

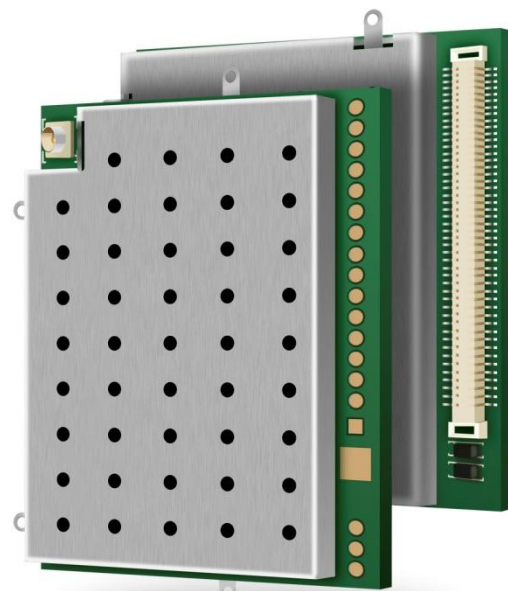


U10

Quectel Cellular Engine

AT Commands Set

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0. Revision history

Revision	Date	Author	Description
1.0	2012-02-08	Amon WU	Initial

1. Introduction

1.1. Scope of the document

This document presents the AT Commands Set for Quectel cellular engine U10.

1.2. Conventions and abbreviations

In this document, the WCDMA engines are referred to as the 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 WCDMA engine by sending AT Command via serial interface. The controlling devices are referred to as the following terms:

- TE (Terminal Equipment)
- DTE (Data Terminal Equipment)

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 Commands Set implemented by U10 is a combination of 3GPP TS27.005, 3GPP TS27.007 and ITU-T recommendation V.25ter and the AT Commands developed by Quectel.

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

● Basic syntax

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

● S parameter syntax

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

● Extended syntax

These commands can operate in several modes, as the following table:

Table 1: Types of AT Commands and responses

Test Command	AT+<x>=?	This command returns the list of parameters and value ranges set by the corresponding Write Command or internal processes.
Read Command	AT+<x>?	This command returns the currently set value of the parameter or parameters.
Write Command	AT+<x>=<...>	This command sets the user-definable parameter values.
Execution Command	AT+<x>	This command reads non-variable parameters affected by internal processes in the WCDMA 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 that a semicolon is used as command delimiter.

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

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

1.4. Supported character sets

The U10 AT Command interface defaults to the **IRA** character set. The U10 supports the following character sets:

- GSM format
- UCS2
- HEX

- IRA
- PCCP437
- 8859_1

The character set can be configured and interrogated using the "AT+CSCS" command (TS27.007). The character set is defined in TS27.005. 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 WCDMA engine and DTE. For example, in the case such as a data or FAX call, the sending device is transferring data faster than the receiving side is ready to accept. When the receiving buffer reaches its capacity, the receiving device should be capable to cause the sending device to pause until it catches up.

1.5.1. 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 ready to receive more data, CTS goes active once again.

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

1.6. 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 "I"), i.e. the line goes active low for a few milliseconds. If an event which delivers a URC coincides with the execution of an AT command, the URC will be output after command execution has completed.

2. 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 form data mode to command mode
ATO	Switch from command mode to data mode
ATP	Select pulse dialing
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 dialing
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
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 manufacture identification
AT+GMM	Request TA model identification
AT+GMR	Request TA revision identification 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+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 <i>Note: It does not have to end with terminating character.</i>
	Parameter
Reference V.25ter	

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. <i>Note</i> <ul style="list-style-type: none"> ● Any additional commands on the same command line are ignored. ● 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.

	<p>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</p> <p>Response in case of voice call, if successfully connected OK</p> <p>Response if no connection NO CARRIER</p>
	Parameter
Reference V.25ter	<p><i>Note:</i> <i>See also ATX.</i></p>

2.2.3. ATD Mobile originated call to dial a number

ATD Mobile originated call to dial a number	
<p>Execution Command ATD<n>[<mgsm II:]</p>	<p>Response</p> <p>This command can be used to set up outgoing voice, data or FAX calls. It also serves to control supplementary services.</p> <p><i>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.</i></p> <p>If no dial tone and (parameter setting ATX2 or ATX4) NO DIALTONE</p> <p>If busy and (parameter setting ATX3 or ATX4) BUSY</p> <p>If a connection cannot be established NO CARRIER</p> <p>If connection successful and non-voice call. CONNECT<text> TA switches to data mode. <i>Note: <text> can be output only if <value> >0 in ATX command.</i></p> <p>When TA returns to command mode after call release</p>

	<p>OK If connection successful and voice call:</p> <p>OK</p> <p>Parameter</p> <p><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, @</p> <p>Emergency call:</p> <p><n> Standardized emergency number 112 (no SIM needed)</p> <p><mgsn> String of GSM modifiers:</p> <p>I Activates CLIR (Disables presentation of own number to called party)</p> <p>i Deactivates CLIR (Enable presentation of own number to called party)</p> <p>G Activates closed user group invocation for this call only</p> <p>g Deactivates closed user group invocation for this call only</p> <p><;> Only required to set up voice call , return to command state</p>
Reference V.25ter	<p><i>Note:</i></p> <ul style="list-style-type: none"> ● Parameter "I" and "i" only if no *# code is within the dial string. ● <n> is default value 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. <p>Responses returned after dialing with ATD</p> <ul style="list-style-type: none"> ● For voice call two different responses mode can be determined. TA returns "OK" immediately either after dialing was completed or after the call was established. The setting is controlled by AT+COLP. Factory default is AT+COLP=0, which causes the TA returns "OK" immediately after dialing was completed, otherwise TA will returns "OK", "BUSY", "NO DIAL TONE", "NO CARRIER". <p>Using ATD during an active voice call:</p> <ul style="list-style-type: none"> ● 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.

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. <i>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.</i> 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. <i>Note: <text> can be output only if <value> >0 in ATX command.</i> 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 <ul style="list-style-type: none"> ● 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

	<i>Parameters.</i>
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2.2.5. ATDL Redial last telephone number used

ATDL Redial last used telephone number	
Execution Command ATDL	Response This command redials the last voice and data call number. 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. <i>Note: <text> can be output only if <value> >0 in ATX command.</i> When TA returns to command mode after call release OK If successfully connected and voice call OK
Reference V.25ter	<i>Note:</i> 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	Response This setting determines whether or not the TA echoes characters received

ATE<value>	from TE during command state. OK					
	Parameter <table border="0"> <tr> <td><value></td> <td>0</td> <td>Echo mode off</td> </tr> <tr> <td></td> <td><u>1</u></td> <td>Echo mode on</td> </tr> </table>	<value>	0	Echo mode off		<u>1</u>
<value>	0	Echo mode off				
	<u>1</u>	Echo mode on				
Reference V.25ter						

2.2.7. ATH Disconnect existing connection

ATH Disconnect existing connection			
Execution Command ATH[n]	Response Disconnect existing call by local TE from command line and terminate call OK <i>Note: OK is issued after circuit 109(DCD) is turned off, if it was previously on.</i>		
	Parameter <table border="0"> <tr> <td><n></td> <td>0</td> <td>Disconnect from line and terminate call</td> </tr> </table>	<n>	0
<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_U10 Revision: U10R01A01M1024 OK
Reference V.25ter	

2.2.9. ATL Set monitor speaker loudness

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

2.2.10. ATM Set monitor speaker mode

ATM Set Monitor Speaker Mode										
Execution Command	Response									
ATM<value>	OK									
	Parameter									
	<table border="0"> <tr> <td><value></td> <td>0</td> <td>Speaker is always off</td> </tr> <tr> <td></td> <td>1</td> <td>Speaker is on until TA inform TE that carrier has been detected</td> </tr> <tr> <td></td> <td>2</td> <td>Speaker is always on when TA is off-hook</td> </tr> </table>	<value>	0	Speaker is always off		1	Speaker is on until TA inform TE that carrier has been detected		2	Speaker is always on when TA is off-hook
<value>	0	Speaker is always off								
	1	Speaker is on until TA inform TE that carrier has been detected								
	2	Speaker is always on when TA is off-hook								
Reference	<i>Note:</i>									
V.25ter	<i>The two commands ATL and ATM are implemented only for V.25 compatibility reasons and have no effect.</i>									

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 with the remote server or, accordingly, the GPRS connection.

	<p>OK</p> <p>To prevent the "+++" escape sequence from being misinterpreted as data, the following sequence should be complied with:</p> <ol style="list-style-type: none"> 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 should be less than 1 second and for a transparent TCPIP connection, the interval MUST should 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	<p><i>Note:</i></p> <p><i>To return from command mode back to data or PPP online mode: Enter ATO.</i></p>

2.2.12. ATO Switch from command mode to data mode

ATO Switch from command mode to data mode	
Execution Command ATO[n]	<p>Response</p> <p>TA resumes the connection and switches back from command mode to data mode.</p> <p>If connection is not successfully resumed</p> <p>NO CARRIER</p> <p>else</p> <p>TA returns to data mode from command mode CONNECT <text></p> <p><i>Note: <text> only if parameter setting X>0.</i></p>
	<p>Parameter</p> <p><n> 0 Switch from Command mode to data mode</p>
Reference V.25ter	

2.2.13. ATP Select pulse dialing

ATP Select pulse dialing	
Execution Command ATP	<p>Response</p> <p>OK</p> <p>Parameter</p>
Reference V.25ter	<p><i>Note:</i></p> <p><i>No effect in WCDMA/GSM.</i></p>

2.2.14. ATQ Set result code presentation mode

ATQ Set result code presentation mode							
Execution Command ATQ<n>	<p>Response</p> <p>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.</p> <p>If <n>=0: OK</p> <p>If <n>=1: (none)</p>						
	<p>Parameter</p> <table border="0"> <tr> <td style="padding-right: 20px;"><n></td> <td style="padding-right: 20px;">0</td> <td>TA transmits result code</td> </tr> <tr> <td></td> <td>1</td> <td>Result codes are suppressed and not transmitted</td> </tr> </table>	<n>	0	TA transmits result code		1	Result codes are suppressed and not transmitted
<n>	0	TA transmits result code					
	1	Result codes are suppressed and not transmitted					
Reference V.25ter							

2.2.15. ATSO Set number of rings before automatically answering the call

ATSO Set number of rings before automatically answering the call							
Read Command ATSO?	<p>Response</p> <p><n></p> <p>OK</p>						
Write Command ATSO=<n>	<p>Response</p> <p>This parameter setting determines the number of rings before auto-answer.</p> <p>OK</p>						
	<p>Parameter</p> <table border="0"> <tr> <td style="padding-right: 20px;"><n></td> <td style="padding-right: 20px;">0</td> <td>Automatic answering is disabled</td> </tr> <tr> <td></td> <td>1-255</td> <td>Enable automatic answering on the ring number specified</td> </tr> </table>	<n>	0	Automatic answering is disabled		1-255	Enable automatic answering on the ring number specified
<n>	0	Automatic answering is disabled					
	1-255	Enable automatic answering on the ring number specified					
Reference V.25ter	<p><i>Note:</i></p> <p><i>If <n> is set too high, the calling party may hang up before the call can be answered automatically.</i></p>						

2.2.16. AT3 Set command line termination character

AT3 Set command line termination character	
Read Command	Response

ATS3?	<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- <u>13</u> -127 Command line termination character
Reference V.25ter	<i>Note:</i> <i>Default 13 = CR.</i>

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- <u>10</u> -127 Response formatting character
Reference V.25ter	<i>Note:</i> <i>Default 10 = LF.</i>

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 the immediately preceding character from the command line

	<p>OK</p> <p>Parameter</p> <p><n> 0-<u>8</u>-127 Response formatting character</p>
Reference V.25ter	<p><i>Note:</i></p> <p><i>Default 8 = Backspace.</i></p>

2.2.19. ATS6 Set pause before blind dialing

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

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?	<p>Response</p> <p><n></p> <p>OK</p>
Write Command ATS7=<n>	<p>Response</p> <p>This parameter setting determines the amount of time to wait for the connection completion in case of answering or originating a call.</p> <p>OK</p> <p>Parameter</p> <p><n> 1-<u>60</u>-255 Number of seconds to wait for connection completion</p>
Reference V.25ter	<p><i>Note:</i></p> <ul style="list-style-type: none"> ● <i>If called party has specified a high value for ATS0=<n>, call setup may fail.</i> ● <i>The correlation between ATS7 and ATS0 is important</i> <i>Example: Call may fail if ATS7=30 and ATS0=20.</i> ● <i>ATS7 is only applicable to data call.</i>

2.2.21. AT^S8 Set number of seconds to wait for comma dial modifier

AT^S8 Set number of seconds to wait for comma dial modifier	
Read Command AT^S8?	Response <n> OK
Write Command AT^S8=<n>	Response OK
	Parameter <n> 0 No pause when comma encountered in dial string 1-255 Number of seconds to wait
Reference V.25ter	<i>Note:</i> <i>No effect in WCDMA</i>

2.2.22. AT^S10 Set disconnect delay after indicating the absence of data carrier

AT^S10 Set disconnect delay after indicating the absence of data carrier	
Read Command AT^S10?	Response <n> OK
Write Command AT^S10=<n>	Response This parameter setting determines the amount of time that the TA will remain connected in absence of data carrier. If the data carrier is once more detected before disconnection, the TA remains connected. OK
	Parameter <n> 1- <u>15</u> -254 Number of delay in 100 ms
Reference V.25ter	

2.2.23. AT^T Select tone dialing

AT^T Select tone dialing	
Execution Command AT^T	Response OK
	Parameter
Reference	<i>Note:</i>

V.25ter	No effect in WCDMA.
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2.2.24. ATV TA response format

ATV TA response format	
Execution Command ATV<value>	<p>Response</p> <p>This parameter setting determines the contents of the header and trailer transmitted with result codes and information responses.</p> <p>When <value>=0</p> <p>0</p> <p>When <value>=1</p> <p>OK</p> <hr/> <p>Parameter</p> <p><value> 0 Information response: <text><CR><LF> Short result code format: <numeric code><CR></p> <p><u>1</u> Information response: <CR><LF><text><CR><LF> Long result code format: <CR><LF><verbose code><CR><LF></p> <p>The result codes, their numeric equivalents and brief descriptions of the use of each are listed in the following table.</p>
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
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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>	<p>Response</p> <p>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</p> <p>OK</p> <hr/> <p>Parameter</p> <p><value> 0 CONNECT result code only returned, dial tone and busy detection are both disabled</p> <p>1 CONNECT<text> result code only returned, dial tone and busy detection are both disabled</p> <p>2 CONNECT<text> result code returned, dial tone detection is enabled, busy detection is disabled</p> <p>3 CONNECT<text> result code returned, dial tone detection is disabled, busy detection is enabled</p> <p>4 CONNECT<text> result code returned, dial tone and busy detection are both enabled</p>
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>]	<p>Response</p> <p>TA sets all current parameters to the user defined profile.</p> <p>OK</p> <hr/> <p>Parameter</p> <p><value> <u>0</u> Reset to profile number 0</p>
Reference V.25ter	<p><i>Note:</i></p> <ul style="list-style-type: none"> ● <i>The user defined profile is stored in non volatile memory.</i> ● <i>If the user profile is invalid, it will default to the factory default profile.</i> ● <i>Any additional commands on the same command line are ignored.</i>

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 auto-answer is 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	
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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	<i>Note:</i> <i>The user defined profile is stored in non volatile memory.</i>

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 AT+DR?	Response +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 is established. OK
	Parameter <value> <u>0</u> 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> <u>0</u> Allow negotiation of p0 down 1 Do not allow negotiation of p0 - disconnect on difference <p1> <u>512</u> -4096 Dictionary size <p2> 6-250 Maximum string size (Default is 6)
Reference V.25ter	<i>Note:</i> <ul style="list-style-type: none"> ● This command is only for data call. ● WCDMA/GSM transmits the data transparently. The remote TA may

	<p><i>support this compression.</i></p> <ul style="list-style-type: none"> • <i>This command must be used in conjunction with command AT+CRLP to enable compression (+CRLP=X,X,X,X,I,X).</i>
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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 Quectel_U10 Revision: MTK 1112 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
Execution Command AT+GMM	TA returns product model identification text. <model> OK Parameter <model> Product model identification text
Reference V.25ter	<i>Note:</i> <i>For example in U10 wireless module, string "Quectel_U10" is displayed.</i>

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	<i>Note:</i> <i>For example in U10 wireless module, string "U10AR01A01M1024" is displayed.</i>

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	<p>Response</p> <p>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.</p> <p><Object Id></p> <p>OK</p>
	<p>Parameter</p> <p><Object Id> Identifier of device type</p> <p>See X.208, 209 for the format of <Object Id>.</p>
Reference V.25ter	<p><i>Note:</i></p> <p><i>For example in U10 wireless module, string "U10" is displayed.</i></p>

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

AT+GSN Request International Mobile Equipment Identity (IMEI)	
Test Command AT+GSN=?	<p>Response</p> <p>OK</p>
	Parameter
Execution Command AT+GSN	<p>Response</p> <p>TA reports the IMEI (International Mobile Equipment Identity) number in information text which permit the user to identify the individual ME device.</p> <p><sn></p> <p>OK</p>
	<p>Parameter</p> <p><sn> IMEI of the telephone</p>
Reference V.25ter	<p><i>Note:</i></p> <p><i>The serial number (IMEI) is varied with the individual ME device.</i></p>

2.2.40. AT+ICF Set TE-TA control character framing

AT+ICF Set TE-TA control character framing	
Test Command AT+ICF=?	<p>Response</p> <p>+ICF: (list of supported <format>s), (list of supported <parity>s)</p>

	<p>OK</p> <p>Parameter See Write Command.</p>																														
Read Command AT+ICF?	<p>Response +ICF: <format>,<parity></p> <p>OK</p> <p>Parameter See Write Command.</p>																														
Write Command AT+ICF=[<format>,<parity>]	<p>Response This parameter setting determines the serial interface character framing format and parity received by TA from TE.</p> <p>OK</p> <p>Parameters</p> <table border="0"> <tr> <td><format></td> <td>1</td> <td>8 data 0 parity 2 stop</td> </tr> <tr> <td></td> <td>2</td> <td>8 data 1 parity 1 stop</td> </tr> <tr> <td></td> <td>3</td> <td>8 data 0 parity 1 stop</td> </tr> <tr> <td></td> <td>4</td> <td>7 data 0 parity 2 stop</td> </tr> <tr> <td></td> <td>5</td> <td>7 data 1 parity 1 stop</td> </tr> <tr> <td></td> <td>6</td> <td>7 data 0 parity 1 stop</td> </tr> <tr> <td><parity></td> <td>0</td> <td>Odd</td> </tr> <tr> <td></td> <td>1</td> <td>Even</td> </tr> <tr> <td></td> <td>2</td> <td>Mark (1)</td> </tr> <tr> <td></td> <td>3</td> <td>Space (0)</td> </tr> </table>	<format>	1	8 data 0 parity 2 stop		2	8 data 1 parity 1 stop		3	8 data 0 parity 1 stop		4	7 data 0 parity 2 stop		5	7 data 1 parity 1 stop		6	7 data 0 parity 1 stop	<parity>	0	Odd		1	Even		2	Mark (1)		3	Space (0)
<format>	1	8 data 0 parity 2 stop																													
	2	8 data 1 parity 1 stop																													
	3	8 data 0 parity 1 stop																													
	4	7 data 0 parity 2 stop																													
	5	7 data 1 parity 1 stop																													
	6	7 data 0 parity 1 stop																													
<parity>	0	Odd																													
	1	Even																													
	2	Mark (1)																													
	3	Space (0)																													
Reference V.25ter	<p><i>Note:</i></p> <ul style="list-style-type: none"> • 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=?	<p>Response +IFC: (list of supported <dce_by_dte>s), (list of supported <dte_by_dce>s)</p> <p>OK</p> <p>Parameter See Write Command.</p>
Read Command AT+IFC?	<p>Response +IFC: <dce_by_dte>,<dte_by_dce></p> <p>OK</p>

	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 that will be used by TE when receiving data from TA <u>0</u> None 1 XON/XOFF, do not pass characters on to data stack 2 RTS flow control 3 XON/XOFF, pass characters on to data stack <dte_by_dce> Specifies the method that will be used by TA when receiving data from TE <u>0</u> None 1 XON/XOFF 2 CTS flow control
Reference V.25ter	<i>Note:</i> <i>This flow control is applied for data mode.</i>

2.2.42. 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. After the delivery of any result code associated with the current command line, the rate of command takes effect.

	<p>OK</p> <p>Parameter</p> <p><rate> Baud rate per second</p> <p><u>0</u> (Autobauding)</p> <p>75</p> <p>150</p> <p>300</p> <p>600</p> <p>1200</p> <p>2400</p> <p>4800</p> <p>9600</p> <p>14400</p> <p>19200</p> <p>28800</p> <p>38400</p> <p>57600</p> <p>115200</p> <p>230400</p> <p>460800</p> <p>921600</p>
Reference V.25ter	<p><i>Note:</i></p> <ul style="list-style-type: none"> ● <i>The default configuration of AT+IPR is autobauding enabled (AT+IPR=0).</i> ● <i>If a fixed baud rate is set, make sure that both TE (DTE, usually external processor) and TA (DCE, Quectel WCDMA 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.</i> ● <i>The value of AT+IPR cannot be restored with AT&F and ATZ, but it is still storable with AT&W and visible in AT&V.</i> ● <i>A selected baud rate takes effect after the write commands are executed and acknowledged by “OK”.</i>

2.2.42.1. 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 (either “**AT**” or “**at**”).
 - URCs that may be issued before the TA detects a new baud rate by receiving the first AT character, and they will be sent at the previously detected baud rate.
 - If TE’s baud rate is changed after TA has recognized the earlier baud rate, loss of synchronization between TE and TA would be encountered and an “**AT**” or “**at**” string must be re-sent by TE to regain synchronization on baud rate. To avoid undefined characters during baud rate resynchronization and the possible malfunction of resynchronization, it is not recommended to switch TE’s baud rate when 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** \neq **0**) are enabled at the same time, especially if SIM PIN 1 authentication is done automatically and the setting **ATS0** \neq **0** is stored to the user profile with **AT&W**.
 - Until the baud rate is synchronized, URCs after restarting will not be output when autobauding is enabled.
 - 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 between DCE and DTE, it is strongly recommended to configure a fixed baud rate and save it instead of using autobauding after start-up.

3. AT Commands according to TS27.007

3.1. Overview of AT Commands according to 3GPP TS27.007

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 condition control
AT+CCUG	Closed user group control
AT+CCWA	Call waiting control
AT+CEER	Extended error report
AT+CGMI	Request manufacture identification
AT+CGMM	Request model identification
AT+CGMR	Request TA revision 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+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
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+VTD	Tone duration
AT+VTS	DTMF and tone generation
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 service notification
AT+CSNS	Signal number scheme
AT+CMOD	Configure alternating mode calls

3.2. Detailed descriptions of AT Commands according to 3GPP TS27.007

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 <acm> String type; three bytes of the current ACM value in hexa-decimal format (e.g. "00001E" indicates decimal value 30)

	000000 - FFFFFFFF
Write Command AT+CACM=[<passwd>]	<p>Parameter <passwd> String type: SIM PIN2</p> <p>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></p>
Reference 3GPP TS27.007	

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=?	<p>Response OK Parameter</p>
Read Command AT+ CAMM?	<p>Response TA returns the current value of ACM max. +CAMM: <acmmmax> OK If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters See Write Command.</p>
Write Command AT+CAMM=[<acmmmax>[,<passwd>]]	<p>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></p> <p>Parameters <acmmmax> String type; three bytes of the max. ACM value in hex-decimal format (e.g. "00001E" indicates decimal value 30)</p> <p>000000</p>

	<p>Disable ACM max feature</p> <p>000001-FFFFFF</p> <p><passwd> String type SIM PIN2</p>
Reference 3GPP TS27.007	

3.2.3. AT+CAOC Advice of charge

AT+CAOC Advice of charge	
Test Command AT+CAOC=?	<p>Response</p> <p>+CAOC: (list of supported <mode>s)</p> <p>OK</p> <p>Parameters See Write Command.</p>
Read Command AT+CAOC?	<p>Response</p> <p>+CAOC: <mode></p> <p>OK</p> <p>Parameters see Write Command</p>
Write Command AT+CAOC=<mode>	<p>Response</p> <p>TA sets the advice of charge supplementary service function mode.</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>If <mode>=0, TA returns the current call meter value +CAOC: <ccm></p> <p>OK</p> <p>If <mode>=1, TA deactivates the unsolicited reporting of CCM value OK</p> <p>If <mode>=2, TA activates the unsolicited reporting of CCM value OK</p> <p>Parameters</p> <p><mode> 0 Query CCM value 1 Deactivate the unsolicited reporting of CCM value 2 Activate the unsolicited reporting of CCM value</p> <p><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 ACM max value in the SIM</p>

	000000-FFFFFF
Reference 3GPP TS27.007	

3.2.4. AT+CBST Select bearer service type

AT+CBST Select bearer service type	
Test Command AT+CBST=?	<p>Response</p> <p>+CBST: (list of supported <speed>s) ,(list of supported <name>s) ,(list of supported <ce>s)</p> <p>OK</p> <p>Parameter See Write Command.</p>
Read Command AT+CBST?	<p>Response</p> <p>+CBST: <speed>,<name>,<ce></p> <p>OK</p> <p>Parameter See Write Command.</p>
Write Command AT+CBST=[<speed>][,<name>][,<ce>]]	<p>Response</p> <p>TA selects the bearer service <name> with data rate <speed>, and the connection element <ce> to be used when data calls are originated.</p> <p>OK</p> <p>Parameters</p> <p><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) 134 64000 bps (multimedia)</p> <p><name> 0 Data circuit asynchronous (UDI or 3.1kHz Modem) 1 Data circuit synchronous (UDI or 3.1kHz Modem) 4 Data circuit asynchronous(RDI)</p> <p><ce> 0 Transparent</p>

	<u>1</u> Non-transparent
Reference 3GPP TS27.007	<i>Note:</i> 3GPP TS22.002 (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=?	<p>Response</p> <p>+CCFC: (list of supported <reads>)</p> <p>OK</p> <hr/> <p>Parameters</p> <p>See Write Command.</p>																		
Write Command AT+CCFC = <reads>, <mode> [, <number> [, <type> [,<class> [, <subaddr> [, <satype> [, <time>]]]]]	<p>Response</p> <p>TA controls the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported.</p> <p>Only <reads> and <mode> should be entered with mode (0-2,4)</p> <p>If <mode>=2 and command successful</p> <p>OK</p> <p>If <mode>=2 and command successful (only in connection with <reads> 0-3)</p> <p>For registered call forwarding numbers:</p> <p>+CCFC: <status>, <class1>[, <number>, <type> [, <subaddr>, <satype>[, <time>]]] [<CR><LF>+CCFC:]</p> <p>OK</p> <p>If no call forwarding numbers are registered (and therefore all classes are inactive):</p> <p>+CCFC: <status>, <class></p> <p>OK</p> <p>where <status>=0 and <class>=15</p> <p>If error is related to ME functionality:</p> <p>+CME ERROR: <err></p> <hr/> <p>Parameters</p> <table> <tr> <td><reads></td> <td>0</td> <td>Unconditional</td> </tr> <tr> <td></td> <td>1</td> <td>Mobile busy</td> </tr> <tr> <td></td> <td>2</td> <td>No reply</td> </tr> <tr> <td></td> <td>3</td> <td>Not reachable</td> </tr> <tr> <td></td> <td>4</td> <td>All call forwarding (0-3)</td> </tr> <tr> <td></td> <td>5</td> <td>All conditional call forwarding (1-3)</td> </tr> </table>	<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)
<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)																	

	<p><mode> 0 Disable 1 Enable 2 Query status 3 Registration 4 Erasure</p> <p><number> Phone number in string type of forwarding address in format specified by <type></p> <p><type> Type of address in integer format; default value is 145 when dialing string includes international access code character "+", otherwise 129</p> <p><subaddr> String type sub-address of format specified by <satype></p> <p><satype> Type of sub-address in integer</p> <p><class> 1 Voice 2 Data 4 FAX 7 All telephony except SMS 8 Short message service 16 Data circuit sync 32 Data circuit async</p> <p><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</p> <p><status> 0 Not active 1 Active</p>
Reference 3GPP TS27.007	

3.2.6. AT+CCUG Closed user group control

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

>]]]	+CME ERROR: <err>																							
	<p>Parameters</p> <table border="0"> <tr> <td><n></td> <td><u>0</u></td> <td>Disable CUG</td> </tr> <tr> <td></td> <td>1</td> <td>Enable CUG</td> </tr> <tr> <td><index></td> <td><u>0</u>..9</td> <td>CUG index</td> </tr> <tr> <td></td> <td>10</td> <td>No index (preferred CUG taken from subscriber data)</td> </tr> <tr> <td><info></td> <td><u>0</u></td> <td>Bo information</td> </tr> <tr> <td></td> <td>1</td> <td>Suppress OA (Outgoing Access)</td> </tr> <tr> <td></td> <td>2</td> <td>Suppress preferential CUG</td> </tr> <tr> <td></td> <td>3</td> <td>Suppress OA and preferential CUG</td> </tr> </table>	<n>	<u>0</u>	Disable CUG		1	Enable CUG	<index>	<u>0</u> ..9	CUG index		10	No index (preferred CUG taken from subscriber data)	<info>	<u>0</u>	Bo information		1	Suppress OA (Outgoing Access)		2	Suppress preferential CUG		3
<n>	<u>0</u>	Disable CUG																						
	1	Enable CUG																						
<index>	<u>0</u> ..9	CUG index																						
	10	No index (preferred CUG taken from subscriber data)																						
<info>	<u>0</u>	Bo information																						
	1	Suppress OA (Outgoing Access)																						
	2	Suppress preferential CUG																						
	3	Suppress OA and preferential CUG																						
Reference 3GPP TS27.007																								

3.2.7. AT+CCWA Call waiting control

AT+CCWA Call waiting control	
Read Command AT+CCWA?	<p>Response</p> <p>+CCWA: <n></p> <p>OK</p>
Test Command AT+CCWA=?	<p>Response</p> <p>+CCWA: (list of supported <n>s)</p> <p>OK</p>
Write Command AT+CCWA=[<n>] [,<mode>[,<class>] >]]]	<p>Response</p> <p>TA controls the call waiting supplementary service. Activation, deactivation and status query are supported.</p> <p>If <mode> <2 and command successful</p> <p>OK</p> <p>If <mode>=2 and command successful</p> <p>+CCWA:<status>,<class1>[<CR><LF>+CCWA:<status>,<class2>[...]]</p> <p>OK</p> <p><i>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.</i></p> <p><i>When <mode>=2, all active call waiting classes will be reported. In this mode, the command is enabled by pressing any key.</i></p> <p>(IS IT NOTE)</p> <p>If error is related to ME functionality:</p> <p>+CME ERROR: <err></p>

	<p>Parameters</p> <p><n> 0 Disable presentation of an unsolicited result code 1 Enable presentation of an unsolicited result code</p> <p><mode> When <mode> parameter is not given, network is not interrogated 0 Disable 1 Enable 2 Query status</p> <p><class> A sum of integers, each integer represents a class of information 1 Voice (telephony) 2 Data (bearer service) 4 FAX(facsimile) 16 Data circuit sync 32 Data circuit async</p> <p><status> 0 Disable 1 Enable</p>
	<p>Unsolicited result code</p> <p>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>]</p>
	<p>Parameters</p> <p><number> Phone number in string type of calling address in format specified by <type></p> <p><type> Type of address octet in integer format 129 Unknown type (ISDN format number) 145 International number type (ISDN format)</p> <p><alpha> Optional string type alphanumeric representation of <number> corresponding to the entry found in phone book</p>
Reference	3GPP TS27.007

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

	<p>Parameter</p> <p><locationID> Location ID as number code. Location IDs are listed in Section 8.3.1. Each ID is related with another table that contains a list of <cause>s</p> <p><cause> Reason for last call release as number code. The number codes are listed in several tables, sorted by different categories. The tables can be found proceeding from the Location ID given in Section 8.3.2</p>
Reference 3GPP TS27.007	

3.2.9. AT+CGMI Request manufacturer identification

AT+CGMI Request manufacturer identification	
Test Command AT+CGMI=?	Response OK
Execution Command AT+CGMI	<p>Response</p> <p>TA returns manufacturer identification text.</p> <p>Quectel_Ltd</p> <p>Quectel_U10</p> <p>Revision: MTK 1112</p> <p>OK</p> <p>Parameter</p>
Reference 3GPP TS27.007	

3.2.10. AT+CGMM Request model identification

AT+CGMM Request model identification	
Test Command AT+CGMM=?	Response OK
Execution Command AT+CGMM	<p>Response</p> <p>TA returns product model identification text.</p> <p><model></p> <p>OK</p> <p>Parameter</p>

	<model> Product model identification text
Reference 3GPP TS27.007	<i>Note:</i> For example in U10 wireless module, string " Quectel_U10" is displayed.

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 3GPP TS27.007	<i>Note:</i> For example in U10 wireless module, string " U10R01A01M1024" is displayed.

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 3GPP TS27.007	

3.2.13. AT+CSCS Select TE character set

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

	<p>OK</p> <p>Parameters</p> <table> <tr> <td><chset></td> <td>"GSM"</td> <td>GSM default alphabet</td> </tr> <tr> <td></td> <td>"HEX"</td> <td>Character strings consist only of hexadecimal numbers from 00 to FF</td> </tr> <tr> <td></td> <td>"IRA"</td> <td>International reference alphabet</td> </tr> <tr> <td></td> <td>"PCCP437"</td> <td>PC character set Code</td> </tr> <tr> <td></td> <td>"UCS2"</td> <td>UCS2 alphabet</td> </tr> <tr> <td></td> <td>"8859-1"</td> <td>ISO 8859 Latin 1 character set</td> </tr> </table>	<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
<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?	<p>Response</p> <p>+CSCS: <chset></p> <p>OK</p> <p>Parameter</p> <p>See Test Command.</p>																		
Write Command AT+CSCS=<chset>	<p>Response</p> <p>Set character set <chset> which is used by the TE. The TA can then convert character strings correctly between the TE and ME character sets.</p> <p>Parameter</p> <p>See Test Command.</p>																		
Reference 3GPP TS27.007																			

3.2.14. AT+CSTA Select type of address

AT+CSTA Select type of address	
Test Command AT+CSTA=?	<p>Response</p> <p>+CSTA: (129,145, 161,)</p> <p>OK</p>
Read Command AT+CSTA?	<p>Response</p> <p>+CSTA: <type></p> <p>OK</p> <p>Parameter</p> <p>< type > Current address type setting.</p>
Reference 3GPP TS27.007	<p><i>Note:</i></p> <ul style="list-style-type: none"> ● The ATD command overrides this setting when a number is dialed. ● 129 Unknown type (ISDN format number) ● 161 National number type (ISDN format) ● 145 International number type (ISDN format)

3.2.15. AT+CHLD Call hold and multiparty

AT+CHLD Call hold and multiparty																			
Test Command AT+CHLD=?	Response +CHLD: (list of supported <n>s) OK																		
Write Command AT+CHLD=[<n> >]	Response TA controls the supplementary services call hold, multiparty and explicit call transfer. Calls can be put on hold, recovered, released, added to conversation and transferred. <i>Note:</i> <i>These supplementary services are only applicable to teleservice 11 (Speech: Telephony).</i> OK If error is related to ME functionality: +CME ERROR: <err>																		
	Parameter <table border="0"> <tr> <td><n></td> <td>0</td> <td>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).</td> </tr> <tr> <td></td> <td>1</td> <td>Terminate all active calls (if any) and accept the other call (waiting call or held call). It cannot terminate active call if there is only one call.</td> </tr> <tr> <td></td> <td>1X</td> <td>Terminate the specific call number X (X= 1-7)(active, waiting or held)</td> </tr> <tr> <td></td> <td>2</td> <td>Place all active calls on hold (if any) and accept the other call (waiting call or held call) as the active call</td> </tr> <tr> <td></td> <td>2X</td> <td>Place all active calls except call X (X= 1-7) on hold</td> </tr> <tr> <td></td> <td>3</td> <td>Add the held call to the active calls</td> </tr> </table>	<n>	0	Terminate all held calls or UDUB (User Determined User Busy) for a waiting call. If a call is waiting, terminate the waiting call. Otherwise, terminate all held calls (if any).		1	Terminate all active calls (if any) and accept the other call (waiting call or held call). It cannot terminate active call if there is only one call.		1X	Terminate the specific call number X (X= 1-7)(active, waiting or held)		2	Place all active calls on hold (if any) and accept the other call (waiting call or held call) as the active call		2X	Place all active calls except call X (X= 1-7) on hold		3	Add the held call to the active calls
<n>	0	Terminate all held calls or UDUB (User Determined User Busy) for a waiting call. If a call is waiting, terminate the waiting call. Otherwise, terminate all held calls (if any).																	
	1	Terminate all active calls (if any) and accept the other call (waiting call or held call). It cannot terminate active call if there is only one call.																	
	1X	Terminate the specific call number X (X= 1-7)(active, waiting or held)																	
	2	Place all active calls on hold (if any) and accept the other call (waiting call or held call) as the active call																	
	2X	Place all active calls except call X (X= 1-7) on hold																	
	3	Add the held call to the active calls																	
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	Response TA returns <IMSI>for identifying the individual SIM which is attached to

AT+CIMI	<p>ME.</p> <p><IMSI></p> <p>OK</p> <p>If error is related to ME functionality:</p> <p>+CME ERROR: <err></p> <p>Parameter</p> <p><IMSI> International Mobile Subscriber Identity (string without double quotes)</p>
Reference 3GPP TS27.007	

3.2.17. AT+CLCC List current calls of ME

AT+CLCC List current calls of ME	
Test Command AT+CLCC=?	<p>Response</p> <p>OK</p> <p>Parameters</p>
Execution Command AT+CLCC	<p>Response</p> <p>TA returns a list of current calls of ME.</p> <p><i>Note:</i></p> <p><i>If command succeeds but no calls are available, no information response is sent to TE.</i></p> <p>[+CLCC: <id1>,<dir>,<stat>,<mode>,<empty>[, <number>,<type>[""]]]</p> <p>[<CR><LF>+CLCC: <id2>,<dir>,<stat>,<mode>,<empty>[, <number>,<type>[""]]]</p> <p>[...]]</p> <p>OK</p> <p>If error is related to ME functionality:</p> <p>+CME ERROR: <err></p> <p>Parameters</p> <p><idx> Integer type; call identification number as described in TS22.030(GSM02.30) sub clause 4.5.5.1; this number can be used in +CHLD Command operations</p> <p><dir> 0 Mobile originated (MO) call 1 Mobile terminated (MT) call</p> <p><stat> State of the call 0 Active 1 Held</p>

	<p>2 Dialing (MO call) 3 Alerting (MO call) 4 Incoming (MT call) 5 Waiting (MT call)</p> <p><mode> Bearer/tele service: 0 Voice 1 Data 2 FAX 9 Unknown</p> <p><mpty> 0 Call is not one of multiparty (conference) call parties 1 Call is one of multiparty (conference) call parties</p> <p><number> Phone number in string type in format specified by <type></p> <p><type> Type of address of octet in integer format; 129 Unknown type(ISDN format number) 145 International number type(ISDN format)</p>
Reference 3GPP TS27.007	

3.2.18. 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

	<p><fac></p> <p>"SC" SIM (lock SIM card) (SIM asks password in ME power-up and when this lock command issued)</p> <p>AO" BAOC (Barr All Outgoing Calls) (refer to TS22.088(GSM02.88) clause 1)</p> <p>"OI" BOIC (Barr Outgoing International Calls) (refer to TS22.088(GSM02.88) clause 1)</p> <p>"OX" BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer to TS22.088(GSM02.88) clause 1)</p> <p>"AI" BAIC (Barr All Incoming Calls) (refer to TS22.088(GSM02.88) clause 2)</p> <p>"IR" BIC-Roam (Barr Incoming Calls when Roaming outside the home country) (refer to TS22.088(GSM02.88) clause 2)</p> <p>"AB" All Barring services (refer to TS22.030(GSM02.30)) (applicable only for <mode>=0)</p> <p>"AG" All out Going barring services (refer to TS22.030(GSM02.30)) (applicable only for <mode>=0)</p> <p>"AC" All in Coming barring services (refer to TS22.030(GSM02.30)) (applicable only for <mode>=0)</p> <p>"PF" Lock Phone to the very first SIM card</p> <p>"PN" Network Personalization (refer to TS22.022(GSM02.22))</p> <p>"PU" Network subset Personalization (refer to TS22.022(GSM02.22))</p> <p>"PP" Service Provider Personalization (refer to TS22.022(GSM02.22))</p> <p>"PC" Corporate Personalization (refer to TS22.022(GSM02.22))</p> <p><mode> 0 Unlock 1 Lock <u>2</u> Query status</p> <p><passwd> Password</p> <p><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</p> <p><status> 0 Off</p>
--	---

	1 On
Reference 3GPP TS27.007	

3.2.19. AT+CLIP Calling line identification presentation

AT+CLIP Calling line identification presentation	
Read Command AT+CLIP?	<p>Response</p> <p>+CLIP: <n>, <m></p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <hr/> <p>Parameters</p> <p>See Write Command.</p>
Test Command AT+CLIP=?	<p>Response</p> <p>+CLIP: (list of supported <n>s)</p> <p>OK</p> <hr/> <p>Parameters</p> <p>See Write Command.</p>
Write Command AT+CLIP=[<n>]	<p>Response</p> <p>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.</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <hr/> <p>Parameters</p> <p><n> 0 Suppress unsolicited result codes 1 Display unsolicited result codes</p> <p><m> 0 CLIP not provisioned 1 CLIP provisioned 2 Unknown</p> <hr/> <p>Unsolicited result code</p> <p>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.</p> <p>+CLIP: <number>, <type>,"",<alphaId>,<CLI validity></p> <hr/> <p>Parameters</p> <p><number> Phone number in string type of calling address in format</p>

	<p>specified by <type></p> <p><type> Type of address octet in integer format; 129 Unknown type (ISDN format number) 145 International number type (ISDN format)</p> <p><alphaId> String type alphanumeric representation of <number> corresponding to the entry found in phone book</p> <p><CLI validity></p> <ul style="list-style-type: none"> 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 3GPP TS27.007	

3.2.20. AT+CLIR Calling line identification restriction

AT+CLIR Calling line identification restriction	
Read Command AT+CLIR?	<p>Response</p> <p>+CLIR: <n>, <m></p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <hr/> <p>Parameters See Write Command.</p>
Test Command AT+CLIR=?	<p>Response</p> <p>+CLIR: (list of supported <n>s)</p> <p>OK</p>
Write Command AT+CLIR=[<n>]	<p>Response</p> <p>TA restricts or enables the presentation of the calling line identity (CLI) to the called party when originating a call.</p> <p>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.</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <hr/> <p>Parameters</p> <p><n> (Parameter sets the adjustment for outgoing calls):</p> <ul style="list-style-type: none"> <u>0</u> presentation indicator is used according to the subscription of the

	<p>CLIR service</p> <ol style="list-style-type: none"> 1 CLIR invocation 2 CLIR suppression <p><m>(Parameter shows the subscriber CLIR service status in the network):</p> <ol style="list-style-type: none"> 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 3GPP TS27.007	

3.2.21. AT+CMEE Report mobile equipment error

AT+CMEE Report mobile equipment error	
Test Command AT+CMEE=?	<p>Response</p> <p>+CMEE: (list of supported <n>s)</p> <p>OK</p> <p>Parameters</p> <p>See Write Command.</p>
Read Command AT+CMEE?	<p>Response</p> <p>+CMEE: <n></p> <p>OK</p> <p>Parameters</p> <p>See Write Command.</p>
Write Command AT+CMEE=[<n>]	<p>Response</p> <p>TA disables or enables the use of result code +CME ERROR: <err> as an indication of an error related to the functionality of the ME.</p> <p>OK</p> <p>Parameters</p> <p><n> 0 Disable result code</p> <p> 1 Enable result code and use numeric values</p> <p> 2 Enable result code and use verbose values</p>
Reference 3GPP TS27.007	

3.2.22. AT+COLP Connected line identification presentation

AT+COLP Connected line identification presentation	
Read Command AT+COLP?	<p>Response</p> <p>+COLP: <n>,<m></p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <hr/> <p>Parameters</p> <p>See Write Command</p>
Test Command AT+COLP=?	<p>Response</p> <p>+COLP: (list of supported <n>s)</p> <p>OK</p> <hr/> <p>Parameters</p> <p>See Write Command.</p>
Write Command AT+COLP=[<n>]	<p>Response</p> <p>TA enables or disables the presentation of the COL (Connected Line) at the TE for a mobile originating a call. It has no effect on the execution of the supplementary service COLR in the network.</p> <p>Intermediate result code is returned from TA to TE before any +CR or V.25ter responses.</p> <p>OK</p> <hr/> <p>Parameters</p> <p><n> (Parameter sets/shows the result code presentation status in the TA):</p> <p> 0 Disable</p> <p> 1 Enable</p> <p><m>(Parameter shows the subscriber COLP service status in the network):</p> <p> 0 COLP not provisioned</p> <p> 1 COLP provisioned</p> <p> 2 Unknown (e.g. no network, etc.)</p> <hr/> <p>Intermediate result code</p> <p>When enabled (and called subscriber allows), an intermediate result code is returned before any +CR or V.25ter responses:</p> <p>+COLP: <number>,<type>[,<subaddr>,<satype> [,<alpha>]]</p> <hr/> <p>Parameters</p> <p><number> Phone number in string type, format specified by <type></p> <p><type> Type of address octet in integer format</p> <p>129 Unknown type(ISDN format number)</p> <p>145 International number type(ISDN format)</p> <p><subaddr> String type sub-address of format specified by <satype></p> <p><satype> Type of sub-address octet in integer format (refer to</p>

	<p>TS24.008(GSM04.08) sub clause 10.5.4.8)</p> <p><alpha> Optional string type alphanumeric representation of <number> , corresponding to the entry found in phone book</p>
Reference 3GPP TS27.007	

3.2.23. AT+COPS Operator selection

AT+COPS Operator selection	
Test Command AT+COPS=?	<p>Response</p> <p>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.</p> <p>+COPS: (list of supported <stat>, long alphanumeric <oper>, short alphanumeric <oper>, numeric <oper> [<Act>])s [, (list of supported <mode>s), (list of supported <format>s)]</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <hr/> <p>Parameters</p> <p>See Write Command.</p>
Read Command AT+COPS?	<p>Response</p> <p>TA returns the current mode and the currently selected operator. If no operator is selected, <format> and <oper> are omitted.</p> <p>+COPS: <mode> [, <format> [, <oper>]]</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <hr/> <p>Parameters</p> <p>See Write Command.</p>
Write Command AT+COPS = <mode> [, <format> [, <oper> [, <Act>]]]	<p>Response</p> <p>TA forces an attempt to select and register the GSM/WCDMA network operator. If the selected operator is not available, no other operator shall be selected (except <mode>=4). The format of selected operator name shall apply to further read commands (+COPS?).</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p>

	<p>Parameters</p> <p><stat> 0 Unknown 1 Operator available 2 Operator current 3 Operator forbidden</p> <p><oper> Operator in format as per <mode></p> <p><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</p> <p><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</p> <p><Act> 0 GSM 2 UTRAN</p>
Reference 3GPP TS27.007	<p><i>Note :</i> <i>U10 does not support mode=2 or mode=4.</i></p>

3.2.24. AT+CPAS Mobile equipment activity status

AT+CPAS Mobile equipment activity status	
<p>Test Command AT+CPAS=?</p>	<p>Response +CPAS: (list of supported <pas>s)</p> <p>OK</p> <hr/> <p>Parameter See Execution Command.</p>
<p>Execution Command AT+CPAS</p>	<p>Response TA returns the activity status of ME. +CPAS: <pas></p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <hr/> <p>Parameter <pas> 0 Ready</p>

	<p>2 Unknown (ME is not guaranteed to respond to instructions)</p> <p>3 Ringing</p> <p>4 Call in progress or call hold</p>
Reference 3GPP TS27.007	

3.2.25. AT+CPBF Find phonebook entries

AT+CPBF Find phonebook entries	
<p>Test Command AT+CPBF=?</p>	<p>Response</p> <p>+CPBF: maximum length of field <nlength>,maximum length of field <tlength></p> <p>OK</p> <hr/> <p>Parameters</p> <p>See Write Command.</p>
<p>Write Command AT+CPBF=[<findtext>]</p>	<p>Response</p> <p>TA returns phone book entries (from the current phone book memory storage selected with +CPBS) which contain alphanumeric string <findtext>.</p> <p>[+CPBF: <index1>, <number>,<type>, <text>[[...] <CR><LF>+CBPF: <index2>,<number>,<type>,<text>]</p> <p>OK</p> <hr/> <p>Parameters</p> <p><findtext> String type field of maximum length <tlength> in current TE character set specified by +CSCS.</p> <p><index1> Integer type values in the range of location numbers of phone book memory</p> <p><index2> Integer type values in the range of location numbers of phone book memory</p> <p><number> Phone number in string type of format <type></p> <p><type> Type of address octet in integer format: 129 Unknown type(ISDN format number) 145 International number type(ISDN format)</p> <p><text> String type field of maximum length <tlength> in current TE character set specified by +CSCS.</p> <p><nlength> Integer type value indicating the maximum length of field <number></p> <p><tlength> Integer type value indicating the maximum length of field <text></p>

Reference 3GPP TS27.007	
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3.2.26. AT+CPBR Read current phonebook entries

AT+CPBR Read current phonebook entries	
Test Command AT+CPBR=?	Response TA returns location range supported by the current storage as a compound value and the maximum lengths of <number> and <text> fields. +CPBR: (list of supported <index> s), <nlength> , <tlength> OK
	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 3GPP TS27.007	

3.2.27. AT+CPBS Select phonebook memory storage

AT+CPBS Select phonebook memory storage	
Test Command AT+CPBS=?	Response +CPBS: (list of supported <storage> s)

	<p>OK</p> <p>Parameters</p> <p>See Write Command.</p>
Read Command AT+CPBS?	<p>Response</p> <p>+CPBS: <storage>[,<used>,<total>]</p> <p>OK</p> <p>Parameters</p> <p>See Write Command.</p>
Write Command AT+CPBS=<storage>	<p>Response</p> <p>TA selects current phone book memory storage, which is used by other phone book commands.</p> <p>OK</p> <p>Parameters</p> <p><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</p> <p><used> Integer type value indicating the total number of used locations in selected memory</p> <p><total> Integer type value indicating the total number of locations in selected memory</p>
Reference 3GPP TS27.007	

3.2.28. AT+CPBW Write phonebook entry

AT+CPBW Write phonebook entry	
Test Command AT+CPBW=?	<p>Response</p> <p>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.</p> <p>+CPBW: (The range of supported <index>s), <nlength>, (list of supported</p>

	<p><type>s), <tlength></p> <p>OK</p> <p>Parameters See Write Command.</p>															
<p>Write Command AT+CPBW= <index1> [, <number>, [<type>, [<text>]]]</p>	<p>Response</p> <p>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.</p> <p>OK</p> <p>Parameters</p> <p><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(ISDN format number) 145 International number type(ISDN format)</p> <p><text> Text for phone number in current TE character set specified by +CSCS</p> <p>Note: The following characters in <text> must be entered via the escape sequence:</p> <table border="1"> <thead> <tr> <th>GSM char</th> <th>Seq. Seq.(hex)</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>\</td> <td>\5C 5C 35 43</td> <td>(backslash)</td> </tr> <tr> <td>"</td> <td>\22 5C 32 32</td> <td>(string delimiter)</td> </tr> <tr> <td>BSP</td> <td>\08 5C 30 38</td> <td>(backspace)</td> </tr> <tr> <td>NULL</td> <td>\00 5C 30 30</td> <td>(GSM null)</td> </tr> </tbody> </table> <p>'0' (GSM null) may cause problems for application layer software when reading string lengths</p>	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)
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)														
<p>Reference 3GPP TS27.007</p>																

3.2.29. AT+CPIN Enter PIN

AT+CPIN Enter PIN	
<p>Test Command AT+CPIN=?</p>	<p>Response</p> <p>OK</p> <p>Parameter See Write Command.</p>

<p>Read Command AT+CPIN?</p>	<p>Response</p> <p>TA returns an alphanumeric string indicating whether or not some password is required.</p> <p>+CPIN: <code></p> <p>OK</p> <hr/> <p>Parameter</p> <table border="0"> <tr> <td>READY</td> <td>No further entry needed</td> </tr> <tr> <td>SIM PIN</td> <td>ME is waiting for SIM PIN</td> </tr> <tr> <td>SIM PUK</td> <td>ME is waiting for SIM PUK</td> </tr> <tr> <td>PH_SIM PIN</td> <td>ME is waiting for phone to SIM card (antitheft)</td> </tr> <tr> <td>PH_SIM PUK</td> <td>ME is waiting for SIM PUK (antitheft)</td> </tr> <tr> <td>SIM PIN2</td> <td>PIN2, e.g. it is possible to edit the FDN book only if preceding command was acknowledged with +CME ERROR:17</td> </tr> <tr> <td>SIM PUK2</td> <td>Possible only if preceding command was acknowledged with error +CME ERROR: 18</td> </tr> </table>	READY	No further entry needed	SIM PIN	ME is waiting for SIM PIN	SIM PUK	ME is waiting for SIM PUK	PH_SIM PIN	ME is waiting for phone to SIM card (antitheft)	PH_SIM PUK	ME is waiting for SIM PUK (antitheft)	SIM PIN2	PIN2, e.g. it is possible to edit the FDN book only if preceding command was acknowledged with +CME ERROR:17	SIM PUK2	Possible only if preceding command was acknowledged with error +CME ERROR: 18
READY	No further entry needed														
SIM PIN	ME is waiting for SIM PIN														
SIM PUK	ME is waiting for SIM PUK														
PH_SIM PIN	ME is waiting for phone to SIM card (antitheft)														
PH_SIM PUK	ME is waiting for SIM PUK (antitheft)														
SIM PIN2	PIN2, e.g. it is possible to edit the FDN book only if preceding command was acknowledged with +CME ERROR:17														
SIM PUK2	Possible only if preceding command was acknowledged with error +CME ERROR: 18														
<p>Write Command AT+CPIN=<pin> [, <new pin>]</p>	<p>Response</p> <p>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.</p> <p>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.</p> <p>OK</p> <hr/> <p>Parameters</p> <table border="0"> <tr> <td><pin></td> <td>String type; password</td> </tr> <tr> <td><new pin></td> <td>String type; If the PIN required is SIM PUK or SIMPUK2: new password</td> </tr> </table>	<pin>	String type; password	<new pin>	String type; If the PIN required is SIM PUK or SIMPUK2: new password										
<pin>	String type; password														
<new pin>	String type; If the PIN required is SIM PUK or SIMPUK2: new password														
<p>Reference 3GPP TS27.007</p>															

3.2.30. AT+CPWD Change password

AT+CPWD Change password	
<p>Test Command AT+CPWD=?</p>	<p>Response</p> <p>TA returns a list of pairs which present the available facilities and the maximum length of their password.</p> <p>+CPWD: (list of supported <fac>s, <pwdlength>s)</p>

	<p>OK</p> <p>Parameters</p> <p><fac> See Write Command, without "FD"</p> <p><pwdlength> Integer. max, length of password</p>
<p>Write Command</p> <p>AT+CPWD =</p> <p><fac>,</p> <p><oldpwd>,</p> <p><newpwd></p>	<p>Response</p> <p>TA sets a new password for the facility lock function.</p> <p>OK</p> <p>Parameters</p> <p><fac></p> <p>"SC" SIM (lock SIM card) (SIM asks password in ME power-up and when this lock Command issued)</p> <p>"AO" BAO (Barr All Outgoing Calls) (refer to TS22.088(GSM02.88) clause 1)</p> <p>"OI" BOIC (Barr Outgoing International Calls) (refer to TS22.088(GSM02.88) clause 1)</p> <p>"OX" BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer to TS22.088(GSM02.88) clause 1)</p> <p>"AI" BAIC (Barr All Incoming Calls) (refer to TS22.088(GSM02.88) clause 2)</p> <p>"IR" BIC-Roam (Barr Incoming Calls when Roaming outside the home country) (refer to TS22.088(GSM02.88) clause 2)</p> <p>"AB" All Barring services (refer to TS22.030(GSM02.30)) (applicable only for <mode>=0)</p> <p>"AG" All outgoing barring services (refer to TS22.030(GSM02.30)) (applicable only for <mode>=0)</p> <p>"AC" All incoming barring services (refer to TS22.030(GSM02.30)) (applicable only for <mode>=0)</p> <p>"FD" SIM fixed dialing memory feature</p> <p>"P2" SIM PIN2</p> <p><oldpwd> Password specified for the facility from the user interface or with command.</p> <p><newpwd> New password</p>

3.2.31. AT+CR Service reporting control

AT+CR Service reporting control	
<p>Test Command</p> <p>AT+CR=?</p>	<p>Response</p> <p>+CR: (list of supported <mode>s)</p> <p>OK</p>

	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 when a call is set up. OK Parameter <mode> 0 Disable 1 Enable
	Intermediate result code If it is 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 3GPP TS27.007	

3.2.32. 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>

	<p>OK</p> <p>Parameter See Write Command.</p>																								
<p>Write Command AT+CREG=[<mode>e]</p>	<p>Response TA controls whether or not the extended format of incoming call indication is used.</p> <p>OK</p> <p>Parameter <table border="0"> <tr> <td><mode></td> <td><u>0</u></td> <td>Disable extended format</td> </tr> <tr> <td></td> <td>1</td> <td>Enable extended format</td> </tr> </table> </p> <p>Unsolicited result code When it is enabled, an incoming call is indicated to the TE with unsolicited result code +CRING: <type> instead of the normal RING.</p> <p>Parameter <table border="0"> <tr> <td><type></td> <td>ASYNC</td> <td>Asynchronous transparent</td> </tr> <tr> <td></td> <td>SYNC</td> <td>Synchronous transparent</td> </tr> <tr> <td></td> <td>REL ASYNC</td> <td>Asynchronous non-transparent</td> </tr> <tr> <td></td> <td>REL SYNC</td> <td>Synchronous non-transparent</td> </tr> <tr> <td></td> <td>FAX</td> <td>Facsimile</td> </tr> <tr> <td></td> <td>VOICE</td> <td>Voice</td> </tr> </table> </p>	<mode>	<u>0</u>	Disable extended format		1	Enable extended format	<type>	ASYNC	Asynchronous transparent		SYNC	Synchronous transparent		REL ASYNC	Asynchronous non-transparent		REL SYNC	Synchronous non-transparent		FAX	Facsimile		VOICE	Voice
<mode>	<u>0</u>	Disable extended format																							
	1	Enable extended format																							
<type>	ASYNC	Asynchronous transparent																							
	SYNC	Synchronous transparent																							
	REL ASYNC	Asynchronous non-transparent																							
	REL SYNC	Synchronous non-transparent																							
	FAX	Facsimile																							
	VOICE	Voice																							
<p>Reference 3GPP TS27.007</p>																									

3.2.33. AT+CREG Network registration

AT+CREG Network registration	
<p>Test Command AT+CREG=?</p>	<p>Response +CREG: (list of supported <n>s)</p> <p>OK</p> <p>Parameters See Write Command.</p>
<p>Read Command AT+CREG?</p>	<p>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.</p> <p>+CREG: <n>,<stat>[,<lac>,<ci>[,Act]]</p> <p>OK</p> <p>If error is related to ME functionality:</p>

	+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> <u>0</u> Disable network registration unsolicited result code 1 Enable network registration unsolicited result code +CREG: <stat> 2 Enable network registration unsolicited result code with location information <stat> 0 Not registered, ME is not currently searching a new operator to register to 1 Registered, home network 2 Not registered, but ME is currently searching a new operator to register to 3 Registration denied 4 Unknown 5 Registered, roaming <lac> String type; two byte location area code in hexadecimal format <ci > String type; two byte cell ID in hexadecimal format <Act> 0 GSM 2 UTRAN 3 GSM w/EGPRS 4 UTRAN w/HSDPA 5 UTRAN w/HSUPA 6 UTRAN w/HSDPA and HSUPA
	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>[,<Act>]] Parameters See Write Command.
Reference 3GPP TS27.007	

3.2.34. 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 <verx> 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.
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 set up. 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 a unit of 10ms <N2> 1-255 Retransmission attempts N2 <verx> RLP 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 a unit of 10 ms
Reference 3GPP TS27.007	

3.2.35. 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>]]]	<p>Response +CRSM: <sw1>, <sw2> [,<response>]</p> <p>OK / ERROR / +CME ERROR: <err></p> <p>Parameters</p> <p><command> 176 READ BINARY 178 READ RECORD 192 GET RESPONSE 214 UPDATE BINARY 220 UPDATE RECORD 242 STATUS</p> <p>All other values are reserved; refer to TS51.011(GSM11.11).</p> <p><fileId> Integer type; this is the identifier for an elementary data file on SIM. Mandatory for every Command except STATUS</p> <p><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 TS51.011(GSM11.11)</p> <p><data> Information which shall be written to the SIM (hexadecimal character format)</p> <p><sw1>, <sw2> Integer type; information from the SIM about the execution of the actual command. These parameters are delivered to the TE in both cases, on successful or failed execution of the command.</p> <p><response> Response of a successful completion of the command previously issued (hexadecimal character format). STATUS and GET RESPONSE return data, which gives information about the current elementary data field. This information includes the type of file and its size (refer to TS51.011 (GSM11.11)). 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.</p>
Reference 3GPP TS27.007 3GPP TS51.011	

3.2.36. AT+CSQ Signal quality report

AT+CSQ Signal quality report	
Test Command AT+CSQ=?	Response +CSQ: (list of supported <rss>),(list of supported <ber>) OK
Execution Command AT+CSQ	Response +CSQ: <rss>,<ber> OK +CME ERROR: <err> Execution Command returns received signal strength indication <rss> and channel bit error rate <ber> from the ME. Test Command returns values supported by the TA.
	Parameters <rss> 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 TS45.008 (GSM05.08) subclause 8.2.4. 99 Not known or not detectable
Reference 3GPP TS27.007	

3.2.37. AT+VTD Tone duration

AT+VTD Tone duration	
Test Command AT+VTD=?	Response +VTD: (list of supported <n>) 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
	Parameter <n> 1-255 Duration of the tone in 1/10 seconds
Reference 3GPP TS27.007	

3.2.38. 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.

<p>Write Command AT+VTS=<dtmf-string></p>	<p>Response</p> <p>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.</p> <p><i>Note: D is used only for dialing.</i></p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters</p> <p><dtmf-string> It has a max length of 20 characters, must be entered between double quotes (" ") and consists of combinations of the following separated by commas. But a single character does not require quotes.</p> <p>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.</p> <p>2) {<dtmf>, <duration>} This is interpreted as a DTMF tone whose duration is determined by <duration>.</p> <p><duration> Duration of the tone in 1/10 seconds range :1-255</p>
<p>Reference 3GPP TS27.007</p>	

3.2.39. AT+CNUM Subscriber number

AT+CNUM Subscriber number	
<p>Test Command AT+CNUM=?</p>	<p>Response OK</p>
<p>Execution Command AT+CNUM</p>	<p>Response</p> <p>+CNUM: [<alpha1>,<number1>,<type1>[,<speed>,<service>[,<itc>]] [<CR><LF>+CNUM: [<alpha2>,<number2>,<type2>[,<speed>,<service> [,<itc>]] [...]]</p> <p>OK</p> <p>+CME ERROR: <err></p>
	<p>Parameters</p> <p><alphax> Optional alphanumeric string associated with <numberx>;</p>

	<p>used character set should be the one selected with command. Select TE character set +CSCS</p> <p><numberx> Phone number in string type of format specified by <typex></p> <p><typex> Type of address octet in integer format (refer to TS24.008(GSM04.08) sub clause 10.5.4.7)</p> <p><speed> As defined by the +CBST command</p> <p><service> (Service related to the phone number:)</p> <ul style="list-style-type: none"> 0 Asynchronous modem 1 Synchronous modem 2 PAD Access (asynchronous) 3 Packet Access (synchronous) 4 Voice 5 FAX <p><itc> (Information transfer capability)</p> <ul style="list-style-type: none"> 0 3.1 kHz 1 UDI
Reference 3GPP TS27.007	

3.2.40. AT+CPOL Preferred operator list

AT+CPOL Preferred operator list	
Test Command AT+CPOL=?	<p>Response</p> <p>+CPOL: (list of supported <index>s),(list of supported <format>s)</p> <p>OK</p>
	<p>Parameters</p> <p>See Write Command.</p>
Read Command AT+CPOL?	<p>Response</p> <p>+CPOL:</p> <p><index1>,<format>,<oper1>[,<GSM_Act1>,<GSM_compact_Act1>,<UTRAN_Act1>]</p> <p>[<CR><LF>+CPOL:</p> <p><index2>,<format>,<oper2>[,<GSM_Act2>,<GSM_compact_Act2>,<UTRAN_Act2>]</p> <p>[...]]</p> <p>OK</p> <p>+CME ERROR: <err></p>
	<p>Parameters</p> <p>See Write Command.</p>

<p>Write Command AT+CPOL=<index>[,<format>[,<oper>[<GSM_Act1>,<GSM_compact_Act1>,<UTRAN_Act1>]]]</p>	<p>Response +CME ERROR: <err></p> <p>Parameters</p> <p><indexn> 1 Integer type: order number of operator in SIM preferred operator list</p> <p><format> 0 Long format alphanumeric <oper> 1 Short format alphanumeric <oper> 2 Numeric <oper></p> <p><opern> String type: <format> indicates either alphanumeric or numeric format is used (see +COPS command)</p> <p><GSM_Actn> GSM access Technology 0 Access Technology not selected 1 Access Technology selected</p> <p><GSM_compact_Actn> GSM compact access Technology 0 Access Technology not selected 1 Access Technology selected</p> <p><UTRAN_Actn> UTRAN access Technology 0 Access Technology not selected 1 Access Technology selected</p>
<p>Reference 3GPP TS27.007</p>	<p><i>Note:</i> Some SIM cards do not support Write command.</p>

3.2.41. AT+COPN Read operator names

AT+COPN Read operator names	
<p>Test Command AT+COPN=?</p>	<p>Response OK</p>
<p>Execution Command AT+COPN</p>	<p>Response +COPN: <numeric1>,<alpha1 > [<CR><LF>+COPN: <numeric2>,<alpha2> [...]]</p> <p>OK +CME ERROR: <err></p> <p>Parameters</p> <p><numericn> String type: operator in numeric format (see +COPS)</p> <p><alphan> String type: operator in long alphanumeric format (see +COPS)</p>
<p>Reference 3GPP TS27.007</p>	

3.2.42. 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 in both transmitting and receiving RF circuits <rst> 0 Do not reset the ME before setting it to <fun> power level. This is default when <rst> is not given 1 Reset the ME before setting it to <fun> power level
Reference 3GPP TS27.007	

3.2.43. 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> e>	Response OK +CME ERROR: <err>
	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. May 6 th , 1994, 22:10:00 GMT+2 hours equals to "94/05/06,22:10:00+08"
Reference 3GPP TS27.007	

3.2.44. 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 reading and writing SIM <length> Integer type: length of parameter <data> String type: hex format: parameter is sent or received from the ME to the SIM
Reference 3GPP TS27.007	

3.2.45. 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> <u>0</u> Normal mode 1 Silent mode (all sounds from ME are prevented)
Reference 3GPP TS27.007	

3.2.46. AT+CRSL Ringer sound level

AT+CRSL Ringer sound level	
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> I>	Response +CME ERROR: <err>
	Parameter <level> Integer type value(0-100) with manufacturer specific range (Smallest value represents the lowest sound level)
Reference 3GPP TS27.007	

3.2.47. AT+CLVL Loud speaker volume level

AT+CLVL Loud speaker volume level	
Test Command AT+CLVL=?	Response +CLVL: (list of supported <level>s) 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> I>	Response +CME ERROR: <err>
	Parameter <level> Integer type value(0-100) with manufacturer specific range (Smallest value represents the lowest sound level)
Reference 3GPP TS27.007	

3.2.48. AT+CMUT Mute control

AT+CMUT Mute control	
Test Command AT+CMUT=?	Response +CMUT: (list of supported <n>s)

	<p>OK</p> <p>Parameter See Write Command.</p>
<p>Read Command AT+CMUT?</p>	<p>Response +CMUT: <n></p> <p>OK +CME ERROR: <err></p> <p>Parameter See Write Command.</p>
<p>Write Command AT+CMUT=<n></p>	<p>Response +CME ERROR: <err></p> <p>Parameter <n> <u>0</u> Mute off 1 Mute on</p>
<p>Reference 3GPP TS27.007</p>	

3.2.49. AT+CPUC Price per unit and currency table

AT+CPUC Price per unit and currency table	
<p>Test Command AT+CPUC=?</p>	<p>Response OK</p> <p>Parameters See Write Command.</p>
<p>Read Command AT+CPUC?</p>	<p>Response +CPUC: <currency>,<ppu></p> <p>OK +CME ERROR: <err></p> <p>Parameters See Write Command.</p>
<p>Write Command AT+CPUC=<currency>,<ppu>[,<passwd>]</p>	<p>Response +CME ERROR: <err></p> <p>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")</p>

	<passwd> String type; SIM PIN2
Reference 3GPP TS27.007	

3.2.50. 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=[<mode>]	Response OK +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 5s call time remains.
Reference 3GPP TS27.007	

3.2.51. 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 3GPP TS27.007	<i>Note:</i> <i>This command is supported when hardware is dependent and only used when battery is set to vibrator.</i>

3.2.52. AT+CUSD Unstructured supplementary service data

AT+ CUSD Unstructured supplementary service data	
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+CUUSD=[<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 3GPP TS23.038	

3.2.53. AT+CSSN Supplementary services notification

AT+CSSN Notification for Supplementary services	
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 is set up 0 Disable 1 Enable <m> A numeric parameter which indicates whether to show the +CSSU:<code2> result code presentation status during a

	<p>mobile terminated call setup or during a call, or when a forward check supplementary service notification is received.</p> <p>0 Disable</p> <p>1 Enable</p> <p><code1> 0 Unconditional call forwarding is active</p> <p>1 Some of the conditional call forwarding are active</p> <p>2 Call has been forwarded</p> <p>3 Call is waiting</p> <p>4 This is a CUG call (also <index> present)</p> <p>5 Outgoing calls are barred</p> <p>6 Incoming calls are barred</p> <p>7 CLIR suppression rejected</p> <p><index> Closed user group index</p> <p><code2> 0 This is a forwarded call</p>
Reference	

3.2.54. AT+CSNS Single numbering scheme

AT+CSNS Single numbering scheme	
Test Command AT+CSNS=?	<p>Response</p> <p>+CSNS: (list of supported <mode>s)</p> <p>OK</p> <p>Parameter</p>
Read Command AT+CSNS?	<p>Response</p> <p>+CSNS: <mode></p> <p>OK</p> <p>Parameter</p>
Write Command AT+CSNS=[<mode>]	<p>Response</p> <p>OK</p> <p>ERROR</p> <p>Parameter</p> <p><mode></p> <p>0 Voice</p> <p>1 Alternating voice/FAX, voice first</p> <p>2 FAX</p> <p>3 Alternating voice/data, voice first</p> <p>4 Data</p> <p>5 Alternating voice/FAX, FAX first</p>

	6	Alternating voice/data, data first
	7	Voice followed by data
Reference		

3.2.55. 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	

Quectel
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4. AT Commands according to TS27.005

The TS27.007 (GSM07.05) commands aim to perform SMS and CBS related operations. Quectel wireless modules support both text and PDU modes.

4.1. Overview of AT Commands according to 3GPP TS27.005

Command	Description
AT+CMGD	Delete SMS message
AT+CMGF	Select SMS message format
AT+CMGL	List SMS message 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 indication
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 3GPP TS27.005

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 3GPP TS27.005	

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 kind of I/O format of messages is used. OK
	Parameter <mode> 0 PDU mode 1 Text mode
Reference 3GPP TS27.005	

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.

<p>Write Command AT+CMGL=<stat>[,<mode>]</p>	<p>Parameters</p> <p>1) If text mode:</p> <p><stat> "REC UNREAD" Received unread messages "REC READ" Received read messages "STO UNSENT" Stored unsent messages "STO SENT" Stored sent messages "ALL" All messages</p> <p><mode> <u>0</u> Normal(default) 1 Do not change status of the specified SMS record</p> <p>2) If PDU mode:</p> <p><stat> 0 Received unread messages 1 Received read messages 2 Stored unsent messages 3 Stored sent messages 4 All messages</p> <p><mode> <u>0</u> Normal(default) 1 Do not change status of the specified SMS record</p>
	<p>Response</p> <p>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'.</p> <p>1) If text mode (+CMGF=1) and Command successful: for SMS-SUBMITs and/or SMS-DELIVERs:</p> <p>+CMGL: <index>,<stat>,<oa/da>,[<alpha>],[<scts>],[<tooa/toda>,<length>]<CR> ><LF><data>[<CR><LF></p> <p>+CMGL: <index>,<stat>,<da/oa>,[<alpha>],[<scts>],[<tooa/toda>,<length>]<CR> ><LF><data>[...]</p> <p>for SMS-STATUS-REPORTs:</p> <p>+CMGL: <index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>[<CR><LF> ></p> <p>+CMGL: <index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>[...]</p> <p>for SMS-COMMANDs:</p> <p>+CMGL: <index>,<stat>,<fo>,<ct>[<CR><LF> +CMGL: <index>,<stat>,<fo>,<ct>[...]</p> <p>for CBM storage:</p> <p>+CMGL:<index>,<stat>,<sn>,<mid>,<page>,<pages><CR><LF><data> >[<CR><LF></p> <p>+CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages><CR><LF><data>[...]</p>

	<p>OK</p> <p>2) If PDU mode (+CMGF=0) and Command successful: +CMGL:<index>,<stat>,[<alpha>],<length><CR><LF><pdu><CR><LF> F> +CMGL: <index>,<stat>,[alpha],<length><CR><LF><pdu>[...]]</p> <p>OK</p> <p>3)If error is related to ME functionality: +CMS ERROR: <err></p> <p>Parameters</p> <p><alpha> String type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; the character set to be used should be the one selected by the command +CSCS (see definition of this command in TS 07.07)</p> <p><da> TS23.040(GSM03.40)TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer to command +CSCS in TS 07.07); type of address given by <toda></p> <p><data> In the case of SMS: TS23.040(GSM03.40) TP-User-Data in text mode responses; format:</p> <ul style="list-style-type: none"> - if <dcs> indicates that TS23.038(GSM03.38) default alphabet is used and <fo> indicates that TS23.040(GSM03.40) TPUser-Data-Header-Indication is not set: - if TE character set other than "HEX" (refer to Command Select TE character set +CSCS in TS07.07):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 TS23.040(GSM03.40) 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)) <p>In the case of CBS: TS23.041(GSM03.41) CBM Content of Message in text mode responses; format:</p>
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	<p>- if <dcs> indicates that TS23.038(GSM03.38) default alphabet is used:</p> <p>- if TE character set other than "HEX" (refer to Command +CSCS in TS07.07): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A</p> <p>- if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number</p> <p>- 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</p> <p><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)</p> <p><index> Integer type; value in the range of location numbers supported by the associated memory</p> <p><oa> TS23.040(GSM03.40)TP-Originating-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer to command +CSCS in TS 07.07); type of address given by <toa></p> <p><pdu> In the case of SMS: TS24.011(GSM04.11) SC address followed by TS23.040(GSM03.40) 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: TS23.041 (GSM03.41) TPDU in hexadecimal format.</p> <p><scts> TS23.040(GSM03.40) TP-Service-Center-Time-Stamp in time-string format (refer to <dt>)</p> <p><toda> TS24.011(GSM04.11)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)</p> <p><toa> TS24.011(GSM04.11)TP-Originating-Address Type-of-Address octet in integer format (refer to <toda>)</p>
Reference 3GPP TS27.00	

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>]	<p>Parameters</p> <p><index> Integer type; value in the range of location numbers supported by the associated memory</p> <p><mode> 0 Normal 1 Do Not change status of the specified SMS record</p> <p>Response</p> <p>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'.</p> <p>1) If text mode (+CMGF=1) and command is executed successfully: for SMS-DELIVER: +CMGR: <stat>,<oa>,[<alpha>],<scts>[,<toa>,<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><data>] for CBM storage: +CMGR: <stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data></p> <p>2) If PDU mode (+CMGF=0) and Command successful: +CMGR: <stat>,[<alpha>],<length><CR><LF><pdu></p> <p>OK</p> <p>3) If error is related to ME functionality: +CMS ERROR: <err></p> <p>Parameters</p> <p><alpha> String type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific</p> <p><da> TS23.040(GSM03.40) TP-Destination-Address Address-Value field in string format; BCD numbers (or</p>

	<p>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 ></p> <p>< data > In the case of SMS: TS23.040(GSM03.40) TP-User-Data in text mode responses; format:</p> <ul style="list-style-type: none"> - if < dcs > indicates that TS23.038(GSM03.38) default alphabet is used and < fo > indicates that TS23.040(GSM03.40) TPUser-Data-Header-Indication is not set: - if TE character set other than "HEX" (refer to command select TE character set +CSCS in TS 07.07): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A - if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number (e.g. character P (GSM 23) is presented as 17 (IRA 49 and 55)) - if < dcs > indicates that 8-bit or UCS2 data coding scheme is used, or < fo > indicates that TS23.040(GSM03.40) 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)) <p>In the case of CBS: TS23.041(GSM03.41) CBM Content of Message in text mode responses; format:</p> <ul style="list-style-type: none"> - if < dcs > indicates that TS23.038(GSM03.38) default alphabet is used: - if TE character set other than "HEX" (refer command +CSCS in TS07.07): 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 <p>< dcs > Depending on the command or result code: TS23.038(GSM03.38) SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme in integer format</p> <p>< fo > Depending on the command or result code: first octet of TS23.040(GSM03.40) SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format</p>
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<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>	TS23.041(GSM03.41) CBM Message Identifier in integer format
<oa>	TS23.040(GSM03.40)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: TS24.011(GSM04.11) SC address followed by TS23.040(GSM03.40) 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: TS23.041(GSM03.41) TPDU in hexadecimal format.
<pid>	TS23.040(GSM03.40) TP-Protocol-Identifier in integer format (default is 0)
<sca>	TS24.011(GSM04.11) 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>
<scts>	TS23.040(GSM03.40) TP-Service-Centre-Time-Stamp in time-string format (refer to <dt>)
<stat>	<ul style="list-style-type: none"> 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>	TS24.011(GSM04.11)TP-Destination-Address Type-of-Address octet in integer format (when first character of <da> is + (IRA 43) default value is 145, otherwise default is 129)
<tooa>	TS24.011(GSM04.11)TP-Originating-Address Type-of-Address octet in integer format (default refer to <toda>)
<tosca>	TS24.011(GSM04.11) RP SC address Type-of-Address octet in integer format (default refer to <toda>)
<vp>	Depending on SMS-SUBMIT <fo> setting:

	TS23.040(GSM03.40) TP-Validity-Period either in integer format (default 167) or in time-string format (refer to <dt>)
Reference	3GPP TS27.005

4.2.5. AT+CMGS Send SMS message

AT+CMGS Send SMS message	
Test Command	Response
AT+CMGS=?	OK
Write Command	Parameters
1) If text mode (+CMGF=1): +CMGS=<da>[,<tda>]<CR> text is entered <ctrl-Z/ESC> ESC quits without sending	<da> TS23.040(GSM03.40) 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 <tda> <tda> TS24.011(GSM04.11) 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)
2) If PDU mode (+CMGF=0): +CMGS=<length> ><CR> PDU is given <ctrl-Z/ESC>	<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)
	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> TS23.040(GSM03.40) TP-Message-Reference in integer format
Reference 3GPP TS27.005	

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>[,<tooa/<da>[,<tooa/<da>[,<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> also allows 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> TS23.040(GSM03.40)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> TS23.040(GSM03.40)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> TS24.011(GSM04.11)TP-Originating-Address Type-of-Address octet in integer format (default refer <toda>) <toda> TS24.011(GSM04.11)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(ISDN format number) 145 International number type(ISDN format)

	<p><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)</p> <p><pdu> In the case of SMS: TS24.011(GSM04.11) SC address followed by TS23.040(GSM03.40) 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)).</p> <p>In the case of CBS: TS23.041 (GSM03.41) TPDU in hexadecimal format.</p> <p><index> Index of message in selected storage <mem2></p>
Reference 3GPP TS27.005	

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>[,<today>]]	<p>Response</p> <p>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.</p> <p>1) If text mode(+CMGF=1) and sending successful: +CMSS: <mr> [,<sets>]</p> <p>OK</p> <p>2) If PDU mode(+CMGF=0) and sending successful; +CMSS: <mr> [,<ackpdu>]</p> <p>OK</p> <p>3) If error is related to ME functionality: +CMS ERROR: <err></p> <p>Parameters</p> <p><index> Integer type; value in the range of location numbers supported by the associated memory</p>

	<p><da> TS23.040(GSM03.40)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></p> <p><toda> TS24.011(GSM04.11)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)</p> <p><mr> TS23.040(GSM03.40) TP-Message-Reference in integer format</p>
Reference 3GPP TS27.005	

4.2.8. AT+CMGC Send SMS command

AT+CMGC Send SMS command	
Test Command AT+CMGC=?	Response OK
<p>Write Command</p> <p>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</p> <p>2) If PDU mode (+CMGF=0): AT+CMGC=<length><CR> PDU is given <ctrl-Z/ESC></p>	<p>Parameters</p> <p><fo> First octet of TS23.040(GSM03.40) SMS-COMMAND (default 2) in integer format</p> <p><ct> TS23.040(GSM03.40) TP-Command-Type in integer format (default 0)</p> <p><pid> TS23.040(GSM03.40) TP-Protocol-Identifier in integer format (default 0)</p> <p><mn> TS23.040(GSM03.40) TP-Message-Number in integer format</p> <p><da> TS23.040(GSM03.40) 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></p> <p><toda> TS24.011(GSM04.11) 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(ISDN format number) 145 International number type(ISDN format)</p> <p><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)</p>

	<p>Response</p> <p>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.</p> <p>1) If text mode(+CMGF=1) and sending successful: +CMGC: <mr> [,<scts>]</p> <p>OK</p> <p>2) If PDU mode(+CMGF=0) and sending successful: +CMGC: <mr> [,<ackpdu>]</p> <p>OK</p> <p>3) If error is related to ME functionality: +CMS ERROR: <err></p> <p>Parameters <mr> TS23.040(GSM03.40) TP-Message-Reference in integer format</p>
Reference 3GPP TS27.005	

4.2.9. AT+CNMI New SMS message indications

AT+CNMI New SMS message indications	
Test Command AT+CNMI=?	<p>Response</p> <p>+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)</p> <p>OK</p> <p>Parameters See Write Command.</p>
Read Command AT+CNMI?	<p>Response</p> <p>+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr></p> <p>OK</p> <p>Parameters See Write Command.</p>
Write Command AT+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]]	<p>Response</p> <p>TA selects the procedure on how the received new messages from the network are indicated to the TE when TE is active, e.g. DTR signal is ON. If TE is inactive (e.g. DTR signal is OFF), message receiving should be done as specified in TS23.038 (GSM03.38).</p>

	<p>OK</p> <p>If error is related to ME functionality:</p> <p>ERROR</p> <p>Parameters</p> <p><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.</p> <ol style="list-style-type: none"> 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. <p><mt> (The rules for storing received SMS depend on its data coding scheme (refer to TS23.038(GSM03.38)), preferred memory storage (+CPMS) setting and this value):</p> <ol style="list-style-type: none"> 0 No SMS-DELIVER indications are routed to the TE. 1 If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE by using unsolicited result code: +CMTI: <mem>,<index> 2 SMS-DELIVERS (except class 2) are routed directly to the TE using unsolicited result code: +CMT: [<alpha>],<length><CR><LF><pdu> (PDU mode enabled) or +CMT: <oa>,<alpha>,<scts> [<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data> (text mode enabled; about parameters in italics, refer to Command Show Text Mode Parameters +CSDH). Class 2 messages result in indication as defined in <mt>=1. 3 Class 3 SMS-DELIVERS are routed directly to TE by using unsolicited result codes defined in <mt>=2. Messages of other classes result in indication as defined in <mt>=1. <p><bm> (The rules for storing received CBMs depend on its data coding scheme (refer to TS23.038(GSM03.38)), the setting of Select CBM Types (+CSCB) and this value):</p> <ol style="list-style-type: none"> 0 No CBM indications are routed to the TE. 2 New CBMs are routed directly to the TE by using unsolicited result code: +CBM: <length><CR><LF><pdu> (PDU mode enabled) or
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	<p>+CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> (Text mode enabled).</p> <p>3 Class 3 CBMs are routed directly to TE by using unsolicited result codes defined in <bm>=2. If CBM storage is supported, messages of other classes result in indication as defined in <bm>=1.</p> <p><ds> 0 No SMS-STATUS-REPORTs are routed to the TE. 1 SMS-STATUS-REPORTs are routed to the TE by using unsolicited result code: +CDS: <length><CR><LF><pdu> (PDU mode enabled) or +CDS: <fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st> (Text mode enabled)</p> <p><bfr> 0 TA buffer of unsolicited result codes defined in this command is flushed to the TE when <mode> 1..3 is entered (OK response shall be given before flushing the codes).</p> <hr/> <p>Unsolicited result code +CMTI: <mem>,<index> Indicate the 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</p>
Reference 3GPP TS27.005	

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
Test Command AT+CPMS=?	Response +CPMS: (list of supported <mem1>s),(list of supported <mem2>s) ,(list of supported <mem3>s)
	Parameters See Write Command.

	<p>OK</p> <p>Parameters See Write Command.</p>
<p>Write Command AT+CPMS= [<mem1> ,<mem2> ,<mem3>]</p>	<p>Response TA selects memory storages <mem1>, <mem2> and <mem3> to be used for reading, writing, etc. +CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3></p> <p>OK If error is related to ME functionality: ERROR</p> <p>Parameters</p> <p><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</p> <p><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</p> <p><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</p> <p><usedx> Integer type; Number of messages currently in <memx> <totalx> Integer type; Number of messages storable in <memx></p>
<p>Reference 3GPP TS27.005</p>	

4.2.11. AT+CRES Restore SMS settings

AT+CRES Restore SMS settings	
<p>Test Command AT+CRES=?</p>	<p>Response +CRES: (list of supported <profile>s)</p> <p>OK</p>
<p>Write Command AT+CRES=[<profile>]</p>	<p>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 broadcast message types +CSCB (if implemented) are restored. Certain</p>

	<p>settings may not be supported by the storage (e.g. SIM SMS parameters) and therefore cannot be restored.</p> <p>OK</p> <p>If error is related to ME functionality:</p> <p>ERROR</p>
	<p>Parameter</p> <p><profile><u>0-3</u> Manufacturer specific profile number where settings are to be stored</p>
Reference 3GPP TS27.005	

4.2.12. AT+CSAS Save SMS settings

AT+CSAS Save SMS settings	
Test Command AT+CSAS=?	<p>Response</p> <p>+CSAS: (list of supported <profile>s)</p> <p>OK</p>
Write Command AT+CSAS=[<profile>]	<p>Response</p> <p>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 cannot be saved</p> <p>OK</p> <p>If error is related to ME functionality:</p> <p>ERROR</p>
	<p>Parameter</p> <p><profile> <u>0-3</u> Manufacturer specific profile number where settings are to be stored</p>
Reference 3GPP TS27.005	

4.2.13. AT+CSCA SMS service center address

AT+CSCA SMS service center address	
Read Command AT+CSCA?	<p>Response</p> <p>+CSCA: <sca>,<tosca></p>

	<p>OK</p> <p>Parameters See Write Command.</p>
Test Command AT+CSCA=?	<p>Response OK</p>
Write Command AT+CSCA = <sca>[,<tosca>]	<p>Response TA updates the SMSC address, through which mobile originated SMS are transmitted. In text mode, setting is used by sending and writing commands. In PDU mode, setting is used by the same commands, but only when the length of the SMSC address coded into <pdu> parameter equals zero.</p> <p><i>Note:</i> <i>The Command writes the parameters in NON-VOLATILE memory.</i></p> <p>OK If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters</p> <p><sca> TS24.011(GSM04.11) 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></p> <p><tosca> Service center address format TS24.011(GSM04.11) RP SC Type-of-Address octet in integer format (Default refer to <toda>)</p>
Reference 3GPP TS27.005	

4.2.14. AT+CSCB Select cell broadcast SMS messages

AT+CSCB Select cell broadcast SMS messages	
Read Command AT+CSCB?	<p>Response +CSCB: <mode>,<mids>,<dcss></p> <p>OK</p> <p>Parameters See Write Command.</p>
Test Command AT+CSCB=?	<p>Response +CSCB: (list of supported <mode>s)</p> <p>OK</p> <p>Parameters See Write Command.</p>

Write Command AT+CSCB= <mode>[,<mids>[,<dcss>]]	Response TA selects which types of CBMs are to be received by the ME. <i>Note:</i> The Command writes the parameters in <i>NON-VOLATILE</i> 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 to <mid>) (default is empty string); e.g. "0,1,5,320-478,922". <dcss> String type; all different possible combinations of CBM data coding schemes (refer to <dcs>) (default is empty string); e.g. "0-3,5"
Reference 3GPP TS27.005	

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

	<p><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</p> <p>1 Show the values in result codes</p>
Reference 3GPP TS27.005	

4.2.16. AT+CSMP Set SMS text mode parameters

AT+CSMP Set SMS text mode parameters	
Read Command AT+CSMP?	<p>Response</p> <p>+CSMP: <fo>,<vp>,<pid>,<dcs></p> <p>OK</p> <p>Parameters See Write Command.</p>
Test Command AT+CSMP=?	<p>Response</p> <p>+CSMP: (list of supported <fo>s), (list of supported <vp>s), (list of supported <pid>s), (list of supported <dcs>s)</p> <p>OK</p> <p>Parameters See Write Command.</p>
Write Command AT+CSMP=[<fo> [<vp>,<pid>,<dcs>]]]	<p>Response</p> <p>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).</p> <p><i>Note:</i> <i>The Command writes the parameters in NON-VOLATILE memory.</i></p> <p>OK</p> <p>Parameters</p> <p><fo> Depending on the Command or result code: first octet of TS23.040(GSM03.40) SMS-DELIVER, SMS-SUBMIT (default is 17), SMS-STATUS-REPORT, or SMS-COMMAND (default is 2) in integer format. SMS status report is supported under text mode if <fo> is set to 49</p> <p><vp> Depending on SMS-SUBMIT <fo> setting: TS23.040(GSM03.40) TP-Validity-Period either in integer</p>

	<p>format (default 167) or in time-string format (refer to <dt>)</p> <p><pid> TS23.040(GSM03.40) TP-Protocol-Identifier in integer format (default is 0)</p> <p><dcs> TS23.038(GSM03.38) SMS Data Coding Scheme in Integer format</p>
Reference 3GPP TS27.005	

4.2.17. AT+CSMS Select message service

AT+CSMS Select message service	
Read Command AT+CSMS?	<p>Response</p> <p>+CSMS: <service>,<mt>,<mo>,<bm></p> <p>OK</p> <p>Parameters See Write Command.</p>
Test Command AT+CSMS=?	<p>Response</p> <p>+CSMS: (list of supported <service>s)</p> <p>OK</p> <p>Parameters See Write Command.</p>
Write Command AT+CSMS= <service>	<p>Response</p> <p>+CSMS: <mt>,<mo>,<bm></p> <p>OK</p> <p>If error is related to ME functionality: +CMS ERROR: <err></p> <p>Parameters</p> <p><service> 0 TS23.040 and TS23.041 (the syntax of SMS AT commands is compatible with TS07.05 Phase 2) 1 TS23.040 and TS23.041 (the syntax of SMS AT commands is compatible with TS07.05 Phase 2+)</p> <p><mt> Mobile Terminated Messages: 0 Type not supported 1 Type supported</p> <p><mo> Mobile Originated Messages: 0 Type not supported 1 Type supported</p> <p><bm> Broadcast Type Messages: 0 Type not supported</p>

	1 Type supported
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5. AT Commands for PS support

5.1. Overview of AT Commands for PS support

Command	Description
AT+CGATT	Attach To/detach from PS 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 status
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 message

5.2. Detailed descriptions of AT Commands for PS support

5.2.1. AT+CGATT Attach to/detach from PS service

AT+CGATT Attach to/detach from PS 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:

	<p><state> Indicates the state of PS attachment</p> <p>0 Detached</p> <p>1 Attached</p> <p>Other values are reserved and will result in an ERROR response to the Write Command</p>
Reference 3GPP TS27.007	

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

	<p>5) OSPIH Internet Hosted Octet Stream Protocol PPP Point to Point Protocol (IETF STD 51)</p> <p><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.</p> <p><PDP_addr> A string parameter identifies the MT in the address space applicable to the PDP. If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, failing that, a dynamic address will be requested. The allocated address may be read using the +CGPADDR command.</p> <p><d_comp> A numeric parameter that controls PDP data compression 0 off (default if value is omitted) Other values are reserved</p> <p><h_comp> A numeric parameter that controls PDP header compression 0 off (default if value is omitted) Other values are reserved</p>
Reference 3GPP TS27.007	

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=<	Response OK

<p>cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]</p>	<p>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)</p> <p>The following parameter are defined in TS23.060(GSM03.60) <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</p>
<p>Reference 3GPP TS27.007</p>	

5.2.4. AT+CGQREQ Quality of service profile (Requested)

<p>AT+CGQREQ Quality of service profile (Requested)</p>	
<p>Test Command AT+CGQREQ=?</p>	<p>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)</p> <p>OK Parameters See Write Command.</p>
<p>Read Command AT+CGQREQ?</p>	<p>Response +CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean> <CR><LF>+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak >,<mean> ...</p> <p>OK Parameters See Write Command.</p>
<p>Write Command AT+CGQREQ=<cid>,<precedence>,<delay>,<reliability>,<peak></p>	<p>Response OK If error is related to ME functionality: +CME ERROR: <err> Parameters</p>

<p>k>[,<mean>]]]]]</p>	<p><cid> A numeric parameter which specifies a particular PDP context definition (see +CGDCONT command)</p> <p>The following parameter are defined in TS23.060(GSM03.60)</p> <p><precedence> A numeric parameter which specifies the precedence class</p> <p><delay> A numeric parameter which specifies the delay class</p> <p><reliability> A numeric parameter which specifies the reliability class</p> <p><peak> A numeric parameter which specifies the peak throughput class</p> <p><mean> A numeric parameter which specifies the mean throughput class</p>
<p>Reference 3GPP TS27.007</p>	

5.2.5. AT+CGACT PDP context activate or deactivate

<p>AT+CGACT Activate or deactivate PDP context</p>	
<p>Test Command AT+CGACT=?</p>	<p>Response +CGACT: (list of supported <state>s)</p> <p>OK</p> <p>Parameter See Write Command.</p>
<p>Read Command AT+CGACT?</p>	<p>Response +CGACT: <cid>,<state>[<CR><LF>+CGACT:<cid><state>...]</p> <p>OK</p>
<p>Write Command AT+CGACT=<state>,<cid></p>	<p>Response OK NO CARRIER</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters</p> <p><state> Indicates the state of PDP context activation</p> <p>0 Deactivated</p> <p>1 Activated</p> <p>Other values are reserved and will result in an ERROR response to the Write Command.</p> <p><cid> A numeric parameter which specifies a particular PDP context definition (see +CGDCONT command)</p>
<p>Reference 3GPP TS27.007</p>	<p><i>Note:</i> <i>If context is deactivated successfully, NO CARRIER is returned.</i></p>

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: 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 3GPP TS27.007	

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

	<p>context definition (see +CGDCONT command)</p> <p><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 <cid>. <PDP_address> is omitted if none is available</p>
Reference 3GPP TS27.007	<p><i>Note:</i></p> <p><i>This command dictates the behavior of PPP in the ME but not that of any other GPRS-enabled foreground layer, e.g. browser.</i></p>

5.2.8. AT+CGCLASS GPRS mobile station class(GPRS only)

AT+CGCLASS GPRS mobile station class	
Test Command AT+CGCLASS=?	Response +CGCLASS: (list of supported <class> s) OK Parameter See Write Command.
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 (Functionality in descending order) "B" Class B "CG" Class C in GPRS only mode "CC" Class C in circuit switched only mode
Reference 3GPP TS27.007	

5.2.9. AT+CGEREP Control unsolicited PS event reporting

AT+CGEREP Control unsolicited PS 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 3GPP TS27.007	

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>[,<Act>]] OK +CME ERROR: <err> Parameter See Write Command.																																																
Write Command AT+CGREG=[<n>]	Response OK If error is related to ME functionality: +CME ERROR: <err> Parameter Parameters <table border="0"> <tr> <td><n></td> <td>0</td> <td>Disable network registration unsolicited result code</td> </tr> <tr> <td></td> <td>1</td> <td>Enable network registration unsolicited result code</td> </tr> <tr> <td></td> <td>2</td> <td>Enable network registration unsolicited result code with location information</td> </tr> <tr> <td><stat></td> <td>0</td> <td>Not registered, ME is not currently searching a new operator to register to</td> </tr> <tr> <td></td> <td>1</td> <td>Registered, home network</td> </tr> <tr> <td></td> <td>2</td> <td>Not registered, but ME is currently searching a new operator to register to</td> </tr> <tr> <td></td> <td>3</td> <td>Registration denied</td> </tr> <tr> <td></td> <td>4</td> <td>Unknown</td> </tr> <tr> <td></td> <td>5</td> <td>Registered, roaming</td> </tr> <tr> <td><lac></td> <td></td> <td>String type; two byte location area code in hexadecimal format</td> </tr> <tr> <td><ci></td> <td></td> <td>String type; two byte cell ID in hexadecimal format</td> </tr> <tr> <td><Act></td> <td>0</td> <td>GSM</td> </tr> <tr> <td></td> <td>2</td> <td>UTRAN</td> </tr> <tr> <td></td> <td>3</td> <td>GSM w/EGPRS</td> </tr> <tr> <td></td> <td>4</td> <td>UTRAN w/HSDPA</td> </tr> <tr> <td></td> <td>5</td> <td>UTRAN w/HSUPA</td> </tr> </table>	<n>	0	Disable network registration unsolicited result code		1	Enable network registration unsolicited result code		2	Enable network registration unsolicited result code with location information	<stat>	0	Not registered, ME is not currently searching a new operator to register to		1	Registered, home network		2	Not registered, but ME is currently searching a new operator to register to		3	Registration denied		4	Unknown		5	Registered, roaming	<lac>		String type; two byte location area code in hexadecimal format	<ci>		String type; two byte cell ID in hexadecimal format	<Act>	0	GSM		2	UTRAN		3	GSM w/EGPRS		4	UTRAN w/HSDPA		5	UTRAN w/HSUPA
<n>	0	Disable network registration unsolicited result code																																															
	1	Enable network registration unsolicited result code																																															
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<stat>	0	Not registered, ME is not currently searching a new operator to register to																																															
	1	Registered, home network																																															
	2	Not registered, but ME is currently searching a new operator to register to																																															
	3	Registration denied																																															
	4	Unknown																																															
	5	Registered, roaming																																															
<lac>		String type; two byte location area code in hexadecimal format																																															
<ci>		String type; two byte cell ID in hexadecimal format																																															
<Act>	0	GSM																																															
	2	UTRAN																																															
	3	GSM w/EGPRS																																															
	4	UTRAN w/HSDPA																																															
	5	UTRAN w/HSUPA																																															

	6 UTRAN w/HSDPA and HSUPA
Reference 3GPP TS27.007	<i>Note:</i> <i>For parameter state, option 0 and 1 are supported only.</i>

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 Packet Domain 1 Circuit switched 2 Packet Domain preferred (use circuit switched if GPRS not available) 3 Circuit switched preferred (use Packet Domain if circuit switched not available)
Reference 3GPP TS27.007	<i>Note:</i> <i>The circuit switched service route is the default method.</i>

6. AT Commands special for Quectel

6.1. Overview

Command	Description
AT+QPOWD	Power off
AT+QMIC	Change the microphone gain level
AT+QADC	Read ADC
AT+QAUDCH	Swap the audio channels
AT+QEADC	Read ADC2
AT+QSCLK	Configure chow clock
AT+QCCID	Show ICCID
AT+QMGDA	Delete all SMS
AT+QEXTUNSOL	Enable/disable propriety unsolicited indications
AT+QNSTATUS	Query GSM network status
AT+QRAT	Radio Access Technology Mode and GPRS/EDGE Status
AT+QPBSE	Frequency Band select
AT+QSRT	Select ring tone

6.2. Detailed descriptions of Commands

6.2.1. AT+QPOWD Power off

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

6.2.2. AT+QMIC Change the microphone gain level

AT+QMIC Change the microphone gain level	
Test Command	Response
AT+QMIC=?	+QMIC: (list of supported <channel>s) , (list of supported

	<p><gainlevel>s)</p> <p>OK</p> <p>Parameters See Write Command.</p>												
<p>Read Command AT+QMIC?</p>	<p>Response + QMIC: < gainlevel(Normal_Mic) >, <gainlevel(Headset_Mic)> , <gainlevel(Loudspeaker_Mic)></p> <p>OK</p> <p>Parameters See Write Command.</p>												
<p>Write Command AT+QMIC= <channel>,< gainlevel></p>	<p>Response :</p> <p>OK</p> <p>ERROR</p> <p>Parameters</p> <table border="0"> <tr> <td><channel></td> <td>0</td> <td>Normal microphone</td> </tr> <tr> <td></td> <td>1</td> <td>Headset microphone</td> </tr> <tr> <td></td> <td>2</td> <td>Loudspeaker microphone</td> </tr> <tr> <td><gainlevel></td> <td colspan="2">Range is 0 - 15</td> </tr> </table>	<channel>	0	Normal microphone		1	Headset microphone		2	Loudspeaker microphone	<gainlevel>	Range is 0 - 15	
<channel>	0	Normal microphone											
	1	Headset microphone											
	2	Loudspeaker microphone											
<gainlevel>	Range is 0 - 15												
Reference													

6.2.3. AT+QADC Read ADC1

AT+QADC Read ADC										
<p>Test Command AT+QADC=?</p>	<p>Response :</p> <p>+QADC: (list of supported <status>s), (list of supported <value>s)</p> <p>OK</p> <p>Parameters See Read Command.</p>									
<p>Read Command AT+ QADC?</p>	<p>Response +QADC: <status>,<value></p> <p>OK</p>									
	<p>Parameters</p> <table border="0"> <tr> <td><status></td> <td>0</td> <td>Fail</td> </tr> <tr> <td></td> <td>1</td> <td>Success</td> </tr> <tr> <td><value></td> <td colspan="2">Range is 0 - 2800</td> </tr> </table>	<status>	0	Fail		1	Success	<value>	Range is 0 - 2800	
<status>	0	Fail								
	1	Success								
<value>	Range is 0 - 2800									

6.2.4. 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> OK												
	Parameter See Write Command												
Write Command AT+QAUDCH=<n>	Response OK +CME ERROR: <err>												
	Parameter <table border="0"> <tr> <td><n></td> <td>0</td> <td>Normal audio channel(default)</td> </tr> <tr> <td></td> <td>1</td> <td>Headset audio channel</td> </tr> <tr> <td></td> <td>2</td> <td>Loudspeaker audio</td> </tr> <tr> <td></td> <td>3</td> <td>Auto</td> </tr> </table>	<n>	0	Normal audio channel(default)		1	Headset audio channel		2	Loudspeaker audio		3	Auto
<n>	0	Normal audio channel(default)											
	1	Headset audio channel											
	2	Loudspeaker audio											
	3	Auto											
Reference													

6.2.5. AT+QEADC Read ADC2

AT+QEADC Read ADC2	
Test Command AT+QEADC=?	Response : +QEADC: (list of supported <status>s), (list of supported <value>s) OK
	Parameters See Read Command.
Read Command AT+QEADC?	Response +QEADC: <status>,<value> OK

	Parameters
<status>	0 Fail 1 Success
<value>	Range is 0 - 2800

6.2.6. 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	

6.2.7. 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	
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6.2.8. 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 "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	

6.2.9. 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+QEXTUNS OL=<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. "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 Terminated active call, at least one held call remaining 1 Attempt to make an Mobile Originated call 2 Mobile Originated Call has failed for some reason 3 Mobile Originated call is ringing 4 Mobile Terminated call is queued (Call waiting) 5 Mobile Originated Call now 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 No answer for mobile Originated call 10 Remote number busy for Mobile Originated call <mode> 0 Disable 1 Enable 2 Query
Reference	

6.2.10. AT+QNSTATUS Query WCDMA/GSM network status

AT+QNSTATUS Query GSM network status	
Test Command	Response

AT+QNSTATUS=?	OK												
Execution Command AT+QNSTATUS	Response +QNSTATUS: <status> OK If error is related to ME functionality: +CME ERROR: <err>												
	Parameter <table border="0"> <tr> <td><status></td> <td>255</td> <td>Not ready to retrieve network status</td> </tr> <tr> <td></td> <td>0</td> <td>Work in normal state</td> </tr> <tr> <td></td> <td>1</td> <td>No available cell</td> </tr> <tr> <td></td> <td>2</td> <td>Only limited service is available</td> </tr> </table>	<status>	255	Not ready to retrieve network status		0	Work in normal state		1	No available cell		2	Only limited service is available
<status>	255	Not ready to retrieve network status											
	0	Work in normal state											
	1	No available cell											
	2	Only limited service is available											
Reference													

6.2.11. AT+QRAT Radio Access Technology Mode and GPRS/EDGE Status

AT+QRAT Set and get Radio Access Technology Mode and GPRS/EDGE Status													
Test Command AT+QRAT=?	Response +QRAT: (0,2,255),(0,1),(0-2,255) OK Parameter See Write Command												
Read Command AT+QRAT?	Response +QRAT: <current RAT>,<GPRS status>,<RAT mode> OK Parameter See Write Command.												
Write Command AT+QRAT=<RAT mode>	Response OK/ERROR If error is related to ME functionality: +CME ERROR: <err> Parameter <table border="0"> <tr> <td><current RAT></td> <td>RAT of current PLMN</td> </tr> <tr> <td></td> <td>0 GSM</td> </tr> <tr> <td></td> <td>2 UMTS</td> </tr> <tr> <td></td> <td>255 Unknown</td> </tr> <tr> <td><GPRS status></td> <td>0 GPRS</td> </tr> <tr> <td></td> <td>1 EDGE</td> </tr> </table>	<current RAT>	RAT of current PLMN		0 GSM		2 UMTS		255 Unknown	<GPRS status>	0 GPRS		1 EDGE
<current RAT>	RAT of current PLMN												
	0 GSM												
	2 UMTS												
	255 Unknown												
<GPRS status>	0 GPRS												
	1 EDGE												

	<RAT mode> RAT mode setting of MS 0 GSM only 1 WCDMA only <u>2</u> Auto 255 Unknown
Reference	

6.2.12. AT+QPBSE Frequency Band select

AT+QPBSE Frequency Band select	
Test Command AT+QPBSE =?	Response +QPBSE: <gsm_band>,<umts_band> OK
	Parameter See Write Command
Read Command AT+QPBSE?	Response +QPBSE: <gsm_band>,<umts_band> OK
	Parameter See Write Command.
Write Command AT+QPBSE = <gsm _band>,<umts_b and>	Response OK/ERROR If error is related to ME functionality: +CME ERROR: <err>
	Parameter <gsm_band> Bit 1 EGSM900 Bit 3 DCS1800 Bit 4 PCS1900 Bit 7 GSM850 0xFF Auto select, select all supported frequency band <umts_band> bit 0 UMTS BAND I: WCDMA-IMT-2000 Bit 1 UMTS BAND II: WCDMA-PCS-1900 Bit 2 UMTS BAND III: WCDMA-DCS-1800 Bit 3 UMTS BAND IV: WCDMA-AWS-1700 bit 4 UMTS BAND V: WCDMA-CLR-850 Bit 5 UMTS BAND VI: WCDMA-800 Bit 6 UMTS BAND VII: WCDMA- IMT-E-2600

	Bit 7 UMTS BAND VIII: WCDMA-GSM-900 bit 8 UMTS BAND IX: WCDMA-1800 Bit 9 UMTS BAND X: WCDMA-1700 0xFFFF Auto select, select all supported frequency band
Reference	<p><i>Notes:</i></p> <ul style="list-style-type: none"> ● This command is not allowed to set each band mode, GSM or UMTS, as 0. Said <code>AT+QPBSE=<gsm_band>,0</code> or <code>AT+QPBSE=0,<umts_band></code> ● If the band mode is not supported, this command will just ignore the setting ● User should reboot the module to let the setting become effective ● If we get 0 in the certain field using <code>AT+QPBSE=?</code>, it means that this field is not supported. <p><i>Examples:</i></p> <p>Set Auto Band <code>AT+QPBSE=255, 65535</code> OK</p> <p>Set EURO Band (GSM-900/DCS-1800/ WCDMA-IMT-2000) <code>AT+QPBSE=10, 1</code> OK</p>

6.2.13. 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	

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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 sever
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

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, respond OK Otherwise respond ERROR And then if connection is successful, respond [<index>] CONNECT OK Otherwise respond [<index>] CONNECT FAIL Parameters <index> A numeric indicates which socket opens the connection. 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	<i>Note:</i> <ul style="list-style-type: none"> This command is allowed to establish a TCP/UDP connection only when the state is IP INITIAL or IP STATUS or IP CLOSE. So it is necessary to process "AT+QIDEACT" or "AT+QICLOSE" before establishing a TCP/UDP connection with this command when the state is not IP INITIAL or IP STATUS or IP CLOSE.

	<ul style="list-style-type: none"> If AT+QIMUX was set as 0 and the current state is CONNECT OK which means the connection channel is used, it will reply "ALREADY CONNECT" after issuing the Write command.
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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 succeeds: SEND OK If sending fails: SEND FAIL <i>Note:</i> <ul style="list-style-type: none"> 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. The maximum length of the data to input at a time is 1460. 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 succeeds: SEND OK If sending fails: SEND FAIL Parameter <index> The index of the socket for sending data. This parameter is necessary only if AT+QIMUX was set as 1 (refer to AT+QIMUX). When AT+QIMUX was set as 0, the parameter MUST be omitted <length> A numeric parameter which indicates the length of sending

	data, it MUST be less than 1460.
Reference	<p><i>Note:</i></p> <ul style="list-style-type: none"> ● <i>There are at most 1460 bytes that can be sent each time.</i> ● <i>Only send data at the status of established connection, otherwise respond ERROR.</i> ● SEND OK means the data have been put into the send window to send rather than it has received the ACK message for the data from the remote node. 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	<p>Response</p> <p>If close succeeds: CLOSE OK</p> <p>If close fails: ERROR</p> <p><i>Note:</i></p> <ul style="list-style-type: none"> ● <i>If QISRVC is 1 (please refer to AT+QISRVC) and QIMUX is 0 (please refer to AT+QIMUX), this command will close the connection in which the module is used as a client.</i> ● <i>If QISRVC is 1 and QIMUX is 1, it will return ERROR.</i> ● <i>If QISRVC is 2 and QIMUX equals 0 and the module is used as a server and some clients have been connected in it, this command will close the connection between the module and the remote client.</i> ● <i>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 listening state.</i> ● <i>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.</i>
Write Command AT+QICLOSE=<index>	<p>Response</p> <p>If close succeeds: <index>, CLOSE OK</p> <p>If close fails: ERROR</p> <p><i>Note:</i></p> <ul style="list-style-type: none"> ● <i>This command is valid only if QIMUX is 1</i>

	<ul style="list-style-type: none"> ● If QISRVC is 1 and QIMUX is 1, this command will close the corresponding connection according to <index> and the module is used as a client in the connection. ● If QISRVC is 2 and QIMUX is 1, this command will close the incoming connection according to <index>.
Reference	<p><i>Note:</i></p> <p>If QISRVC is 1 and QIMUX is 0, AT+QICLOSE only close connection when the status is CONNECTING or CONNECT OK, otherwise respond ERROR. After closing the connection, the status is IP CLOSE.</p>

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 succeeds: DEACT OK If close fails: ERROR <i>Note:</i> Except at the status of IP INITIAL, you can deactivate GPRS/CSD and PDP context by AT+QIDEACT. After closing the connection, 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>

	<p><CR><LF><mode>: <port></p> <p>OK</p> <p>Parameter</p> <p>See Write Command.</p>
<p>Write Command</p> <p>AT+QILPORT= <mode>,<port></p>	<p>Response</p> <p>OK</p> <p>ERROR</p> <p>Parameters</p> <p><mode> A string parameter which indicates the connection type</p> <p>"TCP" TCP local port</p> <p>"UDP" UDP local port</p> <p><port> 0-65535 A numeric parameter which indicates the local port</p>
Reference	<p><i>Note:</i></p> <p><i>This command is used to set the port for listening.</i></p>

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

AT+QIREGAPP Start TCPIP task and set APN, user name and password	
<p>Test Command</p> <p>AT+QIREGAPP =?</p>	<p>Response</p> <p>+QIREGAPP: "APN","USER","PWD"</p> <p>OK</p>
<p>Read Command</p> <p>AT+QIREGAPP ?</p>	<p>Response</p> <p>+QIREGAPP: <apn>,<user name>,<password></p> <p>OK</p> <p>Parameters</p> <p>See Write Command.</p>
<p>Write Command</p> <p>AT+QIREGAPP =<apn>,<user name>,< password>[,<rate e>]</p>	<p>Response</p> <p>OK</p> <p>ERROR</p> <p>Parameters</p> <p><apn> A string parameter which indicates the GPRS access point name or the call number of CSD</p> <p><user name>A string parameter which indicates the GPRS/CSD user name</p> <p><password> A string parameter which indicates the GPRS/CSD password</p> <p><rate> The speed of data transmit for CSD</p>
<p>Execution Command</p> <p>AT+QIREGAPP</p>	<p>Response</p> <p>OK</p> <p>ERROR</p>
Reference	<p><i>Note:</i></p>

	<ul style="list-style-type: none"> ● 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. ● The value of QICSGP (please refer to AT+QICSGP) defines 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	<p><i>Note:</i> AT+QIACT only activates GPRS/CSD context at the status of IP START. After operating this command, the status will become to IP CONFIG. If TA accepts the activated operation, the status will become to IP IND; after GPRS/CSD context is activated successfully, the status will become to IP GPRSACT, respond OK, otherwise respond ERROR.</p>

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	<p>Response <IP address> ERROR</p> <p>Parameter <IP address> A string parameter which indicates the IP address assigned from GPRS or CSD network</p>
Reference	<p><i>Note:</i> 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 respond ERROR. And if the status before executing the command is IP GPRSACT, the status will become to IP STATUS after the command is enabled.</p>

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	<p>Response</p> <p>OK</p> <p>STATE: <state></p> <p>Or</p> <p>List of (+QISTAT: <index>, <mode>, <addr>, <port><CR><LF>)</p> <p>OK</p> <p>Parameter</p> <p><state> A string parameter to indicate the status of the connection.</p> <p>"IP INITIAL" The TCPIP stack is in idle state.</p> <p>"IP START" The TCPIP stack has been registered.</p> <p>"IP CONFIG" It has been start-up to activate GPRS/CSD context.</p> <p>"IP IND" It is activating GPRS/CSD context.</p> <p>"IP GPRSACT" GPRS/CSD context has been activated successfully.</p> <p>"IP STATUS" The local IP address has been gotten by the command AT+QILOCIP.</p> <p>"TCP CONNECTING" It is trying to establish a TCP connection.</p> <p>"UDP CONNECTING" It is trying to establish a UDP connection.</p> <p>"IP CLOSE" The TCP/UDP connection has been closed.</p> <p>"CONNECT OK" The TCP/UDP connection has been established successfully.</p> <p>"PDP DEACT" GPRS/CSD context was deactivated because of unknown reason.</p> <p>If ATV was set to 0 by the command ATV0, the TCPIP stack gives the following numeric to indicate the former status.</p> <p>0 "IP INITIAL" 1 "IP START" 2 "IP CONFIG"</p>

	<p>3 "IP IND" 4 "IP GPRSACT" 5 "IP STATUS" 6 "TCP CONNECTING" or "UDP CONNECTING" 7 "IP CLOSE" 8 "CONNECT OK" 9 "PDP DEACT"</p> <p><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</p> <p><i>Note:</i> The former style of response displays when QIMUX=0, and the later style of response displays when QIMUX=1.</p>
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	<i>Note:</i> Because TA will negotiate to get the DNS server from GPRS/CSD network automatically when activating GPRS/CSD context, it is STRONGLY suggested to configure the DNS server at the status of IP GPRSACT, IP

	<i>STATUS, CONNECT OK and IP CLOSE if it is necessary.</i>
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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 succeeds, return: <IP address> If fails, 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> Please refer to AT+QISTAT
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	Response

AT+QIDNSIP=?	+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 indicates which kind of server format is used when establishing the connection: IP address server or domain name server 0 The address of the remote server is a dotted decimal IP address 1 The address of the remote server is a domain name
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 Parameter

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

7.2.14. AT+QIAUTOS Set auto sending timer

AT+QIAUTOS Set auto sending timer	
Test Command AT+QIAUTOS=?	<p>Response</p> <p>+QIAUTOS: (list of supported <mode>s)</p> <p>OK</p> <p>Parameter</p> <p>See Write Command.</p>
Read Command AT+QIAUTOS?	<p>Response</p> <p>+QIAUTOS: <mode></p> <p>OK</p>
Write Command AT+QIAUTOS= <mode>,<time>	<p>Response</p> <p>OK</p> <p>ERROR</p> <p>Parameters</p> <p><mode> A numeric parameter which indicates whether or not to set timer when sending data</p> <p><u>0</u> DO Not set timer for data sending</p> <p>1 Set timer for data sending</p> <p><time> A numeric parameter which indicates a time in seconds. After the time expires since AT+QISEND, the input data will be sent automatically.</p>
Reference	

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

AT+QIPROMPT Set prompt of '>' when sending data	
Test Command AT+QIPROMPT=?	<p>Response</p> <p>+QIPROMPT: (<send prompt>s)</p> <p>OK</p>

	Parameter See Write Command.
Read Command AT+QIPROMPT ?	Response +QIPROMPT: <send prompt> OK Parameter See Write Command
Write Command AT+QIPROMPT =<send prompt>	Response OK ERROR Parameter <send prompt> A numeric parameter which indicates whether or not to echo prompt ">" after issuing AT+QISEND Command 0 No prompt ">" and show "SEND OK" when sending successes. <u>1</u> Echo prompt ">" and show "SEND OK" when sending successes. 2 No prompt and not show "SEND OK" when sending successes.
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 NOT configured as server 1 Configured as server <num> The number of clients that have been connected in. The range is 1~5.
Execution Command AT+QISERVER	Response OK ERROR If configured as server successfully, return: SERVER OK If configured as server unsuccessfully, return: CONNECT FAIL

	<p><i>Note:</i> This command configures the module as a TCP server and the maximum allowed client is 1.</p>
<p>Write Command AT+QISERVER =<type>[,<max>]</p>	<p>Response OK ERROR</p> <p>If configured as server successes, return: SERVER OK</p> <p>If configured as server fails, return: CONNECT FAIL</p> <p>Parameter</p> <p><type> A numeric indicates the type of the server 0 TCP server 1 UDP server</p> <p><max> The maximum number of clients allowed to connect in. The default value is 1. The range is 1-5.</p> <p><i>Note:</i> The parameter <max> is excluded when QIMUX is 0.</p>
Reference	

7.2.17. AT+QICSGP Select CSD or GPRS as the bearer

AT+QICSGP Select CSD or GPRS as the bearer	
<p>Test Command AT+QICSGP=?</p>	<p>Response +QICSGP:0-CSD,DIALNUMBER,USER NAME,PASSWORD,RATE(0,3) +QICSGP: 1-GPRS,APN,USER NAME,PASSWORD</p> <p>OK</p> <p>Parameters See Write Command.</p>
<p>Read Command AT+QICSGP?</p>	<p>Response +QICSGP: <mode></p> <p>OK</p> <p>Parameter See Write Command.</p>
<p>Write Command AT+QICSGP=< mode>,[(<apn>,< user name ></p>	<p>Response OK ERROR</p> <p>Parameters</p>

<p><password>)/ (<dial number>,<user name>,<password>,<rate>)]</p>	<p><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</p> <p>GPRS parameters:</p> <p><apn> A string parameter which indicates the access point name</p> <p><user name> A string parameter which indicates the user name</p> <p><password> A string parameter which indicates the password</p> <p>CSDparameters:</p> <p> <dial number> A string parameter which indicates the CSD dial numbers</p> <p><user name> A string parameter which indicates the CSD user name</p> <p><password> A string parameter which indicates the CSD password</p> <p><rate> A numeric parameter which indicates the CSD connection rate</p> <p> 0 2400 1 4800 2 9600 3 14400</p>
<p>Reference</p>	

7.2.18. AT+QISRVC Choose connection

<p>AT+QISRVC Choose connection</p>	
<p>Test Command AT+QISRVC=?</p>	<p>Response +QISRVC: (list of supported <connection>s)</p> <p>OK Parameter See Write Command.</p>
<p>Read Command AT+QISRVC?</p>	<p>Response +QISRVC: <connection></p> <p>OK Parameter See Write Command.</p>
<p>Write Command AT+QISRVC=<connection></p>	<p>Response OK ERROR Parameter</p>

	<p><connection> A numeric parameter which indicates the chosen connection</p> <p><u>1</u> Choose the connection in which MS is used as a client. 2 Choose the connection in which MS is used as a server.</p> <p><i>Note:</i> That there could be two connections at one time: one connection is that MS connects with a remote server as a client; the other connection is that MS accepts a remote client as a server. Using this Command to specify which connection data will be sent through.</p>
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+QISHOWR A=?	Response +QISHOWRA: (list of supported <mode> s) OK Parameter See Write Command.
Read Command AT+QISHOWR A?	Response +QISHOWRA: <mode> OK Parameter See Write Command.
Write Command AT+QISHOWR A=<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 remote end) before the received data or not. <u>0</u> DO NOT show the address. Default. 1 Show the address, the format to show the address is like: RCV FROM:<IP ADDRESS>:<PORT>
Reference	

7.2.20. AT+QISCON Save TCPIP application context

AT+QISCON Save TCPIP application context

<p>Read Command AT+QISCON?</p>	<p>Response</p> <p>TA returns TCPIP application context, which consists of the following AT command parameters.</p> <p>SHOW APPTCPIP CONTEXT</p> <p>+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 Tcpi Mode:<mode> In Transparent Transfer Mode Number of Retry:<nmRetry> Wait Time:<waitTm> Send Size:<sendSz> esc:<esc></p> <p>OK</p>
	<p>Parameters</p> <p><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</p> <p>The following four parameters are only for transparent transfer mode.</p> <p><nmRetry> See AT+QITCFG <waitTm> See AT+QITCFG <sendSz> See AT+QITCFG</p>

	<esc> See AT+QITCFG
Execution Command AT+QISCON	<p>Response</p> <p>TA saves TCPIP Application Context which consist of the following AT Command parameters, and when system is rebooted, the parameters will be loaded automatically:</p> <p style="text-align: center;">AT+QIDNSIP, AT+QIPROMPT, AT+QIHEAD, AT+QISHOWRA, AT+QICSGP, AT+QITCFG</p> <p>OK</p> <p>Parameter</p>
Reference	<p><i>Note:</i></p> <p><i>The execution command only save the corresponding parameters of the foreground context (refer to AT+QIFGCNT).</i></p>

7.2.21. AT+QIMODE Select TCPIP transfer mode

AT+QIMODE Select TCPIP transfer mode	
Test Command AT+QIMODE=?	<p>Response</p> <p>+QIMODE:(0-NORMAL MODE,1-TRANSPARENT MODE)</p> <p>OK</p>
Read Command AT+QIMODE?	<p>Response</p> <p>+QIMODE: <mode></p> <p>OK</p> <p>Parameter</p> <p>See Write Command.</p>
Write Command AT+QIMODE=<mode>	<p>Response</p> <p>OK</p> <p>ERROR</p> <p>Parameter</p> <p><mode></p> <p><u>0</u> Normal mode. In this mode, the data should be sent by the command AT+QISEND</p> <p>1 Transparent mode. In this mode, UART will enter data mode after TCP/UDP connection has been established. In data mode, all input data from UART will be sent to the remote end. +++ can help to switch data mode to command mode. And then ATO can help to switch command mode to data mode.</p>
Reference	

7.2.22. AT+QITCFG Configure transparent transfer mode

AT+QITCFG Configure transparent transfer 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 or not, default is TRUE.
Reference	<i>Note:</i> <WaitTm> and <SendSz> are two conditions to send data packet. Firstly, if the length of the input data from UART is greater than or equal to <SendSz>, the TCP/IP stack will send the data by length <SendSz> to the remote. Secondly, if the length of the input data from UART is less than <SendSz>, and the idle time keeps beyond the time defined by <WaitTm>. The TCP/IP stack will send all the data in the buffer to the remote.

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> <u>0</u> 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	<i>Note:</i> <i>This command is invalid if QIHEAD was set as 0 by the command AT+QIHEAD=0</i>

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> <u>0</u> 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+QISHOWL A=?	Response +QISHOWLA: (list of supported <mode>s) OK Parameter See Write Command.
Read Command AT+QISHOWL A?	Response +QISHOWLA: <mode> OK Parameter See Write Command.
Write Command AT+QISHOWL A=<mode>	Response OK ERROR Parameter <mode> A numeric parameter indicates whether to show the destination address before the received data or not. 0 DO NOT show the destination address 1 Show the destination address: TO:<IP ADDRESS> <i>Note:</i> <i>Because U10 supports to activate two GPRS contexts at the same time, i.e. U10 could get two local IP addresses, it is necessary to point out the destination of the received data when two GPRS contexts have been activated at the same time.</i>
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	Response

<p>AT+QIFGCNT?</p>	<p>+QIFGCNT: <id>,<channel></p> <p>OK</p> <p>Parameter See Write Command.</p>										
<p>Write Command AT+QIFGCNT=<id></p>	<p>Response OK ERROR</p> <p>Parameter <id> A numeric indicates which context will be set as foreground context. The range is 0-1 <channel> A numeric indicates which channel is controlling the context <id></p> <table border="0" style="margin-left: 20px;"> <tr> <td>0</td> <td>USB Modem</td> </tr> <tr> <td>1-3</td> <td>Reserved</td> </tr> <tr> <td>4</td> <td>USB Application</td> </tr> <tr> <td>5</td> <td>UART1</td> </tr> <tr> <td>255</td> <td>The context is not controlled by any channel</td> </tr> </table>	0	USB Modem	1-3	Reserved	4	USB Application	5	UART1	255	The context is not controlled by any channel
0	USB Modem										
1-3	Reserved										
4	USB Application										
5	UART1										
255	The context is not controlled by any channel										
<p>Reference</p>											

7.2.27. AT+QISACK Query the data information for sending

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

	<p><nAcked> A numeric indicates the total length of the data that has been sent but not acknowledged by the remote.</p> <p><i>Note:</i> This command is invalid when <i>QIMUX</i> was set as 0 by the command <i>AT+QIMUX=0</i>.</p>
Reference	<p><i>Note:</i> This command could be affected by the command <i>AT+QISRVC</i>. If the <i>QISRVC</i> was set as 1, this command is used to query the information of sending data during the session in which U10 serves as a client. If the <i>QISRVC</i> was set as 2, this command is used to query the data information of sending during the session in which U10 serves as a server.</p>

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=?	<p>Response +QINDI: (0,1)</p> <p>OK</p>
Read Command AT+QINDI?	<p>Response +QINDI: <m></p> <p>OK</p> <p>Parameter See Write Command.</p>
Write Command AT+QINDI=<m>	<p>Response OK</p> <p>Parameter <m></p> <p>A numeric indicates how the mode handles the received data.</p> <p>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.</p> <p>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.</p> <p><id> A numeric points out which context the connection for the received data is based on. Please refer to the parameter <id> in the command AT+QIFGCNT. The range is 0-1.</p>

	<p><sc> A numeric points out the role of U10 in the connection for the received data.</p> <p>1 The module serves as the client of the connection.</p> <p>2 The module serves as the server of the connection.</p> <p><sid> A numeric indicates 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.</p>
Reference	

7.2.29. AT+QIRD Retrieve the received TCP/IP data

AT+QINDI Retrieve the received TCP/IP data	
<p>Test Command</p> <p>AT+QIRD=?</p>	<p>Response</p> <p>+QIRD: (0,1),(1,2),(0-5),(1-1500)</p> <p>OK</p> <p>Parameter</p> <p>See Write Command.</p>
<p>Write Command</p> <p>AT+QIRD=<id>,<sc>,<sid>,<len></p>	<p>Response</p> <p>[+QIRD: <ipAddr>:<port>,<type>,<length><CR><LF><data>]</p> <p>OK</p> <p>Or</p> <p>ERROR</p> <p>Parameter</p> <p><id> A numeric points out which context the connection for the received data is based on. Please refer to the parameter <id> in the command AT+QIFGCNT. The range is 0-1.</p> <p><sc> A numeric points out the role of U10 in the connection for the received data.</p> <p>1 The module serves as the client of the connection.</p> <p>2 The module serves as the server of the connection.</p> <p><sid> A numeric indicates 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.</p> <p><len> The maximum length of data to be retrieved. The range is 1-1500.</p> <p><ipAddr> The address of the remote end. It is a dotted-decimal IP.</p> <p><port> The port of the remote end</p> <p><type> An alpha string without quotation marks indicates the transport protocol type.</p>

	<p>TCP the transport protocol is TCP.</p> <p>UDP the transport protocol is UDP.</p> <p><length> The real length of the retrieved data.</p> <p><data> The retrieved data.</p>
Reference	<p><i>Note:</i></p> <ul style="list-style-type: none"> • <i><id>, <sc> and <sid> are the same as the parameters in the statement "+QIRDI: <id>, <sc>, <sid>".</i> • <i>If it replies only OK for the Write command, it means no received data in the buffer of the connection.</i>

7.2.30. AT+QISDE Control whether to allow echo data for QISEND

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

7.2.31. AT+QPING Ping a remote server

AT+QPING Ping a remote server	
<p>Test Command AT+QPING=?</p>	<p>Response +QPING: "HOST",(1-255),(1-10)</p> <p>OK</p> <p>Parameter</p>

	See Write Command.
Write Command AT+QPING="<host>"[,<timeout>][,<pingnum>]]	<p>Response</p> <p>OK</p> <p>[+QPING: <result>[,<ipAddr>,<bytes>,<time>,<ttd>]<CR><LF>...]<CR><LF></p> <p>+QPING:<finresult>[,<sent>,<rcvd>,<lost>,<min>,<max>,<avg>]</p> <p>Or</p> <p>ERROR</p> <p>Parameter</p> <p><host> The host address in string style. It could be a domain name or a dotted decimal IP address.</p> <p><timeout> A numeric gives the maximum time to wait for the response of each ping request. Unit: second. Range: 1-255. Default: 1.</p> <p><pingnum> A numeric indicates the maximum time of ping request. Range: 1-10. Default: 4.</p> <p><result> The result of each ping request.</p> <p>0 Received the ping response from the server. In the case, it is followed by “,<ipAddr>,<bytes>,<time>,<ttd>”.</p> <p>1 Timeout for the ping request. In the case, no other information follows it.</p> <p><ipAddr> The IP address of the remote server. It is a dotted decimal IP.</p> <p><bytes> The length of sending each ping request.</p> <p><time> The time expended to wait for the response for the ping request. Unit: ms</p> <p><ttd> The value of time to live of the response packet for the ping request..</p> <p><finresult> The final result of the command.</p> <p>2 It is finished normally. It is successful to activate GPRS and find the host. In the case, it is followed by “,<sent>,<rcvd>,<lost>,<min>,<max>,<avg>”</p> <p>3 The TCP/IP stack is busy now. In the case, no other information follows it.</p> <p>4 DO Not find the host. In the case, no other information follows it.</p> <p>5 Failed to activate PDP context. In the case, no other information follows it.</p> <p><sent> Total number of sending the ping requests.</p> <p><rcvd> Total number of the ping requests that received the response.</p> <p><lost> Total number of the ping requests that were timeout.</p> <p><min> The minimum response time. Unit: ms</p> <p><max> The maximum response time. Unit: ms</p> <p><avg> The average response time. Unit: ms</p>

Reference	
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7.2.32. AT+QNTTP Synchronize the local time via NTP

AT+QNTTP Synchronize the local time via NTP	
Test Command AT+QNTTP=?	Response +QNTTP: "SERVER",(1-65535) OK Parameter See Write Command.
Read Command AT+QNTTP?	Response +QNTTP: "<server>",<port> OK Parameter See Write Command.
Execute Command AT+QNTTP	Response OK +QNTTP: <result> Parameter See Write Command.
Write Command AT+QNTTP="<server>",<port>]	Response OK +QNTTP: <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 synchronize the local time. 1 Failed to synchronize the local time because of unknown reason. 2 Failed to receive the response from the Time Server. 3 The TCP/IP stack is busy now. 4 DO NOT find the Time Server. 5 Failed to activate PDP context.
Reference	<i>Note:</i>

	<p><i>The factory Time Server is the National Time Service Centre of China whose address is "210.72.145.44" and port is 123.</i></p>
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8. Appendix

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

31	Network timeout
32	Network not allowed - emergency calls only
40	Network personalization PIN required
41	Network personalization PUK required
42	Network subset personalization PIN required
43	Network subset personalization PUK required
44	Service provider personalization PIN required
45	Service provider personalization PUK required
46	Corporate personalization PIN required
47	Corporate personalization PUK required
103	Illegal MS
106	Illegal ME
107	GPRS services not allowed
111	PLMN not allowed
112	Location area not allowed
113	Roaming not allowed in this location area
132	Service option not supported
133	Requested service option not subscribed
134	Service option temporarily out of order
148	Unspecified GPRS error
149	PDP authentication failure
150	Invalid mobile class
151	Link NS SP person PIN required
152	Link NS SP person PUK required
153	Link SIM C person PIN required
154	Link SIM C person PUK required
302	Command conflict
601	Unrecognized command
602	Return error
603	Syntax error
604	Unspecified
605	Data transfer already
606	Action already
607	Not AT command
608	Multi command too long
609	Abort COPS
610	No call disconnect
3513	Unread records on SIM
3515	PS busy
3516	Couldn't read SMS parameters from SIM
3517	SM not ready
3518	Invalid parameter

3738	CSCS mode not found
3742	CPOL operation format wrong
3765	Invalid input value
3769	Unable to get control
3771	Call setup in progress
3772	SIM powered down
3773	Invalid CFUN state
3774	Invalid ARFCN
3775	The pin is not in GPIO mode

8.2. 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
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
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
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

8.3. Summary of cause for extended error report

8.3.1. 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

8.3.2. 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
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
210	Error in MS
211	Memory Capacity Exceeded
212	SIM Application Toolkit Busy
213	SIM data download error
224	CP retry exceed
225	RP trim timeout
226	SMS connection broken
255	Unspecified error cause
304	Invalid PDU mode parameter
305	Invalid TEXT mode parameter
313	SIM failure
320	Memory failure
321	Invalid memory index
322	Memory full
330	SMSC address unknown
340	No +CNMA acknowledgement expected
500	Unknown error
512	SMS no error
513	Message length exceeds maximum length
514	Invalid request parameters
515	ME storage failure
516	Invalid bearer service
517	Invalid service mode
518	Invalid storage type
519	Invalid message format
520	Too many MO concatenated messages
521	SMSAL not ready
522	SMSAL no more service
523	Not support TP-Status-Report & TP-Command in storage
524	Reserved MTI
525	No free entity in RL layer
526	The port number is already registered
527	There is no free entity for port number
528	More Message to Send state error
529	MO SMS is not allow
530	GPRS is suspended

531	ME storage full
532	Doing SIM refresh
CC Cause	
768	Command not allowed
769	Illegal card ID
770	Call allocation fail
771	BC fill fail
772	Call RE EST
773	Illegal DTMF tone
774	Illegal BC
775	Modify actual mode
776	Data action fail
777	No response from network
778	Call accept not allowed
896	General cause
897	CSD call is aborted by user during call establishment or MT call abort MO call/USSD
898	CSD call is disconnected due to lower layer failure
SS Cause	
1024	Cause none
1025	Unknown subscriber
1033	Illegal subscriber
1034	Bearer service not provisioned
1035	Tele service not provisioned
1036	Illegal equipment
1037	Call barred
1040	Illegal SS operation
1041	SS error status
1042	SS not available
1043	SS subscription violation
1044	SS incompatibility
1045	Facility not supported
1051	Absent subscriber
1053	Short term denial
1054	Long term denial
1058	System failure
1059	Data missing
1060	Unexpected data value
1061	PW registration failure
1062	Negative PW check
1067	Number of PW attempts violation
1078	Position method failure
1095	Unknown alphabet

1096	USSD busy
1145	Rejected by user
1146	Rejected by network
1147	Deflection to served subscriber
1148	Special service code
1149	Invalid deflection to number
1150	Max number of MPTY participants exceeded
1151	Resources not available
1152	General problem, unrecognized component
1153	General problem, mistyped component
1154	General problem, badly structured component
1155	Invoke problem, duplicate invoked
1156	Invoke problem, unrecognized operation
1157	Invoke problem, mistyped parameter
1158	Invoke problem, resource limitation
1159	Invoke problem, initiating release
1160	Invoke problem, unrecognized linked ID
1161	Invoke problem, linked resource unexpected
1162	Invoke problem, unexpected linked operation
1163	Return result problem, RR unrecognized invoked
1164	Return result problem, RR, return result unexpected
1165	Return result problem, RR mistyped parameter
1166	Return error problem, RE, unrecognized invoked
1167	Return error problem, RE return error unexpected
1168	Return error problem, RE unrecognized error
1169	Return error problem, RE unexpected error
1170	Return error problem, RE mistyped parameter
MM Cause	
2048	Cause none
2050	IMSI unknown in HLR
2051	Illegal MS
2052	IMSI unknown in VLR
2053	IMEI not accepted
2054	Illegal ME
2055	GPRS not allowed
2056	None GPRS not allowed
2057	MS ID not derived by network
2058	Implicit detach
2059	PLMN not allowed
2060	Location area not allowed
2061	Roaming area not allowed
2062	GPRS not allowed in PLMN

2063	No suitable cells in LA
2064	MSC temp not reachable
2065	Network failure
2068	MAC failure
2069	Sync failure
2070	Congestion
2080	Serve option not supported
2081	Request serve option not subscribed
2082	Serve option temp out of order
2086	Call cannot be identified
2088	No PDP context activated
2096	Retry upon entry into a new cell
2111	Retry upon entry into a new cell
2143	Semantically incorrect message
2144	Invalid MM info
2145	Message type non existent
2146	Message type incompatible with protocol state
2147	IE not implemented
2148	Conditional MM IE error
2149	Message not compatible with protocol state
2159	Protocol error unspecified
2160	Access barred
2161	Assignment reject
2162	Random access failure
2163	RR no service
2164	PLMN search reject emergency
2165	RR connection release
2166	Authentication failure
2167	IMSI detach
2168	Abort by network
2169	Connection timeout
2170	Enqueue fail
2171	Not updated
2172	State not allowed
2173	Emergency not allowed
2174	No service
2175	Access class barred
SIM Cause	
2560	Command success
2561	Command fail
2562	Fatal error
2563	No inserted

2564	CHV not init
2565	CHV verify error
2566	CHV block
2567	Access not allow
2568	SAT command busy
2569	DL error
2570	Memory problem
2571	Technical problem
2572	PUK unlock
SM Cause	
3080	Operator determined barring
3097	LLC SND failure
3098	Insufficient resource
3099	Unknown APN
3100	Unknown PDP address or type
3101	Authentication failure
3102	Activation reject GGSN
3103	Activation reject
3104	Unsupported service option
3105	Unsubscribed service option
3106	Out of order service option
3108	Regular deactivation
3109	QOS not accepted
3110	Network fail
3111	Reactivation required
3112	Unsupported network context activation
3113	Semantic error in TFT operation
3114	Syntactical error in TFT operation
3115	Unknown PDP context
3116	Semantic error in packet filter
3117	Syntax error in packet filter
3118	PDP context WO TFT already act
3153	Invalid TI
3167	Incorrect message
3168	Invalid MAND info
3169	Unimplemented message type
3170	Incompatible message type protocol state
3171	Unimplemented IE
3172	Conditional IE error
3173	Incompatible message protocol state
3183	Unspecified
3184	Startup failure

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

8.3.3. 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

8.3.4. Cause for PPP/IP-Stack

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

8.4. Summary of URC

Index	URC display	Meaning	Condition
1	+CMTI:<mem>,<index>	New message is received, and saved to memory	AT+CNMI=2,1
2	+CMT:[<alpha>],<length><CR><LF><pdu>	New short message is received and output directly to TE(PDU mode)	AT+CNMI=2,2
3	+CMT:<oa>,<alpha>,<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><da	New short message is received and output directly to TE(Text mode)	AT+CNMI=2,2

	ta>		
4	+CBM:<length><CR>	New CBM is received and output directly(PDU mode)	AT+CNMI=2,2
5	+CBM:<sn>,<mid>,<dc>,<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>]	WCDMA/GPRS network detach	AT+CGEREP=1
9	+CGEV:ME DEACT<PDP_type>,<PDP_addr>[,<cid>]	WCDMA/GPRS ME detach	AT+CGEREP=1
10	+CGEV:NW DETACH	WCDMA/GPRS network detach	AT+CGEREP=1
11	+CGEV:ME DETACH	WCDMA/GPRS ME detach	AT+CGEREP=1
12	+CGREG:1	Network registered	AT+CGREG=1
13	+CGREG:0	Network unregistered	AT+CGREG=2
14	+CGREG:1,<lac>,<ci>,<Act>	Network registered, with location code	AT+CGREG=2
15	+CGREG:0,<lac>,<ci>,<Act>	Network unregistered, with location code	AT+CGREG=2
16	+CSQN:<rssi>,<ber>	Signal quality change	AT+QEXTUNSO L="SQ",1
17	+TSMSINFO:<CMS error info>	Additional SMS information	AT+QEXTUNSO L="SM",1
18	RING	Indicates incoming call	n/a
19	UNDER_VOLTAGE POWER DOWN	Under voltage shutdown indication	n/a
20	UNDER_VOLTAGE WARNING	Under voltage warning	n/a
21	OVER_VOLTAGE POWER DOWN	Over voltage shutdown indication	n/a
22	OVER_VOLTAGE WARNING	Over voltage warning	n/a
23	UNDER_VOLTAGE POWER DOWN	Normal power down	n/a
24	+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
25	+CLIP:<number>,<type>""[,<alphaID>,<CLI validity>	Mobile terminating call indication	AT+CLIP=1

26	+CRING:<type>	An incoming call is indicated to the TE with unsolicited result code instead of the normal RING	AT+CRC=1
27	+CREG:<stat>	Indicate registration status of the ME	AT+CREG=1
28	+CREG:<stat>[,<lac> ,<ci>[,<Act>]]	After cell neighborhood changing shows whether the network has currently indicated the registration of the ME, with location area code	AT+CREG=2
29	CCWV	Call meter warning, 5 seconds left before ACM	AT+CCWE=1
30	+CCWA:<number>,<type>,<class>[,<alpha>]	Call waiting indication	AT+CCWA=1,1
31	RDY	ME initialization is successful	n/a
32	+CFUN:1	All function of the ME is available	n/a
33	+CPIN:<state>	SIM card pin state	n/a
34	INIT: 1	SMS initialization success	n/a
35	INIT: 2	PHB initialization success	n/a

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