	Response TA sets parameter to denote which input and output format of messages to use. **OK**
	Parameter **<mode>** 0 PDU mode 1 Text mode
Reference GSM 07.05	

4.2.3 AT+CMGL List SMS messages from preferred store

AT+CMGL List SMS messages from preferred store	
Test Command **AT+CMGL=?**	Response **+CMGL:** (list of supported <**stat**>s) **OK**
	Parameters See Write Command.
Write Command **AT+CMGL=<stat>[,<mode>]**	Parameters 1) If text mode: **<stat>** "REC UNREAD" Received unread messages "REC READ" Received read messages "STO UNSENT" Stored unsent messages "STO SENT" Stored sent messages "ALL" All messages <**mode**> 0 Normal(default)

		1	Not change status of the specified SMS record
	2) If PDU mode:		
	<stat>	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

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) If text mode (**+CMGF=1**) and Command successful:

for SMS-SUBMITs and/or SMS-DELIVERs:

+CMGL:
<index>,<stat>,<oa/da>,[<alpha>],[<scts>][,<tooa/toda>,<length>]<CR><LF><data>[<CR><LF>
+CMGL:
<index>,<stat>,<da/oa>,[<alpha>],[<scts>][,<tooa/toda>,<length>]<CR><LF><data>[...]]

for SMS-STATUS-REPORTs:

+CMGL:
<index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>[<CR><LF>
+CMGL:
<index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>[...]]

for SMS-COMMANDs:

+CMGL: <index>,<stat>,<fo>,<ct>[<CR><LF>
+CMGL: <index>,<stat>,<fo>,<ct>[...]]

for CBM storage:

+CMGL:<index>,<stat>,<sn>,<mid>,<page>,<pages><CR><LF><data>[<CR><LF>
+CMGL:
<index>,<stat>,<sn>,<mid>,<page>,<pages><CR><LF><data>[...]]
OK

2) If PDU mode (**+CMGF=0**) and Command successful:

+CMGL:<index>,<stat>,[<alpha>],<length><CR><LF><pdu><CR><LF>
+CMGL: <index>,<stat>,[alpha],<length><CR><LF><pdu>[...]]
OK

3)If error is related to ME functionality:

	+CMS ERROR: <err>	
	Parameters	
	<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 **+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 command **+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 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 Command **+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 (**+CMGF=1**)

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		the length of the message body **<data>** (or **<cdata>**) in characters; or in PDU mode (**+CMGF=0**), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)
	<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 command **+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 **<dt>**)
	<toda>	GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of **<da>** is + (IRA 43) default is 145, otherwise default is 129)
	<tooa>	GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format (default refer**<toda>**)
Reference GSM 07.05		

4.2.4 AT+CMGR Read SMS message

AT+CMGR Read SMS message		
Test Command **AT+CMGR=?**	Response **OK**	
Write Command **AT+CMGR=<index>[,<mode>]**	Parameters **<index>**	Integer type; value in the range of location numbers supported by the associated memory
	<mode>	0 Normal 1 Not change status of the specified SMS record
	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 (**+CMGF=1**) and command successful: for SMS-DELIVER: **+CMGR:** **<stat>,<oa>,[<alpha>],<scts>*[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]*<CR><LF><data>**	

for SMS-SUBMIT:
+CMGR:
<stat>,<da>,[<alpha>]*[,<toda>,<fo>,<pid>,<dcs>,[<vp>],<sca>,<tosca>,<length>]*<CR><LF><data>
for SMS-STATUS-REPORTs:
+CMGR: <stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>
for SMS-COMMANDs:
+CMGR:
<stat>,<fo>,<ct>*[,<pid>,[<mn>],[<da>],[<toda>],<length><CR><LF><cdata>]*
for CBM storage:
+CMGR: <stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data>
2) If PDU mode (+CMGF=0) and Command successful:
+CMGR: <stat>,[<alpha>],<length><CR><LF><pdu>

OK
3) If error is related to ME functionality:
+CMS ERROR: <err>
Parameters

<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 **+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 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

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		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 command **+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 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 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format
	<length>	Integer type value indicating in the text mode (**+CMGF=1**) the length of the message body **<data>** (or **<cdata>**) in characters; or in PDU mode (**+CMGF=0**), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)
	<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 **+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 is 0)
	<sca>	GSM 04.11 RP SC address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07);; type of address given by **<tosca>**
	<scts>	GSM 03.40 TP-Service-Centre-Time-Stamp in time-string

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		format (refer **<dt>**)		
	<stat>	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 is 145, otherwise default is 129)		
	<tooa>	GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format (default refer**<toda>**)		
	<tosca>	GSM 04.11 RP SC address Type-of-Address octet in integer format (default refer **<toda>**)		
	<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 **<dt>**)		
Reference GSM 07.05				

4.2.5 AT+CMGS Send SMS message

AT+CMGS Send SMS message		
Test Command **AT+CMGS=?**	Response **OK**	
Write Command 1) If text mode (**+CMGF=1**): **+CMGS=<da>[,<toda>]**<CR> **text is entered** <ctrl-Z/ESC> ESC quits without sending 2) If PDU mode (**+CMGF=0**): **+CMGS=<length>**<CR>	Parameters **<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 **+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 is 145, otherwise default is 129)
	<length>	Integer type value indicating in the text mode (**+CMGF=1**) the length of the message body **<data>** (or **<cdata>**) in characters; or in PDU mode (**+CMGF=0**), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)
PDU 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 **+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(**+CMGF=1**) and sending successful: **+CMGS: <mr>**	

	OK 2) If PDU mode(**+CMGF=0**) and sending successful: **+CMGS: <mr>** **OK** 3)If error is related to ME functionality: **+CMS ERROR: <err>** Parameter **<mr>** GSM 03.40 TP-Message-Reference in integer format
Reference GSM 07.05	

4.2.6 AT+CMGW Write SMS message to memory

AT+CMGW Write SMS message to memory	
Test Command **AT+CMGW=?**	Response **OK**
Write Command 1) If text mode (+CMGF=1): **AT+CMGW=<oa/da>[,<tooa/toda>[,<stat>]]** <CR> **text is entered** <ctrl-Z/ESC> <ESC> quits without sending	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>** allows also other status values to be given. If writing is successful: **+CMGW: <index>** **OK** If error is related to ME functionality: **+CMS ERROR: <err>**
2) If PDU mode (+CMGF=0): **AT+CMGW=<length>[,<stat>]**<CR> **PDU is given** <ctrl-Z/ESC>	Parameters **<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 **+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 **+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 **<toda>**) **<toda>** GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of **<da>** is + (IRA 43)

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		default is 145, otherwise default is 129) 129 Unknown type(IDSN format number) 145 International number type(ISDN format)
	<length>	Integer type value indicating in the text mode (**+CMGF=1**) the length of the message body **<data>** (or **<cdata>**) in characters; or in PDU mode (**+CMGF=0**), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)
	<pdu>	In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)). In the case of CBS: GSM 03.41 TPDU in hexadecimal format.
	<index>	Index of message in selected storage **<mem2>**
Reference GSM 07.05		

4.2.7 AT+CMSS Send SMS message from storage

AT+CMSS Send SMS message from storage	
Test Command **AT+CMSS=?**	Response **OK**
Write Command **AT+CMSS=<index>[,<da>[,<toda>]]**	Response TA sends 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) If text mode(**+CMGF=1**) and sending successful: **+CMSS: <mr> [,<scts>]** **OK** 2) If PDU mode(**+CMGF=0**) and sending successful: **+CMSS: <mr> [,<ackpdu>]** **OK** 3) If error is related to ME functionality: **+CMS ERROR: <err>**
	Parameters **<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

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		selected TE character set (specified by **+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 is 145, otherwise default is 129)
	<mr>	GSM 03.40 TP-Message-Reference in integer format
Reference GSM 07.05		

4.2.8 AT+CMGC Send SMS command

AT+CMGC Send SMS command		
Test Command **AT+CMGC=?**	Response **OK**	
Write Command 1) If text mode (**+CMGF=1**): **AT+CMGC=<fo>[,<ct><pid>,<mn>,<da>,<toda>]** **<CR>** text is entered <ctrl-Z/ESC> ESC quits without sending 2) If PDU mode (**+CMGF**=0): **AT+CMGC**=<length><CR> **PDU is given** <ctrl-Z/ESC>	Parameters	
	<fo>	First octet of GSM 03.40 SMS-COMMAND (default 2) in integer format
	<ct>	GSM 03.40 TP-Command-Type in integer format (default 0)
	<pid>	GSM 03.40 TP-Protocol-Identifier in integer format (default 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 **+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 is 145, otherwise default is 129) 129 Unknown type(IDSN format number) 145 International number type(ISDN format)
	<length>	Integer type value indicating in PDU mode (**+CMGF=0**), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)
	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. 1) If text mode(**+CMGF=1**) and sending successful: **+CMGC: <mr> [,<scts>]** **OK** 2) If PDU mode(**+CMGF=0**) and sending successful: **+CMGC: <mr> [,<ackpdu>]**	

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	OK 3)If error is related to ME functionality: **+CMS ERROR: <err>** Parameters **<mr>** GSM 03.40 TP-Message-Reference in integer format
Reference GSM 07.05	

4.2.9 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**
	Parameters See Write Command.
Read Command **AT+CNMI?**	Response **+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>** **OK**
	Parameters See Write Command.
Write Command **AT+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]]**	Response TA selects the procedure for how the receiving of new messages from the network is indicated to the TE when TE is active, e.g. DTR signal is ON. If TE is inactive (e.g. DTR signal is OFF), message receiving should be done as specified in GSM 03.38. **OK** If error is related to ME functionality: **ERROR**

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	Parameters		
	<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 on-line data mode). Otherwise forward them directly to the TE.
		2	Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE.
		3	Forward unsolicited result codes directly to the TE. TA-TE link specific inband technique used to embed result codes and data when TA is in on-line data mode.
	<mt>	(The rules for storing received SMs depend on its data coding scheme (refer GSM 03.38 [2]), preferred memory storage (**+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 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 Command Show Text Mode Parameters **+CSDH**). Class 2 messages result in indication as defined in **<mt>**=1.
		3	Class 3 SMS-DELIVERs are routed directly to TE 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 GSM 03.38 [2]), the setting of Select CBM Types (**+CSCB**) and this value):	
		0	No CBM indications are routed to the TE.
		2	New CBMs are routed directly to the TE using unsolicited result code: **+CBM: <length><CR><LF><pdu>** (PDU mode enabled) or

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			+CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> (Text mode enabled).
		3	Class 3 CBMs are routed directly to TE 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 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 within this command is flushed to the TE when **<mode>** 1...3 is entered (**OK** response shall be given before flushing the codes).
	Unsolicited result code **+CMTI: <mem>,<index>** Indication 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		
Reference GSM 07.05			

4.2.10 AT+CPMS Preferred SMS message storage

AT+CPMS Preferred SMS message storage	
Read Command **AT+CPMS?**	Response **+CPMS: <mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3>** **OK** If error is related to ME functionality: **ERROR**
	Parameters See Write Command.
Test Command **AT+CPMS=?**	Response **+CPMS:** (list of supported <**mem1**>s),(list of supported <**mem2**>s) ,(list of supported <**mem3**>s) **OK**
	Parameters

	See Write Command.
Write Command **AT+CPMS=** **[<mem1>** **,<mem2>** **,<mem3>]**	Response TA selects memory storages **<mem1>**, **<mem2>** and **<mem3>** to be used for reading, writing, etc. **+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3>** **OK** If error is related to ME functionality: **ERROR**
	Parameters **<mem1>** Messages to be read and deleted from this memory storage "SM" SIM message storage "ME" Mobile Equipment message storage "MT" Sum of "SM" and "ME" storages **<mem2>** Messages will be written and sent to this memory storage "SM" SIM message storage "ME" Mobile Equipment message storage "MT" Sum of "SM" and "ME" storages **<mem3>** Received messages will be placed in this memory storage if routing to PC is not set ("**+CNMI**") "SM" SIM message storage "ME" Mobile Equipment message storage "MT" Sum of "SM" and "ME" storages **<usedx>** Integer type;Number of messages currently in **<memx>** **<totalx>** Integer type;Number of messages storable in **<memx>**
Reference GSM 07.05	

4.2.11 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 **+CSCA**, set message parameters **+CSMP** and select cell boadcasmessage types **+CSCB** (if implemented) are restored. Certain settings may not be supported by the storage (e.g. SIM SMS parameters) and therefore can not be restored. **OK** If error is related to ME functionality: **ERROR**
	Parameter

	<profile>	0-3	Manufacturer specific profile number where setting are to be stored
Reference GSM 07.05			

4.2.12 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 +CSCA, Set Message Parameters **+CSMP** and Select cell broadcast message Types **+CSCB** (if implemented) are saved. Certain settings may not be supported by the storage (e.g. SIM SMS parameters) and therefore can not be saved **OK** If error is related to ME functionality: **ERROR**		
	Parameter **<profile>**	0-3	Manufacturer specific profile number where settings are to be stored
Reference GSM 07.05			

4.2.13 AT+CSCA SMS service center address

AT+CSCA SMS service center address			
Read Command **AT+CSCA?**	Response **+CSCA: <sca>,<tosca>** **OK**		
	Parameters See Write Command.		
Test Command **AT+CSCA=?**	Response **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 send and writes 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. Note: The Command writes the parameters in NON-VOLATILE memory.		

	OK If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<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 **<toda>**)
Reference GSM 07.05	

4.2.14 AT+CSCB Select cell broadcast SMS messages

AT+CSCB Select cell broadcast SMS messages	
Read Command **AT+CSCB?**	Response **+CSCB: <mode>,<mids>,<dcss>** **OK**
	Parameters See Write Command.
Test Command **AT+CSCB=?**	Response **+CSCB:** (list of supported <**mode**>s) **OK**
	Parameters See Write Command.
Write Command **AT+CSCB=<mode>[,mids>[,<dcss>]]**	Response TA selects which types of CBMs are to be received by the ME. Note: The Command writes the parameters in NON-VOLATILE memory. **OK** If error is related to ME functionality: **+CMS ERROR: <err>**
	Parameters **<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 **<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 **<dcs>**) (default is empty string); e.g. "0-3,5"
Reference GSM 07.05		

4.2.15 AT+CSDH Show SMS text mode parameters

AT+CSDH Show SMS text mode parameters	
Read Command **AT+CSDH?**	Response **+CSDH: <show>** **OK**
	Parameters See Write Command.
Test Command **AT+CSDH=?**	Response **+CSDH:** (list of supported <**show**>s) **OK**
	Parameter See Write Command.
Write Command **AT+CSDH=[<show>]**	Response TA determines whether detailed header information is shown in text mode result codes. **OK**
	Parameter **<show>** 0 Do not show header values defined in commands **+CSCA** and **+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
Reference GSM 07.05	

4.2.16 AT+CSMP Set SMS text mode parameters

AT+CSMP Set SMS text mode parameters	
Read Command **AT+CSMP?**	Response **+CSMP: <fo>,<vp>,<pid>,<dcs>** **OK**
	Parameters See Write Command.
Test Command **AT+CSMP=?**	Response **+CSMP:** (list of supported <**fo**>s),(list of supported <**vp**>s), (list of

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	supported <**pid**>s), (list of supported <**dcs**>s) **OK**
	Parameters See Write Command.
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 (**+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). Note: The Command writes the parameters in NON-VOLATILE memory. **OK**
	Parameters **<fo>** Depending on the Command or result code: first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 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 **<dt>**) **<pid>** GSM 03.40 TP-Protocol-Identifier in integer format (default is 0) **<dcs>** GSM 03.38 SMS Data Coding Scheme in Integer format
Reference GSM 07.05	

4.2.17 AT+CSMS Select message service

AT+CSMS Select message service	
Read Command **AT+CSMS?**	Response **+CSMS: <service>,<mt>,<mo>,<bm>** **OK**
	Parameters See Write Command.
Test Command **AT+CSMS=?**	Response **+CSMS:** (list of supported <**service**>s) **OK**

	Parameters See Write Command.
Write Command **AT+CSMS=<service>**	Response **+CSMS: <mt>,<mo>,<bm>** **OK** If error is related to ME functionality: **+CMS ERROR: <err>**
	Parameters **<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 sending/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
Reference GSM 07.05	

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5 AT Commands for GPRS support

5.1 Overview of AT Commands for GPRS support

Command	Description
AT+CGATT	ATTACH TO/DETACH FROM GPRS SERVICE
AT+CGDCONT	DEFINE PDP CONTEXT
AT+CGQMIN	QUALITY OF SERVICE PROFILE (MINIMUM ACCEPTABLE)
AT+CGQREQ	QUALITY OF SERVICE PROFILE (REQUESTED)
AT+CGACT	PDP CONTEXT ACTIVATE OR DEACTIVATE
AT+CGDATA	ENTER DATA STATE
AT+CGPADDR	SHOW PDP ADDRESS
AT+CGCLASS	GPRS MOBILE STATION CLASS
AT+CGEREP	CONTROL UNSOLICITED GPRS EVENT REPORTING
AT+CGREG	NETWORK REGISTRATION STATUS
AT+CGSMS	SELECT SERVICE FOR MO SMS MESSAGES

5.2 Detailed descriptions of AT Commands for GPRS support

5.2.1 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** Parameter See Write Command.
Read Command **AT+CGATT?**	Response **+CGATT: <state>** **OK** Parameter See Write Command.
Write Command **AT+CGATT=<state>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>** 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
Reference GSM07.07	

5.2.2 AT+CGDCONT Define PDP context

AT+CGDCONT	**Define PDP context**
Test Command **AT+CGDCONT=?**	Response **+CGDCONT:** (range of supported <**cid**>s), <**PDP_type**>, <**APN**>, <**PDP_addr**>, (list of supported <**data_comp**>s), (list of supported <**head_comp**>s) **OK** Parameters See Write Command.
Read Command **AT+CGDCONT?**	Response **+CGDCONT:** **<cid>,<PDP_type>,<APN>,<PDP_addr>,<data_comp>,<head_comp>** **<CR><LF>+CGDCONT:** **<cid>,<PDP_type>,<APN>,<PDP_addr>,<data_comp>,<head_comp>** **…** **OK** Parameters See Write Command.
Write Command **AT+CGDCONT=<cid>[,<PDP_type>,[APN>[,<PDP_addr>[,<d_comp>[,<h_comp>]]]]**	Response **OK** **ERROR** Parameters **<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 that identifies the MT in the address

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		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 **+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
Reference GSM07.07		

5.2.3 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** Parameters See Write Command.	
Read Command **AT+CGQMIN?**	Response **+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>** **<CR><LF>+CGQMIN:** **<cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>** **…** **OK** Parameters See Write Command.	
Write Command **AT+CGQMIN=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>** Parameters	
	<cid>	A numeric parameter which specifies a particular PDP context definition (see **+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

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	class **<mean>** A numeric parameter which specifies the mean throughput class
Reference GSM07.07	

5.2.4 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** Parameters See Write Command.
Read Command **AT+CGQREQ?**	Response **+CGQREQ: <cid>,<precedence>,<delay>,>reliability>,<peak>,<mean>** **<CR><LF>+CGQMIN:** **<cid>,<precedence>,<delay>,<reliability>,<peak >,<mean>** **…** **OK** Parameters See Write Command.
Write Command **AT+CGQREQ=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>** Parameters **<cid>** A numeric parameter which specifies a particular PDP context definition (see **+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
Reference GSM07.07	

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5.2.5 AT+CGACT PDP context activate or deactivate

AT+CGACT PDP context activate or deactivate	
Test Command **AT+CGACT=?**	Response **+CGACT:** (list of supported <**state**>s) **OK** Parameter See Write Command.
Read Command **AT+CGACT?**	Response **+CGACT: <cid>,<state>[<CR><LF>+CGACT:<cid><state>…]** **OK**
Write Command **AT+CGACT=<state>,<cid>**	Response **OK** **NO CARRIER** If error is related to ME functionality: **+CME ERROR: <err>** Parameters **<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 **+CGDCONT** command)
Reference GSM07.07	Note: If context is deactivated successfully, **NO CARRIER** is returned.

5.2.6 AT+CGDATA Enter data state

AT+CGDATA Enter data state	
Test Command **AT+CGDATA=?**	Response **+CGDATA:** list of supported <**L2P**>s **OK** Parameter See Write Command.
Write Command **AT+CGDATA=<L2P>[,<cid>[,<cid>[,…]]]**	Response **OK** **NO CARRIER** If error is related to ME functionality: **+CME ERROR: <err>** Parameters **<L2P>** A string parameter that indicates the layer 2 protocol to be used between the TE and MT:

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		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 **+CGDCONT** command)
Reference GSM07.07		

5.2.7 AT+CGPADDR Show PDP address

AT+CGPADDR	**Show PDP address**
Test Command **AT+CGPADDR=?**	Response **+CGPADDR:** (list of defined <**cid**>s) **OK** Parameter See Write Command.
Write Command **AT+CGPADDR=<cid>**	Response **+CGPADDR: <cid>,<PDP_addr>** **OK** **ERROR** Parameters **<cid>** A numeric parameter which specifies a particular PDP context definition (see **+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 **+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 by **<cid>**. **<PDP_ address>** is omitted if none is available
Reference GSM07.07	Note: This command dictates the behavior of PPP in the ME but not that of any other GPRS-enabled foreground layer, e.g. browser.

5.2.8 AT+CGCLASS GPRS mobile station class

AT+CGCLASS	**GPRS mobile station class**
Test Command **AT+CGCLASS=?**	Response **+CGCLASS:** (list of supported <**class**>s) **OK** Parameter See Write Command.

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Read Command **AT+CGCLASS?**	Response **+CGCLASS: <class>** **OK** Parameter See Write Command.
Write Command **AT+CGCLASS=<class>**	Response **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>** Parameter **<class>** A string parameter which indicates the GPRS mobile class (In descending order of functionality) "B" Class B "CG" Class C in GPRS only mode "CC" Class C in circuit switched only mode
Reference GSM07.07	

5.2.9 AT+CGEREP Control unsolicited GPRS event reporting

AT+CGEREP Control unsolicited GPRS event reporting	
Test Command **AT+CGEREP=?**	Response **+CGEREP:** (list of supported <**mode**>s) **OK** Parameter See Write Command.
Read Command **AT+CGEREP?**	Response **+CGEREP: <mode>** **OK** Parameter See Write Command.
Write Command **AT+CGEREP=<mode>**	Response **OK** **ERROR** Parameter **<mode>** 0 Buffer unsolicited result codes in the MT; if MT result code buffer is full, the oldest ones can be discarded. No codes are forwarded to the TE. 1 Discard unsolicited result codes when MT-TE link is reserved (e.g. in on-line data mode); otherwise forward

	them directly to the TE 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 **+CGDCONT** command) **<PDP_addr>** Packet Data Protocol address (see **+CGDCONT** command) **<cid>** Context ID (see **+CGDCONT** command) **<class>** GPRS mobile class (see **+CGCLASS** command)
Reference GSM07.07	

5.2.10 AT+CGREG Network registration status

AT+CGREG Network registration status	
Test Command **AT+CGREG=?**	Response **+CGREG:** (list of supported <**n**>s) **OK** Parameter See Write Command.
Read Command **AT+CGREG?**	Response **+CGREG: <n>,<stat>[,<lac>,<ci>]** **OK** **+CME ERROR: <err>** Parameter See Write Command.
Write Command **AT+CGREG=[<n>]**	Response **OK** **ERROR** Parameters **<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

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	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 bytes cell ID in hexadecimal format
Reference GSM07.07	Note: For parameter stat, options 0 and 1 supported only.

5.2.11 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** Parameter See Write Command.
Read Command **AT+CGSMS?**	Response **+CGSMS: <service>** **OK** Parameter See Write Command.
Write Command **AT+CGSMS=[<service>]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>** Parameter **<service>** A numeric parameter which indicates the service or service preference to be used 0 GPRS 1 Circuit switched 2 GPRS preferred (use circuit switched if GPRS not available) 3 Circuit switched preferred (use GPRS if circuit switched not available)
Reference GSM07.07	Note: The circuit switched service route is the default method.

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6 AT Commands special for Quectel

6.1 Overview

Command	Description
AT+QECHO	ECHO CANCELLATION CONTROL
AT+ QSIDET	CHANGE THE SIDE TONE GAIN LEVEL
AT+QPOWD	POWER OFF
AT+QTRPIN	TIMES REMAIN TO INPUT SIM PIN/PUK
AT+QMIC	CHANGE THE MICROPHONE GAIN LEVEL
AT+QALARM	SET ALARM
AT+QADC	READ ADC
AT +QRSTCB	RESET CELL BROADCAST
AT +QINDRI	INDICATE RI WHEN USING URC
AT+QEXTHS	EXTERNAL HEADSET JACK CONTROL
AT+QHSBTN	HEADSET BUTTON STATUS REPORTING
AT+QSIMSTAT	SIM INSERTED STATUS REPORTING
AT+QLDTMF	GENERATE LOCAL DTMF TONE
AT+QCGTIND	CIRCUIT SWITCHED CALL OR GPRS PDP CONTEXT TERMINATION INDICATION
AT+QSPN	GET SERVICE PROVIDER NAME FROM SIM
AT+QBAND	GET AND SET MOBILE OPERATION BAND
AT+QAUDCH	SWAP THE AUDIO CHANNELS
AT+QSCLK	CONFIGURE SLOW CLOCK
AT+QENG	REPORT CELL DESCRIPTION IN ENGINEERING MODE
AT+QCLASS0	STORE CLASS 0 SMS TO SIM WHEN RECEIVED CLASS 0 SMS
AT+QCCID	SHOW ICCID
AT+QTEMP	SET CRITICAL TEMPERATURE OPERATING MODE OR QUERY TEMPERATURE
AT+QSIMDET	SWITCH ON OR OFF DETECTING SIM CARD
AT+QMGDA	DELETE ALL SMS
AT+QLTONE	GENERATE LOCAL SPECIFIC TONE
AT+QGID	GET SIM CARD GROUP IDENTIFIER
AT+QMOSTAT	SHOW STATE OF MOBILE ORIGINATED CALL
AT+QGPCLASS	CHANGE GPRS MULTI-SLOT CLASS
AT+QMGHEX	ENABLE TO SEND NON-ASCII CHARACTER SMS
AT+QAUDLOOP	AUDIO CHANNEL LOOP BACK TEST
AT+QSMSCODE	CONFIGURE SMS CODE MODE
AT+QIURC	ENABLE OR DISABLE INITIAL URC PRESENTATION
AT+QCSPWD	CHANGE PS SUPER PASSWORD
AT+QEXTUNSOL	ENABLE/DISABLE PROPRIETARY UNSOLICITED INDICATIONS

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AT+QSFR	FORCE SPEECH CODING TO BE FULL RATE
AT+QSPCH	SPEECH CHANNEL TYPE REPORT
AT+QSCANF	SCAN POWER OF GSM FREQUENCY
AT+QLOCKF	LOCK GSM FREQUENCY
AT+QGPIO	CONFIGURE GPIO PIN
AT+QINISTAT	QUERY STATE OF INITIALIZATION
AT+QFGR	READ CUSTOMER FILE
AT+QFGW	WRITE CUSTOMER FILE
AT+QFGL	LIST CUSTOMER FILES
AT+QFGD	DELETE CUSTOMER FILE
AT+QFGM	QUERY FREE SPACE FOR CUSTOMER FILES
AT+QNSTATUS	QUERY GSM NETWORK STATUS
AT+QSRT	SELECT RING TONE
AT+QECHOEX	EXTENDED ECHO CANCELLATION CONTROL
AT+EGPAU	PPP AUTHENTICATION
AT+QNITZ	NETWORK TIME SYNCHRONIZATION
AT+QCLKOUT	OUTPUT CLOCK SOURCE
AT+QTTS	TEXT TO SPEECH
AT+QRIMODE	SET RI TIME
AT+QDISH	DISABLE ATH
AT+QMUXC	TURNOFF MUX PSC COMMAND
AT+QTUNBUF	ADJUST THE UART BUFFER SIZE
AT+QTONEDET	DETECT DTMF
AT+QTDMOD	SET TONE DETECT MODE
AT+QWDTMF	PLAY DTMF TONE TO CALL EACH OTHER
AT+QTONEP	SET DTMF OUTPUT PATH
AT+QDISP	FORGE PPP TERMINATED

6.2 Detailed descriptions of Commands

6.2.1 AT+QECHO Echo cancellation control

AT+QECHO Echo cancellation control	
Test Command **AT+QECHO=?**	Response : **+QECHO**: (<**control word**>), (<**nlp**>) , (<**suppression value**>),(<**nr**>),(<**channel**>) **OK**
	Parameters See Write Command.
Read Command **AT+QECHO?**	Response : **+QECHO: <control word>, <nlp>, <suppression value>,<nr>,<channel>**

	OK
	Parameters See Write Command.
Write Command **AT+QECHO=<control word>,<nlp> ,<suppression value>,<nr>,<channel>**	Response : **OK** **ERROR**
	Parameters **<control word>** 221 Suitable for handset and handset applications 224 Suitable for handfree application 0 Means disabling all echo algorithm **<nlp>** Range is 0 - 2048. The greater the value, the more reduction of echo. 0 means disabling the NLP algorithm **<suppression value>** Range is 0 - 32767. The smaller the value, the more reduction of echo. 0 means disabling the echo suppression algorithm **<nr>** Noise reduction controller. Should NOT be set to 0. 849 Suitable for handset and headset applications 374 Suitable for handfree application **<channel>** 0 Normal channel 1 Handset channel 2 Loudspeaker channel
Reference	

6.2.2 AT+QSIDET Change the side tone gain level

AT+QSIDET Change the side tone gain level	
Test Command **AT+QSIDET=?**	Response **+QSIDET:** (<**gainlevel**>) **OK**
	Parameter See Write Command.
Read Command **AT+QSIDET?**	Response: **+QSIDET(NORMAL_AUDIO): <gainlevel>** **OK** **+QSIDET(HEADSET_AUDIO): <gainlevel>** **OK**
	Parameter See Write Command.
Write Command **AT+QSIDET=<gainlevel >**	Response **OK** **ERROR**

	Parameter **<gainlevel>** Range is 0 - 255
Reference	Note: **<gainlevel>** value is related to channel specific.

6.2.3 AT+QPOWD Power off

AT+QPOWD Power off	
Write Command **AT+QPOWD = <n>**	Response Parameter **<n>** 0 Power off urgently (Will not send out URC "**NORMAL POWER DOWN**") 1 Normal power off (Will send out URC "**NORMAL POWER DOWN**")
Reference	

6.2.4 AT+QTRPIN Times remain to input SIM PIN/PUK

AT+QTRPIN Times remain to input SIM PIN/PUK	
Execution Command **AT+QTRPIN**	Response Times remain to input SIM PIN **+QTRPIN: <chv1>,<chv2>,<puk1>,<puk2>** **OK**
	Parameters **<chv1>** Times remain to input chv1 **<chv2>** Times remain to input chv2 **<puk1>** **T**times remain to input puk1 **<puk2>** Times remain to input puk2
Reference	

6.2.5 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**
	Parameters See Write Command.
Read Command **AT+QMIC?**	Response **+ QMIC: < gainlevel(Normal_Mic) >, <gainlevel(Headset_Mic)> , <gainlevel(Loudspeaker_Mic)>** **OK**
	Parameters

	See Write Command.
Write Command **AT+QMIC=<channel>,<gainlevel>**	Response : **OK** **ERROR**
	Parameters **<channel>** 0 Normal microphone 1 Headset microphone 2 Loudspeaker microphone **<gainlevel>** Range is 0 - 15
Reference	

6.2.6 AT+QALARM Set alarm

AT+QALARM Set alarm	
Test Command **AT+QALARM=?**	Response **+QALARM:** (<**state**>),<**time**>,(<**repeat**>),(<**power**>) **OK**
	Parameters See Write Command.
Write Command **AT+QALARM=<state>,<time>,<repeat>,<power>**	Response **OK** **ERROR** If error is related to ME functionality: **+CMS ERROR: <err>**
	Parameters **<state>** An integer parameter which indicates whether enable or disable alarm. 0 CLEAR ALARM 1 SET ALARM **<time>** A string parameter which indicates the time when alarm arrives. 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 -48 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 dealing power when alarm arrives. 0 None Only send "**ALARM RING**" to serial port

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	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
Reference	Note: In alarm mode, protocol stack and SIM protocol is 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, system will be powered down right now.

6.2.7 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**
	Parameters See Read Command.
Read Command **AT+ QADC?**	Response **+QADC: <status>,<value>** **OK**
	Parameters **<status>** 0 Fail 1 Success **<value>** Range is 0 - 2800

6.2.8 AT+QRSTCB Reset cell broadcast

AT+QRSTCB	**Reset cell broadcast**
Execution Command **AT+QRSTCB**	Response **OK**
	Parameter
Reference	Note: Reset the CB module.

6.2.9 AT+QINDRI Indicate RI when using URC

AT+QINDRI	**Indicate RI when using URC**
Read Command **AT+ QINDRI?**	Response **+QINDRI: <status>** **OK**

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	Parameter See Write Command.
Write Command **AT+QINDRI=<status>**	Response **OK** **ERROR**
	Parameter **<status>** 0 Off 1 On
Reference	

6.2.10 AT+QEXTHS External headset jack control

AT+ QEXTHS External headset jack control	
Test Command **AT+QEXTHS=?**	Response **+QEXTHS:** (<**mode**>s) **OK**
	Parameter See Write Command.
Read Command **AT+QEXTHS?**	Response **+QEXTHS: <mode>,<headset attach>** **OK**
	Parameters See Write Command.
Write Command **AT+QEXTHS=<mode>**	Response **OK** **ERROR** If error is related to ME functionality: **+CMS ERROR: <err>**
	Unsolicited result code **+QEXTHS: <mode>,<headset attach>**
	Parameters **<mode>** A numeric parameter which indicates whether an unsolicited event code (indicating whether the headset has been attached/detached) should be sent to the terminal. 0 Not send unsolicited event code 1 Send unsolicited event code **<headset attach>** A numeric parameter which indicates whether a headset has been attached or not 0 Not attached 1 Attached
Reference	Note: Support for this command will be hardware dependant.

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6.2.11 AT+QHSBTN Headset button status reporting

AT+ QHSBTN	Headset button status reporting
Test Command **AT+QHSBTNT=?**	Response **+QHSBTN:** (<**mode**>s) **OK**
	Parameter See Write Command.
Read Command **AT+QHSBTN?**	Response **+QHSBTN: <mode>,<headset button press>** **OK**
	Parameters See Write Command.
Write Command **AT+QHSBTN=<mode>**	Response **OK** **ERROR** If error is related to ME functionality: **+CMS ERROR: <err>**
	Unsolicited result code **+QHSBTN: <mode>,<headset button press>**
	Parameters **<mode>** A numeric parameter which indicates whether an unsolicited event code (indicating whether the headset button has been pressed) should be sent to the terminal 0 Not send unsolicited event code 1 Send unsolicited event code **<headset attach>** A numeric parameter which indicates whether a headset button has been pressed or not 0 Not pressed 1 Pressed
Reference	Note: Support for this Command will be hardware dependant.

6.2.12 AT+QSIMSTAT SIM inserted status reporting

AT+QSIMSTAT	SIM inserted status reporting
Test Command **AT+QSIMSTAT=?**	Response **+QSIMSTAT:** (list of supported <**n**>s) **OK**
	Parameter See Write Command.

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Read Command **AT+QSIMSTAT?**	Response **+QSIMSTAT: <n>,<SIM inserted>** **OK**
	Parameter See Write Command.
Write Command **AT+QSIMSTAT=<n>**	Response **OK** **ERROR** If error is related to ME functionality: **+CMS ERROR: <err>**
	Parameters **<n>** A numeric parameter which indicates whether to show an unsolicited event code indicating whether the SIM has just been inserted or removed. 0 Disable 1 Enable **<SIM inserted>** A numeric parameter which indicates whether SIM card has been inserted. 0 Not inserted 1 Inserted
Reference	

6.2.13 AT+QLDTMF Generate local DTMF tone

AT+ QLDTMF Generate local DTMF tone	
Write Command **AT+QLDTMF=<n>[,<DTMF string>]**	Response **OK** **ERROR**
	Parameters **<n>** 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.
Execution Command **AT+QLDTMF**	Response **OK** Aborts any DTMF tone currently being generated and any DTMF tone sequence.
Reference GSM07.07	

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6.2.14 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**
	Parameter See Write Command.
Read Command **AT+QCGTIND?**	Response **+QCGTIND: <n>** **OK**
	Parameter See Write Command.
Write Command **AT+QCGTIND=<n>**	Response **OK** **ERROR**
	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
	Unsolicited result code When enabled, an unsolicited result code is returned after the connection has been terminated **+QCGTIND: <type>** Parameter **<type>** Connection type 0 Circuit switched voice call 1 Circuit switched data call 2 PPP connection
Reference	

6.2.15 AT+QSPN Get service provider name from SIM

AT+QSPN Get service provider name from SIM	
Read Command **AT+QSPN?**	Response **+QSPN: <spn>,<display mode>** **OK** **+CME ERROR: <err>**
	Parameters

	<spn>	String type; service provider name on SIM
	<display mode>	0 don't display PLMN. Already registered on PLMN 1 display PLMN
Reference	Note: CME errors possible if SIM not inserted or PIN not entered.	

6.2.16 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**
	Parameter See Write Command.
Read Command **AT+QBAND?**	Response **+QBAND: <op_band>** **OK**
	Parameter See Write Command.
Write Command **AT+QBAND=<op_band>**	Response **OK** If error is related to ME functionality: **+CMS ERROR: <err>**
	Parameter **<op_band>** "EGSM_MODE" "DCS_MODE" "PCS_MODE" "EGSM_DCS_MODE" "GSM850_PCS_MODE" "GSM850_EGSM_DCS_PCS_MODE"
Reference	Note: Radio settings following updates are stored in non-volatile memory.

6.2.17 AT+QAUDCH Swap the audio channels

AT+QAUDCH Swap the audio channels	
Test Command **AT+QAUDCH=?**	Response **+QAUDCH: (0 = NORMAL_AUDIO, 1 = HEADSET_AUDIO, 2 = LOUDSPEAKER_AUDIO, 3 = AUTO)** **OK**
	Parameter See Write Command.
Read Command **AT+QAUDCH?**	Response **+QAUDCH: <n>**

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	OK
	Parameter See Write Command
Write Command **AT+QAUDCH=[<n>]**	Response **OK** **+CME ERROR: <err>**
	Parameter **<n>** 0 Normal audio channel(default) 1 Headset audio channel 2 Loudspeaker audio 3 Auto
Reference	

6.2.18 AT+QSCLK Configure slow clock

AT+ QSCLK Configure slow clock	
Test Command **AT+QSCLK=?**	Response **+QSCLK: (0,1)** **OK**
	Parameter See Write Command.
Read Command **AT+QSCLK?**	Response **+QSCLK: <n>** **OK**
	Parameter See Write Command
Write Command **AT+QSCLK=<n>**	Response **OK** **ERROR**
	Parameter **<n>** 0 Disable slow clock 1 Enable slow clock
Reference	

6.2.19 AT+QENG Report cell description in engineering mode

AT+QENG Report cell description in engineering mode	
Test Command **AT+QENG=?**	Response TA returns the list of supported modes. **+QENG:** (list of supported <**mode**>s),(list of supported **<dump>**s) **OK**

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	Parameters See Write Command.
Read Command **AT+QENG?**	Response This command can be used to retrieve the parameters of the main cell and of up to six neighboring cells. The corresponding information is reported selectively according to **<dump>**: **+QENG: <mode>,<dump>** Main cell description: **+QENG:** **0,<mcc>,<mnc>,<lac>,<cellid>,<bcch>,<bsic>,<dbm>,<c1>,<c2>,<txp>,** **<rla>,<tch>,<ts>,<maio>,<hsn><ta>,<rxq_sub>,<rxq_full>** Neighbour 1 to neighbour 6 cells description: **[+QENG: 1,**list of **(<ncell>,<bcch>,<dbm>,<bsic>,<c1>,<c2>,<mcc>,<mnc>,<lac>,<cellid>**)s**]** **OK**
	Parameters See Write Command.
Write Command **AT+QENG** **=<mode>[,<** **dump>]**	Response TA attempt to switch on or off engineering mode for retrieving detailed cell environment description. These are two possible methods to ascertain these cell parameters: one request by read command or automatically report. **OK** **ERROR**
	Unsolicited result code TA controls the presentation of an unsolicited result code when **<mode>**=2. The corresponding information is reported selectively according to **<dump>**. Main cell description: **+QENG:** **0,<mcc>,<mnc>,<lac>,<cellid>,<bcch>,<bsic>,<dbm>,<c1>,<c2>,<txp>,** **<rla>,<tch>,<ts>,<maio>,<hsn><ta>,<rxq_sub>,<rxq_full>** Neighbour 1 to neighbour 6 cells description: **[+QENG: 1,**list of **(<ncell>,<bcch>,<dbm>,<bsic>,<c1>,<c2>,<mcc>,<mnc>,<lac>,<cellid>**)s**]**
	Parameters **<mode>** 0 Switch off engineering mode and stop detailed reporting. Parameter **<dump>** is ignored. 1 Switch on engineering mode for reading detailed

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	reporting 2 Switch on engineering mode, and automatic report Unsolicited result code **<dump>** 0 Report main cell description only 1 Report main cell and neighbour 1-6 cells description **<mcc>** Mobile country code **<mnc>** Mobile network code **<lac>** Location area code, hexadecimal digits **<cellid>** Cell ID, hexadecimal digits **<bcch>** ARFCN of the BCCH carrier **<bsic>** Base station identity code **<dbm>** Receiving level in dBm **<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>** Timeslot number **<maio>** MAIO value **<hsn>** HSN value **<tch>** ARFCN of the TCH carrier. 'h' indicates frequency hopping **<ts>** Timeslot number **<maio>** MAIO value **<hsn>** HSN value **<ta>** Timing advance, range is 0 - 63 **<rxq_sub>** Receiving quality (sub), range is 0 - 7 **<rxq_full>** Receiving quality (full), range is 0 - 7 **<ncell>** 1-6 index of neighbour 1 to neighbour 6 cells
Reference	Note: ● The automatic URC is reported about every 5 seconds when **<mode>**=2. ● The parameter **<lac>** and **<cellid>** are presented as hexadecimal digits; the remaining parameters are composed of decimal digits. ● If a field cannot be measured, the parameter is filled with character 'x'. ● If not in dedicated mode, **<tch>**, **<ts>**, **<maio>**, **<hsn>**, **<ta>**, **<rxq_sub>**, **<rxq_full>** are not valid and are displayed as "x". ● If the network supports frequency hopping during a connection, the TCH channel is not stable. This mode is indicated by **<tch>** = 'h'. ● In dedicated mode, the parameters **<c1>** and **<c2>** of main cell can not be updated and are displayed as an invalid value '-1'. At the same time, the parameters **<txp>** and **<rla>** cannot be updated under certain conditions and remain the value of idle mode. This is because the ME does not update the cell selection and reselection parameters since, in this mode, they are not relevant for operation. When the connection ends, and the mobile is back to idle mode, correct values will be given. ● If TA reports neighbouring cells description, the information of 6 cells

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	are presented and if some cells can not be measured, 'x' is filled in the parameters of these cells. ● In dedicated mode, the parameters **<c1>** and **<c2>** of neighbour cells may be measured and reported with a meaningless value, and the parameters **<mcc>, <mnc>, <lac>** and **<cellid>** of neighbour cells can not be measured, 'x' is filled in these parameters of all the 6 neighbour cells. ● The command does not report receiving level and reserving quality, and **AT+CSQ** can be used to retrieve the two parameters. ● **AT+QSPCH** can be used to retrieve the speech channel type (FR, HR, EFR, AMR_FR, AMR_HR) when call in progress.
Example	Main cell description: Idle mode: **+QENG: 0,460,00,1806,2602,64,46,-72,119,119,5,8,x,x,x,x,x,x,x** Dedicated mode: **+QENG: 0,460,00,1806,2031,17,41,-73,-1,-1,5,8,h,7,0,24,1,0,1** Neighbour 1 to neighbour 6 cells description: **+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**

6.2.20 AT+QCLASS0 Store Class 0 SMS to SIM when received Class 0 SMS

AT+QCLASS0 Store Class 0 SMS to SIM when received Class 0 SMS	
Test Command **AT+QCLASS0=?**	Response **+QCLASS0: (0, 1)** **OK**
	Parameter See Write Command.
Read Command **AT+QCLASS0?**	Response **+QCLASS0: <mode>** **OK**
	Parameter See Write Command.
Write Command **AT+QCLASS0=<mode>**	Response **OK** **ERROR**
	Parameter **<mode>** 0 Disable to store Class 0 SMS to SIM when received Class 0 SMS

	1 Enable to store Class 0 SMS to SIM when received Class 0 SMS
Reference	

6.2.21 AT+QCCID Show ICCID

AT+QCCID Show ICCID	
Test Command **AT+QCCID =?**	Response **OK**
Execution Command **AT+ QCCID**	Response **ccid data** [ex. 898600810906F8048812] **OK**
	Parameter
Reference	

6.2.22 AT+QTEMP Set critical temperature operating mode or query temperature

AT+QTEMP Set critical temperature operating mode or query temperature	
Read Command **AT+QTEMP?**	Response **+QTEMP: <mode><Temperature>** **OK**
	Parameters See Write Command.
Write Command **AT+QTEMP=** **[<mode>]**	Response **OK** **ERROR**
	Parameters **<mode>** 0 Disable power off 1 Enable power off **<Temperature>** Range is from -40 to 90
Reference	**Note** ● When temperature is extreme high or low, product will power off. ● URCs indicating the alert level "1" or "-1" are intended to enable the user to take appropriate precautions, such as protect the module from exposure to extreme conditions, or save or back up data etc. Presentation of "1" or "-1" URCs is always enabled. ● Level "2" or "-2" URCs are followed by immediate shutdown. The presentations of these URCs are always enabled.

6.2.23 AT+QSIMDET Switch on or off detecting SIM card

AT+ QSIMDET Switch on or off detecting SIM card

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Test Command **AT+QSIMDET=?**	Response **+QSIMDET: (0-1),(0-1)** **OK**
	Parameter See Write Command.
Read Command **AT+QSIMDET?**	Response **+QSIMDET: <mode>,<active>** **OK**
	Parameter See Write Command.
Write Command **AT+QSIMDET=<mode>[,<active>]**	Response **OK** **ERROR**
	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
Reference	

6.2.24 AT+QMGDA Delete all SMS

AT+QMGDA Delete all SMS	
Test Command **AT+QMGDA=?**	Response **+QMGDA:** (listed of supported <**type**>s) **OK** **+CMS ERROR: <err>**
	Parameter See Write Command.
Write Command **AT+QMGDA=<type>**	Response **OK** **ERROR** **+CMS ERROR: <err>**
	Parameter 1) If text mode: "DEL READ" Delete all read messages "DEL UNREAD" Delete all unread messages "DEL SENT" Delete all sent SMS "DEL UNSENT" Delete all unsent SMS "DEL INBOX" Delete all received SMS

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

6.2.25 AT+QLTONE Generate local specific tone

AT+QLTONE Generate local specific tone	
Test Command **AT+QLTONE =?**	Response **+QLTONE: (0-1), (0-50000), (0-1000), (0-1000), (0-15300000)** **OK**
	Parameters See Write Command.
Write Command **AT+QLTONE =<mode>,< frequency >,< periodOn >,< periodOff >,< duration >**	Response **OK** **ERROR**
	Parameters **<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
Reference	Note: When playing tone, module will continuously play for <**periodon**>, then stop playing for <**periodoff**> in a cycle. The total time of cycles is <**duration**>.

6.2.26 AT+QGID Get SIM card group identifier

AT+QGID Get SIM card group identifier	
Execution Command **AT+ QGID**	Response **+QGID: <gid1> <gid2>** **OK** **ERROR**
	Parameters **<gid1>** Integer type of SIM card group identifier 1 **<gid2>** Integer type of SIM card group identifier 2
Reference	Note:

	If the SIM supports GID files, the GID values were retuned. Otherwise 0xff is retuned.

6.2.27 AT+QMOSTAT Show state of mobile originated call

AT+QMOSTAT Show state of mobile originated call	
Test Command **AT+QMOSTAT=?**	Response **+QMOSTAT: (0,1)** **OK**
	Parameters See Write Command.
Read Command **AT+QMOSTAT?**	Response **+QMOSTAT: <mode>** **OK**
Write Command **AT+QMOSTAT=<mode>**	Response **OK** **ERROR**
	Parameters **<mode>** 0 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
Reference	

6.2.28 AT+QGPCLASS Change GPRS multi-slot class

AT+QGPCLASS Change GPRS multi-slot class	
Test Command **AT+QGPCLASS=?**	Response **MULTISLOT CLASS: (1-12)** **OK**
Read Command **AT+QGPCLASS?**	Response **MULTISLOT CLASS: <class>** **OK**
	Parameter See Write Command.
Write Command **AT+QGPCLASS=<class>**	Response **OK** **ERROR**
	Parameter **<class>** GPRS multi-slot class

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Reference	Note: Need reboot to take effect.

6.2.29 AT+QMGHEX Enable to send non-ASCII character SMS

AT+QMGHEX	Enable to send non-ASCII character SMS
Test Command **AT+QMGHEX=?**	Response **+QMGHEX: (0,1)** **OK**
Read Command **AT+QMGHEX?**	Response **+QMGHEX: <mode>** **OK**
	Parameter See Write Command.
Write Command **AT+QMGHEX=<mode>**	Response **OK** **ERROR**
	Parameter **<mode>** 0 Send SMS in ordinary way 1 Enable to send SMS varying from 0x00 to 0x7f except 0x1a and 0x1b under text mode and GSM character set
Reference	Note: Only be available in text mode and **+CSCS="GSM"**.

6.2.30 AT+QAUDLOOP Audio channel loop back test

AT+QAUDLOOP	Audio channel loop back test
Test Command **AT+QAUDLOOP=?**	Response **+QAUDLOOP: (0-1), (0-2)** **OK**
Write Command **AT+QAUDLOOP=<state>[,<type>]**	Response **OK** **ERROR**
	Parameters **<state>** 0 Test is off 1 Test is on **<type>** 0 Normal audio channel 1 Headset audio channel 2 Loudspeaker audio channel
Reference	

6.2.31 AT+QSMSCODE Configure SMS code mode

AT+QSMSCODE Configure SMS code mode

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Test Command **AT+QSMSCODE=?**	Response **+QSMSCODE:(0,1)** **OK**
Read Command **AT+QSMSCODE?**	Response **+QSMSCODE:<mode>** **OK**
	Parameter See Write Command.
Write Command **AT+QSMSCODE=** **<mode>**	Response **OK** **ERROR**
	Parameter **<mode>** 0 Code mode according with NOKIA 1 Code mode according with SIEMENS
Reference	Note: Default value is 0.

6.2.32 AT+QIURC Enable or disable initial URC presentation

AT+QIURC Enable or disable initial URC presentation	
Test Command **AT+QIURC=?**	Response **+QIURC: (0,1)** **OK**
Read Command **AT+QIURC?**	Response **+QIURC:<mode>** **OK**
	Parameter See Write Command.
Write Command **AT+QIURC=** **<mode>**	Response **OK** **ERROR**
	Parameter **<mode>** 0 Disable URC presentation. 1 Enable URC presentation
Reference	Note: When module power on and initialization procedure is over . URC "**Call Ready**" will be presented if **<mode>** is 1.

6.2.33 AT+QCSPWD Change PS super password

AT+QCSPWD Change PS super password	
Write Command	Response

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AT+QCSPWD=<oldpwd>,<newpwd>	**OK** **ERROR**
	Parameters **<oldpwd>** String type. Old password and length should be 8. **<newpwd>** String type. New password and length should be 8.
Reference	Note: ● Default value of **<oldpwd>** is "12345678". ● If 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.

6.2.34 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**
	Parameters See Write Command.
Write Command **AT+QEXTUNSOL=<exunsol> ,<mode>**	Response **OK** **ERROR**
	Parameters **<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 **+CMT**I 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.

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		"UR"	Unsolicited result code. Produces an unsolicited indication following particular call state transitions. Multiple notifications may occur for the same transition **+QGURC: <event>**. Where **<event>** describes the current call state: **<event>:** 0 Active call terminated, 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 connected 6 Mobile Originated or Mobile Terminated call has disconnected 7 Mobile Originated or Mobile Terminated call hung up. 8 Mobile Originated call to non-emergency number in emergency mode 9 Mobile Originated call no answer 10 Mobile Originated call remote number busy
		"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 ofUnsolicited 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 disconnected. **+CCINFO: <Call id disconnected>,<Remain calls>**
	<mode>	0	Disable
		1	Enable
		2	Query
Reference			

6.2.35 AT+QSFR Preference speech coding

AT+QSFR Preference speech coding

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Test Command **AT+QSFR=?**	Response **+QSFR: (0-15)** **OK**
Read Command **AT+QSFR?**	Response **+QSFR:<mode>** **OK**
	Parameter See Write Command.
Write Command **AT+QSFR=<mode>**	Response **OK** **ERROR**
	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
Reference	Note: This setting is stored in the non-volatile memory and will be used whenever the module is powered up again.

6.2.36 AT+QSPCH Speech channel type report

AT+QSPCH Speech channel type report	
Test Command **AT+QSPCH=?**	Response **+QSPCH: (0,1)** **OK**
Read Command **AT+QSPCH?**	Response **+QSPCH:<mode>,<speech channel>** **OK**

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	Parameter See Write Command.
Write Command **AT+QSPCH=<mode>**	Response **OK** **ERROR**
	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
Reference	Note: URC **+QSPCH: <mode>,<speech channel>** will be indicated when speech channel type change.

6.2.37 AT+QSCANF Scan power of GSM frequency

AT+QSCANF Scan power of GSM frequency	
Test Command **AT+QSCANF=?**	Response **+QSCANF:<band>,<freq>** **OK**
Write Command **AT+QSCANF=<band> ,<freq>**	Response If <**freq**>=9999 and command 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 successful **+QSCANF:** **CH<freq>, <dbm>** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter **<band>** 0 BAND 900 1 BAND 1800 2 BAND 1900

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	3 BAND 850 **<freq>** 9999 Scan all frequency in specified band 0-1024 Scan a fixed frequency in specified band **<dbm>** The signal strength indication in dbm value for a specified frequency
Reference	Note: Before use this AT command, must turn off RF function of system, please make sure CFUN state is 0 or 4. About how to change CFUN state, please refer AT command **AT+CFUN**.

6.2.38 AT+QLOCKF Lock GSM frequency

AT+QLOCKF Lock GSM frequency	
Test Command **AT+QLOCKF=?**	Response **+QLOCKF:<mode>,<band1900>,<freq>** **OK**
Read Command **AT+QLOCKF?**	Response **+QLOCKF:<status>** **OK**
	Parameter See Write Command.
Write Command **AT+QLOCKF=<mode>,<band1900>,<freq>**	Response **OK** **ERROR**
	Parameter **<mode>** 0 Unlock frequency 1 Lock frequency **<band1900>** 0 Be not in 1900 band cell 1 Be in 1900 band cell <**freq**> 0-1024 Frequency to be locked. <**status**> 0 System is not locked to a specified frequency. 1 System is locked to a specified frequency.
Reference	

6.2.39 AT+QGPIO Configure GPIO pin

AT+QGPIO Configure GPIO pin	
Test Command **AT+QGPIO=?**	Response **+QGPIO: (1-3) <pinname> (0,1) (0,1), (0,1)** **OK**
Write Command 1) If <**op**> equal 1 **AT+QGPIO=**	Response If <**op**>=1 or <**op**>=3, and command successful, **OK**

<op>,<pinname>,<dir>,<pullen> 2) If <**op**> equal 2 **AT+QGPIO=<op>,<pinname>** 3) If <**op**> equal 3 **AT+QGPIO=<op>,<pinname>,<val>**	If <**op**>=2, and command successful, **+QGPIO:<pinname>,<dir>,<val>,<pullen>** **OK** If error is related to ME functionality: **+CME ERROR: <err>** Parameter <**op**> 1 Init and Set <**dir**> and <**pullen**> of the specified pin. 2 Read the specified pin 3 Write <**val**> to the specified output GPIO pin. <**pinname**> Name of the specified pin in string format <**dir**> 0 The pin will be configured as input GPIO. 1 The pin will be configured as output GPIO. <**val**> 0-1 The value written to GPIO port. If the pin is configured as input GPIO, this parameter will be ignored. <**pullen**> 0 GPIO internal pull up/down is disabled. 1 GPIO internal pull up/down is enabled.
Reference	Note: About the valid value of <**pinname**>, please refer HD document of the module.

6.2.40 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** Parameter <state> 0 Not initialization 1 Ready to execute AT command 2 Phonebook has finished initialization 3 SMS has finished initialization
Reference	Note: When <**state**> is 3, it also means initialization of SIM card related functions has finished.

6.2.41 AT+QFGR Read customer file

AT+QFGR Read customer file	
Test Command **AT+QFGR=?**	Response

	OK
Write Command **AT+QFGR=<name>**	Response **+QFGR:<length><CR><LF><data>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter <**name**> Name of the specified customer file in string format **<length>** Length of the customer file **<data>** Content of the customer file
Reference	

6.2.42 AT+QFGW Write customer file

AT+QFGW Write customer file	
Test Command **AT+QFGW=?**	Response **OK**
Write Command **AT+QFGW=<name>,<data>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter <**name**> Name of the specified customer file in string format **<data>** Content of the customer file. The maximum length is 512.
Reference	Note: If the specified file doesn't exist, the file will be created, otherwise, the <**data**> will be appended to the tail of the file.

6.2.43 AT+QFGL List customer files

AT+QFGL List customer files	
Test Command **AT+QFGL=?**	Response **OK**
Execution Command **AT+QFGL**	Response **+QFGL:<name>[<CR><LF>…]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter <**name**> Name of the customer file in string format
Reference	

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6.2.44 AT+QFGD Delete customer file

AT+QFGD Delete customer file	
Test Command **AT+QFGD=?**	Response **OK**
Write Command **AT+QFGD=<name>[,<flag>]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter <**name**> Name of the specified customer file in string format <**flag**> 0 The specified customer file will be deleted 1 All customer files will be deleted
Reference	

6.2.45 AT+QFGM Query free space for customer files

AT+QFGD Query free space for customer files	
Test Command **AT+QFGM=?**	Response **OK**
Execution Command **AT+QFGM**	Response **+QFGM: <size>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter <**size**> size of free space for customer file in bytes.
Reference	

6.2.46 AT+QSRT Select ring tone

AT+QSRT Select ring tone	
Test Command **AT+QSRT =?**	Response **+QSRT: (1-10)** **OK**
Read Command **AT+QSRT?**	Response **+QSRT: <tone>**

	OK
Write Command **AT+QSRT=<tone>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter <**tone**> 1…10 Id of the selected ring tone
Reference	

6.2.47 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>**
	Parameter <**status**> 255 Not ready to retrieve network status 0 Work in normal state 1 No available cell. 2 Only limited service is available.
Reference	

6.2.48 AT+QECHOEX Extended echo cancellation control

AT+QECHOEX Extended echo cancellation control	
Test Command **AT+QECHOEX=?**	Response : **+QECHOEX: echo flag(0-close,1-aes,2-ees,3-es), ul nr flag(0-close, 1-open), dl nr flag(0-close, 1-open), control word(0,221,224,223,256,479),nlp(0-65535),suppresion value(0-65535),nr(0-65535),channel(0-2)** **OK**
	Parameters See Write Command.
Read Command **AT+QECHOEX**	Response : **+QECHOEX: <echo flag >,<ul nr flag>,<dl nr flag>,<control**

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?	**word>,<nlp>,<suppression value>,<nr>,<channel>** **OK**
	Parameters See Write Command.
Write Command **AT+QECHOEX = <echo flag >, <ul nr flag>, <dl nr flag>, <control word>, <nlp> , <suppression value>,<nr>,<channel>**	Response : **OK** **ERROR**
	Parameters **<echo flag>** 0 disable all echo algorithm 1 enable AEC (Acoustic Echo Cancellation) echo algorithm 2 enable EES (Enhanced Echo Suppression) echo algorithm 3 enable ES (Echo Suppression) echo algorithm **<ul nr flag>** 0 disable uplink noise reduction controller 1 enable uplink noise reduction controller **<dl nr flag>** 0 disable downlink noise reduction controller 1 enable downlink noise reduction controller **<control word>** 221 Suitable for handset and handset applications 224 Suitable for handfree application 0 disabling all echo algorithm **<nlp>** Range is 0 - 2048. The greater the value, the more reduction of echo. 0 means disabling the NLP algorithm <**suppression value**> Range is 0 - 32767. The smaller the value, the more reduction of echo. 0 means disabling the echo suppression algorithm **<nr>** Noise reduction controller. Should NOT be set to 0. 849 Suitable for handset and headset applications 374 Suitable for handfree application **<channel>** 0 Normal channel 1 Handset channel 2 Loudspeaker channel
Reference	Note: AT&W can be used to save the setting.

6.2.49 AT+EGPAU PPP authentication

AT+EGPAU PPP authentication	
Test Command **AT+EGPAU=?**	Response **+EGPAU: (0-1), (1-3), (0-1)** **OK**

Execution Command **AT+EGPAU=<op>,<cid>[,<is_chap>]**	Response This command is used to set GPRS PPP negotiated authentication protocol. If PDP Context Identifier is not defined by **AT+CGDCONT**, **ERROR** If <**op**>=0, <**is_chap**> is omitted. **+EGPAU: <is_chap>** **OK** If <op>=1, <is_chap> should not be omitted. **OK**
	Parameter <**op**> Operation 0 Read 1 Write <**cid**> PDP Context Identifier <**is_chap**> Negotiation protocol 0 PAP 1 CHAP
Reference	

6.2.50 AT+QNITZ Network time synchronization

AT+QNITZ Network time synchronization	
Test Command **AT+QNITZ=?**	Response **OK**
Write Command **AT+QNITZ=<enable>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	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>**". <**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 -48...+48). E.g. 6th of May 2004, 22:10:00

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	GMT+2 hours equals to "04/05/06,22:10:00+08"
Reference	Note: This function needs support of local GSM network.

6.2.51 AT+QCLKOUT Output clock source

AT+QCLKOUT Output clock source	
Test Command **AT+QCLKOUT=?**	Response **+QCLKOUT: (0,1),(1-4)** **OK**
Read Command **AT+QCLKOUT?**	Response **+QCLKOUT: <enable>,<source>**
	Parameter See Write Command
Write Command **AT+QCLKOUT=<enable>[,<source>]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter <**enable**> 0 Disable to output clock source. 1 Enable to output clock source. <**source**> 1 26MHz 2 13MHz 3 6.5MHz 4 32KHz
Reference	Note: This function will output clock source from COL5 pin of the module

6.2.52 AT+QTTS Text To Speech

AT+QTTS Text To Speech	
Test Command **AT+QTTS=?**	Response **+QTTS: (0-3),<text>** **OK**
Read Command **AT+QTTS?**	Response **+QTTS: <mode>**
	Parameter See Write Command
Write Command	Response

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AT+QTTS=<op>[,<text>]	**OK** When all text is played, "**+QTTS: 0**" will be reported. If TTS playing is interrupted by ring tone or other audio request, TTS playing will stop and "**+QTTS: 1**" will be reported. If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter <**op**> 0 Close TTS function 1 Start and init TTS function 2 Play input text to speech 3 Stop playing text <**text**> Input text in UCS2 string format, the max length is 960.
Reference	Note: TTS is not a standard function. If you need it, please contact Quectel for support.

6.2.53 AT+QRIMODE Set RI time

AT+QRIMODE Set RI time	
Test Command **AT+QRIMODE=?**	Response **+QRIMODE: (0-1)** **OK**
	Parameter See Write Command
Read Command **AT+QRIMODE?**	Response **+QRIMODE: <timemode>** **OK**
	Parameter See Write Command.
Write Command **AT+QRIMODE=<timemode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter **<timemode>** time mode 0 Receive SMS, RI 120ms low pulse, other URC RI 120ms low pulse. 1 Receive SMS, RI 120ms low pulse, other

	URC RI 50ms low pulse.
Reference	

6.2.54 AT+QDISH Disable ATH

AT+QDISH Disable ATH	
Test Command **AT+QDISH =?**	Response **+QDISH: (0-1)** **OK**
	Parameter See Write Command
Read Command **AT+QDISH?**	Response **+QDISH: <disableath>** **OK**
	Parameter See Write Command.
Write Command **AT+QDISH =<disableath>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter **<disableath>** disable ATH 0 enable ATH command 1 disable ATH command
Reference	

6.2.55 AT+QMUXC Turnoff MUX PSC command

AT+QMUXC Turnoff MUX PSC command	
Test Command **AT+QMUXC=?**	Response **+QMUXC: (0,1)** **OK**
	Parameter See Write Command
Read Command **AT+QMUXC?**	Response **+QMUXC: <turnoffPSC>** **OK**
	Parameter

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	See Write Command.
Write Command **AT+QMUXC=<turnoffPSC>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter **<turnoffPSC>** turnoff MUX PSC command 0 turnoff PSC command 1 turnon PSC command
Reference	**Note:** After set **AT+QMUXC=1**, when module MUX want to entry sleep mode, module will send PSC command to peer.

6.2.56 AT+QTUNBUF Adjust the UART buffer size

AT+QTUNBUF Adjust the UART buffer size	
Test Command **AT+QTUNBUF=?**	Response **+QTUNBUF: (1-2048),(1-3584),(1-2048),(1-3584)** **OK**
	Parameter See Write Command
Read Command **AT+QTUNBUF?**	Response **+QTUNBUF:** **<rxbuffersize>,<txbuffersize>,<rxalertsize>,<txalertsize>** **OK**
	Parameter See Write Command.
Write Command **AT+QTUNBUF** **=<rxbuffersize>,<txbuffersize>,<rxalertsize>,<txalertsize>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter **<rxbuffersize>** UART receive buffer size Max value is 2048 **<txbuffersize>** UART send buffer size Max value is 3584 **<rxalertsize>** UART receive buffer alert size Max value is 2048

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	<txalertsize> UART send buffer alert size Max value is 3584
Reference	**Exampel:** If using the MUX, and UART did not enable the physical flow control, then the MUX start, run **AT+QTUNBUF= 2048,3584,500,500** on a virtual serial port, it can improve the transmission performance on all virtual serial port.

6.2.57 AT+QTONEDET Detect DTMF

AT+QTONEDET Detect DTMF	
Test Command **AT+QTONEDET=?**	Response **+QTONEDET: (0,1)** **OK**
	Parameter See Write Command
Write Command **AT+QTONEDET=<mode >[,<operate >][,<prefixpause>][,<lowthreshold>][,<highthreshold>]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>** Open after successful DTMF tone is detected, will be reported: **+QTONEDET: <dtmfcode>[,< persistencetime>]**
	Parameter **< mode>** mode function 0 close tone detect 1 open tone detect 2 configure 1400Hz and 2300Hz 100ms detect threshold 3 configure 1400Hz and 2300Hz 400ms detect threshold 4 configure DTMF detect threshold 5 open debug **<oprerate>** operate value When **<mode>**=2,**<oprerate >** set as follows 0 query threshold values, these values are 1400Hz and 2300Hz 100ms detect threshold 1 set threshold values, these values are

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	1400Hz and 2300Hz 100ms detect threshold. **<prefixpause>** is prefix pause number, **<lowthreshold>** is low threshold value, **<highthreshold>** is high threshold value. When **<mode>**=3,**<oprerate >** 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. **<prefixpause>** is prefix pause number, **<lowthreshold>** is low threshold value, **<highthreshold>** is high threshold value. When **<mode>**=4,**<oprerate >** set as follows 0 query threshold values, these values are DTMF detect threshold 1 set threshold values, these values are DTMF detect threshold. **<prefixpause>** is prefix pause number, **<lowthreshold>** is low threshold value, **<highthreshold>** is high threshold value . When **<mode>**=5,**<param1>** set as follows 0 working status, default value, report **+QTONEDET: x,x,** please ref Note3 1 debug status, only report **+QTONEDTD:x,x,…** debug information(Note2), 2 debug status and working status, report **+QTONEDTD:x,x,…** debug information(Note2) and **+QTONEDET: x,x,** please ref Note3. **<prefixpause>** prefix pause number pause persistence number detected before detect tone **<lowthreshold>** low threshold tone low threshold is persistence number detected **<highthreshold>** high threshold tone high persistence threshold is number

	detected **<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 detected, only 1400Hz and 2300 Hz 400 400ms of the tone detected, only 1400Hz and 2300 Hz
Reference	**Note**: 1. Available for calling. 2. When in debug mode, report **+QTONEDTD: <dtmfcode>,<weak>,,<pause_f7>,<pause_dtmf>,<pause_unkown>,<framecnt>** 3. when report as follow **+QTONEDET: 50** indicate DTMF 2 detected **+QTONEDET: 69,100** 100ms of 1400Hz detected **+QTONEDET: 70,100** 100ms of 2300Hz detected **+QTONEDET: 69,400** 400ms of 1400Hz detected **+QTONEDET: 70,400** 400ms of 2300Hz detected 4. consult **AT+QTDMODE**

6.2.58 AT+QTDMOD Set tone detect mode

AT+QTDMOD Set tone detect mode	
Test Command **AT+QTDMODE =?**	Response **+QTDMODE: (1,2),(0,1)**

	OK
	Parameter See Write Command
Read Command **AT+QTDMODE?**	Response **+QTDMODE: <operatefuntion>,<funtionstatus>** **OK**
	Parameter See Write Command.
Write Command **AT+QTDMOD=** **<operatefuntion>,<funtionstatus>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter **<operatefuntion>** operate function 1 set detect range 2 set detect mode **<funtionstatus>** function status 0 when set **<operatefuntion>**=1,detect all DTMF, include 1400 and 2300 handshake signal. when set **<operatefuntion>**=2, normal arithmetic detect DTMF tone. 1 when set **<operatefuntion>**=1, only detect 1400 and 2300 handshake signal, and the optimal detect. when set **<operatefuntion>**=2, optimal arithmetic detect long continuous DTMF tone.
Reference	**Example:** set **AT+QTDMODE =1,0**, detect all DTMF, include 1400 and 2300 handshake signal. set **AT+QTDMODE =1,1**, only detect 1400 and 2300 handshake signal, and the optimal detect. set **AT+QTDMODE =2,0**, normal arithmetic detect DTMF tone. set **AT+QTDMODE =2,1**, optimal arithmetic detect long continuous DTMF tone. consult **AT+QTONEDET**

6.2.59 AT+QWDTMF Play DTMF tone to call each other

AT+QWDTMF Play DTMF tone to call each other	
Test Command **AT+QWDTMF=?**	Response **+QWDTMF:**

	<ul_volume>(0-7),<dl_volume>(0-7),("<dtmfcode>,<continuancetime>,<mutetime>") **OK**
	Parameter See Write Command
Write Command **AT+QWDTMF=<ul_volume>,<dl_volume>,("<dtmfcode>,<continuancetime>,<mutetime>")**	Response If format is error, response **+CME ERROR: <err>** If success is related to ME functionality **+QWDTMF: 5** **OK** If fail is related to ME functionality **+QWDTMF: <playcode>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter **<ul_volume>** Uplink channel of the volume 0 mute, 7 is the maximum **<dl_volume>** downlink channel of the volume 0 mute, 7 is the maximum, recommended set to 0 **<dtmfcode>** Play 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 #

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	'E' frequency of 1400Hz 'F' frequency of 2300Hz 'G' frequency of 1KHz **<continuancetime>** Play the DTMF tone time Units are ms **<mutetime>** Mute time Units are ms **<playcode>** Play success tips If not equal to 5, that player fails
Reference	**Note**: Example 1 **AT+QWDTMF=7,0,"0,50,50,A,55,50,E,100,50"** Express DTMF '0' Play 50ms, mute for 50ms, DTMF 'A' play 55ms, mute for 50ms, frequency of 1400Hz play 100ms, mute for 50ms. Example 2 **AT+QWDTMF=7,0,"0A5,50,50,1,55,50,23,100,50"** Express DTMF '0' Play 50ms, mute for 50ms, DTMF 'A' Play 50ms, mute for 50ms, DTMF '5' Play 50ms, mute for 50ms, DTMF '1' play 55ms, mute for 50ms, DTMF '2' Play 100ms, mute for 50ms, DTMF '3' Play 100ms, mute for 50ms,

6.2.60 AT+QTONEP Set DTMF output path

AT+QTONEP Set DTMF output path	
Test Command **AT+QTONEP =?**	Response **+QTONEP: (0-3)** **OK**
	Parameter See Write Command
Read Command **AT+QTONEP?**	Response **+QTONEP: <outputpath>** **OK**
	Parameter See Write Command.
Write Command **AT+QTONEP = <outputpath>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter

	<outputpath> output path 0 output DTMF from Normal speak 1 output DTMF from Headset speak 2 output DTMF from Loud speak 3 auto
Reference	**Example:** set **AT+QTONEP=3,** output DTMF from default speak path, consult **AT+QAUDCH**.

6.2.61 AT+QDISP Forge PPP terminated

AT+QDISP Forge PPP terminated	
Test Command **AT+QDISP =?**	Response **+QDISP: (0-2),(0-1) ,(0-1) ,(0-1)** **OK**
	Parameter See Write Command
Read Command **AT+QDISP?**	Response **+QDISP: <enablemode>,<P1>,<P2>,<P3>** **OK**
	Parameter See Write Command.
Write Command **AT+QDISP** **=<enablemode>,<P1>,<P2>,<P3>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter **<enablemode>** enable mode 0 disable forge PPP terminated 1 forge PPP terminated in voice incoming 2 forge PPP terminated in any case **<P1>,<P2>,<P3>** Parameters 0 when set **<enablemode>**=0,these patametes set 0 1 when set **<enablemode>**!=0,these patametes set 1
Reference	**Example:** Set **AT+QDISP=1,1,1,1**, Currently being PPP communications, when call incoming, peer issue a PPP termination command to the module, the module forge a

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	PPP terminate response, peer and module will exit to the command mode, peer issue ATA to answer the call.

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7 AT Commands for TCPIP application toolkit

7.1 Overview

Command	Description
AT+QIOPEN	START UP TCP OR UDP CONNECTION
AT+QISEND	SEND DATA THROUGH TCP OR UDP CONNECTION
AT+QICLOSE	CLOSE TCP OR UDP CONNECTION
AT+QIDEACT	DEACTIVATE GPRS/CSD PDP CONTEXT
AT+QILPORT	SET LOCAL PORT
AT+QIREGAPP	START TCPIP TASK AND SET APN, USER NAME, PASSWORD
AT+QIACT	BRING UP WIRELESS CONNECTION WITH GPRS OR CSD
AT+QILOCIP	GET LOCAL IP ADDRESS
AT+QISTAT	QUERY CURRENT CONNECTION STATUS
AT+QIDNSCFG	CONFIGURE DOMAIN NAME SERVER
AT+QIDNSGIP	QUERY THE IP ADDRESS OF GIVEN DOMAIN NAME
AT+QIDNSIP	CONNECT WITH IP ADDRESS OR DOMAIN NAME SERVER
AT+QIHEAD	ADD AN IP HEADER WHEN RECEIVING DATA
AT+QIAUTOS	SET AUTO SENDING TIMER
AT+QIPROMPT	SET PROMPT OF '>' WHEN SENDING DATA
AT+QISERVER	CONFIGURE AS SERVER
AT+QICSGP	SELECT CSD OR GPRS AS THE BEARER
AT+QISRVC	CHOOSE CONNECTION
AT+QISHOWRA	SET WHETHER TO DISPLAY THE ADDRESS OF SENDER
AT+QISCON	SAVE TCPIP APPLICATION CONTEXT
AT+QIMODE	SELECT TCPIP TRANSFERRING MODE
AT+QITCFG	CONFIGURE TRANSPARENT TRANSFERRING MODE
AT+QISHOWPT	CONTROL WHETHER TO SHOW THE PROTOCOL TYPE
AT+QIMUX	CONTROL WHETHER TO ENABLE MULTIPLE TCPIP SESSION
AT+QISHOWLA	CONTROL WHETHER TO DISPLAY LOCAL IP ADDRESS
AT+QIFGCNT	SELECT A CONTEXT AS FOREGROUND CONTEXT
AT+QISACK	QUERY THE DATA INFORMATION FOR SENDING
AT+QINDI	SET THE METHOD TO HANDLE RECEIVED TCP/IP DATA
AT+QIRD	RETRIEVE THE RECEIVED TCP/IP DATA
AT+QISDE	CONTROL WHETHER TO ALLOW ECHO DATA FOR QISEND
AT+QPING	PING A REMOTE SERVER
AT+QNTP	SYNCHRONIZE THE LOCAL TIME VIA NTP

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7.2 Detailed descriptions of Commands

7.2.1 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**>)**,(IP address range)**,(**port range**) <CR><LF>**+QIOPEN:** (list of supported <**mode**>),(**domain name**),(**port range**) **OK** Parameters See Write Command
Write Command **AT+QIOPEN=[<index>,]<mode>,<IP address>/<domain name>,<port>**	Response If format is right response **OK** Otherwise response **ERROR** And then if connect successfully response **[<index>,] CONNECT OK** Otherwise response **[<index>,] CONNECT FAIL** Parameters <**index**> A numeric to indicate which socket to open the connection on. M10 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 **<domain name>** A string parameter which represents the domain name address of the remote server.
Reference	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 establish 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

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	"**ALREADY CONNECT**" after issue the Write command.

7.2.2 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 successfully: **SEND OK** If sending fail: **SEND FAIL** 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 one time is 1460. 3 This command is invalid when QIMUX is 1 (refer to **AT+QIMUX**).
Write Command **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 successfully: **SEND OK** If sending fail: **SEND FAIL** Parameter **<index>** The index of the socket to send 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 sending data, it MUST be less than 1460
Reference	Note: 1. There are at most 1460 bytes that can be sent each time. 2. Only send data at the status of established connection, otherwise Response **ERROR** 3. **SEND OK** means the data have been put into the send window to send

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	rather than it has received the ACK message for the data from the remote node. To check whether the data has been sent to the remote note, it is necessary to execute the command **AT+QISACK** to query.

7.2.3 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 successfully: **CLOSE OK** If close fail: **ERROR** Note: 1. 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 takes a part of client. 2. If QISRVC is 1 and QIMUX is 1, it will return **ERROR** 3. If QISRVC is 2 and QIMUX equals 0 and the module is used as a server and some client has connected in, this command will close the connection between the module and the remote client. 4. If QISRVC is 2 and QIMUX is 0 and the module is in listening state without any client, this command will cause the module quit the listen state. 5 If QISRVC is 2 and QIMUX is 1 and the module is used as a server, this command will close all the income connection and cause the module quit the listening state.
Write Command **AT+QICLOSE=<index>**	Response If close successfully: **<index>, CLOSE OK** If close fail: **ERROR** Note: 1 This command is valid only if QIMUX is 1 2 If QISRVC is 1 and QIMUX is 1, this command will close the corresponding connection according to **<index>** and the module takes a part of client in the connection. 3 If QISRVC is 2 and QIMUX is 1, this command will close the income connection according to **<index>**.
Reference	Note: If QISRVC is 1 and QIMUX is 0, **AT+QICLOSE** only close connection when the status is CONNECTING or CONNECT OK，otherwise response ERROR, after close the connection, the status is IP CLOSE.

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7.2.4 AT+QIDEACT Deactivate GPRS/CSD PDP context

AT+QIDEACT	Deactivate GPRS/CSD PDP context
Test Command **AT+QIDEACT=?**	Response **OK**
Execution Command **AT+QIDEACT**	Response If close successfully: **DEACT OK** If close fail: **ERROR** Note: Except at the status of IP INITIAL, you can deactivate GPRS/CSD PDP context by **AT+QIDEACT**. After closed, the status becomes to IP INITIAL.
Reference	

7.2.5 AT+QILPORT Set local port

AT+QILPORT	Set local port
Test Command **AT+QILPORT=?**	Response **+QILPORT:** (list of supported <**port**>s) **OK** Parameter See Write Command.
Read Command **AT+QILPORT?**	Response **<mode>: <port>** **<CR><LF><mode>: <port>** **OK** Parameter See Write Command.
Write Command **AT+QILPORT=<mode>,<port>**	Response **OK** **ERROR** Parameters **<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
Reference	Note: This command is used to set the port for listening.

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7.2.6 AT+QIREGAPP Start TCPIP task and set APN, user name, password

AT+QIREGAPP	Start TCPIP task and set APN, user name, password
Test Command **AT+QIREGAPP=?**	Response **+QIREGAPP: "APN","USER","PWD"** **OK**
Read Command **AT+QIREGAPP?**	Response **+QIREGAPP: <apn>,<user name>,<password>** **OK** Parameters See Write Command.
Write Command **AT+QIREGAPP=<apn>,<user name>,<password>[,<rate>]**	Response **OK** **ERROR** Parameters **<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
Execution Command **AT+QIREGAPP**	Response **OK** **ERROR**
Reference	Note: 1 The write command and execution command of this command is 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**) define what kind of bearer (GPRS or CSD) the parameters are used for.

7.2.7 AT+QIACT Bring up wireless connection with GPRS or CSD

AT+QIACT	Bring up wireless connection with GPRS or CSD
Execution Command **AT+QIACT**	Response **OK** **ERROR**
Reference	Note: **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, response **OK**, otherwise response **ERROR**.

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7.2.8 AT+QILOCIP Get local IP address

AT+QILOCIP Get local IP address	
Read Command **AT+QILOCIP?**	Response **OK**
Execution Command **AT+QILOCIP**	Response **<IP address>** **ERROR** Parameter **<IP address>** A string parameter which indicates the IP address assigned from GPRS or CSD network
Reference	Note: Only at the following status: IP GPRSACT, IP STATUS, TCP/UDP CONNECTING, CONNECT OK, IP CLOSE can get local IP address by **AT+QILOCIP**, otherwise response ERROR. And if the status before execute the command is IP GPRSACT, the status will become to IP STATUS after the command.

7.2.9 AT+QISTAT Query current connection status

AT+QISTAT Query current connection status	
Test Command **AT+QISTAT=?**	Response **OK**
Execution Command **AT+QISTAT**	Response **OK** **STATE**: **<state>** Or **List of (+QISTAT: <index>, <mode>, <addr>, <port><CR><LF>)** **OK** 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"

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	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: The former style of response displays when **QIMUX=0**, and the later style of response displays when **QIMUX=1**.
Reference	

7.2.10 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** **ERROR** Parameters **<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
Reference	Note: Because TA will negotiate to get the DNS server from GPRS/CSD network automatically when activate 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.

7.2.11 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** or **ERROR** If successful, return: **<IP address>** If fail, return: **ERROR: <err>** **STATE: <state>** Parameters **<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 Authorization 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**

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Reference	

7.2.12 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** Parameter See Write Command.
Read Command **AT+QIDNSIP?**	Response **+QIDNSIP: <mode>** **OK** Parameter See Write Command.
Write Command **AT+QIDNSIP=<mode>**	Response **OK** **ERROR** Parameter **<mode>** A numeric parameter which indicates connecting with 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
Reference	

7.2.13 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** Parameter See Write Command.
Read Command **AT+QIHEAD?**	Response **+QIHEAD: <mode>** **OK** Parameter See Write Command.
Write Command **AT+QIHEAD=<mode>**	Response **OK** **ERROR**

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	Parameter **<mode>** A numeric parameter which indicates whether add an IP header before received data or not 0 Not add IP header 1 Add a header before the received data, and the format is "**IPD(data length):**"
Reference	

7.2.14 AT+QIAUTOS Set auto sending timer

AT+QIAUTOS	**Set auto sending timer**
Test Command **AT+QIAUTOS=?**	Response **+QIAUTOS:** (list of supported <**mode**>s) **OK** Parameter See Write Command.
Read Command **AT+QIAUTOS?**	Response **+QIAUTOS: <mode>** **OK**
Write Command **AT+QIAUTOS=<mode>,<time>**	Response **OK** **ERROR** Parameters **<mode>** A numeric parameter which indicates whether set timer for when sending 0 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.
Reference	

7.2.15 AT+QIPROMPT Set prompt of '>' when sending data

AT+QIPROMPT Set prompt of '>' when sending data	
Test Command **AT+QIPROMPT=?**	Response **+QIPROMPT:** (<**send prompt**>s) **OK** Parameter See Write Command.
Read Command **AT+QIPROMPT?**	Response **+QIPROMPT: <send prompt>**

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	OK Parameter See Write Command
Write Command **AT+QIPROMPT** **=<send prompt>**	Response **OK** **ERROR** Parameter **<send prompt>** A numeric parameter which indicates whether echo prompt ">" after issuing **AT+QISEND** Command 0 No prompt ">" and show "SEND OK" when send successfully 1 Echo ">" prompt and show "SEND OK" when send successfully 2 No prompt and not show "SEND OK" when send successfully
Reference	

7.2.16 AT+QISERVER Configure as server

AT+QISERVER	**Configure as server**
Read Command **AT+QISERVER?**	Response +**QISERVER**: **<mode>, <num>** **OK** Parameter **<mode>** 0 Has not been configured as a server 1 Has been configured as a server **<num>** The number of clients that have connected in. The range is 1~5.
Execution Command **AT+QISERVER**	Response **OK** **ERROR** If configuration as server successfully, return: **SERVER OK** If configuration as server fail, return: **CONNECT FAIL** Note: This command configures the module as a TCP server and the maximum allowed client is 1.
Write Command **AT+QISERVER=<type>[,<max>]**	Response **OK** **ERROR** If configuration as server success, return: **SERVER OK** If configuration as server fail, return: **CONNECT FAIL**

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	Parameter **<type>** A numeric to indicate 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: The parameter **<max>** is excluded when QIMUX is 0.
Reference	

7.2.17 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,DIALNUMBER,USER NAME,PASSWORD,RATE(0,3)** **+QICSGP: 1-GPRS,APN,USER NAME,PASSWORD** **OK** Parameters See Write Command.
Read Command **AT+QICSGP?**	Response **+QICSGP: <mode>** **OK** Parameter See Write Command.
Write Command **AT+QICSGP=<mode>,[(<apn>,<user name >,<password>)/(<dial number>,<user name>,<password>,<rate>)]**	Response **OK** **ERROR** Parameters **<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

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	1 4800 2 9600 3 14400
Reference	

7.2.18 AT+QISRVC Choose connection

AT+QISRVC Choose connection	
Test Command **AT+QISRVC=?**	Response **+QISRVC**: (list of supported <**connection**>s) **OK** Parameter See Write Command.
Read Command **AT+QISRVC?**	Response **+QISRVC: <connection>** **OK** Parameter See Write Command.
Write Command **AT+QISRVC=<connection>**	Response **OK** **ERROR** Parameter **<connection>** A numeric parameter which indicates the chosen connection 1 Choose the connection in which MS takes a part of client 2 Choose the connection in which MS takes a part of server Note: That there could be two connections at one time: one connection is that MS connects with a remote server as client; the other connection is that MS accepts a remote client as server. Using this Command to specify which connection data will be sent through.
Reference	

7.2.19 AT+QISHOWRA Set whether to display the address of sender

AT+QISHOWRA Set whether to display the address of sender	
Test Command **AT+QISHOWRA=?**	Response **+QISHOWRA:** (list of supported <**mode**>s) **OK** Parameter See Write Command.
Read Command	Response

AT+QISHOWRA?	**+QISHOWRA**: **<mode>** **OK** Parameter See Write Command.
Write Command **AT+QISHOWRA=<mode>**	Response **OK** **ERROR** Parameter **<mode>** A numeric parameter which indicates whether to show the address (including IP address in dotted decimal style and port of the remot end before the received data or not. 0 DO NOT show the address. Default. 1 Show the address, the format to show the address is like: **RECV FROM:<IP ADDRESS>:<PORT>**
Reference	

7.2.20 AT+QISCON Save TCPIP application context

AT+QISCON Save TCPIP application context	
Read Command **AT+QISCON?**	Response TA returns TCPIP 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**

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	Parameters **<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 four parameters are only for transparent transferring mode. **<nmRetry>** See **AT+QITCFG** **<waitTm>** See **AT+QITCFG** **<sendSz>** See **AT+QITCFG** **<esc>** See **AT+QITCFG**
Execution Command **AT+QISCON**	Response TA saves TCPIP Application Context which consist of following AT Command parameters, and when system is rebooted, the parameters will be loaded automatically: **AT+QIDNSIP**, **AT+QIPROMPT**, **AT+QIHEAD**, **AT+QISHOWRA**, **AT+QICSGP**, **AT+QITCFG** **OK**
	Parameter
Reference	Note: The execution command only save the corresponding parameters of the foreground context (refer to **AT+QIFGCNT**).

7.2.21 AT+QIMODE Select TCPIP transferring mode

AT+QIMODE	**Select TCPIP transferring mode**
Test Command **AT+QIMODE=?**	Response **+QIMODE:(0-NORMAL MODE,1-TRANSPARENT MODE)** **OK**
Read Command **AT+QIMODE?**	Response **+QIMODE: <mode>** **OK**

	Parameter See Write Command.
Write Command **AT+QIMODE=<mode>**	Response **OK** **ERROR** 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 data input 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.
Reference	

7.2.22 AT+QITCFG Configure transparent transferring mode

AT+QITCFG Configure transparent transferring mode	
Test Command **AT+QITCFG=?**	Response **+QITCFG: (NmRetry:3-8),(WaitTm:2-10),(SendSz:256-1024),(esc:0,1)** **OK**
Read Command **AT+QITCFG?**	Response **+QITCFG: <NmRetry>,<WaitTm>,<SendSz>,<esc>** **OK** Parameters See Write Command.
Write Command **AT+QITCFG=<NmRetry>,<WaitTm>,<SendSz>,<esc>**	Response **OK** **ERROR** Parameters **<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 turn on the escape sequence, default is TRUE.
Reference	Note: **<WaitTm>** and **<SendSz>** are two conditions to send data packet. Firstly, if the length of the data input from UART is greater than or equal to **<SendSz>**, The TCPIP stack will send the data by length **<SendSz>** to the remote. Secondly, if the length of the data input from UART is less than **<SendSz>**, and the idle time keeps beyond the time defined by **<WaitTm>**, The TCPIP stack will send all the data in the buffer to the remote.

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7.2.23 AT+QISHOWPT Control whether to show the protocol type

AT+QISHOWPT Control whether to show the protocol type	
Test Command **AT+QISHOWPT=?**	Response **+QISHOWPT: (0-1)** **OK**
Read Command **AT+QISHOWPT?**	Response **+QISHOWPT: <mode>** **OK** Parameters See Write Command.
Write Command **AT+QISHOWPT=<mode>**	Response **OK** **ERROR** Parameters **<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):
Reference	Note: This command is invalid if QIHEAD was set as 0 by the command **AT+QIHEAD=0**

7.2.24 AT+QIMUX Control whether to enable multiple TCPIP session

AT+QIMUX Control whether to enable multiple TCPIP session	
Test Command **AT+QIMUX=?**	Response **+QIMUX: (0,1)** **OK**
Read Command **AT+QIMUX?**	Response **+QIMUX: <mode>** **OK** Parameters See Write Command.
Write Command **AT+QIMUX=<mode>**	Response **OK** **ERROR** Parameters **<mode>**

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	0 DO NOT enable multiple TCPIP session at the same time. 1 Enable multiple TCPIP session at the same time.
Reference	

7.2.25 AT+QISHOWLA Control whether to display local IP address

AT+QISHOWLA	Control whether to display local IP address
Test Command **AT+QISHOWLA=?**	Response **+QISHOWLA:** (list of supported <**mode**>s) **OK** Parameter See Write Command.
Read Command **AT+QISHOWLA?**	Response **+QISHOWLA**: **<mode>** **OK** Parameter See Write Command.
Write Command **AT+QISHOWLA=<mode>**	Response **OK** **ERROR** Parameter **<mode>** A numeric parameter to indicate whether to show the destination address before the received data. 0 DO NOT show the destination address 1 Show the destination address as: **TO:<IP ADDRESS>** Note: Because M10 supports to activate two GPRS contexts at the same time, i.e. M10 could be get two local IP address, it is necessary to point out the destination of the received data when two GPRS contexts has been activated at the same time.
Reference	

7.2.26 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** Parameter See Write Command.
Read Command **AT+QIFGCNT?**	Response **+QIFGCNT**: **<id>,<channel>**

	OK Parameter See Write Command.
Write Command **AT+QIFGCNT=<id>**	Response **OK** **ERROR** Parameter **<id>** A numeric to indicate which context will be set as foreground context. The range is 0-1 <**channel**> A numeric to indicate 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 is opened, if the status of the context defined by **<id>** is not IP_INITIAL and the context is controlled by the other channel, it will return **ERROR**
Reference	

7.2.27 AT+QISACK Query the data information for sending

AT+QISACK Query the data information for sending	
Test Command **AT+QISACK=?**	Response **OK**
Execution Command **AT+QISACK**	Response **+QISACK**: **<sent>, <acked>, <nAcked>** **OK** Parameter See Write Command.
Write Command **AT+QISACK=<n>**	Response **+QISACK**: **<sent>, <acked>, <nAcked>** **OK** Parameter **<n>** The index of the connection to query **<sent>** A numeric to indicate the total length of the data that has been sent through the session. **<acked>** A numeric to indicate the total length of the data that has been acknowledged by the remote. **<nAcked>** A numeric to indicate the total length of the data that has

	been sent but not acknowledged by the remote. Note: This command is invalid when QIMUX was set as 0 by the command **AT+QIMUX=0**.
Reference	Note: This command could be affected by the command **AT+QISRVC**. If the QISRVC was set as 1, this command is used to query the information of data sending for the session in which M10 takes a part as client. If the QISRVC was set as 2, this command is used to query the information of data sending for the session in which M10 takes a part as server.

7.2.28 AT+QINDI Set the method to handle received TCP/IP data

AT+QINDI Set the method to handle received TCP/IP data	
Test Command **AT+QINDI=?**	Response **+QINDI: (0,1)** **OK**
Read Command **AT+QINDI?**	Response **+QINDI**: **<m>** **OK** Parameter See Write Command.
Write Command **AT+QINDI=<m>**	Response **OK** Parameter **<m>** A numeric to indicate the mode to handle the received data. **0** Output the received data through UART directly. In the case, it probably includes header at the beginning of a received data packet. Please refer to the commands **AT+QIHEAD**, **AT+QISHOWRA**, **AT+QISHOWPT**, **AT+QISHOWLA**. **1** Output a notification statement "**+QIRDI: <id>,<sc>,<sid>**" through UART. This statement will be displayed only one time until all the received data from the connection (defined by **<id>,<sc>,<sid>**) has been retrieved by the command **AT+QIRD**. **<id>** A numeric to point 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 to point out the role of M10 in the connection for the received data. **1** The module is the client of the connection. **2** The module is the server of the connection. **<sid>** A numeric to indicate the index of the connection for the

	received data. The range is 0-5. When QIMUX was set as 0 by the command **AT+QIMUX=0**, this parameter will be always 0.
Reference	

7.2.29 AT+QIRD Retrieve the received TCP/IP data

AT+QINDI Retrieve the received TCP/IP data	
Test Command **AT+QIRD=?**	Response **+QIRD: (0,1),(1,2),(0-5),(1-1500)** **OK** Parameter See Write Command.
Write Command **AT+QIRD=<id>,<sc>,<sid>,<len>**	Response **[+QIRD: <ipAddr>:<port>,<type>,<length><CR><LF><data>]** **OK** Or **ERROR** Parameter **<id>** A numeric to point 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 to point out the role of M10 in the connection for the received data. **1** The module is the client of the connection. **2** The module is the server of the connection. **<sid>** A numeric to indicate the index of the connection for the received data. The range is 0-5. When QIMUX was set as 0 by the command **AT+QIMUX=0**, this parameter will be always 0. **<len>** The maximum length of data to retrieve. 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 to indicate 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.
Reference	Note: 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 no received data in the buffer of the connection.

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7.2.28 AT+QISDE Control whether to allow echo data for QISEND

AT+QISDE Control whether to allow echo data for QISEND	
Test Command **AT+QISDE=?**	Response **+QISDE: (0,1)** **OK**
Read Command **AT+QISDE?**	Response **+QISDE**: **<m>** **OK** Parameter See Write Command.
Write Command **AT+QISDE=<m>**	Response **OK** Parameter **<m>** A numeric to indicate whether to allow echo data for **AT+QISEND**. **0** Do not echo the data to send for **AT+QISEND**. **1** Echo the data to send for **AT+QISEND**.
Reference	

7.2.29 AT+QPING Ping a remote server

AT+QPING Ping a remote server	
Test Command **AT+QPING=?**	Response **+QPING: "HOST",(1-255),(1-10)** **OK** Parameter See Write Command.
Write Command **AT+QPING="<host>"[,[<timeout>][,<pingnum>]]**	Response **OK** **[+QPING: <result>[,<ipAddr>,<bytes>,<time>,<ttl>]<CR><LF>** **…]<CR><LF>** **+QPING:<finresult>[,<sent>,<rcvd>,<lost>,<min>,<max>,<avg>]** Or **ERROR** Parameter **<host>** The host address in string style. It could be a domain name or a dotted decimal IP address. **<timeout>** A numeric to give the maximum time to wait for the response of each ping request. Unit: second. Range: 1-255. Default: 1.

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	<pingnum>	A numeric to indicate the maximum times 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 to send in each ping request.
	<time>	The expended time 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 normal finished. It wase successful to acitivate 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** 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>	The total number of the ping requests sent.
	<rcvd>	The total number of the ping requests that received the response.
	<lost>	The 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
Reference	Note:	

7.2.30 AT+QNTP Synchronize the local time via NTP

AT+QNTP Synchronize the local time via NTP	
Test Command **AT+QNTP=?**	Response **+QNTP: "SERVER",(1-65535)** **OK** Parameter See Write Command.
Read Command **AT+QNTP?**	Response **+QNTP: "<server>",<port>** **OK** Parameter

	See Write Command.
Execute Command **AT+QNTP**	Response **OK** **+QNTP: <result>** Parameter See Write Command.
Write Command **AT+QNTP="<server>"[,<port>]**	Response **OK** **+QNTP: <result>** Or **ERROR** 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 to 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** Not find the Time Server. **5** Failed to activate PDP context.
Reference	Note: The factory Time Server is the National Time Service Centre of China whose address and port are "**210.72.145.44**" and **123**.

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8 AT Commands for FAX

8.1 Overview

Command	Description
AT+FMI	FAX: REPORT MANUFACTURER ID
AT+FMM	FAX: REPORT MODEL ID
AT+FMR	FAX: REPORT REVISION ID
AT+FTS	TRANSMIT SILENCE
AT+FRS	WAIT FOR SILENCE
AT+FTM	TRANSMIT DATA
AT+FRM	RECEIVE DATA
AT+FTH	TRANSMIT HDLC DATA
AT+FRH	RECEIVE HDLC DATA

8.2 Detailed descriptions of Commands

8.2.1 AT+FMI FAX: Report manufacturer ID

AT+FMI FAX: Report manufacturer ID	
Test Command **AT+ FMI =?**	Response **OK**
	Parameters see Execution Command
Execution Command **AT+ FMI**	Response TA reports one or more lines of information text which permit the user to identify the manufacturer. **<manufacturer Id>** **OK**
	Parameter **<manufacturer Id>**
Reference EIA/TIA-578-D	

8.2.2 AT+FMM FAX: Report model ID

AT+FMM FAX: Report model ID	
Test Command **AT+ FMM =?**	Response **OK**
	Parameters See Execution Command.
Execution	Response

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Command **AT+ FMM**	TA reports one or more lines of information text which permit the user to identify the specific model of device. **<model Id>** **OK**
	Parameter **<model Id>**
Reference EIA/TIA-578-D	

8.2.3 AT+FMR FAX: Report revision ID

AT+FMR FAX: Report revision ID	
Test Command **AT+ FMR =?**	Response **OK**
	Parameter See Execution Command.
Execution Command **AT+ FMR**	Response TA reports one or more lines of information text which permit the user to identify the version, revision level or data or other information of the device. **Revision:<Revision Id>** **OK**
	Parameter **<Revision Id>** The version, revision level or data or other information of the device
Reference EIA/TIA-578-D	

8.2.4 AT+FTS Transmit silence

AT+FTS Transmit silence	
Write Command **AT+FTS=<Time>**	Response This command causes the DCE to stop any transmission. The DCE then waits for the specified amount of time, and then sends the **OK** result code to the DTE.
	Parameter **<Time>** 0-255 Time to wait in 10 millisecond intervals
Reference	

8.2.5 AT+FRS Wait for silence

AT+FRS Wait for silence	
Write Command **AT+FRS=<Time**	Response This command causes the DCE to listen, and to report back an **OK** result

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>	code when silence has been present on the line for the amount of time specified. This command will terminate when the required amount of silence on the line is detected or when the DTE sends the DCE another character other than DC1 (0/1) or DC3 (0/3), which is discarded. In either event, the **OK** result code will be returned to the DTE.
	Parameter **<Time>** 0-255 Time to wait in 10 millisecond intervals
Reference	

8.2.6 AT+FTM Transmit data

AT+FTM Transmit data	
Test Command **AT+FTM=?**	Response **+FTM**: (list of supported <**Mod**>s) **OK** Parameters See Write Command.
Write Command **AT+FTM=<Mod>**	Response This command causes the DCE to transmit data using the modulation selected in <**Mod**>. The DCE returns the **CONNECT** result code if succeed, or **ERROR** if fails.
	Parameter **<Mod>** 24 2400 bps 48 4800 bps 72 7200 bps 96 9600 bps
Reference	

8.2.7 AT+FRM Receive data

AT+FRM Receive data	
Test Command **AT+FRM=?**	Response **+FRM**: (list of supported <**Mod**>s) **OK** Parameters See Write Command.
Write Command **AT+FRM=<Mod>**	Response This command causes the DCE to enter receive mode using the modulation specified in <**Mod**> When the selected carrier is detected, the DCE will send the **CONNECT** result code to the DTE.
	Parameter **<Mod>** 24 2400 bps

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	48 4800 bps 72 7200 bps 96 9600 bps
Reference	

8.2.8 AT+FTH Transmit HDLC data

AT+FTH Transmit HDLC data	
Test Command **AT+FTH=?**	Response **+FTH**: (list of supported <**Mod**>s) **OK** Parameters See Write Command.
Write Command **AT+FTH=<Mod>**	Response This command causes the DCE to transmit data framed in HDLC protocol using the modulation mode selected. The DCE returns the **CONNECT** result code if succeed, or **ERROR** if fails.
	Parameter **<Mod>** 3 V.21 channels 300 bps
Reference	

8.2.9 AT+FRH Receive HDLC data

AT+FRH Receive HDLC data	
Test Command **AT+FRH=?**	Response **+FRH**: (list of supported <**Mod**>s) **OK** Parameters See Write Command.
Write Command **AT+FRH=<Mod>**	Response This command causes the DCE to receive HDLC framed data using the modulation mode selected. The DCE returns the **CONNECT** result code if succeed, or **ERROR** if fails.
	Parameter **<Mod>** 3 V.21 channels 300 bps
Reference	

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9 AT Commands for FAX Class 2

9.1 Overview

Command	Description
AT+FDT	SEND A PAGE
AT+FDR	RECEIVE A PAGE
AT+FET	END A PAGE OR DOCUMENT
AT+FPTS	PAGE TRANSFER STATUS PARAMETERS
AT+FK	TERMINATE THE SESSION
AT+FBOR	PAGE TRANSFER BIT ORDER
AT+FCQ	COPY QUALITY CHECKING
AT+FCR	CAPABILITY TO RECEIVE
AT+FDIS	CURRENT SESSION PARAMETERS
AT+FDCC	CAPABILITIES PARAMETERS
AT+FLID	LOCAL ID STRING
AT+FPHCTO	PAGE TRANSFER TIMEOUT PARAMETERS
AT+FBADLIN	BAD LINE THRESHOLD
AT+FBADMUL	ERROR THRESHOLD MULTIPLIER
AT+FCIG	LOCAL POLLING ID
AT+FDFFC	DATA COMPRESSION FORMAT CONVERSION
AT+FVRFC	VERTICAL RESOLUTION FORMAT CONVERSION

9.2 Detailed descriptions of Commands

9.2.1 AT+FDT Send a page

AT+FDT Send a page	
Test Command **AT+FDT=?**	Response **<df>,<vr>,<wd>,<ln>** **OK** Parameters See Write Command.
Execution Command **AT+FDT**	Response This command requests the DCE to transmit a Phase C page The **+FDT** command results in a **CONNECT** result code response if the DCE is ready for data, or another result code if not.
Write Command **AT+FDT=<df>,<vr>,<wd>,<ln>**	Response This command requests the DCE to transmit a Phase C page The **+FDT** command results in a **CONNECT** result code response if the DCE is ready for data, or another result code if not.
	Parameter

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	<**df**> Data Compression Format 0 1-D Modified Huffman 1 2-D Modified read 2 2-D Uncompressed mode 3 2-D Modified modified read <**vr**> Vertical Resolution 0 R8 x 3.85 l/mm, Normal 1 R8 x 7.7 l/mm, Fine <**wd**> Page Width 0 1728 pixels in 215mm 1 2048 pixels in 255 mm 2 2432 pixels in 303 mm 3 1216 pixels in 151 mm 4 864 pixels in 107 mm <**ln**> Page Length 0 A4, 297mm 1 B4, 364mm 2 Unlimited length
Reference	

9.2.2 AT+FDR Receive a page

AT+FDR Receive a page	
Test Command **AT+FDR=?**	Response **OK**
Execution Command **AT+FDR**	Response This command initiates transition to phase C data reception. When the DCE is ready to commence data transfer, it shall issue a **CONNECT** response code or **ERROR** if not.
Reference	

9.2.3 AT+FET End a page or document

AT+FET End a page or document	
Test Command **AT+FET=?**	Response **<ppm>** **OK** Parameters See Write Command.
Write Command **AT+FET=<ppm>**	Response **OK** This command indicates that the current page or partial page is complete.
	Parameter <**ppm**> Post page message code 0 Another page next, same document

	1 Another document next 2 No more pages or documents 4 Another page, procedure interrupt 5 Another document, procedure interrupt 6 All done, procedure interrupt
Reference	

9.2.4 AT+FPTS Page transfer status parameters

AT+FPTS Page transfer status parameters	
Test Command **AT+FPTS=?**	Response (list of supported <**ppr**>s) **OK** Parameters See Write Command.
Read Command **AT+FPTS**	Response <**ppr**> **OK** Parameters See Write Command.
Write Command **AT+FPTS=<ppr>**	Response **OK** **ERROR** This command sets post page transfer response.
	Parameter <**ppr**> Post page response 1 Page good 2 Page bad, retry requested 3 Page good, retrain requested 4 Page bad, interrupt requested 5 Page good, interrupt requested
Reference	

9.2.5 AT+FK Terminate the session

AT+FK Terminate the session	
Test Command **AT+FK=?**	Response **OK**
Execution Command **AT+FK**	Response **OK** This command causes the DCE to terminate the session.
Reference	

9.2.6 AT+FBOR Page transfer bit order

AT+FBOR Page transfer bit order	
Test Command **AT+FBOR=?**	Response (list of supported <**bor**>s) **OK** Parameters See Write Command.
Read Command **AT+FBOR**	Response <**bor**> **OK** Parameters See Write Command.
Write Command **AT+FBOR=<bor>**	Response **OK** **ERROR** This command sets the bit order for negotiation and fax page transfer. The order is related to the bit order on radio link.
	Parameter <**bor**> Bit Order Modes 0 Direct bit order for both phase C and for phase B/D data 1 Reversed bit order for phase C data, direct bit order for phase B/D data
Reference	

9.2.7 AT+FCQ Copy quality checking

AT+FCQ Copy quality checking	
Test Command **AT+FCQ=?**	Response (list of supported <**rq**>s) **OK** Parameters See Write Command.
Read Command **AT+FCQ**	Response <**rq**> **OK** Parameters See Write Command.
Write Command **AT+FCQ=<rq>**	Response **OK**

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	ERROR This command controls copy quality checking for receiving faxes.
	Parameter <**rq**> 0 Default value, the only supported
Reference	

9.2.8 AT+FCR Capability to receive

AT+FCR Capability to receive	
Test Command **AT+FCR=?**	Response (list of supported <**cr**>s) **OK** Parameters See Write Command.
Read Command **AT+FCR**	Response <**cr**> **OK** Parameters See Write Command.
Write Command **AT+FCR=<cr>**	Response **OK** **ERROR** This command controls the capability of modem to accept incoming faxes.
	Parameter <**cr**> 0 The DCE will not receive message data. 1 The DCE can receive message data
Reference	

9.2.9 AT+FDIS Current session parameters

AT+FDIS Current session parameters	
Test Command **AT+FDIS=?**	Response (list of supported <**vr**>s), (list of supported <**br**>s), (list of supported <**wd**>s), (list of supported <**ln**>s), (list of supported <**df**>s), (list of supported <**ec**>s), (list of supported <**bf**>s), (list of supported <**st**>s) **OK** Parameters See Write Command.
Read Command **AT+FDIS**	Response <**cr**>,<**br**>,<**wd**>,<**ln**>,<**df**>,<**ec**>,<**bf**>,<**st**>

	OK Parameters see Write Command
Write Command **AT+FDIS=<cr>**	Response **OK** **ERROR** This command allows the DTE to parameter the capabilities used for the current session.
	Parameter <**vr**> Vertical Resolution, 0 Normal: 98 lpi 1 Fine: 196 lpi <**br**> Baud Rate, 0 2400 bps 1 4800 bps 2 7200 bps 3 9600 bps <**wd**> Page Width 0 1728 pixels in 215mm 1 2048 pixels in 255 mm 2 2432 pixels in 303 mm 3 1216 pixels in 151 mm 4 864 pixels in 107 mm <**ln**> Page Length 0 A4, 297 mm 1 B4, 364 mm 2 Unlimited <**df**> Data Compression Format 0 1-D modified Huffman 1 2-D modified read 2 2-D uncompressed mode 3 2-D modified modified read <**ec**> Error Correction 0 Disable Fax ECM <**bf**> Binary File Transfer 0 Disable BFT <**st**> Scan Time Per Line 0 0 ms 1 5 ms 2 10 ms 3 10 ms 4 20 ms 5 20 ms 6 40 ms

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	7 40 ms
Reference	

9.2.10 AT+FDCC Capabilities parameters

AT+FDCC Capabilities parameters	
Test Command **AT+FDCC=?**	Response (list of supported <**vr**>s), (list of supported <**br**>s), (list of supported <**wd**>s), (list of supported <**ln**>s), (list of supported <**df**>s), (list of supported <**ec**>s), (list of supported <**bf**>s), (list of supported <**st**>s) **OK** Parameters See Write Command.
Read Command **AT+FDCC**	Response <**cr**>,<**br**>,<**wd**>,<**ln**>,<**df**>,<**ec**>,<**bf**>,<**st**> **OK** Parameters See Write Command.
Write Command **AT+FDCC=<cr>**	Response **OK** **ERROR** This command allows the DTE to parameter the capabilities used for the any session.
	Parameter <**vr**> Vertical Resolution, 0 Normal: 98 lpi 1 Fine: 196 lpi <**br**> Baud Rate, 0 2400 bps 1 4800 bps 2 7200 bps 3 9600 bps <**wd**> Page Width 0 1728 pixels in 215mm 1 2048 pixels in 255 mm 2 2432 pixels in 303 mm 3 1216 pixels in 151 mm 4 864 pixels in 107 mm <**ln**> Page Length 0 A4, 297 mm 1 B4, 364 mm 2 Unlimited <**df**> Data Compression Format

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	0 1-D modified Huffman 1 2-D modified read 2 2-D uncompressed mode 3 2-D modified modified read <**ec**> Error Correction 0 Disable Fax ECM <**bf**> Binary File Transfer 0 disable BFT <**st**> Scan Time Per Line 0 0 ms 1 5 ms 2 10 ms 3 10 ms 4 20 ms 5 20 ms 6 40 ms 7 40 ms
Reference	

9.2.11 AT+FLID Local ID string

AT+FLID Local ID string	
Test Command **AT+FLID=?**	Response **(32-126)** (range of supported ASCII character values) **OK**
Read Command **AT+FLID?**	Response <**string**> **OK** Parameters See Write Command.
Write Command **AT+FLID** **=<string>**	Response **OK** **ERROR** This command allows the local ID string to be defined.
	Parameter <**string**> Local ID string
Reference	

9.2.12 AT+FPHCTO Page transfer timeout parameters

AT+FPHCTO Page transfer timeout parameters

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Test Command **AT+FPHCTO=?**	Response (list of supported <**n**>s) **OK** Parameters See Write Command.
Read Command **AT+FPHCTO?**	Response <**n**> **OK** Parameters See Write Command.
Write Command **AT+FPHCTO=<n>**	Response **OK** **ERROR** This command sets the time interval during which the modem expects another page before it assumes there are no more pages and aborts.
	Parameter <**n**> 0-255 Waiting period for another page in seconds
Reference	

9.2.13 AT+FBADLIN Bad line threshold

AT+FBADLIN	**Bad line threshold**
Test Command **AT+FBADLIN=?**	Response (list of supported <**n**>s) **OK** Parameters See Write Command.
Read Command **AT+FBADLIN?**	Response <**n**> **OK** Parameters See Write Command.
Write Command **AT+FBADLIN=<n>**	Response **OK** **ERROR** This command defines the Copy-Quality-OK-threshold.
	Parameter <**n**> 0 Bad lines
Reference	

9.2.14 AT+FBADMUL Error threshold multiplier

AT+FBADMUL	Error threshold multiplier
Test Command **AT+FBADMUL=?**	Response (list of supported <**n**>s) **OK** Parameters See Write Command.
Read Command **AT+FBADMUL?**	Response <**n**> **OK** Parameters See Write Command.
Write Command **AT+FBADMUL=<n>**	Response **OK** **ERROR** This command defines the "Copy-Quality-OK" multiplier.
	Parameter <**n**> 0 Bad multiplier
Reference	

9.2.15 AT+FCIG Local polling ID

AT+FCIG	Local polling ID
Test Command **AT+FCIG=?**	Response **(32-126)** (range of supported ASCII character values) **OK** Parameters See Write Command.
Read Command **AT+FCIG?**	Response <**string**> **OK** Parameters See Write Command.
Write Command **AT+FCIG=<string>**	Response **OK** **ERROR** This command allows the local polling ID string to be defined.
	Parameter <**string**> Local polling ID string

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Reference	

9.2.16 AT+FDFFC Data compression format conversion

AT+FDFFC Data compression format conversion	
Test Command **AT+FDFFC=?**	Response (list of supported <**df**>s) **OK** Parameters See Write Command.
Read Command **AT+FDFFC?**	Response <**df**> **OK** Parameters See Write Command.
Write Command **AT+FDFFC** **=<df>**	Response **OK** **ERROR** This command determines the ME response to a mismatch between the data format negotiated for the fax session.
	Parameter <**df**> 0 Mismatch checking is always disabled
Reference	

9.2.17 AT+FVRFC Vertical resolution format conversion

AT+FVRFC Vertical resolution format conversion	
Test Command **AT+FVRFC=?**	Response (list of supported <**df**>s) **OK** Parameters See Write Command.
Read Command **AT+FVRFC?**	Response <**df**> **OK** Parameters See Write Command.
Write Command **AT+FVRFC=<df>**	Response **OK** **ERROR**

	This command determines the DCE response to a mismatch between the vertical resolution negotiated for the facsimile session and the phase C data desired by the DTE.
	Parameter <**df**> 0 Disable mismatch checking.
Reference	

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10 Appendix

10.1 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 messaging 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.

Code of <err>	Meaning
0	phone failure
1	no connection to phone
2	phone-adaptor link reserved
3	operation not allowed
4	operation not supported
5	PH-SIM PIN required
6	PH-FSIM PIN required
7	PH-FSIM PUK required
10	SIM not inserted
11	SIM PIN required
12	SIM PUK required
13	SIM failure
14	SIM busy
15	SIM wrong
16	incorrect password
17	SIM PIN2 required
18	SIM PUK2 required
20	memory full
21	invalid index
22	not found
23	memory failure
24	text string too long
25	invalid characters in text string
26	dial string too long
27	invalid characters in dial string
30	no network service
31	network timeout
32	network not allowed - emergency calls only
40	network personalization PIN required

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41	network personalization PUK required
42	network subset personalization PIN required
43	network subset personalization PUK required
44	service provider personalization PIN required
45	service provider personalization PUK required
46	corporate personalization PIN required
47	corporate personalization PUK required
103	illegal MS
106	illegal ME
107	GPRS services not allowed
111	PLMN not allowed
112	location area not allowed
113	roaming not allowed in this location area
132	service option not supported
133	requested service option not subscribed
134	service option temporarily out of order
148	unspecified GPRS error
149	PDP authentication failure
150	invalid mobile class
151	Link NS SP person PIN required
152	Link NS SP person PUK required
153	Link SIM C person PIN required
154	Link SIM C person PUK required
302	Command conflict
601	Unrecognized command
602	Return error
603	Syntax error
604	Unspecified
605	Data transfer already
606	Action already
607	Not AT command
608	Multi command too long
609	Abort COPS
610	No call disconnect
3513	Unread records on SIM
3515	PS busy
3516	Couldn't read SMS parameters from SIM
3517	SM not ready
3518	Invalid parameter
3738	CSCS mode not found
3742	CPOL operation format wrong
3765	Invalid input value
3769	Unable to get control

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3771	Call setup in progress
3772	SIM powered down
3773	Invalid CFUN state
3774	Invalid ARFCN
3775	the pin is not in GPIO mode

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10.2 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 messaging commands:

Code of <err>	Meaning
300	ME failure
301	SMS ME reserved
302	operation not allowed
303	operation not supported
304	invalid PDU mode
305	invalid text mode
310	SIM not inserted
311	SIM pin necessary
312	PH SIM pin necessary
313	SIM failure
314	SIM busy
315	SIM wrong
316	SIM PUK required
317	SIM PIN2 required
318	SIM PUK2 required
320	memory failure
321	invalid memory index
322	memory full
330	SMSC address unknown
331	no network
332	network timeout
500	unknown
512	SIM not ready
513	message length exceeds
514	invalid request parameters
515	ME storage failure
517	Invalid service mode
528	more message to send state error
529	MO SMS is not allow
530	GPRS is suspended
531	ME storage full
3513	unread records on SIM
3515	PS busy
3516	Couldn't read SMS parameters from SIM
3517	SM not ready

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3518	invalid parameter
3742	incorrect <oper> format
3765	invalid input value
3769	unable to get control of required module
3771	call setup in progress
3772	SIM powered down
3773	unable to operate in this cfun state
3774	invalid arfcn in this band
3775	the pin is not in GPIO mode
3776	FOTA UA not exsit
3777	FOTA not inited
3778	FOTA receive error data
3779	FOTA write data fail
3801	http timeout
3802	http busy
3803	http uart busy
3804	http get no request
3805	http network busy
3806	http network open fail
3807	http network no config
3808	http network deactive
3809	http network error
3810	http url error
3811	http empty url
3812	http ip addr error
3813	http dns error
3814	http socket create error
3815	http socket connect error
3816	http socket read error
3817	http socket write error
3818	http socket close
3819	http data encode error
3820	http data decode error
3821	http read timeout
3822	http response fail
3823	incoming call busy
3824	voice call busy
3825	input timeout
3826	wait data timeout
3827	wait http response timeout
3901	Timeout
3902	URL too long
3903	Invalid URL

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3904	Unsupported proxy
3905	Invalid proxy address
3906	IP address error
3907	DNS error
3908	Parameter error
3909	TO addresses exceeded
3910	CC addresses exceeded
3911	BCC addresses exceeded
3912	Appended file capacity exceeded
3913	File name too long
3914	The number of files exceeded
3915	Non-existent address
3916	UFS storage full
3917	Drive full
3918	Drive error
3919	File not found
3920	Invalid file name
3921	File already existed
3922	Failed to create file
3923	Failed to write file
3924	Failed to open file
3925	Failed to read file
3926	MMS busy
3927	Sending MMS busy
3928	Sending MMS stopped
3929	Already stop to send
3930	Receiving MMS busy
3931	Receiving MMS stopped
3932	Already stop to receive
3933	HTTP response failure
3934	Invalid MMS response
3935	MMS response error
3936	Invalid push message
3937	Already download
3938	Network busy
3939	Failed to open network
3940	Network no configured
3941	Network deactivated
3942	Network error
3943	Network shutdown
3944	UART busy
3945	UART escaped
3946	Failed to create socket

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3947	Failed to connect socket
3948	Failed to read socket
3949	Failed to write socket
3950	Socket closed
3951	MMS length error
3952	Failed to encode MMS
3953	Failed to decode MMS
3954	Failed to decode HTTP
3955	Failed to decode push message
3956	HEX align error
3957	HEX character error
3958	String too long
3959	MMS full
3960	Non-existent MMS
3961	Invalid address
3962	voice call busy
3963	Alloc memory failed
4000	File exceed max length
4001	Open file fail
4002	Write file fail
4003	Get file size fail
4004	Read file fail
4005	List file fail
4006	Delete file fail

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10.3 Summary of cause for extended error report

10.3.1 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

10.3.2 Cause 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

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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
SMS Cause	
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

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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
255	Unspecified error cause
304	Invalid PDU mode parameter
305	Invalid TEXT mode parameter
313	SIM failure
320	Memory failure
321	Invalid memory index
322	Memory full
330	SMSC address unknown
340	No +CNMA acknowledgement expected
500	Unknown error
512	SMS no error
513	Message length exceeds maximum length
514	Invalid request parameters
515	ME storage failure
516	Invalid bearer service
517	Invalid service mode
518	Invalid storage type
519	Invalid message format
520	Too many MO concatenated messages
521	SMSAL not ready
522	SMSAL no more service
523	Not support TP-Status-Report & TP-Command in storage
524	Reserved MTI
525	No free entity in RL layer
526	The port number is already registered
527	There is no free entity for port number
528	More Message to Send state error
529	MO SMS is not allow
530	GPRS is suspended
531	ME storage full
532	Doing SIM refresh
CC Cause	
768	Command not allowed
769	Illegal card ID
770	Call allocation fail
771	BC fill fail
772	Call RE EST

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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

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1153	General problem, mistyped component
1154	General problem, badly structured component
1155	Invoke problem, duplicate invoked
1156	Invoke problem, unrecognized operation
1157	Invoke problem, mistyped parameter
1158	Invoke problem, resource limitation
1159	Invoke problem, initiating release
1160	Invoke problem, unrecognized linked ID
1161	Invoke problem, linked resource unexpected
1162	Invoke problem, unexpected linked operation
1163	Return result problem, RR unrecognized invoked
1164	Return result problem, RR, return result unexpected
1165	Return result problem, RR mistyped parameter
1166	Return error problem, RE, unrecognized invoked
1167	Return error problem, RE return error unexpected
1168	Return error problem, RE unrecognized error
1169	Return error problem, RE unexpected error
1170	Return error problem, RE mistyped parameter
MM Cause	
2048	Cause none
2050	IMSI unknown in HLR
2051	Illegal MS
2052	IMSI unknown in VLR
2053	IMEI not accepted
2054	Illegal ME
2055	GPRS not allowed
2056	None GPRS not allowed
2057	MS ID not derived by network
2058	Implicit detach
2059	PLMN not allowed
2060	Location area not allowed
2061	Roaming area not allowed
2062	GPRS not allowed in PLMN
2063	No suitable cells in LA
2064	MSC temp not reachable
2065	Network failure
2068	MAC failure
2069	Sync failure
2070	Congestion
2080	Serve option not supported
2081	Request serve option not subscribed
2082	Serve option temp out of order
2086	Call cannot be identified

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2088	No PDP context activated
2096	Retry upon entry into a new cell
2111	Retry upon entry into a new cell
2143	Semantically incorrect message
2144	Invalid MM info
2145	Message type non existent
2146	Message type incompatible with protocol state
2147	IE not implemented
2148	Conditional MM IE error
2149	Message not compatible with protocol state
2159	Protocol error unspecified
2160	Access barred
2161	Assignment reject
2162	Random access failure
2163	RR no service
2164	PLMN search reject emergency
2165	RR connection release
2166	Authentication failure
2167	IMSI detach
2168	Abort by network
2169	Connection timeout
2170	Enqueue fail
2171	Not updated
2172	State not allowed
2173	Emergency not allowed
2174	No service
2175	Access class barred
SIM Cause	
2560	Command success
2561	Command fail
2562	Fatal error
2563	No inserted
2564	CHV not init
2565	CHV verify error
2566	CHV block
2567	Access not allow
2568	SAT command busy
2569	DL error
2570	Memory problem
2571	Technical problem
2572	PUK unlock
SM Cause	
3080	Operator determined barring

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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

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3286	None auto deactivation
TCM Cause	
3372	Invalid parameter
3373	NSAPI not in use
3374	ACL action not allowed
3375	ACL SIM file full
3376	ACL add entry failed
3377	ACL del entry failed
3378	ACL set entry failed
3379	ACL SIM read failed
3380	ACL SIM write failed

10.3.3 Internal cause for MM layer

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

10.3.4 Cause for PPP/IP-Stack

Cause	Description
0	No error
1	LCP fail
2	Authentication fail
3	IPCP fail

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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

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10.4 Summary of URC

Index	URC display	Meaning	Condition
1	+CMTI:<mem>,<index>	New message received, and saved to memory	AT+CNMI=2,1
2	+CMT:[<alpha>],<length><CR><LF><pdu>	New short message is received and output directly to TE(PDU mode)	AT+CNMI=2,2
3	+CMT:<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data>	New short message is received and output directly to TE(Text mode)	AT+CNMI=2,2
4	+CBM:<length><CR>	New CBM is received and output directly(PDU mode)	AT+CNMI=2,2
5	+CBM:<sn>,<mid>,<dcs>,<page>,<pages>,<CR>,<LF><data>	New CBM is received and output directly to TE(Text mode)	AT+CNMI=2,2
6	+CDS:<length><CR><LF><pdu>	New CDS is received and output directly(PDU mode)	AT+CNMI=2,2
7	+CDS:<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>	New CDS is received and output directly to TE(Text mode)	AT+CNMI=2,2
8	+CGEV:NW DEACT<PDP_type>,<PDP_addr>[,<cid>]	GPRS network detach	AT+CGEREP=1
9	+CGEV:ME DEACT<PDP_type>,<PDP_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	+CVGREG:1	Network registered	AT+CGREG=1
13	+CGREG:0	Network unregistered	AT+CGREG=2
14	+CVGREG:1,<lac><ci>	Network registered, with location code	AT+CGREG=2
15	+CVGREG:0,<lac><ci>	Network unregistered, with location code	AT+CGREG=2
16	+QEXTHS:<mode>,<headset attach>	Headset attachment status change	AT+QEXTHS=1
17	+QHSBTN:<mode>,<headset button press>	Headset button pressed	AT+QHSBTN=1
18	+QCGTIND	A CS voice call, CS data, fax call or GPRS session termination indicator	AT+QCGTIND=1
19	+CSQN:<rssi>,<ber>	Signal quality change	AT+QEXTUNSOL="SQ",1

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20		Forbidden network available only	AT+QEXTUNSOL="FN",1
21	+CMWT:<store>,<index>,<voice>,<fax>,<email>,<other>	Message waiting	AT+QEXTUNSOL="MW",1
22	+QGURC:<event>	Unsolicited result code follow particular call state transition	AT+QEXTUNSOL="UR",1
23	+CBCN<bcs>,<bcl>	Display battery connection status and battery charge level	AT+QEXTUNSOL="BC",1
24	+QBAND:<band>	Band mode display	AT+QEXTUNSOL="BM",1
25	+TSMSINFO:<CMS error info>	Additional SMS information	AT+QEXTUNSOL="SM",1
26	+CCINFO:<Call is Disconnected>,<remain calls>	Displays the disconnected call ID and the remain call numbers after one of the call disconnected	AT+QEXTUNSOL="CC",1
27	RING	Indicates incoming call	n/a
28	Call Ready	Device ready to make/receive calls	n/a
29	Charging in NORNAL MODE	The module is in charging state	n/a
30	From GHOST MODE to NORMAL MODE	Device is turned on when in charging state	n/a
31	+QTEMP:-1	Low temperature warning	AT+QTEMP=1
32	+QTEMP:1	High temperature warning	AT+QTEMP=1
33	+QTEMP:-2	Low temperature shutdown indicator	AT+QTEMP=1
34	+QTEMP:2	High temperature shutdown indicator	AT+QTEMP=1
35	UNDER_VOLTAGE POWER DOWN	Under voltage shutdown indication	n/a
36	UNDER_VOLTAGE WARNING	Under voltage warning	n/a
37	OVER_VOLTAGE POWER DOWN	Over voltage shutdown indication	n/a
38	OVER_VOLTAGE WARNING	Over voltage warning	n/a
39	UNDER_VOLTAGE POWER DOWN	Normal power down	n/a
40	+COLP:<number>,<type>[,<subaddr>,<satype>[CLI validity]],	The presentation of the COL(connected line) at the TE for a mobile originated call	AT+COLP=1
41	+CLIP:<number>,<type>"",,<alphaID>,<CLI validity>	Mobile terminating call indication	AT+CLIP=1
42	+CRING:<type>	An incoming call is indicated to the TE with unsolicited result	AT+CRC=1

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		code instead of the normal RING	
43	+CREG:<stat>	Indicate registration status of the ME	AT+CREG=1
44	+CREG:<stat>[,<lac>]	After cell neighborhood changing shows whether the network has currently indicated the registration of the ME, with location area code	AT+CREG=2
45	CCWV	Call meter warning,5 seconds left before ACM	AT+CCWV=1
46	+CCWA:<number>,<type>,<class>[,<alpha>]	Call waiting indication	AT+CCWA=1,1
47	RDY	ME initialization successful	n/a
48	+CFUN:1	All function of the ME is available	n/a
49	+CPIN:<state>	SIM card pin state	n/a
50	MO RING	MO call ringing	AT+QMOSTAT=1
51	MO CONNECTED	MO call connected	AT+QMOSTAT=1
52	ALARM RING	Alarm event triggered	AT+QALARM=1,<time>,<repeat>,0/1
53	ALARM MODE	ME switched on by alarm	AT+QALARM=1,<time>,<repeat>,2

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