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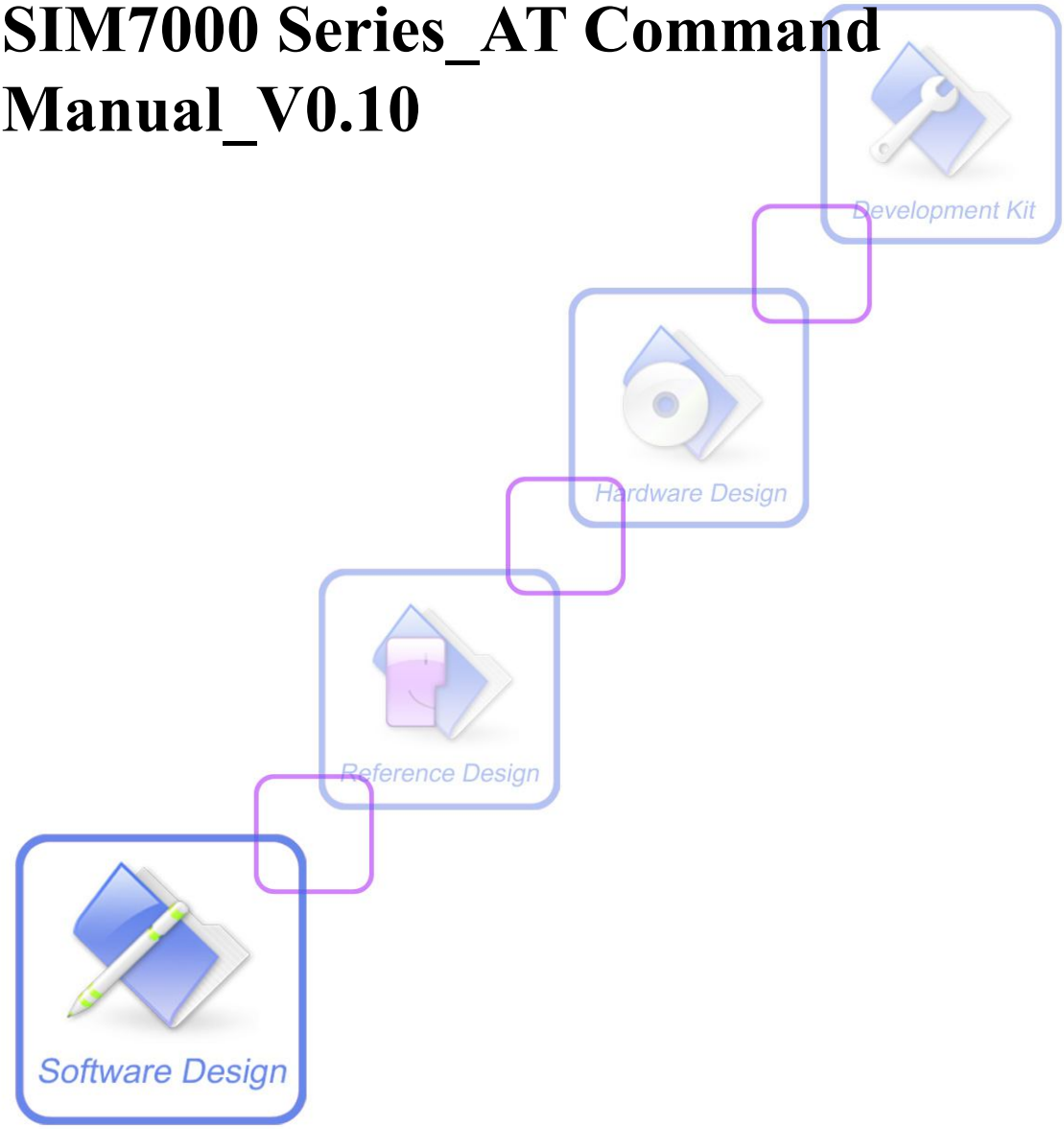
SIM7000 Series_AT Command Manual_V0.10



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Version History

Version	Date	Chapter	What is new
V1.00			New version

1 Introduction

1.1 Scope of the document

This document presents the AT Command Set for SIMCom SIM7000 Series, including SIM7000C, SIM7000A.

1.2 Related documents

You can visit the SIMCom Website using the following link:
http://www.simcomm2m.com

1.3 Conventions and abbreviations

In this document, the GSM engines are referred to as following term:
ME (Mobile Equipment);
MS (Mobile Station);
TA (Terminal Adapter);
DCE (Data Communication Equipment) or facsimile DCE (FAX modem, FAX board);

In application, controlling device controls the GSM engine by sending AT Command via its serial interface. The controlling device at the other end of the serial line is referred to as following term:
TE (Terminal Equipment);
DTE (Data Terminal Equipment) or plainly "the application" which is running on an embedded system;

1.4 AT Command syntax

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

The AT Command set implemented by SIM7000 Series is a combination of 3GPP TS 27.005,

3GPP TS 27.007 and ITU-T recommendation V.25ter and the AT commands developed by SIMCom.

Note: A HEX string such as "00 49 49 49 49 FF FF FF FF" will be sent out through serial port at the baud rate of 115200 immediately after SIM7000 Series is powered on. The string shall be ignored since it is used for synchronization with PC tool. Only enter AT Command through serial port after SIM7000 Series is powered on and Unsolicited Result Code "RDY" is received from serial port. If auto-bauding is enabled, the Unsolicited Result Codes "RDY" and so on are not indicated when you start up the ME, and the "AT" prefix, or "at" prefix must be set at the beginning of each command line.

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

1.4.1 Basic syntax

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

1.4.2 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.

1.4.3 Extended Syntax

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

Table 1: Types of AT commands and responses

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

1.4.4 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**" the beginning of the command line. Please note to use a semicolon as the command delimiter after an extended command; in basic syntax or S parameter syntax, the semicolon need not enter, for

example: ATE1Q0S0=1S3=13V1X4;+IFC=0,0;+IPR=115200;&W.

The Command line buffer can accept a maximum of 556 characters (counted from the first command without "AT" or "at" prefix). If the characters entered exceeded this number then none of the Command will executed and TA will return "**ERROR**".

1.4.5 Entering successive AT commands on separate lines

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

1.5 Supported character sets

The SIM7000 Series AT Command interface defaults to the **IRA** character set. The SIM7000 Series supports the following character sets:
GSM format
UCS2
HEX
IRA
PCCP
PCDN
8859-1
The character set can be set and interrogated using the "**AT+CSCS**" Command (3GPP TS 27.007). The character set is defined in GSM specification 3GPP TS 27.005.

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.

1.6 Flow control

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

There are basically two approaches to achieve data flow control: software flow control and hardware flow control. SIM7000 Series support both two kinds of flow control.
In Multiplex mode, it is recommended to use the hardware flow control.

1.6.1 Software flow control (XON/XOFF flow control)

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

The default flow control approach of SIM7000 Series is hardware flow control (RTS/CTS flow

control), to enable software flow control in the DTE interface and within GSM engine, type the following AT Command:

AT+IFC=1, 1

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

NOTE:

The AT commands listed in the table of **AT&W** chapter should be stored to user profile with **AT&W** for use after restart. Most other AT commands in V.25, 3GPP TS 27.005, 3GPP TS 27.007, GPRS will store parameters automatically and can be used after module restart.

Ensure that any communications software package (e.g. Hyper terminal) uses software flow control.

NOTE:

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

1.6.2 Hardware flow control (RTS/CTS flow control)

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

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

1.7 Definitions

1.7.1 Parameter Saving Mode

For the purposes of the present document, the following syntactical definitions apply:

- **NO_SAVE**: The parameter of the current AT command will be lost if module is rebooted or current AT command doesn't have parameter.
- **AUTO_SAVE**: The parameter of the current AT command will be kept in NVRAM automatically, and it won't be lost if module is rebooted.
- **AT&W_SAVE**: The parameter of the current AT command will be kept in NVRAM by sending the command of "AT&W".

1.7.2 Max Response Time

Max response time is estimated maximum time to get response, the unit is seconds.

"-" means this AT command doesn’t care the response time.

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 the last command given
ATD	Mobile originated call to dial a number
ATD><N>	Originate call to phone number in current memory
ATD><STR>	Originate call to phone number in memory which corresponds to field <str>
ATDL	Redial last telephone number used
ATE	Set command echo mode
ATH	Disconnect existing connection
ATI	Display product identification information
ATL	Set monitor speaker loudness
ATM	Set monitor speaker mode
+++	Switch from data mode or ppp online mode to command mode
ATO	Switch from command mode to data mode
ATP	Select pulse dialling
ATQ	Set result code presentation mode
ATS0	Set number of rings before automatically answering the call
ATS3	Set command line termination character
ATS4	Set response formatting character
ATS5	Set command line editing character
ATS6	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 encountered in dial string of D command
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	Reset default configuration
AT&C	Set DCD function mode
AT&D	Set DTR function mode
AT&F	Factory defined configuration

AT&V	Display current configuration
AT&W	Store active profile
AT+GCAP	Request complete TA capabilities list
AT+GMI	Request manufacturer 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 TA serial number identification (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
AT+HVOIC	Disconnect voice call only

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
Reference V.25ter	Note

2.2.2 ATD Mobile Originated Call to Dial A Number

ATD Mobile Originated Call to Dial A Number	
Execution Command **ATD<n>[<mgsm][;]**	Response This command can be used to set up outgoing voice, data or fax calls. It also serves to control supplementary services. 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 the remote station does not answer **NO ANSWER** If connection successful and non-voice call. **CONNECT<text>** TA switches to data mode. Note: **<text>** output only if **ATX<value>** parameter setting with the **<value>** >0 When TA returns to command mode after call release **OK** If connection successful and voice call **OK**
	Parameters **<n>** String of dialing digits and optionally V.25ter modifiers dialing digits: **0-9, * , #, +, A, B, C** Following V.25ter modifiers are ignored: **,(comma), T, P, !, W, @** **Emergency call:** **<n>** Standardized emergency number 112 (no SIM needed) **<mgsm>** String of **GSM** modifiers: **I** Actives **CLIR** (Disables presentation of own number to called party) **i** Deactivates **CLIR** (Enable presentation of own number to called party) **G** Activates Closed User Group invocation for this call only **g** Deactivates Closed User Group invocation for this call only **<;>** Only required to set up voice call , return to Command state
Parameter Saving Mode	NO_SAVE
Max Response Time	20s(voice call) Timeout set with ATS7 (data call)
Reference V.25ter	Note Parameter "I" and "i" only if no *# code is within the dial string **<n>** is default for last number that can be dialed by **ATDL** *# codes sent with **ATD** are treated as voice calls. Therefore, the Command must be terminated with a semicolon ";"

	See **ATX** Command for setting result code and call monitoring parameters. Responses returned after dialing with **ATD** For voice call two different responses mode can be determined. **TA** returns "**OK**" immediately either after dialing was completed or after the call is established. The setting is controlled by **AT+COLP**. Factory default is **AT+COLP=0**, this cause the **TA** returns "**OK**" immediately after dialing was completed, otherwise **TA** will returns "**OK**", "**BUSY**", "**NO DIAL TONE**", "**NO CARRIER**". Using **ATD** during an active voice call: When a user originates a second voice call while there is already an active voice call, the first call will be automatically put on hold. The current states of all calls can be easily checked at any time by using the **AT+CLCC** Command.

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>[<clir>][<cug>][;]**	Response This command can be used to dial a phone number from current phonebook memory. Note: This command may be aborted generally by receiving an **ATH** command or a character during execution. The aborting is not possible during some states of connection establishment such as handshaking. If error is related to ME functionality **+CME ERROR: <err>** If no dial tone and (parameter setting **ATX2** or **ATX4**) **NO DIALTONE** If busy and (parameter setting **ATX3** or **ATX4**) **BUSY** If a connection cannot be established **NO CARRIER** If the remote station does not answer **NO ANSWER** If connection successful and non-voice call. **CONNECT<text> TA** switches to data mode. Note: **<text>** output only if **ATX<value>** parameter setting with the

	<value> >0 When **TA** returns to command mode after call release **OK** If successfully connected and voice call **OK**
	Parameters **<n>** Integer type memory location should be in the range of locations available in the memory used **<mgsm>** String of **GSM** modifiers: **<clir>** **I** Override the CLIR supplementary service subscription default value for this call Invocation (restrict CLI presentation) **i** Override the CLIR supplementary service subscription default value for this call Suppression (allow CLI presentation) **<cug>** **G** Control the CUG supplementary service information for this call CUG Not supported **g** Control the CUG supplementary service information for this call CUG Not supported **<;>** Only required to set up voice call , return to command state
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note Parameter **"I"** and **"i"** only if no *# code is within the dial string *# codes sent with **ATD** are treated as voice calls. Therefore, the command must be terminated with a semicolon ";" See **ATX** Command for setting result code and call monitoring parameters.

2.2.5 ATD><str> Originate Call to Phone Number in Memory Which Corresponds to Field <str>

ATD><str> Originate Call to Phone Number in Memory Which Corresponds to Field <str>	
Execution Command **ATD><str>[<clir**	Response This command make the **TA** attempts to set up an outgoing call to stored number.

>][<cug>][;]	All available memories are searched for the entry **<str>**. 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 the remote station does not answer **NO ANSWER** If connection successful and non-voice call. **CONNECT<text> TA** switches to data mode. Note: **<text>** output only if **ATX<value>** parameter setting with the **<value>** >0 When **TA** returns to command mode after call release **OK** If successfully connected and voice call **OK**
	Parameters **<str>** String type (string should be included in quotation marks) value ("**x**"), which should equal to an alphanumeric field in at least one phone book entry in the searched memories. <**str**> formatted as current **TE** character set specified by **+CSCS**. **<mgsm>** String of **GSM** modifiers: **I** Actives **CLIR** (Disables presentation of own number to called party) **i** Deactivates **CLIR** (Enable presentation of own number to called party) **G** Activates Closed User Group invocation for this call only **g** Deactivates Closed User Group invocation for this call only **<;>** Only required to set up voice call, return to Command state
Parameter Saving	NO_SAVE

Mode	
Max Response Time	-
Reference V.25ter	Note Parameter **"I"** and **"i"** only if no "*#" code is within the dial string *# codes sent with **ATD** are treated as voice calls. Therefore, the Command must be terminated with a semicolon ";" See **ATX** Command for setting result code and call monitoring parameters.

2.2.6 ATDL Redial Last Telephone Number Used

ATDL Redial Last Telephone Number Used	
Execution Command **ATDL**	Response This command redials the last voice and data call number used. 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 the remote station does not answer **NO ANSWER** If connection successful and non-voice call. **CONNECT<text> TA** switches to data mode. Note: **<text>** output only if **ATX<value>** parameter setting with the **<value>** >0 When **TA** returns to Command mode after call release **OK** If successfully connected and voice call **OK**

Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note See **ATX** Command for setting result code and call monitoring parameters. Return the numbers and symbols which **ATD** supports if there is no last dialing context.

2.2.7 ATE Set Command Echo Mode

ATE Set Command Echo Mode	
Execution Command **ATE<value>**	Response This setting determines whether or not the TA echoes characters received from TE during Command state. **OK**
	Parameters **<value>** 0 Echo mode off 1 Echo mode on
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.8 ATH Disconnect Existing Connection

ATH Disconnect Existing Connection	
Execution Command **ATH**	Response Disconnect existing call by local TE from Command line and terminate call **OK** Note: OK is issued after circuit 109(DCD) is turned off, if it was previously on.
Parameter Saving Mode	NO_SAVE
Max Response Time	20s
Reference V.25ter	Note

2.2.9 ATI Display Product Identification Information

ATI Display Product Identification Information	
Execution Command **ATI**	Response TA issues product information text Example: SIM7000A_V1.6 **OK**
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.10 ATL Set Monitor speaker loudness

ATL Set Monitor speaker loudness	
Execution Command **ATL<value>**	Response **OK**
	Parameters **<value>** 0..9 Volume
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note No effect in GSM

2.2.11 ATM Set Monitor Speaker Mode

ATM Set Monitor Speaker Mode	
Execution Command **ATM<value>**	Response **OK**
	Parameters **<value>** 0..9 Mode
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note No effect in GSM

2.2.12 +++ Switch from Data Mode or PPP Online Mode to Command Mode

+++ Switch from Data Mode or PPP Online Mode to Command Mode	
Execution Command +++	Response The +++ character sequence causes the TA to cancel the data flow over the AT interface and switch to Command mode. This allows you to enter AT Command while maintaining the data connection to the remote server. **OK** To prevent the +++ escape sequence from being misinterpreted as data, it should comply to following sequence: No characters entered for T1 time (1 second) "+++" characters entered with no characters in between (1 second) No characters entered for T1 timer (1 second) Switch to Command mode, otherwise go to step 1.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note To return from Command mode back to data mode: Enter **ATO**.

2.2.13 ATO Switch from Command Mode to Data Mode

ATO Switch from Command Mode to Data Mode	
Execution Command **ATO[n]**	Response TA resumes the connection and switches back from command mode to data mode. **CONNECT** If connection is not successfully resumed **ERROR** else TA returns to data mode from command mode **CONNECT <text>** Note: <**text**> only if parameter setting **ATX>0**
	Parameter **<n>** 0 Switch from command mode to data mode.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.14 ATP Select Pulse Dialling

ATP Select Pulse Dialling	
Execution Command **ATP**	Response **OK**
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note No effect in GSM

2.2.15 ATQ Set Result Code Presentation Mode

ATQ Set Result Code Presentation Mode	
Execution Command **ATQ<n>**	Response This parameter setting determines whether or not the TA transmits any result code to the TE. Information text transmitted in response is not affected by this setting. If <**n**>=0: **OK** If <**n**>=1: (none)
	Parameters **<n>** 0 TA transmits result code 1 Result codes are suppressed and not transmitted
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.16 ATS0 Set Number of Rings before Automatically Answering the Call

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

ATS0=<n>	This parameter setting determines the number of rings before auto-answer. **OK** **ERROR**
	Parameters **<n>** 0 Automatic answering is disable. 1-255 Number of rings the modem will wait for before answering the phone if a ring is detected.
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference V.25ter	Note If <**n**> is set too high, the calling party may hang up before the call can be answered automatically. If using cmux port, **ATH** and **AT+CHUP** can hang up the call (automatically answering) only in the CMUX channel 0. If using dual-physical serial port, **ATH** and **AT+CHUP** can hang up the call (automatically answering) only in UART1.

2.2.17 ATS3 Set Command Line Termination Character

ATS3 Set Command Line Termination Character	
Read Command **ATS3?**	Response **<n>** **OK**
	Parameters See Write Command
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** **ERROR**
	Parameters **<n>** 13 Command line termination character
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference	Note

V.25ter	Default 13 = CR. It only supports default value.

2.2.18 ATS4 Set Response Formatting Character

ATS4 Set Response Formatting Character	
Read Command **ATS4?**	Response **<n>** **OK**
	Parameters See Write Command
Write Command **ATS4=<n>**	Response This parameter setting determines the character generated by the TA for result code and information text. **OK** **ERROR**
	Parameters **<n>** 10 Response formatting character
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference V.25ter	Note Default 10 = LF. It only supports default value.

2.2.19 ATS5 Set Command Line Editing Character

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

	<n> 0-8-127 Response formatting character
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference V.25ter	Note Default 8 = Backspace.

2.2.20 ATS6 Pause Before Blind Dialling

ATS6 Pause Before Blind Dialling	
Read Command **ATS6?**	Response **<n>** **OK**
Write Command **ATS6=<n>**	Response **OK** **ERROR**
	Parameters **<n>** 0-2-999 Time
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference V.25ter	Note No effect in GSM

2.2.21 ATS7 Set Number of Seconds to Wait for Connection Completion

ATS7 Set Number of Seconds to Wait for Connection Completion	
Read Command **ATS7?**	Response **<n>** **OK**
	Parameters See Write Command
Write Command **ATS7=<n>**	Response This parameter setting determines the amount of time to wait for the connection completion in case of answering or originating a call. **OK** **ERROR**

	Parameters **<n>** 1-60-255 Number of seconds to wait for connection completion
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference V.25ter	Note If called party has specified a high value for **ATS0=<n>**, call setup may fail. The correlation between **ATS7** and **ATS0** is important Example: Call may fail if **ATS7=30** and **ATS0=20**. **ATS7** is only applicable to data call.

2.2.22 ATS8 Set Number of Seconds to Wait for Comma Dial Modifier Encountered in Dial String of D Command

ATS8 Set Number of Seconds to Wait for Comma Dial Modifier Encountered in Dial String of D Command	
Read Command **ATS8?**	Response **<n>** **OK**
	Parameters See Write Command
Write Command **ATS8=<n>**	Response **OK** **ERROR**
	Parameters **<n>** 0-2-255 The value of this register determines how long the modem should pause when it sees a comma in the dialing string.
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference V.25ter	Note No effect in GSM

2.2.23 ATS10 Set Disconnect Delay after Indicating the Absence of Data Carrier

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

	Parameters See Write Command
Write Command **ATS10=<n>**	Response This parameter setting determines the amount of time that the TA will remain connected in absence of data carrier. If the data carrier is once more detected before disconnecting, the TA remains connected. **OK** **ERROR**
	Parameters **<n>** 1-15-254 Number of tenths seconds of delay
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.24 ATT Select Tone Dialing

ATT Select Tone Dialing	
Execution Command **ATT**	Response **OK**
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.25 ATV TA Response Format

ATV TA Response Format	
Execution Command **ATV<value>**	Response This parameter setting determines the contents of the header and trailer transmitted with result codes and information responses. When <**value**>=0 **0** When <**value**>=1 **OK**
	Parameters **<value>** 0 Information response: **<text><CR><LF>**

	Short result code format: **<numeric code><CR>** 1 Information response: **<CR><LF><text><CR><LF>** Long result code format: **<CR><LF><verbose code><CR><LF>** The result codes, their numeric equivalents and brief descriptions of the use of each are listed in the following table.
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference V.25ter	Note

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

2.2.26 ATX Set CONNECT Result Code Format and Monitor Call Progress

ATX Set CONNECT Result Code Format and Monitor Call Progress	
Execution Command **ATX<value>**	Response This parameter setting determines whether or not the TA detected the presence of dial tone and busy signal and whether or not TA transmits particular result codes. **OK**

	ERROR
	Parameters **<value>** 0 **CONNECT** result code only returned, dial tone and busy detection are both disabled. 1 **CONNECT<text>** result code only returned, dial tone and busy detection are both disabled. 2 **CONNECT<text>** result code returned, dial tone detection is enabled, busy detection is disabled. 3 **CONNECT<text>** result code returned, dial tone detection is disabled, busy detection is enabled. 4 **CONNECT<text>** result code returned, dial tone and busy detection are both enabled.
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.27 ATZ Reset Default Configuration

ATZ Reset Default Configuration	
Execution Command **ATZ[<value>]**	Response TA sets all current parameters to the user defined profile. **OK** **ERROR**
	Parameters **<value>** 0 Restore profile 0
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

Parameter impacted by Z command: refer to AT&W

NOTE:

Parameters related to uart operation, like csclk, ipr, icf, ifc and cmnrp, will not be reset to default configuration.

2.2.28 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** **ERROR**
	Parameters **<value>** 0 **DCD** line is always ON 1 **DCD** line is ON only in the presence of data carrier
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.29 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** **ERROR**
	Parameters **<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 call, change to Command mode. During state DTR = OFF is auto-answer off.
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.33 AT+GCAP Request Complete TA Capabilities List

AT+GCAP Request Complete TA Capabilities List	
Execution Command **AT+GCAP**	Response TA reports a list of additional capabilities. **+GCAP:** list of supported **<name>**s

	OK
	Parameters **<name>** +CGSM GSM function is supported
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.34 AT+GMI Request Manufacturer Identification

AT+GMI Request Manufacturer Identification	
Test Command **AT+GMI=?**	Response **OK**
	Parameters
Execution Command **AT+GMI**	TA reports one or more lines of information text which permit the user to identify the manufacturer. **SIMCOM_Ltd** **OK**
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.35 AT+GMM Request TA Model Identification

AT+GMM Request TA Model Identification	
Test Command **AT+GMM=?**	Response **OK**
Execution Command **AT+GMM**	TA reports one or more lines of information text which permit the user to identify the specific model of device. **<model>** **OK**

	Parameters **<model>** Product model identification text
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.36 AT+GMR Request TA Revision Identification of Software Release

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

2.2.37 AT+GOI Request Global Object Identification

AT+GOI Request Global Object Identification	
Test Command **AT+GOI=?**	Response **OK**
Execution Command **AT+GOI**	Response TA reports one or more lines of information text which permit the user to identify the device, based on the ISO system for registering unique object identifiers. **<Object Id>** **OK**

	Parameters **<Object Id>** Identifier of device type see X.208, 209 for the format of <Object Id>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.38 AT+GSN Request TA Serial Number Identification (IMEI)

AT+GSN Request TA Serial Number Identification(IMEI)	
Test Command **AT+GSN=?**	Response **OK**
Execution Command **AT+GSN**	Response TA reports the IMEI (international mobile equipment identifier) number in information text which permit the user to identify the individual ME device. **<sn>** **OK**
	Parameters **<sn>** IMEI of the telephone(International Mobile station Equipment Identity)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note The serial number (IMEI) is varied by individual ME device.

2.2.39 AT+ICF Set TE-TA Control Character Framing

AT+ICF Set TE-TA Control Character Framing	
Test Command **AT+ICF=?**	Response **+ICF: (**list of supported **<format>**s**),(**list of supported **<parity>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+ICF?**	Response **+ICF: <format>,<parity>**

	OK
	Parameters See Write Command
Write Command **AT+ICF=<format>[,<parity>]**	Response This parameter setting determines the serial interface character framing format and parity received by TA from TE. **OK**
	Parameters **<format>** 1 8 data 0 parity 2 stop 2 8 data 1 parity 1 stop 3 8 data 0 parity 1 stop 4 7 data 0 parity 2 stop 5 7 data 1 parity 1 stop 6 7 data 0 parity 1 stop **<parity>** 0 odd 1 even 3 space (0)
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference V.25ter	Note The Command is applied for Command state; In **<format>** parameter, "0 parity" means no parity; The **<parity>** field is ignored if the **<format>** field specifies no parity and string "**+ICF: <format>,255**" will be response to "**AT+ICF**? " Command.

2.2.40 AT+IFC Set TE-TA Local Data Flow Control

AT+IFC Set TE-TA Local Data Flow Control	
Test Command **AT+IFC=?**	Response **+IFC: (**list of supported **<dce_by_dte>**s**),(**list of supported **<dte_by_dce>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+IFC?**	Response **+IFC: <dce_by_dte>,<dte_by_dce>** **OK**
	Parameters

	See Write Command
Write Command **AT+IFC=<dce_by_dte>[,<dte_by_dce>]**	Response This parameter setting determines the data flow control on the serial interface for data mode. **OK**
	Parameters **<dce_by_dte>** Specifies the method will be used by TE at receive of data from TA 0 No flow control 1 Software flow control 2 Hardware flow control **<dte_by_dce>**Specifies the method will be used by TA at receive of data from TE 0 No flow control 1 Software flow control 2 Hardware flow control
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.41 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**
	Parameters See Write Command
Read Command **AT+IPR?**	Response **+IPR: <rate>** **OK**
	Parameters See Write Command
Write Command **AT+IPR=<rate>**	Response This parameter setting determines the data rate of the TA on the serial interface. The rate of Command takes effect following the issuance of any

	result code associated with the current Command line. **OK**
	Parameters **<rate>** Baud rate per second 1200 2400 4800 9600 19200 38400 57600 115200 230400 460800
Parameter Saving Mode	
Max Response Time	-
Reference V.25ter	Note Factory setting is "**AT+IPR=0**"(auto-bauding).

2.2.41.1 Auto-bauding

Synchronization between DTE and DCE ensure that DTE and DCE are correctly synchronized and the baud rate used by the DTE is detected by the DCE (= ME).To allow the baud rate to be synchronized, simply issue an "AT" string. This is necessary when you start up the module while auto-bauding is enabled. It is recommended to wait 3 to 5 seconds before sending the first AT character. Otherwise undefined characters might be returned.

If you want to use auto-bauding and auto-answer at the same time, you can easily enable the DTE-DCE synchronization, when you activate auto-bauding first and then configure the auto-answer mode.

Restrictions on auto-bauding operation

The serial interface has to be operated at 8 data bits, no parity and 1 stop bit (factory setting).
Only the strings "AT" or "at" can be detected when auto-bauding is enabled.
AT+IPR=0 setting to auto-bauding will take effect after module resets.
Unsolicited Result Codes that may be issued before the ME detects the new baud rate (by receiving the first AT Command string) will be sent at the previously detected baud rate.The Unsolicited Result Codes "RDY" and so on are not indicated when you start up the ME while auto-bauding is enabled.

It is not recommended to switch to auto-bauding from a baud rate that cannot be detected by the auto-bauding mechanism (e.g. 300 baud). Responses to +IPR=0 and any commands on the same

line might be corrupted.

Auto-bauding and baud rate after restart

The most recently detected baud rate can not be stored when module is powered down.

3 AT Commands According to 3GPP TS 27.007

3.1 Overview of AT Command According to 3GPP TS 27.007

Command	Description
AT+CEER	Extended error report
AT+CGMI	Request manufacturer identification
AT+CGMM	Request model identification
AT+CGMR	Request TA revision identification of software release
AT+CGSN	Request product serial number identification (identical with +GSN)
AT+CSCS	Select TE character set
AT+CIMI	Request international mobile subscriber identity
AT+CMEE	Report mobile equipment error
AT+COPS	Operator selection
AT+CPIN	Enter PIN
AT+CREG	Network registration
AT+CSQ	Signal quality report
AT+CMUX	Multiplexer control
AT+CFUN	Set phone functionality

3.2 Detailed Descriptions of AT Command According to 3GPP TS 27.007

3.2.1AT+CEER Extended Error Report

AT+CEER Extended Error Report	
Test Command **AT+CEER=?**	Response **+CEER: (**list of supported **<n>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CEER?**	Response **+CEER: <n>** **OK**
	Parameters

	See Write Command
Write Command **AT+CEER=<n>**	Response **OK**
	Parameter **<n>** 0 The reason for last call release as text code 1 The reason for last call release as number code
Execution Command **AT+CEER**	Response TA returns an extended report of the reason for the last call release. **+CEER: <report>** **OK**
	Parameters **<report>** If **AT+CEER=0**, return <**s**> **<s>** a string that represents the Cause If **AT+CEER=1**, return **Cause:<c>** **<c>** number representing the Cause
	Parameters **<c>(number)** **<s>(string)** 0 (No cause) 1 (unassigned (unallocated) number) 3 (no route to destination) 6 (channel unacceptable) 8 (operator determined barring) 16 (normal call clearing) 17 (user busy) 18 (no user responding) 19 (user alerting, no answer) 21 (call rejected) 22 (number changed) 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 (emergency call not possible) 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) 68 (ACM equal to or greater than ACMmax) 65 (bearer service not implemented) 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 IE error) 101 (message not compatible with protocol state) 102 (recovery on timer expiry) 111 (protocol error, unspecified) 127 (interworking, unspecified)
Parameter Saving Mode	NO_SAVE
Max Response Time	-

Reference 3GPP TS 27.007 [13]	Note

3.2.2 AT+CGMI Request Manufacturer Identification

AT+CGMI Request Manufacturer Identification	
Test Command **AT+CGMI=?**	Response **OK**
Execution Command **AT+CGMI**	Response TA returns manufacturer identification text. **<manufacturer>** **OK**
	Parameters **<manufacturer>** The ID of manufacturer
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.3 AT+CGMM Request Model Identification

AT+CGMM Request Model Identification	
Test Command **AT+CGMM=?**	Response **OK**
Execution Command **AT+CGMM**	Response TA returns product model identification text. **<model>** **OK**
	Parameters **<model>** Product model identification text
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.4 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**
	Parameters **<revision>** Product software version identification text
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.5 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 see +GSN **<sn>** **OK**
	Parameters **<sn>** International mobile equipment identity (IMEI)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.6 AT+CSCS Select TE Character Set

AT+CSCS Select TE Character Set	
Test Command	Response

AT+CSCS=?	**+CSCS: (**list of supported **<chset>**s**)** **OK**
	Parameters **<chset>** "GSM" GSM 7 bit default alphabet (3GPP TS 23.038); "UCS2" 16-bit universal multiple-octet coded character set (ISO/IEC10646); UCS2 character strings are converted to hexadecimal numbers from 0000 to FFFF; e.g. "004100620063" equals three 16-bit characters with decimal values 65, 98 and 99 "IRA" International reference alphabet (ITU-T T.50) "HEX" Character strings consist only of hexadecimal ers from 00 to FF; "PCCP" PC character set Code "PCDN" PC Danish/Norwegian character set "8859-1" ISO 8859 Latin 1 character set
Read Command **AT+CSCS?**	Response **+CSCS: <chset>** **OK**
	Parameters See Test Command
Write Command **AT+CSCS=<chset>**	Response Sets which character set **<chset>** are used by the TE. The TA can then convert character strings correctly between the TE and ME character sets. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Test Command
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.7 AT+CIMI Request International Mobile Subscriber Identity

AT+CIMI Request International Mobile Subscriber Identity	
Test Command **AT+CIMI=?**	Response **OK**

Execution Command **AT+CIMI**	Response TA returns <**IMSI**>for identifying the individual SIM which is attached to ME. **<IMSI>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<IMSI>** International Mobile Subscriber Identity (string without double quotes)
Parameter Saving Mode	NO_SAVE
Max Response Time	20s
Reference 3GPP TS 27.007 [13]	Note

3.2.8 AT+CMEE Report Mobile Equipment Error

AT+CMEE Report Mobile Equipment Error	
Test Command **AT+CMEE=?**	Response **+CMEE: (**list of supported **<n>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CMEE?**	Response **+CMEE: <n>** **OK**
	Parameters See Write Command
Write Command **AT+CMEE=[<n>]**	Response TA disables or enables the use of result code **+CME ERROR: <err>** as an indication of an error relating to the functionality of the ME. **OK** If error is related to ME functionality: **+CME ERROR:<err>**
	Parameters **<n>** 0 Disable **+CME ERROR: <err>** result code and use ERROR instead.

	1 Enable **+CME ERROR: <err>** result code and use numeric **<err>** 2 Enable **+CME ERROR: <err>** result code and use verbose **<err>** values
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-

3.2.9 AT+COPS Operator Selection

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

	If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<stat>** 0 Unknown 1 Operator available 2 Operator current 3 Operator forbidden **<oper>** Refer to [27.007] operator in format as per <**format**> **<mode>** 0 Automatic mode; <**oper**> field is ignored 1 Manual (<**oper**> field shall be present, and <**AcT**> optionally) 2 manual deregister from network 3 set only <**format**> (for read Command **+COPS?**) - not shown in Read Command response 4 Manual/automatic (<**oper**> field shall be present); if manual selection fails, automatic mode (<**mode**>=0) is entered **<format>** 0 Long format alphanumeric <**oper**> 1 Short format alphanumeric <**oper**> 2 Numeric <**oper**>; GSM Location Area Identification number
Parameter Saving Mode	AUTO_SAVE
Max Response Time	Test command: 45 seconds Write command: 120 seconds
Reference 3GPP TS 27.007 [14]	Note

3.2.10 AT+CPIN Enter PIN

AT+CPIN Enter PIN	
Test Command **AT+CPIN=?**	Response **OK**
Read Command **AT+CPIN?**	Response TA returns an alphanumeric string indicating whether some password is required or not. **+CPIN: <code>** **OK**
	Parameters **<code>** READY MT is not pending for any password

	SIM PIN MT is waiting SIM PIN to be given SIM PUK MT is waiting for SIM PUK to be given PH_SIM PIN ME is waiting for phone to SIM card (antitheft) PH_SIM PUK ME is waiting for SIM PUK (antitheft) SIM PIN2 PIN2, e.g. for editing the FDN book possible only if preceding Command was acknowledged with +CME ERROR:17 SIM PUK2 Possible only if preceding Command was acknowledged with error +CME ERROR: 18.
Write Command **AT+CPIN=<pin>[,<new pin>]**	Response TA stores a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.). If the PIN required is SIM PUK or SIM PUK2, the second pin is required. This second pin, <**new pin**>, is used to replace the old pin in the SIM. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<pin>** String type; password **<new pin>** String type; If the PIN required is SIM PUK or SIMPUK2: new password
Parameter Saving Mode	NO_SAVE
Max Response Time	5s
Reference 3GPP TS 27.007 [13]	Note

3.2.11 AT+CPWD Change Password

AT+CPWD Change Password	
Test Command **AT+CPWD=?**	Response TA returns a list of pairs which present the available facilities and the maximum length of their password. **+CPWD: (**list of supported **<fac>**s, list of supported **<pwdlength>**s**)** **OK**
	Parameters **<fac>** See Write Command **<pwdlength>** Integer max. length of password
Write Command **AT+CPWD=<fac>,<oldpwd>,<new**	Response TA sets a new password for the facility lock function. **OK**

pwd>	Parameters **<fac>** "AO" BAOC (Barr All Outgoing Calls) "OI" BOIC (Barr Outgoing International Calls) "OX" BOIC-exHC (Barr Outgoing International Calls except to Home Country) "AI" BAIC (Barr All Incoming Calls) "IR" BIC-Roam (Barr Incoming Calls when Roaming outside the home country) "AB" All Barring services "P2" SIM PIN2 "SC" SIM (lock SIM/UICC card) (SIM/UICC asks password in MT power-up and when this lock command issued) Correspond to PIN1 code. **<oldpwd>** String type (string should be included in quotation marks): password specified for the facility from the user interface or with command. If an old password has not yet been set, <oldpwd> is not to enter. **<newpwd>** String type (string should be included in quotation marks): new password
Parameter Saving Mode	NO_SAVE
Max Response Time	15s
Reference 3GPP TS 27.007 [13]	Note

3.2.12 AT+CR Service Reporting Control

AT+CR Service Reporting Control	
Test Command **AT+CR=?**	Response **+CR: (**list of supported **<mode>**s) **OK**
	Parameters See Write Command
Read Command **AT+CR?**	Response **+CR: <mode>** **OK**
	Parameters See Write Command
Write Command	Response

AT+CR=[<mode>]	TA controls whether or not intermediate result code **+CR: <serv>** is returned from the TA to the TE at a call set up. **OK**
	Parameters **<mode>** 0 Disable 1 Enable
	Intermediate result code If enabled, an intermediate result code is transmitted at the point during connect negotiation at which the TA has determined which speed and quality of service will be used, before any error control or data compression reports are transmitted, and before any final result code (e.g. **CONNECT**) is transmitted. **+CR:<serv>**
	Parameters **<serv>** ASYNC Asynchronous transparent SYNC Synchronous transparent REL ASYNC Asynchronous non-transparent REL SYNC Synchronous non-transparent GPRS For GPRS
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.13 AT+CRC Set Cellular Result Codes for Incoming Call Indication

AT+CRC Set Cellular Result Codes for Incoming Call Indication	
Test Command **AT+CRC=?**	Response **+CRC: (**list of supported **<mode>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CRC?**	Response **+CRC: <mode>** **OK**
	Parameters See Write Command
Write Command	Response

AT+CRC=[<mode>]	TA controls whether or not the extended format of incoming call indication is used. **OK**
	Parameters **<mode>** 0 Disable extended format 1 Enable extended format Omitted Use previous value
	Unsolicited Result Code When enabled, an incoming call is indicated to the TE with unsolicited result code **+CRING: <type>** instead of the normal **RING**.
	Parameters **<type>** ASYNC Asynchronous transparent SYNC Synchronous transparent REL ASYNC Asynchronous non-transparent REL SYNC Synchronous non-transparent FAX Facsimile VOICE Voice
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.34 AT+CREG Network Registration

AT+CREG Network Registration	
Test Command **AT+CREG=?**	Response **+CREG: (**list of supported **<n>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CREG?**	Response TA returns the status of result code presentation and an integer <**stat**> which shows whether the network has currently indicated the registration of the ME. Location information elements <**lac**> and <**ci**> are returned only when <**n**>=2 and ME is registered in the network. **+CREG: <n>,<stat>[,<lac>,<ci>]** **OK** If error is related to ME functionality:

	+CME ERROR: <err>
Write Command **AT+CREG=[<n>]**	Response TA controls the presentation of an unsolicited result code **+CREG: <stat>** when <**n**>=1 and there is a change in the ME network registration status. **OK**
	Parameters **<n>** 0 Disable network registration unsolicited result code 1 Enable network registration unsolicited result code +CREG: <**stat**> 2 Enable network registration unsolicited result code with location information **+CREG: <stat>[,<lac>,<ci>]** **<stat>** 0 Not registered, MT is not currently searching a new operator to register to 1 Registered, home network 2 Not registered, but MT is currently searching a new operator to register to 3 Registration denied 4 Unknown 5 Registered, roaming **<lac>** String type (string should be included in quotation marks); two byte location area code in hexadecimal format **<ci>** String type (string should be included in quotation marks); two byte cell ID in hexadecimal format
	Unsolicited Result Code If <**n**>=1 and there is a change in the MT network registration status **+CREG: <stat>** If <**n**>=2 and there is a change in the MT network registration status or a change of the network cell: **+CREG: <stat>[,<lac>,<ci>]**
	Parameters See Write Command
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-

3.2.15 AT+CSQ Signal Quality Report

AT+CSQ Signal Quality Report	
Test Command **AT+CSQ=?**	Response **+CSQ: (**list of supported **<rssi>**s**),(**list of supported **<ber>**s**)** **OK**
Execution	Response

Command **AT+CSQ**	**+CSQ: <rssi>,<ber>** **OK** If error is related to ME functionality: **+CME ERROR: <err>** Execution Command returns received signal strength indication <**rssi**> and channel bit error rate <**ber**> from the ME. Test Command returns values supported by the TA.
	Parameters **<rssi>** 0 -115 dBm or less 1 -111 dBm 2...30 -110... -54 dBm 31 -52 dBm or greater 99 not known or not detectable **<ber>** (in percent): 0...7 As RXQUAL values in the table in GSM 05.08 [20] subclause 7.2.4 99 Not known or not detectable
Parameter Saving Mode	NO_SAVE
Max Response Time	-

3.2.16 AT+CMUX Multiplexer Control

AT+CMUX Multiplexer Control	
Test Command **AT+CMUX=?**	Response **+CMUX: (0),(0),(1-6),(16-1510),(1-255),(0-100),(2-255),(1-255),(1-7)** **OK**
	Parameters See Write Command
Read Command **AT+CMUX?**	Response: **+CMUX:[<mode>[,<subset>[,<port_speed>[,<N1>[,<T1>[,<N2>[,<T2>[,<T3>[,<k>]]]]]]]]** **OK** **ERROR**
	Parameters **<mode>** Multiplexer transparency mechanism 0 Basic option **<subset>** The way in which the multiplexer control channel is set up

	0 UIH frames used only **<port_speed>** Transmission rate 1 9600 bits/t 2 19200 bits/t 3 38400 bits/t 4 57600 bits/t 5 115200 bit/s 6 230400 bits/t 7 460800 bits/t Proprietary values, available if MUX NEW PORT SPEED FTR is activated **<N1>** Maximum frame size 1-255 Default: 127 **<T1>** Acknowledgement timer in units of ten milliseconds 1-255 Default:10 (100 ms) **<N2>** Maximum number of re-transmissions 0-100 Default:3 **<T2>** Max Response Timer for the multiplexer control channel in units of ten milliseconds 2-255 Default:30 **<T3>** Wake up Max Response Timers in seconds 1-255 Default:10 **<k>** Window size, for Advanced operation with Error Recovery options 1-7 Default:2
Write Command **AT+CMUX=<mode>**	Response If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<mode>** Multiplexer transparency mechanism 0 Basic option
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note The multiplexing transmission rate is according to the current serial baud rate. It is recommended to enable multiplexing protocol under 115200 bit/s baud rate Multiplexer control channels are listed as follows: **Channel Number Type DLCI** None Multiplexer Control 0 1 3GPP TS 27.007 and 005 1

	2	3GPP TS 27.007 and 005	2
	3	3GPP TS 27.007 and 005	3
	4	3GPP TS 27.007 and 005	4

3.2.17 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** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command
Read Command **AT+CFUN?**	Response **+CFUN: <fun>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command
Write Command **AT+CFUN=<fun>[,<rst>]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<fun>** 0 Minimum functionality 1 Full functionality (Default) 4 Disable phone both transmit and receive RF circuits. **<rst>** 1 Reset the MT before setting it to <**fun**> power level.
Parameter Saving Mode	AUTO_SAVE
Max Response Time	10s
Reference 3GPP TS 27.007 [13]	Note Minimum functionality mode (**AT+CFUN=0**)and RF disabled functionality mode (**AT+CFUN=4**) cannot be switched to each other. The <**fun**> power level will be written to flash except minimum functionality. **AT+CFUN=1,1** can be used to reset module purposely at minimum/full functionality mode.

	Response string "**OK**" will be returned after module resets if baud rate is set to fixed baud rate.

4 AT Commands According to 3GPP TS 27.005

The 3GPP TS 27.005 commands are for performing SMS and CBS related operations. SIM7000 Series supports both Text and PDU modes.

4.1 Overview of AT Commands According to 3GPP TS 27.005

Command	Description
AT+CMGD	Delete SMS message
AT+CMGF	Select SMS message format
AT+CMGL	List SMS messages from preferred store
AT+CMGR	Read SMS message
AT+CMGS	Send SMS message
AT+CMGW	Write SMS message to memory
AT+CMSS	Send SMS message from storage
AT+CNMI	New SMS message indications
AT+CPMS	Preferred SMS message storage

4.2 Detailed Descriptions of AT Commands According to 3GPP TS 27.005

4.2.1 AT+CMGD Delete SMS Message

AT+CMGD Delete SMS Message	
Test Command **AT+CMGD=?**	Response **+CMGD: (**list of supported **<index>**s**),(**list of supported **<delflag>**s**)** **OK**
	Parameters See Write Command
Write Command **AT+CMGD=<index>[,<delflag>]**	Response TA deletes message from preferred message storage <**mem1**> location <**index**>. **OK** **ERROR** If error is related to ME functionality: **+CMS ERROR: <err>**
	Parameters **<index>** Integer type; value in the range of location numbers supported by the associated memory

	<delflag> 0 Delete the message specified in **<index>** 1 Delete all read messages from preferred message storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched 2 Delete all read messages from preferred message storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched 3 Delete all read messages from preferred message storage, sent and unsent mobile originated messages leaving unread messages untouched 4 Delete all messages from preferred message storage including unread messages
Parameter Saving Mode	NO_SAVE
Max Response Time	5s（delete 1 message） 25s（delete 50 messages） 25s（delete 150 messages）
Reference 3GPP TS 27.005	Note

4.2.2 AT+CMGF Select SMS Message Format

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

Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference 3GPP TS 27.005	Note

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**
	Parameter See Write Command
Write Command **AT+CMGL=<stat>[,<mode>]**	Parameters 1) If text mode: **<stat>** "REC UNREAD" Received unread messages "REC READ" Received read messages "STO UNSENT" Stored unsent messages "STO SENT" Stored sent messages "ALL" All messages **<mode>** 0 Normal 1 Not change status of the specified SMS record 2) If PDU mode: **<stat>** 0 Received unread messages 1 Received read messages 2 Stored unsent messages 3 Stored sent messages 4 All messages **<mode>** 0 Normal 1 Not change status of the specified SMS record
	Response TA returns messages with status value <**stat**> from message storage <**mem1**> to the TE. If status of the message is 'received unread', status in the storage changes to 'received read'. 1) If text mode (**+CMGF=1**) and Command successful: for SMS-SUBMITs and/or SMS-DELIVERs: **+CMGL: <index>,<stat>,<oa/da>[,<alpha>][,<scts>]** **[,<tooa/toda>,<length>]<CR><LF><data>** **[<CR><LF>+CMGL: <index>,<stat>,<da/oa>** **[,<alpha>][,<scts>][,<tooa/toda>,<length>]<CR><LF><data>[...]]**

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

for SMS-COMMANDs:
+CMGL: <index>,<stat>,<fo>,<ct>[<CR><LF>
+CMGL: <index>,<stat>,<fo>,<ct>[...]]

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

2) If PDU mode (**+CMGF=0**) and Command successful:
+CMGL:<index>,<stat>[,<alpha>],<length>
<CR><LF><pdu><CR><LF>
+CMGL: <index>,<stat>[,alpha],<length>
<CR><LF><pdu>[...]]
OK

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

Parameters
<alpha> String type(string should be included in quotation marks) alphanumeric representation of <**da**> or <**oa**> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with Command Select TE Character Set **+CSCS** (see definition of this Command in 3GPP TS 27.007)
<da> GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer Command **+CSCS** in 3GPP TS 27.007); type of address given by <**toda**>
<data> In the case of SMS: GSM 03.40 TP-User-Data in text mode responses; format:
- if <**dcs**> indicates that GSM 03.38 default alphabet is used and <**fo**> indicates that GSM 03.40 TPUser-Data-Header-Indication is not set:
- if TE character set other than "HEX" (refer Command Select TE Character Set +CSCS in 3GPP TS 27.007):ME/TA converts

GSM alphabet into current TE character set according to rules of Annex A
- if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number (e.g. character P (GSM 23) is presented as 17 (IRA 49 and 55))
- if <**dcs**> indicates that 8-bit or UCS2 data coding scheme is used, or <**fo**> indicates that GSM 03.40 TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)) In the case of CBS: GSM 03.41 CBM Content of Message in text mode responses; format:
- if <**dcs**> indicates that GSM 03.38 default alphabet is used:
- if TE character set other than "HEX" (refer Command +CSCS in 3GPP TS 27.007): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A
- if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number
- if <**dcs**> indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number

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

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

<oa> GSM 03.40 TP-Originating-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer Command **+CSCS** in 3GPP TS 27.007); type of address given by <tooa>

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

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

<toda> GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <**da**> is + (IRA 43) default is 145, otherwise default is 129)

<tooa> GSM 04.11 TP-Originating-Address Type-of-Address octet in

	integer format (default refer<**toda**>)
Execution Command **AT+CMGL**	1) If text mode: the same as **AT+CMGL="REC UNREAD"**, received unread messages 2) If PDU mode: the same as **AT+CMGL=0**, received unread messages See more messages please refer to Write Command.
	Parameters See Write Command
Parameter Saving Mode	NO_SAVE
Max Response Time	20s(list 50 messages) 20s(list 150 messages)
Reference 3GPP TS 27.005	Note

4.2.4 AT+CMGR Read SMS Message

AT+CMGR Read SMS Message	
Test Command **AT+CMGR=?**	Response **OK**
Write Command **AT+CMGR=<index>[,<mode>]**	Parameters **<index>** Integer type; value in the range of location numbers supported by the associated memory **<mode>** 0 Normal 1 Not change status of the specified SMS record
	Response TA returns SMS message with location value <**index**> from message storage <**mem1**> to the TE. If status of the message is 'received unread', status in the storage changes to 'received read'. 1) If text mode (**+CMGF=1**) and Command successful: for SMS-DELIVER: **+CMGR: <stat>,<oa>[,<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>** **,<sca>,<tosca>,<length>]<CR><LF><data>** for SMS-SUBMIT: **+CMGR: <stat>,<da>[,<alpha>][,<toda>,<fo>,<pid>,<dcs>[,<vp>]** **,<sca>,<tosca>,<length>]<CR><LF><data>** for SMS-STATUS-REPORTs: **+CMGR: <stat>,<fo>,<mr>[,<ra>][,<tora>],<scts>,<dt>,<st>** for SMS-COMMANDs: **+CMGR: <stat>,<fo>,<ct>[,<pid>[,<mn>][,<da>][,<toda>]**

	,<length><CR><LF><cdata>] for CBM storage: **+CMGR: <stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data>** 2) If PDU mode (+CMGF=0) and Command successful: **+CMGR: <stat>[,<alpha>],<length><CR><LF><pdu>** **OK** 3) If error is related to ME functionality: **+CMS ERROR: <err>**
	Parameters **<alpha>** String type (string should be included in quotation marks) alphanumeric representation of <**da**> or <**oa**> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific **<da>** GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in 3GPP TS 27.007); type of address given by <**toda**> **<data>** In the case of SMS: GSM 03.40 TP-User-Data in text mode responses; format: - if <**dcs**> indicates that GSM 03.38 default alphabet is used and <**fo**> indicates that GSM 03.40 TPUser-Data-Header-Indication is not set: - if TE character set other than "HEX" (refer Command Select TE Character Set +CSCS in 3GPP TS 27.007):ME/TA converts GSM alphabet into current TE character set according to rules of Annex A - if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number (e.g. character P (GSM 23) is presented as 17 (IRA 49 and 55)) - if <**dcs**> indicates that 8-bit or UCS2 data coding scheme is used, or <**fo**> indicates that GSM 03.40 TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)) In the case of CBS: GSM 03.41 CBM Content of Message in text mode responses; format: - if <**dcs**> indicates that GSM 03.38 default alphabet is used: - if TE character set other than "HEX" (refer Command +CSCS in 3GPP TS 27.007): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A - if TE character set is "HEX": ME/TA converts each 7-bit

character of GSM alphabet into two IRA character long hexadecimal number

- if <**dcs**> indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number

<dcs> Depending on the Command or result code: GSM 03.38 SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme in integer format

<fo> Depending on the Command or result code: first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format

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

<mid> GSM 03.41 CBM Message Identifier in integer format

<oa> GSM 03.40 TP-Originating-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted characters of the currently selected TE character set (specified by +CSCS in 3GPP TS 27.007); type of address given by <**tooa**>

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

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

<sca> GSM 04.11 RP SC address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS in 3GPP TS 27.007); type of address given by <**tosca**>

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

<stat>

0	"REC UNREAD"	Received unread messages
1	"REC READ"	Received read messages
2	"STO UNSENT"	Stored unsent messages
3	"STO SENT"	Stored sent messages
4	"ALL"	All messages

<toda> GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <**da**> is + (IRA 43) default is 145, otherwise default is 129)

<tooa> GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format (default refer<**toda**>)

	<tosca> GSM 04.11 RP SC address Type-of-Address octet in integer format (default refer <**toda**>) **<vp>** Depending on SMS-SUBMIT <**fo**> setting: GSM 03.40 TP-Validity-Period either in integer format (default 167) or in time-string format (refer <**dt**>)
Parameter Saving Mode	NO_SAVE
Max Response Time	5s
Reference 3GPP TS 27.005	Note

4.2.5 AT+CMGS Send SMS Message

AT+CMGS Send SMS Message	
Test Command **AT+CMGS=?**	Response **OK**
Write Command 1) If text mode (+CMGF=1): **+CMGS=<da>[,<toda>]** **<CR>text is entered** **<ctrl-Z/ESC>** ESC quits without sending 2) If PDU mode (+CMGF=0): **+CMGS=<length>** **<CR>PDU is given** **<ctrl-Z/ESC>**	Parameters **<da>** GSM 03.40 TP-Destination-Address Address-Value field in string format(string should be included in quotation marks); BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in 3GPP TS 27.007); type of address given by <**toda**> **<toda>** GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <**da**> is + (IRA 43) default is 145, otherwise default is 129) **<length>** Integer type value (not exceed 160 bytes) 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>** GSM 03.40 TP-Message-Reference in integer format
Parameter Saving Mode	NO_SAVE
Max Response Time	60s
Reference 3GPP TS 27.005	Note ● In text mode, the maximum length of an SMS depends on the used coding scheme: It is 1024 characters if the 7 bit GSM coding scheme is used. ● Reject incoming call when sending messages.

4.2.6 AT+CMGW Write SMS Message to Memory

AT+CMGW Write SMS Message to Memory	
Test Command **AT+CMGW=?**	Response **OK**
Write Command 1) If text mode (+CMGF=1): **AT+CMGW=<oa/da>[,<tooa/toda>][,<stat>]** <CR> **text is entered** **<ctrl-Z/ESC>** <ESC> quits without sending	Response TA transmits SMS message (either SMS-DELIVER or SMS-SUBMIT) from TE to memory storage <**mem2**>. Memory location <**index**> of the stored message is returned. By default message status will be set to 'stored unsent', but parameter <**stat**> allows also other status values to be given. If writing is successful: **+CMGW: <index>** **OK** If error is related to ME functionality: **+CMS ERROR: <err>**
2) If PDU mode (+CMGF=0): **AT+CMGW=<length>[,<stat>]** **<CR>PDU is given** **<ctrl-Z/ESC>**	Parameters **<oa>** GSM 03.40 TP-Originating-Address Address-Value field in string format(string should be included in quotation marks); BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS in 3GPP TS 27.007);type of address given by <**tooa**> **<da>** GSM 03.40 TP-Destination-Address Address-Value field in string format(string should be included in quotation marks); BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in 3GPP TS 27.007); type of address given by <**toda**> **<tooa>** GSM 04.11 TP-Originating-Address Type-of-Address octet

	in integer format (default refer <**toda**>) **<toda>** GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <**da**> is + (IRA 43) default is 145, otherwise default is 129) 129 Unknown type(IDSN format number) 161 National number type(IDSN format) 145 International number type(ISDN format) 177 Network specific number(ISDN format) **<length>** Integer type value (not exceed 160 bytes) 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) **<stat>** in the text mode (**+CMGF=1**): "STO UNSENT" Stored unsent messages "STO SENT" Stored sent messages in PDU mode (**+CMGF=0**): 0 Received unread messages 1 Received read messages 2 Stored unsent messages 3 Stored sent messages **<pdu>** In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)). In the case of CBS: GSM 03.41 TPDU in hexadecimal format. **<index>** Index of message in selected storage <**mem2**>
Execution Command **AT+CMGW**	Response TA transmits SMS message (either SMS-DELIVER or SMS-SUBMIT) from TE to memory storage <**mem2**>. Memory location <**index**> of the stored message is returned. By default message status will be set to 'stored unsent', but parameter <**stat**> allows also other status values to be given. If writing is successful: **+CMGW: <index>** **OK** If error is related to ME functionality: **+CMS ERROR: <err>**
Parameter Saving Mode	NO_SAVE
Max Response Time	5s

Reference 3GPP TS 27.005	Note

4.2.7 AT+CMSS Send SMS Message from Storage

AT+CMSS Send SMS Message from Storage	
Test Command **AT+CMSS=?**	Response **OK**
Write Command **AT+CMSS=<index>[,<da>,<toda>]**	Response TA sends message with location value <**index**> from message storage <**mem2**> to the network (SMS-SUBMIT). If new recipient address <**da**> is given, it shall be used instead of the one stored with the message. Reference value <**mr**> is returned to the TE on successful message delivery. Values can be used to identify message upon unsolicited delivery status report result code. 1) If text mode(**+CMGF=1**) and sending successful: **+CMSS: <mr>** **OK** 2) If PDU mode(**+CMGF=0**) and sending successful: **+CMSS: <mr>** **OK** 3)If error is related to ME functionality: **+CMS ERROR: <err>**
	Parameters **<index>** Integer type; value in the range of location numbers supported by the associated memory **<da>** GSM 03.40 TP-Destination-Address Address-Value field in string format(string should be included in quotation marks); BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in 3GPP TS 27.007); type of address given by <**toda**> **<toda>** GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <**da**> is + (IRA 43) default is 145, otherwise default is 129) **<mr>** GSM 03.40 TP-Message-Reference in integer format
Parameter Saving Mode	NO_SAVE
Max Response Time	60s
Reference 3GPP TS 27.005	Note

4.2.8 AT+CNMI New SMS Message Indications

AT+CNMI New SMS Message Indications	
Test Command **AT+CNMI=?**	Response **+CNMI: (**list of supported **<mode>**s**),(**list of supported **<mt>**s**),(**list of supported **<bm>**s**),(**list of supported **<ds>**s**),(**list of supported **<bfr>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CNMI?**	Response **+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>** **OK**
	Parameters See Write Command
Write Command **AT+CNMI=<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]**	Response TA selects the procedure for how the receiving of new messages from the network is indicated to the TE when TE is active, e.g. DTR signal is ON. If TE is inactive (e.g. DTR signal is OFF), message receiving should be done as specified in GSM 03.38. **OK** **ERROR**
	Parameters **<mode>** 0 Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications. 1 Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE. 2 Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE. 3 Forward unsolicited result codes directly to the TE. TA-TE link specific inband technique used to embed result codes and data when TA is in on-line data mode. **<mt>** (the rules for storing received SMs depend on its data coding scheme (refer GSM 03.38 [2]), preferred memory storage (+CPMS) setting and this value): 0 No SMS-DELIVER indications are routed to the TE. 1 If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code:

	+CMTI: <mem>,<index> 2 SMS-DELIVERs (except class 2) are routed directly to the TE using unsolicited result code: **+CMT: [<alpha>],<length><CR><LF><pdu>** (PDU mode enabled) or **+CMT: <oa>,[<alpha>],<scts>** **[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data>** (text mode enabled; about parameters in italics, refer Command Show Text Mode Parameters +CSDH). Class 2 messages result in indication as defined in <**mt**>=1. 3 Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in <**mt**>=2. Messages of other classes result in indication as defined in <**mt**>=1. **<bm>** (the rules for storing received CBMs depend on its data coding scheme (refer GSM 03.38 [2]), the setting of Select CBM Types (+CSCB) and this value): 0 No CBM indications are routed to the TE. 2 New CBMs are routed directly to the TE using unsolicited result code: **+CBM: <length><CR><LF><pdu>** (PDU mode enabled) or **+CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data>** (text mode enabled). **<ds>** 0 No SMS-STATUS-REPORTs are routed to the TE. 1 SMS-STATUS-REPORTs are routed to the TE using unsolicited result code: **+CDS:<length><CR><LF><pdu>** (PDU mode enabled) or **+CDS: <fo>,<mr>[,<ra>][,<tora>],<scts>,<dt>,<st>** (text mode enabled) **<bfr>** 0 TA buffer of unsolicited result codes defined within this Command is flushed to the TE when <**mode**> 1...3 is entered (OK response shall be given before flushing the codes). 1 TA buffer of unsolicited result codes defined within this command is cleared when <**mode**> 1…3 is entered
	Unsolicited result code 1. Indicates that new message has been received If <**mt**>=1: **+CMTI: <mem3>, <index>** If <**mt**>=2 (PDU mode enabled): **+CMT: [<alpha>],<length><CR><LF><pdu>** If <**mt**>=2 (text mode enabled): **+CMT: <oa>, <scts>[, <tooa>, <fo>, <pid>, <dcs>, <sca>, <tosca>, <length>]<CR><LF><data>** 2. Indicates that new cell broadcast message has been received If <**bm**>=2 (PDU mode enabled): **+CBM: <length><CR><LF><pdu>**

	If <**bm**>=2 (text mode enabled): **+CBM: <sn>, <mid>, <dcs>, <page>, <pages><CR><LF><data>** 3. Indicates that new SMS status report has been received If <**ds**>=1 (PDU mode enabled): **+CDS: <length><CR><LF><pdu>** If <**ds**>=1 (text mode enabled): **+CDS: <fo>, <mr>[, <ra>][, <tora>], <scts>, <dt>, <st>**
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference 3GPP TS 27.005	Note

4.2.9 AT+CPMS Preferred SMS Message Storage

AT+CPMS Preferred SMS Message Storage	
Test Command **AT+CPMS=?**	Response **+CPMS: (**list of supported **<mem1>**s**),(**list of supported **<mem2>**s**),(**list of supported **<mem3>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CPMS?**	Response **+CPMS: <mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>, <mem3>,<used3>,<total3>** **OK** **ERROR**
	Parameters See Write Command
Write Command **AT+CPMS=<mem1>[,<mem2>[,<mem3>]]**	Response TA selects memory storages <mem1>, <mem2> and <mem3> to be used for reading, writing, etc. **+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3>** **OK** **ERROR**
	Parameters **<mem1>** Messages to be read and deleted from this memory storage "SM" SIM message storage

	"ME" Phone message storage "SM_P" SM message storage preferred "ME_P" ME message storage preferred "MT" SM or ME message storage (SM preferred) **<mem2>** Messages will be written and sent to this memory storage "SM" SIM message storage "ME" Phone message storage "SM_P" SM message storage preferred "ME_P" ME message storage preferred "MT" SM or ME message storage (SM preferred) **<mem3>** Received messages will be placed in this memory storage if routing to PC is not set ("+CNMI") "SM" SIM message storage "ME" Phone message storage "SM_P" SM message storage preferred "ME_P" ME message storage preferred "MT" SM or ME message storage (SM preferred) **<usedx>** Integer type; Number of messages currently in <memx> **<totalx>** Integer type; Number of messages storable in <memx>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.005	Note

4.2.12 AT+CSCA SMS Service Center Address

AT+CSCA SMS Service Center Address	
Test Command **AT+CSCA=?**	Response **OK**
Read Command **AT+CSCA?**	Response **+CSCA: <sca>,<tosca>[,<scaAlpha>]** **OK**
	Parameters See Write Command
Write Command **AT+CSCA=<sca>[,<tosca>]**	Response TA updates the SMSC address, through which mobile originated SMS are transmitted. In text mode, setting is used by send and writes commands. In PDU mode, setting is used by the same commands, but only when the length of the SMSC address coded into <pdu> parameter equals zero. Note: The Command writes the parameters in NON-VOLATILE memory.

	OK If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<sca>** GSM 04.11 RP SC address Address-Value field in string format(string should be included in quotation marks); BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS in 3GPP TS 27.007); type of address given by <tosca> **<tosca>** Service center address format GSM 04.11 RP SC address Type-of-Address octet in integer format (default refer <toda>) **<scaAlpha>** String type(string should be included in quotation marks) Service center address alpha data
Parameter Saving Mode	NO_SAVE
Max Response Time	5s
Reference 3GPP TS 27.005	Note

7 AT Commands for GPRS Support

7.1 Overview of AT Commands for GPRS Support

Command	Description
AT+CGATT	Attach or detach from GPRS service
AT+CGDCONT	Define PDP context
AT+CGQMIN	Quality of service profile (minimum acceptable)
AT+CGQREQ	Quality of service profile (requested)
AT+CGACT	PDP context activate or deactivate
AT+CGDATA	Enter data state
AT+CGPADDR	Show PDP address
AT+CGCLASS	GPRS mobile station class
AT+CGEREP	Control unsolicited GPRS event reporting
AT+CGREG	Network registration status
AT+CGSMS	Select service for MO SMS messages

7.2 Detailed Descriptions of AT Commands for GPRS Support

7.2.1 AT+CGATT Attach or Detach from GPRS Service

AT+CGATT Attach or Detach from GPRS Service	
Test Command **AT+CGATT=?**	Response **+CGATT: (**list of supported **<state>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CGATT?**	Response **+CGATT: <state>** **OK**
	Parameters See Write Command
Write Command **AT+CGATT=<state>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<state>** Indicates the state of GPRS attachment

	0 Detached 1 Attached Other values are reserved and will result in an ERROR response to the Write Command.
Parameter Saving Mode	NO_SAVE
Max Response Time	75 seconds
Reference	Note

7.2.2 AT+CGDCONT Define PDP Context

AT+CGDCONT	**Define PDP Context**
Test Command **AT+CGDCONT=?**	Response **+CGDCONT: (**range of supported **<cid>**s**),<PDP_type>,,,(**list of supported**<d_comp>**s**),(**list of supported**<h_comp>**s**)** **[<CR><LF>+CGDCONT:** **(**range of supported **<cid>**s**), <PDP_type>,,,(**list ofsupported **<d_comp>**s**),(**list of supported **<h_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) IP Internet Protocol (IETF STD 5) **<APN>** (Access Point Name) A string parameter (string should be included in quotation marks) which 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.The default value is NULL. **<PDP_addr>** A string parameter (IP address). Format: "**<n>.<n>.<n>.<n>**" where <**n**>=0..255 If the value is null or equals 0.0.0.0 a dynamic address will be requested. The allocated address may be read using the +CGPADDR command **<d_comp>** A numeric parameter that controls PDP data compression 0 –PDP data compression off (default if value is omitted) **<h_comp>** A numeric parameter that controls PDP data compression 0 –PDP header compression off (default if value is omitted)
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note

7.2.3 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)** [<CR><LF>+CGQMIN: <PDP_type>,**(list of supported **<precedence>**s)**,**(list of supported **<delay>**s)**,**(list of supported **<reliability>**s)**,**(list of supported **<peak>**s)**,**(list of supported **<mean>**s)** […]] **OK**
	Parameters See Write Command

Read Command **AT+CGQMIN?**	Response **+CGQMIN: <cid>,<precedence>,<delay>,>reliability>,<peak>,<mean>** **[<CR><LF>+CGQMIN:** **<cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>** **[…]]** **OK**
	Parameters See Write Command
Write Command **AT+CGQMIN=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<cid>** 1..3 A numeric parameter which specifies a particular PDP context definition (see +CGDCONT command) **<precedence>** 0 QOS precedence class subscribed value 1..3 QOS precedence class **<delay>** 0 QOS delay class subscribed value 1..4 QOS delay class subscribed **<reliability>** 0 QOS reliability class subscribed value 1..5 QOS reliability class. **<peak>** 0 QOS peak throughput class subscribed value 1..9 QOS peak throughput class **<mean>** 0 QOS mean throughput class subscribed value 1..18 QOS mean throughput class 31 QOS mean throughput class best effort
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note

7.2.4 AT+CGQREQ Quality of Service Profile (Requested)

AT+CGQREQ Quality of Service Profile (Requested)

Test Command **AT+CGQREQ=?**	Response **+CGQREQ: <PDP_type>,**(list of supported **<precedence>**s)**,(**list of supported **<delay>**s)**,(**list of supported **<reliability>**s)**,**<**list of supported **<peak>**s)**,(**list of supported **<mean>**s)** **[<CR><LF>+CGQREQ: <PDP_type>,**(list of supported **<precedence>**s)**,(**list of supported **<delay>**s)**,(**list of supported **<reliability>**s)**,(**list of supported **<peak>**s)**,(**list of supported **<mean>**s)** **[…]]** **OK**
	Parameters See Write Command
Read Command **AT+CGQREQ?**	Response **+CGQREQ: <cid>,<precedence>,<delay>,>reliability>,<peak>,<mean>** **[<CR><LF>+CGQREQ:** **<cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>** **[…]]** **OK**
	Parameters See Write Command
Write Command **AT+CGQREQ=cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<cid>** A numeric parameter which specifies a particular PDP context definition (see +CGDCONT Command) The following parameter are defined in GSM 03.60 **<precedence>** A numeric parameter which specifies the precedence class 0 QOS precedence class subscribed value 1..3 QOS precedence class **<delay>** A numeric parameter which specifies the delay class 0 QOS delay class subscribed value 1..4 QOS delay class **<reliability>** A numeric parameter which specifies the reliability class 0 QOS reliability class subscribed value 1..5 QOS reliability class; default value: 3 **<peak>** A numeric parameter which specifies the peak throughput class 0 QOS peak throughput class subscribed value 1..9 QOS peak throughput class

	<mean> A numeric parameter which specifies the mean throughput class 0 QOS mean throughput class subscribed value 1..18 QOS mean throughput class 31 QOS mean throughput class best effort
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note

7.2.5 AT+CGACT PDP Context Activate or Deactivate

AT+CGACT PDP Context Activate or Deactivate	
Test Command **AT+CGACT=?**	Response **+CGACT: (**list of supported **<state>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CGACT?**	Response **+CGACT: <cid>,<state>[<CR><LF>+CGACT:<cid>,<state>…]** **OK**
	Parameters See Write Command
Write Command **AT+CGACT=<state>[,<cid>]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<state>** Indicates the state of PDP context activation 0 Deactivated 1 Activated Other values are reserved and will result in an ERROR response to the Write Command. **<cid>** A numeric parameter which specifies a particular PDP context definition (see +CGDCONT Command). If the <cid> is omitted, it only affects the first cid.
Parameter Saving Mode	NO_SAVE
Max Response	150 seconds

Time	
Reference	Note ● This command is used to test PDPs with network simulators. Successful activation of PDP on real network is not guaranteed. ● Refer to **AT+CGDATA** clarification for more information.

7.2.6 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>]**	Response **CONNECT** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<L2P>** A string parameter (string should be included in quotation marks) 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)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

7.2.7 AT+CGPADDR Show PDP Address

AT+CGPADDR Show PDP Address	
Test Command **AT+CGPADDR=?**	Response **+CGPADDR: (**list of defined **<cid>**s**)** **OK**
	Parameters See Write Command

Write Command **AT+CGPADDR=<cid>**	Response **+CGPADDR: <cid>,<PDP_addr>** **[<CR><LF>+CGPADDR: <cid>,<PDP_addr>[…]]** **OK** **ERROR**
	Parameters **<cid>** A numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** Command) **<PDP_addr>** String type, IP address Format: "**<n>.<n>.<n>.<n>**" where <**n**>=0..255
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note Write command returns address provided by the network if a connection has been established.

7.2.8 AT+CGCLASS GPRS Mobile Station Class

AT+CGCLASS GPRS Mobile Station Class	
Test Command **AT+CGCLASS=?**	Response **+CGCLASS: (**list of supported **<class>**s**)** **OK**
	Parameter See Write Command
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(string should be included in quotation marks) which indicates the GPRS mobile class (in descending order of functionality)

	B Class-B mode of operation (A/Gb mode), (not applicable in Iu mode) MT would operate PS and CS services but not simultaneously CG Class C in GPRS only mode CC Class C in circuit switched only mode (lowest)
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note It only supports Class B, CG and CC.

7.2.9 AT+CGEREP Control Unsolicited GPRS Event Reporting

AT+CGEREP Control Unsolicited GPRS Event Reporting	
Test Command **AT+CGEREP=?**	Response **+CGEREP: (**list of supported **<mode>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CGEREP?**	Response **+CGEREP: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+CGEREP=<mode>**	Response **OK** **ERROR**
	Parameters **<mode>** 0 Disable event reporting. 1 Enable event reporting. 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 DETACH** 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)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

7.2.10 AT+CGREG Network Registration Status

AT+CGREG Network Registration Status	
Test Command **AT+CGREG=?**	Response **+CGREG: (**list of supported **<n>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CGREG?**	Response **+CGREG: <n>,<stat>[,<lac>,<ci>]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command
Write Command **AT+CGREG=[<n>]**	Response **OK** **ERROR**
	Parameters **<n>** 0 Disable network registration unsolicited result code 1 Enable network registration unsolicited result code **+CGREG:<stat>** 2 Enable network registration and location information unsolicited result code **+CGREG: <stat>[,<lac>,<ci>]** **<stat>** 0 Not registered, MT is not currently searching an operator to register to.The GPRS service is disabled, the UE is allowed to attach for GPRS if requested by the user. 1 Registered, home network. 2 Not registered, but MT is currently trying to attach or

	searching an operator to register to. The GPRS service is enabled, but an allowable PLMN is currently not available. The UE will start a GPRS attach as soon as an allowable PLMN is available. 3 Registration denied, The GPRS service is disabled, the UE is not allowed to attach for GPRS if it is requested by the user. 4 Unknown 5 Registered, roaming **<lac>** String type (string should be included in quotation marks); two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal) **<ci>** String type (string should be included in quotation marks); two bytes cell ID in hexadecimal format
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference	Note

7.2.11 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**
	Parameters See Write Command
Read Command **AT+CGSMS?**	Response **+CGSMS: <service>** **OK**
	Parameters See Write Command
Write Command **AT+CGSMS=<service>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<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)
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note

8 AT Commands for TCPIP Application Toolkit

8.1 Overview

Command	Description
AT+CIPMUX	Start up multi-IP connection
AT+CIPSTART	Start up TCP or UDP connection
AT+CIPSEND	Send data through TCP or UDP connection
AT+CIPQSEND	Select data transmitting mode
AT+CIPACK	Query previous connection data transmitting state
AT+CIPCLOSE	Close TCP or UDP connection
AT+CIPSHUT	Deactivate GPRS PDP context
AT+CLPORT	Set local port
AT+CSTT	Start task and set APN, user name, password
AT+CIICR	Bring up wireless connection with GPRS or CSD
AT+CIFSR	Get local IP address
AT+CIPSTATUS	Query current connection status
AT+CDNSCFG	Configure domain name server
AT+CDNSGIP	Query the IP address of given domain name
AT+CIPHEAD	Add an IP head at the beginning of a package received
AT+CIPATS	Set auto sending timer
AT+CIPSPRT	Set prompt of '>' when module sends data
AT+CIPSERVER	Configure module as server
AT+CIPCSGP	Set CSD or GPRS for connection mode
AT+CIPSRIP	Show remote IP address and port when received data
AT+CIPDPDP	Set whether to check state of GPRS network timing
AT+CIPMODE	Select TCPIP application mode
AT+CIPCCFG	Configure transparent transfer mode
AT+CIPSHOWTP	Display transfer protocol in IP head when received data
AT+CIPUDPMODE	UDP extended mode
AT+CIPRXGET	Get data from network manually
AT+CIPRDTIMER	Set remote delay timer
AT+CIPSGTXT	Select GPRS PDP context

8.2 Detailed Descriptions of Commands

8.2.1 AT+CIPMUX Start Up Multi-IP Connection

AT+CIPMUX Start Up Multi-IP Connection	
Test Command **AT+CIPMUX=?**	Response **+CIPMUX: (0,1)** **OK**
	Parameters See Write Command
Read Command **AT+CIPMUX?**	Response **+CIPMUX: <n>** **OK**
	Parameters See Write Command
Write Command **AT+CIPMUX=<n>**	Response **OK**
	Parameters **<n>** 0 Single IP connection 1 Multi IP connection
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note ● Only in IP initial state, **AT+CIPMUX=1** is effective; ● Only when multi IP connection and GPRS application are both shut down, **AT+CIPMUX=0** is effective.

8.2.2 AT+CIPSTART Start Up TCP or UDP Connection

AT+CIPSTART Start Up TCP or UDP Connection	
Test Command **AT+CIPSTART=?**	Response 1) If AT+CIPMUX=0 **+CIPSTART: (**list of supported **<mode>),(<IP address>),(<port>)** **+CIPSTART: (**list of supported **<mode>),(<domain name>),(<port>)** **OK** 2) If AT+CIPMUX=1 **+CIPSTART: (**list of supported **<n>),(**list of supported **<mode>),(<IP address>),(<port>)** **+CIPSTART: (**list of supported **<n>),(**list of supported **<mode>),(<domain**

	name>),(<port>) **OK**
	Parameters See Write Command
Write Command 1)If single IP connection (+CIPMUX=0) **AT+CIPSTART=<mode>,<IP address>,<port>** Or **AT+CIPSTART=<mode>,<domain name>,<port>** 2)If multi-IP connection (+CIPMUX=1) **AT+CIPSTART=<n>,<mode>,<address>,<port>** **AT+CIPSTART=<n>,<mode>,<domain name>,<port>**	Response 1)If single IP connection (**+CIPMUX=0**) If format is right response **OK** otherwise response If error is related to ME functionality: **+CME ERROR <err>** Response when connection exists **ALREADY CONNECT** Response when connection is successful **CONNECT OK** Otherwise **STATE: <state>** **CONNECT FAIL** 2)If multi-IP connection (+CIPMUX=1) If format is right **OK**, otherwise response If error is related to ME functionality: **+CME ERROR <err>** Response when connection exists **<n>,ALREADY CONNECT** If connection is successful **<n>,CONNECT OK** Otherwise **<n>,CONNECT FAIL**
	Parameters **<n>** 0..5 A numeric parameter which indicates the connection number **<mode>** A string parameter which indicates the connection type "TCP" Establish a TCP connection "UDP" Establish a UDP connection **<IP address>** A string parameter which indicates remote server IP address **<port>** Remote server port **<domain name>** A string parameter which indicates remote server domain name **<state>** A string parameter which indicates the progress of connecting

	0 IP INITIAL 1 IP START 2 IP CONFIG 3 IP GPRSACT 4 IP STATUS 5 TCP CONNECTING/UDP CONNECTING/ SERVER LISTENING 6 CONNECT OK 7 TCP CLOSING/UDP CLOSING 8 TCP CLOSED/UDP CLOSED 9 PDP DEACT In Multi-IP state: 0 IP INITIAL 1 IP START 2 IP CONFIG 3 IP GPRSACT 4 IP STATUS 5 IP PROCESSING 9 PDP DEACT
Parameter Saving Mode	NO_SAVE
Max Response Time	When mode is multi-IP state, the max response time75 seconds. When mode is single state, and the state is IP INITIAL, the max response time is 160 seconds.
Reference	Note ● This command allows establishment of a TCP/UDP connection only when the state is IP INITIAL or IP STATUS when it is in single state. In multi-IP state, the state is in IP STATUS only. So it is necessary to process "**AT+CIPSHUT**" before user establishes a TCP/UDP connection with this command when the state is not IP INITIAL or IP STATUS. ● When module is in multi-IP state, before this command is executed, it is necessary to process "**AT+CSTT**, **AT+CIICR**, **AT+CIFSR**".

8.2.3 AT+CIPSEND Send Data Through TCP or UDP Connection

AT+CIPSEND Send Data Through TCP or UDP Connection	
Test Command **AT+CIPSEND=?**	Response 1) For single IP connection (+CIPMUX=0) **+CIPSEND: <length>** **OK** 2) For multi IP connection (+CIPMUX=1) **+CIPSEND: (0-5),<length>**

	OK
	Parameters See Write Command
Read Command **AT+CIPSEND?**	Response 1) For single IP connection (+CIPMUX=0) **+CIPSEND: <size>** **OK** 2) For multi IP connection (+CIPMUX=1) **+CIPSEND: <n>,<size>** **OK**
	Parameters **<n>** A numeric parameter which indicates the connection number **<size>** A numeric parameter which indicates the data length sent at a time
Write Command 1) If single IP connection (+CIPMUX=0) **AT+CIPSEND=<length>** 2) If multi IP connection (+CIPMUX=1) **AT+CIPSEND=<n>[,<length>]**	Response This Command is used to send changeable length data If single IP is connected (+CIPMUX=0) If connection is not established or module is disconnected: If error is related to ME functionality: **+CME ERROR <err>** If sending is successful: When +CIPQSEND=0 **SEND OK** When +CIPQSEND=1 **DATA ACCEPT:<length>** If sending fails: **SEND FAIL** If multi IP connection is established (+CIPMUX=1) If connection is not established or module is disconnected: If error is related to ME functionality: **+CME ERROR <err>** If sending is successful: When +CIPQSEND=0 **<n>,SEND OK** When +CIPQSEND=1 **DATA ACCEPT:<n>,<length>** If sending fails: **<n>,SEND FAIL**
	Parameters **<n>** A numeric parameter which indicates the connection number

	<length> A numeric parameter which indicates the length of sending data, it must be less than <size>
Execution Command **AT+CIPSEND** response">", then type data for send, tap CTRL+Z to send, tap ESC to cancel the operation	Response This Command is used to send changeable length data. If single IP connection is established (+CIPMUX=0) If connection is not established or module is disconnected: If error is related to ME functionality: **+CME ERROR <err>** If sending is successful: When +CIPQSEND=0 **SEND OK** When +CIPQSEND=1 **DATA ACCEPT:<length>** If sending fails: **SEND FAIL** Note This Command can only be used in single IP connection mode (+CIPMUX=0) and 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. There are at most **<size>** bytes which can be sent at a time.
Parameter Saving Mode	NO_SAVE
Max Response Time	When +CIPQSEND=0 and the remote server no response, after 645 seconds, "**CLOSE**" will be reported.
Reference	Note ● The data length which can be sent depends on network status. ● Set the time that send data automatically with the Command of AT+CIPATS. ● Only send data at the status of established connection.

8.2.4 AT+CIPQSEND Select Data Transmitting Mode

AT+CIPQSEND	**Select Data Transmitting Mode**
Test Command **AT+CIPQSEND =?**	Response **+CIPQSEND: (0,1)** **OK**
	Parameters See Write Command
Read Command **AT+CIPQSEND**	Response **+CIPQSEND: <n>**

?	**OK**
	Parameter See Write Command
Write Command **AT+CIPQSEND=<n>**	Response **OK**
	Parameters **<n>** 0 Normal mode – when the server receives TCP data, it will responsd SEND OK. 1 Quick send mode – when the data is sent to module, it will responsd DATA ACCEPT:<n>,<length>, while not responding SEND OK.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.5 AT+CIPACK Query Previous Connection Data Transmitting State

AT+CIPACK Query Previous Connection Data Transmitting State	
Test Command **AT+CIPACK=?**	Response **OK**
Write Command If in multi IP connection (+CIPMUX=1) **AT+CIPACK=<n>**	Response **+CIPACK: <txlen>, <acklen>, <nacklen>** **OK**
	Parameters **<n>** A numeric parameter which indicates the connection number **<txlen>** The data amount which has been sent **<acklen>** The data amount confirmed successfully by the server **<nacklen>** The data amount without confirmation by the server
Execution Command If in single IP connection (+CIPMUX=0) **AT+CIPACK**	Response **+CIPACK: <txlen>, <acklen>, <nacklen>** **OK**
	Parameters See Write Command
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.6 AT+CIPCLOSE Close TCP or UDP Connection

AT+CIPCLOSE	**Close TCP or UDP Connection**
Test Command **AT+CIPCLOSE=?**	Response **OK**
Write Command 1) If single IP connection (+CIPMUX=0) **AT+CIPCLOSE=<n>** 2) If multi IP connection (+CIPMUX=1) **AT+CIPCLOSE=<id>,[<n>]**	Response: 1) For single IP connection (+CIPMUX=0) **CLOSE OK** 2) For multi IP connection (+CIPMUX=1) **<id>, CLOSE OK** Parameters **<n>** 0 Slow close 1 Quick close **<id>** A numeric parameter which indicates the connection number
Execution Command **AT+CIPCLOSE**	Response If close is successfully: **CLOSE OK** If close fails: **ERROR**
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note AT+CIPCLOSE only closes connection at corresponding status of TCP/UDP stack. To see the status use AT+CIPSTATUS command. Status should be: TCP CONNECTING, UDP CONNECTING, SERVER LISTENING or CONNECT OK in single-connection mode (see <state> parameter); CONNECTING or CONNECTED in multi-connection mode (see <client state>); OPENING or LISTENING in multi-connection mode (see <server state>). Otherwise it will return ERROR".

8.2.7 AT+CIPSHUT Deactivate GPRS PDP Context

AT+CIPSHUT	**Deactivate GPRS PDP Context**
Test Command	Response

AT+CIPSHUT=?	OK
Execution Command **AT+CIPSHUT**	Response If close is successful: **SHUT OK** If close fails: **ERROR**
Parameter Saving Mode	NO_SAVE
Max Response Time	65 seconds
Reference	Note ● If this command is executed in multi-connection mode, all of the IP connection will be shut. ● User can close gprs pdp context by AT+CIPSHUT. After it is closed, the status is IP INITIAL. ● If "+PDP: DEACT" urc is reported which means the gprs is released by the network, then user still needs to execute "AT+CIPSHUT" command to make PDP context come back to original state.

8.2.8 AT+CLPORT Set Local Port

AT+CLPORT Set Local Port	
Test Command **AT+CLPORT=?**	Response 1) For single IP connection (+CIPMUX=0) **+CLPORT: ("TCP","UDP"),(0-65535)** **OK** 2) For multi IP connection (+CIPMUX=1) **+CLPORT: (0-5),("TCP","UDP"),(0-65535)** **OK**
	Parameters See Write Command
Read Command **AT+CLPORT?**	Response 1) For single IP connection (+CIPMUX=0) **+CLPORT: <TCP port>,<UDP port>** **OK** 2) For multi IP connection (+CIPMUX=1) **+CLPORT: 0,<TCP port>,<UDP port>** **+CLPORT: 1,<TCP port>,<UDP port>** **+CLPORT: 2,<TCP port>,<UDP port>** **+CLPORT: 3,<TCP port>,<UDP port>** **+CLPORT: 4,<TCP port>,<UDP port>**

	+CLPORT: 5,<TCP port>,<UDP port> **OK**
	Parameters See Write Command
Write Command 1) For single IP connection (+CIPMUX=0) **AT+CLPORT=<mode>,<port>** 2) For multi IP connection (+CIPMUX=1) **AT+CLPORT=<n>,<mode>,<port>**	Response **OK** **ERROR**
	Parameters **<n>** 0..5 A numeric parameter which indicates the connection number this used in multi IP connection **<mode>** A string parameter which indicates the connection type "TCP" TCP local port "UDP" UDP local port **<port>** 0-65535 A numeric parameter which indicates the local port. Default value is 0, a port can be dynamically allocated a port.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note This command will be effective when module is set as a Client.

8.2.9 AT+CSTT Start Task and Set APN, USER NAME, PASSWORD

AT+CSTT Start Task and Set APN, USER NAME, PASSWORD	
Test Command **AT+CSTT=?**	Response **+CSTT: "APN","USER","PWD"** **OK**
	Parameters See Write Command
Read Command **AT+CSTT?**	Response **+CSTT: <apn>,<user name>,<password>** **OK**
	Parameters See Write Command
Write Command **AT+CSTT=<apn>,<user name>,<passwor**	Response **OK** **ERROR**
	Parameters

d>	**<apn>** A string parameter which indicates the GPRS access point name. The max length is 50 bytes.Defautl value is "CMNET". **<user name>** A string parameter which indicates the GPRS user name. The max length is 50 bytes. **<password>** A string parameter which indicates the GPRS password. The max length is 50 bytes.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Execution Command **AT+CSTT**	Response **OK** **ERROR**
Reference	Note The write command and execution command of this command is valid only at the state of IP INITIAL. After this command is executed, the state will be changed to IP START.

8.2.10 AT+CIICR Bring Up Wireless Connection with GPRS or CSD

AT+CIICR Bring Up Wireless Connection with GPRS or CSD	
Test Command **AT+CIICR=?**	Response **OK**
Execution Command **AT+CIICR**	Response **OK** **ERROR**
Parameter Saving Mode	NO_SAVE
Max Response Time	85 seconds
Reference	Note ● AT+CIICR only activates moving scene at the status of IP START, after operating this Command is executed, the state will be changed to IP CONFIG. ● After module accepts the activated operation, if it is activated successfully, module state will be changed to IP GPRSACT, and it responds OK, otherwise it will respond ERROR.

8.2.11 AT+CIFSR Get Local IP Address

AT+CIFSR Get Local IP Address	
Test Command **AT+CIFSR=?**	Response **OK**
Execution	Response

Command **AT+CIFSR**	**<IP address>** **ERROR**
	Parameter **<IP address>** A string parameter which indicates the IP address assigned from GPRS or CSD.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note Only after PDP context is activated, local IP address can be obtained by AT+CIFSR, otherwise it will respond ERROR. To see the status use AT+CIPSTATUS command. Status should be: IP GPRSACT, TCP CONNECTING, UDP CONNECTING, SERVER LISTENING, IP STATUS, CONNECT OK, TCP CLOSING, UDP CLOSING, TCP CLOSED, UDP CLOSED in single-connection mode (see <state> parameter); IP STATUS, IP PROCESSING in multi-connection mode (see <state> parameter).

8.2.12 AT+CIPSTATUS Query Current Connection Status

AT+CIPSTATUS	**Query Current Connection Status**
Test Command **AT+CIPSTATUS=?**	Response **OK**
Write Command If multi IP connection mode (+CIPMUX=1) **AT+CIPSTATUS=<n>**	Response **+CIPSTATUS: <n>,<bearer>, <TCP/UDP>, <IP address>, <port>, <client state>** **OK**
	Parameters See Execution Command
Execution Command **AT+CIPSTATUS**	Response 1）If in single connection mode (+CIPMUX=0) **OK** **STATE: <state>** 2) If in multi-connection mode (+CIPMUX=1) **OK** **STATE: <state>** If the module is set as server **S: 0, <bearer>, <port>, <server state>**

	C: <n>,<bearer>, <TCP/UDP>, <IP address>, <port>, <client state>
	Parameters **<n>** 0-5 A numeric parameter which indicates the connection number **<bearer>** 0-1 GPRS bearer, default is 0 **<server state>** OPENING LISTENING CLOSING **<client state>** INITIAL CONNECTING CONNECTED REMOTE CLOSING CLOSING CLOSED **<state>** A string parameter which indicates the progress of connecting 0 IP INITIAL 1 IP START 2 IP CONFIG 3 IP GPRSACT 4 IP STATUS 5 TCP CONNECTING/UDP CONNECTING /SERVER LISTENING 6 CONNECT OK 7 TCP CLOSING/UDP CLOSING 8 TCP CLOSED/UDP CLOSED 9 PDP DEACT In Multi-IP state: 0 IP INITIAL 1 IP START 2 IP CONFIG 3 IP GPRSACT 4 IP STATUS 5 IP PROCESSING 9 PDP DEACT
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.13 AT+CDNSCFG Configure Domain Name Server

AT+CDNSCFG	Configure Domain Name Server
Test Command **AT+CDNSCFG=?**	Response **+CDNSCFG: ("Primary DNS"),("Secondary DNS")** **OK**
	Parameters See Write Command
Read Command **AT+CDNSCFG?**	Response **PrimaryDns: <pri_dns>** **SecondaryDns: <sec_dns>** **OK**
	Parameter See Write Command
Write Command **AT+CDNSCFG=<pri_dns>[,<sec_dns>]**	Response **OK** **ERROR**
	Parameters **<pri_dns>** A string parameter which indicates the IP address of the primary domain name server. Default value is 0.0.0.0. **<sec_dns>** A string parameter which indicates the IP address of the secondary domain name server. Default value is 0.0.0.0.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.14 AT+CDNSGIP Query the IP Address of Given Domain Name

AT+CDNSGIP	Query the IP Address of Given Domain Name
Test Command **AT+CDNSGIP=?**	Response **OK**
Write Command **AT+CDNSGIP=<domain name>**	Response **OK** **ERROR** If successful, return: **+CDNSGIP: 1, <domain name>,<IP1>[,<IP2>]** If fail, return: **+CDNSGIP:0,<dns error code>**

	Parameters **<domain name>** A string parameter which indicates the domain name **<IP1>** A string parameter which indicates the first IP address corresponding to the domain name **<IP2>** A string parameter which indicates the second IP address corresponding to the domain name **<dns error code>** A numeric parameter which indicates the error code 8 DNS COMMON ERROR 3 NETWORK ERROR There are some other error codes as well.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.15 AT+CIPHEAD Add an IP Head at the Beginning of a Package Received

AT+CIPHEAD Add an IP Head at the Beginning of a Package Received	
Test Command **AT+CIPHEAD=?**	Response **+CIPHEAD: (**list of supported **<mode>**s**)** **OK**
	Parameter See Write Command
Read Command **AT+CIPHEAD?**	Response **+CIPHEAD: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+CIPHEAD=<mode>**	Response **OK** **ERROR**
	Parameters **<mode>** A numeric parameter which indicates whether an IP header is added to the received data or not. 0 Not add IP header 1 Add IP header, the format is: 1) For single IP connection (+CIPMUX=0) **+IPD,<data length>:** 2) For multi IP connection (+CIPMUX=1)

	+RECEIVE,<n>,<data length>:
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.16 AT+CIPATS Set Auto Sending Timer

AT+CIPATS Set Auto Sending Timer	
Test Command **AT+CIPATS=?**	Response **+CIPATS: (**list of supported **<mode>**s**),(**list of supported **<time**>) **OK**
	Parameters See Write Command
Read Command **AT+CIPATS?**	Response **+CIPATS: <mode>,<time>** **OK**
	Parameters See Write Command
Write Command **AT+CIPATS=<mode>[,<time>]**	Response **OK** **ERROR**
	Parameters **<mode>** A numeric parameter which indicates whether set timer when module is sending data 0 Not set timer when module is sending data 1 Set timer when module is sending data **<time>** 1..100 A numeric parameter which indicates the seconds after which the data will be sent
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.17 AT+CIPSPRT Set Prompt of '>' When Module Sends Data

AT+CIPSPRT Set Prompt of '>' When Module Sends Data	
Test Command	Response

AT+CIPSPRT=?	**+CIPSPRT: (**list of supported **<send prompt>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CIPSPRT?**	Response **+CIPSPRT: <send prompt>** **OK**
	Parameters See Write Command
Write Command **AT+CIPSPRT=<send prompt>**	Response **OK** **ERROR**
	Parameters **<send prompt>** A numeric parameter which indicates whether to echo prompt '>' after module issues AT+CIPSEND command. 0 It shows "send ok" but does not prompt echo '>' when sending is successful. 1 It prompts echo '>' and shows "send ok" when sending is successful. 2 It neither prompts echo '>' nor shows "send ok" when sending is successful.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.18 AT+CIPSERVER Configure Module as Server

AT+CIPSERVER Configure Module as Server	
Test Command **AT+CIPSERVER=?**	Response **+CIPSERVER: (0-CLOSE SERVER, 1-OPEN SERVER),(1-65535)** **OK**
	Parameters See Write Command
Read Command **AT+CIPSERVER?**	Response **+CIPSERVER: <mode>[,<port>,<channel id>,<bearer>]** **OK**

	Parameters See Write Command
Write Command **AT+CIPSERVER=<mode>[,<port>]**	Response **OK** **ERROR**
	Parameters **<mode>** 0 Close server 1 Open server **<port>** 1..65535 Listening port **<channel id>** Channel id **<bearer>** GPRS bearer
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note This command is allowed to establish a TCP server only when the state is IP INITIAL or IP STATUS when it is in single state. In multi-IP state, the state is in IP STATUS only.

8.2.19 AT+CIPCSGP Set CSD or GPRS for Connection Mode

AT+CIPCSGP Set CSD or GPRS for Connection Mode	
Test Command **AT+CIPCSGP=?**	Response **+CIPCSGP:0-CSD,DIALNUMBER,USER NAME,PASSWORD,RATE(0-3)** **+CIPCSGP: 1-GPRS,APN,USER NAME,PASSWORD** **OK**
	Parameters See Write Command
Read Command **AT+CIPCSGP?**	Response **+CIPCSGP: <mode>, <apn>, <user name>, <password>[,<rate>]** **OK**
	Parameters See Write Command
Write Command **AT+CIPCSGP=<mode>[,(<apn>,<user name>,<password>),(<d**	Response **OK** **ERROR**
	Parameters **<mode>** A numeric parameter which indicates the wireless connection mode

ial number>,<user name>,<password>,<rate>)]	0 set CSD as wireless connection mode 1 set GPRS as wireless connection mode GPRS parameters: **<apn>** A string parameter which indicates the access point name **<user name>** A string parameter which indicates the user name **<password>** A string parameter which indicates the password CSD parameters: **<dial number>** A string parameter which indicates the CSD dial numbers **<user name>** A string parameter which indicates the CSD user name **<password>** A string parameter which indicates the CSD password **<rate>** A numeric parameter which indicates the CSD connection rate 0 2400 1 4800 2 9600 3 14400
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.20 AT+CIPSRIP Show Remote IP Address and Port When Received Data

AT+CIPSRIP Show Remote IP Address and Port When Received Data	
Test Command **AT+CIPSRIP=?**	Response **+CIPSRIP: (**list of supported **<mode>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CIPSRIP?**	Response **+CIPSRIP**: **<mode>** **OK**
	Parameters See Write Command
Write Command **AT+CIPSRIP=<mode>**	Response **OK** **ERROR**
	Parameters

	<mode> A numeric parameter which shows remote IP address and port. 0 Do not show the prompt 1 Show the prompt, the format is as follows: 1) For single IP connection (+CIPMUX=0) **+RECV FROM:<IP ADDRESS>:<PORT>** 1) For multi IP connection (+CIPMUX=1) **+RECEIVE,<n>,<data length>,<IP ADDRESS>:<PORT>**
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

8.2.21 AT+CIPDPDP Set Whether to Check State of GPRS Network Timing

AT+CIPDPDP Set Whether to Check State of GPRS Network Timing	
Test Command **AT+CIPDPDP=?**	Response **+CIPDPDP: (**list of supported**<mode>s,** list of supported **<interval>,** list of supported **<timer>)** **OK**
	Parameters See Write Command
Read Command **AT+CIPDPDP?**	Response **+CIPDPDP: <mode>, <interval>, <timer>** **OK**
	Parameters See Write Command
Write Command **AT+CIPDPDP=<mode>[,<interval>,<timer>]**	Response **OK** **ERROR**
	Parameters **<mode>** 0 Not set detect PDP 1 Set detect PDP **<interval>** 1<=interval<=180(s), default value is 10. **<timer>** 1<=timer<=10, default value is 3.
Parameter Saving Mode	NO_SAVE

Max Response Time	-
Reference	Note If "+PDP: DEACT" urc is reported because of module not attaching to gprs for a certain time or other reasons, user still needs to execute "AT+CIPSHUT" command makes PDP context come back to original state.

8.2.22 AT+CIPMODE Select TCPIP Application Mode

AT+CIPMODE	**Select TCPIP Application Mode**
Test Command **AT+CIPMODE=?**	Response **+CIPMODE: (0-NORMAL MODE,1-TRANSPARENT MODE)** **OK**
	Parameters See Write Command
Read Command **AT+CIPMODE?**	Response **+CIPMODE: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+CIPMODE=<mode>**	Response **OK** **ERROR**
	Parameters **<mode>** 0 Normal mode 1 Transparent mode
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.23 AT+CIPCCFG Configure Transparent Transfer Mode

AT+CIPCCFG	**Configure Transparent Transfer Mode**
Test Command **AT+CIPCCFG=?**	Response **+CIPCCFG:** **(NmRetry:3-8),(WaitTm:1-10),(SendSz:1-1460),(esc:0,1) ,(Rxmode:0,1),** **(RxSize:50-1460),(Rxtimer:20-1000)** **OK**

	Parameters See Write Command
Read Command **AT+CIPCCFG?**	Response **+CIPCCFG:** **<NmRetry>,<WaitTm>,<SendSz>,<esc>,<Rxmode>,<RxSize>,<Rxtimer>** **OK**
	Parameters See Write Command
Write Command **AT+CIPCCFG=<NmRetry>,<WaitTm>,<SendSz>,<esc>[,<Rxmode>,<RxSize>,<Rxtimer>]**	Response **OK** **ERROR**
	Parameters **<NmRetry>** Number of retries to be made for an IP packet.Default value is 5. **<WaitTm>** Number of 100ms intervals to wait for serial input before sending the packet. Default value is 2. **<SendSz>** Size in bytes of data block to be received from serial port before sending. Default value is 1024. **<esc>** Whether turn on the escape sequence, default is TRUE. 0 Turn off the escape sequence 1 Turn on the escape sequence **<Rxmode>** Whether to set time interval during output data from serial port. 0 output data to serial port without interval 1 output data to serial port within <Rxtimer> interval. **<RxSize>** Output data length for each time. Default value is 1460. **<Rxtimer>** Time interval (ms) to wait for serial port to output data again. Default value: 50ms
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note This command will be effective only in single connection mode (+CIPMUX=0)

8.2.24 AT+CIPSHOWTP Display Transfer Protocol in IP Head When Received Data

AT+CIPSHOWTP	**Display Transfer Protocol in IP Head When Received Data**
Test Command **AT+CIPSHOWTP=?**	Response **+CIPSHOWTP: (**list of supported **<mode>**s**)**

	OK
	Parameters See Write Command
Read Command **AT+CIPSHOWTP?**	Response **+CIPSHOWTP: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+CIPSHOWTP=<mode>**	Response **OK** **ERROR** Parameters **<mode>** A numeric parameter which indicates whether to display transfer protocol in IP header to received data or not 0 Not display transfer protocol 1 Display transfer protocol, the format is "+IPD,<data size>,<TCP/UDP>:<data>"
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note ● This command will be effective only in single connection mode (+CIPMUX=0). • Only when +CIPHEAD is set to 1, the setting of this command will work.

8.2.25 AT+CIPUDPMODE UDP Extended Mode

AT+CIPUDPMODE UDP Extended Mode	
Test Command **AT+CIPUDPMODE=?**	Response 1) For single IP connection (+CIPMUX=0) **+CIPUDPMODE: (0-2),("(0-255).(0-255).(0-255).(0-255)"),(1-65535)** **OK** 2) For multi IP connection (+CIPMUX=1) **+CIPUDPMODE:** **(0-5),(0-2),("(0-255).(0-255).(0-255).(0-255)"),(1-65535)** **OK**
	Parameters See Write Command
Read Command	Response

AT+CIPUDPMODE?	1) For single IP connection (+CIPMUX=0) **+CIPUDPMODE: <mode>[,<IP address>,<Port>]** **OK** 2) For multi IP connection (+CIPMUX=1) **+CIPUDPMODE: 0, <mode>[,<IP address>,<Port>]** **+CIPUDPMODE: 1,<mode>[,<IP address>,<Port>]** **+CIPUDPMODE: 2,<mode>[,<IP address>,<Port>]** **+CIPUDPMODE: 3,<mode>[,<IP address>,<Port>]** **+CIPUDPMODE: 4,<mode>[,<IP address>,<Port>]** **+CIPUDPMODE: 5,<mode>[,<IP address>,<Port>]** **OK**
	Parameter See Write Command
Write Command 1) For single IP connection (+CIPMUX=0) **AT+CIPUDPMODE=<mode>[,<IP address>,<Port>]** 2) For multi IP connection (+CIPMUX=1) **AT+CIPUDPMODE=<n>,<mode>[,<IP address>,<Port>]**	Response **OK** **ERROR**
	<n> 0-5 A numeric parameter which indicates the connection number **<mode>** 0 UDP Normal Mode 1 UDP Extended Mode 2 Set UDP address to be sent **<IP address>** A string parameter which indicates remote IP address **<port>** Remote port
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.26 AT+CIPRXGET Get Data from Network Manually

AT+CIPRXGET	**Get Data from Network Manually**
Test Command **AT+CIPRXGET=?**	Response If single IP connection (+CIPMUX=0) **+CIPRXGET: (**list of supported **<mode>**s**),(**list of supported **<reqlength>)** **OK** If multi IP connection (+CIPMUX=1)

	+CIPRXGET: (list of supported **<mode>s), (**list of supported **<id>**s**), (**list of supported **<reqlength>)** **OK**
	Parameters See Write Command
Read Command **AT+CIPRXGET?**	Response **+CIPRXGET: <mode>** **OK**
	Parameters See Write Command
Write Command 1) If single IP connection (+CIPMUX=0) **AT+CIPRXGET=<mode>[,<reqlength>]** 2) If multi IP connection (+CIPMUX=1) **AT+CIPRXGET=<mode>[,<id>,<reqlength>]**	Response **OK** **ERROR** 1)For single IP connection If "AT+CIPSRIP=1" is set, IP address and port are contained. if <mode>=1 **+CIPRXGET: 1[,<IP ADDRESS>:<PORT>]** if <mode>=2 **+CIPRXGET: 2,<reqlength>,<cnflength>[,<IP ADDRESS>:<PORT>]** **1234567890…** **OK** if <mode>=3 **+CIPRXGET: 3,<reqlength>,<cnflength>[,<IP ADDRESS>:<PORT>]** **5151…** **OK** if <mode>=4 **+CIPRXGET: 4, <cnflength>** **OK** 2)For multi IP connection If "AT+CIPSRIP=1" is set, IP address and port is contained. if <mode>=1 **+CIPRXGET: 1[,<id>,<IP ADDRESS>:<PORT>]** if <mode>=2 **+CIPRXGET: 2,<id>,<reqlength>,<cnflength>[,<IP ADDRESS>:<PORT>]** **1234567890…** **OK** if <mode>=3 **+CIPRXGET: 3,<id>,<reqlength>,<cnflength>[,<IP ADDRESS>:<PORT>]**

	5151… **OK** if <mode>=4 **+CIPRXGET: 4, <id>,<cnflength>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<mode>** 0 Disable getting data from network manually, the module is set to normal mode, data will be pushed to TE directly. 1 Enable getting data from network manually. 2 The module can get data, but the length of output data can not exceed 1460 bytes at a time. 3 Similar to mode 2, but in HEX mode, which means the module can get 730 bytes maximum at a time. 4 Query how many data are not read with a given ID. **<id>** A numeric parameter which indicates the connection number **<reqlength>** Requested number of data bytes (1-1460 bytes)to be read **<cnflength>** Confirmed number of data bytes to be read, which may be less than <length>. 0 indicates that no data can be read.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note To enable this function, parameter <mode> must be set to 1 before connection.

8.2.28 AT+CIPRDTIMER Set Remote Delay Timer

AT+CIPRDTIMER Set Remote Delay Timer	
Test Command **AT+CIPRDTIMER=?**	Response **+CIPRDTIMER: (100-4000),(100-7000)** **OK**
	Parameters See Write Command
Read Command **AT+CIPRDTIMER?**	Response **+CIPRDTIMER: <rdsigtimer>,<rdmuxtimer>** **OK**

	Parameters See Write Command
Write Command **AT+CIPRDTIMER=<rdsigtimer>,<rdmuxtimer>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<rdsigtimer>** Remote delay timer of single connection. Default value is 2000. **<rdmuxtimer>** Remote delay timer of multi-connections. Default value is 3500.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note This command is used to shorten the disconnect time locally when the remote server has been disconnected.

8.2.29 AT+CIPSGTXT Select GPRS PDP context

AT+CIPSGTXT	**Select GPRS PDP context**
Test Command **AT+CIPSGTXT=?**	Response **+CIPSGTXT: (0,1)** **OK**
	Parameters See Write Command
Write Command **AT+CIPSGTXT=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<mode>** 0 Select first PDP context 1 Select second PDP context
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note This command is used to select pdp context, only for multi IP connection (+CIPMUX=1).

19 Supported Unsolicited Result Codes

19.1 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 used by common messaging commands:

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

40	network personalisation PIN required
41	network personalisation PUK required
42	network subset personalisation PIN required
43	network subset personalisation PUK required
44	service provider personalisation PIN required
45	service provider personalisation PUK required
46	corporate personalisation PIN required
47	corporate personalisation PUK required
99	resource limitation
100	unknown
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
160	DNS resolve failed
161	Socket open failed
171	MMS task is busy now
172	The MMS data is oversize
173	The operation is overtime
174	There is no MMS receiver
175	The storage for address is full
176	Not find the address
177	The connection to network is failed
178	Failed to read push message
179	This is not a push message
180	gprs is not attached
181	tcpip stack is busy
182	The MMS storage is full
183	The box is empty
184	failed to save MMS

185	It is in edit mode
186	It is not in edit mode
187	No content in the buffer
188	Not find the file
189	Failed to receive MMS
190	Failed to read MMS
191	Not M-Notification.ind
192	The MMS inclosure is full
193	Unknown
600	No Error
601	Unrecognized Command
602	Return Value Error
603	Syntax Error
604	Unspecified Error
605	Data Transfer Already
606	Action Already
607	Not At Cmd
608	Multi Cmd too long
609	Abort Cops
610	No Call Disc
611	BT SAP Undefined
612	BT SAP Not Accessible
613	BT SAP Card Removed
614	AT Not Allowed By Customer
753	missing required cmd parameter
754	invalid SIM command
755	invalid File Id
756	missing required P1/2/3 parameter
757	invalid P1/2/3 parameter
758	missing required command data
759	invalid characters in command data
765	Invalid input value
766	Unsupported mode
767	Operation failed
768	Mux already running
769	Unable to get control
770	SIM network reject
771	Call setup in progress

772	SIM powered down
773	SIM file not present
791	Param count not enough
792	Param count beyond
793	Param value range beyond
794	Param type not match
795	Param format invalid
796	Get a null param
797	CFUN state is 0 or 4

19.2 Summary of CMS ERROR Codes

Final result code **+CMS ERROR: <err>** indicates an error related to message service 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 used by common messaging commands:

Code of <err>	Meaning
1	Unassigned(unallocated) 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	Short message transfer rejected
22	Number changed
25	Pre-emption
26	Non-selected user clearing
27	Destination out of service
28	Invalid number format (incomplete number)
29	Facility rejected
30	Response to STATUS ENQUIRY
32	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	Resources unavailable, unspecified
49	Quality of service unavailable
50	Requested facility not subscribed
55	Requested facility not subscribed
57	Bearer capability not authorized
58	Bearer capability not presently available
63	Service or option not available, unspecified
65	Bearer service not implemented
68	ACM equal or greater than ACM maximum
69	Requested facility not implemented
70	Only restricted digital information bearer capability is available
79	Service or option not implemented, unspecified
81	Invalid transaction identifier value
87	User not member of CUG
88	Incompatible destination
91	Invalid transit network selection
95	Semantically incorrect message
96	Invalid mandatory information
97	Message type non-existent or not implemented
98	Message type not compatible with protocol state
99	Information element non-existent or not implemented
100	Conditional information element error
101	Message not compatible with protocol
102	Recovery on timer expiry
111	Protocol error, unspecified
127	Interworking, unspecified
128	Telematic interworking not supported
129	Short message Type 0 not supported
130	Cannot replace short message

143	Unspecified TP-PID error
144	Data coding scheme (alphabet) not supported
145	Message class not supported
159	Unspecified TP-DCS error
160	Command cannot be acted
161	Command unsupported
175	Unspecified TP-Command error
176	TPDU not supported
192	SC busy
193	No SC subscription
194	SC system failure
195	Invalid SME address
196	Destination SME barred
197	SM Rejected-Duplicate SM
198	TP-VPF not supported
199	TP-VP not supported
208	SIM SMS storage full
209	No SMS storage capability in SIM
210	Error in MS
211	Memory Capacity Exceeded
212	SIM Application Toolkit Busy
213	SIM data download error
224	CP retry exceed
225	RP trim timeout
226	SMS connection broken
255	Unspecified error cause
300	ME failure
301	SMS 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
323	invalid input parameter
324	invalid input format
325	invalid input value
330	SMSC address unknown
331	no network
332	network timeout
340	no cnma ack
500	Unknown
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 registerred
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

Contact us:

Shanghai SIMCom wireless solutions Ltd.

Address: Building A, SIM Technology Building, No. 633 Jinzhong Road, Shanghai, P. R. China 200335

Tel: +86 21 3252 3300

Fax: +86 21 3252 3020

URL: www.simcomm2m.com