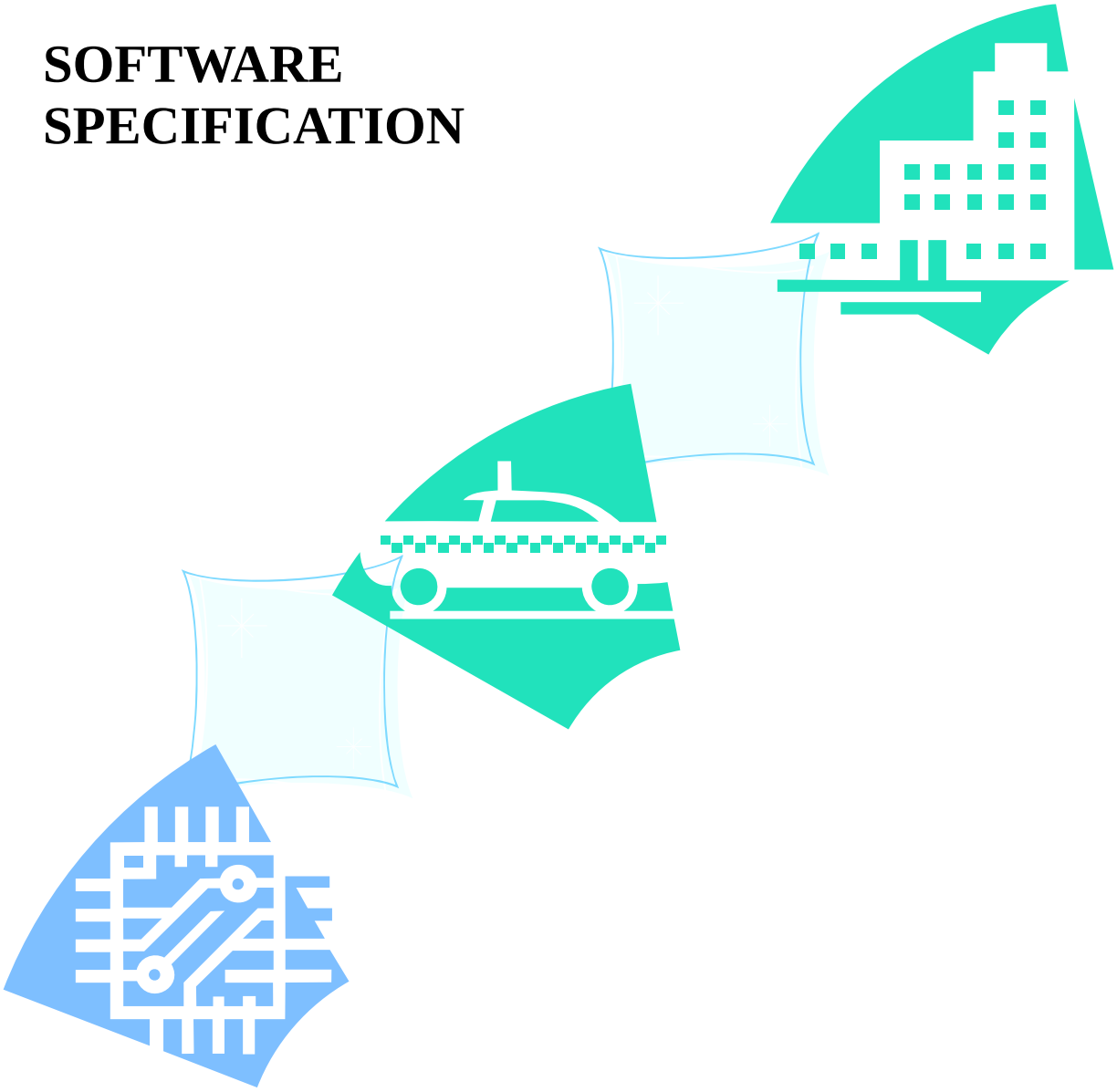
SIM508 AT Command Set

SOFTWARE SPECIFICATION



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0 Version History

SIM508_ATC_V01.00 is the first version of SIM508 AT Command Set.

Chapter	Page	What is new

1. Introduction

1.1 Scope of the document

This document presents the AT Command Set for GSM part of SIMCOM cellular engine SIM508.

1.2 Related documents

You can visit the SIMCOM Website using the following link:
http://www.simcom-sh.com

1.3 Conventions and abbreviations

In this document, the GSM engines are referred to as following term:
1) ME (Mobile Equipment);
2) MS (Mobile Station);
3) TA (Terminal Adapter);
4) 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:
1) TE (Terminal Equipment);
2) DTE (Data Terminal Equipment) or plainly “the application” which is running on an embedded system;

1.4 AT Command syntax

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

The AT command set implemented by SIM508 is a combination of GSM07.05, GSM07.07 and ITU-T recommendation V.25ter and the AT commands developed by SIMCOM.
Note: Only enter AT command through serial port after SIM508 is power on and Unsolicited Result Code “RDY” is received from serial port. And if unsolicited result code”SCKS: 0” returned it indicates SIM card isn’t present.

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 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 "**or**" at the beginning of the command line. Please note to use a semicolon as command delimiter.

The command line buffer can accept a maximum of 256 characters. If the characters entered exceeded this number then none of the command will executed and TA will returns "**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 SIM508 AT command interface defaults to the **GSM** character set. The SIM508 supports the following character sets:

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

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

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. SIM508 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 SIM508 is hardware flow control (RTS/CTS flow control), to enable software flow control in the DTE interface and within GSM engine, type the following AT command:

AT+IFC=1, 1

This setting is stored volatile, for use after restart, **AT+IFC=1, 1** should be stored to the user profile with **AT&W**.
Ensure that any communications software package (e.g. ProComm Plus, Hyper terminal or WinFax Pro) uses software flow control.

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

1.6.2 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.

2 AT Commands According to V.25TER

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

2.1 Overview of AT Commands According to V.25TER

Command	Description
A/	RE-ISSUES LAST AT COMMAND GIVEN
ATA	ANSWER INCOMING CALL
ATD	MOBILE ORIGINATED CALL TO DIALABLE NUMBER
ATD><MEM><N>	ORIGINATE CALL TO PHONE NUMBER IN MEMORY <MEM>
ATD><N>	ORIGINATE CALL TO PHONE NUMBER IN CURRENT MEMORY
ATD><STR>	ORIGINATE CALL TO PHONE NUMBER IN MEMORY WHICH CORRESPONDS TO ALPHANUMERIC 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	SET PAUSE BEFORE BLIND DIALLING
ATS7	SET NUMBER OF SECONDS TO WAIT FOR CONNECTION COMPLETION
ATS8	SET NUMBER OF SECONDS TO WAIT WHEN COMMA DIAL MODIFIER USED
ATS10	SET DISCONNECT DELAY AFTER INDICATING THE ABSENCE OF DATA CARRIER

ATT	SELECT TONE DIALLING
ATV	SET RESULT CODE FORMAT MODE
ATX	SET CONNECT RESULT CODE FORMAT AND CALL MONITORING
ATZ	SET ALL CURRENT PARAMETERS TO USER DEFINED PROFILE
AT&C	SET DCD FUNCTION MODE
AT&D	SET DTR FUNCTION MODE
AT&F	SET ALL CURRENT PARAMETERS TO MANUFACTURER DEFAULTS
AT&V	DISPLAY CURRENT CONFIGURATION
AT&W	STORE CURRENT PARAMETER TO USER DEFINED PROFILE
AT+DR	V.42BIS DATA COMPRESSION REPORTING CONTROL
AT+DS	V.42BIS DATA COMPRESSION CONTROL
AT+GCAP	REQUEST COMPLETE TA CAPABILITIES LIST
AT+GMI	REQUEST MANUFACTURER IDENTIFICATION
AT+GMM	REQUEST TA MODEL IDENTIFICATION
AT+GMR	REQUEST TA REVISION IDENTIFICATION
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+ILRR	SET TE-TA LOCAL RATE REPORTING MODE
AT+IPR	SET FIXED LOCAL RATE

2.2 Detailed Description of AT Commands According to V.25TER

2.2.1 A/ Reissues the last command given

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

2.2.2 ATA Answers a call

ATA Answers a call

Executing command	Response
ATA	TA sends off-hook to the remote station. Note1: Any additional commands on the same command line are ignored. Note2: This command may be aborted generally by receiving a character during execution. The aborting is not possible during some states of connection establishment such as handshaking. Response in case of data call, if successfully connected **CONNECT<text>** TA switches to data mode. Note: **<text>** output only if **ATX<value>** parameter setting with the **<value>** >0 When TA returns to command mode after call release **OK** Response in case of voice call, if successfully connected **OK** Response if no connection **NO CARRIER**
	Parameter
Reference	Note
V.25ter	See also **ATX**

2.2.3 ATD Mobile originate call to dial a number

ATD Mobile originate call to dial a number	
Execution command	Response
ATD[<n>][<mgsm][;]	This command can be used to set up outgoing *voice, data or fax calls*. It also serves to control *supplementary services*. Note: This command may be aborted generally by receiving an **ATH** command or a character during execution. The aborting is not possible during some states of connection establishment such as handshaking. If no dial tone and (parameter setting **ATX2** or **ATX4**) **NO DIALTONE** If busy and (parameter setting **ATX3** or **ATX4**) **BUSY** If a connection cannot be established **NO CARRIER** If connection successful and non-voice call. **CONNECT<text>** TA switches to data mode. Note: **<text>** output only if **ATX<value>** parameter setting with the

	<value> >0 When TA returns to command mode after call release **OK** If connection successful and voice call **OK** Response in case of voice call, if successfully connected **OK**
	Parameter **<n>** string of dialing digits and optionally V.25ter modifiers dialing digits: **0-9, * , #, +, A, B, C** Following V.25ter modifiers are ignored: **,(comma), T, P, !, W, @** **Emergency call:** **<n>** Standardized emergency number 112(no SIM needed) **<mgsm>** string of **GSM** modifiers: I Actives **CLIR** (Disables presentation of own number to called party) i Deactivates **CLIR** (Enable presentation of own number to called party) G Activates Closed User Group invocation for this call only g Deactivates Closed User Group invocation for this call only **<;>** only required to set up voice call , return to command state
Reference V.25ter	Note ● Parameter “I” and “i” only if no *# code is within the dial string ● **<n>** is default for last number that can be dialed by **ATDL** ● *# codes sent with **ATD** are treated as voice calls. Therefore, the command must be terminated with a semicolon “;” ● See **ATX** command for setting result code and call monitoring parameters. Responses returned after dialing with **ATD** ● For voice call two different responses mode can be determined. **TA** returns “**OK**” immediately either after dialing was completed or after the call is established. The setting is controlled by **AT+COLP**. Factory default is **AT+COLP=0**, this cause the **TA** returns “**OK**” immediately after dialing was completed, otherwise **TA** will returns “**OK**”, “**BUSY**”, “**NO DIAL TONE**”, “**NO CARRIER**”.

	Using **ATD** during an active voice call: ● When a user originates a second voice call while there is already an active voice call, the first call will be automatically put on hold. ● The current states of all calls can be easily checked at any time by using the **AT+CLCC** command.

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

ATD><mem><n> Originate call to phone number in memory <mem>	
Execution command **ATD><mem><n>[<I>][<G>][;]**	Response This command can be used to dial a phone number from a specific phonebook. Note: This command may be aborted generally by receiving an **ATH** command or a character during execution. The aborting is not possible during some states of connection establishment such as handshaking. If error is related to **ME** functionality **+CME ERROR: <err>** If no dial tone and (parameter setting **ATX2** or **ATX4**) **NO DIALTONE** If busy and (parameter setting **ATX3** or **ATX4**) **BUSY** If a connection cannot be established **NO CARRIER** If connection successful and non-voice call. **CONNECT<text> TA** switches to data mode. Note: **<text>** output only if **ATX<value>** parameter setting with the **<value>** >0 When **TA** returns to command mode after call release **OK** If successfully connected and voice call **OK**

	Parameter **<mem>** Phonebook "**DC**" ME dialled calls list "**FD**" SIM fixed dialling-phonebook "**LD**" SIM dialled calls list "**MC**" ME missed (unanswered received) calls list "**ME**" ME phonebook "**ON**" SIM (or ME) own numbers (MSISDNs) list "**RC**" ME received calls list "**SM**" SIM phonebook **<n>** Integer type memory location should be in the range of locations available in the memory used **<mgsm>** string of **GSM** modifiers: **I** Actives **CLIR** (Disables presentation of own number to called party) **i** Deactivates **CLIR** (Enable presentation of own number to called party) **G** Activates Closed User Group invocation for this call only **g** Deactivates Closed User Group invocation for this call only **<;>** only required to set up voice call , return to command state
Reference V.25ter	Note ● There is no **<mem>** for emergency call ("**EN**"). ● 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. ● For example: The command "**ATD>SM7;** "is going to dial the phone number stored at location 7 in SIM phone book.

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

ATD><n> Originate call to phone number in current memory	
Execution command **ATD><n>[<I>][<G>][;]**	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 connection successful and non-voice call. **CONNECT<text> TA** switches to data mode. Note: **<text>** output only if **ATX<value>** parameter setting with the **<value>** >0 When **TA** returns to command mode after call release **OK** If successfully connected and voice call **OK**
	Parameter **<n>** Integer type memory location should be in the range of locations available in the memory used **<mgsm>** string of **GSM** modifiers: **I** Actives **CLIR** (Disables presentation of own number to called party) **i** Deactivates **CLIR** (Enable presentation of own number to called party) **G** Activates Closed User Group invocation for this call only **g** Deactivates Closed User Group invocation for this call only **<;>** only required to set up voice call , return to command state

Reference	Note
V.25ter	● 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 ATD> <str> Originate call to phone number in memory which corresponding alpha num field

ATD><str> Originate call to phone number in memory which corresponding alpha num field	
Execution command	Response
ATD><str>[I][G][;]	This command make the **TA** attempts to set up an outgoing call to stored number. 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 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 **<str>** string type 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
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.

2.2.7 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 connection successful and non-voice call. **CONNECT<text> TA** switches to data mode.

	Note: **<text>** output only if **ATX<value>** parameter setting with the **<value>** >0 When **TA** returns to command mode after call release **OK** If successfully connected and voice call **OK**
Reference V.25ter	Note ● See **ATX** command for setting result code and call monitoring parameters.

2.2.8 ATE Set command echo mode

ATE Set command echo mode	
Set command **ATE[<value>]**	Response This setting determines whether or not the TA echoes characters received from TE during command state. **OK**
	Parameter **<value>** 0 Echo mode off 1 Echo mode on
Reference **V.25ter**	Note

2.2.9 ATH Disconnect existing connection

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

2.2.10 ATI Display product identification information

ATI Display product identification information	
Execution command **ATI**	Response TA issues product information text Example: **SIMCOM_Ltd** **SIMCOM_SIM300** **Revision: SIM300M32(ATMEL)_V10.0.8_BUILD04** **OK**
	Parameter
Reference **V.25ter**	Note

2.2.11 ATL Set monitor speaker loudness

ATL Set monitor speaker loudness		
Set command **ATL[value]**	Response **OK**	
	Parameter	
	<value> 0	low speaker volume
	1	low speaker volume
	2	medium speaker volume
	3	high speaker volume
Reference **V.25ter**	Note ● The two commands ATL and ATM are implemented only for V.25 compatibility reasons and have no effect.	

2.2.12 ATM Set monitor speaker mode

ATM Set monitor speaker mode		
Set command **ATM[value]**	Response **OK**	
	Parameter	
	<value> 0	speaker is always off
	1	speaker on until TA inform TE that carrier has been detected
	2	speaker is always on when TA is off-hook
Reference **V.25ter**	Note ● The two commands ATL and ATM are implemented only for V.25 compatibility reasons and have no effect.	

2.2.13 +++ 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 This command is only available during a CSD call or a GPRS connection. The **+++** character sequence causes the TA to cancel the data flow over the AT interface and switch to command mode. This allows you to enter AT command while maintaining the data connection to the remote server or, accordingly, the GPRS connection. **OK** To prevent the **+++** escape sequence from being misinterpreted as data, it should comply to following sequence: 1. No characters entered for T1 time (0.5 seconds) 2. "+++" characters entered with no characters in between 3. No characters entered for T1 timer (0.5 seconds) 4. Switch to command mode, otherwise go to step 1.
	Parameter
Reference **V.25ter**	Note ● To return from command mode back to data or PPP online mode: Enter **ATO**.

2.2.14 ATO Switch from command mode to data mode

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

2.2.15 ATP Select pulse dialing

ATP Select pulse dialing	
Set command **ATP**	Response **OK**

	Parameter
Reference **V.25ter**	Note ● No effect in GSM

2.2.16 ATQ Set result code presentation mode

ATQ Set result code presentation mode	
Set command **ATQ[<n>]**	Response This parameter setting determines whether or not the TA transmits any result code to the TE. Information text transmitted in response is not affected by this setting. If <n>=0: **OK** If <n>=1: (none)
	Parameter **<n>** 0 TA transmits result code 1 Result codes are suppressed and not transmitted
Reference **V.25ter**	Note

2.2.17 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**
Set command **ATS0=[<n>]**	Response This parameter setting determines the number of rings before auto-answer. **OK**
	Parameter **<n>** 0 automatic answering is disable 1-255 enable automatic answering on the ring number specified
Reference **V.25ter**	Note ● If **<n>** is set too high, the calling party may hang up before the call can be answered automatically.

2.2.18 ATS3 Set command line termination character

ATS3 Set command line termination character	
Read command **ATS3?**	Response **<n>** **OK**

Set command **ATS3=[<n>]**	Response This parameter setting determines the character recognized by TA to terminate an incoming command line. The TA also returns this character in output. **OK**
	Parameter **<n>** 0-13-127 command line termination character
Reference **V.25ter**	Note ● Default 13 = CR.

2.2.19 ATS4 Set response formatting character

ATS4 Set response formatting character	
Read command **ATS4?**	Response **<n>** **OK**
Set command **ATS4=[<n>]**	Response This parameter setting determines the character generated by the TA for result code and information text. **OK**
	Parameter **<n>** 0-10-127 response formatting character
Reference **V.25ter**	Note ● Default 10 = LF.

2.2.20 ATS5 Set command line editing character

ATS5 Set command line editing character	
Read command **ATS5?**	Response **<n>** **OK**
Set command **ATS5=[<n>]**	Response This parameter setting determines the character recognized by TA as a request to delete from the command line the immediately preceding character. **OK**
	Parameter **<n>** 0-8-127 response formatting character
Reference **V.25ter**	Note ● Default 8 = Backspace.

2.2.21 ATS6 Set pause before blind dialing

ATS6 Set pause before blind dialing	
Read command **ATS6?**	Response **<n>** **OK**
Set command **ATS6=[<n>]**	Response **OK**
	Parameter **<n>** 0-2-255 number of seconds to wait before blind dialing
Reference **V.25ter**	Note ● No effect for GSM

2.2.22 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**
Set command **ATS7=[<n>]**	Response This parameter setting determines the amount of time to wait for the connection completion in case of answering or originating a call. **OK**
	Parameter **<n>** 0-60-255 number of seconds to wait for connection completion
Reference **V.25ter**	Note ● If called party has specified a high value for **ATS0=<n>**, call setup may fail. ● The correlation between ATS7 and ATS0 is important Example: Call may fail if ATS7=30 and ATS0=20. ● ATS7 is only applicable to data call.

2.2.23 ATS8 set number of second to wait for comma dial modifier

ATS8 Set number of second to wait for comma dial modifier	
Read command **ATS8?**	Response **<n>** **OK**
Set command **ATS8=[<n>]**	Response **OK**
	Parameter **<n>** 0 no pause when comma encountered in dial string 1-255 number of seconds to wait
Reference **V.25ter**	Note ● No effect for GSM

2.2.24 ATS10 Set disconnect delay after indicating the absence of data carries

ATS10 Set disconnect delay after indicating the absence of data carrier	
Read command **ATS10?**	Response **<n>** **OK**
Set command **ATS10=[<n>]**	Response This parameter setting determines the amount of time that the TA will remain connected in absence of data carrier. If the data carrier is once more detected before disconnect, the TA remains connected. **OK**
	Parameter **<n>** 1-15-255 number of tenths seconds of delay
Reference **V.25ter**	Note

2.2.25 ATT Select tone dialing

ATT Select tone dialing	
Set command **ATT**	Response **OK**
	Parameter
Reference **V.25ter**	Note ● No effect in GSM

2.2.26 ATV Set result code format mode

ATV Set result code format mode	
Set command **ATV[<value>]**	Response This parameter setting determines the contents of the header and trailer transmitted with result codes and information responses. When **<value>**=0 **0** When **<value>**=1 **OK**
	Parameter **<value>** 0 Information response: **<text><CR><LF>** Short result code format: **<numeric code><CR>** 1 Information response: **<CR><LF><text><CR><LF>** Long result code format: **<CR><LF><verbose code><CR><LF>**
Reference **V.25ter**	Note

2.2.27 ATX Set CONNECT result code

ATX Set CONNECT result code	
Set command **ATX[<value>]**	Response This parameter setting determines whether or not the TA detected the presence of dial tone and busy signal and whether or not TA transmits particular result codes **OK**
	Parameter <value> 0 **CONNECT** result code only returned, dial tone and busy detection are both disabled 1 **CONNECT<text>** result code only returned, dial tone and busy detection are both disabled 2 **CONNECT<text>** result code returned, dial tone detection is enabled, busy detection is disabled 3 **CONNECT<text>** result code returned, dial tone detection is disabled, busy detection is enabled 4 **CONNECT<text>** result code returned, dial tone and busy detection are both enabled
Reference **V.25ter**	Note

2.2.28 ATZ set all current parameters to user defined profile

ATZ Set all current parameters to user defined profile	
Set command **ATZ[<value>]**	Response TA sets all current parameters to the user defined profile. **OK**
	Parameter **<value>** 0 Reset to profile number 0
Reference **V.25ter**	Note ● The user defined profile is stored in non volatile memory; ● If the user profile is not valid, it will default to the factory default profile; ● Any additional commands on the same command line are ignored.

2.2.29 AT&C Set circuit Data Carrier Detect (DCD) function mode

AT&C Set circuit Data Carrier Detect (DCD) function mode	
Set command **AT&C[<value>]**	Response This parameter determines how the state of circuit 109**(DCD)** relates to the detection of received line signal from the distant end. **OK**
	Parameter **<value>** 0 **DCD** line is always ON 1 **DCD** line is ON only in the presence of data carrier

Reference	Note
V.25ter	

2.2.30 AT&D Set circuit Data Terminal Ready (DTR) function mode

AT&D Set circuit Data Terminal Ready (DTR) function mode	
Set command **AT&D[<value>]**	Response This parameter determines how the TA responds when circuit 108/2(DTR) is changed from the ON to the OFF condition during data mode. **OK**
	Parameter **<value>** 0 TA ignores status on DTR 1 ON->OFF on DTR: Change to command mode with remaining the connected call 2 ON->OFF on DTR: Disconnect call, change to command mode. During state DTR = OFF is auto-answer off.
Reference **V.25ter**	Note

2.2.31 AT&F Set all current parameters to manufacturer defaults

AT&F Set all current parameters to manufacturer defaults	
Execution command **AT&F[<value>]**	Response TA sets all current parameters to the manufacturer defined profile. **OK**
	Parameter **<value>** 0 set all TA parameters to manufacturer defaults.
Reference **V.25ter**	Note

2.2.32 AT&V Display current configuration

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

2.2.33 AT&W Store current parameter to user defined profile

AT&W Store current parameter to user defined profile	
Execution command **AT&W[<n>]**	Response TA stores the current parameter setting in the user defined profile. **OK**
	Parameter **<n>** 0 profile number to store to
Reference **V.25ter**	Note ● The user defined profile is stored in non volatile memory.

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

AT+DR V.42bis data compression reporting control	
Test command **AT+DR=?**	Response **+DR:(list of supported <value>s)** **OK**
	Parameter See set command.
Read command **AT+DR?**	Response **+DR: <value>** **OK**
	Parameter See set command.
Set command **AT+DR=<value>**	Response This parameter setting determines whether or not intermediate result code of the current data compressing is reported by TA to TE after a connection establishment. **OK**
	Parameter **<value>** 0 reporting disabled 1 reporting enabled
Reference **V.25ter**	Note ● If the **<value>** is set to 1, then the intermediate result code reported at call set up is: +DR: <type> **<type>** NONE data compression is not in use V42B Rec. V42bis is in use in both direction V42B RD Rec. V42bis is in use in receive direction only V42B TD Rec. V42bis is in use in transmit direction only

2.2.35 AT+DS V.42bis data compression control

AT+DS V.42bis data compression control	
Test command **AT+DS=?**	Response **+DS:(list of supported <p0>s), (list of supported <n>s), (list of supported <p1>s), (list of supported <p2>s)** **OK**
	Parameter See set command.
Read command **AT+DS?**	Response **+DR: <p0>,<n>,<p1>,<p2>** **OK**
	Parameter See set command.
Set command **AT+DS=[<p0>,[<n>,[<p1>,[<p2>]]]]**	Response This parameter setting determines the possible data compression mode by TA at the compression negotiation with the remote TA after a call set up. **OK**
	Parameter **<p0>** 0 NONE 1 transmit only 2 receive only 3 both direction, but allow negotiation **<n>** 0 allow negotiation of p0 down 1 do not allow negotiation of p0 - disconnect on difference **<p1>** 512-2048 dictionary size **<p2>** 6-255 maximum string size (default 20)
Reference **V.25ter**	Note ● This command is only for data call; ● GSM transmits the data transparent. The remote TA may support this compression; ● This command must be used in conjunction with command AT+CRLP to enable compression (+CRLP=X,X,X,X,1,X).

2.2.36 AT+GCAP Request complete TA capabilities list

AT+GCAP Request complete TA capabilities list	
Test command **AT+GCAP=?**	Response **OK**
	Parameter
Execution command **AT+GCAP**	Response TA reports a list of additional capabilities. **+GCAP: <name>s** **OK**

	Parameter **<name>** e.g.: **+CGSM, +FCLASS, +DS**
Reference **V.25ter**	Note

2.2.37 AT+GMI Request manufacture identification

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

2.2.38 AT+GMM Request TA model identification

AT+GMM Request TA model identification	
Test command **AT+GMM=?**	Response **OK**
	Parameter
Execution command **AT+GMM**	TA reports one or more lines of information text which permit the user to identify the specific model of device. **SIMCOM_SIM300** **OK**
	Parameter
Reference **V.25ter**	Note

2.2.39 AT+GMR Request TA model identification

AT+GMR Request TA model identification	
Test command **AT+GMR=?**	Response **OK**
	Parameter

Execution command **AT+GMR**	TA reports one or more lines of information text which permit the user to identify the version, revision level or data or other information of the device. **Revision:** SIM300M32(ATMEL)_V10.0.8_BUILD04 **OK**
	Parameter
Reference **V.25ter**	Note

2.2.40 AT+GOI Request global object identification

AT+GOI Request global object identification	
Test command **AT+GOI=?**	Response **OK**
	Parameter
Execution command **AT+GOI**	Response TA reports one or more lines of information text which permit the user to identify the device, based on the ISO system for registering unique object identifiers. **SIM300** **OK**
	Parameter **<Object Id>** identifier of device type see X.208, 209 for the format of **<Object Id>**
Reference **V.25ter**	Note

2.2.41 AT+GSN Request TA serial number identification (IMEI)

AT+GSN Request TA serial number identification(IMEI)	
Test command **AT+GSN=?**	Response **OK**
	Parameter
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**
	Parameter **<sn>** IMEI of the telephone(International Mobile station Equipment Identity)

Reference	Note
V.25ter	● The serial number (IMEI) is varied by individual ME device.

2.2.42 AT+ICF Set TE-TA control character framing

AT+ICF Set TE-TA control character framing	
Test command **AT+ICF=?**	Response **+ICF:(list of supported <format>s), (list of supported <parity>s)** **OK**
	Parameter See set command.
Read command **AT+ICF?**	Response **+ICF: <format>,<parity>** **OK**
	Parameter See set command.
Set command **AT+ICF=[<format>,[<parity>]]**	Response This parameter setting determines the serial interface character framing format and parity received by TA from TE. **OK**
	Parameter **<format>** 1 8 data 0 parity 2 stop 2 8 data 1 parity 1 stop 3 8 data 0 parity 1 stop 4 7 data 0 parity 2 stop 5 7 data 1 parity 1 stop 6 7 data 0 parity 1 stop **<parity>** 0 odd 1 even 2 mark (1) 3 space (0)
Reference **V.25ter**	Note ● The command is applied for command state; ● The setting of **AT+IPR=0** forces **AT+ICF=0**; ● The **<parity>** field is ignored if the **< format >** field specifies no parity.

2.2.43 AT+IFC Set TE-TA local data flow control

AT+IFC Set TE-TA local data flow control	
Test command **AT+IFC=?**	Response **+IFC:(list of supported <dce_by_dte>s), (list of supported <dte_by_dce>s)** **OK**

	Parameter See set command.
Read command **AT+IFC?**	Response **+IFC: <dce_by_dte>,<dte_by_dce>** **OK**
	Parameter See set command.
Set 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**
	Parameter **<dce_by_dte>** specifies the method will be used by TE at receive of data from TA 0 None 1 XON/XOFF, don't pass characters on to data stack 2 line 133: Ready for Receiving 3 XON/XOFF, pass characters on to data stack **<dte_by_dce>** specifies the method will be used by TA at receive of data from TE 0 None 1 XON/XOFF 2 line 106: Clear to send(CTS)
Reference **V.25ter**	Note ● This flow control is applied for data mode; ● SIMCOM use the RTS for this method.

2.2.44 AT+ILRR Set TE-TA local rate reporting mode

AT+ILRR Set TE-TA local rate reporting mode	
Test command **AT+ILRR=?**	Response **+ILRR:(list of supported <value>s** **OK**
	Parameter See set command.
Read command **AT+ILRR?**	Response **+ILRR: <value>** **OK**
	Parameter See set command.
Set command **AT+ILRR=<value>**	Response This parameter setting determines whether or not an intermediate result code of local rate is reported at connection establishment. The rate is applied after the final result code of the connection is transmitted to TE. **OK**

	Parameter <value> 0 Disables reporting of local port rate 1 Enables reporting of local port rate
Reference **V.25ter**	Note ● If the **<value>** is set to 1, the following intermediate result will comes out on connection to indicates the port rate settings **+ILLR:<rate>** **<rate>** port rate setting on call connection in Baud per second 300 1200 2400 4800 9600 19200 28800 38400 57600 115200

2.2.45 AT+IPR Set TE-TA fixed local rate

AT+IPR Set TE-TA fixed local rate	
Test command **AT+IPR=?**	Response **+IPR: (list of supported auto detectable <rate>s),(list of supported fixed-only<rate>s)** **OK**
	Parameter See set command.
Read command **AT+IPR?**	Response **+IPR: <rate>** **OK**
	Parameter See set command.
Set command **AT+IPR=<value>**	Response This parameter setting determines the data rate of the TA on the serial interface. The rate of command takes effect following the issuance of any result code associated with the current command line. **OK**

	Parameter **<rate>** Baud-rate per second 300 1200 2400 4800 9600 19200 28800 38400 57600 115200
Reference **V.25ter**	Note

3 AT Commands According to GSM07.07

3.1 Overview of AT Command According to GSM07.07

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

AT+CREG	NETWORK REGISTRATION
AT+CRLP	SELECT RADIO LINK PROTOCOL PARAM.ETER
AT+CRSM	RESTRICTED SIM ACCESS
AT+CSQ	SIGNAL QUALITY REPORT
AT+FCLASS	FAX: SELECT, READ OR TEST SERVICE CLASS
AT+FMI	FAX: REPORT MANUFACTURED ID
AT+FMM	FAX: REPORT MODEL ID
AT+FMR	FAX: REPORT REVISION ID
AT+VTD	TONE DURATION
AT+VTS	DTMF AND TONE GENERATION
AT+CMUX	MULTIPLEXER CONTROL
AT+CNUM	SUBSCRIBER NUMBER
AT+CPOL	PREFERRED OPERATOR LIST
AT+COPN	READ OPERATOR NAMES
AT+CFUN	SET PHONE FUNCTIONALITY
AT+CCLK	CLOCK
AT+CSIM	GENERIC SIM ACCESS
AT+CALM	ALERT SOUND MODE
AT+CRSL	RINGER SOUND LEVEL
AT+CLVL	LOUDSPEAKER VOLUME
AT+CMUT	MUTE CONTROL
AT+CPUC	PRICE PER UNIT CURRENCY TABLE
AT+CCWE	CALL METER MAXIMUM EVENT
AT+CBC	BATTERY CHARGE
AT+CUSD	UNSTRUCTURED SUPPLEMENTARY SERVICE DATA
AT+CSSN	SUPPLEMENTARY SERVICES NOTIFICATION

3.2 Detailed Descriptions of AT Command According to GSM07.07

3.2.1 AT+CACM Accumulated Call Meter (ACM) Reset or Query

AT+CACM	**Accumulated Call Meter(ACM) Reset or Query**
Test command AT+CACM=?	Response **OK** Parameter
Read command AT+CACM?	Response TA returns the current value of ACM. +CACM: <acm> OK If error is related to ME functionality: +CME ERROR: <err> Parameters <acm> string type; three bytes of the current ACM value in

	hexa-decimal format (e.g. "00001E" indicates decimal value 30) 000000 - FFFFFF
Set command AT+CACM=[<passwd>]	Parameters <passwd> string type: SIM PIN2 Response TA resets the Advice of Charge related accumulated call meter (ACM) value in SIM file EF (ACM). ACM contains the total number of home units for both the current and preceding calls. OK If error is related to ME functionality: +CME ERROR: <err>
Reference GSM 07.07 [13]	Note

3.2.2 AT+CAMM Accumulated call meter maximum (ACM max) reset or query

AT+CAMM Accumulated call meter maximum(ACM max) reset or query	
Test command AT+CAMM=?	Response **OK** Parameter
Read command AT+ CAMM?	Response TA returns the current value of ACM max. +CAMM: <acmmax> OK If error is related to ME functionality: +CME ERROR: <err> Parameters see set command
Set command AT+CAMM=[<acmmax>[,<passwd>]]	Response TA sets the Advice of Charge related accumulated call meter maximum value in SIM file EF (ACM max). ACM max contains the maximum number of home units allowed to be consumed by the subscriber. OK If error is related to ME functionality: +CME ERROR: <err> Parameters <acmmax> string type; three bytes of the max. ACM value in hexa-decimal format (e.g. "00001E" indicates decimal value 30) 000000 disable ACMmax feature 000001-FFFFFF <passwd> string type SIM PIN2

Reference	Note
GSM 07.07 [13]	

3.2.3 AT+CAOC Advice of Charge

AT+CAOC Advice of Charge	
Test command AT+CAOC=?	Response +CAOC: list of supported <mode>s OK Parameters see execution command
Read command AT+CAOC?	Response +CAOC: <mode> OK Parameters see execution command
Execution command AT+CAOC=<mode>	Response TA sets the Advice of Charge supplementary service function mode. If error is related to ME functionality: +CME ERROR: <err> If <mode>=0, TA returns the current call meter value +CAOC: <ccm> OK If <mode>=1, TA deactivates the unsolicited reporting of CCM value OK If <mode>=2. TA activates the unsolicited reporting of CCM value OK Parameter <mode> 0 query CCM value 1 deactivate the unsolicited reporting of CCM value 2 activate the unsolicited reporting of CCM value <ccm> string type; three bytes of the current CCM value in hex-decimal format (e.g. "00001E" indicates decimal value 30); bytes are similarly coded as ACMmax value in the SIM 000000-FFFFFF
Reference GSM 07.07 [13]	Note

3.2.4 AT+CBST Select Bearer Service Type

AT+CBST Select Bearer Service Type	
Test command AT+CBST=?	Response +CBST: (list of supported <speed>s) ,(list of supported <name>s) ,(list of supported <ce>s) OK Parameter see set command
Read command AT+CBST?	Response +CBST: <speed>,<name>,<ce> OK

	Parameter see set command
Set command AT+CBST=[<speed>] [,<name>[,<ce>]]]	Response TA selects the bearer service <name> with data rate <speed>, and the connection element <ce> to be used when data calls are originated. OK Parameter <speed> 0 autobauding 1 300 bps(V.21) 2 1200 bps(V.22) 3 1200/75 bps(V.23) 4 2400 bps(V.22bis) 5 2400 bps(V.26ter) 6 4800 bps(V.32) 7 9600 bps(V.32) 12 9600 bps(V.34) 14 14400 bps(V.34) 65 300 bps (V.110) 66 1200 bps(V.110 or X.31 flag stuffing) 68 2400 bps(V.110 or X.31 flag stuffing) 70 4800 bps(V.110 or X.31 flag stuffing) 71 9600 bps(V.110 or X.31 flag stuffing) 75 14400 bps(V.110 or X.31 flag stuffing) <name> 0 asynchronous modem 2 PAD access (asynchronous) <ce> 0 transparent 1 non-transparent
Reference GSM 07.07 [14]	Note GSM 02.02[1]: lists the allowed combinations of the sub parameters

3.2.5 AT+CCFC Call Forwarding Number And Conditions Control

AT+CCFC Call Forwarding Number And Conditions Control	
Test Command AT+CCFC=?	Response +CCFC: (list of supported <reads>) OK
	Parameters see Write command

Write Command	Response
AT+CCFC = <reads>, <mode> [, <number> [, <type> [,<class> [, <subaddr> [,<satype> [,time]]]]]]	TA controls the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported. Only ,<reads> and <mode> should be entered with mode (0-2,4) If <mode><>2 and command successful OK If there is a network error: +CCFC: 0, 0 If <mode>=2 and command successful (only in connection with <reads> 0 – 3) For registered call forward numbers: +CCFC: <status>, <class1>[, <number>, <type> [, <time>]] [<CR><LF>+CCFC: ....] OK If no call forward numbers are registered (and therefore all classes are inactive): +CCFC: <status>, <class> OK where <status>=0 and <class>=7 If error is related to ME functionality: +CME ERROR: <err>
	Parameters <reads> 0 unconditional 1 mobile busy 2 no reply 3 not reachable 4 all call forwarding (0-3) 5 all conditional call forwarding (1-3) <mode> 0 disable 1 enable 2 query status 3 registration 4 erasure <number> string type phone number of forwarding address in format specified by <type> <type> type of address in integer format; default 145 when dialing string includes international access code character "+", otherwise 129 <subaddr> string type subaddress of format specified by <satype>

	<satype> type of subaddress in integer; default 128 <class> 1 voice 2 data 4 fax 7 all classes <time> time, rounded to a multiple of 5 sec. 1...20..30 <status> 0 not active 1 active
Reference GSM07.07	

3.2.6 AT+CCUG Closed User Group control

AT+CCUG Closed User Group control	
Read Command **AT+CCUG?**	Response **+CCUG: <n>,<index>,<info> OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter see write command
Test Command **AT+CCUG=?**	Response **OK**
Write Command **AT+CCUG=[<n>]** **[,<index>[,<info>]]]**	TA sets the Closed User Group supplementary service parameters as a default adjustment for all following calls. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter **<n>** 0 disable CUG 1 enable CUG **<index>** 0...9 CUG index 10 no index (preferred CUG taken from subscriber data) **<info>** 0 no information 1 suppress OA (Outgoing Access) 2 suppress preferential CUG 3 suppress OA and preferential CUG
Reference	

3.2.7 AT+CCWA Call Waiting Control

AT+CCWA Call Waiting Control	
Read Command AT+CCWA?	Response +CCWA: <n> OK
Test Command AT+CCWA=?	Response +CCWA: (list of supported <n>s) OK
Write Command AT+CCWA=[<n>] [,<mode>[,<class>]]]	Response TA controls the Call Waiting supplementary service. Activation, deactivation and status query are supported. If there is a network error: +CCWA: 0, 0 If <mode><>2 and command successful OK If <mode>=2 and command successful +CCWA:<status>,<class1>[<CR><LF>+CCWA:<status>,<class2>[...]] OK Note :< status>=0 should be returned only if service is not active for any <class> i.e. +CCWA: 0, 7 will be returned in this case. When mode=2, all active call waiting classes will be reported. In this mode the command is abort able by pressing any key. If error is related to ME functionality: +CME ERROR: <err> Parameter <n> 0 disable presentation of an unsolicited result code 1 enable presentation of an unsolicited result code <mode> when <mode> parameter not given, network is not interrogated 0 disable 1 enable 2 query status <class> is a sum of integers each representing a class of information 1 voice (telephony) 2 data (bearer service) 4 fax (teleservice) 7 default(equals to all classes) <status> 0 not active 1 enable
	Unsolicited result code When the presentation Call Waiting at the TA is enabled (and Call Waiting is enabled) and a terminating call set up has attempted during an established call, an unsolicited result code is returned: +CCWA: <number>,<type>,<class>[,<alpha>]
	Parameter <number> string type phone number of calling address in format specified by <type>

	<type> type of address octet in integer format; 129 Unknown type(IDSN format number) 128 Unknown type(unknown number format) 161 National number type(IDSN format) 145 International number type(ISDN format) 177 Network specific number(ISDN format) <alpha> optional string type alphanumeric representation of <number> corresponding to the entry found in phone book
Reference GSM07.07	

3.2.8 AT+CEER Extended error report

AT+CEER Extended error report	
Test command AT+CEER=?	Response OK
Execution command AT+CEER	Response TA returns an extended report of the reason for the last call release. +CEER: <report> OK Parameters <report> Reason for last call release as number code
Reference GSM 07.07 [13]	Note

3.2.9 AT+CGMI Request manufacturer identification

AT+CGMI Request manufacturer identification	
Test command AT+CGMI=?	Response OK
Execution command AT+CGMI	Response TA returns manufacturer identification text. <manufacturer> OK Parameters <manufacturer>
Reference GSM 07.07 [13]	Note

3.2.10 AT+CGMM Request model identification

AT+CGMM Request model identification	
Test command AT+CGMM=?	Response OK
Execution command AT+CGMM	Response TA returns product model identification text. <model> OK Parameters

	<model>
Reference GSM 07.07 [13]	Note

3.2.11 AT+CGMR Request revision identification

AT+CGMR Request revision identification	
Test command AT+CGMR=?	Response OK
Execution command AT+CGMR	Response TA returns product software version identification text. <revision> OK Parameters <revision>
Reference GSM 07.07 [13]	Note

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

AT+CGSN Request product serial number identification (Identical with +GSN)	
Test command AT+CGSN=?	Response OK
Execution command AT+CGSN	Response see +GSN <sn> OK Parameters see +GSN
Reference GSM 07.07 [13]	Note

3.2.13 AT+CSCS Select TE Character Set

AT+CSCS Select TE Character Set	
Test command AT+CSCS=?	Response +CSCS: (list of supported <chset>s) Parameters <chset> “GSM” GSM default alphabet. "HEX" character strings consist only of hexadecimal numbers from 00 to FF; "IRA" international reference alphabet "PCCP" PC character set Code "PCDN" PC Danish/Norwegian character set “UCS2” UCS2 alphabet "8859-1" ISO 8859 Latin *1* character set
Set command AT+CSCS=[<chse	Response Sets which character set <chset> are used by the TE. The TA can then

t>]	convert character strings correctly between the TE and ME character sets. Parameter <chset> see Test command
Reference GSM 07.07 [13]	Note

3.2.14 AT+CSTA Select Type of Address

AT+CSTA Select Type of Address	
Test command AT+CSTA=?	Response +CSTA: (128,129,145, 161,177)
Read command AT+CSTA?	Response +CSTA: <type> OK Parameters < type > Current address type setting.
Reference GSM 07.07 [13]	Note The ATD command overrides this setting when a number is dialed. 129 Unknown type(IDSN format number) 128 Unknown type(unknown number format) 161 National number type(IDSN format) 145 International number type(ISDN format) 177 Network specific number(ISDN format)

3.2.15 AT+CHLD Call hold and multiparty

AT+CHLD Call hold and multiparty	
Test Command **AT+CHLD=?**	Response **+CHLD: list of supported <n>s** **OK**
Write Command **AT+CHLD=[<n>]**	Response TA controls the supplementary services Call Hold, Multiparty and Explicit Call Transfer. Calls can be put on hold, recovered, released, added to conversation, and transferred. Note These supplementary services are only applicable to tele service 11 (Speech: Telephony). OK If error is related to ME functionality: +CME ERROR: <err>

	Parameters		
	<n>	0	Terminate all held calls or UDUB (User Determined User Busy) for a waiting call
		1	Terminate all active calls (if any) and accept the other call (waiting call or held call)
		1X	Terminate the specific call number X (X= 1-7)(active, waiting or held)
		2	Place all active calls on hold (if any) and accept the other call (waiting call or held call) as the active call
		2X	Place all active calls except call X (X= 1-7) on hold
		3	Add the held call to the active calls
Reference			

3.2.16 AT+CIMI Request international mobile subscriber identity

AT+CIMI Request international mobile subscriber identity	
Test command AT+CIMI=?	Response OK Parameters
Execution command AT+CIMI	Response TA returns <IMSI>for identifying the individual SIM which is attached to ME. +CIMI: <IMSI> OK If error is related to ME functionality: +CME ERROR: <err> Parameter <IMSI> International Mobile Subscriber Identity (string without double quotes)
Reference GSM 07.07 [13]	

3.2.17 AT+CKPD Keypad Control

AT+CKPD Keypad Control	
Test command AT+ CKPD=?	Response OK Parameters
Execution command AT+CKPD=<keys> [,<time>[,<pause>]]	Response TA emulates ME keypad by giving each keystroke as a character in a string <keys>. <time>*0.1 seconds is the time to stroke each key and <pause>*0.1 seconds is the length of pause between two strokes. Keystrokes <keys> are emulated.

	OK If error is related to ME functionality: +CME ERROR: <err> Parameters <keys> string of characters representing keys as listed in the following table (based on PCCA STD-101 Annex table I-3): Char.: ASCII-Code: Note: # 35 hash (number sign) * 42 star (*) 0... 9 48... 57 number keys : 58 escape character for manufacturer specific keys D/d 68/100 volume down E/e 69/101 connection end (END) R/r 82/114 recall last number (R/RCL/MR) S/s 83/115 connection start (SEND) U/u 85/117 volume up <time> 0...255 seconds (default value is manufacturer specific, but should be so long that a normal ME can handle keystrokes correctly) <pause> 0... 25.5 seconds (default value is manufacturer specific, but should be so long that a normal ME can handle keystrokes correctly)
Reference GSM 07.07 [13]	

3.2.18 AT+CLCC List current calls of ME

AT+CLCC List current calls of ME	
Test command **AT+CLCC=?**	Response OK Parameters
Execution command **AT+CLCC**	Response TA returns a list of current calls of ME. Note: If command succeeds but no calls are available, no information response is sent to TE. [+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[, <number>,<type>[,<alpha>]] [<CR><LF>+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[, <number>,<type>[,<alpha>]] [...]]] OK If error is related to ME functionality: +CME ERROR: <err> Parameters <id*x*> integer type; call identification number as described in GSM

	02.30[19] sub clause 4.5.5.1; this number can be used in +CHLD command operations <dir> 0 mobile originated (MO) call 1 mobile terminated (MT) call <stat> state of the call: 0 active 1 held 2 dialing (MO call) 3 alerting (MO call) 4 incoming (MT call) 5 waiting (MT call) <mode> bearer/tele service: 0 voice 1 data 2 fax 9 unknown <mpty> 0 call is not one of multiparty (conference) call parties 1 call is one of multiparty (conference) call parties <number> string type phone number in format specified by <type> <type> type of address of octet in integer format; 129 Unknown type(IDSN format number) 128 Unknown type(unknown number format) 161 National number type(IDSN format) 145 International number type(ISDN format) 177 Network specific number(ISDN format) <alpha>string type alphanumeric representation of <number> corresponding to the entry found in phone book
Reference GSM 07.07 [13][14]	

3.2.19 AT+CLCK Facility lock

AT+CLCK Facility lock	
Test command **AT+CLCK=?**	Response **+CLCK: (list of supported <fac>s)** **OK**
	Parameter see execution command

Execution command	Response
AT+CLCK = <fac>, <mode> [,<passwd> [,<class>]]	This command is used to lock, unlock or interrogate a ME or a network facility <fac>. Password is normally needed to do such actions. When querying the status of a network service (<mode>=2) the response line for 'not active' case (<status>=0) should be returned only if service is not active for any <class>. If <mode><>2 and command is successful **OK** If <mode>=2 and command is successful **+CLCK: <status>[,<class1>[<CR><LF>** **+CLCK: <status>, class2....]] OK**

Parameter

<fac>	"PS"	PH-SIM (lock Phone to SIM card) (ME asks password when other than current SIM card inserted; ME may remember certain amount of previously used cards thus not requiring password when they are inserted)
	"SC"	SIM (lock SIM card) (SIM asks password in ME power-up and when this lock command issued)
	"AO"	BAOC (Barr All Outgoing Calls) (refer GSM02.88[6] clause 1)
	"OI"	BOIC (Barr Outgoing International Calls) (refer GSM02.88[6] clause 1)
	"OX"	BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer GSM02.88[6] clause 1)
	"AI"	BAIC (Barr All Incoming Calls) (refer GSM02.88[6] clause 2)
	"IR"	BIC-Roam (Barr Incoming Calls when Roaming outside the home country) (refer GSM02.88 [6] clause 2)
	"AB"	All Barring services (refer GSM02.30[19]) (applicable only for <mode>=0)
	"AG"	All out Going barring services (refer GSM02.30[19]) (applicable only for <mode>=0)
	"AC"	All in Coming barring services (refer GSM02.30[19]) (applicable only for <mode>=0)
	"PN"	Network Personalization (refer GSM 02.22[33])
	"PU"	network subset Personalization (refer GSM 02.22[33])
	"PP"	service Provider Personalization (refer GSM 02.22[33])
	"PC"	Corporate Personalization (refer GSM 02.22[33])
<mode>	0	unlock
	1	lock
	2	query status
<passwd>		password
<class>	1	voice
	2	data

		4	fax
		7	all classes (default)
	<status>	0	off
		1	on
Reference **GSM 07.07 [14]**	Note		

3.2.20 AT+CLIP calling line identification presentation

AT+CLIP Calling line identification presentation			
Read Command **AT+CLIP?**	Response **+CLIP: <n>, <m>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**		
	Parameters see write command		
Test Command **AT+CLIP=?**	Response **+CLIP: (list of supported <n>s)** **OK**		
	Parameters see write command		
Write Command **AT+CLIP=<n>**	Response TA enables or disables the presentation of the CLI at the TE. It has no effect on the execution of the supplementary service CLIP in the network. **OK** If error is related to ME functionality: **+CME ERROR: <err>**		
	Parameters		
	<n>	0	suppress unsolicited result codes
		1	display unsolicited result codes
	<m>	0	CLIP not provisioned
		1	CLIP provisioned
		2	unknown

	Unsolicited result code When the presentation of the CLI at the TE is enabled (and calling subscriber allows), an unsolicited result code is returned after every RING (or +CRING: <type>) at a mobile terminating call. **+CLIP: <number>, <type>,<alphaId>** Parameter **<number>** string type phone number of calling address in format specified by <type> **<type>** type of address octet in integer format; 129 Unknown type(IDSN format number) 128 Unknown type(unknown number format) 161 National number type(IDSN format) 145 International number type(ISDN format) 177 Network specific number(ISDN format) **<alphaId>** string type alphanumeric representation of <number> corresponding to the entry found in phone book
Reference	

3.2.21 AT+CLIR Calling Line Identification Restriction

AT+CLIR Calling Line Identification Restriction	
Read Command **AT+CLIR?**	Response **+CLIR:** <n>, <m> **OK** If error is related to ME functionality: **+CME ERROR:** <err>
	Parameters see write command
Test Command **AT+CLIR=?**	Response **+CLIR:** (list of supported <n>s) **OK**
Write Command **AT+CLIR=<n>**	Response TA restricts or enables the presentation of the CLI to the called party when originating a call. The command overrides the CLIR subscription (default is restricted or allowed) when temporary mode is provisioned as a default adjustment for all following outgoing calls. This adjustment can be revoked by using the opposite command. **OK**

	If error is related to ME functionality: **+CME ERROR:** <err>
	Parameters **<n>** (parameter sets the adjustment for outgoing calls): 0 presentation indicator is used according to the subscription of the CLIR service 1 CLIR invocation 2 CLIR suppression **<m>** (parameter shows the subscriber CLIR service status in the network): 0 CLIR not provisioned 1 CLIR provisioned in permanent mode 2 unknown (e.g. no network, etc.) 3 CLIR temporary mode presentation restricted 4 CLIR temporary mode presentation allowed
Reference	

3.2.22 AT+CMEE Report mobile equipment error

AT+CMEE Report mobile equipment error	
Test command AT+CMEE=?	Response +CMEE: (list of supported <n>s) OK
	Parameters see set command
Read command AT+CMEE?	Response +CMEE: <n> OK
	Parameters see set command
Set 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
	Parameters <n> 0 disable result code 1 enable result code and use numeric values 2 enable result code and use verbose values
Reference GSM 07.07 [13]	

3.2.23 AT+COLP Connected Line Identification Presentation

AT+COLP Connected Line Identification Presentation	
Read Command **AT+COLP?**	Response **+COLP: <n>,<m> OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See write command
Test Command **AT+COLP=?**	Response **+COLP:** (list of supported <n>s) **OK**
	Parameters See write command
Write Command **AT+COLP=[<n>]**	Response TA enables or disables the presentation of the COL (Connected Line) at the TE for a mobile originated call. It has no effect on the execution of the supplementary service COLR in the network. Intermediate result code is returned from TA to TE before any +CR or V.25ter responses. **OK**
	Parameters **<n>** (parameter sets/shows the result code presentation status in the TA): 0 disable 1 enable **<m>** (parameter shows the subscriber COLP service status in the network): 0 COLP not provisioned 1 COLP provisioned 2 unknown (e.g. no network, etc.)
	Intermediate result code When enabled (and called subscriber allows), an intermediate result code is returned before any +CR or V.25ter responses: +COLP:<number>,<type>[,<subaddr>,<satype> [,<alpha>]]

	Parameters **<number>** string type phone number of format specified by <type> **<type>** type of address octet in integer format; 129 Unknown type(IDSN format number) 128 Unknown type(unknown number format) 161 National number type(IDSN format) 145 International number type(ISDN format) 177 Network specific number(ISDN format) **<subaddr>** string type sub address of format specified by <satype> **<satype>** type of sub address octet in integer format (refer GSM 04.08 [8] sub clause 10.5.4.8) **<alpha>** optional string type alphanumeric representation of <number> corresponding to the entry found in phone book
Reference	

3.2.24 AT+COPS Operator selection

AT+COPS Operator selection	
Test command AT+COPS=?	Response TA returns a list of quadruplets, each representing an operator present in the network. Any of the formats may be unavailable and should then be an empty field. The list of operators shall be in order: home network, networks referenced in SIM, and other networks. +COPS: list of supported(<stat>, long alphanumeric <oper>, 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 set 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 set command

Set command	Response
AT+COPS = <mode> [, <format>[, <oper>]]	TA forces an attempt to select and register the GSM network operator. If the selected operator is not available, no other operator shall be selected (except <mode>=4). The selected operator name format shall apply to further read commands (+COPS?). OK If error is related to ME functionality: +CME ERROR: <err>
	Parameters

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

Reference	
GSM 07.07 [14]	

3.2.25 AT+CPAS Mobile equipment activity status

AT+CPAS Mobile equipment activity status	
Test command AT+CPAS=?	Response +CPAS: (list of supported <pas>s) OK
	Parameters see execution command
Execution command AT+CPAS	Response TA returns the activity status of ME. +CPAS: <pas> OK If error is related to ME functionality: +CME ERROR: <err>

	Parameters		
	<pas>	0	ready
		2	unknown (ME is not guaranteed to respond to instructions)
		3	incoming call (ringing)
		4	call in progress or call hold
Reference GSM 07.07 [13]			

3.2.26 AT+CPBF Find phone book entries

AT+CPBF Find phone book entries	
Test command **AT+CPBF=?**	Response +CPBF: [maximum length of field <nlength>],[maximum length of field <tlength>] **OK**
	Parameter see execution command
Execution command **AT+CPBF=<find text>**	Response TA returns phone book entries (from the current phone book memory storage selected with +CPBS) which contain alphanumeric string <findtext>. **[+CPBF: <index1>, <number>,<type>, <text>[[...]** **<CR><LF>+CBPF: <index2>,<number>,<type>,<text>]** **OK**
	Parameter <**index1**>, <**index2**> integer type values in the range of location numbers of phone book memory <**number**> string type phone number of format <type> **<type>** type of address octet in integer format ; 129 Unknown type(IDSN format number) 128 Unknown type(unknown number format) 161 National number type(IDSN format) 145 International number type(ISDN format) 177 Network specific number(ISDN format) <**findtext**>, <**text**> string type field of maximum length <tlength> in current TE character set specified by +CSCS. <**nlength**> integer type value indicating the maximum length of field <number> <**tlength**> integer type value indicating the maximum length of field <text>

Reference	Note
GSM 07.07 [13]	

3.2.27 AT+CPBR Read current phone book entries

AT+CPBR Read current phone book entries	
Test command **AT+CPBR=?**	Response TA returns location range supported by the current storage as a compound value and the maximum lengths of <number> and <text> fields. **+CPBR: (list of supported <index>s), <nlength>, <tlength>** **OK**
	Parameter <**index**> location number <**nlength**> max. length of phone number <**tlength**> max. length of text for number
Execution command **AT+CPBR=** **<index1>** **[, <index2>]**	Response TA returns phone book entries in location number range <index1>... <index2> from the current phone book memory storage selected with +CPBS. If <index2> is left out, only location <index1> is returned. +CPBR: <index1>, <number>, <type>, <text>[<CR><LF>+CPBR: .....+CPBR: <index2>, <number>, <type>, <text>] **OK**
	Parameter <**index1**> read as of this location number <**index2**> read to this location number <**number**> phone number <**type**> type of number <**text**> ext for phone number in current TE character set specified by +CSCS.
Reference **GSM 07.07 [13]**	Note

3.2.28 AT+CPBS Select phone book memory storage

AT+CPBS Select phone book memory storage	
Test command **AT+CPBS=?**	Response +CPBS: (list of supported <storage>s) **OK**
	Parameter see set command

Read command **AT+CPBS?**	Response **+CPBS: <storage>** **OK**
	Parameter See set command.
Set command **AT+CPBS=<storage>**	Response **TA selects current phone book memory storage, which is used by other phone book commands.** **OK**
	Parameter <**storage**> "MC" ME missed (unanswered) calls list "RC" ME received calls list "DC" ME dialed calls list(+CPBW may not be applicable or this storage)(same as LD) "LA" Last Number All list (LND/LNM/LNR) "ME" ME phonebook "BN" SIM barred dialed number "SD" SIM service dial number "VM" SIM voice mailbox "FD" SIM fix dialing-phone book "LD" SIM last-dialing-phone book "ON" SIM (or ME) own numbers (MSISDNs) list "SM" SIM phonebook
Reference **GSM 07.07 [13]**	Note

3.2.29 AT+CPBW Write phone book entry

AT+CPBW Write phone book entry	
Test command **AT+CPBW=?**	Response TA returns location range supported by the current storage, the maximum length of <number> field, supported number formats of the storage, and the maximum length of <text> field. +CPBW: (list of supported <index>s), <nlength>, (list of supported <typ>s), <tlength> **OK**
	Parameter see execution command

Execution command **AT+CPBW= <index1> [, <number>, [<type>, [<text>]]]**	Response TA writes phone book entry in location number <index> in the current phone book memory storage selected with +CPBS. Entry fields written are phone number <number> (in the format <type>) and text <text> associated with the number. If those fields are omitted, phone book entry is deleted. If <index> is left out, but <number> is given, entry is written to the first free location in the phone book. **OK**
	Parameter <**nlength**> max. length of phone number <**tlength**> max. length of text for number <**index**> location number <**number**> phone number **<type>** type of number; 129 Unknown type(IDSN format number) 128 Unknown type(unknown number format) 161 National number type(IDSN format) 145 International number type(ISDN format) 177 Network specific number(ISDN format) <**text**> text for phone number in current TE character set specified by +CSCS. **Note**: The following characters in <text> must be entered via the escape sequence: GSM char. Seq. Seq.(hex) Note \ \5C 5C 35 43 (backslash) “ \22 5C 32 32 (string delimiter) BSP \08 5C 30 38 (backspace) NULL \00 5C 30 30 (GSM null) ‘0’ (GSM null) may cause problems for application layer software when reading string lengths.
Reference **GSM 07.07 [13]**	Note

3.2.30 AT+CPIN Enter PIN

AT+CPIN Enter PIN	
Test command **AT+CPIN=?**	Response **OK** Parameter see execution command

Execution command **AT+CPIN?**	Response TA returns an alphanumeric string indicating whether some password is required or not. **+CPIN: <code>** **OK**
	Parameter **<code>** READY no further entry needed SIM PIN ME is waiting for SIM PIN SIM PUK ME is waiting for SIM PUK PH_SIM PIN ME is waiting for phone to SIM card (antitheft) PH_SIM PUK ME is waiting for SIM PUK (antitheft) SIM PIN2 PIN2, e.g. for editing the FDN book possible only if preceding command was acknowledged with +CME ERROR:17 SIM PUK2 possible only if preceding command was acknowledged with error +CME ERROR: 18.
Set command **AT+CPIN=<pin>** [, <new pin>]	Response TA stores a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.). If the PIN is to be entered twice, the TA shall automatically repeat the PIN. If no PIN request is pending, no action is taken and an error message, +CME ERROR, is returned to TE. If the PIN required is SIM PUK or SIM PUK2, the second pin is required. This second pin, <new pin>, is used to replace the old pin in the SIM. **OK**
	Parameter **<pin>** string type; password **<new pin>** string type; If the PIN required is SIM PUK or SIMPUK2: new password
Reference **GSM 07.07 [13]**	Note

3.2.31 AT+CPWD Change password

AT+CPWD Change password	
Test command **AT+CPWD=?**	Response TA returns a list of pairs which present the available facilities and the maximum length of their password. **+CPWD: list of supported (<fac>, <pwdlength>)s** **OK** Parameter **<fac>** otherwise see execution command, without "FD" **<pwdlength>** integer max. length of password

Execution command **AT+CPWD = <fac>, [<oldpwd>], <newpwd>**	Response TA sets a new password for the facility lock function. **OK**
	Parameter **<fac>** "SC" SIM (lock SIM card) (SIM asks password in ME power-up and when this lock command issued) "AO" BAOC (Barr All Outgoing Calls) (refer GSM02.88[6] clause 1) "OI" BOIC (Barr Outgoing International Calls) (refer GSM02.88[6] clause 1) "OX" BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer GSM02.88[6] clause 1) "AI" BAIC (Barr All Incoming Calls) (refer GSM02.88[6] clause 2) "IR" BIC-Roam (Barr Incoming Calls when Roaming outside the home country) (refer GSM02.88 [6] clause 2) "AB" All Barring services (refer GSM02.30[19]) (applicable only for <mode>=0) "AG" All outgoing barring services (refer GSM02.30[19]) (applicable only for <mode>=0) "AC" All incoming barring services (refer GSM02.30[19]) (applicable only for <mode>=0) "P2" SIM PIN2<oldpwd> 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>** new password
Reference **GSM 07.07 [13]**	Note

3.2.32 AT+CR Service Reporting Control

AT+CR Service Reporting Control	
Test command **AT+CR=?**	Response +CR: list of supported <mode>s **OK**
	Parameters see set command
Read command **AT+CR?**	Response +CR: <mode> **OK**

	Parameters see set command
Set command **AT+CR=<mode>**	Response TA controls whether or not intermediate result code +CR: <serv> is returned from the TA to the TE at a call set up. OK 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
Reference **GSM 07.07 [13]**	

3.2.33 AT+CRC Set Cellular Result Codes for incoming call indication

AT+CRC Set Cellular Result Codes for incoming call indication	
Test command AT+CRC=?	Response +CRC: list of supported <mode>s OK
	Parameters see set command
Read command AT+CRC?	Response +CRC: <mode> OK
	Parameters see set command
Set command AT+CRC=<mode>	Response 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

	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
Reference GSM 07.07 [13]	

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 set 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>
Set command AT+CREG=[<n>]	Response TA controls the presentation of an unsolicited result code +CREG: <stat> when <n>=1 and there is a change in the ME network registration status. OK

	Parameters <n> 0 disable network registration unsolicited result code 1 enable network registration unsolicited result code +CREG: <stat> 2 enable network registration unsolicited result code with location information <stat> 0 not registered, ME is not currently searching a new operator to register to 1 registered, home network 2 not registered, but ME is currently searching a new operator to register to 3 registration denied 4 unknown 5 registered, roaming
	Unsolicited result code When <n>=1 and there is a change in the ME network registration status: +CREG: <stat> Parameters see set command
Reference GSM 07.07 [13]	

3.2.35 AT+CRLP Select Radio Link Protocol parameter

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

	Parameters see set command
Set command AT+CRLP=[<iws>[,<mws>[,<T1>[,<N2>[,<ver>[,<T4>]]]]]]	Response TA sets radio link protocol (RLP) parameters used when non-transparent data calls are setup. OK
	Parameters <iws> 0-61-255 Interworking window size (IWF to MS) <mws> 0-61-255 Mobile window size(MS to IWF) <T1> 0-48-255 acknowledgment timer T1 in 10 ms units) <N2> 0-6-255 retransmission attempts N2 <verx> 0-1 RLP version number in integer format; when Version indication is not present it shall equal 0. Note: Versions 0 and 1 share the same parameter set. <T4> 0-3-255 re-sequencing period in integer format, in units of 10 ms. This is NOT used for RLP versions 0 and 1.
Reference GSM 07.07 [13]	

3.2.36 AT+CRSM Restricted SIM access

AT+CRSM Restricted SIM access	
Test command AT+CRSM=?	Response OK
Write command AT+CRSM=<command>[,<fileId>[,<P1>,<P2>,<P3>[,<data>]]]	Response **+CRSM: <sw1>, <sw2> [,<response>]** **OK / ERROR / +CME ERROR: <err>** Parameter **<command>** 176 READ BINARY 178 READ RECORD 192 GET RESPONSE 214 UPDATE BINARY 220 UPDATE RECORD 242 STATUS all other values are reserved; refer GSM 11.11. **<fileId>** integer type; this is the identifier for an elementary data file on SIM. Mandatory for every command except STATUS **<P1>,<P2>,<P3>** integer type, range 0 - 255 parameters to be passed on by the ME to the SIM; refer GSM 11.11. **<data>** information which shall be written to the SIM (hex-decimal character format) **<sw1>, <sw2>** integer type, range 0 - 255

	status information from the SIM about the execution of the actual command. These parameters are delivered to the TE in both cases, on successful or failed execution of the command; refer GSM 11.11. **<response>** response of a successful completion of the command previously issued (hexadecimal character format)
Reference GSM 07.07 GSM 11.11	

3.2.37 AT+CSQ Signal Quality Report l

AT+CSQ Signal Quality Report l	
Test command AT+CSQ=?	Response +CSQ: (list of supported <rssi>s),(list of supported <ber>s)
Execution command AT+CSQ	Response +CSQ: <rssi>,<ber> *+CME ERROR: <err>* Execution command returns received signal strength indication <rssi> and channel bit error rate <ber> from the ME. Test command returns values supported by the TA.
	Parameters <rssi>: 0 -113 dBm or less 1 -111 dBm 2...30 -109... -53 dBm 31 -51 dBm or greater 99 not known or not detectable <ber> (in percent): 0...7 as RXQUAL values in the table in GSM 05.08 [20] subclause 8.2.4 99 not known or not detectable
Reference GSM 07.07 [13]	Note

3.2.38 AT+FCLASS Select mode

AT+FCLASS Select mode	
Test command **AT+FCLASS=?**	Response +FCLASS: list of supported <n>s) **OK**
	Parameter see set command

Read command **AT+ FCLASS?**	Response **+ FCLASS: <n>** **OK**
	Parameter See set command.
Set command **AT+FCLASS= <n>**	Response **TA sets a particular mode of operation (data fax). This causes the TA to process information in a manner suitable for that type of information** **OK**
	Parameter <**n**> 0 data 1 fax class 1 (TIA-578-A)
Reference **GSM 07.07 [13]**	Note

3.2.39 AT+FMI FAX: select read or test service class

AT+FMI FAX: select read or test service class	
Test command **AT+ FMI =?**	Response **OK**
	Parameter see set command
Read command **AT+ FMI**	Response TA reports one or more lines of information text which permit the user to identify the manufacturer. **<manufacturer Id>** **OK**
	Parameter **<manufacturer Id>**
Reference **EIA/TIA-578-D**	Note

3.2.40 AT+FMM FAX: report model ID

AT+FMM FAX: report model ID	
Test command **AT+ FMM =?**	Response **OK**
	Parameter see set command
Read command **AT+ FMM**	Response TA reports one or more lines of information text which permit the user to identify the specific model of device. **<model Id>** **OK**

	Parameter **<model Id>**
Reference **EIA/TIA-578-D**	Note

3.2.41 AT+FMR FAX: report revision ID

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

3.2.42 AT+VTD=<n> Tone duration

AT+VTD=<n> Tone duration	
Test command AT+VTD=?	Response +VTD: list of supported <n>s OK
	Parameters see set command
Read command AT+VTD?	Response +VTD: <n> OK
	Parameters see set command
Set command AT+VTD = <duration>	Response This command refers to an integer <n> that defines the length of tones emitted as a result of the +VTS command. This does not affect the D command. OK
	Parameters <n> 0 default setting 1-255 duration of the tone in 1/10 seconds

Reference	Note
GSM 07.07 [13]	

3.2.43 AT+VTS DTMF and tone generation

AT+VTS DTMF and tone generation	
Test command AT+VTS=?	Response +VTS: list of supported <dtmf>s, list of supported <duration>s OK
	Parameters see set command
Set command AT+VTS=<dtmf-string>	Response This command allows the transmission of DTMF tones and arbitrary tones in voice mode. These tones may be used (for example) when announcing the start of a recording period. Note: D is used only for dialing. OK If error is related to ME functionality: +CME ERROR: <err> Note: The command is writing only. Parameters <dtmf-string> which has a max length of 20 characters, must be entered between double quotes (“ “) and consists of combinations of the following separated by commas: 1) <dtmf> A single ASCII characters in the set 0-9, #,*, A-D. This is interpreted as a sequence of DTMF tones whose duration is set by the +VTD command. 2) {<dtmf>, <duration>} This is interpreted as a DTMF tone whose duration is determined by <duration>. <duration> duration of the tone in 1/10 seconds range :1-255
Reference GSM 07.07 [13]	Note

3.2.44 AT+CMUX Serial Multiplexer control

AT+CMUX Serial Multiplexer control	
Test command AT+CMUX=?	Response +CMUX: (list of supported <mode>s)
	Parameter See set command
Set command AT+CMUX=<m	Response *+CME ERROR: <err>*

ode>[,<subset>[, <port_speed>[, N1>[,<T1>[,<N2 >[,<T2>[,<T3>[, <k>]]]]]]]	Parameters <mode> 0 Basic option (i.e. No multiplexer in operation) 1 Advanced option (GSM 07.10 multiplexer) 2 Proprietary option (manufacturer specific multiplexer) <subset>
Read command AT+CMUX ?	Response: +CMUX: (mode-1),0,5,127,10,3,30,10,2 **OK** *ERROR*
Reference GSM 07.07 [13]	Note **Channel Number Type DLCI** None Multiplexer Control 0 1 07.07 and 07.05 1 2 07.07 and 07.05 2 3 07.07 and 07.05 3 4 07.07 and 07.05 4

3.2.45 AT+CNUM Subscriber Number

AT+CNUM Subscriber Number	
Test command AT+CNUM=?	Response
Execution command AT+CNUM	Response +CNUM: [<alpha1>],<number1>,<type1>[,<speed>,<service>[,<itc>]] [<CR><LF>+CNUM: [<alpha2>],<number2>,<type2>[,<speed>,<service> [, <itc>]] [...]] *+CME ERROR: <err>*
	Parameters <alpha*x*> optional alphanumeric string associated with <*numberx*>; used character set should be the one selected with command Select TE Character Set +CSCS <number*x*> string type phone number of format specified by <type*x*> <type*x*> type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7) <speed> as defined by the +CBST command <service> (service related to the phone number:) 0 asynchronous modem 1 synchronous modem 2 PAD Access (asynchronous) 3 Packet Access (synchronous) 4 Voice 5 Fax

	<itc> (information transfer capability:) 0 3.1 kHz 1 UDI
Reference GSM 07.07 [13]	Note

3.2.46 AT+CPOL Preferred operator list

AT+CPOL Preferred operator list.	
Test command AT+CPOL=?	Response +CPOL: (list of supported <index>s),(list of supported <format>s)
	Parameters see set command
Read command AT+CPOL?	Response +CPOL: <index1>,<format>,<oper1> [<CR><LF>+CPOL: <index2>,<format>,<oper2> […]] *+CME ERROR: <err>*
	Parameter *See set command*
Set command AT+CPOL=[<index>][,<format>[,<oper>]]	Response *+CME ERROR: <err>*
	Parameters <index> integer type: order number of operator in SIM preferred operator list <format> 0 long format alphanumeric <oper> 1 short format alphanumeric <oper> 2 numeric <oper> <oper> string type: <format> indicates whether alphanumeric or numeric format used (see +COPS command)
Reference GSM 07.07 [13]	Note

3.2.47 AT+COPN Read operator names.

AT+COPN Read operator names.	
Test command AT+COPN=?	Response
Execution command AT+COPN	Response +COPN: <numeric1>,<alpha1 > [<CR><LF>+COPN: <numeric2>,<alpha2> […]] *+CME ERROR: <err>*

	Parameters <numeric*n*> string type: operator in numeric format (see +COPS) <alpha*n*> string type: operator in long alphanumeric format (see +COPS)
Reference GSM 07.07 [13]	Note

3.2.48 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) *+CME ERROR: <err>*
	Parameters see set command
Read command AT+CFUN?	Response +CFUN: <fun> *+CME ERROR: <err>*
	Parameter *See set command*
Set command AT+CFUN=<fun>，[<rst>]	Response *+CME ERROR: <err>*
	Parameters <fun> 0 minimum functionality 1 full functionality (Default) 4 disable phone both transmit and receive RF circuits <rst>: 0 Set the ME to <fun> power level immediately. This is the default when <rst> is not given. 1 Set the ME to <fun> power level after the ME been reset.
Reference GSM 07.07 [13]	Note

3.2.49 AT+CCLK Clock

AT+CCLK Clock	
Test command AT+CCLK=?	Response
	Parameters

Read command AT+CCLK?	Response +CCLK: <time> *+CME ERROR: <err>*
	Parameter See set command
Set command AT+CCLK=<time>	Response *+CME ERROR: <err>*
	Parameters <time> string type value; format is "yy/MM/dd,hh:mm:ss+/-time zone (two digits)"; where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone. E.g: 22:10:00+00 GMT equals to "94/05/06,22:10:00+00" The value scope of "time zone (two digits)" is: 00 – 48. The interval between each time zone is 15 minutes.
Reference GSM 07.07 [13]	Note

3.2.50 AT+CSIM Generic SIM Access

AT+CSIM Generic SIM Access	
Test command AT+CSIM=?	Response
	Parameters
Set command AT+CSIM=<length>,<command>	Response +CSIM: <command>,<response> *+CME ERROR: <err>*
	Parameters <length> integer type: length of characters sent to the TE in <command> or <response> (i.e. twice the number of octets in the raw data) <command> string type: hex format: GSM 11.11 SIM command sent from the ME to the SIM <response> string type: hex format: GSM 11.11 response from SIM to <command>
Reference GSM 07.07 [13]	Note

3.2.51 AT+CALM Alert Sound Mode

AT+CALM Alert Sound Mode	
Test command AT+CALM=?	Response +CALM: (list of supported <mode>s) *+CME ERROR: <err>*

	Parameter See set command
Read command AT+CALM?	Response +CALM: <mode> *+CME ERROR: <err>*
	Parameter See set command
Set command AT+CALM=<mode>	Response *+CME ERROR: <err>*
	Parameters <mode> 0 normal mode 1 silent mode (all sounds from ME are prevented)
Reference GSM 07.07 [13]	Note

3.2.52 AT+CRSL Ringer Sound Level

AT+CRSL Ringer Sound Level	
Read command AT+CRSL?	Response +CRSL: <level> *+CME ERROR: <err>*
	Parameter See set command
Set command AT+CRSL=<level>	Response *+CME ERROR: <err>*
	Parameters <level> integer type value(0-100) with manufacturer specific range (smallest value represents the lowest sound level)
Reference GSM 07.07 [13]	Note

3.2.53 AT+CLVL Loud speaker volume level

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

	Parameters see set command
Read command AT+CLVL?	Response +CLVL: <level> *+CME ERROR: <err>*
	Parameter *See set command*
Set command AT+CLVL=<level>	Response *+CME ERROR: <err*
	Parameters <level> integer type value with manufacturer specific range (smallest value represents the lowest sound level)
Reference GSM 07.07 [13]	Note

3.2.54 AT+CMUT Mute control.

AT+CMUT Mute control.	
Test command AT+CMUT=?	Response +CMUT: (list of supported <n>s)
	Parameters see set command
Read command AT+CMUT?	Response +CMUT: <n> *+CME ERROR: <err>*
	Parameter *See set command*
Set command AT+CMUT=<n>	Response *+CME ERROR: <err>*
	Parameters <n> 0 mute off 1 mute on
Reference GSM 07.07 [13]	Note

3.2.55 AT+CPUC Price per Unit and Currency Table

AT+CPUC Price Per Unit and Currency Table	
Test command AT+CPUC=?	Response
	Parameters see set command

Read command AT+CPUC?	Response +CPUC: <currency>,<ppu> *+CME ERROR: <err>*
	Parameter *See set command*
Set command AT+CPUC=<currency>,<ppu>[,<passwd>]	Response *+CME ERROR: <err>*
	Parameters <currency> string type; three-character currency code (e.g. "GBP", "DEM"); character set as specified by command Select TE Character Set +CSCS <ppu> string type; price per unit; dot is used as a decimal separator (e.g. "2.66") <passwd> string type; SIM PIN2
Reference GSM 07.07 [13]	Note

3.2.56 AT+CCWE Call Meter Maximum Event

AT+CCWE Call Meter Maximum Event	
Test command AT+CCWE=?	Response +CCWE: (list of supported <mode>s) *+CME ERROR: <err>*
	Parameters see set command
Read command AT+CCWE?	Response +CCWE: <mode> *+CME ERROR: <err>*
	Parameter *See set command*
Set command AT+CCWE=<mode>	Response *+CME ERROR: <err>*
	Parameters <mode> 0 Disable call meter warning event 1 Enable call meter warning event
	Unsolicited result codes supported: +CCWV Shortly before the ACM (Accumulated Call Meter) maximum value is reached, an unsolicited result code +CCWV will be sent, if enabled by this command. The warning is issued approximately when 5 seconds call time remains. It is also

	issued when starting a call if less than 5 s call time remains. Parameters
Reference GSM 07.07 [13]	Note GSM 07.07 specifies 30 seconds, so SIMCOM deviate from the specification.

3.2.57 AT+CBC Battery charge

AT+ CBC Battery charge	
Test command AT+CBC=?	Response +CBC: (list of supported < bcs >s),(list of supported < bcl >s),(voltage)
	Parameters see set command
Read command AT+CBC?	Response *ERROR*
	Parameter *See set command*
Set command AT+CBC	Response +CBC: < battery connected status >, < battery charging level >,<voltage> *+CME ERROR: <err>*
	Parameters <bcs> charge status 0 ME is not charged 1 ME is charging <bcl> battery connection level 0 battery is exhausted, or ME does not have a battery connected 1...100 battery has 1-100 percent of capacity remaining vent <voltage> battery voltage(mV)
Reference GSM 07.07 [13]	Note Support for this command will be hardware dependant and only be used when battery is set to vibrator

3.2.58 AT+CUSD Unstructured supplementary service data

AT+ CUSD Unstructured supplementary service data	
Test command AT+CUSD=?	Response +CUSD: <n>
	Parameters see set command

Read command AT+CUSD?	Response +CUSD:<n>
	Parameter <*n*>
Set command AT+CUSD=[<n>[,<str>[,<dcs>]]	Response OK ERROR
	Parameters <n> a numeric parameter which indicates control of the unstructured supplementary service data 0 disable the result code presentation in the TA 1 enable the result code presentation in the TA 2 cancel session (not applicable to read command response) <str> string type USSD-string <dcs> Cell Broadcast Data Coding Scheme in integer format (default 0)
Reference GSM 03.38 [25]	Note

3.2.59 AT+CSSN SUPPLEMENTARY SERVICES NOTIFICATION

AT+ CSSN SUPPLEMENTARY SERVICES NOTIFICATION	
Test command AT+CSSN=?	Response +CSSN: (list of supported <n>s), (list of supported <m>s)
	Parameters see set command
Read command AT+CSSN?	Response +CSSN:<n>,<m>
	Parameter see set command
Set command AT+CSSN=[<n>[,<m>]]	Response OK ERROR

	Parameters <n> a numeric parameter which indicates whether to show the +CSSI result code presentation status after a mobile originated call setup 0 disable 1 enable <m> a numeric parameter which indicates whether to show the +CSSU result code presentation status during a mobile terminated call setup or during a call, or when a forward check supplementary service notification is received. 0 disable 1 enable
Reference	Note

4 AT Commands According to GSM07.05

The GSM 07.05 commands are for performing SMS and CBS related operations. SIM508 II supports both Text and PDU modes.

4.1 Overview of AT Commands According to GSM07.05

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

4.2 Detailed Descriptions of AT Commands According to GSM07.05

4.2.1 AT+CMGD Delete SMS message

AT+CMGD Delete SMS message	
Read Command **AT+CMGD=?**	Response +CMGD：<Range of SMS on SIM card can be deleted> **OK**
Write Command **AT+CMGD=<index>**	Response TA deletes message from preferred message storage <mem1> location <index>. **OK** 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
Reference GSM 07.05	

4.2.2 AT+CMGF Select SMS Message Format

AT+CMGF Select SMS Message Format	
Read Command **AT+CMGF?**	Response **+CMGF:** <mode> **OK**
	Parameters see write command
Test Command **AT+CMGF=?**	Response **+CMGF:** list of supported <mode>s **OK**
Write Command **AT+CMGF=[<mode>]**	Response TA sets parameter to denote which input and output format of messages to use. **OK**
	Parameters **<mode>** 0 PDU mode 1 text mode
Reference GSM 07.05	

4.2.3 AT+CMGL List SMS messages from preferred store

AT+CMGL List SMS messages from preferred store	
Test Command **AT+CMGL=?**	Response **+CMGL:** list of supported <stat>s **OK**
	Parameters see write command
Write Command **AT+CMGL=[<stat>]**	Parameters 1) If text mode: **<stat>** "REC UNREAD" Received unread messages (default) "REC READ" Received read messages "STO UNSENT" Stored unsent messages "STO SENT" Stored sent messages "ALL" All messages 2) If PDU mode: **<stat>** 0 Received unread messages (default) 1 Received read messages 2 Stored unsent messages 3 Stored sent messages 4 All messages
	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>[...]] **OK** 2) If PDU mode (+CMGF=0) and command successful: **+CMGL:**<index>,<stat>,[<alpha>],<length><CR><LF><pdu><CR><LF> **+CMGL:** <index>,<stat>,[alpha],<length><CR><LF><pdu>[...]] **OK** 3)If error is related to ME functionality: **+CMS ERROR: <err>** Parameters **<alpha>** string type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific **<da>** GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters; 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 TP-User-Data-Header-Indication is not set: ME/TA converts GSM alphabet into current TE character set according to rules of Annex A -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: ME/TA converts GSM alphabet into current TE character

	set according to rules of Annex A -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; type of address given by <tooa> **<pdu>** In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)). In the case of CBS: GSM 03.41 TPDU in hexadecimal format. **<scts>** GSM 03.40 TP-Service-Center-Time-Stamp in time-string format (refer <dt>) **<toda>** GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129) **<tooa>** GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format (default refer<toda>)
Reference GSM 07.05	

4.2.4 AT+CMGR Read SMS message

AT+CMGR Read SMS message	
Test Command **AT+CMGR=?**	Response **OK**
Write Command **AT+CMGR=<index>[,<mode>]**	Parameters **<index>** integer type; value in the range of location numbers supported by the associated memory <**mode**> 0 normal 1 not change status of the specified SMS record
	Response TA returns SMS message with location value <index> from message storage <mem1> to the TE. If status of the message is 'received unread', status in the

storage changes to 'received read'.
1) If text mode (+CMGF=1) and command successful:
for SMS-DELIVER:
+CMGR:<stat>,<oa>,[<alpha>],<scts>[,<*tooa*>,<*fo*>,<*pid*>,<*dcs*>,<*sca*>,<*tosca*>,<*length*>]<CR><LF><data>
for SMS-SUBMIT:
+CMGR:<stat>,<da>,[<alpha>][,<*toda*>,<*fo*>,<*pid*>,<*dcs*>,*[<vp>],*<*sca*>,<*tosca*>,<*length*>]<CR><LF><data>
2) If PDU mode (+CMGF=0) and command successful:
+CMGR: <stat>,[<alpha>],<length><CR><LF><pdu>
OK
3) If error is related to ME functionality:
+CMS ERROR: <err>

Parameters

<alpha> string type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific

<da> GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS); 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 TP-User-Data-Header-Indication is not set: ME/TA converts GSM alphabet into current TE character set according to rules of Annex A
-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: ME/TA converts GSM alphabet into current TE character set according to rules of Annex A
-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);; 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.
	<sca>	GSM 04.11 RP SC address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are are converted to characters of the currently selected TE character set (specified by +CSCS);; 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>)

Reference	
GSM 07.05	

4.2.5 AT+CMGS Send SMS message

AT+CMGS Send SMS message	
Test Command **AT+CMGS=?**	Response **OK**
Write Command 1) If text mode (+CMGF=1): +CMGS=<da>[,<toda>]<CR> **text is entered** <ctrl-Z/ESC> ESC quits without sending 2) If PDU mode (+CMGF=0): +CMGS=<length><CR> **PDU is given** <ctrl-Z/ESC>	Parameters **<da>** GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS);; type of address given by <toda> **<toda>** GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format 129 Unknown type(IDSN format number) 128 Unknown type(unknown number format) 161 National number type(IDSN format) 145 International number type(ISDN format) 177 Network specific number(ISDN format) **<length>** integer type value indicating in the text mode (+CMGF=1) the length of the message body <data> (or <cdata>) in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)
	Response TA transmits SMS message from a TE to the network (SMS-SUBMIT). Message reference value <mr> is returned to the TE on successful message delivery. Value can be used to identify message upon unsolicited delivery status report result code. 1) If text mode(+CMGF=1) and sending successful: **+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>** Parameters **<mr>** GSM 03.40 TP-Message-Reference in integer format
Reference GSM 07.05	

4.2.6 AT+CMGW Write SMS message to memory

AT+CMGW Write SMS message to memory	
Test Command **AT+CMGW=?**	Response **OK**
Write Command 1) If text mode (+CMGF=1): **AT+CMGW=**[<oa/da>[,<tooa/toda>]] <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><CR> **PDU is given** <ctrl-Z/ESC>	Parameters **<oa>** GSM 03.40 TP-Originating-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS);; type of address given by <tooa> **<da>** GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS);; 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 129 Unknown type(IDSN format number) 128 Unknown type(unknown number format) 161 National number type(IDSN format) 145 International number type(ISDN format) 177 Network specific number(ISDN format) **<length>** integer type value indicating in the text mode (+CMGF=1) the length of the message body <data> (or <cdata>) in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length) **<pdu>** In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA

	character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)). In the case of CBS: GSM 03.41 TPDU in hexadecimal format. **<index>** Index of message in selected storage <mem2>
Reference GSM 07.05	

4.2.7 AT+CMSS Send SMS message from storage

AT+CMSS Send SMS message from storage	
Test Command **AT+CMSS=?**	Response **OK**
Write Command **AT+CMSS**=<index>[,<da>[,<toda>]]	Response TA sends message with location value <index> from message storage <mem2> to the network (SMS-SUBMIT). If new recipient address <da> is given, it shall be used instead of the one stored with the message. Reference value <mr> is returned to the TE on successful message delivery. Values can be used to identify message upon unsolicited delivery status report result code. 1) If text mode(+CMGF=1) and sending successful: **+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>**
	Parameters **<index>** integer type; value in the range of location numbers supported by the associated memory **<da>** GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS);; type of address given by <toda> **<toda>** GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format 129 Unknown type(IDSN format number) 128 Unknown type(unknown number format) 161 National number type(IDSN format) 145 International number type(ISDN format) 177 Network specific number(ISDN format)

	<mr> GSM 03.40 TP-Message-Reference in integer format
Reference GSM 07.05	

4.2.8 AT+CMGC Send SMS Command

AT+CMGC Send SMS Command	
Test Command **AT+CMGC=?**	Response **OK**
Write Command 1) If text mode (+CMGF=1): **AT+CMGC**=<fo>,<ct>[<pid>[,<mn>[,<da>[,<toda>]]]]<CR> **text is entered** <ctrl-Z/ESC> ESC quits without sending 2) If PDU mode (+CMGF=0): **AT+CMGC=**<length><CR> **PDU is given** <ctrl-Z/ESC>	Parameters **<fo>** first octet of GSM 03.40 SMS-COMMAND (default 2) in integer format **<ct>** GSM 03.40 TP-Command-Type in integer format (default 0) **<pid>** GSM 03.40 TP-Protocol-Identifier in integer format (default 0) **<mn>** GSM 03.40 TP-Message-Number in integer format **<da>** GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS);; type of address given by <toda> **<toda>** GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format 129 Unknown type(IDSN format number) 128 Unknown type(unknown number format) 161 National number type(IDSN format) 145 International number type(ISDN format) 177 Network specific number(ISDN format) **<length>** integer type value indicating in PDU mode (+CMGF=0), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)

	Response TA transmits SMS Command message from a TE to the network (SMS-COMMAND). Message reference value <mr> is returned to the TE on successful message delivery. Value can be used to identify message upon unsolicited delivery status report result code. 1) If text mode(+CMGF=1) and sending successful: **+CMGC:** <mr> **OK** 2) If PDU mode(+CMGF=0) and sending successful: **+CMGC:** <mr> **OK** 3)If error is related to ME functionality: **+CMS ERROR: <err>** Parameters **<mr>** GSM 03.40 TP-Message-Reference in integer format
Reference GSM 07.05	

4.2.9 AT+CNMI New SMS message indications

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

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 **+CMTI:** <mem>,<index> Indication that new message has been received **+CMT:** ,<length><CR><LF><pdu> Short message is output directly **+CBM:** <length><CR><LF><pdu> Cell broadcast message is output directly		
Reference GSM 07.05			

4.2.10 AT+CPMS Preferred SMS Message Storage

AT+CPMS Preferred SMS Message Storage	
Read Command **AT+CPMS?**	Response **+CPMS:**<mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3> OK If error is related to ME functionality: **+CMS ERROR**
	Parameters see write command
Test Command **AT+CPMS=?**	Response **+CPMS:** (list of supported <mem1>s),(list of supported <mem2>s) ,(list of supported <mem3>s)
	Parameters see write command

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

4.2.11 AT+CRES Restore SMS settings

AT+CRES Restore SMS settings	
Test Command **AT+CRES=?**	Response **+CRES:** list of supported <profile>s **OK**
Write Command **AT+CRES=**[<profile>]	Response TA restores SMS settings for +CMGF, +CNMI, +CSDH from non-volatile memory to active memory. **OK** If error is related to ME functionality: **+CMS ERROR:<err>**
	Parameters **<profile>** 0 manufacturer specific profile number where setting are to be stored
Reference GSM 07.05	

4.2.12 AT+CSAS Save SMS settings

AT+CSAS Save SMS settings	
Test Command **AT+CSAS=?**	Response **+CSAS:** list of supported <profile>s **OK**

Write Command **AT+CSAS=**[<profile>]	Response TA saves current message service settings for +CMGF, +CNMI, +CSDH, to a non-volatile memory. **OK** If error is related to ME functionality: **+CMS ERROR:<err>**
	Parameters <profile> 0 manufacturer specific profile number where settings are to be stored
Reference GSM 07.05	

4.2.13 AT+CSCA SMS Service Center Address

AT+CSCA SMS Service Center Address	
Read Command **AT+CSCA?**	Response **+CSCA:** <sca>,<tosca> **OK**
	Parameters see write command
Test Command **AT+CSCA=?**	Response **OK**
Write Command **AT+CSCA =** <sca>[,<tosca>]	Response TA updates the SMSC address, through which mobile originated SMS are transmitted. In text mode, setting is used by send and writes commands. In PDU mode, setting is used by the same commands, but only when the length of the SMSC address coded into <pdu> parameter equals zero. Note: The command writes the parameters in NON-VOLATILE memory. **OK**
	Parameters **<sca>** GSM 04.11 RP SC address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS);; type of address given by <tosca> **<tosca>** Service center address format GSM 04.11 RP SC address Type-of-Address octet in integer format (default refer <toda>)
Reference GSM 07.05	

4.2.14 AT+CSCB Select cell broadcast SMS messages

AT+CSCB Select cell broadcast SMS messages	
Read Command **AT+CSCB?**	Response +CSCB: <mode>,<mids>,<dcss> OK
	Parameters see write command
Test Command **AT+CSCB=?**	Response **+CSCB:** list of supported <mode>s OK
	Parameters see write command
Write Command **AT+CSCB=** [<mode>[,mids>[, <dcss>]]]	Response TA selects which types of CBMs are to be received by the ME. Note: The command writes the parameters in NON-VOLATILE memory. **OK**
	Parameters **<mode>** 0 message types specified in <mids> and <dcss> are accepted 1 message types specified in <mids> and <dcss> are not accepted **<mids>** string type; all different possible combinations of CBM message identifiers (refer <mid>) (default is empty string); e.g. "0,1,5,320-478,922". **<dcss>** string type; all different possible combinations of CBM data coding schemes (refer <dcs>) (default is empty string); e.g. "0-3,5".
Reference GSM 07.05	

4.2.15 AT+CSDH Show SMS text mode parameters

AT+CSDH Show SMS text mode parameters	
Read Command **AT+CSDH?**	Response **+CSDH:**<show> **OK**
	Parameters see write command
Test Command **AT+CSDH=?**	Response **+CSDH:** list of supported <show>s **OK**
	Parameters see write command

Write Command **AT+CSDH=<show>**	Response TA determines whether detailed header information is shown in text mode result codes. OK
	Parameters **<show>** 0 do not show header values defined in commands +CSCA and +CSMP (<sca>, <tosca>, <fo>, <vp>, <pid> and <dcs>) nor <length>, <toda> or <tooa> in +CMT, +CMGL, +CMGR result codes in text mode 1 show the values in result codes
Reference GSM 07.05	

4.2.16 AT+CSMP Set SMS text mode parameters

AT+CSMP Set SMS text mode parameters	
Read Command **AT+CSMP?**	Response **+CSMP:**<fo>,<vp>,<pid>,<dcs> **OK**
	Parameters see write command
Test Command **AT+CSMP=?**	Response **+CSMP:**(list of supported <fo>s),(list of supported <vp>s) OK
	Parameters see write command
Write Command **AT+CSMP=**[<fo>[<vp>[,pid>[,<dcs>]]]]	Response TA selects values for additional parameters needed when SM is sent to the network or placed in a storage when text mode is selected (+CMGF=1). It is possible to set the validity period starting from when the SM is received by the SMSC (<vp> is in range 0... 255) or define the absolute time of the validity period termination (<vp> is a string). Note: The command writes the parameters in NON-VOLATILE memory. **OK**

	Parameters	
	<fo>	depending on the command or result code: first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format
	<vp>	depending on SMS-SUBMIT <fo> setting: GSM 03.40 TP-Validity-Period either in integer format (default 167) or in time-string format (refer <dt>)
	<pid>	GSM 03.40 TP-Protocol-Identifier in integer format.
	<dcs>	GSM 03.38 SMS Data Coding Scheme in Integer format.
Reference GSM 07.05		

4.2.17 AT+CSMS Select Message Service

AT+CSMS Select Message Service	
Read Command **AT+CSMS?**	Response **+CSMS:** <service>,<mt>,<mo>,<bm> **OK**
	Parameters see write command
Test Command **AT+CSMS=?**	Response **+CSMS:** list of supported <service>s **OK**
	Parameters see write command
Write Command **AT+CSMS=** **<service>**	Response **+CSMS:** <mt>,<mo>,<bm> OK If error is related to ME functionality: **+CMS ERROR: <err>**

	Parameters		
	<service>	0	GSM 03.40 and 03.41 (the syntax of SMS AT commands is compatible with GSM 07.05 Phase 2 version 4.7.0; Phase 2+ features which do not require new command syntax may be supported (e.g. correct routing of messages with new Phase 2+ data coding schemes))
		128	SMS PDU mode - TPDU only used for sending/receiving SMSs.
	<mt>		Mobile Terminated Messages:
		0	Type not supported
		1	Type supported
	<mo>		Mobile Originated Messages:
		0	Type not supported
		1	Type supported
	<bm>		Broadcast Type Messages:
		0	Type not supported
		1	Type supported
Reference GSM 07.05			

4.3 Configuration commands for SMS

AT+SMALPHAID	CONFIGURE ALPHAID LOOKUP WHEN DISPLAYING SMS's
AT+SMEXTRAINFO	CONFIGURE EXTRA SMS INFORMATION DISPLAY
AT+SMEXTRAUNSOL	CONFIGURE EXTRA UNSOLICITED SMS MESSAGE

4.3.1 AT+SMALPHAID CONFIGURE ALPHAID LOOKUP WHEN DISPLAYING SMS's

AT+SMALPHAID CONFIGURE ALPHAID LOOKUP WHEN DISPLAYING SMS's	
Test command +SMALPHAID=?	Response + SMALPHAID: (list of supported <mode>s) OK Parameter See set command
Read command +SMALPHAID?	Response +SMALPHAID :<mode> OK Parameter See set command
Set command +SMALPHAID =<mode>	Response OK Parameter

	<mode>	Enable/disable the Alphaid lookup for phonenumbers when displaying sms 0 disable the Alphaid(default) 1 enable the Alphaid
Reference	Note	

4.3.2 AT+SMEXTRAINFO CONFIGURE EXTRA SMS INFORMATION DISPLAY

AT+SMEXTRAINFO CONFIGURE EXTRA SMS INFORMATION DISPLAY	
Test command +SMEXTRAINFO=?	Response +SMEXTRAINFO: (list of supported <mode>s) OK Parameter See set command
Read command + SMEXTRAINFO?	Response + SMEXTRAINFO :<mode> OK Parameter See set command
Set command +SMALPHAID =<mode>	Response OK Parameter <mode> Enable/disable the extra non-standard information on some commands and messages 0 disable the extra non-standard information 1 enable the extra non-standard information
Reference	Note e.g. Adds an extra field onto the AT+CSCA command: +CSCA: "+447802000332",145,"BT Cellnet SMS"

4.3.3 AT+SMEXTRAUNSOL CONFIGURE EXTRA UNSOLICITED SMS MESSAGE

AT+SMEXTRAUNSOL CONFIGURE EXTRA UNSOLICITED SMS MESSAGE	
Test command +SMEXTRAUNSOL=?	Response + SMEXTRAUNSOL: (list of supported <mode>s) OK Parameter See set command
Read command + SMEXTRAUNSOL?	Response + SMEXTRAUNSOL :<mode>

	OK Parameter See set command
Set command +SMEXTRAUNSOL =<mode>	Response OK Parameter <mode> Enable/disable the extra unsolicited messages. 0 disable the extra unsolicited message 1 enable the extra unsolicited message
Reference	Note

5 AT Commands for GPRS Support

5.1 Overview of AT Commands for GPRS Support

Command	Description
AT+CGATT	ATTACH/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	CONTEXT ACTIVATION
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
AT+CGCOUNT	GPRS PACKET COUNTERS

5.2 Detailed Descriptions of AT Commands for GPRS Support

5.2.1 AT+CGATT Attach or detach from GPRS service

AT+CGATT Attach or detach from GPRS service	
Test command +CGATT=?	Response +CGATT: (list of supported <state>s) Parameter See set command
Read command +CGATT?	Response +CGATT:<state> Parameter See set command
Set command +CGATT=[<state>]	Response OK ERROR Parameter <state> indicates the state of GPRS attachment 0 – detached 1 – attached Other values are reserved and will result in an ERROR response to the execution command.
Reference GSM07.07	Note

5.2.2 AT+CGDCONT Define PDP context

AT+CGDCONT	**Define PDP context**
Test command +CGDCONT=?	Response +CGDCONT: (range of supported <cid>s), <PDP_ type>, <APN>, <PDP_addr>, (list of supported <data_comp>s), <list of supported <head_comp>s), Parameter See set command
Read command +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> […]] Parameter See set command
Set command +CGDCONT=[<cid>[,<PDP_type>,[APN>[,<PDP_addr>[,<d_comp>[,<h_comp>]]]]]]	Response OK ERROR Parameter <cid> (PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value=1) is returned by the test form of the command. <PDP_type> (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol X25 ITU-T/CCITT X.25 layer 3 IP Internet Protocol (IETF STD 5) OSPIH Internet Hosted Octet Stream Protocol PPP Point to Point Protocol (IETF STD 51) <APN> (Access Point Name) a string parameter 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. <PDP_addr> a string parameter that identifies the MT in the address space applicable to the PDP. If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, failing that, a dynamic address will be requested. The read form of the command will continue to return the null string even if an address has been allocated during the PDP startup procedure. The allocated address may be read using the +CGPADDR command.

	<d_comp> a numeric parameter that controls PDP data compression 0 – off (default if value is omitted) 1 – on Other values are reserved <h_comp> a numeric parameter that controls PDP data compression 0 – off (default if value is omitted) 1 – on Other values are reserved Note: At present only one data compression algorithm (V.42bis) is provided in SNDCP. If and when other algorithms become available, a command will be provided to select one or more of these.
Reference GSM07.07	Note

5.2.3 AT+CGQMIN Quality of service profile (minimum acceptable)

AT+CGQMIN	**Quality of service profile (minimum acceptable)**
Test command +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) […]] Parameter See set command
Read command +CGQMIN?	Response +CGQMIN:<cid>,<precedence>,<delay>,>reliability>,<peak>,<mean> [<CR><LF>+CGQMIN:<cid>,<precedence>,<delay>,<reliability>,<peak>,<mean> […]] Parameter See set command
Set command +CGQMIN=[<state>]	Response OK ERROR Parameter <cid> a numeric parameter which specifies a particular PDP context definition (see +CGDCONT command) The following parameter are defined in GSM 03.60 <precedence> a numeric parameter which specifies the precedence class <delay> a numeric parameter which specifies the delay class <reliability> a numeric parameter which specifies the reliability class

	<peak> a numeric parameter which specifies the peak throughput class <mean> a numeric parameter which specifies the mean throughput class
Reference GSM07.07	Note

5.2.4 AT+CGQREQ Quality of service profile (requested)

AT+CGQREQ	**Quality of service profile (requested)**
Test command +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) […]] Parameter See set command
Read command +CGQREQ?	Response +CGQREQ:<cid>,<precedence>,<delay>,>reliability>,<peak>,<mean> [<CR><LF>+CGQMIN:<cid>,<precedence>,<delay>,<reliability>,<peak>,<mean> […]] Parameter See set command
Set command +CGQREQ=[<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]]	Response OK ERROR Parameter <cid> a numeric parameter which specifies a particular PDP context definition (see +CGDCONT command) The following parameter are defined in GSM 03.60 <precedence> a numeric parameter which specifies the precedence class <delay> a numeric parameter which specifies the delay class <reliability> a numeric parameter which specifies the reliability class <peak> a numeric parameter which specifies the peak throughput class <mean> a numeric parameter which specifies the mean throughput class
Reference GSM07.07	Note

5.2.5 AT+CGACT PDP context activate or deactivate

AT+CGACT PDP context activate or deactivate	
Test command +CGACT=?	Response +CGACT: (list of supported <state>s) Parameter See set command
Read command +CGACT?	Response +CGATT:<cid>,<state> [<CR><LF>+CGACT:<cid>,<state> […]] Parameter See set command
Set command +CGACT=[<state>[,<cid>[,<cid>[,…]]]]	Response OK NO CARRIER ERROR Parameter <state> indicates the state of PDP context activation 0 – deactivated 1 – activated Other values are reserved and will result in an ERROR response to the execution command. <cid> a numeric parameter which specifies a particular PDP context definition (see +CGDCONT command)
Reference GSM07.07	Note If context is deactivated successfully, NO CARRIER is returned

5.2.6 AT+CGDATA PDP context activate or deactivate

AT+CGDATA PDP context activate or deactivate	
Test command +CGDATA=?	Response +CGDATA: (list of supported <L2P>s) Parameter See set command
Set command +CGDATA=[<L2P>[,<cid>[,<cid>[,…]]]]	Response OK ERROR Parameter <L2P> a string parameter that indicates the layer 2 protocol to be used between the TE and MT: PPP – Point to Point protocol for a PDP such as IP Other values are not supported and will result in an ERROR response to the execution command. <cid> a numeric parameter which specifies a particular PDP context definition (see +CGDCONT command)

Reference	Note
GSM07.07	The command does not fully implement the CGDATA command as specified in GSM 07.07. The command will not enter data state once the PDP context has been activated and will simply generate the result code "OK" if the context has been successfully activated.

5.2.7 AT+CGPADDR Show PDP address

AT+CGPADDR	**Show PDP address**
Test command +CGPADDR=?	Response +CGPADDR: (list of defined <cid>s) Parameter See set command
Set command +CGPADDR=[<cid>[,<cid>[,…]]]	Response +CGPADDR: <cid>,<PDP_addr> [<CR><LF>+CGPADDR:<cid>,<PDP_addr>[…]] **ERROR** Parameter <cid> a numeric parameter which specifies a particular PDP context definition (see +CGDCONT command) If no <cid> is specified, the addresses for all defined contexts are returned. <PDP_addr> a string that identifies the MT in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the +CGDCONT command when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to by <cid>. <PDP_ address> is omitted if none is available.
Reference GSM07.07	Note This command dictates the behavior of PPP in the ME but not that of any other GPRS-enabled foreground layer, e.g. browser.

5.2.8 AT+CGCLASS GPRS mobile station class

AT+CGCLASS	**GPRS mobile station class**
Test command +CGCLASS=?	Response +CGCLASS: (list of supported <class>s) Parameter See set command
Read command +CGCLASS?	Response +CGCLASS: <class> Parameter See set command

Set command +CGCLASS= [<state> [, <cid> [, <cid> […]]]]	Response OK ERROR Parameter <class> a string parameter which indicates the GPRS mobile class (in descending order of functionality) A class A (highest) B class B C class C CG class C in GPRS only mode CC class C in circuit switched only mode (lowest)
Reference GSM07.07	Note Class A is not supported by the SIMCOM GPRS solution. Class C is only supported for <class> values of “CG” and “C

5.2.9 AT+CGEREP Control unsolicited GPRS event reporting

AT+CGEREP Control unsolicited GPRS event reporting	
Test command +CGEREP=?	Response +CGEREP: (list of supported <modes>s) Parameter See set command
Read command +CGEREP?	Response +CGEREP:<mode> Parameter See set command
Set command +CGEREP=<mode>	Response OK ERROR Parameter <mode> 0 buffer unsolicited result codes in the MT; if MT result code buffer is full, the oldest ones can be discarded. No codes are forwarded to the TE. 1 discard unsolicited result codes when MT-TE link is reserved (e.g. in on-line data mode); otherwise forward them directly to the TE Unsolicited Result Codes supported: +CGEV: NW DEACT <PDP_type>, <PDP_addr>[,<cid>] +CGEV: ME DEACT <PDP_type>, <PDP_addr>[,<cid>] +CGEV: NW DETACH +CGEV: ME CLASS <class> parameter <PDP_type> Packet Data Protocol type (see +CGDCONT command) <PDP_addr> Packet Data Protocol address (see +CGDCONT command)

	<cid> Context Id (see +CGDCONT command) <class> GPRS mobile class (see +CGCLASS command)
Reference GSM07.07	Note

5.2.10 AT+CGREG Network registration status

AT+CGREG Network registration status	
Test command +CGREG=?	Response +CGREG: (list of supported <n>s) Parameter See set command
Read command +CGREG?	Response +CGREG:<n>,<stat>[,<lac>,<ci>] +CME ERROR:<err> Parameter See set command
Set command +CGREG=[<n>]	Response OK ERROR Parameter <n> 0 disable network registration unsolicited result code 1 enable network registration unsolicited result code +CGREG:<stat> 2 enable network registration and location information unsolicited result code +CGREG: <stat>[,<lac>,<ci>] <stat> 0 not registered, ME is not currently searching a new operator to register to 1 registered <lac> string type; two byte location area code in hexadecimal format (e.g. “00C3” equals 195 in decimal) <ci> string type; two bytes cell ID in hexadecimal format
Reference GSM07.07	Note For parameter stat, options 0 and 1 supported only.

5.2.11 AT+CGSMS Select service for MO SMS messages

AT+CGSMS Select service for MO SMS messages	
Test command +CGSMS=?	Response +CGSMS: (list of currently available <service>s) Parameter See set command

Read command +CGSMS?	Response +CGSMS:<service> Parameter See set command
Set command +CGSMS=[<service>]	Response OK ERROR Parameter <service> a numeric parameter which indicates the service or service preference to be used 0 GPRS 1 circuit switched 2 GPRS preferred (use circuit switched if GPRS not available) 3 circuit switched preferred (use GPRS if circuit switched not available)
Reference GSM07.07	Note The circuit switched service route is the default method

5.2.12 AT+CGCOUNT GPRS packet counters

AT+CGCOUNT	**GPRS packet counters**
Test command +CGCOUNT=?	Response +CGCOUNT: (list of supported <actions>s),(list of supported <cid>s),(list of supported <period>s) Parameter See set command
Read command +CGCOUNT?	Response +CGCOUNT:<cid>,<state>[,<period>] [<CR><LF>+CGCOUNT:<cid>,<state>[,<period>] […]] Parameter <state> indicates the state of the GPRS counters 1 – periodic. The <period> will then also be displayed 2 – on GPRS context deactivation. <period> is N/A in this case For other parameters see set command
Set command +CGCOUNT=<action>,<cid>[,<period>]	Response OK ERROR Parameter <action> indicates the action to be performed 0 – reset counter for specified <cid> 1 – read counter for specified <cid> 2 – start reporting counter periodically for specified <cid> defined by <period>. Counter is also reported on context deactivation.

	3 – report counter on context deactivation for specified <cid> 4 – stop reporting counter on specified <cid> <cid> a numeric parameter which specifies a particular PDP context definition (see +CGDCONT command) <period> period for periodic packet counter reporting in seconds Unsolicited Result Once a counter has been setup for a <cid> the counter will be displayed as Following either periodically or when the context has been deactivated: <uc> a numeric 32 parameter which indicates the number of compressed bytes transferred in the uplink direction displayed in decimal format <uu> a numeric 32 bit parameter which indicates the number of uncompressed bytes transferred in the uplink direction displayed in decimal format <un> a numeric 32 bit parameter which indicate the number of N-PDUs (i.e. IP packets) transferred in the uplink direction displayed in decimal format <dc> a numeric 32 bit parameter which indicates the number of compressed bytes transferred in the downlink direction displayed in decimal format <dn> a numeric 32 bit parameter which indicates the number of N-PDUs (i.e. IP packets) transferred in the downlink direction displayed in decimal format Note that the current counter values will be displayed immediately this command is entered for any action (i.e. even stopping the counter display will generate the above unsolicited result code for the cancelled <cid>)
Reference GSM07.07	Note This command displays byte and IP packet counters for GPRS contexts. It is proprietary to SIMCOM. If counters are displayed periodically, they will only be displayed if: - there is a separate multiplexer channel for unsolicited result codes, or - the user switches to command mode using the “+++” escape sequence

6 AT Commands for SIM Application Toolkit

This section defines the AT Commands implemented in SIM508 for the control of the SIM Application Toolkit protocol, as per specification GSM 11.14. The table in section 6.1 lists the AT commands supported – these are SIMCOM proprietary commands as no formal specification currently exist defining STK functionality via an AT interface. The parameters supported by each AT command for the different proactive commands are given in the subsections which follow the main table.

The protocol defined below provides a generic mechanism for the exchange of information between the ME and the application for a typical proactive SIM command.

How to use SIM508 STK AT interface please see document STK USER GUIDE.

6.1 Overview of Commands, Responses and Result codes

The following tables outline the AT commands, responses and unsolicited result codes applicable for control of the SIM Application Toolkit protocol via the AT command interface.

Notation	Description
+STC:	Unsolicited result code issued by the CI Task to the application to indicate either: • there is no STK application available on the SIM • there is a proactive SIM command to retrieve and action end of the current proactive command session – used if the user wishes to terminate the current proactive SIM session.
+STGC=…	AT command to Get Command parameters for a proactive SIM command from the CI Task. This will be sent from the application after unsolicited result code +STC: <cmdId> informs it the SIM has issued a proactive SIM command to be performed.
+STCR=…	AT command to provide Command Response parameters for a previously executed proactive SIM command. Its purpose is to relay response data to the lower layers of the SIMCOM protocol stack to allow the Terminal Response SIM command (see [10]) to be returned to the SIM for the current proactive command.
+STPD=…	AT command to provide Profile Download parameters to the CI Task. This contains information relating to the SIM Application Toolkit capabilities of the application, and is used by the SIMAT task to limit its SAT instruction set accordingly. Any application plugging into the serial port should send this command or it will be assumed that the application has no SAT support and will therefore never receive any SAT related information.
+STMS=…	AT Command for selecting a menu option. On power-up the SIM will send the Set-Up-Menu proactive indication. The accessory should load and display the menu structure. This AT command should be used to inform SIM508 of the item selected from the list.
+STEV=…	This command is used to inform the MS that an MMI specific event has occurred.
+STRT=…	AT command for setting the automatic response timer used by the CI Task to issue the Terminal Response (no user response) to a proactive command which has not been processed. The default response time is ten seconds, but it is recommended this is increased when performing SIM Toolkit FTA.
+STTONE=…	AT command for playing SIM Toolkit Tones in both idle and dedicated mode. This command should be used in conjunction with the Play Tone proactive command.

6.2 Definition of Unsolicited Result Codes

Not all proactive commands are required to be visible to the application. For example, the proactive commands More Time and Provide Local Information are transparent and therefore do not require an unsolicited result code to be sent to the user. The commands, which are relevant for user interaction in one form or another, are listed in the following tables.

The output generated for strings is controlled by the +CMGF AT command. The factory default for string output is PDU mode where strings are output in HEX. The tables below illustrate the alternative mechanism of TEXT output; this is obtained by using the +CMGF AT command with a parameter of one.

6.2.1 +STC Command

+STC Informs the application of the type of proactive SIM command data awaiting retrieval.	
Result Code: **+STC: <cmdId>**	Parameters **<cmdId>** Hexadecimal format of Type of Command . Unique identifier for the current SIM Toolkit proactive command issued by the SIM - The following values are supported: ‘10’ Get Acknowledgement For Set Up Call command ‘15’ Launch Browser command ‘20’ Play Tone command ‘21’ Display Text command ‘22’ Get Inkey command ‘23’ Get Input command ‘24’ Select Item command ‘25’ Set Up Menu command ‘28’ Set Up Idle Mode Text command ‘40’ Open Channel command ‘14’ Send DTMF command ‘05’ Set Up Event List command ‘81’ End of proactive session
Reference	Note The special case is +STC: 0 that is issued when there is no STK application accessible on the SIM.

The following tables in this section detail the information that is distributed to the application for proactive indications using unsolicited result codes. The information applicable to the proactive command is sent to the application using the +STUD (SIM Toolkit Unsolicited Data) results code.

6.2.2 Send SM

Command data for Send Short Message unsolicited proactive command	
Result Code **+STUD: 13[,<alphaId>[,<iconId>,<dispMode>]]**	Parameters **13** hex notation: Command Type value. See Section 6.2 for values. **<alphaId>** string format: using either SMS default alphabet or UCS2 alpha field coding '0' : Special case indicating SIM provided a null alphaId and user should not be informed of SMS transaction. If alphaId field is not present it is up to the ME to decide whether to inform the user or not. **<iconId>** Numeric tag for the icon to be displayed – corresponds to the index in the Image file on the SIM 0 No icon 1..255 Icon tag **<dispMode>** integer: denotes use of associated icon 0 display icon only (replaces any text string or alphaId) display with alphaId or text string
Reference	Note

6.2.3 Send SS

Command data for Send SS unsolicited proactive command	
Result Code **+STUD: 11[,<alphaId>[,<iconId>,<dispMode>]]**	Parameters **11** hex notation: Command Type value. See Section 6.2 for values. **<alphaId>** string format: using either SMS default alphabet or UCS2 alpha field coding to inform user of current transaction. '0' : Special case indicating SIM provided a null alphaId and user should not be informed of SS transaction. If alphaId field is not present it is up to the ME to decide whether to inform the user or not. **<iconId>** Numeric tag for the icon to be displayed – corresponds to the index in the Image file on the SIM 0 No icon 1..255 Icon tag **<dispMode>** integer: denotes use of associated icon 0 display icon only (replaces any text string or alphaId) 1 display with alphaId or text string
Reference	Note

6.2.4 Send USSD

Command data for Send USSD unsolicited proactive command	
Result Code	Parameters
+STUD: 12[,<alphaId>[,<iconId>,<dispMode>]]	**12** hex notation: Command Type value. See Section 6.2 for values. **<alphaId>** string format: using either SMS default alphabet or UCS2 alpha field coding to inform user of current transaction. '0' : Special case indicating SIM provided a null alphaId and user should not be informed of USSD transaction. If alphaId field is not present it is up to the ME to decide whether to inform the user or not. **<iconId>** Numeric tag for the icon to be displayed – corresponds to the index in the Image file on the SIM 0 No icon 1..255 Icon tag **<dispMode>** integer: denotes use of associated icon 0 display icon only (replaces any text string or alphaId) 1 display with alphaId or text string
Reference	Note

6.2.5 Set Up Call

Command data for Set Up Call unsolicited proactive command	
Result Code	Parameters
+STUD: 10,<alphaId>,<dialstring>,<cps>[,<iconId>,<dispMode>]	**10** hex notation: Command Type value. See Section 6.2 for values. **<alphaId>** string format: using either SMS default alphabet or UCS2 alpha field coding **<dialstring>** string format: using either SMS default alphabet or UCS2 alpha field coding **<cps>** string format: using either SMS default alphabet or UCS2 alpha field coding **<iconId>** Numeric tag for the icon to be displayed – corresponds to the index in the Image file on the SIM 0 No icon 1..255 Icon tag **<dispMode>** integer: denotes use of associated icon 0 display icon only (replaces any text string or alphaId) 1 display with alphaId or text string
Reference	Note

6.2.6 Close Channel

Command data for Close Channel proactive command	
Result Code **+STUD: 41[,<alphaId>[,<iconId>,<dispMode>]]**	Parameters **41** hex notation: Command Type value. See Section 6.2 for values. **<alphaId>** string format: using either SMS default alphabet or UCS2 alpha field coding to inform user of current transaction. '0' : Special case indicating SIM provided a null alphaId and the user should not be informed of the current transaction. If alphaId field is not present it is up to the ME to decide whether or not to inform the user. **<iconId>** Numeric tag for the icon to be displayed – corresponds to the index in the Image file on the SIM 0 No icon 1..255 Icon tag **<dispMode>** integer: denotes use of associated icon 0 display icon only (replaces any text string or alphaId) 1 display with alphaId or text string
Reference	Note

6.2.7 Receive Data

Command data for Receive Data proactive command	
Result Code **+STUD: 42,<length>[,<alphaId>[,<iconId>,<dispMode>]]**	Parameters **42** hex notation: Command Type value. See Section 6.2 for values. **<length>** integer type: number of bytes requested in command **<alphaId>** string format: using either SMS default alphabet or UCS2 alpha field coding to inform user ofcurrent transaction. '0' : Special case indicating SIM provided a null alphaId and the user should not be informed of the current transaction. If alphaId field is not present it is up to the ME to decide whether or not to inform the user. **<iconId>** Numeric tag for the icon to be displayed – corresponds to the index in the Image file on the SIM 0 No icon 1..255 Icon tag **<dispMode>** integer: denotes use of associated icon 0 display icon only (replaces any text string or alphaId) 1 display with alphaId or text string
Reference	Note

6.2.8 Send Data

Command data for Send Data proactive command	
Result Code **+STUD: 43,<length>,<data>[,<alphaId>[,<iconId>,<dispMode>]]**	Parameters **43** hex notation: Command Type value. See Section 6.2 for values. **<length>** integer type: number of bytes of data transmitted **<data>** string type: channel data – coded as 8bit data. This appears in BCD notation with two TE characters representing one byte of actual data. **<alphaId>** string format: using either SMS default alphabet or UCS2 alpha field coding to inform user of current transaction. '0' : Special case indicating SIM provided a null alphaId and the user should not be informed of the current transaction. If alphaId field is not present it is up to the ME to decide whether or not to inform the user. **<iconId>** Numeric tag for the icon to be displayed – corresponds to the index in the Image file on the SIM 0 No icon 1..255 Icon tag **<dispMode>** integer: denotes use of associated icon 0 display icon only (replaces any text string or alphaId) 1 display with alphaId or text string
Reference	Note

6.2.9 Language Notification

Command data for Language Notification proactive command	
Result Code **+STUD: 35[,<language>]**	Parameters **35** hex notation: Command Type value. See Section 6.2 for values. **<language>** language code: coded as pair of alphanumeric characters, as given in ISO 639 [12].
Reference	Note The language parameter is optional. Its inclusion in the result code indicates a specific language notification. Omission from the result code indicates a non-specific language notification, which cancels a previous specific language notification

6.2.10 Run AT

Command data for Run AT Command proactive command	
Result Code **+STUD: 34[,<alphaId>[,<iconId>,<dispMo**	Parameters **34** hex notation: Command Type value. See Section 6.2 for values. **<alphaId>** string format: using either SMS default alphabet or UCS2

de>]]	alpha field coding to inform user of current transaction. '0' : Special case indicating SIM provided a null alphaId and the user should not be informed of the current transaction. If alphaId field is not present it is up to the ME to decide whether or not to inform the user. **<iconId>** Numeric tag for the icon to be displayed – corresponds to the index in the Image file on the SIM. 0 No icon 1..255 Icon tag **<dispMode>** integer: denotes use of associated icon 0 display icon only (replaces any text string or alphaId) 1 display with alphaId or text string
Reference	Note

6.2.11 Refresh

Command data for Refresh proactive command	
Result Code **+STUD: 01,<refMode>[,<numFiles>,<fileList>]**	Parameters **01** hex notation: Command Type value. See Section 6.2 for values. **<refMode >** hex notation: command Qualifier information giving the type of Refresh to be performed. 00 SIM Initialisation and Full File Change Notification 01 File Change Notification 02 SIM Initialisation and File Change Notification 03 SIM Initialisation 04 SIM Reset **<numFiles>** integer: gives number of Files in the list **<fileList>** string type, hex notation: gives the full paths for the SIM files, each file being delimited by commas within the string
Reference	Note For <refMode> values '01' and '02' file list data must be provided by the SIM. For all other <refMode> values any included file list information will be ignored. If the optional <fileList> parameter is not present in the result code, we assume that <refMode>s '01'and '02' cannot occur.

6.3 ME Initialisation Procedure

On powering up the ME the SIM's Phase file (EF 0x6FAE) is read. If this indicates the SIM is of Phase 2+ or greater the ME sends a Terminal Profile command (see [3]) to the SIM to inform it of the SIM Application Toolkit capabilities of the ME. The SIM then limits its instruction set based on this profile. This terminal profile data is configurable and resides in an application layer configuration file for ease of customisation. On sending the Profile Download command The SIM will respond with signals that will provide the ME with information on whether the SIM has a SIM Toolkit application present.

If on completing ME initialisation the stack determines that the SIM has no STK capability an unsolicited result code +STC: 0 will be issued to indicate to the user that there is no SIM toolkit availability during the current session.

However, if STK information is available for use by the ME/application then the lower layers of the SIMCom Protocol Stack are informed and the first proactive command to be sent from the SIM to the user will be the Set Up Menu command to allow the available STK menu to be added to the ME's own menu structure (i.e. unsolicited result code +STC: 25 will be issued by the CI Task after it has received this proactive command from the SIMAT task.

6.4 Definition of AT Commands

This section details the AT commands for driving an STK application on the SIM.

6.4.1 AT+STGC SIM Toolkit Get Command parameters

Get proactive Command parameters	
Write Command **+STGC=<cmdId>**	Response +STGC: <cmdId>,<data>
	Parameter **<cmdId>** hex notation: Command Type value See Section 6.2 for values. **<data>** proactive command specific data, dependent on <cmdId>
Reference	

The <data> information varies between proactive SIM commands, according to the type of command issued by the SIM, as given by <cmdId>. This reflects the useful part of the proactive command from a user's perspective. The result codes returned to the application on a command by command basis are outlined in the following subsections:

6.4.1.1 Display Text

Command data for Display Text proactive command	
Result Code **+STGC: 21,<dcs>,<text>,**	Parameters **21** hex notation: Command Type value. See Section 6.2 for values.

<priority>,<clear>[,<iconId>,<dispMode>[,<response>]]	**<dcs >** integer: data coding scheme used for <text>. The schemes used are as per GSM 03.38 for SMS 0 7bit GSM default alphabet (packed) 4 8bit data 8 UCS2 alphabet **<text>** string format: text string in <dcs> format **<priority>** integer: display priority information 0 Normal priority 1 High priority **<clear>** integer: mode of clearing message 0 Clear after delay 1 User clears message **<iconId>** Numeric tag for the icon to be displayed – corresponds to the index in the Image file on the SIM 0 No icon 1..255 Icon tag **<dispMode>** integer: denotes use of associated icon 0 Display icon only (replaces any text string or alphaId) 1 Display with alpha Id or text string **<response>** 0 normal response expected 1 immediate response expected.
Reference	Note

6.4.1.2 Get Inkey

Command data for Get Inkey proactive command	
Result Code	Parameters
+STGC: 22,<dcs>,<text>,<response>,<helpInfo>[,<iconId>,<dispMode>]	**22** hex notation: Command Type value. See Section 6.2 for values. **<dcs >** integer: data coding scheme used for <text> The schemes used are as per GSM 03.38 for SMS 0 7bit GSM default alphabet (packed) 4 8bit data 8 UCS2 alphabet **<text>** string format: text string in <dcs> format **<response>** integer: expected response character format. 0 Digits (0-9, *, # and +) only 1 SMS default alphabet 2 UCS2 alphabet 3 Yes/No response only **<helpInfo>** 0 no help information available 1 help information available **<iconId>** Numeric tag for the icon to be displayed – corresponds to the index in the Image file on

	the SIM 0 No icon 1..255 Icon tag **<dispMode>** integer: denotes use of associated icon 0 display icon only (replaces any text string or alphaId) 1 display with alpha Id or text string
Reference	Note Entry of the Digits only response is the same regardless of alphabet set – coding of this response is performed within the SIMCOM Protocol Stack when creating the Terminal Response

6.4.1.3 Get Input

Command data for Get Input proactive command	
Result Code **+STGC: 23,<dcs>,<text>,<response>,<echo>,<helpInfo>,<minLgth>,<maxLgth>[,<dcs>,<default>[,<iconId>,<dispMode>]]**	Parameters **23** hex notation: Command Type value. See Section 6.2 for values. **<dcs >** integer: data coding scheme used for <text> or <default>. The schemes used are as per GSM 03.38 for SMS. 0 7bit GSM default alphabet (packed) 4 8bit data 8 UCS2 alphabet **<text>** string format: text string in <dcs> format **<response>** integer: expected response characters and their format. 1 Digits (0-9, *, # and +) only from SMS default alphabet (unpacked) 2 Digits (0-9, *, # and +) only from SMS default alphabet (packed) 3 Digits from UCS2 alphabet 4 SMS default alphabet (unpacked) 5 SMS default alphabet (packed) 6 UCS2 alphabet **<echo>** 0 echo input to display 1 no echo allowed (see Note) **<helpInfo>** 0 no help information available 1 help information available **<minLgth>** Integer: minimum length of expected response,in range 0..255 0 indicates no minimum length requirement **<maxLgth>** Integer: maximum length of expected response, in range 1..255 255 indicates no maximum length requirement **<iconId>** Numeric tag for the icon to be displayed –corresponds to the index in the Image file on the SIM (see [10]) 0 No icon 1..255 Icon tag **<dispMode>** integer: denotes use of associated icon

	0 display icon only (replaces any text string or alphaId) 1 display with alpha Id or text string
Reference	Note Actual input string may not be displayed in this case but can alternatively be masked to indicate key entry using characters from the set (0-9, * and #). If <minLgth> and <maxLgth> are equal, the response string is to be of fixed length.

6.4.1.4 Play Tone

Command data for Play Tone proactive command	
Result Code **+STGC: 20[,<alphaId>[,<tone>[,<duration>]]]**	Parameters **20** hex notation: Command Type value. See Section 6.2 for values. **<alphaId>** string format: using either SMS default alphabet or UCS2 alpha field coding **<tone>** integer: identifies requested tone type. SST denotes a Standard Supervisory Tone, MPT denotes an ME Proprietary Tone. 1 Dial (SST) 2 Called subscriber busy (SST) 3 Congestion (SST) 4 Radio Path acknowledge (SST) 5 Radio path not available / Call dropped (SST) 6 Error / Special information (SST) 7 Call waiting (SST) 8 Ringing Tone (SST) 16 General Beep (MPT) 17 Positive ack (MPT) 18 Negative ack or Error (MPT) **<duration>** integer: duration of the tone to be played, given in milliseconds.
Reference	Note If no tone is specified the ME shall default to the General Beep SST. If no duration is specified the ME default of 500ms is chosen.

6.4.1.5 Set Up Menu

Command data for Set Up Menu proactive command	
Result Code **+STGC: 25,<numItems>,<selection>,<helpInfo>,<removeMenu><alphaId>[,<iconId>,<dis**	Parameters **25** hex notation: Command Type value. See Section 6.2 for values. **<numItems>** integer: indicates the number of items accessible in the menu structure. 0 is a special case, indicating the existing menu is to be removed from the ME's menu structure.

pMode>]<CR><LF> **+STGC: <itemId>,<itemText>[,<iconId>,<dispMode>,<nai><CR><LF>** **[+STGC: <itemId>,<itemText>[,<iconId>,<dispMode>,<nai><CR><LF>** **[…]]]]**	**<selection>** integer: gives preferred user selection method 0 no selection preferrence 1 soft key selection preferred **<helpInfo>** 0 no help information available 1 help information available **<removeMenu>** 0 do not remove the current menu 1 remove the current menu **<alphaId>** string format: using either SMS default alphabet or UCS2 alpha field coding **<iconId>** Numeric tag for the icon to be displayed – corresponds to the index in the Image file on the SIM 0 No icon 1..255 Icon tag **<dispMode>** integer: denotes use of associated icon 0 display icon only (replaces any text string or alphaId) 1 display with alpha Id or text string **<itemId>**integer: denotes the identifier of the item **<itemText>** string format: using either SMS default alphabet or UCS2 alpha field coding **<nai>** hex notation: next action indicator – this takes one of the allowed values from the Command Type (see section 5.2) range, as specified in [9], section 13.4
Reference	Note

6.4.1.6 Select Item

Command data for Select Item proactive command	
Result Code	Parameters
+STGC: 24,<numItems>,<selection>,<helpInfo>,<alphaId>[,<iconId>,<dispMode>]<CR><LF> **+STGC: <itemId>,<itemText>[,<iconId>,<dispMode>,<nai><CR><LF>** **[+STGC: <itemId>,<itemText>[,<iconId>,<dispMode>,<nai><CR><LF>**	**24** hex notation: Command Type value. See Section 6.2 for values. **<numItems>** integer: indicates the number of items accessible in the menu structure. 0 is a special case, indicating the existing menu is to be removed from the ME's menu structure. **<selection>** integer: gives preferred user selection method 0 no selection preferrence 1 soft key selection preferred **<helpInfo>** 0 no help information available 1 help information available **<alphaId>** string format: using either SMS default alphabet or UCS2 alpha field coding **<iconId>** Numeric tag for the icon to be displayed – corresponds to the index in the Image file on the SIM 0 No icon 1..255 Icon tag

[…]]]]	**<dispMode>** integer: denotes use of associated icon 0 display icon only (replaces any text string or alphaId) 2 display with alpha Id or text string **<itemId>** integer: denotes the identifier of the item **<itemText>** string format: using either SMS default alphabet or UCS2 alpha field coding **<nai>** hex notation: next action indicator – this takes one of the allowed values from the Command Type (see section 6.2) range
Reference	Note

6.4.1.7 Get Acknowledgement For Set Up Call

Command data for Set Up Call proactive command	
Result Code **+STGC: 10,<alphaId>[,<iconId>,<dispMode>]**	Parameters **10** hex notation: Command Type value. See Section 6.2 for values. **<alphaId>** string format: using either SMS default alphabet or UCS2 alpha field coding **<iconId>** Numeric tag for the icon to be displayed – corresponds to the index in the Image file on the SIM 0 No icon 1..255 Icon tag **<dispMode>** integer: denotes use of associated icon 0 display icon only (replaces any text string or alphaId) 1 display with alphaId or text string
Reference	Note

6.4.1.8 Set Up Idle Mode Text

Command data for Set Up Idle Mode Text proactive command	
Result Code **+STGC: 28,<dcs>,<text>[,<iconId>,<dispMode>]**	Parameters **28** hex notation: Command Type value. See Section 6.2 for values. **<dcs >** integer: data coding scheme used for <text>. The schemes used are as per GSM 03.38 for SMS. 0 7bit GSM default alphabet (packed) 4 8bit data 8 UCS2 alphabet **<text>** string format: text string in <dcs> format See Note below. **<iconId>** Numeric tag for the icon to be displayed – corresponds to the index in the Image file on the SIM 0 No icon 1..255 Icon tag

	<dispMode> integer: denotes use of associated icon 0 display icon only (replaces any text string or alphaId) 1 display with alphaId or text string
Reference	Note If the text string given in the result code is Null (i.e. zero length and set as "" in the result code) it implies the existing Idle Mode Text is to be removed.

6.4.1.9 Send DTMF

Command data for Send DTMF proactive command	
Result Code **+STGC: 14[,<alphaId>[,<iconId>,<dispMode>]]**	Parameters **14** hex notation: Command Type value. See Section 6.2 for values. **<alphaId>** string format: using either SMS default alphabet or UCS2 alpha field coding to inform user of current transaction. '0' : Special case indicating SIM provided a null alphaId and the user should not be informed of the current transaction. If alphaId field is not present it is up to the ME to decide whether or not to inform the user. **<iconId>** Numeric tag for the icon to be displayed – corresponds to the index in the Image file on the SIM 0 No icon 1..255 Icon tag **<dispMode>** integer: denotes use of associated icon 0 display icon only (replaces any text string or alphaId) 1 display with alphaId or text string
Reference	Note

6.4.1.10 Launch Browser

Command data for Launch Browser proactive command	
Result Code **+STGC: 15,<comQual>,<url>[,<browserId>[,<bearer>[,<numFiles>,<provFiles>[,<dcs>,<gateway>[,<alphaId>[,<iconId>,<dispMode>]]]]]]**	Parameters **15** hex notation: Command Type value. See Section 6.2 for values. **<comQual>** hex notation: command qualifier information from Command Details Data Object: 00 launch browser without making connection, if not already launched 01 launch browser making connection, if not already launched 02 use existing browser 03 close existing browser, launch new browser, making a connection

	04 close existing browser, launch new browser, using secure session **<url>** string format: 8bit data using GSM default 7bit alphabet. Special case: <url>="" – Null value, so use default URL **<browserId>** hex notation: Browser Id to use. Available values: '00' Use default browser **<bearer>** hex notation: list of allowed bearers in priority order. Possible values: '00' SMS '01' CSD '02' USSD '03' GPRS **<numFiles>** integer: denotes the number of provisioning files given **<provFiles>** string type, hex notation file ids: List of Provisioning File Reference ids. Full Paths are given, delimeted within the string by a comma **<dcs >** integer: data coding scheme used for <text>. The schemes used are as per GSM 03.38 for SMS. 0 7bit GSM default alphabet (packed) 4 8bit data 8 UCS2 alphabet **<gateway>** string format: text string in <dcs> format **<alphaId>** string format: using either SMS default alphabet or UCS2 alpha field coding **<iconId>** Numeric tag for the icon to be displayed – corresponds to the index in the Image file on the SIM 0 No icon 1..255 Icon tag **<dispMode>** integer: denotes use of associated icon 0 display icon only (replaces any text string or alphaId) 1 display with alphaId or text string
Reference	Note

6.4.1.11 Open Channel

Command data for Open Channel proactive command	
Result Code	Parameters
+STGC: 40[,<alphaId>[,<iconId>,<dispMode>]]	**40** hex notation: Command Type value. See Section 6.2 for values. **<alphaId>** string format: using either SMS default alphabet or UCS2 alpha field coding to inform user of current transaction. '0' : Special case indicating SIM provided a null alphaId and the user should not be informed of the current transaction. If alphaId field is not present it is up to the ME to decide whether

	or not to inform the user. **<iconId>** Numeric tag for the icon to be displayed – corresponds to the index in the Image file on the SIM 0 No icon 1..255 Icon tag **<dispMode>** integer: denotes use of associated icon 0 display icon only (replaces any text string or alphaId) 1 display with alphaId or text string
Reference	Note

6.4.1.12 Set Up Event List

Command data for Set Up Event List proactive command	
Result Code **+STGC: 05,<eventList>**	Parameters **05** hex notation: Command Type value. See Section 6.2 for values. **<eventList>** hex: denotes applicable event identifiers. 05 User activity event 06 Idle Screen Available event 08 Language Selection event 09 Browser termination event FF Remove existing event list
Reference	Note <eventList> value of FF used to remove existing list of events as value 0 can be confused with event MT Call value. This command causes the application to send a GSM 11.14 [9] ENVELOPE (EVENT DOWNLOAD) command to the SIM.

6.4.2 AT+STCR SIM Toolkit Command Response

Once a proactive command has been processed by the application a response needs to be sent to the SIM in the form of a TERMINAL RESPONSE command. It is therefore only a requirement for the application to issue command +STCR for those proactive commands it already retrieved via the +STGC AT command. The general format is shown below:

AT+STCR SIM Toolkit Command Response data	
Write Command **+STCR=<cmdId**	Response ***+CME ERROR: <err>***

>,<result>[,<data>]	Parameter **<result>** hex notation: dependent on the command type – see following sections for each proactive command supported.The values given in the result field for each set of proactive command response parameters the setting of the general result parameter returned to the SIMAT task in the next phase of signaling for building the Terminal Response command. **<data>** additional data provided for certain commands, as required for the Terminal Response returned to the SIM after processing a proactive SIM command
Reference	

For the above AT Command, the data contained within the <data> field varies depending on the current proactive SIM command being processed. The result data available for each of the proactive commands processed by the application is described in the following subsections:

6.4.2.1 Display Text

Command response for Display Text proactive command	
Write Command **+STCR=21,<result>**	Parameters **21** hex notation: Command Type value. See Section 6.2 for values. **<result>** integer: possible values: 0 Message displayed OK 1 Terminate proactive session 2 User cleared message 3 Screen is busy 4 Backward move requested 5 No response from user
Reference	Note

6.4.2.2 Get Inkey

Command response for Get Inkey proactive command	
Write Command **+STCR=22,<result>[,<dcs>,<text>]**	Parameters **22** hex notation: Command Type value. See Section 6.2 for values. **<result>** integer: possible values: 0 Data entered OK 1 Terminate proactive session 2 Help information requested 3 Backward move requested

	4 No response from user **<dcs >** integer: data coding scheme used for <text>. The schemes used are as per GSM 03.38 for SMS. 0 7bit GSM default alphabet (packed) 4 8bit data 8 UCS2 alphabet **<text>** string format: text string in <dcs> format Special cases are: "00" Negative response entered "01" Positive response entered
Reference	Note The <dcs> and <text> information must be provided for <result>=0 as the SIM expects the input to be provided in a Text String Data Object in the Terminal Response SIM command when data has been input.

6.4.2.3 Get Input

Command response for Get Input proactive command	
Write Command **+STCR=23,<result>[,<dcs>,<text>]**	Parameters **23** hex notation: Command Type value. See Section 6.2 for values. **<result>** integer: possible values: 0 Data entered OK 1 Terminate proactive session 2 Help information requested 3 Backward move requested 4 No response from user **<dcs >** integer: data coding scheme used for <text>. The schemes used are as per GSM 03.38 for SMS . 0 7bit GSM default alphabet (packed) 4 8bit data 8 UCS2 alphabet
Reference	Note **If the <dcs> is present but <text> is an empty string this indicates a null text string data object must be sent to the SIM. This is caused by the user making an 'empty' input.**

6.4.2.4 Play Tone

Command response for Play Tone proactive command	
Write Command **+STCR=20,<result>**	Parameters **20** Hex notation: Command Type value. See section 6.2 for values. **<result>** integer: possible values: 0 Command performed OK 1 Terminate proactive session

	2 Tone not played 3 Specified tone not supported
Reference	Note

6.4.2.5 Set Up Menu

Command response for Set Up Menu proactive command	
Write Command **+STCR=25,<result>**	Parameters **25** hex notation: Command Type value. See Section 6.2 for values. **<result>** integer: possible values: 0 Menu successfully added/removed 1 User chosen menu item 2 Help information requested 3 Problem with menu operation
Reference	Note

6.4.2.6 Select Item

Command response for Select Item proactive command	
Write Command **+STCR=24,<result>[,<itemId>]**	Parameters **24** hex notation: Command Type value. See Section 6.2 for values. **<result>** integer: possible values: 0 Item Selected OK 1 Terminate proactive session 2 Help information requested 3 Backward move requested 4 No response given **<itemId>**integer: denotes identifier of item selected
Reference	Note

6.4.2.7 Get Acknowledgement For Set Up Call

Command response for Set Up Call proactive command	
Write Command **+STCR=10,<result>**	Parameters **10** hex notation: Command Type value. See Section 6.2 for values. **<result>** integer: possible values: 0 user accepted call (conf phase only) 1 user rejected call (conf phase only) 2 user cleared call (any phase)

Reference	Note

6.4.2.8 Set Up Idle Mode Text

Command response for Set Up Idle Mode Text proactive command	
Write Command **+STCR=28,<result>**	Parameters **28** hex notation: Command Type value. See Section 6.2 for values. **<result>** integer: possible values: 0 Text successfully added/removed 1 Problem performing command
Reference	Note

6.4.2.9 Send DTMF

Command response for Send DTMF proactive command	
Write Command **+STCR=13,<result>**	Parameters **13** hex notation: Command Type value. See Section 6.2 for values. **<result>** integer: possible values: 0 DTMF not accepted 1 DTMF required.
Reference	Note

6.4.2.10 Launch Browser

Command response for Launch Browser proactive command	
Write Command **+STCR=15,<result>**	Parameters **15** hex notation: Command Type value. See Section 6.2 for values. **<result>** integer: possible values: 0 Command performed successfully 1 Command performed – partial comp 2 Command performed – missing info 3 User rejected launch 4 Error – no specific cause given 5 Bearer unavailable 6 Browser unavailable 7 ME cannot process command 8 Network cannot process command 9 Command beyond MEs capabilities.
Reference	Note

6.4.2.11 Open Channel

Command response for Open Channel proactive command	
Write Command **+STCR=40,<result>**	Parameters **40** hex notation: Command Type value. See Section 6.2 for values. **<result>** integer: possible values: 0 Channel not accepted 1 Channel required.
Reference	Note

6.4.2.12 Set Up Event List

Command response for Set Up Event List proactive command	
Write Command **+STCR=05,<result>**	Parameters **05** hex notation: Command Type value. See Section 6.2 for values. **<result>** integer: possible values: 0 Command performed successfully 1 Cannot perform command.
Reference	Note

6.4.3 AT+STPD SIM Toolkit Profile Download

When an application is plugged into the serial port the command interpreter needs to have knowledge of its SAT capabilities to enable it to route all SAT related signaling to that application if required. If this command is not received it will be assumed that any attached application has no SAT capability and will therefore not send any related signals to it. If the SIM has reported that it does not have any proactive capability then an STC: 0 unsolicited response will be sent to the application.

AT+STPD SIM Toolkit Command Response data	
Write Command **+STPD=<length>,<data>**	Response ***OK*** ***+CME ERROR: <err>*** ***+STC: 0***
	Parameter **<length >** Integer Determines the number of bytes of <data> used for the Profile Download data from the application. **<data>** List Of Hex Values, two digits each: Hexadecimal representation of the Terminal Profile data
Reference	Note Some octets are optional in the profile, hence the inclusion of a length

	parameter. For example, the following command sets all the bits in octets 3 and 4: AT+STPD=4,0000FFFF.

6.4.4 AT+STEV SIM Toolkit Event Command

The application can inform the MS of defined MMI events using this command.

AT+STEV SIM Toolkit Event Command	
Test Command **AT+STEV=?**	Response +STEV: (supported <event> list) ***+CME ERROR: <err>***
Write Command **+STEV=<event>,<language>**	Response ***+CME ERROR: <err>***
	Parameter **<event>** hex two digits: 05 User Activity Event 06 Idle Screen Event 08 Language Selection Event 09 Browser Termination Event FF Clear Current Event List **<language>** string type up to two characters
Reference	Note The <language> parameter is applicable only to Language Selection Event. For example the language can be set by: AT+STEV=09,"11"

6.4.5 AT+STMS SIM Toolkit Main Menu Selection Command

The application may set up its main menu on receipt of the Set Up Menu SIM Toolkit event. The application can select an item from the menu by sending this AT command to the MS.

AT+STMS SIM Toolkit Menu Selection Command	
Test Command **AT+STMS=?**	Response +STMS: (range of available <item>s),<0-1> ***+CME ERROR: <err>***
Write Command **+STMS=<item>[,help]**	Response ***+CME ERROR: <err>***
	Parameter **<item>** numeric type, giving unique identifier of menu item **<help>** numeric type
Reference	Note For example, **AT+STMS=2,1** will select item 2 from the main menu with help.

6.4.6 AT+STRT SIM Toolkit Response Timer Command

When a proactive command is received from the SIM an automatic response timer is started. If this timer expires before the application has provided a suitable response via the +STCR command,

a Terminal Response is sent to the SIM containing a result of No User Response. This AT command allows the automatic response timeout period to be configured by the application at run-time, thus giving it extended time to respond to certain proactive commands (e.g. the Get Input command may request a long input string to be entered as part of the associated test case). The default setting for the response timer is ten seconds, and the maximum duration available is one hour.

AT+STRT SIM Toolkit Response Timer Command	
Read Command **AT+STRT?**	Response: **+STRT: <duration>** ***+CME ERROR: <err>***
	Parameter See Write command
Test Command **AT+STRT=?**	Response **+STRT: (list of supported <duration>s)** ***+CME ERROR: <err>***
Write Command **+STRT=<duration>**	Response ***+CME ERROR: <err>***
	Parameter <duration> numeric type. Minimum = 1s, maximum = 3600s
Reference	Note Default setting is ten seconds

6.4.7 AT+STTONE SIM Toolkit Tone Command

The application may request a tone to played after receiving the Play Tone proactive command. The application either starts playing the tone with the requested tone Id, or stops playing the current tone depending on the <mode> parameter. Tones may be played in either idle or dedicated mode.

On completion of the current tone, unsolicited result code +STTONE: 0 will be issued by the CI Task. However, if <mode>=0 is used to terminate the tone before it has completed playing there will be no unsolicited result code but only a result code of OK generated by the CI Task.

AT+STTONE SIM Toolkit PLAY TONE COMMAND	
Test Command AT+STTONE=?	Response +STTONE: (list of supported <mode>s),(list of supported <tone>s),<list of supported <duration>s> ***+CME ERROR: <err>***
Write Command	Response ***+CME ERROR: <err>***

	Parameter **<mode>** 0 Stop playing tone 1 Start playing tone **<tone>** numeric type 1 Dial Tone 2 Called Subscriber Busy 3 Congestion 4 Radio Path Acknowledge 5 Radio Path Not Available / Call Dropped 6 Error / Special information 7 Call Waiting Tone 8 Ringing Tone 16 General Beep 17 Positive Acknowledgement Tone 18 Negative Acknowledgement or Error Tone 19 Indian Dial Tone **< Duration>** numeric type, in milliseconds. Max requested value = 255*60*1000 = 15300000ms (supported range = 1- 15300000)
Reference	Note The default <tone>, if none entered, is General Beep. The default <duration>, if none entered, is 500ms.

6.4.8 AT+HSTK Terminate All STK action

AT+HSTK Terminate All STK action	
Execution Command **AT+HSTK**	Response ***OK***
Reference	Note: All STK action will be terminated after execute this command

7 AT Commands Special for SIMCOM

7.1 Overview

Command	Description
AT+ECHO	ECHO CANCELLATION CONTROL
AT+ SIDET	CHANGE THE SIDE TONE GAIN LEVEL
AT+CPOWD	POWER OFF
AT+SPIC	TIMES REMAIN TO INPUT SIM PIN/PUK
AT+CMIC	CHANGE THE MICOPHONE GAIN LEVEL
AT +UART	CONFIGURE DUAL SERIAL PORT MODE
AT+CALARM	SET ALARM
AT+CADC	READ ADC
AT +CSNS	SINGLE NUMBERING SCHEME
AT +CDSCB	RESET CELLBROADCAST
AT +CMOD	CONFIGRUE ALTERNATION MODE CALLS
AT +CFGRI	INDICATE RI WHEN USING URC
AT+CLTS	GET LOCAL TIMESTAMP
AT+CEXTHS	EXTERNAL HEADSET JACK CONTROL
AT+CEXTBUT	HEADSET BUTTON STATUS REPORTING
AT+CSMINS	SIM INSERTED STATUS REPORTING
AT+CLDTMF	LOCAL DTMF TONE GENERATION
AT+CDRIND	CS VOICE/DATA/FAX CALL OR GPRS PDP CONTEXT TERMINATION INDICATION
AT+CSPN	GET SERVICE PROVIDER NAME FORM SIM
AT+CCVM	GET AND SET THE VOICE MAIL NUMBER ON THE SIM
AT+CBAND	GET AND SET MOBILE OPERATION BAND
AT+CHF	CONFIGURES HANDS FREE OPERATION
AT+CHFA	SWAP THE AUDIO CHANNELS
AT+CSCLK	CONFIGURE SLOW CLOCK
AT+CENG	SWITCH ON OR OFF ENGINEERING MODE
AT+SCLASS0	STORE CLASS 0 SMS TO SIM WHEN RECEIVED CLASS 0 SMS
AT+CCID	SHOW ICCID

7.2 Detailed Descriptions of Commands

7.2.1 AT+ECHO Echo cancellation control

AT+ECHO Echo cancellation control	
Read Command **AT+ECHO?**	Response : +ECHO(NORMAL_AUDIO): <MAINvoxGain>,<MAINminMicEnergy>,<MAINsampSlncePrd> +ECHO(AUX_AUDIO): <AUXvoxGain>,<AUXminMicEnergy>,<AUXsampSlncePrd> **ok**
	Parameter: See write command
Test Command **AT+ECHO=?**	Response : **+ECHO**: (voxGain),(minMicEnergy) ,(sampSlncePrd).(channel) **ok**
	Parameter: See write command
Write Command **AT+ECHO=<voxGain>,<minMicEnergy>,<sampSlncePrd>,<channel>**	Response : **ok**
	Parameter: **< voxGain >** int: 0 – 32767 **< minMicEnergy >** int: 0 – 32767 < sampSlncePrd > int: 0 – 32767 <channel>int 0-1 0 AUX_AUDIO 1 NORMAL_AUDIO
Reference	Note: **< voxGain >**: the parameter models the acoustic path between ear-piece and microphone. **< minMicEnergy >**: the parameter sets the minimum microphone energy level to beattained before suppression is allowed. A typical value of this parameter is 20. **< sampSlncePrd >**: the parameter control the minimum number of speech frames that will be replace with SID frames when an echo is detected. A typical value of this parameter is 4.

7.2.2 AT+SIDET Change the side tone gain level

AT+SIDET Change the side tone gain level	
Read Command **AT+SIDET?**	Response: **+ SIDET:** < gainlevel> **OK**
	Parameter: See write command

Test Command **AT+SIDET=?**	Response: **+SIDET:** (gainlevel) **OK**
	Parameter: See write command
Write Command **AT+SIDET=< gainlevel >**	Response: **OK**
	Parameters **< gainlevel > int: 0 – 32767**
Reference	Note The relation between the Side Tone Gain and <gainlevel> is Side Tone Gain/dB = 20*log(sideTone/32767)

7.2.3 AT+CPOWD Power Off

AT+CPOWD	**Power Off**
Write Command AT+CPOWD = <n>	Response: **NORMAL POWER DOWN**
	Parameters n: 1 Normal power off (Will disconnect from network)
Reference	Note

7.2.4 AT+SPIC Times remain to input SIM PIN/PUK

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

7.2.5 AT+CMIC Change the microphone gain level

AT+CMIC	**Change the microphone gain level**
Read Command AT+CMIC?	Response : + CMIC: < gainlevel(Main_Mic) >, <gainlevel(Aux_Mic)> OK

	Parameter: See set command
Test Command AT+CMIC=?	Response : +CMIC: list of supported <channel >s, list of supported < gainlevel >s ok
	Parameter: See set command
Set Command AT+CMIC= <channel>,< gainlevel>	Response : Ok
	Parameter: <channel> 0 – Main Microphone 1 – Aux Microphone < gainlevel > int: 0 – 15 0 0dB 1 +1.5dB 2 +3.0 dB(default value) 3 +4.5 dB 4 +6.0 dB 5 +7.5 dB 6 +9.0 dB 7 +10.5 dB 8 +12.0 dB 9 +13.5 dB 10 +15.0 dB 11 +16.5 dB 12 +18.0 dB 13 +19.5 dB 14 +21.0 dB 15 +22.5 dB
Reference	Note:

7.2.6 AT+UART Configure dual serial port mode

AT+UART Configure dual serial port mode	
Read Command **AT+UART?**	Response +UART: <currentUart> Ok

	Parameter: See Write Command
Write Command AT+UART=<uart>[,<baud>]	Response Ok Error
	Parameter currentUart 1 use serial line 1 2 use serial line 2(gprs) 3 use serial line 2 4 last commond use serial line 1 5 last commond use serial line 2 Uart 1 use serial line 1 2 use serial line 2(gprs) 3 use serial line 2 Baud (If uart is 2 or 3) 9600,19200,28800,38400,57600,115200
Reference	

7.2.7 AT+CALARM Set alarm

AT+CALARM	**Set alarm**
Read Command **AT+CALARM=?**	Response : **+ CALARM:** <state>,<time>,<repeat>,<power> **ok**
	Parameter: See set command
Set Command **AT+CALARM=<state>,<time>,<repeat>,<power>**	Response : **ok**
	Parameter: < state > an integer parameter which indicates whether enable or disable alarm. 0 CLEAR ALARM 1 SET ALARM < time > a string parameter which indicates the time when alarm arrives. The format is "yy/MM/dd,hh:mm:ss+-zz" where characters indicate the last two digits of year, month, day, hour, minute, second and time zone. The time zone is expressed in quarters of an hour between the local time and GMT, ranging from -47 to +48. < repeat > an integer parameter which indicates the repeat mode

	0 None 1 Daily 2 Weekly 3 Monthly <power> an integer parameter which indicates the method of dealing power when alarm arrives. 0 None Only send “ALARM RING” to serial port 1 Alarm power off Send “ALARM RING” to serial port and power off in 5 seconds 2 Alarm power on Send “ALARM MODE” to serial port and enter into alarm mode Note: In alarm mode, protocol stack and SIM protocol is closed, only a few AT command can be executed, and system will be powered down after 90 seconds if neither power key is pressed nor functionality is changed to full functionality. If power key is pressed, system will be powered down right now.
Reference	Note:

7.2.8 AT+CADC Read ADC

AT+CADC Read ADC	
Read Command **AT+ CADC?**	Response : **+ CADC: < status>,<value>** **OK**
	Parameter: See test command
Test Command **AT+CADC=?**	Response : **+ CADC: list of supported <status>s, list of supported <value>s>** **OK**
	Parameter: <status> 1 success 0 fail <value> integer 0-2400
	Note:

7.2.9 AT+CSNS Single numbering scheme

AT+CSNS Single numbering scheme	
Test command AT+ CSNS =?	Response : +CSNS:(list of supported modes)

	Parameter
Read command AT+ CSNS?	Response : +CSNS:<mode>
	Parameter:
Set Command AT+ CSNS=<mode>	Response : Ok Error
	Parameter: <mode> 0 voice 2 fax 4 data
Reference	Note

7.2.10 AT+CDSCB Reset cell broadcast

AT+CDSCB	**Reset cell broadcast**
Set Command AT+ CDSCB	Response : **OK**
	Parameter:
Reference	Note Reset the CB module

7.2.11 AT+CMOD Configures alternating mode calls

AT+CMOD	**Configures alternating mode calls**
Test command AT+ CMOD =?	Response : +CMOD: (0)
	Parameter:
Set Command AT+CMOD=<mode>	Response : **OK**
	Parameter: <mode> 0
Reference	Note

7.2.12 AT+CFGRI Indicate RI when using URC

AT+CFGRI	**Indicate RI when using URC**

Read command AT+ CFGRI ?	Response : +CFGRI: <status> ok
	Parameter: See set command
Set Command AT+ CFGRI=<status>	Response : **OK**
	Parameter: <status> 0 on 1 off
Reference	Note

7.2.13 AT+CLTS Get local timestamp

AT+CLTS Get local timestamp	
Test command AT+CLTS=?	Response +CLTS: (the format of timestamp)
	Parameters see set command
	Parameter *See set command*
Execution command AT+CLTS	Response +CLTS:(timestamp)
	Parameters <timestamp> a string parameter which indicates the local timestamp. The format of timestamp is "yy/MM/dd,hh:mm:ss+/-zz" yy: year MM: month dd: day hh: hour mm: minute ss: second zz: time zone
Reference	Note Support for this command will be network dependant

7.2.14 AT+CEXTHS External headset jack control

AT+ CEXTHS External headset jack control	
Test command AT+CEXTHS=?	Response +CEXTHS: <mode>
	Parameters see set command

Read command AT+CEXTHS?	Response +CEXTHS:<mode>,<headset attach>
	Parameter see set command
Set command AT+CEXTHS=<mode>	Response **OK** **ERROR**
	Unsolicited result code: **+CEXTHS:**<mode>,<headset attach>
	Parameters <mode> a numeric parameter which indicates whether an unsolicited event code (indicating whether the headset has been attached/detached) should be sent to the terminal. 0 not send unsolicited event code 1 send unsolicited event code <headset attach> a numeric parameter which indicates whether a headset has been attached or not 0 not attached 1 attached
Reference	Note Support for this command will be hardware dependant

7.2.15 AT+CEXTBUT Headset button status reporting

AT+ CEXTBUT	**Headset button status reporting**
Test command AT+CEXTBUT=?	Response +CEXTBUT: <mode>
	Parameters see set command
Read command AT+CEXTBUT?	Response +CEXTBUT:<mode>,<headset button press>
	Parameter see set command
Set command AT+CEXTBUT=<mode>	Response OK ERROR
	Unsolicited result code: +CEXTBUT:<mode>,<headset button press>

	Parameters <mode> a numeric parameter which indicates whether an unsolicited event code (indicating whether the headset button has been pressed) should be sent to the terminal. 0 not send unsolicited event code 1 send unsolicited event code <headset attach> a numeric parameter which indicates whether a headset button has been pressed or not 0 not pressed 1 pressed
Reference	Note Support for this command will be hardware dependant

7.2.16 AT+CSMINS SIM inserted status reporting

AT+ CSMINS SIM inserted status reporting	
Test command AT+CSMINS=?	Response +CSMINS: (list of supported <n>s)
	Parameters see set command
Read command AT+CSMINS?	Response +CSMINS:<n>,<SIM inserted>
	Parameter see set command
Set command AT+CSMINS=[<n>[,<m>]]	Response OK ERROR
	Parameters <n> a numeric parameter which indicates whether to show an unsolicited event code indicating whether the SIM has just been inserted or removed. 0 disable 1 enable < SIM inserted> a numeric parameter which indicates whether SIM card has been inserted. 0 not inserted 1 inserted
Reference	Note

7.2.17 AT+CLDTMF Local DTMF tone generation

AT+ CLDTMF Local DTMF tone generation	
Set command AT+CLDTMF=[<n>[,<DTMF string>]]	Response OK ERROR
	Parameters <n> a numeric parameter(1-255(ms)) which indicates the duration of all DTMF tones in < DTMF -string> in 1/10 secs < DTMF -string> a string parameter which has a max length of 20 chars of form < DTMF >, separated by commas. < DTMF > A single ASCII chars in the set 0-9,#,*,A-D.
Execution command AT+CLDTMF	Response OK Aborts any DTMF tone currently being generated and any DTMF tone sequence.
Reference GSM07.07	Note

7.2.18 AT+CDRIND CS voice/data/fax call or GPRS PDP context termination indication

AT+ CDRIND CS voice/data/fax call or GPRS PDP context termination indication	
Test command AT+CDRIND=?	Response +CDRIND: (list of supported <n>s)
	Parameters see set command
Read command AT+CDRIND?	Response +CDRIND:<n>
	Parameter see set command
Set command AT+CDRIND=<n>	Response OK ERROR
	Parameters <n> a numeric parameter which indicates whether to enable an unsolicited event code indicating whether a CS voice call, CS data, fax call or GPRS session has been terminated. 0 disable 1 enable
Reference	Note

7.2.19 AT+CSPN Service Provider Name (from SIM)

AT+CSPN Service Provider Name (from SIM)	
Read Command **AT+CSPN?**	Response: **+CSPN:** <spn>,<display mode> **+CME ERROR: <err>**
	Parameters **<spn>** string type; service provider name on SIM **<display mode>** 0 – don't display PLMN. Already registered on PLMN 1 – display PLMN
Reference	Note CME errors possible if SIM not inserted or PIN not entered.

7.2.20 AT+CCVM Read and write the voice mail number on the SIM

AT+CCVM Read and write the voice mail number on the SIM	
Read Command **AT+CCVM?**	Response **+CCVM:** <vm number>[,<alpha string>]
	Parameter See Write Command
Test Command **AT+CCVM=?**	Response **+CCVM:** <vm number>[,<alpha string>]
	Parameter See Write Command
Write Command **AT+CCVM=<vm number>[,<alpha string>]**	Response +CME ERROR: <err>
	Parameters **<vm number>** String Type -The voice mail number to write to the SIM **<alpha-string>** String Type -The alpha-string to write to the SIM
Reference	Note: CPHS voice mail only currently available on Orange SIMS

7.2.21 AT+CBAND Get and Set Mobile Operating Band

AT+CBAND Get and Set Mobile Operating Band	
Read Command **AT+CBAND?**	Response **+CBAND:** < op_band >
	Parameter See Write Command
Test Command **AT+CBAND=?**	Response **+CBAND:** (list of supported <op_band>s)
	Parameter See Write Command

Write Command **AT+CBAND=<op_band>**	Response **OK** **ERROR**
	Parameters **<op_band>** PGSM_MODE DCS_MODE PCS_MODE EGSM_DCS_MODE GSM850_PCS_MODE
Reference	Note: Radio settings following updates are stored in non-volatile memory.

7.2.22 AT+CHF Configures hands free operation

AT+CHF Configures hands free operation	
Read Command **AT+CHF?**	Response **+CHF: <ind>,<state>** Unsolicited result code: **+CHF: <state>**
	Parameters See write command.
Write Command AT+CHF=<ind>,<state>	Response **+CME ERROR: <err>**
	Parameters **<ind>** 0 Unsolicited result code disabled 1 Unsolicited result code enabled (non-volatile) **<state>** 0 Hands free operation disabled 1 Hands free operation enabled (volatile)
Reference	

7.2.23 AT+CHFA Swap the audio channels

AT+ CHFA Swap the audio channels	
Read Command **AT+ CHFA?**	Response + CHFA: <n>
	Parameters See write command.
Test Command **AT+ CHFA=?**	Response +CHFA: (0 = NORMAL_AUDIO, 1 = AUX_AUDIO)

	Parameters See write command.
Write Command AT+CHFA=<stat> >	Response OK +CME ERROR: <err>
	Parameters <n> 0 – Normal audio channel(default) 1 – Aux audio channel
Reference	NOTE This command swaps the audio channels between the normal channel and the aux channel.

7.2.24 AT+CSCLK Configure Slow Clock

AT+ CSCLK Configure Slow Clock	
Read Command **AT+ CSCLK?**	Response +CSCLK: <n>
	Parameters See write command.
Test Command **AT+ CSCLK=?**	Response +CSCLK: (0,1)
	Parameters See write command.
Write Command AT+ CSCLK =<n>	Response OK ERROR
	Parameters <n> 0 – disable slow clock 1 – enable slow clock
Reference	NOTE

7.2.25AT+CENG Switch On or Off Engineering Mode

AT+ CENG Switch On or Off Engineering Mode	
Read Command **AT+ CENG?**	Response Engineering Mode is designed to allow a field engineer to view and test the network information received by a handset, when the handset is either in idle mode or dedicated mode (that is: with a call active). In each mode, the engineer is able to view network interaction for the “serving cell” (the cell the handset is currently registered with) or for the neighbouring cells.

	TA returns the current engineering mode. The network information including serving cell and neighbouring cells are returned only when <mode>=1 or <mode> = 2. <cell> carry with them corresponding network interaction. +CENG:<mode> [+CENG: <cell>,"<arfcn>,<rxl>,<rxq>,<mcc>,<mnc>,<bsic>,<cellid>,< rla >,< txp >" <CR><LF>+CENG: <cell>,"<arfcn>,<rxl>,<bsic>" …]
	Parameters See write command.
Test Command **AT**+ CENG=**?**	Response TA returns the list of supported modes. +CENG: list of supported <mode>s OK
	Parameters See write command.
Write Command AT+ CENG =<mode>	Response TA attempt to switch on or off engineering mode.GSM network operator. TA controls the presentation of an unsolicited result code +CENG: (network information) when <mode>=2 and there is a change of network information . OK ERROR
	Parameters <mode> 0 switch off engineering mode 1 switch on engineering mode 2 switch on engineering mode, and activate the unsolicited reporting of network information. <cell> 0 the serving cell 1-6 the index of the neighbouring cell. <arfcn> absolute radio frequency channel number. <rxl> receive level. <rxq> receive quality. <mcc> mobile country code. <mnc> mobile network code. <bsic> base station identity code. <cellid> cell id. <rla> receive level access minimum. <txp> transmit power maximum CCCH.
Reference	NOTE

7.2.26 AT+SCLASS0 Store Class 0 SMS

AT+ SCLASS0 Store Class 0 SMS	
Read Command **AT+ SCLASS0?**	Response + SCLASS0: <mode>
	Parameters See write command.
Test Command **AT+ SCLASS0=?**	Response +SCLASS0: (0 = DISABLE, 1 =ENABLE)
	Parameters See write command.
Write Command AT+SCLASS0=<mode>	Response OK ERROR
	Parameters <mode> 0 – disable to store Class 0 SMS to SIM when received Class 0 SMS 1 – Enable to store Class 0 SMS to SIM when received Class 0 SMS
Reference	NOTE

7.2.27 AT+CCID Show ICCID

AT+CCID Show ICCID	
Test Command **AT+ CCID =?**	Response: **OK**
Execute Command AT+ CCID	Response: Ccid data[ex. 898600910903:0513918] **OK**
	Parameters
Reference	Note

8 AT Commands for TCPIP Application Toolkit

8.1 Overview

Command	Description
AT+CIPSTART	START UP TCP OR UDP CONNECTION
AT+CIPSEND	SEND DATA THROUGH TCP OR UDP CONNECTION
AT+CIPCLOSE	CLOSE CONNECTION
AT+CIPSHUT	DEACTIVATE GPRS PDP CONTEXT
AT+CLPORT	SET LOCAL PORT
AT+CSTT	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 IP ADDRESS OF GIVEN DOMAIN NAME
AT+CDNSORIP	CONNECT WITH IP ADDRESS OR DOMAIN NAME SERVER
AT+CIPHEAD	ADD AN IP HEADER WHEN RECEIVING DATA
AT+CIPATS	SET AUTO SENDING TIMER
AT+CIPSPRT	SET PROMPT OF '>' WHEN SENDING DATA
AT+CIPSERVER	CONFIGURE AS SERVER
AT+CIPCSGP	SET CSD OR GPRS FOR CONNECTION MODE
AT+CIPCCON	CHOOSE CONNECTION
AT+CIPFLP	FIX LOCAL PORT
AT+CIPSRIP	SHOW WHERE RECEIVED DATA FROM
AT+CIPDPDP	SET WHETHER CHECK STATE OF GPRS NETWORK TIMING
AT+CIPSCONT	SAVE TCPIP APPLICATION CONTEXT
AT+CIPMODE	SELECT TCPIP APPLICATION MODE
AT+CIPCCFG	CONFIGURE TRANSPARENT TRANSFER MODE

8.2 Detailed Descriptions of Commands

8.2.1 AT+CIPSTART Start up TCP or UDP connection

AT+CIPSTART	Start up TCP or UDP connection
Test command +CIPSTART=?	Response +CIPSTART: (list of supported <mode>),(IP address range),(port range) <CR><LF>+CIPSTART: (list of supported <mode>),(domain name),(port range) OK Parameter

	See set command
Set command +CIPSTART=<mode>,[<IP address>,<domain name>],<port>	Response If format is right response OK, otherwise response ERROR If connect successfully response CONNECT OK Otherwise STATE:<state> CONNECT FAIL Parameter <mode> a string parameter which indicates the connection type "TCP" Establish a TCP connection "UDP" Establish a UDP connection <IP address> remote server IP address <port> remote server port <domain name> 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 IND 4 IP GPRSACT 5 IP STATUS 6 TCP/UDP CONNECTING 7 IP CLOSE 8 CONNECT OK
Reference	Parameter

8.2.2 AT+CIPSEND Send data through TCP or UDP connection

AT+CIPSEND	**Send data through TCP or UDP connection**
Test command +CIPSEND=?	Response OK
Execution command +CIPSEND response"> ", then type data for send, tap CTRL+Z to send	Response This command is used to send changeable length data. If connection is not established or disconnection: ERROR If sending successfully: SEND OK If sending fail: SEND FAIL Note This command is used to send data on the TCP or UDP connection that has been established already. Ctrl-Z is used as a termination symbol. There are at most 1024 bytes that can be sent at a time.

Set command +CIPSEND=<data_length>	Response This command is used to send fixed length data. If connection is not established or disconnect: ERROR If sending successfully: SEND OK If sending fail: SEND FAIL Parameter <data_length> a numeric parameter which indicates the length of sending data, it must less than 1024
Reference	Note 1. There are at most 1024 bytes that can be sent each time. 2. Set the time that send data automatically with the command of AT+CIPATS. 3. Only send data at the status of established connection, otherwise Response ERROR

8.2.3 AT+CIPCLOSE Close TCP or UDP Connection

AT+CIPCLOSE	**Close connection**
Test command +CIPCLOSE=?	Response +CIPCLOSE: OK
Execution command +CIPCLOSE	Response If close successfully: CLOSE OK If close fail: ERROR
Reference	Note AT+CIPCLOSE only close connection at the status of TCP/UDP CONNECTING or CONNECT OK，otherwise response ERROR, after close the connection, the status is IP CLOSE

8.2.4 AT+CIPSHUT Disconnect wireless connection

AT+CIPSHUT	**Disconnect wireless connection**
Test command +CIPSHUT=?	Response +CIPSHUT: OK
Read command +CIPSHUT?	Response +CIPSHUT:

	OK
Execution command +CIPSHUT	Response If close successfully: SHUT OK If close fail: ERROR Note Except at the status of IP INITIAL, you can close moving scene by AT+CIPSHUT. After closed, the status is IP INITIAL.
Reference	Note

8.2.5 AT+CLPORT Set local port

AT+CLPORT Set local port	
Test command +CLPORT=?	Response +CLPORT: (list of supported <port>s) Parameter See set command
Read command +CLPORT?	Response <mode>:<port> <CR><LF><mode>:<port> Parameter See set command
Set command +CLPORT=<mode>,<port>	Response OK ERROR Parameter <mode> a string parameter which indicates the connection type "TCP" TCP local port "UDP" UDP local port <port> a numeric parameter which indicates the local port
Reference	Note

8.2.6 AT+CSTT START task and Set APN、USER ID、PASSWORD

AT+CSTT Start task and Set APN、USER ID、PASSWORD	
Test command +CSTT=?	Response +CSTT: "APN","USER","PWD" OK
Read command +CSTT?	Response +CSTT: <apn>,<user id>,<password> OK Parameter

	See set command
Set command +CSTT=<apn>,<user id>,<password>	Response OK ERROR Parameter <apn> a string parameter which indicates the GPRS access point name <user id> a string parameter which indicates the GPRS user name <password> a string parameter which indicates the GPRS password
Execution Command +CSTT	Response OK ERROR
Reference	Note

8.2.7 AT+CIICR Bring up wireless connection with GPRS or CSD

AT+CIICR Bring up wireless connection with GPRS or CSD	
Test command +CIICR=?	Response OK
Execution command +CIICR	Response OK STATE: <state> ERROR Parameter <state> referred to AT+CIPSTART
Reference	Note AT+CIICR only activate moving scene at the status of IP START， after operate this command, the state changed to IP CONFIG. If module accept the activate operation, the state changed to IP IND; after module accept the activate operation, if activate successfully, the state changed to IP GPRSACT, response OK, otherwise response ERROR.

8.2.8 AT+CIFSR Get local IP address

AT+CIFSR Get local IP address	
Test command +CIFSR=?	Response +CIFSR: OK
Read command +CIFSR?	Response +CIFSR: OK
Execution command +CIFSR	Response <IP address>

	OK ERROR Parameter <IP address> a string parameter which indicates the IP address assigned from GPRS or CSD
Reference	Note Only at the status of activated the moving scene: IP GPRSACT、TCP/UDP CONNECTING、CONNECT OK、IP CLOSE can get local IP Address by AT+CIFSR, otherwise response ERROR.

8.2.9 AT+CIPSTATUS Query current connection status

AT+CIPSTATUS	**Query current connection status**
Test command +CIPSTATUS=?	Response +CIPSTATUS: OK
Read command +CIPSTATUS?	Response +CIPSTATUS: OK
Execution command +CIPSTATUS	Response STATE: <state> OK Parameter <state> referred to AT+CIPSTART
Reference	Note

8.2.10 AT+CDNSCFG Configure domain name server

AT+CDNSCFG	**Configure domain name server**
Test command +CDNSCFG=?	Response +CDNSCFG: ("(0,255).(0,255).(0,255).(0,255)"),("(0,255).(0,255).(0,255).(0,255)") OK
Read command +CDNSCFG?	Response +CDNSCFG: ("PRIMARY DNS"),("SECONDARY DNS")
Set command +CDNSCFG=<pri_dns>,<sec_dns>	Response OK ERROR Parameter

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

8.2.11 AT+CDNSGIP Query the IP address of given domain name

AT+CDNSGIP	Query the IP address of given domain name
Test command +CDNSGIP=?	Response +CDNSGIP: DOMAIN NAME LENGTH(0,100) OK
Read command +CDNSGIP?	Response +CDNSGIP: ("DOMAIN NAME") ok
Set command +CDNSGIP=<domain name>	Response OK ERROR If successful, return: <IP address> If fail, return: ERROR: <error code> STATE: <state> Parameter <domain name> a string parameter which indicates the domain name <IP address> a string parameter which indicates the IP address corresponding to the domain name <error code> a numeric parameter which indicates the error code 1 DNS not Authorization 2 invalid parameter 3 network error 4 no server 5 time out 6 no configuration 7 no memory <state> refer to AT+CIPSTART
Reference	Note

8.2.12 AT+CDNSORIP Connect with IP address or domain name server

AT+CDNSORIP	**Connect with IP address or domain name server**
Test command +CDNSORIP=?	Response +CDNSORIP: (list of supported <mode>s)

	OK Parameter See set command
Read command +CDNSORIP?	Response +CDNSORIP: <mode> OK Parameter See set command
Set command +CDNSORIP=<mode>	Response OK ERROR Parameter <mode> a numeric parameter which indicates whether connecting with IP address server or domain name server 0 remote server is an IP address 1 remote server is a domain name
Reference	Note

8.2.13 AT+CIPHEAD Add an IP head when receiving data

AT+CIPHEAD	**Add an IP head when receiving data**
Test command +CIPHEAD=?	Response +CIPHEAD: (list of supported <mode>s) Parameter See set command
Read command +CIPHEAD?	Response +CIPHEAD: <mode> Parameter See set command
Set command +CIPHEAD=<mode>	Response OK ERROR Parameter <mode> a numeric parameter which indicates whether adding an IP header to received data or not 0 not add IP header 1 add IP header, the format is “+IPD(data length):”
Reference	Note

8.2.14 AT+CIPATS Set auto sending timer

AT+CIPATS Set auto sending timer	
Test command +CIPATS=?	Response +CIPATS: (list of supported <mode>s) OK Parameter See set command
Read command +CIPATS?	Response +CIPATS: <mode> Parameter See set command
Set command +CIPATS=<mode>,<time>	Response OK ERROR Parameter <mode> a numeric parameter which indicates whether set timer when sending data 0 not set timer when sending data 1 Set timer when sending data <time> a numeric parameter which indicates the seconds after which the data will be sent
Reference	Note

8.2.15 AT+CIPSPRT Set prompt of '>' when sending data

AT+CIPSPRT Set prompt of '>' when sending data	
Test command +CIPSPRT=?	Response +CIPSPRT: (<send prompt>) Parameter See set command
Read command +CIPSPRT?	Response +CIPSPRT: <send prompt> Parameter See set command
Set command +CIPSPRT=<send prompt>	Response OK ERROR Parameter <send prompt> a numeric parameter which indicates whether echo prompt '>' after issuing AT+CIPSEND command 0 no prompt and show "send ok" when send successfully 1 echo '>' prompt and show "send ok" when send successfully 2 no prompt and not show "send ok" when send successfully

Reference	Note

8.2.16 AT+CIPSERVER Configure as a server

AT+CIPSERVER Configure as a server	
Read command +CIPSERVER?	Response <mode> OK Parameter <mode> 0 has not been configured as a server 1 has been configured as a server
Execution command +CIPSERVER	Response OK ERROR If configuration as server success, return: SERVER OK If configuration as server fail, return: STATE:<state> CONNECT FAIL Parameter <state> refer to AT+CIPSTART
Reference	Note

8.2.17 AT+CIPCSGP Set CSD or GPRS connection mode

AT+CIPCSGP Set CSD or GPRS for connection mode	
Test command +CIPCSGP=?	Response +CIPCSGP: (list of supported connection <mode>s),[(GPRS parameters <apn>,<user name>,<password>),(CSD parameters <dial number>,<user ID>,<password>,<rate>)] OK Parameter See set command
Read command +CIPCSGP?	Response +CIPCSGP: <mode> OK Parameter See set command
Set command +CIPCSGP=<mode>,[(<apn>,<user name >,<password>),(<dial	Response OK ERROR Parameter <mode> a numeric parameter which indicates the wireless connection mode

number>,<user ID>,<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 ID> a string parameter which indicates the CSD USER ID <password> a string parameter which indicates the CSD password <rate> a numeric parameter which indicates the CSD connection rate
Reference	Note

8.2.18 AT+CIPCCON Choose connection

AT+CIPCCON	**Choose connection**
Test command +CIPCCON=?	Response +CIPCCON: (list of supported <connection>s) OK Parameter See set command
Read command +CIPCCON?	Response <connection> OK Parameter See set command
Set command +CIPCCON=<connection>	Response OK ERROR Parameter <connection> a numeric parameter which indicates the chosen connection 1 choose connection as client 2 choose connection as server Note that there may exist two connections at one time: one connection is as client connecting with remote server, the other connection is as server connecting with remote client. Using this command to choose through which connection data is sent.
Reference	Note

8.2.19 AT+CIPFLP Set whether fix the local port

AT+CIPFLP Set whether fix the local port	
Test command +CIPFLP=?	Response +CIPFLP: (list of supported <mode>s) Parameter See set command
Read command +CIPFLP?	Response +CIPFLP: <mode> OK Parameter See set command
Set command +CIPFLP=<mode>	Response OK ERROR Parameter <mode> a numeric parameter which indicates whether increasing local port automatically when establishing a new connection 0 do not fix local port, increasing local port by 1 when establishing a new connection 1 fix local port, using the same port when establishing a new connection Note that in default mode, the local port is fixed. It can speed up the connection progress if setting to not fixed local port when establishing a new connection after closing previous connection.
Reference	Note

8.2.20 AT+CIPSRIP Set whether display IP address and port of sender when receive data

AT+CIPSRIP Set whether display IP address and port of sender when receive data	
Test command +CIPSRIP=?	Response +CIPSRIP: (list of supported <mode>s) OK Parameter See set command
Read command +CIPSRIP?	Response <mode>: OK Parameter See set command

Set command +CIPSRIP=<mode>	Response OK ERROR Parameter <mode> a numeric parameter which indicates whether show the prompt of where the data received are from or not before received data. 0 do not show the prompt 1 show the prompt, the format is as follows: RECV FROM:<IP ADDRESS>:<PORT> Note that the default mode is not to show the prompt.
Reference	Note

8.2.21 AT+CIPDPDP Set Whether Check State Of GPRS Network Timing

AT+CIPDPDP Set Whether Check State Of GPRS Network Timing	
Test command +CIPDPDP =?	Response +CIPDPDP:(list of supported< mode>s) OK Parameter See set command
Read command +CIPDPDP?	Response +CIPDPDP:<mode>,<interval>,<timer> +CIPCPCP: 0 OK Parameter See set command
Set command +CIPDPDP=<mode>,<interval>,<timer>	Response OK ERROR Parameter <mode> 0 not set detect PDP 1 set detect PDP <interval> 0<interval<=180(ms) <timer> 0<timer<=255
Reference	Note

8.2.22 AT+CIPSCONT Save TCPIP Aplicaton Context

AT+CIPSCONT Save TCPIP Application Context	
Read command AT+CIPSCONT?	Response TA returns TCPIP Application Context, which consists of the following AT Command parameters. SHOW APPTCPIP CONTEXT +CDNSORIP:<mode> +CIPSPRT:< sendprompt> +CIPHEAD:<iphead> +CIPFLP:<flp> +CIPSRIP:<srip> +CIPCSGP:<csgp> Gprs Config APN:<apn> Gprs Config UserId:<gusr> Gprs Config Password:<gpwd> Gprs Config inactivityTimeout:<timeout> CSD Dial Number:<cnum> CSD Config UserId:<cusr> CSD Config Password:<cpwd> CSD Config rate:<crate> +CIPDPDP:<dpdp> Detect PDP Inerval:<int> Detect PDP Timer:<timer> **OK**
	Parameters <mode> see AT+CDNSORIP <sendprompt> see AT+CIPSPRT <iphead> see AT+CIPHEAD <flp> see AT+CIPFLP <srip> see AT+CIPSRIP <csgp> see AT+CIPCSGP <apn> see AT+CIPCSGP <gusr> see AT+CIPCSGP <gpwd> see AT+CIPCSGP <timeout> see AT+CIPCSGP <cnum> see AT+CIPCSGP <cusr> see AT+CIPCSGP <cpwd> see AT+CIPCSGP <crate> see AT+CIPCSGP <dpdp> see AT+CIPDPDP <int> see AT+CIPDPDP <timer> see AT+CIPDPDP

Set command AT+CIPSCONT	Response TA saves TCPIP Application Context which consist of following AT command parameters, and when system is rebooted, the parameters will be loaded automatically: AT+CDNSORIP, AT+CIPSPRT, AT+CIPHEAD, AT+CIPFLP,AT+CIPSRIP, AT+CIPCSGP, AT+CIPDPDP **OK**
	Parameter

8.2.23 AT+CIPMODE Select TCPIP Application mode

AT+CIPMODE	Select TCPIP Application mode
Test command +CIPMODE=?	Response +CIPMODE: (0,1) OK
Read command +CIPMODE?	Response +CIPMODE: <mode> OK Parameter See set command
Set command +CIPMODE=<mode >	Response OK ERROR Parameter <mode> 0:command mode 1:transparent transfer mode
Execution Command +CIPMODE	Response ERROR
Reference	Note

8.2.24 AT+CIPCCFG Configure Transparent Transfer mode

AT+CIPCCFG	Configure Transparent Transfer Mode
Test command +CIPCCFG=?	Response +CIPCCFG: <3-8>,<2-10>,<256-1024>,<0,1> OK
Read command +CIPCCFG?	Response +CIPCCFG: <NmRetry>,<WaitTm>,<SendSz>,<esc> OK Parameter See set command

Set command	Response	
+CIPCCFG=<NmRetry>,<WaitTm>,<SendSz>,<esc>	OK ERROR Parameter	
	<NmRetry>	number of retries to be made for an IP packet.
	<WaitTm>	number of 200ms intervals to wait for serial input before sending the packet.
	<SendSz>	size in bytes of data block to be received from serial port before sending.
	<esc>	whether turn on the escape sequence, default is TRUE.
Execution Command	Response	
+CIPCCFG	ERROR	
Reference	Note	

9 Supported unsolicited result codes

9.1 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 calls only
40	network personalization PIN required
41	network personalization PUK required
42	network subset personalization PIN required
43	network subset personalization PUK required
44	service provider personalization PIN required

45	service provider personalization PUK required
46	corporate personalization PIN required
47	corporate personalization PUK required
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
577	GPRS - activation rejected by GGSN
578	PRS - unspecified activation rejection
579	GPRS - bad code or protocol rejection
580	GPRS - can't modify address
581	GPRS - CHAP close
582	GPRS - profile (cid) currently unavailable
583	GPRS - a profile (cid) is currently active
584	GPRS - combined services not allowed
585	GPRS - conditional IE error
586	GPRS - context activation rejected
587	GPRS - duplicate TI received
588	GPRS - feature not supported
589	GPRS - service not available
590	GPRS - unknown IE from network
591	GPRS - implicitly detached
592	GPRS - insufficient resources
593	GPRS - invalid activation state (0-1)
594	GPRS - invalid address length
595	GPRS - invalid character in address string
596	GPRS - invalid cid value
597	GPRS - invalid dial string length
598	GPRS - mode value not in range
599	GPRS - invalid MAND information
600	GPRS - SMS service preference out of range
601	GPRS - invalid TI value
602	GPRS - IPCP negotiation timeout
603	GPRS - LCP negotiation timeout
604	GPRS - LLC error

605	GPRS - LLC or SNDCP failure
606	GPRS - lower layer failure
607	GPRS - missing or unknown APN
608	GPRS - mobile not ready
609	GPRS - MS identity not in network
610	GPRS - MSC temporarily not reachable
611	GPRS - message incompatible with state
612	GPRS - message type incompatible with state
613	GPRS - unknown message from network
614	GPRS - NCP close
615	GPRS - network failure
616	PRS - no echo reply
617	GPRS - no free NSAPIs
618	GPRS - processing of multiple cids not supported
619	GPRS - no PDP context activated
620	GPRS - normal termination
621	GPRS - NSAPI already used
622	GPRS - address element out of range
623	GPRS - PAP close
624	GPRS - PDP context w/o TFT already activated
625	GPRS - PDP type not supported
626	GPRS - peer refuses our ACCM
627	GPRS - peer refuses our IP address
628	GPRS - peer refuses our MRU
629	GPRS - peer requested CHAP
630	GPRS - profile (cid) not defined
631	GPRS - unspecified protocol error
632	GPRS - QOS not accepted
633	GPRS - QOS validation fail
634	GPRS - reactivation required
635	GPRS - regular deactivation
636	GPRS - semantic error in TFT operation
637	GPRS - semantic errors in packet filter
638	GPRS - semantically incorrect message
639	GPRS - service type not yet available
640	GPRS - syntactical error in TFT operation
641	GPRS - syntactical errors in packet filter
642	PRS - too many RXJs
643	GPRS - unknown PDP address or type
644	GPRS - unknown PDP context
645	GPRS - user authorization failed
646	GPRS - QOS invalid parameter
673	audio manager not ready
674	audio format cannot be configured

705	SIM toolkit menu has not been configured
706	SIM toolkit already in use
707	SIM toolkit not enabled
737	+CSCS type not supported
738	CSCS type not found
741	must include <format> with <oper>
742	incorrect <oper> format
743	<oper> length too long
744	SIM full
745	unable to change PLMN list
746	network operator not recognized
749	invalid command length
750	invalid input string
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 value or mode
767	operation failed
768	multiplexer already active
769	unable to get control of required module
770	SIM invalid - network reject
771	call setup in progress
772	SIM powered down
773	SIM File not present

9.2 Summary of CMS ERROR Codes

Final result code +CMS ERROR: <err> indicates an error related to mobile equipment or network. The operation is similar to ERROR result code. None of the following commands in the same command line is executed. Neither ERROR nor OK result code shall be returned.
<err> values used by common messaging commands:

Code of <err>	**Meaning**
300	ME failure
301	SMS ME reserved
302	operation not allowed
303	operation not supported
304	invalid PDU mode

305	invalid text mode
310	SIM not inserted
311	SIM pin necessary
312	PH SIM pin necessary
313	SIM failure
314	SIM busy
315	SIM wrong
316	SIM PUK required
317	SIM PIN2 required
318	SIM PUK2 required
320	memory failure
321	invalid memory index
322	memory full
330	SMSC address unknown
331	no network
332	network timeout
500	unknown
512	SIM not ready
513	unread records on SIM
514	CB error unknown
515	PS busy
517	SM BL not ready
528	Invalid (non-hex) chars in PDU
529	Incorrect PDU length
530	Invalid MTI
531	Invalid (non-hex) chars in address
532	Invalid address (no digits read)
533	Incorrect PDU length (UDL)
534	Incorrect SCA length
536	Invalid First Octet (should be 2 or 34)
537	Invalid Command Type
538	SRR bit not set
539	SRR bit set
540	Invalid User Data Header IE

10 AT Commands Sample

10.1 Profile Commands

Demonstration	Syntax	Expect Result
The AT command interpreter is actively responding to input.	AT	OK
Display product identification information: the manufacturer, the product name and the product revision information.	ATI	SIMCOM_Ltd SIMCOM_SIM300 Revision: SIM300M32(ATMEL)_V10.0.8_BUILD02
Display current configuration, a list of the current active profile parameters.	AT&V	[A complete listing of the active profile]
Reporting of mobile equipment errors. The default CME error reporting setting is disabled. Switching to verbose mode displays a string explaining the error in more details.	AT+CMEE=? AT+CMEE? AT+CSCS=? AT+CSCS=”TEST” AT+CMEE=2 AT+CSCS=”TEST”	+CMEE:(0,1,2) +CMEE:0 +CSCS:”GSM” +CSCS:”UCS2” ERROR OK +CME ERROR: +CSCS type not found
Storing the current configuration in nonvolatile memory. When the board is reset, configuration changes from the last session are loaded.	ATE0;&W AT [Reset the board] AT ATE1;&W AT	OK [No echo] OK [No echo] [Echo on]
Set the ME to minimum functionality	AT+CFUN=0	OK

ME has entered full functionality mode.	AT+CFUN?	+CFUN:1

10.2 SIM Commands

Demonstration	Syntax	Expect Result
Listing available phonebooks, and selecting the SIM phone book.	AT+CPBS=? AT+CPBS=”SM”	+CPBS:(“DC”,”FD”, ”LD”,”ON”,”SM”,”MC”) OK
Displaying the ranges of phone book	AT+CPBR=?	+CPBR:(1-150),41,14

entries and listing the contents of the phone book.	AT+CPBR=1,10	[a listing of phone book contents]
Wrinting an entry to the current phonebook.	AT+CPBW=,"13918 18xxxx", ,"Daniel" AT+CPBR=1,10	OK [a listing of phone book contents]
Finding an entry in the current phonebook using a text search.	AT+CPBF="Daniel"	+CPBF: 5,"139181860 89",129,"Daniel"
Deleting an entry from the current phonebook specified by its position index.	AT+CPBW=2," " AT+CPBR=1,10	OK [a listing of phone book contents]

10.3 General Commands

Demonstration	Syntax	Expect Result
Displays the current network operator that the handset is currently registered with.	AT+COPS?	+COPS: 0,0,"CHINA MOBILE"
Display a full list of network operator names.	AT+COPN	AT+COPN +COPN:"20201", "COSMO" [skip a bit] +COPN:"730100", "ENTEL PCS" OK
Power down the phone – reducing its functionality. This will deregister the handset from the network.	AT+CFUN=0 [wait for deregister] ATD6241xxxx; AT+CFUN=1	OK NO CARRIER OK
CFUN disables access to the SIM. CSMINS shows when the SIM is available again.	AT+CSMINS=1 AT+CFUN=0 AT+CFUN=1	OK OK +CSMINS:0 OK +CSMINS:1
Emulating the MIMI keypad to make a voice call.	AT+CKPD="6241xx xxs",4,4	OK [the voice call is connected]
Request the IMSI	AT+CIMI	460008184101641

10.4 GPRS Commands

Demonstration	Syntax	Expect Result
To establish a GPRS context.	Setup modem driver Setup dial up connection with *99# Run internet explorer	Should be able to surf the web using Internet explorer.
There are two GPRS Service Codes for the ATD Command: Value 98 and 99. Establish a connection by service code 99. Establish a connection by service code 99, IP address123… and L2P=PPP and using CID 1.The CID has to be defined by AT+CGDCONT. Establish a connection by service code 99 and L2P=PPP Establish a connection by service code 99 and using CID 1 Establish a connection by service code 99 and L2P=PPP and using CID1. The CID has to be defined by AT+CGDCONT Establish an IP connection by service code 98	 ATD*99# ATD*99*123.124.125.126*PPP*1# ATD*99**PPP# ATD*99***1# ATD*99**PPP*1# ATD*98#	
To check if the MS is connected to the GPRS network Detach from the GPRS network To check if the MS is connected to the GPRS network	AT+CGATT? AT+CGATT=0 AT+CGATT?	+CGATT:1 OK +CGATT : 0
To check the class of the MS	AT+CGCLASS?	+CGCLASS:B
Establish a context using the terminal equipment: defines CID 1 and sets the PDP type to IP, access point name and IP address aren't set.	AT+CGDCONT=1,"IP" ATD*99#	OK CONNECT <data>
Cancel a context using the terminal equipment	AT+CGDCONT=1, "IP" ATD*99#	OK CONNECT

		<data>
Pause data transfer and enter command mode by +++	+++	
Stop the GPRS data transfer	ATH	OK
Reconnect a context using the terminal equipment	AT+CGDCONT=1,"IP" AT*99#	OK CONNECT <data>
	+++	CONNECT
Resume the data transfer	ATO	<data>
Pause the data transfer and make a voice call. The release of voice call, resume the data transfer	AT+CGDCONT=1,"IP" ATD*99#	OK CONNECT <data>
	+++	OK
	ATD6241xxxx;	OK
	ATH	CONNECT
	ATO	<data>
		OK
	ATH	

*Quality of Service (QOS) is a special parameter of a CID which consists of several parameters itself.

The QOS consists of

The precedence class

The delay class

The reliability class

The peak throughput class

The mean throughput class

And is decided in "requested QOS" and "minimum acceptable QOS".

All parameters of the QOS are initiated by default to the "network subscribed value (=0)" but the QOS itself is set to be undefined. To define a QOS use the AT+CGQREQ or AT+CGQMIN command.

Overwrites the precedence class of QOS of CID 1 and sets the QOS of CID 1 to be present	AT+CGQREQ=1,2	OK
Response: all QOS values of CID 1 Are set to network subscribed except precedence class which is set to 2	AT+CGQREQ?	+CGQREQ:1,2,0,0,0,0 OK
Set the QOS of CID 1 to not present. Once defined, the CID it can be activated.	AT+CGQREQ=1	OK
Activate CID 2, if the CID is already active, the mobile returns OK at once. If no CID is defined the mobile	AT+CGACT=1,2 AT+CGACT=1,3	OK +CME ERROR: 123

responses +CME ERROR: invalid index. Note: If the mobile is NOT attached by AT+CGATT=1 before activating, the attach is automatically done by the AT+CGACT command.		
Use the defined and activated CID to get online. The mobile can be connected using the parameters of appointed CID or using default parameter	AT+CGDATA=”PPP”, 1	CONNECT

The mobile supports Layer 2 Protocol(L2P) PPP only.
Note: If the mobile is NOT attached by AT+CGATT=1 and the CID is NOT activated before connecting, attaching and activating is automatically done by the AT+CGDATA command.

Some providers require to use an APN to establish a GPRS connection. So if you use the Microsoft Windows Dial-Up Network and ATD*9… to connect to GPRS you must provide the context definition as part of the modem definition (Modem properties/Connection/Advanced…/Extra settings.) As an alternative, you can define and activate the context in a terminal program (e.g. Microsoft HyperTerminal) and then use the Dial-Up Network to send only the ATD command.

10.5 Call Control Commands

Demonstration	Syntax	Expect Result
Make a voice call	ATD6241xxxx;	OK MS makes a voice call
Hang up a call	ATH	OK Call dropped
Make a voice call using the last number facility. The initial call is established then cancelled. The second call is made using the previous dial string.	ATD6241xxxx; ATH ATDL	OK OK
Make a circuit switch data call	ATD*99#	The dial string does not include the terminating semicolon. The call is made to a configured modem. Data can be exchanged using a terminal emulator.
Make a circuit switch data call, suspend the call and then resume the call	ATD*99# +++ ATO	CONNECT <text> OK CONNECT <text>
Example of a MT voice call	Make MT voice call to MS. ATA	RING RING OK[accept call]

	ATH	OK[hang up call]
Call related supplementary service: AT+CHLD. This command provides support for call waiting functionality.	AT+CHLD=<N> <N>=0 RELEASE ALL HELD CALLS OR SENDS USER BUSY STATUS TO WAITING CALL <N>=1 RELEASE ALL ACTIVE CALLS AND ACCEPT OTHER CALL(WAITING OR HELD) <N>=1X RELEASE CALL X <N>=2 PLACE ALL ACTIVE CALLS ON HOLD AND ACCEPT CALL <N>=2X PLACE ALL CALLS ON HOLD EXCEPT CALL X	Return value:(0,1,1x,2,2x,3)
Terminate current call and accept waiting call. Establish a voice call from EVB, receive an incoming call(incoming call accepts waiting status), terminate active call and accept incoming call. Note call waiting must be active for this option – use "AT+CCWA=1,1" before running this demonstration.	AT+CCWA=1,1 ATD6241xxxx; <RX incoming call> AT+CHLD=1	OK OK +CCWA:"62418148",129,1 OK <waiting call active>
Set current call to busy and accept waiting call. Establish a voice call from EVB, receive an incoming call(incoming call accepts waiting status), place active call on hold and switch to incoming call. Terminate active call and switch back to original call. Note call waiting must have been previously enabled for this demonstration to work.	ATD6241xxxx; <RX incoming call> AT+CHLD=2 AT+CHLD=1	 +CCWA:"13918186089",129,1 OK<waiting call active other call on hold> OK<incoming call terminated, dialed number now active>
Switch between active and held calls. Establish a voice call from EVB, receive an incoming call (incoming call accepts waiting status), place active call on hold and switch to incoming call. Switch	ATD6241xxxx; <RX incoming call> AT+CHLD=2	OK +CCWA:"13918186089",129,1 OK

between both calls, placing each in the hold state whilst the other is active before terminating each one. This feature relies on knowing each call's ID. This is done using the List Current Calls(AT+CLCC) command. A call's ID is required to switch between held and active calls. Held calls that are not automatically resumed when all other calls are terminated. They need to be made active using the AT+CHLD=2x command. Note call waiting must have been previously enabled for this demonstration to work.	AT+CHLD=21 AT+CCLC AT+CHLD=23 AT+CHLD=13 AT+CHLD=11	<incoming call activated,original on hold> OK <original call active,incoming call held> +CLCC:1,0,0,0,0,"62 418148",129 +CLCC:3,1,1,0,0,"139 18186089",129 OK < note incoming call held flag set> OK <original call held, incoming call active> OK <terminate incoming call> <terminate original call>
Send busy status to incoming waiting caller. Establish a voice call from EVB, receive an incoming call(incoming call accepts waiting status), send 'busy' status to waiting mobile. Note call waiting must have been previously enabled for this demonstration to work.	ATD6241xxxx; <RX incoming call> AT+CHLD=0	OK +CCWA:"1391818 6089",129,1 OK OK <incoming call sent busy msg, current call retained>
Drop all calls on hold. Establish a voice call from EVB, receive an incoming call (incoming call accepts waiting status), switch to incoming call and drop all waiting calls. Note call waiting must have been previously enabled for this demonstration to work.	ATD6241xxxx; <RX incoming call> AT+CHLD=2 AT+CHLD=0	OK +CCWA:"1391818 6089",129,1 OK <incoming call active, original on hold> OK <incoming call on hold terminated, current call retained>

10.6 SIM Toolkit Commands

Demonstration	Syntax	Expect Result
Inform voyager that the accessory Has SAT97 capability and sets the output	AT+STPD=5,1F7FFF7 F7F	OK +STC: 25

to TEXT mode.	AT+CMGF=1	OK +STC: 81
Sets the response timer	AT+START=200	OK

10.7 Audio Commands

Demonstration	Syntax	Expect Result
DTMF tones	AT+CLDTMF=2,”1,2,3,4,5”	DTMF tones generated in the headset

10.8 SMS commands

Demonstration	Syntax	Expect Result
Set SMS system into text mode, as opposed to PDU mode.	AT+CMGF=1	OK
Send an SMS to myself.	AT+CMGS=”+8613918186xxxx” >This is a test	+CMGS:34 OK
Unsolicited notification of the SMS arriving		+CMTI:”SM”,1
Read SMS message that has just arrived. Note: the number should be the same as that given in the +CMTI notification.	AT+CMGR=1	+CMGR: “REC UNREAD”, “+8613918186089”, ,”02/01/30,20:40:31+00” This is a test OK
Reading the message again changes the status to “READ” from ”UNREAD”	AT+CMGR=1	+CMGR: “REC READ”, “+8613918186089”, , “02/01/30,20:40:31+00” This is a test OK
Send another SMS to myself.	AT+CMGS=”+8613918186xxxx” >Test again	+CMGS:35 OK
Unsolicited notification of the SMS arriving		+CMTI:”SM”,2
Listing all SMS messages. Note:”ALL” must be in uppercase.	AT+CMGL=”ALL”	+CMGL: 1,”REC READ”,”+8613918186089”, , “02/01/30,20:40:31+00” This is a test +CMGL: 2,”REC UNREAD”,” ”,”+8613918186089”, , “02/01/30,20:45:12+00” Test again OK

Delete an SMS message.	AT+CMGD=1	OK
List all SMS messages to show message has been deleted.	AT+CMGL=”ALL”	+CMGL: 2,”REC READ”, “+8613918186089”,”02/01/30,20:45:12+00” Test again OK
Send SMS using Chinese characters	AT+CSMP=17,0,2,25 AT+CSCS=”UCS2” AT+CMGS=”00310030039031003800310038003x003x003x003x” >4E014E50	OK OK +CMGS:36 OK