Direction des Recherches et des Développements Etablissement de VELIZY
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NOTE D'ETUDE / *TECHNICAL DOCUMENT*

TITRE / *TITLE* :

AT Command Set for SAGEM HILO Module

RESUME / *SUMMARY*

This document presents the AT Command Set of the SAGEM SA :HILO modules.

The document is derived from "SCT TMO MOD SPEC 0465 J - AT Command Set for SAGEM Modules.doc" and has been updated to take into account HILO new commands.

Mots clés / *Keywords* : AT commands, DATA, GPRS

NOTE D'ETUDE / *TECHNICAL DOCUMENT*

FICHE RECAPITULATIVE / *SUMMARY SHEET*

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1. INTRODUCTION

1.1. Scope of the document

This document presents the AT Command Set of the SAGEM SA **HILO** modules.

Each AT command is described and if necessary the standard reference is noted. (e.g.: 27.007] §7.5). Some AT command are SAGEM SA proprietary: in this case it is clearly indicated.

1.2. Supported product

This document specifies the AT commands of HILO modules.

HILO modules support all AT commands when using the latest software release. Please refer to section Appendix 5 for the extensive list.

1.3. Reference documents

[04.08]	GSM 04.08 (6.7.1) – Mobile radio interface layer 3 specification (Release 1997)
[22.022]	3GPP 22.022 (3.1.0) - Personalization of Mobile Equipment (ME); Mobile functionality specification (Release 1999)
[27.005]	3GPP 27.005 (5.0.0) – Equipment (DTE - DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)
[27.007]	3GPP 27.007 (6.0.0) - AT command set for User Equipment (UE) (Release 6)
[V24]	Recommandation UIT-T V.24 - Liste des définitions des circuits de jonction entre l'équipement terminal de traitement de données et l'équipement de terminaison du circuit de données
[V25ter]	ITU-T Recommendation V.25 ter - Serial asynchronous automatic dialing and control
[STK]	Interface Requirements specification for AT Commands of the SIM Application Toolkit on HILO
[SIM]	Specification of the Subscriber Identity Module – Mobile Equipment (SIM – ME) interface. (GSM 11.11 version 8.3.0 Release 1999)
[HW]	Module HILO Hardware specification

1.4. AT Command principle

The ''*AT*'' or ''*at*'' prefix must be set at the beginning of each line. To terminate a command line, a *<CR>* character must be inserted.

Commands are usually followed by a response that includes *'<CR><LF><response><CR><LF>'*. Throughout this document, only the responses are indicated, the <CR> and <LF> characters are omitted intentionally.

Four kinds of extended AT commands are implemented:

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

1.4.1. Parameters

In this document, the default parameters are underlined and the optional parameters are enclosed in square brackets.

Optional parameters or sub-parameters can be omitted unless they are followed by other parameters. A parameter in the middle of a string can be omitted by replacing it with a comma.

When the parameter is a character string, the string must be enclosed in quotation marks.

All space characters will be ignored when using strings without quotation marks.

1.4.2. Possible answers

There is always an answer sent by the TA to an AT Command line (except the very special case of a TA setup for no answer, see ATQ).

The answer is always terminated by an indication of success or failure. However, regarding the setup of the TA (by AT Commands), the message may be different.

Classical messages:	**OK or ERROR**
Extended Error message (see AT+CMEE):	**+CME ERROR: <n>**
	(See Appendix for the different values for **<n>**)
Numeric Mode (see ATV) :	**<n>** with: <**n**> = 0 ⇔ OK or **<n>** is an error code

1.4.3. Multiple AT commands on the same command line

You may enter several AT commands on the same line. This eliminates the need to type the "AT" or "at" prefix before each command and to wait for the answer for each command. The main advantage is to avoid loosing bandwidth on the link between DTE and the Module.

There is no separator between two basic commands but a semi-colon character is necessary between two extended commands (prefix +).

The command line buffer accepts a maximum of 391 characters. If this number is exceeded none of the commands will be executed and TA returns ERROR.

If a command is not supported, then the treatment of the line is stopped (i.e. the following ones are not treated) and an error message is returned.

Example:

Command: ATZ&K3+CBST=7,0,1;+CBST?

Answer: +CBST=7,0,1

OK

1.4.4. AT Commands on separate lines

When you enter a series of AT commands on *separate* lines, it is strongly advised to leave a pause between the preceding and the following command until the final answer (OK or Error message) appears. This avoids sending too many AT commands at a time without waiting for a response for each.

1.5. Modification of this document

The commands described in this document are subject to change without notice, and shall only be used as for usual AT commands use.

2. V25TER AT COMMANDS

2.1. A/ Command : Repeat previous command line

A/ Repeat previous command line	
Execute command Syntax **A/**	 Response Depend on the previous command Parameters None
Reference V.25Ter	Notes • Line does not need to end with terminating character

2.2. +++ Command : Switch from data mode to command mode

+++ Switch from data mode to command mode	
Execute command Syntax **+++**	 Response This command is only available during data calls. The +++ characters sequence causes to cancel de data flow over the AT interface and switch to command mode. This allows entering AT commands while maintaining the data connection to the remote device. **OK** Parameters None
Reference V.25Ter	Notes • To return to data mode, use the ATO command • Line does not need to end with terminating character • The "+" character may be changed with the ATS2 command (see following chapters)

2.3. O Command : Switch from command mode to data mode

ATO Switch from command mode to data mode	
Test command Syntax **ATO[<n>]**	 Response TA returns to data mode from command mode: **CONNECT <text>** If connection is not successfully resumed **NO CARRIER** Parameter **<n>:** 0: switch from command mode to data mode
Reference V.25Ter	Notes • ATO is the alternative command to the +++ escape sequence described in Chapter 2.2: When you have established a data call and TA is in command mode, ATO causes the TA to resume the data connection and return to data mode.

2.4. E Command : Enable command echo

ATE Enable command echo	
Execute command Syntax **ATE[<value>]**	 Response **OK** Parameters **<value>:** 0 : Echo mode off 1 : Echo mode on
Reference V.25Ter	Notes • This setting determines whether or not the TA echoes characters received from TE during command state

2.5. Q Command : Set result code presentation mode

ATQ Set result code presentation mode	
Execute command Syntax **ATQ[<n>]**	Response **OK** (if **<n>** = 0) *Nothing* (if **<n>** = 1) Parameters **<n>:** 0: result codes transmitted by TA 1: no result code transmitted by TA
Reference V.25Ter	Notes • Specifies whether or not the TA transmits any result code to the TE. Information text transmitted in response is not affected by this setting.

2.6. S0 Command : Set number of rings before automatically answering the call

ATS0 Set number of rings before automatically answering the call	
Read command Syntax **ATS0?**	Response **<n>** **OK**
Write command Syntax **ATS0=<n>**	Response **OK** Parameters **<n>:** 0: automatic answering deactivated 1-255: number of rings before automatically answering
Reference V.25ter	Notes • See Data stored by &W for default value.

2.7. S2 Command : Set character for the escape sequence (data to command mode)

ATS2 Set character for the escape sequence (data to command mode)	
Read command Syntax **ATS2?**	 Response **<n>** **OK**
Write command Syntax **ATS2=<n>**	 Response **OK** Parameters **<n>:** only 43 (“+”) is supported
Reference V.25ter	Notes • The default character is “+” (043) and cannot be changed.

2.8. S3 Command : Command line termination character

ATS3 Command line termination character	
Read command Syntax **ATS3?**	 Response **<n>** **OK**
write command Syntax **ATS3=<n>**	 Response **OK** Parameters **<n>:** 13: command line termination character<CR>: carriage return.
Reference V.25Ter	Notes • This parameter determines the character recognized by TA to terminate an incoming command line (13 = <CR> by default); it cannot be changed. • See Data stored by &W for default value.

2.9. S4 Command : Set response formatting character

ATS4 Set response formatting character	
Read command Syntax **ATS4?**	 Response **<n>** **OK**
Write command Syntax **ATS4=<n>**	 Response **OK** Parameters **<n>:** 10: response formatting character <LF>: line feed.
Reference V.25Ter	Notes • This parameter determines the character recognized by TA to terminate answer line (10 = <LF> by default); it cannot be changed • See Data stored by &W for default value.

2.10. S5 Command : Write command line editing character

ATS5 Write command line editing character	
Read command Syntax **ATS5?**	 Response **<n>** **OK**
write command Syntax **ATS5=<n>**	 Response **OK** Parameters **<n>:** 8: command line editing character <BS>: back space.
Reference V.25Ter	Notes • This parameter determines the character recognized by TA to terminate an incoming command line (8 = <backspace> by default); it cannot be changed. • See Data stored by &W for default value.

2.11. S7 Command : Set number of seconds to wait for connection completion

ATS7 Set number of seconds to wait for connection completion	
Read command Syntax **ATS7?**	 Response: **<n>** **OK**
Write command Syntax **ATS7=<n>**	 Response: **OK** Parameters: **<n>:** 1...255: number of second to wait for connection completion
Reference V.25Ter	Notes • See also AT&V for default values of this parameter • See Data stored by &W for default value.

2.12. V Command : TA response format

ATV TA response format	
Execute command Syntax **ATV[<value>]**	 Response **0** (When numeric mode activated) **OK** (When verbose mode activated) Parameters **<value>:** 0: Short result code format: **<numeric code>.** 1: Long result code format: **<verbose code>**
Reference V.25Ter	Notes • Data stored by &W for default value.

2.13. X Command : Result code selection and call progress monitoring control

ATX Result code selection and call progress monitoring control	
Write command Syntax **ATX[<value>]**	Response **OK** Parameters **<value>:** 0 : CONNECT result code only returned, dial tone and busy detection are both disabled 1 : CONNECT<text> result code only returned, dial tone and busy detection are both disabled 2 : CONNECT<text> result code returned, dial tone detection is enabled, busy detection is disabled 3 : CONNECT<text> result code returned, dial tone detection is disabled, busy detection is enabled 4 : CONNECT<text> result code returned, dial tone and busy detection are both enabled
Reference V.25Ter	Notes • See Data stored by &W for default value.

2.14. &C Command : Set circuit Data Carrier Detect (DCD) function mode

AT&C Set circuit Data Carrier Detect (DCD) function mode	
Execute command Syntax **AT&C<value>**	Response **OK** Parameters **<value>:** 0 : DCD line is always active 1: DCD line is active in the presence of data carrier only.
Reference V.25Ter	Notes • Data stored by &W for default value.

2.15. &D Command : Set circuit Data Terminal Ready (DTR) function mode

AT&D Set circuit Data Terminal Ready (DTR) function mode	
Execute command Syntax **AT&D<value>**	Response **OK** Parameters **<value>:** 0: TA ignores status on DTR. 1: Active->Inactive on DTR: Change to command mode while retaining the connected data call. 2: Active->Inactive on DTR: Disconnect data call, change to command mode. During state DTR inactive auto-answer is off.
Reference V.25Ter	Notes • The command AT&D only applies to data calls. Thus, a DTR drop from active to inactive in AT&D2 mode will not hang up a voice call.

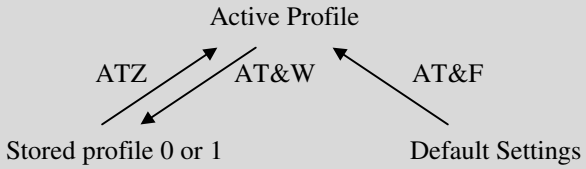
2.16. &F Command : Restore manufactory configuration

AT&F Restore Manufactory configuration	
Execute command Syntax **AT&F[<value>]**	Response **OK** Parameters **<value>:** 0: Restore parameters to manufactory values
Reference V.25Ter	Notes • See also AT&V • Restore manufactory values to active profile

2.17. &W Command : Save stored profile

AT&W Save stored profile	
Execute command Syntax **AT&W**	 Response **OK** Parameters
Reference SAGEM SA Proprietary	Notes • This command saves the current configuration in a non erasable place. • See also AT&V • The default stored profile may be adapted for customer needs. Configuration saved : E: Echo Q: Set result code presentation mode V: Verbose X: Extended result code &C: DCD control &D: DTR behavior &R: RTS control &S0 DSR control &K0 Flow control FCLASS: FCLASS S0: Set number of rings before automatically answering the call S3: Write command line termination character S4: Set response formatting character S5: Write command line editing character S7: Set number of seconds to wait for connection completion S8: Comma dial modifier time S10: Automatic disconnect delay

2.18. &V Command : Display current configuration

AT&V Display current configuration	
Execute command Syntax **AT&V[<value>]**	Response **ACTIVE PROFILE:** **<current configuration>** **STORED PROFILE 0:** **<user default configuration>** **STORED PROFILE 1:** **<manufactory configuration>** Parameters **<value>:** 0: display active profile
Reference SAGEM SA Proprietary	Notes • The configuration is a text string on multiple lines as shown in the example below. This string may vary depending on the manufactory, the product and the user setup. Example: E1 Q0 V1 X4 &C1 &D1 &R1 &S0 +IFC= 0,2 &K0 +FCLASS0 S00:0 S03:13 S04:10 S05:8 S07:50 S08:2 S10:14 • This command indicates the result of certain actions as shown below: 

2.19. +IPR Command : Set fixed local rate

AT+IPR Set fixed local rate	
Test command Syntax **AT+IPR=?**	 Response **+IPR:** (list of supported auto-detectable **<rate>**s), (list of supported fixed-only **<rate>**s) **OK**
Read command Syntax **AT+IPR?**	 Response **+IPR: <rate>** **OK**
Write command Syntax **AT+IPR=<rate>**	 Response **OK** Parameters **<rate>:** bit rate per second 1200, 2400, 4800, 9600 19200, 38400, 57600, 115200, 230400, 460800 0 = autobaud
Reference V.25ter	Notes • The speed is modified after sending the answer

2.20. B: Data rate selection

ATB Data Rate Selection	
Execute Command Syntax **ATB<rate>**	 Response **OK** Parameters **<rate>:** number from [0, 99], but meaningless.
Reference V.25ter	Notes • The responses of this command are compliant with the recommendation but this command has no effect. • It is recommended to use AT+CBST instead of this command

2.21. \N: Data transmission mode

AT\N Data Transmission Mode	
Execute Command Syntax **AT\N<x>**	 Response **OK** Parameters **<x>:** 0: transparent mode 4, 6: RLP mode (non transparent)
Reference V.25ter	Notes • Not support. It is recommended to use AT+CBST instead of this command

2.22. &K Command : Flow control option

AT&K Flow control command	
Execute command Syntax **AT&K<mode>**	Response **OK** Parameters **<mode>:** 0: Disable all flow control 3: Enable bi-directional hardware flow control. 4: Enable XON/XOFF flow control.
Reference V.25ter	Notes • Use AT&V0 to display the current flow control setting

3. GENERAL AT COMMANDS

3.1. I Command : Request Identification Information

ATI Request identification information	
Execute command Syntax **ATI[<value>]**	Response **<text>** (depends on <**value**>) **OK** Parameter **<value>:** (nothing): Product name 0: Product name 3: Software version 4: Manufacturer identification text and Product name 5: Manufacturer identification text
Reference V.25ter	Notes • <text> may take more than one line

3.2. Z Command : Reset and restore user configuration

ATZ Reset and restore user configuration	
Execute command Syntax **ATZ[<value>]**	Response **OK** Parameter **<value>:** 0: Reset and restore user configuration with profile 0 1: Reset and restore user configuration with profile 1
Reference V.25ter	Notes See also AT&V

3.3. +CGMI Command : Request manufacturer identification

AT+CGMI Request manufacturer identification	
Test command Syntax **AT+CGMI=?**	 Response **OK**
Execute command Syntax **AT+CGMI**	 Response **(manufacturer identification text)** **OK**
Reference [27.007] § 5.1	Notes

3.4. +CGMM Command : Request model identification

AT+CGMM Request model identification	
Test command Syntax **AT+CGMM=?**	 Response **OK**
Execute command Syntax **AT+CGMM**	 Response **(model identification text)** **OK**
Reference [27.007] § 5.2	Notes

3.5. +CGMR Command : Request revision identification

AT+CGMR Request revision identification	
Test command Syntax **AT+CGMR=?**	 Response **OK**
Execute command Syntax **AT+CGMR**	 Response **(model revision identification text)** **OK**
Reference [27.007] § 5.3	Notes

3.6. +CGSN Command : Request product serial number identification (IMEI)

AT+CGSN Request product serial number identification (IMEI)	
Test command Syntax **AT+CGSN=?**	 Response **OK**
Execute command Syntax **AT+CGSN**	 Response **<sn>** (identification text for determination of the individual ME) **OK**
Reference [27.007] § 5.4	Notes

3.7. +KGSN Command : Request product serial number identification and Software Version

AT+KGSN Request product serial number identification (IMEI)	
Test command Syntax **AT+KGSN=?**	 Response **+KGSN: (**list of supported **<imei type>**s**)** **OK**
Execute command Syntax **AT+KGSN=<imei type>**	 Response If <**imei type**> = 0: +KGSN: **<IMEI>** **OK** If <**imei type**> = 1: +KGSN: **< IMEISV>** **OK** If <**imei type**> = 2: +KGSN: **< IMEISV_STR>** **OK** Parameters **<IMEI>:** 15 digits IMEI (8 digits for TAC + 6 digits for SNR + 1 check digit) **<IMEISV>:** 16 digits IMEISV (8 digits for TAC + 6 digits for SNR + 2 SVN digits) **<IMEISV_STR>:** formatted string : <15 digits>-<Check digit> SV:<Software version>
Reference SAGEM S.A. proprietary	Notes • This command has been developped to provide the IMEI SV through an AT Command Example AT+KGSN=0 +KGSN: **351578000023006** OK AT+KGSN=1 +KGSN: **351578000023001** OK

3.8. +KSGV Command : Read creation/modification date of SGV file

AT+KSGV Read Creation/Modification date for SGV file	
Execute command Syntax **AT+KSGV**	Response **+KSGV : <generation date>,<modification date>** **OK** Parameters **<generation date>:** "hh:mm DD/MM/YY" **<modification date>:** "hh:mm DD/MM/YY"
Reference SAGEM S.A. proprietary	Notes • This command is dedicated for OEM and allows to check the sgv file (audio setup) used in the module firmware.

3.9. +CSCS Command : Set TE character set

AT+CSCS Set TE character set	
Test command Syntax **AT+CSCS=?**	Response **+CSCS: (**list of supported **<chset>)** **OK**
Read command Syntax **AT+CSCS?**	Response **+CSCS: <chset>** **OK**
Write command Syntax **AT+CSCS=<chset>**	Response **OK** Parameter **<chset>:** **"GSM"** GSM default alphabet (GSM 03.38 subclause 6.2.1) **"UCS2"** 16 bit universal multiple-octet coded character set (ISO/IEC 10646) **"IRA"** default value
Reference [27.007] §5.5	Notes • Select the character set used for all string types (Phonebook entries, SMS data, …)

3.10. +CIMI Command : Request international subscriber identity

AT+CIMI Request international subscriber identity	
Test command Syntax **AT+CIMI=?**	 Response **OK**
Execute command Syntax **AT+CIMI**	 Response **<IMSI>:** (International Mobile Subscriber Identify) **OK**
Reference [27.007] § 5.6	Notes

3.11. +GCAP Command : Request complete TA capability list

AT+GCAP Request complete TA capability list	
Execute command Syntax **AT+GCAP**	 Response **+GCAP:** list of **<name>**s **OK**
Reference V.25ter	Notes Example: **+GCAP:+FCLASS,+CGSM** **OK**

3.12. +GMI Command : Request manufacturer identification

AT+GMI Request manufacturer identification	
Test command Syntax **AT+GMI=?**	 Response **OK**
Execute command Syntax **AT+GMI**	 Response **(manufacturer identification text)** **OK**
Reference V.25ter	Notes

3.13. +GMM Command : Request model identification

AT+GMM Request model identification	
Test command Syntax **AT+GMM=?**	 Response **OK**
Execute command Syntax **AT+GMM**	 Response **(model identification text)** **OK**
Reference V.25ter	Notes

3.14. +GMR Command : Request revision identification

AT+GMR Request revision identification	
Test command Syntax **AT+GMR=?**	 Response **OK**
Execute command Syntax **AT+GMR**	 Response **(model identification text)** **OK**
Reference V.25ter	Notes

3.15. +GSN Command : Request product serial number identification (IMEI) identical to GSN

AT+GSN Request product serial number identification (IMEI) identical to GSN	
Test command Syntax **AT+GSN=?**	 Response **OK**
Execute command Syntax **AT+GSN**	 Response **<sn>** (identification text for determination of the individual ME) **OK**
Reference V.25ter	Notes

3.16. +CMUX Command : Multiplexing mode

AT+CMUX Multiplexing Mode	
Test command Syntax **AT+CMUX=?**	Response **+CMUX:** (list of supported **<mode>**s),(list of supported **<subset>**s),(list of supported **<port_speed>**s),(list of supported **<N1>**s),(list of supported **<T1>**s),(list of supported **<N2>**s),(list of supported **<T2>**s),(list of supported **<T3>**s),(list of supported **<k>**s) **OK**
Read Command Syntax **AT+CMUX?**	Response **+CMUX: <mode>,[<subset>],<port_speed>,<N1>,<T1>, <N2>,<T2>,<T3>[,<k>]** **OK**
Write command Syntax **AT+CMUX=<mode>[,<subset>[,<port_speed>[,<N1>[,<T1>[,<N2>[,<T2>[,<T3>[,<k>]]]]]]]]**	Response **OK** Parameters **<mode>:** multiplexer Transparency Mechanism 0: Basic option 1: Advanced option **<subset>:** 0 UIH frames used only 1 UI frames used only **<port_speed>:** transmission rate(1-8) 1 9 600 bit/s 2 19 200 bit/s 3 38 400 bit/s 4 57 600 bit/s 5 115 200 bit/s **<N1>:** maximum frame size (1- 32768) default Value : 31 (64 if Advanced option is used) **<T1>:** acknowledgement timer in units of ten milliseconds 1-255, where 10 is default (100 ms) **<N2>:** maximum number of re-transmissions 0-100, where 3 is default **<T2>:** response timer for the multiplexer control channel in units of ten milliseconds 2-255, where 30 is default (300 ms) **<T3>:** wake up response timer in seconds 1-255, where 10 is default **<k>:** window size, for Advanced operation with Error Recovery options 1-7, where 2 is default.
Reference [27.007] § 5.7	Notes • Multiplexing protocol is described in 3 GPP TS 27 010 • See Chapter Appendix 4 for a summary of SAGEM S.A. support

4. CALL CONTROL COMMANDS

4.1. A Command : Answer a call

ATA Answer a call	
Execute command Syntax **ATA**	Response: **CONNECT[<text>]** Data Connection established **OK** Voice Connection established or if cancellation of the command **ERROR** Response if no connection
Reference V.25Ter	Notes • See ATX for setup of the CONNECT message

4.2. H Command : Disconnect existing connection

ATH Disconnect existing connection

Execute command Syntax **ATH[<type>]**	Response: **OK** Parameters: **<type>:** Type of call affected by ATH request. Voice call disconnection is also dependant of +CVHU settings. 0: Same behavior as without parameter. Disconnect ALL calls on the channel he command is requested All active or waiting calls, CS data calls, GPRS call of the channel will be disconnected. 1: Disconnect all calls on ALL connected channels. All active or waiting calls, CSD calls, GPRS call will be disconnected (clean up of all calls of the ME). 2: Disconnect all connected CS data call only on the channel the command is requested (Speech calls (active or waiting) or GPRS calls are not disconnected). 3: Disconnect all connected GPRS calls only on the channel the command is requested (Speech calls (active or waiting) or CS data calls are not disconnected). 4: Disconnect all CS calls (either speech or data) but does not disconnect waiting call (either Speech or data) on the channel the command is requested. 5: Disconnect waiting call (either speech or data) but does not disconnect other active calls (Either CS speech, CS data or GPRS) on the channel the command is requested. (rejection of incoming call)
Reference V.25Ter	Notes • On this command, all calls in progress are ended • See also AT+CHLD

4.3. D Command : Mobile originated call to dial a number

ATD Mobile originated Call to dial a number	
Test command Syntax **ATD=?**	 Response **1 2 3 4 5 6 7 8 9 0 * # + A B C D P T W , @ !** **OK**
Read command Syntax **ATD?**	 Response **1 2 3 4 5 6 7 8 9 0 * # + A B C D P T W , @ !** **OK**
Execute command Syntax **ATD[<n>][;]**	 Response: **NO DIALTONE** **BUSY** **NO CARRIER** The connection cannot be established **NO ANSWER** **CONNECT[<text>]** Data connection successfully connected **OK** If successfully connected and voice call Parameters: **<n>:** String of dialing digits and optionally V.25ter modifiers (dialing digits): 0-9, * , #, +, A, B, C (maximum length: 20 digits) **<;>:** Only required to set up voice calls. TA remains in command mode.
Reference V.25Ter	Notes • The command may be aborted generally when receiving an ATH command during execution • Same behavior for ATDP, ATDR, ATDT, ATPD, ATRD, ATTD • OK answer may arrive after just after the ATD command or after the call is actually active (see AT+COLP, chapter 6.11)
ATD Mobile originated Call to dial a number	
Execute command Syntax **ATD[<n>][;]**	 Response: **NO DIALTONE** **BUSY** **NO CARRIER** The connection cannot be established **NO ANSWER** **CONNECT[<text>]** Data connection successfully connected **OK** If successfully connected and voice call Parameters: **<n>:** String of dialing digits and optionally V.25ter modifiers (dialing digits): 0-9, * , #, +, A, B, C (maximum length: 20 digits) **<;>:** Only required to set up voice calls. TA remains in command mode.

Reference V.25Ter	Notes • The command may be aborted generally when receiving an ATH command during execution • Same behavior for ATDP, ATDR, ATDT, ATPD, ATRD, ATTD • OK answer may arrive after just after the ATD command or after the call is actually active (see AT+COLP, chapter 6.11)

4.4. D>: Direct dialing from phonebook

ATD> Direct dialing from phonebook	
Execute command Syntax **ATD><str>[;]** **ATD>[<mem>]<n>[;]**	 Response See ATD Parameters: **<str>:** alphanumeric field (if possible all available memories should be searched for correct entry) **<mem>:** memory storage (“ME”, “SM”…) **<n>:** entry location
Reference [27.007] § 6.2	Notes • For memory storage locations, see AT+CPBS

4.5. +CHUP Command : Hang up call

AT+CHUP Hang up call	
Execute command Syntax **AT+CHUP**	 Response **OK**
Test command Syntax **AT+CHUP=?**	 Response **OK**
Reference [27.007] § 6.5	Notes • Since only single mode is supported, the execution of the command always disconnects active call. **AT+CHUP** has the same behavior as **ATH** (i.e. ends all calls in progress)

4.6. +CRC Command : Set Cellular Result Codes for incoming call indication

AT+CRC Set Cellular Result Codes for incoming call indication	
Test command Syntax **AT+CRC=?**	 Response **+CRC:** (list of supported **<mode>**) **OK**
Read command Syntax **AT+CRC?**	 Response **+CRC:<mode>** **OK**
Write command Syntax **AT+CRC=[<mode>]**	 Response **OK** Parameters **<mode>:** 0: disable extended format 1: enable extended format
Reference [27.007] § 6.11	Notes • When enabled, an incoming call is indicated with **+CRING: <type>.** **<type>** :**FAX** or **VOICE** or **ASYNC**

5. MOBILE EQUIPMENT CONTROL AND STATUS COMMANDS

5.1. +CACM Command : Accumulated call meter (ACM) reset or query

AT+CACM Accumulated call meter (ACM) reset or query	
Test command Syntax **AT+CACM=?**	 Response **OK**
Read command Syntax **AT+CACM?**	 Response **+CACM: <acm> (current acm value)** **OK**
Write command Syntax **AT+CACM=<password>** (reset the value)	 Response **OK** Parameters **<password>:** SIM PIN2
Reference [27.007] §8.25	Notes • This AT command needs SIM and network where AOC are allowed.

5.2. +CAMM Command : Accumulated call meter maximum (ACM max) set or query

AT+CAMM Accumulated call meter maximum (ACM max) set or query	
Test command Syntax **AT+CAMM=?**	 Response **OK**
Read command Syntax **AT+CAMM?**	 Response **+CAMM: <acmmax>** **OK**
write command Syntax **AT+CAMM=** **[<acmmax>[,<passwd>]]**	 Response **+CAMM: <acmmax>** **OK** Parameters **<acmmax>:** string type; three bytes of the max ACM value in hexadecimal format 0 disables ACMmax feature **<passwd>:** SIM PIN2
Reference [27.007] § 8.26	Notes • This AT command needs SIM and network where AOC are allowed.

5.3. +CCWE Command : Call Meter maximum event

AT+CCWE Call Meter maximum event	
Test command Syntax **AT+CCWE=?**	 Response **+CCWE**: (list of supported **<mode>**s) **OK**
Read command Syntax **AT+CCWE?**	 Response **+CCWE**: **<mode>** **OK**
Write command Syntax **AT+CCWE=<mode>**	 Response **OK** Parameter **<mode>:** 0: Disable the call meter warning event 1: Enable the call meter warning event
Reference [27.007] §8.28	Notes • When enabled, a notification (+CCWV) is sent shortly (approx. 30s) before the ACM max is reached. • This AT command needs SIM and network where AOC are allowed.

5.4. +CALA Command : Set alarm time

AT+CALA Set alarm time	
Test command Syntax **AT+CALA=?**	Response **+CALA:** (list of supported **<n>**s),**(**list of supported **<type>**s) **OK**
Read command Syntax **AT+CALA?**	Response **[+CALA: <time>,<n1>,[<recurr>]** **[<CR><LF>+CALA: <time>,<n2>,[<recurr>]** **OK**
Write command Syntax **AT+CALA=<time>[,<n>[,<recurr>]]=<time>**	Response **OK** Parameters **<time>:** internal clock (Cf. +CCLK). String type "hh:mm:ss" if <recurr> is present or"yy/mm/dd,hh:mm:ss" if not. **<n>:** index of the alarm (range 1 to 5 for now). **<recurr>:** string type value indicating day of week for the alarm in one of the following formats: "<1..7>[,<1..7>[…]]" – Sets a recurrent alarm for one or more days in the week. The digits 1 to 7 corresponds to the days in the week, Monday (1), …, Sunday (7). "0" – Sets a recurrent alarm for all days in the week. **<type>:** type of alarm (sound, LED, volume…).
Reference [27.007] §8.16	Notes • To set up a recurrent alarm for one or more days in the week, the <recurr>-parameter may be used. • When an alarm is timed out and executed, the unsolicited result code +CALV: <n> is returned. • When woken up by an alarm, the module is fully started. It is the responsibility of the host to turn it off and to set a new alarm if recurrent alarms are not used. • Only for not recurrent alarm : if date and hour are over , +CME ERROR: 4 is returned • After *PSCPOF command, +CALV: correctly received if autobaud speed is not selected. Examples - at+cala=”07/04/11,11:34:25” -> set a one shot alarm saved at index 1 for the specified date and time - at+cala=”07/04/11,11:34:00” ,3 -> set a one shot alarm saved at index 3 for the specified date and time - at+cala=”11:50:45” ,1,”1,4” -> set a recurrent alarm saved at index 1 for every monday and thursday at 11:50:45 noonWhen woken up by an alarm, the module is fully started. It is the responsibility of the host to turn it off anew.

5.5. +CALD Command : Delete alarm

AT+CALD Delete alarm	
Test command Syntax **AT+CALD=?**	 Response **+CALD: (list of supported <n>s)** **OK**
Write command Syntax **AT+CALD=<n>**	 Response **OK** Parameters **<n>:** index of the alarm
Reference [27.007] §8.38	Notes Action command deletes an alarm in the MT

5.6. +CCLK Command : Real time clock

AT+CCLK Real time clock	
Test command Syntax **AT+CCLK=?**	 Response **OK**
Read command Syntax **AT+CCLK?**	 Response **+CCLK: <time>**
Write command Syntax **AT+CCLK=<time>**	 Response **OK** Parameter **<time>:** string type value; format is "yy/MM/dd,hh:mm:ss+/-Timezone", where characters indicate year (last two digits), month, day, hour, minutes, seconds;
Reference [27.007] § 8.15	Notes

5.7. *PSCPOF Command : Power off

AT*PSCPOF Power off	
Execute command Syntax **AT*PSCPOF**	 Response **OK**
Reference	Notes • This command allows switching off the mobile. Note that "**OK**" result code will appear immediately if the command is accepted and power off will occur after that. Unexpected random characters may also be issued during switch off of MS.

5.8. +CIND Command : Indicator control

AT+CIND Indicator control	
Test command Syntax **AT+CIND=?**	 Response **+CIND: ("battchg",(0-5)),("signal",(0-4)),("service",(0-1)),("message",(0-1)),("call",(0-1)),("roam",(0-1)),("smsfull",(0-1))**
Read command Syntax **AT+CIND?**	 Response **+CIND: <battchg>,<signal>,<service>,<call>, <smsfull>** Parameters **<battchg>:** battery charge level (0-5) **<signal>:** signal quality (0-4) **<service>:** service availability (0-1) **<message>:** Message received (0-1) **<call>:** call in progress (0-1) **<roam>:** Roaming indicator (0-1) 0: Home net 1: Roaming **<smsfull>:** SMS memory storage (0-1) 0: Memory available 1: Memory full
Reference [27.007] § 8.9	Notes • <smsfull> indication not available on all products

5.9. +CLAC Command : List all available AT commands

AT+CLAC List all available AT commands	
Execute command Syntax **AT+CLAC**	Response List of all supported AT Commands **+CLAC:<AT Command1><CR> <LF>** **<AT Command2>[…]]** **OK** Parameters
Reference [27.007] § 8.37	Notes • This command provides the AT Command list available for the user

5.10. +CMEC Command : Mobile Equipment control mode

AT+CMEC Mobile Equipment control mode	
Test command Syntax **AT+CMEC=?**	Response **+CMEC:** (list of supported **<keyp>**s),(list of supported **<disp>**s),(list of supported **<ind>**s) **OK**
Read command Syntax **AT+CMEC?**	Response **+CMEC: <keyp>,<disp>,<ind>** **OK**
Write command Syntax **AT+CMEC=[<keyp>[,<disp>[,<ind>]]]**	Response **OK** Parameters **<keyp>:** 0: keypad management, not significant for HILO (no keypad) **<disp>:** 0: display management, not significant for HILO (no display) **<ind>:** 0: only ME can set the status of its indicators (command +CIND can only be used to read the indicators)
Reference [27.007] § 8.6	Notes • Set command selects the equipment, which operates ME keypad, writes to ME display and sets ME indicators

5.11. +CFUN Command : Set Phone Functionality

AT+CFUN Set Phone Functionality	
Test command Syntax **AT+CFUN=?**	 Response **+CFUN:** (list of supported <**fun**>s), (list of supported <**rst**>s)
Read command Syntax **AT+CFUN?**	 Response **+CFUN**: <**fun**>
Write command Syntax **AT+CFUN=[<fun>[,<rst>]]**	 Response **OK** Parameters **<fun>:** 0: minimum functionality(not support); 1: full functionality; **<rst>:** 0: Set the ME to <fun> power level immediately. This is the default when <rst> is not given(not support); 1: reset the MT before setting it to <fun> power level
Reference [27.007] § 8.2	Notes • AT+CFUN=1,1 generates a blocking defense to reset the mobile. “OK” result code will appear after reset has been completed. (AT+CFUN=1,1 has no effect on radio on/off, it leaves it has is was before reset).

5.12. +CMER Command : Mobile Equipment event reporting

AT+CMER Mobile Equipment event reporting	
Test command Syntax **AT+CMER=?**	 Response **+CMER:** (list of supported **<mode>**s),(list of supported **<keyp>**s),(list of supported **<disp>**s),(list of supported **<ind>**s),(list of supported **<bfr>**s) **OK**
Read command Syntax **AT+CMER?**	 Response **+CMER: <mode>,<keyp>,<disp>,<ind>,<bfr>** **OK**
Write command Syntax **AT+CMER=[<mode>[,<keyp>[,<disp>[,<ind>[,<bfr>]]]]]**	 Response **OK** Parameters **<mode>:** 0: buffer unsolicited result codes in the TA; if TA result code buffer is full, codes can be buffered in some other place or the oldest ones can be discarded. 1: discard unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode); otherwise forward them directly to the TE **<keyp>:** 0: no keypad event reporting **<disp>:** 0: no display event reporting **<ind>:** 0: no indicator event reporting 1: indicator event reporting using result code +CIEV: <ind>,<value>. <ind> indicates the indicator order number (as specified for +CIND) and <value> is the new value of indicator. Only those indicator events, which are not caused by +CIND shall be indicated by the TA to the TE 2: indicator event reporting using result code +CIEV: <ind>,<value>. All indicator events shall be directed from TA to TE **<bfr>:** 0: TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1 is entered
Reference [27.007] § 8.10	Notes

5.13. +CMEE Command : Report Mobile Termination error

AT+CMEE Report Mobile Termination Error	
Test command Syntax **AT+CMEE=?**	 Response **+CMEE:** (list of supported **<n>**s) **OK**
Read command Syntax **AT+CMEE?**	 Response **+CMEE: <n>** **OK**
Write command Syntax **AT+CMEE=[<n>]**	 Response **OK** Parameter **<n>:** 0: disable +CME ERROR: <err> result code and use ERROR instead 1: +CME ERROR: <err> result code and use numeric <err> values 2: +CME ERROR: <err> result code and use verbose <err> values
Reference [27.007] § 9.1	Notes • See Data impacted by &F for default value.

5.14. +CMUT Command : Mute control

AT+CMUT Mute control	
Test command Syntax **AT+CMUT=?**	 Response **+CMUT:** (list of supported **<n>**s) **OK**
Read command Syntax **AT+CMUT?**	 Response **+CMUT: <n>** **OK**

Write command Syntax **AT+CMUT=<n>**	 Response **OK** Parameter **<n>:** 0 mute off 1 mute on
Reference [27.007] § 8.24	Notes • Be careful, this command can only be used during voice call.

5.15. +CPIN Command : Enter pin

AT+CPIN Enter pin	
Test command Syntax **AT+CPIN=?**	 Response **OK**
Read command Syntax **AT+CPIN?**	 Response **+CPIN: <code>**
Write command Syntax **+CPIN=<pin>** **[,<newpin>]**	 Response **OK** Parameters **<code>:** values reserved by this TS: READY ME is not pending for any password SIM PIN ME is waiting SIM PIN to be given SIM PUK ME is waiting SIM PUK to be given. Also, a second pin, <newpin>, is used to replace the old pin in the SIM and should thus be supplied SIM PIN2 ME is waiting SIM PIN2 to be given (this <code> is recommended to be returned only when the last executed command resulted in PIN2 authentication failure (i.e. +CME ERROR: 17); if PIN2 is not entered right after the failure, it is recommended that ME does not block its operation) SIM PUK2 ME is waiting SIM PUK2 to be given (this <code> is recommended to be returned only when the last executed command resulted in PUK2 authentication failure (i.e. +CME ERROR: 18); if PUK2 and new PIN2 are not entered right after the failure, it is recommended that ME does not block its operation). Also, a second pin, <newpin>, is used to replace the old pin in the SIM and should thus be supplied PH-NET PIN ME is waiting personalization password to be given **<pin>, <newpin>:** string type value (8 characters max.)
Reference [27.007] § 8.3	Notes • Parameter <newpin> can only be used if SIM is PIN blocked. <pin> must be PUK. Otherwise, the command is rejected

5.16. *PSPRAS Command : Pin Remaining Attempt Status

AT*PSPRAS PS Pin Remaining Attempt Status	
Test command Syntax **AT*PSPRAS=?**	 Response ***PSPRAS:** (list of supported **<code>**) **OK**
Read command Syntax **AT*PSPRAS?**	 Response ***PSPRAS: < pin1>, <puk1>,<pin2>,<puk2>**
Write command Syntax **AT*PSPRAS**	 Response **OK** Parameters **<pin1>:** integer type value indicating the number of false presentations remaining for PIN1. The maximum value is 3, and the minimum value is 0. Zero means that the PIN1 is blocked. **<puk1>:** integer type value indicating the number of false presentations remaining for PUK1. The maximum value is 10, and the minimum value is 0. Zero means that the PUK1 is blocked. **<pin2>:** integer type value indicating the number of false presentations remaining for PIN2. The maximum value is 3, and the minimum value is 0. Zero means that the PIN2 is blocked. **<puk2>:** integer type value indicating the number of false presentations remaining for PUK2. The maximum value is 10, and the minimum value is 0. Zero means that the PUK2 is blocked. **<code>:** ”SIM PIN1”, “SIM PUK1”, “SIM PIN2”, “SIM PUK2”
Reference SAGEM S.A. proprietary command	Notes • This commands returns information about the number of codes attempts remaining. • Set command has no effect (return OK)

5.17. +CPUC Command : Price per unit and currency table

AT+CPUC Price per unit and currency table	
Test command Syntax **AT+CPUC=?**	 Response **OK**
Read command Syntax **AT+CPUC?**	 Response **+CPUC: <currency>,<ppu>** **OK**
Write command Syntax **AT+CPUC=<currency>, <ppu>[,<passwd>]**	 Response **OK** Parameters **<currency>:** string type; three-character currency code (e.g. .GBP., .DEM.);character set as specified with AT+CSCS. **<ppu>:** string type; price per unit; dot is used as a decimal separator (e.g. .2.66.). The length is limited to 20 characters. If the string length is exceeded, the command is terminated with an error. This string may only contain digits and a dot. Leading zeros are removed from the string. **<passwd>:** string type; SIM PIN2. String parameter which can contain any combination of characters. The maximum string length is limited to 8 characters.
Reference [27.007] § 8.27	Notes • This AT command needs SIM and network where AOC are allowed.

5.18. +CPWC Command : Power class

AT+CPWC Power class	
Test command Syntax **AT+CPWC=?**	Response **+CPWC:** list of supported **(<band>**,(list of **<class>**s)) pairs **OK**
Read command Syntax **AT+CPWC?**	Response **+CPWC:** **<curr_class1>,<def_class1>,<band1>[,<curr_class2>,<def_class2>,<band2>[...]]** **OK**
Write command Syntax **AT+CPWC=[<class>[,<band>]]**	Response **OK** Parameters **<class>, <curr_class*n*>, <def_class*n*>:** 0 default (not applicable to <curr_class>s or <def_class*n*>s) 1… MS output power class as in GSM 45.005 [38] **<band>, <band*n*>:** 0 GSM850 1 GSM900 2 GSM1800 3 GSM1900
Reference [27.007] § 8.29	Notes • Module must be rebooted for the selection to be effective

5.19. *PSRDBS Command : Change Frequency Band class

AT*PSRDBS Change Frequency Band	
Test command Syntax **AT*PRDBS=?**	Response *** PSRDBS**: (list of supported**<mode>**s), (list of supported **<GSM band>**s), (list of supported **<UMTS band>**s)
Read command Syntax **AT*PRDBS?**	Response *** PSRDBS**: **<GSM band>** [,**<UMTS band>**]
Write command Syntax ***PSRDBS=<mode> [,<GSMband> , [<UMTS band>]]**	Response **OK** Parameter **<Mode>:** 0 Set <**Band**> at next switch on (default value) 1 Set <**Band**> immediately by restarting stack <**GSM Band>:** bit field type parameter; to set several bands sum up the values. 1 GSM 850 2 GSM 900 4 E-GSM 8 PCS 1800 16 PCS 1900 <**UMTS Band>:** bit field type parameter; to set several bands sum up the values. 1 UMTS band 1 2 UMTS band 2 4 UMTS band 3 8 UMTS band 4 16 UMTS band 5 32 UMTS band 6
Reference SAGEM SA Proprietary	Notes

5.20. +CPAS Command : Phone Activity Status

AT+CPAS Phone activity status	
Test command Syntax **AT+CPAS=?**	 Response **+CPAS:** (list of supported **<pas>**s) **OK**
Execute command Syntax **AT+CPAS**	 Response **+CPAS: <pas>** **OK** Response **<pas>:** 0: ready (ME allows commands from TA/TE) 2: unknown (ME is not guaranteed to respond to instructions) 3: ringing (ME is ready for commands from TA/TE, but the ringer is active) 4: call in progress (ME is ready for commands from TA/TE, but a call is in progress)
Reference [27.007] § 8.1	Notes

5.21. +CSQ Command : Signal quality

AT+CSQ Signal quality	
Test command Syntax **AT+CSQ=?**	 Response **+CSQ:** (list of supported **<rssi>**s),(list of supported **<ber>**s) **OK**
Execute command Syntax **AT+CSQ**	 Response **+CSQ: <rssi>,<ber>** **OK** 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) 99: not known or not detectable
Reference [27.007] § 8.5	Notes

5.22. +KRIC Command : Ring indicator control

AT+KRIC Ring indicator control	
Test command Syntax **AT+KRIC=?**	Response **+KRIC:** (list of supported **<masks>**s),(list of supported **<shape>**s) **OK**
Read command Syntax **AT+KRIC?**	Response **+KRIC: <masks>,< shape >** **OK**
Write command Syntax **AT+KRIC=<mask>[,<shape>]**	Response **OK** Parameters **<mask>:** (0-31)Use of RI signal 0x00: RI not used. 0x01: RI activated on incoming calls (**+CRING, RING**) 0x02: RI activated on SMS (**+CMT, +CMTI**) 0x04: RI activated on SMS-CB (**+CBM, +CBMI**) 0x08: RI activated on USSD (**+CUSD**) 0x10: RI activated on network state (**+CIEV**) 0x20: RI activated on 0710 wakeup (to be used when GSM 07.10 protocol is managed and the host is wakened up by RI. It will avoid the module to close the GSM 07.10 because the host doesn't answer) **<shape>:** signal shape – available only for incoming calls 0: Repeat pulses The total length of the pulse is equivalent to the transfer of the RING or CRING notification 1: Always active The signal is set to active during the whole incoming call notification
Reference SAGEM SA Proprietary	Notes • For a SMS and other unsolicited messages, only one pulse is set. • If the 0710 is woken up by an incoming call only one pulse is set, even if shape=0 is used. • The width of the pulse is 1s by default. It can be extended to 4s (according to Customer). • Setup command only to send once to define the RI behavior. • Do not use the command while an incoming call, SMS, SMSCB, USSD…

5.23. +KSREP Command : Mobile start-up reporting

AT+KSREP Mobile start-up reporting	
Test command Syntax **AT+KSREP=?**	 Response **+KSREP:** (list of supported **<act>**s) **OK**
Read command Syntax **AT+KSREP?**	 Response **+KSREP: <act>,<stat>** **OK**
Write command Syntax **AT+KSREP=<act>**	 Response **OK** Parameters **<act>:** Indicates if the module must send a unsolicited code during the startup. 0: The module doesn't send an unsolicited code. 1: The module will send an unsolicited code. **<stat>:** This code indicates the status of the module. 0: The module is ready to receive commands for the TE. No access code is required. 1: The module is waiting for an access code. (The **AT+CPIN?** Command can be used to determine it). 2: The SIM card is not present. 3: The module is in "SIMlock" state. 4: unrecoverable error. 5: unknown state.
Reference SAGEM SA Proprietary	Notes • The module uses unsolicited code once after the boot process +KSUP: <stat> • The KSUP notification will not be sent if the module is in autobaud mode and no bytes have been received from TE to adapt the serial link to the actual speed

5.24. +KGPIO Command : Hardware IO Contro

AT+KGPIO Hardware IO Control	
Test command Syntax **AT+KGPIO=?**	 Response **+KGPIO:** (list of supported **<IO>**s),(list of supported **<cde>**s) **OK**
Read command Syntax **AT+KGPIO?**	 Response **OK**
Write command Syntax **AT+KGPIO=<IO>,<cde>**	 Response If <cde> = 2: **+KGPIO: <IO>, <current_value>** **OK** Else **OK** Parameters **<IO>:** Selected IO 1: GPIO1, pin name of the connector. 2: GPIO2, pin name of the connector. 3: GPIO3, pin name of the connector 4: GPIO4, pin name of the connector 5: GPIO5, pin name of the connector 6: GPIO6_SPI_IRQ, pin name of the connector 7: GPIO7_SPI_CLK, pin name of the connector 8: GPIO8_SPI_IN, pin name of the connector **<cde>:** 0: Reset the selected IO 1: Set the selected IO 2: Request the current value of the IO
Reference SAGEM SA Proprietary	Notes • Be aware that this command doesn't change the level of the IO after a reset of the module.

5.25. +KSLEEP Command : Power Management Control

AT+KSLEEP Power management control	
Test command Syntax **AT+KSLEEP=?**	Response **+KSLEEP:** (list of supported **<mngt>**s) **OK**
Read command Syntax **AT+KSLEEP?**	Response **+KSLEEP: <mngt>** **OK**
Write command Syntax **AT+KSLEEP=<mngt>**	Response **OK** Parameters **<mngt>:** 0: The module doesn't go in sleep mode as long as DTR is set to high level 1: The module decides by itself (internal timing) when it goes in sleep mode
Reference SAGEM SA Proprietary	Notes • This parameter is part of the profile (see AT&V, ATZ, AT&F) • See the documents related to the power saving methods to have more details of the possible methods

5.26. +KCELL Command : Cell Environment Information

<table>
<tr><th colspan="2">AT+KCELL Cell Environment Information</th></tr>
<tr><td>Test command

Syntax
AT+KCELL=?</td><td>

Response
+KCELL: (list of supported <revision>s)
OK</td></tr>
<tr><td>Read command

Syntax
AT+KCELL?</td><td>

Response
OK</td></tr>
<tr><td>Write command

Syntax
AT+KCELL=<revision></td><td>

Response
+KCELL: <nbcells>[,<ARFCN_i>,<BSIC_i>,<PLMN_i>,<LAC_i>,<CI_i>,<RSSI_i>,<TA_i>]
OK

Parameters
<revision>: reserved for future purposes (only 0 for the moment)
<nbcells>: number of base stations available. The first base station is the serving cell (0 ≤ i ≤ 7)
<ARFCN>: Absolute Radio Frequency Channel Number
<BSIC>: Base Station Identify Code
PLMN>: PLMN identifiers (3 bytes), made of MCC (Mobile Country Code), and MNC (Mobile Network Code).
<LAC>: Location Area
CI>: Cell ID, 4 hexadecimal digits, e.g. ABCD.
<RSSI>: Received signal level of the BCCH carrier, decimal value from 0 to 63. The indicated value is an offset which should be added to –110 dBm to get a value in dBm. See the formula specified in TS 05.08 Radio Subsystem Link Control.
TA>: Timing advance. Available only during a communication (equals to 0xff=255 at any other time).</td></tr>
<tr><td>Reference
SAGEM SA Proprietary</td><td>Notes
• This command provides information related to the network environment and can be used for example for localization calculation
• Values in italic are not available during some times; i.e. during a communication phase CI is not available, where TA is available only during a communication. By default, all values will be initialized to 0xFF; thus when a value is returned equal to 0xFF, this will mean it was not possible to decode it.

Example
AT+KCELL=0
+KCELL: 5, 102,
15,02f810,61a9,abcd,28,255,82,3,02f810,41b1,bcde,29,255,84,1,02f810,58d0,cdef,30,255,119,22,02f810,ffff,ffff,12,255,106,16,02f810,ffff,ffff,24,255
OK</td></tr>
</table>

5.27. +CRMP Command : Ring Melody Playback

AT+CRMP Ring Melody Playback	
Test command Syntax **AT+CRMP=?**	Response **+CRMP:** (list of supported **<call type>**s),(list of supported **<volume>**s),(**0**),(list of supported **<index>**s) **OK**
Write command Syntax **AT+CRMP=<call type>[,<volume>[,<type>,<index>]]**	Response **OK** Parameters **<index>:** integer which defines a ring melody(1-11). **<volume>:** integer which defines the sound level(1-3). The smaller the lower **<call type>:** integer which specifies the type of event which will start the ring. 0: Voice call (default value) **<type>:** 0: ring melody is manufacturer defined (unique supported value)
Reference [27.007] § 8.35	Notes • When playing a melody, if a parameter is not given, the value setup with AT+CRMC is used, If <type> and <index> are defined, <calltype> is not taken in account.

5.28. +CRMC Command : Ring Melody Control

AT+CRMC Ring Melody control	
Test command Syntax **AT+CRMC=?**	Response **+CRMC:** (list of supported **<index>**s),(list of supported **<volume>**s),(list of supported **<call type>**s) **OK**
Read command Syntax **AT+CRMC?**	Response **+CRMC: <index>,<volume>,<calltype1>** **+CRMC: <index>,<volume>,<calltype2>** **...** **OK**

Write command Syntax **AT+CRMC=<index>,<volume>[,<calltype>]**	Response **OK** Parameters **<index>:** integer which defines a ring melody. **<volume>:** integer which defines the sound level. The smaller the lower **<calltype>:** integer which specifies the type of event which will start the ring. 0: Voice call (default value)
Reference [27.007] § 8.34	Notes

5.29. *PSVMWN Command : Voice Message Waiting Notification

AT*PSVMWN Voice mail indicator	
Test command Syntax **AT*PSVMWN=?**	 Response ***PSVMWN:** (list of supported **<mode>**) ***PSVMWN:** (list of supported **<mode>**) **OK**
Read command Syntax **AT*PSVMWN?**	 Response ***PSVMWN: < current mode>** **OK**
Write command Syntax **AT*PSVMWN=<mode>**	 Response **OK** Parameters **<Mode>:** 0 Disable presentation of notification 1 enable presentation of notification **<line Id >:** 1 (Line 1) 2 (Aux. Line) 3 (data) 4 (fax) **<status>:** 0 (No message waiting) 1 (at least one message is waiting) **<index>:** Record index in EF SMS if the received MWI message has been stored in SIM (if it sis a STORE MWI SMS) 0...255 **<NbMsgWaiting>:** Number of message waiting on line <line Id> 0...255
Reference SAGEM SA Proprietary	Notes • Set command enables/disables the presentation of notification result code from ME to TE When <mode> = 1, * PSVMWI: <line Id > , <status> [,<index>[,<NbMsgWaiting>]] (Voice Message Waiting Indication is sent to TE when notification is received from network or at switch on.

5.30. +CRSM Command : SIM Restricted Access

AT+CRSM SIM RESTRICTED ACCESS	
Test command Syntax **AT+CRSM=?**	 Response **OK**
Write command Syntax **AT+CRSM=<command>[,<fileid>[,<P1>,<P2>,<P3>[,<data>]]]**	 Response **+CRSM: <sw1>,<sw2>[,<response>]** **OK** Parameters **<command>:** command passed on by the MT to the SIM; refer GSM 51.011 [28] 176 READ BINARY 178 READ RECORD 192 GET RESPONSE 242 STATUS all other values are reserved **<fileid>:** integer type; this is the identifier of a elementary data file on SIM. Mandatory for every command except STATUS **<Pi>:** integer type; parameters passed on by the MT to the SIM. These parameters are mandatory for every command, except GET RESPONSE and STATUS. The values are described in GSM 51.011 [28] **<data>:** information which shall be written to the SIM (hexadecimal character format; refer +CSCS) **<swi>:** integer type; information from the SIM about the execution of the actual command. These parameters are delivered to the TE in both cases, on successful or failed execution of the command **<response>:** response of a successful completion of the command previously issued (hexadecimal character format; refer +CSCS). STATUS and GET RESPONSE return data, which gives information about the current elementary data field. This information includes the type of file and its size (refer GSM 51.011 [28]). After READ BINARY or READ RECORD command the requested data will be returned. <response> is not returned after a successful UPDATE BINARY or UPDATE RECORD command
Reference [27.007] § 8.18	Notes • For safety reason, following **<command>**s are not supported 214 UPDATE BINARY 220 UPDATE RECORD • **<data>** is a string and so must be put between quotes (“”)\

5.31. *PSPWM Command : PWM control

AT*PSPWM PWM control

Write command Syntax **AT*PSPWM=<output>,<period >, <level>**	Response Parameters **< output >:** 0: PWM0 1: PWM1 2: BUZZER **< period >:** 0..126 (when output is PWM0 or PWM1): as number of SYSCLK/8 period 0: forces DC PWM output to be high 1..126: DC period is n+1 $T_{SYSCLK/8}$, T = 1 /(26M / 8) = 307 ns Or 0..1024(when output is buzzer): freq = SYSCLK / (period * 2 * 64) When period = 203, then freq = 26M / (203 * 2* 64) = 1KHz **< level >:** ranges from 0 to 100 as a percentage
Reference SAGEM SA Proprietary	Notes

6. NETWORK SERVICE RELATED COMMANDS

6.1. +CAOC Command : Advice of charge information

AT+CAOC Advice of charge information	
Test command Syntax **AT+CAOC=?**	Response **+CAOC:** (list of supported **<mode>**s) **OK**
Read command Syntax **AT+CAOC?**	Response **+CAOC: <mode>** **OK**
Write command Syntax **AT+CAOC=<mode>**	Response If <mode> = 0 **+CAOC: <ccm>** **OK** Else **OK**
Execute command Syntax **AT+CAOC**	Response **+CAOC: <ccm>** **OK** Parameters **<mode> :** 0: query CCM value 1: deactivation of the unsolicited notification (+CCCM) 2: activation of the unsolicited notification **<ccm>:** string type; three bytes of the current CCM value in hexadecimal format
Reference [27.007] §7.16	Notes • The unsolicited code is: +CCCM: <ccm> • When activated this message is sent to the TE every time there is a change in the ccm value with a minimum of 10 seconds between 2 messages. • This AT command needs SIM and network where AOC are allowed.

6.2. +CCFC Command : Call forwarding number and conditions control

AT+CCFC Call forwarding number and conditions control	
Test command Syntax **AT+CCFC=?**	 Response **+CCFC:** (list: range of supported **<reas>**) **OK**
Write command Syntax **AT+CCFC=<reas>, <mode>[,<number>[,<type>[,<class>[,<subaddr>[,<satype>[,<time>]]]]]]**	 Response If <**mode**> = 2 and command successful: **+CCFC: <status>,<class1>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]]** **[+CCFC: <status>,<class2>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]]]** **[…]** **OK** Else **OK** Parameter **<reas>:** 0: unconditional 1: mobile busy 2: no reply 3: not reachable 4: all call forwarding 5 all conditional call forwarding **<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 octet in integer format **<class>:** is a sum of integers each representing a class of information (default 7) 1: voice 2: data 4: fax **<subaddr>:** string type sub address of format specified by **<satype>** **<satype>:** type of subaddress octet in integer format **<time>** 1...30 when "no reply" is enabled or qurred, this gives the time in seconds to wait before call is forwarded (default value is 20) **<status>:** 0: not active 1: active
Reference [27.007] § 7.11	Notes • This command allows control of the call forwarding supplementary service according to GSM 02.84

6.3. +CCWA Command : Call waiting

AT+CCWA Call waiting	
Test command Syntax **AT+CCWA=?**	 Response **+CCWA:** (list of supported **<n>**s) **OK**
Read command Syntax **AT+CCWA?**	 Response **+CCWA: <n>** **OK**
Write command Syntax **AT+CCWA=[<n>** **[,<mode>[,<class>]]]**	 Response when <**mode**>=2 and command successful **+CCWA: <status>,<class1>** **[+CCWA: <status>,<class2>[...]]** **OK** Parameters **<n>:** sets/shows the result code presentation status in the TA 0 disable 1 enable **<mode>:** when <mode> parameter is not given, network is not interrogated 0 disable 1 enable 2 query status **<class>:** sum of integers each representing a class of information (default 7): 1 voice (telephony) 2 data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 32, 64 and 128) 4 fax (facsimile services) **<status>:** 0 not active 1 active **<number>:** string type phone number of calling address in format specified by **<type>** **<type>:** type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7) **<alpha>:** optional string type alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command Select TE Character Set +CSCS **<CLI validity>:** 0 CLI valid 1 CLI has been withheld by the originator. 2 CLI is not available due to interworking problems or limitations of originating network.
Reference [27.007] § 7.12	Notes • When enabled (<n>=1), the following unsolicited code is sent to the TE: **+CCWA: <number>,<type>,<class>[,<alpha>][,<CLI validity>]**

6.4. +CHLD Command : Call hold and multiparty

AT+CHLD Call hold and multiparty	
Test command Syntax **AT+CHLD=?**	Response **+CHLD:** (list of supported **<n>**s) **OK**
Execute command Syntax **AT+CHLD=[<n>]**	Response **OK** Parameters **<n>:** 0 Terminate all held calls; or set UDUB (User Determined User Busy) for a waiting call, i.e. reject the waiting call. 1 Terminate all active calls (if any) and accept the other call (waiting call or held call) 1X Terminate the active call X (X= 1-7) 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 4 Explicit Call Transfer
Reference [27.007] §7.13	Notes

6.5. +CUSD: Unstructured Supplementary Service Data

AT+CUSD Unstructured supplementary service data	
Test command Syntax **AT+CUSD=?**	 Response **+CUSD:** (list of supported **<n>**s) **OK**
Read command Syntax **AT+CUSD?**	 Response **+CUSD: <n>** **OK**
Unsolicited Notification	**+CUSD: <m>[,<str>,<dcs>]**
Write command Syntax **AT+CUSD=[<n>[,<str>[,<dcs>]]]**	 Response **OK** Parameters **<n>:** parameter sets/shows the result code presentation status in the TA 0: disable the result code presentation to the TE (default value if no parameter) 1: enable the result code presentation to the TE 2: cancel session (not applicable to read command response) **<str>:** string type USSD-string (when <str> parameter is not given, network is not interrogated): if <dcs> indicates that 3GPP TS 23.038 [25] 7 bit default alphabet is used: if TE character set other than "HEX" (refer command Select TE Character Set +CSCS): MT/TA converts GSM alphabet into current TE character set according to rules of 3GPP TS 27.005 [24] Annex A if TE character set is "HEX": MT/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number (e.g. character Π (GSM 23) is presented as 17 (IRA 49 and 55)) if <dcs> indicates that 8-bit data coding scheme is used: MT/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)) **<dcs>:** 3GPP TS 23.038 [25] Cell Broadcast Data Coding Scheme in integer format (default 0) **<m>:** 0 : no further user action required (network initiated USSD-Notify, or no further information needed after mobile initiated operation) 1 : further user action required (network initiated USSD-Request, or further information needed after mobile initiated operation) 2 : USSD terminated by network 3 : other local client has responded 4 : operation not supported 5 : network time out

Reference	Notes
[27.007] §7.15	• When TE sends an USSD to the network, the OK result code is sent before the response of the network. When network answers, the response will be sent as an URC (as if it was a network initiated operation, in case of error +CUSD: 4 will be sent). • This allows the link not to be blocked for a long time (the network can take a long time to answer a USSD request initiated by the TE). • The USSD session can be aborted using command at+cusd=2.

6.6. +CLCC Command : List current call

AT+CLCC List current call	
Test command Syntax **AT+CLCC=?**	 Response **OK**

Execute command Syntax **AT+CLCC**	Response **[+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]]]** **[+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]]]** **[…]** **OK** Parameters **<id>:** integer type; call identification number as described in GSM 02.30 [19] subclause 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/teleservice 0: voice 1: data 2: fax 3: voice followed by data, voice mode 4: alternating voice/data, voice mode 5: alternating voice/fax, voice mode 6: voice followed by data, data mode 7: alternating voice/data, data mode 8: alternating voice/fax, fax mode 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 octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7) **<alpha>:** string type alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command Select TE Character Set +CSCS
Reference [27.007] §7.18	Notes • This commands returns the current list of calls of ME • Example: Outgoing voice call in progress **+CLCC: 1,0,0,0,0**

6.7. +CLCK Command : Facility lock

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

Execute command Syntax **AT+CLCK=<fac>,<mode>[,<passwd>[,<class>]]**	Response If <**mode**> <> 2 and command is successful **OK** If <**mode**> = 2 and command is successful **+CLCK:<status>[,<class1>[<CR>,<LF>+CLCK:<status>,class2…]]** Parameters **<fac>:** values reserved by the present document: "AO" BAOC (Barr All Outgoing Calls) (refer 3GPP TS 22.088 [6] clause 1) "OI" BOIC (Barr Outgoing International Calls) (refer 3GPP TS 22.088 [6] clause 1) "OX" BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer 3GPP TS 22.088 [6] clause 1) "AI" BAIC (Barr All Incoming Calls) (refer 3GPP TS 22.088 [6] clause 2) "IR" BIC-Roam (Barr Incoming Calls when Roaming outside the home country) (refer 3GPP TS 22.088 [6] clause 2) "AB" All Barring services (refer 3GPP TS 22.030 [19]) (applicable only for mode>=0) "AG" All outgoing barring services (refer 3GPP TS 22.030 [19]) (applicable only for <mode>=0) "AC" All incoming barring services (refer 3GPP TS 22.030 [19]) (applicable only for <mode>=0) "FD" SIM card or active application in the UICC (GSM or USIM) fixed dialing memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>) "SC" SIM (lock SIM/UICC card) (SIM/UICC asks password in MT power-up and when this lock command issued) "PN" Network Personalization (refer 3GPP TS 22.022 [33]) "PU" network subset Personalization (refer 3GPP TS 22.022 [33]) "PP" service Provider Personalization (refer 3GPP TS 22.022 [33]) **<mode>:** 0 unlock 1 lock 2 query status **<status>:** 0 not active 1 active **<passwd>:** string type; shall be the same as password specified for the facility from the ME user interface or with command Change Password +CPWD **<class>:** sum of integers each representing a class of information (default 7): 1 voice (telephony) 2 data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 32, 64 and 128) 4 fax (facsimile services) 8 short message service 16 data circuit sync 32 data circuit async
Reference [27.007] §7.4	Notes • This commands may be used by the TE to lock or unlock ME or network facilities (with a password protection) AT+CLCK="PN",2 --> Query the status of the Network Personalization +CLCK: 0 --> unlock state OK

6.8. +CLIP Command : Calling line identification presentation

AT+CLIP Calling line identification presentation

Test command Syntax **AT+CLIP=?**	 Response **+CLIP:** (list of supported **<n>**) **OK**
Read command Syntax **AT+CLIP?**	 Response **+CLIP: <n>,<m>** **OK**
Read command Syntax **AT+CLIP=<n>**	 Response **OK** Parameters **<n>:** parameter sets/shows the result code presentation status in the TA 0: disable 1: enable **<m>:** parameter shows the subscriber CLIP service status in the network 0: CLIP not provisioned 1: CLIP provisioned 2: unknown (e.g. no network, etc.) **<number>:** string type phone number of format specified by <type> **<type>:** type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7) **<subaddr>:** string type subaddress of format specified by <satype> **<satype>:** type of subaddress octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.8) **<alpha>:** optional string type alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command Select TE Character Set +CSCS **<CLI validity>:** 0: CLI valid 1: CLI has been withheld by the originator. 2 CLI is not available due to interworking problems or limitations of originating network.
Reference [27.007] § 7.6	Notes • When the presentation to the CLI at the TE is enabled, the following notification is sent after every ring notification **+CLIP: <number>,<type>[,<subaddr>,<satype>[,<alpha>,[<CLI validity>]]]**

6.9. +CLIR Command : Calling line identification restriction

AT+CLIR Calling line identification restriction	
Test command Syntax **AT+CLIR=?**	 Response **+CLIR:** (list of supported **<n>**) **OK**
Read command Syntax **AT+CLIR?**	 Response **+CLIR: <n>,<m>** **OK**
Execute command Syntax **AT+CLIR=<n>**	 Response **OK** 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 [27.007] § 7.7	Notes

6.10. +CNUM Command : Subscriber number

AT+CNUM Subscriber number	
Test command Syntax **AT+CNUM=?**	 Response **+CNUM: (0-1),(129,145,161,128-255)** **OK**
Execute command Syntax **AT+CNUM**	 Response **+CNUM: [<alpha1>],<number1>,<type1>[,<speed>,<service>[,<itc>]][<CR><LF>** **+CNUM: [<alpha2>],<number2>,<type2>[,<speed>,<service>[,<itc>]][...]]** **OK** Parameters **<alpha>:** optional alphanumeric string associated with <number>; used character set should be the one selected with command Select TE Character Set +CSCS **<number>:** string type phone number of format specified by <type> **<type>:** type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7) **<speed>:** as defined in 27.007 subclause 6.7 or +CBST **<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 also all other values below 128 are reserved by the present document **<itc>:** information transfer capability 0: 3.1kHz 1: UDI
Reference [27.007] § 7.1	Notes • Action command returns the MSISDNs related to the subscriber (this information can be stored in the SIM or in the ME) • The Read Command (AT+CNUM?) returns an error • All the numbers are in the “ON” (Own number) phonebook Example: AT+CNUM +CNUM: "TEL","0612345678",129 +CNUM: "","",255 +CNUM: "","",255 +CNUM: "","",255 OK

6.11. +COLP Command : Connected line identification presentation

AT+COLP Connected line identification presentation	
Test command Syntax **AT+COLP=?**	 Response **+COLP:** (list of supported **<n>**s) **OK**
Read command Syntax **AT+COLP?**	 Response **+COLP: <n>,<m>** **OK**
Execute command Syntax **AT+COLP=[<n>]**	 Response **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.) **<number>**, **<type>**, **<subaddr>**, **<satype>**, **<alpha>:** refer +CLIP
Reference [27.007] § 7.8	Notes • This command refers to the GSM supplementary service COLP (Connected Line Identification Presentation) that enables a calling subscriber to get the connected line identity (COL) of the called party after setting up a mobile originated call. • When enabled (and called subscriber allows) >]] the following intermediate result code is returned from TA toTE before any +CR or V.25ter [14] responses +COLP: <number>,<type>[,<subaddr>,<satype> [,<alpha>]] • If COLP=1, the OK answer to an ATD Command happens only after the call is active (and not just after the command)

6.12. +COPN Command : Read operator name

AT+COPN Read operator name	
Test command Syntax **AT+COPN=?**	 Response **OK**
Execute command Syntax **AT+COPN**	 Response **+COPN: <numeric1>,<alpha1>[<CR><LF>** **+COPN: <numeric2>,<alpha2>** **[...]]** **OK** Parameters **<numeric>:** string type; operator in numeric format (see +COPS) **<alpha>:** string type; operator in long alphanumeric format (see +COPS)
Reference [27.007] § 7.21	Notes

6.13. +COPS Command : Operator selection

AT+COPS Operator selection	
Test command Syntax **AT+COPS=?**	Response **+COPS:** [list of supported **(<stat>,**long alphanumeric **<oper>,**short alphanumeric **<oper>,**numeric **<oper>[,< AcT>])**s][,,(list of supported **<mode>**s)**,(**list of supported **<format>**s)**]** **OK**
Read command Syntax **AT+COPS?**	Response **+COPS: <mode>[,<format>,<oper>[,< AcT>]]** **OK**
Write command Syntax **AT+COPS=[<mode>[,<format> [,<oper>[,< AcT>]]]]**	Response **OK** Parameters **<mode>:** 0 automatic (<oper> field is ignored) 1 manual (<oper> field shall be present, and <AcT> optionally) 2 unsupported 3 set the read format; use with <format> 4 manual/automatic (<oper> field shall be present); if manual selection fails, automatic mode (<mode>=0) is entered **<format>:** 0 long format alphanumeric <oper> 1 short format alphanumeric <oper> 2 numeric <oper> **<oper>:** string type; <format> indicates if the format is alphanumeric or numeric **<stat>:** 0 unknown 1 available 2 current 3 forbidden **<AcT>:** access technology selected: 0 GSM 1 GSM Compact 2 UTRAN
Reference [27.007] §7.3	Notes • Only mode 0,1, 3 and 4 are supported

6.14. +CPOL Command : Preferred PLMN list

<table>
<tr><th colspan="2">AT+CPOL Preferred PLMN list</th></tr>
<tr><td>Test command

Syntax
AT+CPOL=?</td><td>

Response
+CPOL: (list of supported <index>s),(list of supported <format>s)
OK</td></tr>
<tr><td>Read command

Syntax
AT+CPOL?</td><td>

Response
+CPOL:
<index1>,<format>,<oper1>[,<GSM_AcT1>,<GSM_Comp_AcT1>,<UTRAN_AcT1>]
[+CPOL:
<index2>,<format>,<oper2>[,<GSM_AcT2>,<GSM_Comp_AcT2>,<UTRAN_AcT2>]
[...]]
OK</td></tr>
<tr><td><i>Write command</i>

Syntax
AT+CPOL=[<index>][,<format>[,<oper>[,<GSM_AcT>,<GSM_Compact_AcT>,<UTRAN_AcT>]]]</td><td>

Response
OK

Parameters
<index>: integer type; the order number of operator in the SIM/USIM preferred operator list
<format>: 0 long format alphanumeric <oper>
1 short format alphanumeric <oper>
2 numeric <oper>
<oper<i>n</i>>: string type;
<format> indicates if the format is alphanumeric or numeric (see +COPS)
<GSM_AcT<i>n</i>>: GSM access technology:
0 access technology not selected
1 access technology selected
<GSM_Comp_AcTn>: GSM compact access technology:
0 access technology not selected
1 access technology selected
<UTRA_AcTn>: UTRA access technology:
0 access technology not selected
1 access technology selected</td></tr>
<tr><td>Reference
[27.007] §7.19</td><td>Notes</td></tr>
</table>

6.15. +CPWD Command : Change password

AT+CPWD Change password	
Test command Syntax **AT+CPWD=?**	Response **+CPWD:** list of supported (**<fac>,<pwdlength>**)s **OK**
Write command Syntax **AT+CPWD=<fac>, <oldpwd>,<newpwd>**	Response **OK** Parameters **<fac>:** **"AO"** BAOC (Barr All Outgoing Calls) **"OI"** BOIC (Barr Outgoing International Calls) **"OX"** BOIC-exHC (Barr Outgoing International Calls except to Home Country) **"AI"** BAIC (Barr All Incoming Calls) **"IR"** BIC-Roam (Barr Incoming Calls when Roaming outside the home country) **"AB"** All Barring services (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. **"SC"** SIM (lock SIM card) (SIM asks password in ME power-up and when this lock command issued) **<oldpwd>, <newpwd>:** string type; <**oldpwd**> shall be the same as password specified for the facility from the ME user interface or with command Change Password +CPWD and <**newpwd**> is the new password; maximum length of password can be determined with <**pwdlength**> **<pwdlength>:** integer type maximum length of the password for the facility
Reference [27.007] §7.5	Notes • Test command returns a list of pairs which present the available facilities and the maximum length of their password. • Write command sets a new password for the facility lock function..

6.16. +CREG Command : Network registration

AT+CREG Network registration	
Test command Syntax **AT+CREG=?**	Response **+CREG:** (list of supported **<n>**s) **OK**
Read command Syntax **AT+CREG?**	Response **+CREG: <n>,<stat>[,<lac>,<ci>]** **OK**
Execute command Syntax **AT+CREG=<n>**	Response **OK** Parameters **<n>:** 0: disable network registration unsolicited result code 1: enable network registration unsolicited result code +CREG: <stat> 2: enable network registration and location information unsolicited result code +CREG: <stat>[,<lac>,<ci>] **<stat>:** 0: not registered, ME is not currently searching a new operator to register to 1: registered, home network 2: not registered, but ME is currently searching a new operator to register to 3: registration denied 4: unknown 5: registered, roaming **<lac>:** string type; two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal) **<ci>:** string type; two byte cell ID in hexadecimal format
Reference [27.007] § 7.2	Notes • Set command controls the presentation of an unsolicited result code **+CREG: <stat>** when <n>=1 and there is a change in the ME network registration status, or code **+CREG: <stat>[,<lac>,<ci>]** when <n>=2 and there is a change of the network cell.

6.17. +CSSN Command : Supplementary service notification

AT+CSSN Supplementary service notification	
Test command Syntax **AT+CSSN=?**	 Response **+CSSN:** (list of supported **<n>**s), (list of supported **<m>**s) **OK**
Read command Syntax **AT+CSSN?**	 Response **+CSSN: <n>,<m>** **OK**
Write command Syntax **AT+CSSN=<n>[,<m>]**	 Response **OK** Parameters **<n>:** 0: Suppresses the +CSSI messages 1: Activates the +CSSI messages **<m>:** 0: Suppresses the +CSSU messages 1: Activates the +CSSU messages
Reference [27.007] § 7.17	Notes Currently, Modules support the following values: • CSSI: 0 to 6 • CSSU: 0 to 5

7. PHONE BOOK MANAGEMENT

7.1. +CPBF Command : Find phonebook entries

AT+CPBF Find phonebook entries	
Test command Syntax **AT+CPBF=?**	 Response **+CPBF: [<nlength>],[<tlength>]** **OK**
Execute command Syntax **AT+CPBF=<findtext>**	 Response **[+CPBF: <index1>,<number>,<type>,<text>]** **[+CBPF: <index2>,<number>,<type>,<text>]** **OK** Parameters **<index1>, <index2>:** integer type values in the range of location numbers of phonebook memory **<number>:** string type phone number of format <type> **<type>:** type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7) **<findtext>, <text>:** string type field of maximum length <tlength>; character set as specified by command Select TE Character Set +CSCS **<nlength>:** integer type value indicating the maximum length of field <number> **<tlength>:** integer type value indicating the maximum length of field <text>
Reference [27.007] §8.13	Notes • Execution command returns phonebook entries (from the current phonebook memory storage selected with +CPBS)

7.2. +CPBR Command : Read current phonebook entries

AT+CPBR Read current phonebook entries	
Test command Syntax **AT+CPBR=?**	 Response **+CPBR: (list of supported <index>s),[<nlength>],[<tlength>]** **OK**
Execute command Syntax **AT+CPBR=<index1>** **[,<index2>]**	 Response **[+CPBR: <index1>,<number>,<type>,<text>]** **[+CPBR: <index2>,<number>,<type>,<text>]** **OK** Parameters **<index1>, <index2>, <index>:** integer type values in the range of location numbers of phonebook memory **<number>:** string type phone number of format <type> **<type>:** type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7) **<text>:** string type field of maximum length <tlength>; character set as specified by command Select TE Character Set +CSCS **<nlength>:** integer type value indicating the maximum length of field <number> **<tlength>:** integer type value indicating the maximum length of field <text>
Reference [27.007] §8.12	Notes • Execution command returns phonebook entries in location number range <index1>... <index2> from the current phonebook memory storage selected with +CPBS.

7.3. +CPBS Command : Select phonebook memory storage

AT+CPBS Select phonebook memory storage	
Test command Syntax **AT+CPBS=?**	Response **+CPBS: (list of supported <storage>s)** **OK**
Read command Syntax **AT+CPBS?**	Response **+CPBS: <storage>[,<used>,<total>]** **OK**
Execute command Syntax **AT+CPBS=<storage>**	Response **OK** Parameters **<storage>:** "DC" ME dialed calls list (+CPBW may not be applicable for this storage) $(AT R97)$ "EN" SIM/USIM (or MT) emergency number (+CPBW is not be applicable for this storage) "FD" SIM fix dialing-phonebook "MC" MT missed (unanswered received) calls list (+CPBW may not be applicable for this storage) "ON" SIM (or ME) own numbers (MSISDNs) list (reading of this storage may be available through +CNUM also) $(AT R97)$ "RC" MT received calls list (+CPBW may not be applicable for this storage) "SM" SIM phonebook **<used>:** integer type value indicating the number of used locations in selected memory **<total>:** integer type value indicating the total number of locations in selected memory
Reference [27.007] §8.11	Notes • Set command selects phonebook memory storage <storage>, which is used by other phonebook commands

7.4. +CPBW Command : Write phonebook entries

AT+CPBW Write phonebook entries	
Test command Syntax **AT+CPBW=?**	Response **+CPBW:** (list of supported **<index>**s),[**<nlength**>], (list of supported **<type>**s),**[<tlength>]** **OK**
Execute command Syntax **AT+CPBW=[<index>][,<number>[,<type>[,<text>]]]**	Response **OK** Parameters **<index>:** integer type values in the range of location numbers of phonebook memory **<number>:** string type phone number of format <type> **<type>:** type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7) ; default 145 when dialling string includes international access code character "+", otherwise 129 **<text>:** string type field of maximum length <tlength>; character set as specified by command Select TE Character Set +CSCS **<nlength>:** integer type value indicating the maximum length of field <number> **<tlength>:** integer type value indicating the maximum length of field <text>
Reference [27.007] §8.14	Notes • Execution command writes phonebook entry in location number <index> in the current phonebook memory storage selected with +CPBS

8. SMS AT COMMANDS

8.1. Preliminary comment

The commands supported in both PDU and text modes are only described hereafter in the first one. One must refer to the [27.005] for details about the latter if need be.

8.2. Parameters definition

The following parameters are used in the subsequent clauses which describe all commands. The formats of integer and string types referenced here are defined in V.25ter. The default values are for command parameters, not for result code parameters.

Message Storage Parameters

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

<mem1>: string type; memory from which messages are read and deleted (commands List Messages +CMGL, Read Message +CMGR and Delete Message +CMGD); defined values (others are manufacturer specific):

"BM" broadcast message storage

"ME" ME message storage

"MT" any of **the storages associated with ME**

"SM" (U)SIM message storage

"TA" TA message storage

"SR" status report storage

<mem2>: string type; memory to which writing and sending operations are made (commands Send Message from Storage +CMSS and Write Message to Memory +CMGW)); refer <mem1> for defined values

<mem3>: string type; memory to which received SMs are preferred to be stored (unless forwarded directly to TE; refer command New Message Indications +CNMI); refer <mem1> for defined values; received CBMs are always stored in "BM" (or some manufacturer specific storage) unless directly forwarded to TE; received status reports are always stored in "SR" (or some manufacturer specific storage) unless directly forwarded to TE

<stat>: integer type in PDU mode (default 0), or string type in text mode (default "REC UNREAD"); indicates the status of message in memory; defined values:

0 "REC UNREAD" received unread message (i.e. new message)

1 "REC READ" received read message

2 "STO UNSENT" stored unsent message (only applicable to SMs)

3	"STO SENT"	stored sent message (only applicable to SMs)
4	"ALL"	all messages (only applicable to +CMGL command)

<total1>: integer type; total number of message locations in <mem1>

<total2>: integer type; total number of message locations in <mem2>

<total3>: integer type; total number of message locations in <mem3>

<used1>: integer type; number of messages currently in <mem1>

<used2>: integer type; number of messages currently in <mem2>

<used3>: integer type; number of messages currently in <mem3>

Message Data Parameters

<ackpdu>: 3G TS 23.040 [3] RP-User-Data element of RP-ACK PDU; format is same as for <pdu> in case of SMS, but without 3G TS 24.011 [6] SC address field and parameter shall be bounded by double quote characters like a normal string type parameter

<alpha>: string type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with command Select TE Character Set +CSCS (see definition of this command in 3G TS 27.007 [9])

<cdata>: 3G TS 23.040 [3] TP-Command-Data in text mode responses; 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))

<ct>: 3G TS 23.040 [3] TP-Command-Type in integer format (default 0)

<da>: 3G TS 23.040 [3] TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (refer command +CSCS in3G TS 27.007 [9]); type of address given by <toda>

<data>: In the case of SMS: 3G TS 23.040 [3] TP-User-Data in text mode responses; format:

- if <dcs> indicates that 3G TS 23.038 [2] GSM 7 bit default alphabet is used and <fo> indicates that 3G TS 23.040 [3] TP-User-Data-Header-Indication is not set:

- if TE character set other than "HEX" (refer command Select TE Character Set +CSCS in 3G TS 27.007 [9]): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A

- if TE character set is "HEX": ME/TA converts each 7-bit character of GSM 7 bit default alphabet into two IRA character long hexadecimal number (e.g. character Π (GSM 7 bit default alphabet 23) is presented as 17 (IRA 49 and 55))

- if <dcs> indicates that 8-bit or UCS2 data coding scheme is used, or <fo> indicates that 3G TS 23.040 [3] 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: 3G TS 23.041 [4] CBM Content of Message in text mode responses; format:

- if <dcs> indicates that 3G TS 23.038 [2] GSM 7 bit default alphabet is used:

- if TE character set other than "HEX" (refer command +CSCS in 3G TS 27.007 [9]): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A

- if TE character set is "HEX": ME/TA converts each 7-bit character of the GSM 7 bit default alphabet into two IRA character long hexadecimal number

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

<dcs>: depending on the command or result code: 3G TS 23.038 [2] SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme in integer format

<dt>: 3G TS 23.040 [3] TP-Discharge-Time in time-string format: “yy/MM/dd,hh:mm:ss±zz”, where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone. E.g. 6th of May 1994, 22:10:00 GMT+2 hours equals to “94/05/06,22:10:00+08”

<fo>: depending on the command or result code: first octet of 3G TS 23.040 [3] 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>: 3G TS 23.041 [4] CBM Message Identifier in integer format

<mn>: 3G TS 23.040 [3] TP-Message-Number in integer format

<mr>: 3G TS 23.040 [3] TP-Message-Reference in integer format

<oa>: 3G TS 23.040 [3] TP-Originating-Address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (refer command +CSCS in TS 27.07); type of address given by <tooa>

<page>: 3G TS 23.041 [4] CBM Page Parameter bits 4-7 in integer format

<pages>: 3G TS 23.041 [4] CBM Page Parameter bits 0-3 in integer format

<pdu>: In the case of SMS: 3G TS 24.011 [6] SC address followed by 3G TS 23.040 [3] 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: 3G TS 23.041 [4] TPDU in hexadecimal format

<pid>: 3G TS 23.040 [3] TP-Protocol-Identifier in integer format (default 0)

<ra>: 3G TS 23.040 [3] TP-Recipient-Address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (refer command +CSCS in 3G TS 27.007 [9]); type of address given by <tora>

<sca>: 3G TS 24.011 [6] RP SC address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (refer command +CSCS in 3G TS 27.007 [9]); type of address given by <tosca>

<scts>: 3G TS 23.040 [3] TP-Service-Centre-Time-Stamp in time-string format (refer <dt>)

<sn>: 3G TS 23.041 [4] CBM Serial Number in integer format

<st>: 3G TS 23.040 [3] TP-Status in integer format

<toda>: 3G TS 24.011 [6] 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>: 3G TS 24.011 [6] TP-Originating-Address Type-of-Address octet in integer format (default refer <toda>)

<tora>: 3G TS 24.011 [6] TP-Recipient-Address Type-of-Address octet in integer format (default refer <toda>)

<tosca>: 3G TS 24.011 [6] RP SC address Type-of-Address octet in integer format (default refer <toda>)

<vp>: depending on SMS-SUBMIT <fo> setting: 3G TS 23.040 [3] TP-Validity-Period either in integer format (default 167) or in time-string format (refer <dt>)

<vp>: depending on SMS-SUBMIT <fo> setting: 3G TS 23.040 [3] TP-Validity-Period either in integer format (default 167), in time-string format (refer <dt>), or if EVPF is supported, in enhanced format (hexadecimal coded string with double quotes)

8.3. +CMGD Command : Delete SMS message

AT+CMGD Delete SMS message	
Test command Syntax **AT+CMGD=?**	 Response **+CMGD:** (list of supported **<index>**s)[,(list of supported **<delflag>**s)] **OK**
Execute command Syntax **AT+CMGD=<index>[,<delflag>]**	 Response **OK** Parameters **<delflag>:** an integer indicating multiple message deletion request as follows: 0 (or omitted) : Delete the message specified in <index> 1: Delete all read messages from preferred message storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched 2: Delete all read messages from preferred message storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched 3: Delete all read messages from preferred message storage, sent and unsent mobile originated messages leaving unread messages untouched. 4: Delete all messages from preferred message storage including unread messages.
Reference [27.005] §3.5.4	Notes • Execution command deletes message from preferred message storage <**mem1**> location <**index**>. If <**delflag**> is present and not set to 0 then the ME shall ignore <**index**> and follow the rules for <**delflag**> shown before

8.4. +CMGF Command : Select SMS message format

AT+CMGF Select SMS message format	
Test command Syntax **AT+CMGF=?**	 Response **+CMGF:** (list of supported **<mode>**s) **OK**
Read command Syntax **AT+CMGF?**	 Response **+CMGF: <mode>** **OK**
Execute command Syntax **AT+CMGF=[<mode>]**	 Response **OK** Parameters **<mode>:** 1: text mode
Reference [27.005] §3.2.3	Notes • Set command tells the TA, which input and output format of messages to use. <mode> indicates the format of messages used with send, list, read and write commands and unsolicited result codes resulting from received messages. Mode can be either PDU mode (entire TP data units used) or text mode (headers and body of the messages given as separate parameters). Text mode uses the value of parameter <chset> specified by command Select TE Character Set +CSCS to inform the character set to be used in the message body in the TA-TE interface.

8.5. +CMGL Command : List SMS messages from preferred store

AT+CMGL List SMS messages from preferred store	
Test command Syntax **AT+CMGL=?**	 Response **+CMGL:** (list of supported **<stat>**s) **OK**
Execute command Syntax **AT+CMGL=[<stat>]**	 Response Only 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** Parameters **<stat>:** 0, 1, 2, 3, 4 in PDU mode "REC UNREAD", "REC READ", "STO UNSET", "STO SENT", "ALL" in text mode
Reference [27.005] § 3.4.2 and 4.1	Notes • Execution command returns messages with status value <**stat**> from preferred message storage <mem1> to the TE. Entire data units <pdu> are returned • If status of the message is 'received unread', status in the storage changes to 'received read'. • <alpha> is optional, it is NOT used.

8.6. +CMGR Command : Read SMS message

AT+CMGR Read SMS message	
Write command Syntax **AT+CMGR=<index>**	 Response if PDU mode (+CMGF=0) and command successful: **+CMGR: <stat>,[<alpha>],<length><CR><LF><pdu>**
Reference [27.005] §3.4.3 and 4.2 (+CMGR)	Notes • Execution command returns message with location value <index> from preferred message storage <mem1> to the TE. Status of the message and entire message data unit <pdu> is returned. • With AT+CMGR, if status of the message is 'received unread', status in the storage changes to 'received read'. • <alpha> is optional, it is NOT used.

8.7. +CMGS Command : Send SMS message

AT+CMGS Send SMS message	
Test command Syntax **AT+CMGS=?**	 Response **OK**
Write command Syntax if PDU mode (+CMGF=0): **AT+CMGS=<length><CR>*PDU is given*<ctrl-Z/ESC>**	 Response if PDU mode (+CMGF=0) and sending successful: **+CMGS: <mr>[,<ackpdu>]** **OK**
Reference [27.005] § 3.5.1 and 4.3	Notes • <length> must indicate the number of octets coded in the TP layer data unit to be given (i.e. SMSC address octets are excluded). • the TA shall send a four character sequence <CR><LF><greater_than><space> (IRA 13, 10, 62, 32) after command line is terminated with <CR>; after that PDU can be given from TE to ME/TA the DCD signal shall be in ACTIVE state while PDU is given the echoing of given characters back from the TA is controlled by V.25ter echo command E. • the PDU shall be hexadecimal format (similarly as specified for <pdu>) and given in one line; ME/TA converts this coding into the actual octets of PDU when the length octet of the SMSC address (given in the PDU) equals zero, the SMSC address set with command Service Centre Address +CSCA is used; in this case the SMSC Type-of-Address octet shall not be present in the PDU, i.e. TPDU starts right after SMSC length octet sending can be cancelled by giving <ESC> character (IRA 27) <ctrl-Z> (IRA 26) must be used to indicate the ending of PDU

8.8. +CMGW Command : Write SMS message to memory

AT+CMGW Write SMS message to memory	
Test command Syntax **AT+CMGW=?**	 Response **OK**
Write command Syntax if PDU mode **(+CMGF=0):** **AT+CMGW=<length>[, <stat>]<CR>*PDU is given*<ctrl-Z/ESC>**	 Response **+CMGW: <index>** **OK**
Reference [27.005] § 3.5.3 and 4.4	Notes • Execution command stores a message 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. (ME/TA manufacturer may choose to use different default <stat> values for different message types.) The entering of PDU is done similarly as specified in command Send Message +CMGS.

8.9. +CMSS Command : Send SMS message from storage

AT+CMSS Send SMS message from storage	
Test command Syntax **AT+CMSS=?**	 Response **OK**
Write command Syntax **AT+CMSS=<index>[,<da>[,<toda>]]**	 Response if PDU mode (+CMGF=0) and sending successful: **+CMSS: <mr>[,<ackpdu>]** **OK**
Reference [27.005] § 3.5.2 and 4.7	Notes • Execution command sends message with location value <index> from message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND). If new recipient address <da> is given for SMS-SUBMIT, it shall be used instead of the one stored with the message. Reference value <mr> is returned to the TE on successful message delivery. Optionally (when +CSMS <service> value is 1 and network supports) <ackpdu> is returned. Values can be used to identify message upon unsolicited delivery status report result code • Be careful, all the messages stored in the module may not be forwarded (for instance, carrier messages as SMS replace…)

8.10. +CNMI Command : New SMS message indication

AT+CNMI New SMS message indication	
Test command Syntax **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**
Read command Syntax **AT+CNMI?**	 Response **+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr> OK**
Write command Syntax **AT+CNMI =[<mode>]** **[,<mt>][,<bm>]** **[,<ds>][,<bfr>]**	 Response **OK** 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. 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. **<mt>:** 0: No SMS-DELIVER indications are routed to the TE. 1: If SMS-DELIVER, when a SMS is received there is an unsolicited result code **+CMTI:<memory>,<index>** 2: The message is not stored in the module. **<bm>:** 0 No CBM indications are routed to the TE. 1: Idem than 0 but +CBMI are sent. 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: The buffred notification are sent. 1: TA buffer of unsolicited result codes defined within this command is cleared when **<mode> 1...3** is entered.
Reference [27.005] § 3.4.1	Notes

8.11. +CSCB Command : Select cell broadcast message

AT+CSCB Select cell broadcast message	
Test command Syntax **AT+CSCB=?**	Response **+CSCB:** (list of supported **<mode>**s) **OK**
Read command Syntax **AT+CSCB?**	Response **+CSCB: <mode>,<mids>,<dcss>** **OK**
Write command Syntax **AT+CSCB=[<mode>[,<mids>]]**	Response **OK** Parameters **<mode>:** 0: Accepts messages that are defined in **<mids>** 1: Does not accept messages that are defined in **<mids>** **<mids>:** String type; combinations of CBM message IDs (e.g. "0,1,5,320-478,922"). The number of ranges in **<mids>** parameter string is limited to 6. Intervals not allowed. **<dcss>:** string type; all different possible combinations of CBM data coding schemes (refer <dcs>) (default is empty string); e.g. "0-3,5"
Reference [27.005] § 3.3.4	Notes • Set command selects which types of CBMs are to be received by the ME. • The module doesn't managed SMSCB language, nor the data coding scheme parameter (<dcss> parameter)

8.12. +CSCA Command : SMS service center address

AT+CSCA SMS service center address	
Test command Syntax **AT+CSCA=?**	 Response **OK**
Read command Syntax **AT+CSCA?**	 Response **+CSCA: <sca>,<tosca>** **OK**
Write command Syntax **AT+CSCA=<sca>[,<tosca>]**	 Response **OK**
Reference [27.005] § 3.3.1	Notes • Set command updates the SMSC address, through which mobile originated SMS is transmitted. In text mode, setting is used by send and write 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.

8.13. +CSMP Command : Set SMS text mode parameters

AT+CSMP Set SMS text mode parameters	
Test command Syntax **AT+CSMP=?**	 Response **OK**
Read command Syntax **AT+CSMP?**	 Response **+CSMP: <fo>,<vp>,<pid>,<dcs>** **OK**
Write command Syntax **AT+CSMP=[<fo>[,<vp>[,<pid>[,<dcs>]]]]**	 Response **OK**
Reference [27.005] § 3.3.2	Notes • Set command is used to select values for additional parameters needed when SM is sent to the network or placed in storage when text format message mode is selected. 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). The format of <vp> is given by <fo>. If TA supports the EVPF, see 3G TS 23.040 [3], it shall be given as a hexadecimal coded string (refer e.g. <pdu>) with double quotes. • When storing a SMS-DELIVER from the TE to the preferred memory storage in text mode (refer command Write Message to Memory +CMGW), <vp> field can be used for <scts>.

8.14. +CSMS Command : Select Message service

AT+CSMS Select Message service	
Test command Syntax **AT+CSMS=?**	 Response **+CSMS**: (list of supported **<service>**s) **OK**
Read command Syntax **AT+CSMS?**	 Response **+CSMS: <service>,<mt>,<mo>,<bm>** **OK**
Write command Syntax **AT+CSMS=<service>**	 Response **+CSMS: <mt>,<mo>,<bm>** **OK** Parameters **<service>:** 0: GSM 03.40 and 03.41 (the syntax of SMS AT commands is ompatible with GSM 27.05 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) **<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 [27.005] §3.2.1	Notes • Set command selects messaging service <**service**>. It returns the types of messages supported by the ME: <**mt**> for mobile terminated messages, <**mo**> for mobile originated messages and <**bm**> for broadcast type messages.

8.15. +CPMS Command : Preferred Message Storage

AT+CPMS Preferred Message Storage	
Test command Syntax **AT+CPMS=?**	Response **+CPMS**: (list of supported **<mem1>**s), (list of supported **<mem2>**s), (list of supported **<mem3>**s) **OK**
Read command Syntax **AT+CPMS?**	Response **+CPMS: <mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>, <total3>** **OK**
Write command Syntax **AT+CPMS=<mem1>[,<mem2>[,<mem3>]]**	Response **+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3>** **OK** Parameters See chapter 8.2
Reference [27.005] §3.2.2	Notes • Set command selects memory storages <mem1>,<mem2>,<mem3> to be used for reading, writing, etc. • Default values are : mem1 = “ME”, mem2 = “ME”, mem3 = “MT” • Configuration is set to default values when the module starts. Example AT+CPMS=? +CPMS: ("SM"),("SM"),("SM") OK AT+CPMS? +CPMS: "SM",27,50,"SM",27,50,"SM",27,50 OK AT+CPMS="SM" +CPMS: 27,50,27,50,27,50 OK AT+CPMS="SM","SM","SM" +CPMS: 27,50,27,50,27,50 OK

8.16. +CSDH Command : Show text mode parameters

AT+CSDH Show Text Mode Parameters	
Test command Syntax **AT+CSDH=?**	Response **+CSDH**: (list of supported **<show>**s) **OK**
Read command Syntax **AT+CSDH?**	Response **+CSDH: <show>** **OK**
Write command Syntax **AT+CSDH=[<show>]**	Response **OK** Parameter **<show> :** 0 : do not show header values defined in commands +CSCA and +CSMP (<sca>, <tosca>, <fo>, <vp>, <pid> and <dcs>) nor <length>, <toda> or <tooa> in +CMT, +CMGL, +CMGR result codes for SMS-DELIVERs and SMS-SUBMITs in text mode; for SMS-COMMANDs in +CMGR result code, do not show <pid>, <mn>, <da>, <toda>, <length> or <cdata> 1 : show the values in result codes
Reference [27.005] §3.3.3	Notes • Set command controls whether detailed header information is shown in text mode result codes

8.17. +CSAS Command : Save settings

AT+CSAS Save Settings	
Test command Syntax **AT+CSAS=?**	 Response **+CSAS**: (list of supported **<profile>**s) **OK**
Write command Syntax **AT+CSAS=[<profile>]**	 Response **OK** Parameter **<profile> :** profile number where user settings are to be stored (0 only)
Reference [27.005] §3.3.3	Notes • Saves the active message service settings (+CSMP) to a non volatile memory. Currently, mobile phone supports only one profile.

8.18. +CRES Command : Restore settings

AT+CRES Restore Settings	
Test command Syntax **AT+CRES=?**	 Response **+CRES:** (list of supported **<profile>**s) **OK**
Write command Syntax **AT+CRES=[<profile>]**	 Response **OK** Parameter **<profile> :** profile number where user settings are stored 0 : values saved by the user 10 : default factory settings
Reference [27.005] §3.3.3	Notes • Restore the saved message service settings (+CSMP) from a non volatile memory.

9. DATA AND FAX AT COMMANDS

9.1. +CBST Command : Select bearer service type

AT+CBST Select bearer service type	
Test command Syntax **AT+CBST=?**	Response **+CBST:** (list of supported **<speed>**s),(list of supported **<name>**s),(list of sup-ported **<ce>**s) **OK**
Read command Syntax **AT+CBST?**	Response **+CBST: <speed>,<name>,<ce>** **OK**
Write command Syntax **AT+CBST=[<speed>[,<name>[,<ce>]]]**	Response **OK** Parameter **<speed>:** 0 auto bauding (automatic selection of the speed; this setting is possible in case of 3.1 kHz modem and non-transparent service) 7 9600 bps (V.32) 71 9600 bps (V.110 or X.31 flag stuffing) **<name>:** 0 data circuit asynchronous (UDI or 3.1 kHz modem) **<ce>:** 1 non-transparent
Reference [27.007] §6.7	Note • Set command selects the bearer service <name> with data rate <speed>, and the connection element <ce> to be used when data calls are originated (refer 3G TS 22.002 [1]). Values may also be used during mobile terminated data call setup, especially in case of single numbering scheme calls.

9.2. +CRLP Command : Select radio link protocol parameter

<table>
<tr><th colspan="2">AT+CRLP Select radio link protocol parameter</th></tr>
<tr><td>Test command

Syntax
AT+CRLP=?</td><td>

Response
+CRLP: (list of supported <iws>s),(list of supported <mws>s),(list of supported <T1>s),(list of supported <N2>s)[,<ver1>[,(list of supported <T4>s)]]
[+CRLP: (list of supported <iws>s),(list of supported <mws>s),(list of supported <T1>s),(list of supported <N2>s)[,<ver1>[,(list of supported <T4>s)]][...]]</td></tr>
<tr><td>Read command

Syntax
AT+CRLP?</td><td>

Response
+CRLP: <iws>,<mws>,<T1>,<N2>[,<ver1>[,<T4>]]
[+CRLP: <iws>,<mws>,<T1>,<N2>[,<ver2>[,<T4>]]
[...]]
OK</td></tr>
<tr><td>Write command

Syntax
AT+CRLP=[<iws>[,<mws>[,<T1>[,<N2>[,<ver>[,<T4>]]]]]]</td><td>

Response
OK

Parameters
<ver>, <verx>: RLP version number in integer format; when version indication is not present it shall equal 0
<iws>, <mws>, <T1>, <N2>, <T4>: IWF to MS window size, MS to IWF window size, acknowledgement timer T1, retransmission attempts N2, re-sequencing period T4 in integer format (default values and value ranges depend on RLP version; refer 3G TS 24.022 [18]): T1 and T4 are in units of 10 ms.</td></tr>
<tr><td>Reference
[27.007] §6.8</td><td>Notes
• Radio link protocol (RLP) parameters used when non-transparent data calls are originated may be altered with set command. Available command subparameters depend on the RLP versions implemented by the device (e.g. <ver> may not be available if device supports only versions 0 and 1).
• If radio link protocol is not used, but some other error correcting protocol (for transparent data calls), V.25ter [14] Error Control Selection test command +ES=? may be used to indicate the presence of the protocol.
• Read command returns current settings for each supported RLP version <verx>. Only RLP parameters applicable to the corresponding <verx> are returned.
• Test command returns values supported by the TA as a compound value. If ME/TA supports several RLP versions <verx>, the RLP parameter value ranges for each <verx> are returned in a separate line.
• Versions 0 and 1 share the same parameter set. Read and test commands shall return only one line for this set (where <verx> is not present).</td></tr>
</table>

9.3. +CR Command : Service reporting control

AT+CR Service reporting control	
Test command Syntax **AT+CR=?**	Response **+CR:** (list of supported **<mode>**s) **OK**
Read command Syntax **AT+CR?**	Response **+CR: <mode>** **OK**
Write command Syntax **AT+CR=[<mode>]**	Response **OK** Parameters **<mode>:** 0: disables reporting 1: enables reporting **<serv>:** ASYNC: asynchronous transparent SYNC: synchronous transparent REL ASYNC: asynchronous non-transparent REL SYNC: synchronous non-transparent GPRS [<L2P>] GPRS The optional <L2P> proposes a layer 2 protocol to use between the MT and the TE. It is defined in the Enter GPRS Data Mode (+CGDATA) command.
Reference [27.007] §6.9	Notes • Set command controls whether or not intermediate result code +CR: <serv> is returned from the TA to the TE. If enabled, the 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 the intermediate result code CONNECT is transmitted. • This command replaces V.25ter [14] command Modulation Reporting Control +MR, which is not appropriate for use in the GSM/UMTS network. Possible error control (other than radio link protocol) and data compression reporting can be enabled with V.25ter commands Error Control Reporting +ER and Data Compression Reporting +DR.

9.4. +FCLASS Command : Fax : Select, read or test service class

AT+FCLASS Fax : Select, read or test service class	
Test command Syntax **AT+FCLASS=?**	 Response (list of supported **<n>**s) **OK**
Read command Syntax **AT+FCLASS?**	 Response **<n>** **OK**
Write command Syntax **AT+FCLASS=<n>**	 Response **OK** Parameters **<n>:** 0: Select Data mode (default) 1: Select Facsimile Class 1
Reference [27.007] § C.2.1	Notes

9.5. +FAE Command : Data/Fax auto answer

AT+FAE Data/Fax auto answer	
Test command Syntax **AT+FAE=?**	 Response (List of supported **<n>**) **OK**
Read command Syntax **AT+FAE?**	 Response **<n>** **OK**
Write command Syntax **AT+FAE=<n>**	 Response **OK** Parameters **<n>:** 0: Disable data/fax auto answer mode. The modem answers as a fax modem only (default) 1: Enable data/fax auto answer mode. The modem answers as a fax or data modem
Reference TIA578A	Notes • Not support.

9.6. +FRM Command : Receive data

AT+FRM Receive data	
Test command Syntax **AT+FRM=?**	 Response (List of supported **<mode>**s) **OK**
Read command Syntax **AT+FRM?**	 Response **+FRM:<mode>** **OK**
Write command Syntax **AT+FRM=<mode>**	 Response **CONNECT** Or **NO CARRIER** Parameters **<mode>:** Modulation used by the other modem to transmit data. The mobile phone should then enter in a receiving mode, using that modulation. 24: V27 ter 2400 bps 48: V27 ter 4800 bps 72: V29 7200 bps 96: V29 9600 bps
Reference	Notes • This command is fully supported only in fax mode (AT+FCLASS=1). • Set command only supported during FAX communication established. Read and test command only supported in command mode • Read command always return 9600 bits/s because the communication must begin at this speed

9.7. +FTM Command : Transmit data

AT+FTM Transmit data	
Test command Syntax **AT+FTM=?**	 Response (List of supported **< mode >**s) **OK**
Read command Syntax **AT+FTM?**	 Response **+FTM:<mode>** **OK**
Write command Syntax **AT+FTM=<** mode **>**	 Response **CONNECT** Or **NO CARRIER** Parameters **< mode >:** Modulation used by the other modem to transmit data. The mobile phone should then enter in a receiving mode, using that modulation. 24: V27 ter 2400 bps 48: V27 ter 4800 bps 72: V29 7200 bps 96: V29 9600 bps
Reference TIA578A	Notes • This command is fully supported only in fax mode (AT+FCLASS=1). • Set command only supported during FAX communication established. Read and test command only supported in command mode. • Read command always return 9600 bits/s because the communication must begin at this speed

9.8. +FRS Command : Receive silence

AT+FRS Receive silence	
Test command Syntax **AT+FRS=?**	 Response (list of supported **<n>**s) **OK**
Read command Syntax **AT+FRS?**	 Response **OK**
Write command Syntax **AT+FRS=<n>**	 Response **OK** Parameters **<n>:** number of times of 10 ms of silence detected on the line to be waited for by the modem before it can report OK to DTE (0-255)
Reference TIA578A	Notes • Not support. This command is fully supported only in fax mode (AT+FCLASS=1).

9.9. +FTS Command : Stop transmission and wait

AT+FTS Stop transmission and wait	
Test command Syntax **AT+FTS=?**	 Response (list of supported **< mode >**s) **OK**
Read command Syntax **AT+FTS?**	 Response **+FTM:<mode>** **OK**
Write command Syntax **AT+FTS=<** mode **>**	 Response **OK** Parameters **< mode >:** number of times of 10 ms of silence detected on the line to be waited for by the modem before it can report OK to DTE (0-255)
Reference	Notes • Not support. This command is fully supported only in fax mode (AT+FCLASS=1).

9.10. +FRH Command : Receive data using HDLC framing

AT+FRH Receive data using HDLC framing	
Test command Syntax **AT+FRH=?**	 Response (list of supported **< mode >**s) **OK**
Read command Syntax **AT+FRH?**	 Response **+FRH:<mode>** **OK**
Write command Syntax **AT+FRH=< mode >**	 Response **OK** Parameters **< mode >:** modulation used by the other modem to transmit data, using HDLC protocol. 3: V21 channel 2 300 bps
Reference TIA578A	Notes • This command is fully supported only in fax mode (AT+FCLASS=1). • Set command only supported during FAX communication established.

9.11. +FTH Command : Transmit data using HDLC framing

AT+FTH Transmit data using HDLC framing	
Test command Syntax **AT+FTH=?**	 Response (lsit of supported **< mode >**s) **OK**
Read command Syntax **AT+FTH?**	 Response **+FTH:<mode>** **OK**
Write command Syntax **AT+FTH=< mode >**	 Response **OK** Parameters **< mode >:**modulation used by the other modem to transmit data, using HDLC protocol. 3: V21 channel 2 300 bps
Reference	Notes • This command is fully supported only in fax mode (AT+FCLASS=1).

10. GPRS AT COMMANDS

These commands are fully supported when the SIM card and the network have GPRS capability.

10.1. +CGATT Command : PS Attach or Detach

AT+CGATT PS Attach or Detach	
Test command Syntax **AT+CGATT=?**	 Response **+CGATT:** (list of supported **<state>**s) **OK**
Read command Syntax **AT+CGATT?**	 Response **+CGATT: <state>** **OK**
Write command Syntax **AT+CGATT= <state>**	 Response **OK** Parameters **<state>:** indicates the state of PS attachment 0: detached 1: attached
Reference [27.007] §10.1.9	Notes

10.2. +CGACT Command : PDP context activate or deactivate

AT+CGACT PDP context activate or deactivate	
Test command Syntax **AT+CGACT=?**	 Response **+CGACT:** (list of supported **<state>**s) **OK**
Read command Syntax **AT+CGACT?**	 Response **+CGACT: <cid>, <state>** **OK**
Write command Syntax **AT+CGACT= <state>[, <cid>]**	 Response **OK** Parameters **<state>:** indicates the state of PDP context activation 0: deactivated 1: activated Other values are reserved and will result in an ERROR response to the execution command. **<cid>:** PDP Context Identifier is 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.
Reference [27.007] §10.1.10	Notes

10.3. +CGCLASS Command : GPRS mobile station class

AT+CGCLASS GPRS mobile station class	
Test command Syntax **AT+CGCLASS=?**	 Response **+CGCLASS:** (list of supported **<class>**s) **OK**
Read command Syntax **AT+CGCLASS?**	 Response **+CGCLASS: <class>** **OK**
Write command Syntax **AT+CGCLASS=<class>**	 Response **OK** Parameters **<class>:** A string parameter which indicates the GPRS mobile class (in descending order of functionality) "B" class B "CC" class C in circuit switched only mode (lowest)
Reference [27.007] §10.1.17	Notes • Class A is not supported; the module must be restarted in order to be effective.

10.4. +CGDCONT Command : Define PDP context

<table>
<tr><th colspan="2">AT+ CGDCONT Define PDP context</th></tr>
<tr><td>Test command

Syntax
AT+CGDCONT=?</td><td>

Response
+CGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s), (list of supported <h_comp>s)[,(list of supported <pd1>s)[,…[,(list of supported <pdN>s)]]][...]]
OK</td></tr>
<tr><td>Read command

Syntax
AT+CGDCONT?</td><td>

Response
+CGDCONT: <cid>, <PDP_type>, <APN>,<PDP_addr>, <data_comp>, <head_comp>[,<pd1>[,…[,pdN]]
OK</td></tr>
<tr><td>Write command

Syntax
AT+CGDCONT=<cid> ,<PDP_type> ,<APN> ,<PDP_addr> ,<d_comp> ,<h_comp></td><td>

Response
OK

Parameters
<PDP_type>: Packet Data Protocol type
A string parameter which specifies the type of packet data protocol. Only IP Internet Protocol - IETF STD 5) is supported.
<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.
<PDP_address>: a string parameter that identifies the MT in the address space applicable to the PDP. As only IP is currently supported, it shall be an IP address.
If the value is null (“0.0.0.0” or 0), 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 and only value supported)
<h_comp>: a numeric parameter that controls PDP header compression
0: off (default and only value supported)
<pd1>, … <pdN>: zero to N string parameters whose meanings are specific to the <PDP_type></td></tr>
<tr><td>Reference
[27.007] §10.1.1</td><td>Notes
• The set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, <cid>. The number of PDP contexts that may be in a defined state at the same time is given by the range returned by the test command.
• A special form of the set command, +CGDCONT= <cid> causes the values for context number <cid> to become undefined.</td></tr>
</table>

10.5. +CGDATA Command : Enter data state

AT+CGDATA Command Enter data state	
Test command Syntax **AT+CGDATA=?**	 Response **+CGDATA:** (list of supported **<L2P>**s) **OK**
Write command Syntax **AT+CGDATA=[<L2P>** **,[<cid> [,<cid> [,…]]]]**	 Response **CONNECT** Parameters **<L2P>:** a string parameter that indicates the layer 2 protocol to be used between the TE and MT. Only PPP (Point-to-point) protocol is currently allowed. **<cid>:** a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT command). 1..3 If option SECONDARY_PDP_CONTEXT_FTR is disabled 1..11 If option SECONDARY_PDP_CONTEXT_FTR is enabled
Reference [27.007] §	Notes • This command is used for PS internal tests with network emulators. • On real network functioning of +CGACT and then +CGDATA for data transfer is not guaranteed. When activating a PDP context, PCO (protocol configuration option) has to be provided to network. PCO can be provided to network only if a PPP negotiation has been initiated between mobile and TE before activation (refer to TS 27.060). For this, the channel must be in online data mode before activation. PPP server will first negotiate PCO and then request PDP context activation: this is possible only when using ATD*98 or ATD*99 command (online data state is entered immediately when ATD received) Moreover +CGDATA does not fully complies with recommendation, especially it does not behave as ATD*9x Command : +CGDATA does not perform PS attach or PDP context activation. A PDP must have been activated with +CGACT previously. • +CGDATA is used to open PPP server in “FTA mode” and switch channel to online data mode To go back in online command, the “+++” escape sequence has to be sent on link in data mode +CGDATA can also be used to switch again channel to online data mode (after “+++”) if PDP is still active (same behavior has ATO command). • If no parameters are provided (i.e. +CGDATA=<CR>), the last <cid> activated with +CGACT is used or the default EEPROM <cid> is used. • Only one <cid> in the command is supported (i.e. +CGDATA=”PPP”,<cid><CR>)

10.6. +CGPADDR Command : Show PDP address

AT+ CGPADDR Show PDP address	
Test command Syntax **AT+CGPADDR=?**	Response **+CGPADDR:** (list of supported **<cid>**s) **OK**
Write command Syntax **AT+CGPADDR=<cid>[,<cid>,[…]]**	Response **+CGPADDR: <cid>, <PDP_addr>** **[+CGPADDR: <cid>, <PDP_addr>** **[…]]** **OK** Parameters **< 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. "<n>.<n>.<n>.<n>" where <n>=0..255 **<cid>:** 1..3
Reference [27.007] §10.1.14	Notes • The execution command returns a list of PDP addresses for the specified context identifiers • Example : Ask for IP address according to cid=1 (identify the PDP context) AT+CGPADDR=1 +CGPADDR: 1, “10.20.30.40”

10.7. +CGQMIN Command : Quality of service profile (minimum acceptable)

AT+ CGQMIN Quality of service profile (minimum acceptable)	
Test command Syntax **AT+CGQMIN=?**	Response **+CGQMIN: <PDP_type>,**(list of supported **<precedence>**s)**,**(list of supported **<delay>**s)**,**(list of supported **<reliability>**s)**,**(list of supported **<peak>**s)**,**(list of supported **<mean>**s) **[+CGQMIN:...]** **OK**
Read command Syntax **AT+CGQMIN?**	Response **+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>** **[+CGQMIN: ...]** **OK**
Write command Syntax **AT+CGQMIN=[<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]]**	Response **OK/** Parameters **<precedence>:** numeric parameter for the precedence class 0: network subscribed value 1: High Priority Service commitments shall be maintained ahead of precedence classes 2 and 3 2: Normal priority Service commitments shall be maintained ahead of precedence class 3 3: Low priority **<delay>:** numeric parameter for the delay class **<reliability>:** numeric parameter for the reliability class 0: network subscribed value 1: Non real-time traffic , error-sensitive application that cannot cope with data loss 2: Non real-time traffic, error-sensitive application that can cope with infrequent data loss 3: Non real-time traffic, error-sensitive application that can cope with data loss, GMM/SM, and SMS 4: Real-time traffic, error-sensitive application that can cope with data loss 5: Real-time traffic, error non-sensitive application that can cope with data loss **<peak>:** numeric parameter for the peak throughput class 0: network subscribed value 1: Up to 1 000 (8 kbit/s) 2: Up to 2 000 (16 kbit/s) 3: Up to 4 000 (32 kbit/s) 4: Up to 8 000 (64 kbit/s) 5: Up to 16 000 (128 kbit/s) 6: Up to 32 000 (256 kbit/s) 7: Up to 64 000 (512 kbit/s) 8: Up to 128 000 (1 024 kbit/s) 9: Up to 256 000 (2 048 kbit/s)

	<mean>:	numeric parameter for the mean throughput class 0: network subscribed value 1: 100 (~0.22 bit/s) 2: 200 (~0.44 bit/s) 3: 500 (~1.11 bit/s) 4: 1 000 (~2.2 bit/s) 5: 2 000 (~4.4 bit/s) 6: 5 000 (~11.1 bit/s) 7: 10 000 (~22 bit/s) 8: 20 000 (~44 bit/s) 9: 50 000 (~111 bit/s) 10: 100 000 (~0.22 kbit/s) 11: 200 000 (~0.44 kbit/s) 12: 500 000 (~1.11 kbit/s) 13: 1 000 000 (~2.2 kbit/s) 14: 2 000 000 (~4.4 kbit/s) 15: 5 000 000 (~11.1 kbit/s) 16: 10 000 000 (~22 kbit/s) 17: 20 000 000 (~44 kbit/s) 18: 50 000 000 (~111 kbit/s) 31: best effort
Reference [27.007] §10.1.7	Notes	

10.8. +CGQREQ Command : Request quality of service profile

AT+ CGQREQ Request quality of service profile	
Test command Syntax **AT+CGQREQ=?**	Response **+CGQREQ: <PDP_type>,** (list of supported **<precedence>**s),(list of supported **<delay>**s),(list of supported **<reliability>**s),(list of supported **<peak>**s),(list of supported **<mean>**s) **[+CGQREQ: <PDP_type>,** (list of supported **<precedence>**s),(list of supported **<delay>**s),(list of supported **<reliability>**s),(list of supported **<peak>**s),(list of supported **<mean>**s) **[…]]** **OK**
Read command Syntax **AT+CGQREQ?**	Response **+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>** **[+CGQREQ: <cid>,<precedence>,<delay>,<reliability.>,<peak>,<mean>** **[…]]** **OK**
Write command Syntax **+CGQREQ=[<cid>** **[,<precedence >** **[,<delay> [,<reliability.>** **[,<peak> [,<mean>]]]]]]**	Response **OK** Parameters **<cid>:** a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT command). **<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 [27.007] §10.1.4	Notes • This command allows the TE to specify a Quality of Service Profile that is used when the MT sends an Activate PDP Context Request message to the network. • If a value is omitted for a particular class then the value is considered to be unspecified

10.9. +CGREG Command : GPRS network registration status

AT+ CGREG GPRS network registration status	
Test command Syntax **AT+CGREG=?**	 Response **+CGREG:** (list of supported **<n>**s) **OK**
Read command Syntax **AT+CGREG?**	 Response **+CGREG: <n>,<stat>[,<lac,<ci>]** **OK**
Write command Syntax **AT+CGREG=[<n>]**	 Response **OK** Parameters **<n>:** 0: disable network registration unsolicited result code 1: enable network registration unsolicited result code +CGREG: <stat> 2: enable network registration and location information unsolicited result code +CGREG: <stat>[,<lac>,<ci>] **<stat>:** 0: not registered, ME is not currently searching an operator to register to The MS is in GMM state GMM-NULL or GMM-DEREGISTERED-INITIATED. The GPRS service is disabled, the MS is allowed to attach for GPRS if requested by the user. 1: registered, home network The MS is in GMM state GMM-REGISTERED or GMM-ROUTING-AREA-UPDATING-INITIATED INITIATED on the home PLMN. 2: not registered, but ME is currently trying to attach or searching an operator to register to The MS is in GMM state GMM-DEREGISTERED or GMM-REGISTERED-INITIATED. The GPRS service is enabled, but an allowable PLMN is currently not available. The MS will start a GPRS attach as soon as an allowable PLMN is available. 3: registration denied The MS is in GMM state GMM-NULL. The GPRS service is disabled, the MS is not allowed to attach for GPRS if requested by the user. 4: unknown 5: registered, roaming The MS is in GMM state GMM-REGISTERED or GMM-ROUTING-AREA-UPDATING-INITIATED on a visited PLMN. **<lac>:** string type; two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal) **<ci>:** string type; two byte cell ID in hexadecimal format
Reference [27.007] §10.1.19	Notes • The set command controls the presentation of an unsolicited result code **+CGREG: <stat>** when <**n**>=1 and there is a change in the MT's GPRS network registration status, or code **+CGREG: <stat>[,<lac>,<ci>]** when <n>=2 and there is a change of the network cell.

11. SIM APPLICATION TOOLKIT AT COMMANDS

11.1. Preliminary comments

- SAGEM SA has developed a proprietary set of commands to allow a DTE to interface with the SIM Application Toolkit

- Details about the implementation of the SIM Application Toolkit are provided in [STK]

- The following table gives the list of each SIM ToolKit *PSSTK command parameter and the *PSSTK URC Format.

Command name	*PSSTK URC Format	*PSSTK command parameters list
COMMAND REJECTED	NULL	"COMMAND REJECTED", CommandNumber, cause
NOTIFICATION	AT*PSSTK: "NOTIFICATION", <CommandNumber>, <TypeOfCommand>, <Presence>, <Alphabet>, <AlphaId>, <IconId>, <IconQualifier>	"NOTIFICATION", CommandNumber, IconDisplay
SETUP CALL	AT*PSSTK: "SETUP CALL", <CommandNumber>,<TypeOfCommand>,<Confirmation>,<Presence1>,<Alphabet1>,<AlphaId1>,<IconId1>,<IconQualifier1>,<Presence2>,<Alphabet2>,<AlphaId2>,<IconId2>,<IconQualifier2>,<RepeatIndicator>	"SETUP CALL", CommandNumber, IconDisplay
DISPLAY TEXT	AT*PSSTK: "DISPLAY TEXT", <CommandNumber>,<Priority>,<Clear>,<ImmediateResponse>,<Alphabet>,<Text>,<IconId>,<IconQualifier>	"DISPLAY TEXT", CommandNumber, IconDisplay
GET INKEY	AT*PSSTK: "GET INKEY", <CommandNumber>, <ResponseFormat>, <ResponseAlphabet>, <HelpInfo>,<Alphabet>,<Text>,<IconId>,<IconQualifier>	"GET INKEY", alphabet,Text,CommandNumber, IconDisplay, HelpRequest
GET INPUT	AT*PSSTK: "GET INPUT", <CommandNumber>, <ResponseFormat>,<ResponseAlphabet>,<HideEntry>,<AlphabetText>,<Text>,<IconId>,<IconQualifier>,<AlphabetDefault>,<DefaultText>,<MinLength>,<MaxLength>,<HelpInfo>	"GET INPUT", alphabet,Text,CommandNumber, IconDisplay, HelpRequest
PLAY TONE	AT*PSSTK: "PLAY TONE", <Presence>, <Alphabet>, <AlphaId>, <IconId>, <IconQualifier>, <CommandNumber>, <Tone>,<Duration>	"PLAY TONE", CommandNumber, IconDisplay
SELECT ITEM	AT*PSSTK: "SELECT ITEM", <Presence>, <AlphaId>, <Alphabet>,<IconId>, <IconQualifier>, <CommandNumber>, <DefaultItem>, <HelpInfo>, <NumberOfItem>	"SELECT ITEM", CommandNumber,ItemIdentifier, IconDisplay, IconDisplay,HelpRequest
SETUP MENU	AT*PSSTK: "SETUP MENU", <Presence>, <Alphabet>, <AlphaId>, <IconId>, <IconQualifier>, <CommandNumber>,<DefaultItem>,<HelpInfo>,<NumberOfItem>	"SETUP MENU",CommandNumber, IconDisplay
REMOVE MENU	AT*PSSTK: "REMOVE MENU",<CommandNumber>	"REMOVE MENU ", CommandNumber
MENU SELECTION	NULL	"MENU SELECTION",ItemIdentifier, HelpRequest
ALL CALLS DISCONNECTED	NULL	"ALL CALLS DISCONNECTED "
USER ACTIVITY	NULL	"USER ACTIVITY"
IDLE SCREEN AVAILABLE	NULL	"IDLE SCREEN AVAILABLE"
SETUP CALL TERMINATED	NULL	"SETUP CALL TERMINATED "
GET ITEM LIST	AT*PSSTK:"GET ITEM LIST", <Item_index>,<ItemIdentifier>,<Alphabet>, <p_Text>,<NextAction>,<IconId>, <IconQualifier>	"GET ITEM LIST", NumberOfItems
LANGUAGE NOTIFICATION	AT*PSSTK:"LANGUAGE NOTIFICATION", <CommandNumber>,<SpecificLanguage>, <SimLanguage>	NULL
SETUP IDLE MODE TEXT	AT*PSSTK:"SETUP IDLE MODE TEXT", <CommandNumber>, <Alphabet>, <Text>, <IconId>, <IconQulifier>	"SETUP IDLE MODE TEXT", CommandNumber, IconDisplay
REFRESH	AT*PSSTK: "REFRESH",<CommandNumber>,<RefreshType>	NULL
END CALL	AT*PSSTK:"ENDCALL",<CommandNumber>,<CauseSelect>,<Cause>,<CallId>	NULL
DISCONNECT	AT*PSSTK="DISCONNECT",<CauseSelect>,<Cause>,<CallIdListStatus0>,<CallIdListStatus1>,<CallIdListStatus2>,<CallIdListStatus3>,<CallIdListStatus4>,<CallIdListStatus5>,<CallIdListStatus6>,<CallId>,<MaxNumberOfCallRepeatAttempts>,<RepeatCallAttemptWaitingTime>,<CallIdPreviousState>	NULL
PROCESSING	AT*PSSTK: "PROCESSING",<CommandNumber>	NULL
END SESSION	AT*PSSTK: "END SESSION"	NULL
ABORT SESSION	AT*PSSTK: "ABORT SESSION"	NULL
CONTROL BY SIM	AT*PSSTK: "CONTROL BY SIM",<TypeOfCommand>,<Presence>,<Alphabet>,<AlphaId>	NULL

11.2. *PSSTKI Command : SIM ToolKit Interface configuration

AT*PSSTKI SIM ToolKit Interface configuration	
Test command Syntax **AT*PSSTKI=?**	 Response ***PSSTKI:** (List of supported **<mode>s**) **OK**
Read command Syntax **AT*PSSTKI?**	 Response ***PSSTKI:<mode>** **OK**
Write command Syntax **AT*PSSTKI=<mode>**	 Response **OK** Parameter **<mode>:** 0: no *PSSTK unsolicited result code will be sent to TE. TE won't send *PSSTK command to Module. 1: any *PSSTK unsolicited result code will be sent to TE.
Reference SAGEM SA Proprietary	Notes The aim of this AT command is to configure the AT interface for SIM ToolKit support.

11.3. *PSSTK Command : SIM Toolkit command

AT*PSSTK SIM Toolkit *PSSTK as command	
Write command Syntax **AT*PSSTK=<msg>,<parameter1>,…,<parameterN>**	Response **OK** Parameters **<msg>:** 1 Command require a SIM Toolkit answer: ”MENU SELECTION” “GET ITEM LIST” 2 Command does not require a SIM Toolkit answer: “ALL CALLS DISCONNECTED” “USER ACTIVITY” “IDLE SCREEN AVAILABLE” “SETUP CALL TERMINATED” 3 Command used to answer an unsolicited result code: “COMMAND REJECTED” “NOTIFICATION” “SETUP CALL” “DISPLAY TEXT” “GET INKEY” “GET INPUT” “PLAY TONE” “SELECT ITEM” “SETUP MENU” “REMOVE MENU” “SETUP IDLE MODE TEXT” **<parameter i>:** Depends of <**msg**> value, For each value of <**msg**> a parameter list is defined. For detail information about parameter list, please see the ….table
Reference SAGEM SA Proprietary	Notes The *PSSTK can be used in two different ways: • *PSSTK is an unsolicited result code received from SIM Toolkit application • *PSSTK is sent by the DTE to the ME (used as a normal AT command)

11.4. *PSSTK URC : SIM Toolkit unsolicited result code

*PSSTK Unsolicited result code or possible response(s)	
Result code or Possible response(s)	Response ***PSSTK: <msg>,<parameter1>, …, <parameterN>** **OK** Parameters **<msg>:** 1 Unsolicited result code not requiring an answer from DTE “LANGUAGE NOTIFICATION” “CONTROL BY SIM” “REFRESH” “END CALL” “DISCONNECT” “PROCESSING” “END SESSION” “ABORT SESSION” 2 Unsolicited result code requiring an answer from DTE “NOTIFICATION” “SETUP CALL” “DISPLAY TEXT” “GET INKEY” “GET INPUT” “PLAY TONE” “SELECT ITEM” “SETUP MENU” “REMOVE MENU” “SETUP IDLE MODE TEXT” **<parameter i>:** Depends of <**msg**> value, For each value of <**msg**> a parameter list is defined. For detail information about parameter list, please see the ….table
	Notes The *PSSTK can be used in two different ways: • *PSSTK is an unsolicited result code received from SIM Toolkit application • *PSSTK is sent by the DTE to the ME (used as a normal AT command)

12. AUDIO COMMANDS

12.1. +CLVL Command : Loudspeaker volume level

AT+CLVL Loudspeaker volume level	
Test command Syntax **AT+CLVL=?**	 Response **+CLVL:** (list of supported **<level>**s) **OK**
Read command Syntax **AT+CLVL?**	 Response **+CLVL: <level>** **OK**
Write command Syntax **AT+CLVL=<level>**	 Response **OK** Parameter **<level>:** Loudspeaker level (smallest value represents the lowest sound)
Reference [27.007] § 8.23	Notes

12.2. +VIP Command : Initialize Voice Parameters

AT+VIP Initialize voice parameter	
Test command Syntax **AT+VIP=?**	 Response (list of supported **<n>**s) **OK**
Write command Syntax **AT+VIP=<n>**	 Response **OK** Parameters **<n>:** Mode 0 Handset (7 levels of volume, main audio interface) 1 Handsfree (5 levels of volume, main audio interface) 2 Headset (5 levels of volume, secondary audio interface)
Reference [27.007] § C.2.6	Notes • It is possible to re-direct the audio paths as well as the audio parameters (filters, gain) through the Audio tool provided by SAGEM S.A. • The mention to the main and secondary audio interfaces (Speaker and Micro) are linked to the default audio parameters and defined in [HW] • The values are automatically reset after a call (return to 0). • Level volume are accessible with AT+CLVL

12.3. +VTS Command : DTMF and Tone generation

AT+VTS DTMF and tone generation	
Test command Syntax **AT+VTS=?**	Response (list of supported **<tone1>**s),(list of supported **<tone2>**s) ,(list of supported **<duration>**s) **OK**
Write command Syntax **AT+VTS="<DTMF1>,<DTMF2>, …, <DTMFn>"** Or **AT+VTS= "{<DTMF1>, <duration>, {<DTMF2>, <duration>,…{<DTMFn>,<duration>}"**	Response **OK** Parameters **<DTMFi>:** a single ASCII character in the set 0-9, #,*,A-D. DTMF tones can be issued only during a voice call. **<tone1>:** 0(see [27.007] C.2.11) **<tone2>:** 0(see [27.007] C.2.11) **<duration>:** 0 (see [27.007] C.2.11)
Reference [27.007] § C.2.11	Notes • The network shall ensure that the minimum length of tone and the minimum gap between two subsequent tones (according to ETR 206) is achieved. (In ETR 206 the minimum duration of a DTMF tone is 70ms ±5ms, the minimum gap between DTMF tones is 65ms). There is no defined maximum length to the tone, however, the operator may choose to put a pre-defined time limit on the duration of tones sent to line (cf. [23.014]). That means that with n<6, DTMF will be generated with a duration given by the network. • Total number of parameters is limited to 9.

12.4. +VTD Command : Tone duration

AT+VTD Tone duration	
Test command Syntax **AT+VTD=?**	 Response (list of supported **<n>**s) **OK**
Read command Syntax **AT+VTD?**	 Response **<n>** **OK**
Write command Syntax **AT+VTD=<n>**	 Response **OK** Parameters **<n>:** 0 (see [27.007] C.2.12)
Reference [27.007] § C.2.12	Notes • The network shall ensure that the minimum length of tone and the minimum gap between two subsequent tones (according to ETR 206) is achieved. (In ETR 206 the minimum duration of a DTMF tone is 70ms ±5ms, the minimum gap between DTMF tones is 65ms). There is no defined maximum length to the tone, however, the operator may choose to put a pre-defined time limit on the duration of tones sent to line (cf. [23.014]). That means that with n<6, DTMF will be generated with a duration given by the network.

12.5. +VGR Command : Received Gain Selection

AT+VGR Received Gain Selection	
Test command Syntax **AT+VGR=?**	 Response (list of supported **<n>**s) **OK**
Read command Syntax **AT+VGR?**	 Response **<n>** **OK**

Write command Syntax **AT+VGR=<n>**	Response **OK** Parameters **<n>:** gain in dBm 255 +63.5 254 +63 … 129 +0.5 128 +0 127 -0.5 … 2 -63 1 -63.5 0 AUTO (i.e. adjusted values inside the module)
Reference [27.007] § C.2.4	Notes

12.6. +VGT Command : Transmit Gain Selection

AT+VGT Transmit Gain Selection	
Test command Syntax **AT+VGT=?**	Response (list of supported **<n>**s) **OK**
Read command Syntax **AT+VGT?**	Response **<n>** **OK**
Write command Syntax **AT+VGT=<n>**	Response **OK** Parameters **<n>:** gain in dBm 255 +63.5 254 +63 … 129 +0.5 128 +0 127 -0.5 … 2 -63 1 -63.5 0 AUTO (i.e. adjusted values inside the module)
Reference [27.007] § C.2.5	Notes

13. PROTOCOL SPECIFIC COMMANDS

13.1. Preliminary comments

SAGEM S.A. has developed a set of proprietary AT Commands to simplify data exchanges with different protocols:

- FTP
- TCP/IP
- UDP
- SMTP
- POP3

IMPORTANT :

After to be connected, you can use as usual AT commands (have a call, send sms…) between a read, write or close commands.

These commands are using a polling mode, it is up to application to check if data are available on a socket by using specific protocol read AT commands.

13.2. CONNECTION CONFIGURATION

13.2.1. +KCNXCFG: GSM Connection Configuration

+KCNXCFG GSM Connection configuration	
Test command Syntax **AT+KCNXCFG=?**	 Response **+KCNXCFG:** (list of possible **<cnxconf>**s)
Read command Syntax **AT+KCNXCFG?**	 Response **+KCNXCFG:** **<cnxconf>,"GSM",<dialupnb>,<nbmode>,<login>,<passwd>,<ip>,<dns1>,<dns2>**

Write command

Syntax
AT+KCNXCFG=<cnx cnf>,"GSM",<dialupnb>,<nb mode>[,[<login>][,[<password>][,[<ip>][,[<dns1>][,[<dns 2>]]]]]]

Response
OK

Parameters

<cnx cnf>:	Index of a set of parameters for configuring a connection (max value 200)
<dialupnb>:	String type. Indicates the dial-up number of the GSM connection.
<nbmode>:	Numeric parameter (max 20 bytes), indicates the numbering type of the GSM connection : 0 – analog 1 – digital
<login>:	string type (max size 24 bytes), indicates the user name of the cnx
<password>:	string type (max size 24 bytes), indicates the password of the cnx
<ip>:	String type. Consists of dot-separated numeric (0-255) parameters on the form a1.a2.a3.a4, if the mobile is supposed to work with a static address. For dynamic address the value is "0.0.0.0" or an empty string. Displayed value with read command will be "0.0.0.0" for dynamic address. Note that with an empty value in the write command the previously stored value will be kept.
<dns1>, <dns2>:	String type. Consists of dot-separated numeric (0-255) parameters on the form a1.a2.a3.a4, if the mobile is supposed to work with static DNS addresses. For dynamic addresses the value is "0.0.0.0" or an empty string. Displayed value with read command will be "0.0.0.0" for dynamic address. Note that with an empty value in the write command the previously stored value will be kept.

Reference
SAGEM SA Proprietary

Notes
- This AT command is used to configure the bearer to be used for the IP Services.
- As far as only one connection is allowed, the same connection will be used for all the IP services therefore :
  - Defining a connection will remove the previous one.
  - If two different IP services require two different network configurations, the user has to reuse the AT+ KCNXCFG command.

  Between two IP services, the connection parameters are kept on, therefore between two IP services using the same network settings, the connection parameters do not need to be redefined.
- By default, the IP and DNS address are dynamic (those values would be affected by the network during the GSM or GPRS connection.
- This connection will be used by the Module to access to the IP services described on the following chapters. The AT+KCNXCFG command is only defined to set the current parameters. The defined connection will be automatically opened when needed by the IP services.

13.2.2. +KCNXCFG: GPRS Connection Configuration

+KCNXCFG GPRS Connection configuration	
Test command Syntax **AT+KCNXCFG=?**	 Response **+KCNXCFG:** (list of possible **<cnxconf>**s)
Read command Syntax **AT+KCNXCFG?**	 Response **+KCNXCFG: <cnx cnf>, "GPRS",<apn>,<login>,<password>, <ip>,<dns1>,<dns2>**
Write command Syntax **AT+KCNXCFG=<cnx cnf>,"GPRS",<apn>[,[<login>][,[<password>][,[<ip>][,[<dns1>][,<dns2>]]]]]**	 Response **OK** Parameters **<cnx cnf>:** Index of a set of parameters for configuring a connection (max value 200) **<apn>:** (Access Point Name) a string parameter (max size 63 bytes), logical name used to select the GGSN or the external packet data network. **<login>:** string type (max size 24 bytes), indicates the user name of the cnx **<password>:** string type (max size 24 bytes), indicates the password of the cnx **<ip>:** String type. Consists of dot-separated numeric (0-255) parameters on the form a1.a2.a3.a4, if the mobile is supposed to work with a static address. For dynamic address the value is "0.0.0.0" or an empty string. Displayed value with read command will be "0.0.0.0" for dynamic address. Note that with an empty value in the write command the previously stored value will be used. **<dns1>, <dns2>:** String type. Consists of dot-separated numeric (0-255) parameters on the form a1.a2.a3.a4, if the mobile is supposed to work with static DNS addresses. For dynamic addresses the value is "0.0.0.0" or an empty string. Displayed value with read command will be "0.0.0.0" for dynamic address. Note that with an empty value in the write command the previously stored value will be kept.

Reference
SAGEM SA Proprietary
	Notes
	• This AT command is used to configure the bearer to be used for the future IP Services.
	• As far as only one connection is allowed, the same connection will be used for all the IP services therefore :
	  • Defining a connection will remove the previous one.
	  • If two different IP services require two different network configurations, the user has to reuse the AT+ KCNXCFG command.
	Between two IP services, the connection parameters are kept on, therefore between two IP services using the same network settings, the connection parameters do not need to be redefined.
	• By default, the IP and DNS address are dynamic (those values would be affected by the network during the GSM or GPRS connection.
	• This connection will be used by the Module to access to the IP services described on the following chapters. The AT+KCNXCFG command is only defined to set the current parameters. The defined connection will be automatically opened when needed by the IP services.

13.2.3. +KCNXTIMER: Connection Timer Configuration

+KCNXTIMER Connection Timer Configuration	
Test command Syntax **AT+KCNXTIMER=?**	 Response **+KCNXTIMER:** (list of supported **<cnx cnf>**s),(list of supported **<tim1>**s),(list of supported **<nbtrial>**s),(list of supported **<tim2>**s) **OK**
Read command Syntax **AT+KCNXTIMER?**	 Response **+KCNXTIMER: <cnx cnf>,<tim1>,<nbtrial>,<tim2>** [CR><LF>**+KCNXTIMER: <cnx cnf>, <tim1>,<nbrtrial>,<tim2>**
Write command Syntax **AT+KCNXTIMER=<cnx cnf>[,[<tim1>][,[<nbrtrial>][,<tim2>]]]]**	 Response **OK** Parameters **<cnx cnf>:** Integer type. Index of a set of parameters for configuring a connection (max value 200). **<tim1>:** Connection timeout in seconds Must be within 15s to 120s (30s by default) **<tim2>:** Linger timer in seconds Must be within 60s to 300s (60s by default) 0: deactivated (connection will not close by itself) **<nbtrial>:** Number of attempts to connect to the network Must take a value between 1 & 4 (2 by default)
Reference SAGEM SA Proprietary	Notes

13.2.4. +KCNXPROFILE: Connection current profile configuration

+KCNXPROFILE Connection current profile configuration	
Read command Syntax **AT+KCNXPROFILE?**	 Response **+KCNXPROFILE:** (list of supported**<cnx cnf>**s)
Write command Syntax **AT+KCNXPROFILE=** **<cnx cnf>**	 Response **OK** Parameters **<cnx cnf>:** Index of a set of parameters for configuring a connection.
Reference SAGEM SA Proprietary	Notes This AT command specifies the current profile to configure the GPRS or GSM connection for all subsequent TCP or FTP connections. However, if the user wants to override this profile for one TCP (or FTP) session it may use KTCPCFG (KFTPCFG) with the optional <cnx cnf> parameter.

13.3. TCP Specific Commands

13.3.1. +KTCPCFG: TCP Connection Configuration

+KTCPCFG TCP Connection Configuration	
Test command Syntax **AT+KTCPCFG=?**	 Response **+KTCPCFG:** (list of possible **<mode>**s) **OK**
Read command Syntax **AT+KTCPCFG?**	 Response **+KTCPCFG: <cnx cnf>,<mode>,<tcp remote address>,<tcp_port>**
Write command Syntax **AT+KTCPCFG=[<cnx cnf>],<mode>,<tcp remote address>,<tcp_port>**	 Response **OK** Parameters **<cnx conf>:** Index of a set of parameters for configuring one TCP session (see KCNXCFG). **<mode>:** 0: Client The socket is defined as a standard TCP socket **<tcp remote address>**: dot-separated numeric (0-255) parameters on the form a1.a2.a3.a4 or explicit name of the remote server **<tcp_port>:** numeric parameter (0-65535)
Reference SAGEM SA Proprietary	Notes Like in the FTP or in the SMTP cases, the TCP functionality is working with an auto-connect behaviour. Therefore, • When defining a TCP Server socket, the ME will open the current defined GSM or GPRS link and wait for the incoming connection. • For TCP (working in the client mode), the GSM or GPRS line will be opened during the <tim2> set by using the +KCNXTIMER command. • If the socket is defined as a <CLIENT> socket, <tcp_port> and <tcp_server> define the port and the IP adress of the remote server we want to connect. • Only one TCP socket can be defined in the ME

13.3.2. +KTCPCNX: TCP Connection

+KTCPCNX TCP Connection	
Write command Syntax **AT+KTCPCNX**	Response **OK** **NO CARRIER** **+CME ERROR: <err>** **+KTCP_NOTIF: <tcp_notif>** Parameters **<tcp_notif>:** Integer type. Indicates the cause of the TCP connection failure. 0- Network error 1- no more socket available; max. number already reached 2- Memory problem 3- DNS error 4-TCP disconnection by the server 5-TCP connection error 6-generic error
Reference SAGEM SA Proprietary	Notes • The answer to this command is OK if the TCP connection is successful If the connection to the network fails, it returns NO CARRIER only. If the connection to the network succeeds, but the TCP connection fails, the module hangs up, returns to COMMAND mode and returns NO CARRIER followed by "+KTCP_NOTIF : 1" or "+KTCP_NOTIF : 2" or "KTCP_NOTIF : 3" or "KTCP_NOTIF : 5" or "KTCP_NOTIF : 6" If the connection to the network and tcp succeed (ktcpcnx returns OK), but the network fails, the module returns NO CARRIER followed by KTCP_NOTIF : 0. If the connection to the network and tcp succeed (ktcpcnx returns OK), but the TCP connection fails, the module returns "+KTCP_NOTIF : 4" or "+KTCP_NOTIF : 5" or "+KTCP_NOTIF : 6" or "+KTCP_NOTIF : 2" . • The GSM or GPRS connection is supposed to be down before entering this command • Beware when ktcpcnx returns OK the user must do a ktcpclose before a new ktcpcnx.

13.3.3. +KTCP_DATA: Incoming data through a TCP Connection

+KTCP_DATA: Incoming data through a TCP Connection	
Unsolicited notification	Response **+KTCP_DATA: <ndata available>** Parameters **< ndata available>:** Maximum number of bytes to be read
Reference SAGEM SA Proprietary	Notes • As soon as the connection is established, the module can receive data through the TCP socket. This notification is sent when data are available in the receive buffer. • This notification will be sent one time. The controlling software must read the buffer with KTCPRCV in order to activate the notification again.

13.3.4. +KTCPRCV: Receiving data through a TCP Connection

+KTCPRCV TCP Receiving data through a TCP connection	
Write command Syntax **AT+KTCPRCV= <ndata>**	Response **CONNECT** **OK** **+KTCP_NOTIF: <tcp_notif>** Parameters **<ndata>:** Maximum number of bytes the device is ready to receive (max value 4294967295) **<tcp_notif>:** See command AT+KTCPCNX
Reference SAGEM SA Proprietary	Notes • This function is used to receive <ndata> data bytes through a previously opened TCP socket. • <ndata> indicates the max data number that the terminal wishes to receive. If the TCP socket contains more data than <ndata> bytes then only <ndata> bytes will be received. If the TCP socket contains less data than <ndata> bytes then only TCP socket's data will be received. • When <ndata> (max value) bytes or only available data in the TCP socket have been received, the module returns to command state and returns OK. The end of the downloading is defined by the transmission of the <ETX> character. Therefore, if a <ETX> data has to be transmitted on the payload data, it should be transmitted preceded by the <DLE> character to give <DLE><ETX> and the <DLE> character will be transmitted as <DLE><DLE>. • Before using this command, it is highly recommended to configure the module for Hardware flow control, using the command AT&K3.If a network disconnection occurs during the reception, the command will first return the <ETX> character, followed by NO CARRIER, followed by +KTCP_DOWN : 0. • If a tcp disconnection occurs during the reception the command will first return the <ETX> character and the module returns OK, or +CME ERROR <err> end by "+KTCP_NOTIF: 4" or "+KTCP_NOTIF: 5" or "+KTCP_NOTIF: 6" or "+KTCP_NOTIF: 2". • Moreover if the user launches ktcprcv at command after a network down or tcp disconnection (TCP disconnection by the server or TCP connection error), returns OK until no more data is contained in the socket. When there is no more data in the socket +CME ERROR <err> is returned. • If a DTR drop from active to inactive occurs during the reception, the command will first return the <ETX> character, followed by +CME ERROR <err>.

13.3.5. +KTCPSND: Sending data through a TCP Connection

+KTCPSND Sending data through a TCP connection	
Write command Syntax **AT+KTCPSND= <ndata>**	Response **CONNECT** **OK** **+CME ERROR: <err>** **NO CARRIER** **+KTCP_NOTIF:< tcp_notif>** Parameters **<ndata>:** number of bytes the device wants to send (max value 4294967295) **<tcp_notif>:** See command AT+KTCPCNX
Reference SAGEM SA Proprietary	Notes • This function is used to send <ndata> bytes through a previously opened TCP socket. When <ndata> bytes have been sent, the module returns to command state and returns OK. This message doesn't mean that the data have been sent through the socket, but only that they have been transmitted to module's TCP layer. In the case of a loss of network link while this command is in progress, the command would return NO CARRIER followed by +KTCP_NOTIF : 0 instead of OK. If a tcp disconnection occurs during the reception, the module returns OK, or +CME ERROR <err> followed by "+KTCP_NOTIF : 4" or "+KTCP_NOTIF : 5" or "+KTCP_NOTIF : 6" or "+KTCP_NOTIF : 2". Moreover if the user launches ktcpsnd at command after a network down or tcp disconnection (TCP connection error), this at command returns +CME ERROR <err>. • The end of the uploading is defined by the transmission of the <ETX> character. Therefore, if an <ETX> data has to be transmitted on the payload data, it must be transmitted preceded by the <DLE> character to give <DLE><ETX> and the <DLE> character must be transmitted as <DLE><DLE>. • The user can abort the uploading by sending the ETX character. • Before using this command, it is highly recommended to configure the module for Hardware flow control, using the command AT&K3.

13.3.6. +KTCPCLOSE: Closing current TCP operation

+KTCPCLOSE Closing current TCP operation	
Write command Syntax **AT+KTCPCLOSE=** **<closing_type>**	Response **+CME ERROR: <err>** **NO CARRIER** Parameters **<closing_type>:** 0: abort. Fast closing of the TCP connection. 1: The TCP connection is properly closed, which means that data sent to the module by AT+KTCPSND will be sent to the TCP server and acknowledged before the socket is closed.
Reference SAGEM SA Proprietary	Notes This function first closes the TCP socket and then closes the network connection. Then, the module returns NO CARRIER.

13.4. FTP Specific Commands

13.4.1. +KFTPCFG: FTP Configuration

+KFTPCFG FTP Configuration	
Read command Syntax **AT+KFTPCFG?**	 Response **+KFTPCFG: <server name>,<login>,<password>,<port number>,<mode>**
Write command Syntax **AT+KFTPCFG=[<cnx cnf>],<server_name> [,<login>[, <password>[,<remote port number> [,<mode>]]]]**	 Response **OK** Parameters **<cnx cnf>:** Index of a set of parameters for configuring one FTP session. **<server name>:** string type. Consists of a dot-separater numeric (0-255) parameters on the form a1.a2.a3.a4, to identify the ftp server or explicit name of the server. Do not add "ftp://" in the server name. Use server_path variable to indicate the right path in the receive, send and delete commands. **<login>:** string type, indicates the user name to be used during the FTP connection. **<password>:** string type, indicates the password to be used during the FTP connection. **<port number>:** numeric parameter (0-65535). Indicates the remote command port (21 by default) **<mode>:** numeric number. Indicates the initiator of the FTP connection. 0 – actif. The server is initiator of the FTP data connection 1 – passif. The client is initiator of the FTP data connection in order to avoid the proxy filtrate. The passive data transfert process "listens" on the data port for a connection from the active transfert process in order to open the data connection. *Note that only passive mode is currently supported, active mode is internally switched to passive.*

Reference
SAGEM SA Proprietary
	Notes
	Execution command sets the server name, the login, the password, the port number and the mode for ftp operations.
	
	Example :
	//use only the server name
	AT+KFTPCFG=0,"ftp.connect.com","weblog","webpass",21,0
	//use the file's path in the receive command
	directory/test","sagem_test.txt",1

13.4.2. +KFTPRCV: Downloading FTP files

+KFTPRCV Downloading FTP files	
Write command Syntax **+KFTPRCV=[<server_path>],<file_name>[,<type of file>]**	Response **CONNECT** **OK** **+CME ERROR<err>** **NO CARRIER** **+KFTP_ERROR : <ftp cause>** Parameters **<server_path>:** string type. Indicates the path of the file to be downloaded. An empty string or no string indicates the downloading is done from the path given by the <server_name> parameter. **<file_name>:** string type. Indicates the name of the file to download. **<type of file>:** Numeric type. Indicates the type of file (ASCII or binary) to transfer. 0 – binary, (default value) 1 – ASCII. **<ftp_cause> :** Integer type. Indicates the cause of the FTP connection failure. 0- the sending or the retrieving was impossible due to request timeout. 1- it is impossible to connect to the server due to DNS resolution failure. 2- it is impossible to upload or download a file due to connection troubles. 3- the upload or download was impossible due to connection timeout 4-no network available.
Reference SAGEM SA Proprietary	Notes • Before using this command an FTP connection must have been achieved using AT+KFTPCFG • If an IP connection which is not an FTP connection (SMTP or TCP) is ongoing, an error code will be returned. • After sending the +KFTPRCV command, the user will receive the entire data stream. • The end of the downloading is defined by the transmission of the <ETX> character. Therefore, if an <ETX> data has to be transmitted on the payload data, it will be transmitted preceded by the <DLE> character to give <DLE><ETX> and the <DLE> character will be transmitted as <DLE><DLE>. • The user can abort the downloading by sending any character from the host. In this case, the module will end the transfer by transmitting the EndOfText (ETX) followed by ERROR

13.4.3. +KFTPSND: Uploading FTP files

+KFTPSND Uploading FTP files	
Write command Syntax **+KFTPSND=[<server_path>],<file_name>[, <type of file>]**	Response **CONNECT** *ME receives data ended with the <ETX> Character* **<ETX>.** **OK** **+CME ERROR <err>** **NO CARRIER** **+KFTP_ERROR : <ftp cause>** Parameters **<server_path>:** string type. Indicates the path of the file to be uploaded. An empty string or no string indicates the downloading is done from the path given by the <server_name> parameter. **<file_name>:** string type. Indicates the name of the file to upload. **<type of file>:** Numeric type. Indicates the type of file (ASCII or binary) to transfer. 0 – binary, (default value) 1 – ASCII. **<ftp_cause> :** Integer type. Indicates the cause of the FTP connection failure. 0- the sending or the retrieving was impossible due to request timeout. 1- it is impossible to connect to the server due to DNS resolution failure. 2- it is impossible to upload or download a file due to connection troubles. 3- the upload or download was impossible due to connection timeout 4- no network available.
Reference SAGEM SA Proprietary	Notes • Before using this command an FTP connection must have been achieved using AT+KFTPCFG • If an IP connection which is not an FTP connection (SMTP or TCP) is ongoing, an error code will be returned. • After sending the +KFTPSND command, the host must send the entire data stream of the file. • The end of the downloading is defined by the transmission of the <ETX> character. Therefore, if an <ETX> data has to be transmitted on the payload data, it must be transmitted preceded by the <DLE> character to give <DLE><ETX> and the <DLE> character must be transmitted as <DLE><DLE>. • The user can abort the uploading by sending the ETX character.

13.4.4. +KFTPDEL: Deleting FTP files

+KFTPDEL Deleting FTP files	
Write command Syntax **+KFTPDEL=[<server>], <file>[, <type>]**	Response **OK** **+CME ERROR <err>** **NO CARRIER** **+KFTP_ERROR : <ftp cause>** Parameters **<server>:** string type. Indicates the path of the file to be uploaded. An empty string or no string indicates the downloading is done from the path given by the <server_name> parameter. **<file>:** string type. Indicates the name of the file to upload. **<type>:** Numeric type. Indicates the type of file (ASCII or binary) to transfer. 0 – binary, (default value) 1 – ASCII. **<ftp_cause> :** Integer type. Indicates the cause of the FTP connection failure. 0- the sending or the retrieving was impossible due to request timeout. 1- it is impossible to connect to the server due to DNS resolution failure. 2- it is impossible to upload or download a file due to connection troubles. 3- the upload or download was impossible due to connection timeout 4- no network available.
Reference SAGEM SA Proprietary	Notes • Before using this command an FTP connection must have been achieved using AT+KFTPCFG • If an IP connection which is not an FTP connection (SMTP or TCP) is ongoing, an error code will be returned.

13.4.5. +KFTPCLOSE: Ending current FTP connection

+KFTPCLOSE Ending current FTP connection	
Write command Syntax **+KFTPCLOSE**	Response **OK**
Reference SAGEM SA Proprietary	Notes • This command will close the connection to the FTP server

13.5. UDP Specific Commands

13.5.1. +KUDPCFG: UDP Connection Configuration

+KUDPCFG UDP Connection Configuration	
Test command Syntax **AT+KUDPCFG=?**	 Response **+KUDPCFG: (n)**
Read command Syntax **AT+KUDPCFG?**	 Response **+KUDPCFG: <cnx cnf>** **OK** Error cases **+CME ERROR <err>** **err** can take the following values: 83 : internal configuration error 64531 : active profile does not exist
Write command Syntax **AT+KUDPCFG=[<cnx cnf>]**	 Response **+KUDPCFG: <socket num>** **OK** if the UDP socket connection is successful **<socket num>** is the socket index to use with +KUDPSEND and +KUDPRCV commands. Error case **NO CARRIER** **+CME ERROR: <err>** **+KUDP_NOTIF: <udp_notif>** **<udp_notif>:** Integer type. Indicates the cause of the UDP connection failure. 0-Network error 1-no more socket available; max. number already reached 2-Memory problem 3- DNS error 5-UDP connection error 6-generic errorParameters Parameter **<cnx cnf>:** Index of a set of parameters for configuring one UDP session (see KCNXCFG). If no value is supplied to the command line, the default connection profile is used.
Reference SAGEM SA Proprietary	Notes • Only one UDP socket can be defined in the ME • To open a new socket the user is invited to close the current socket thanks to +KUDPCLOSE command. • A default profile must exist if the command line “AT+KUDPCFG=” is used otherwise an error is raised.

13.5.2. +KUDPCLOSE: Closing current UDP operation

+KUDPCLOSE Closing current UDP operation	
Action command Syntax **AT+KUDPCLOSE**	Response **OK** Error case **+CME ERROR: <err>** **err** can take the following value: 82 : if no active session was found
Reference SAGEM SA Proprietary	Notes This function closes the UDP socket and the network session.

13.5.3. +KUDPSND: Sending data through an UDP Connection

+KUDPSND Sending data through an UDP connection	
Write command Syntax **AT+KUDPSND=<socket num>,<udp remote address>,<udp_port>,<ndata>**	Response **CONNECT** **OK** Error case **NO CARRIER** **+CME ERROR: <err>** **+KUDP_NOTIF:< udp_notif>** **<udp_notif>:** Integer type. Indicates the cause of the UDP connection failure. 0-Network error 1-no more socket available; max. number already reached 2-Memory problem 3- DNS error 5-UDP connection error 6-generic errorParameters Parameters **<socket num>:** Integer type obtained by a previous KUDPCFG command. **<udp remote address>:** dot-separated numeric (0-255) parameters on the form a1.a2.a3.a4 or explicit name of the remote server **<udp_port>:** numeric parameter (0-65535) **<ndata>:** number of bytes the device wants to send (max value 4294967295)

Reference SAGEM SA Proprietary	Notes • This function is used to send <ndata> bytes through a previously opened UDP socket. When <ndata> bytes have been sent, the module returns to command state and returns OK. This message doesn't mean that the data have been sent through the socket, but only that they have been transmitted to module's UDP layer. In the case of a loss of network link while this command is in progress, the command would return NO CARRIER followed by +KUDP_NOTIF : 0 instead of OK. If an udp disconnection occurs during the reception, the module returns OK, or +CME ERROR <err> followed by "+KUDP_NOTIF : 5" or "+KUDP_NOTIF : 6" or "+KUDP_NOTIF : 2". Moreover if the user launches kudpsnd at command after a network down this at command returns +CME ERROR <err>. • The end of the uploading is defined by the transmission of the <ETX> character. Therefore, if an <ETX> data has to be transmitted on the payload data, it must be transmitted preceded by the <DLE> character to give <DLE><ETX> and the <DLE> character must be transmitted as <DLE><DLE>. • The user can abort the uploading by sending the ETX character. • Before using this command, it is highly recommended to configure the module for Hardware flow control, using the command AT&K3.

13.5.4. +KUDPRCV: Receiving data through an UDP Connection

+KUDPRCV UDP receiving data through an UDP connection	
Write command Syntax **AT+KUDPRCV=<socket num>,<udp remote address>,<udp_port>,<ndata>**	Response **CONNECT** **OK** **+KUDP_DATA: <ndata present>** Error case **NO CARRIER** **+CME ERROR: <err>** **+KUDP_NOTIF:< udp_notif>** **+KUDP_DATA_MISSED: <ndata missed>** **<udp_notif>:** Integer type. Indicates the cause of the UDP connection failure. 0-Network error 1-no more socket available; max. number already reached 2-Memory problem 3- DNS error 5-UDP connection error 6-generic errorParameters **<ndata present>:** number of bytes available in the UDP socket. **<ndata missed>:** number of bytes left (and definitely lost!) in the UDP socket. Parameters **<socket num>:** Integer type obtained by a previous KUDPCFG command. **<udp remote address>**: dot-separated numeric (0-255) parameters on the form a1.a2.a3.a4 or explicit name of the remote server **<udp_port>:** numeric parameter (0-65535) **<ndata>:** number of bytes the device wants to send (max value 4294967295)

Reference SAGEM SA Proprietary	Notes • This function is used to receive <ndata> data bytes through a previously opened UDP socket. • <ndata> indicates the max data number that the terminal wishes to receive. If the UDP socket contains more data than <ndata> bytes then only <ndata> bytes will be received. • When <ndata> (max value) bytes or only available data in the UDP socket have been received, the module returns to command state and returns OK. The end of the downloading is defined by the transmission of the <ETX> character. Therefore, if a <ETX> data has to be transmitted on the payload data, it should be transmitted preceded by the <DLE> character to give <DLE><ETX> and the <DLE> character will be transmitted as <DLE><DLE>. • Before using this command, it is highly recommended to configure the module for Hardware flow control, using the command AT&K3.If a network disconnection occurs during the reception, the command will first return the <ETX> character, followed by NO CARRIER. If an udp disconnection occurs during the reception the command will first return the <ETX> character and the module returns OK, or +CME ERROR <err> end by "+KUDP_NOTIF: 5" or "+KUDP_NOTIF: 6" or "+KUDP_NOTIF: 2". • Moreover if the user launches kudprcv at command after a network down, the module returns OK until no more data is contained in the socket. When there is no more data in the socket +CME ERROR <err> is returned. • If a DTR drop from active to inactive occurs during the reception, the command will first return the <ETX> character, followed by +CME ERROR <err>.

13.6. SMTP Specific Commands

13.6.1. +KSMTPPARAM: Connection Configuration

+KSMTPPARAM Connection Configuration	
Test command Syntax **AT+KSMTPPARAM=?**	 Response **+KSMTPPARAM: <server>, <port>, <sender>** **OK**
Read command Syntax **AT+KSMTPPARAM?**	 Response **+KSMTPPARAM: <server>, <port>, <sender>** **OK**
Write command Syntax **AT+KSMTPPARAM=** **<server>,<port>,<sender>**	 Response **OK** Parameters **<server>:** String type. Indicates the basic name of the SMTP server. This name must either integrate SMTP URL schemes separate from the server name by "." or an IPV4 address. e.g: smtp.sagem.com or 80.156.25.12 **<port>:** Numeric type. Indicates the SMTP server port. **<sender>:** String type. Indicates sender's mail address. e.g: mo200_xxx@sagem.com
Reference SAGEM SA Proprietary	Notes • <server> string maxlength is 255. • <port> max value is 65535. • <sender> string max length 256. • Usual SMTP default port is 25. • Between two emails sending, the <server > and <sender> fields are kept on inside the ME, therefore if the same identifier accesses the same SMTP server, those parameters do not need to be reloaded.

13.6.2. +KSMTPPWD: Authentication Configuration

+KSMTPPWD Authentication Configuration	
Test command Syntax **AT+KSMTPPWD=?**	Response **+KSMTPPWD: <login>, <password>** **OK**
Read command Syntax **AT+KSMTPPWD?**	Response **+KSMTPPWD: <login>, <password>** **OK**
Write command Syntax **AT+KSMTPPWD=** **<login>, <password>**	Response **OK** Parameters **<login>:** String type. Indicates the user name to be used during the SMTP connection. **<password>:** String type. Indicates the password to be used during the SMTP connection.
Reference SAGEM SA Proprietary	Notes • <login> and <password> strings max length is 24. • By default, both <login> and <password> are empty. If the dedicated SMTP server does not need authentication, theses values can be left empty. • The SMTP client only supports LOGIN authentication. • Between two emails sending, the <login> and <password> fields are kept on inside the ME, therefore if the same identifier accesses the same SMTP server, those parameters do not need to be reloaded

13.6.3. +KSMTPTO: Receivers Configuration

+KSMTPTO Receivers Configuration	
Test command Syntax **AT+KSMTPTO=?**	 Response **+KSMTPTO: <to1> [, <to2> [, <cc1> [, cc2>]]]** **OK**
Read command Syntax **AT+KSMTPTO?**	 Response **+KSMTPTO: <to1> [, <to2> [, <cc1> [, cc2>]]]** **OK**
Write command Syntax **AT+ KSMTPTO = <to1>[,<to2>[,<cc1>[,<cc2>]]]**	 Response **OK** Parameters **<to1>:** String type. Indicates the name of the first receiver of the mail. **<to2>:** String type. Indicates the name of the second receiver of the mail. **<cc1>:** String type. Indicates the name of the first copy receiver of the mail. **<cc2>:** String type. Indicates the name of the second copy receiver of the mail.
Reference SAGEM SA Proprietary	Notes • <to1>, <to2>, <cc1>, <cc2> strings max length 256. • The fields <to2>,<cc1> and <cc2> can be empty. • These fields are deleted after each successful mail sent.

13.6.4. +KSMTPSUBJECT: Subject Configuration

+KSMTPSUBJECT Authentication Configuration	
Test command Syntax **AT+KSMTPSUBJECT=?**	 Response **+KSMTPSUBJECT: <subject>** **OK**
Read command Syntax **AT+KSMTPSUBJECT?**	 Response **+KSMTPSUBJECT: <subject>** **OK**
Write command Syntax **AT+KSMTPSUBJECT= <subject>**	 Response **OK** Parameters **<subject>:** String type. Indicates the subject of the mail. Must use US-ASCII charset
Reference SAGEM SA Proprietary	Notes • This field is deleted after each successful mail sent. • Must use US-ASCII charset. • <subject> string max length 255. • This field can be left empty.

13.6.5. +KSMTPUL: Send Message

+KSMTPUL Send Message	
Test command Syntax **AT+KSMTPUL=?**	 Response **+KSMTPUL: <mode>, <size>** **OK**
Read command Syntax **AT+KSMTPUL?**	 Response **ERROR**
Write command Syntax **AT+KSMTPUL=** **<mode>, <size>**	 Response **CONNECT** The ME wait for the data ended with the character **<ETX>** **OK** **+CME ERROR: <err>** **NO CARRIER** Parameters **<mode>:** Numeric type. Indicates the transfer mode (header closed or not): **1-** Normal mode. The mail header is minimal, the user only send the mail body. This is use for simple mails without attachment. **0-** Complex mode. The mail header minimal part is still handled by the AT command but the header is not closed. The user is responsible for completing and closing the mail header. This is use for mails with attachment or complex headers. (cf. examples) **<size>:** Numeric type. Amount of data transferred within the CONNECT, including <ETX> character. **<err>:** See 2.7 Error codes for the SMTP transfer.
Reference SAGEM SA Proprietary	Notes • If another IP operation (FTP, SMTP or TCP) is ongoing, the command will return an error. • If the GSM or GPRS connection is not up, before uploading the file the ME will automatically open the predefined GSM or GPRS link. • The end of the file is defined by the <ETX> parameter. Therefore, if a <ETX> data has to be transmitted on the payload data, it should be transmitted preceded by the <DLE> character to give <DLE><ETX> and the <DLE> character will be transmitted as <DLE><DLE>. • At the end of the SMTP transfer, the OK message indicates the status of the transfer. • At the end of the SMTP transfer, whether it succeeds, the parameters associated with the current mail (recipients, subjects) will be set to the NULL value. • Hardware flow control is required for serial link

13.6.6. +KSMTPCLEAR: Clear Parameters

+KSMTPCLEAR Clearing Parameters	
Test command Syntax **AT+KSMTPCLEAR=?**	 Response **ERROR**
Read command Syntax **AT+KSMTPCLEAR?**	 Response **ERROR**
Action command Syntax **AT+KSMTPCLEAR**	 Response **OK**
Reference SAGEM SA Proprietary	Notes This command deletes all SMTP parameters.

Specific Error Code For The SMTP Commands

Code of <err>	Meaning
3000	Invalid SMTP server name.
3001	Invalid address identification.
3002	Invalid configuration. Parameter(s) is missing.
3003	Invalid data size - with KSMTPUL.
3010	The login or the password got an invalid value.
3011	Invalid authentication method.
3020	Invalid receivers of the mail TO1.
3021	Invalid receivers of the mail TO2.
3022	Invalid receivers of the mail CC1.
3023	Invalid receivers of the mail CC2.
3040	The SMTP transfer failed due to connection (GSM or GPRS) fails.
3041	The SMTP transfer failed due to TCP connection troubles.
3042	The SMTP transfer failed due to server TCP connection error.
3043	The SMTP download failed due to Request time out.
3044	The SMTP transfer failed due to SMTP protocol error.
3045	The SMTP transfer failed due to DTR drop.
3049	The SMTP transfer download failed due to internal error.

13.7. POP3 Specific Commands

13.7.1. +KPOPCNX: Connection Configuration

+KPOPCNX Connection Configuration	
Test command Syntax **AT+KPOPCNX=?**	 Response **+KPOPCNX: <server>, <port>, <login>, <password>** **OK**
Read command Syntax **AT+KPOPCNX?**	 Response **+KPOPCNX: <server>, <port>, <login>, <password>** **OK**
Write command Syntax **AT+KPOPCNX=** **<server>,<port>,<login>,** **<password>**	 Response **OK** Parameters **<server>:** String type. Indicates the basic name of the POP3 server. This name must either integrate POP3 URL schemes separate from the server name by "." or an IPV4 address. e.g: pop.sagem.com or 80.156.25.12 **<port>:** Numeric type. Indicates the POP3 server port. **<login>:** String type. Indicates the user name to be used during the POP3 connection. **<password>:** String type. Indicates the password to be used during the POP3 connection.
Reference SAGEM SA Proprietary	Notes • <server> string max length is 255. • <port> max value is 65535. • <login> and <password> strings max length is 24. • Usual POP3 default port is 110. • Once the command returns OK, the module is connected to the POP3 server. • This connection will be maintained until the KPOPQUIT command is sent or the POP3 server closes the communication (Inactivity time out).

13.7.2. +KPOPLIST: List Available Mail

+KPOPLIST List Available Mail	
Test command Syntax **AT+KPOPLIST=?**	 Response **ERROR**
Read command Syntax **AT+KPOPLIST?**	 Response **ERROR**
Action command Syntax **AT+KPOPLIST**	 Response **+KPOPLIST: <*N*> messages (<*size*> octets)** **+KPOPLIST: <*n1*>,<*size1*>** **+KPOPLIST: <*n2*>,<*size2*>** **+KPOPLIST: <*n3*>,<*size3*>** **OK** Parameters **<N>:** Numeric type. Indicates the number of available messages. **<size>:** Numeric type. Indicates the total size of the messages. **<n#>:** Numeric type. Indicates the index of the message. **<size#>:** Numeric type. Indicates the size in octet of the message #.
Reference SAGEM SA Proprietary	Notes This command lists available mail in the POP3 server

13.7.3. +KPOPREAD: Download A Mail

+KPOPREAD Download a Mail	
Test command Syntax **AT+KPOPREAD=?**	 Response **+KPOPREAD: <index>** **OK**
Read command Syntax **AT+KPOPREAD?**	 Response **+KPOPREAD: <index>** **OK**
Write command Syntax **AT+KPOPREAD=<index>**	 Response **CONNECT** Dataflow sent and ended with the character **<ETX>** **OK** **+CME ERROR: <err>** **NO CARRIER** Parameters **<index>:** Numeric type. Indicates the index of the mail to read.
Reference SAGEM SA Proprietary	Notes • Whether the asked mail ID is wrong the command returns the associated error code nonetheless the connection with the server is maintained. • The end of the mail is defined by the <ETX> character. Therefore, if a <ETX> data has to be transmitted on the payload data, it should be transmitted preceded by the <DLE> character to give <DLE><ETX> and the <DLE> character will be transmitted as <DLE><DLE>. • Whether an error is detected during the mail transfer, the connection with the server is closed. • Hardware flow control is required for serial link

13.7.4. +KPOPDEL: Delete A Mail

+KPOPDEL Delete a Mail	
Test command Syntax **AT+KPOPDEL=?**	 Response **+KPOPDEL: <index>** **OK**
Read command Syntax **AT+KPOPDEL?**	 Response **+KPOPDEL: <index>** **OK**
Write command Syntax **AT+KPOPDEL=<index>**	 Response **OK** Parameters **<index>:** Numeric type. Indicates the index of the mail to delete.
Reference SAGEM SA Proprietary	Notes • Whether the asked mail ID is wrong the command returns the associated error code nonetheless the connection with the server is maintained. • The mail actually deleted by the server after the KPOPQUIT command.

13.7.5. +KPOPQUIT: Close Connection

+KPOPQUIT Close Connection	
Test command Syntax **AT+KPOPQUIT=?**	 Response **ERROR**
Read command Syntax **AT+KPOPQUIT?**	 Response **ERROR**
Action command Syntax **AT+KPOPQUIT**	 Response **OK**
Reference SAGEM SA Proprietary	Notes This command closes the connection.

13.7.6. Specific Error Code For POP3 Commands

As an error can occur while there is no command in progress, a no solicited notification is sent:

+KPOPNOTIF: <err>

For solicited and no solicited notifications, error codes will have the following meanings:

Code of <err>	Meaning
3100	Invalid POP server name.
3101	Not connected to the server.
3110	The login or the password got an invalid value or the server is busy.
3111	Invalid mail index.
3140	The POP transfer failed due to connection (GSM or GPRS) fails.
3141	The SMTP transfer failed due to TCP connection troubles.
3142	The SMTP transfer failed due to server TCP connection error.
3143	The SMTP download failed due to Request time out.
3144	The SMTP transfer failed due to SMTP protocol error.
3145	The SMTP transfer failed due to DTR drop.
3149	The SMTP transfer download failed due to internal error.

14. SPECIFIC FLASH COMMANDS

14.1. +KFLSHRD Command Read Flash command

AT+KFLSHRD : Read into flash module	
Read command Syntax **AT+KFLSHRD?**	 Response **+KFLSH : <MAX_MEM>** **OK (command supported)** **or** **command not supported)**
Write command Syntax **AT+KFLSHRD=<ADD>,** **<NB_DATA>**	 Response **CONNECT** **OK** **+CME ERROR <err>** Parameters **<ADD> :** Decimal value value indicating the address of the first byte to read. 0 is for the first byte. **<NB_DATA> :** Decimal value indicating the number of bytes to read. **< MAX_MEM > :** Constant decimal value (in byte) indicating the maximum space available.
Reference SAGEM SA Proprietary	Notes • 256K or 512K bytes are available. • The user can abort the downloading by DTR. • This command can read blocks of 1024 bytes.
Example	• Read from address 589 to 1088 (length equals to 500 bytes) : AT+KFLSHRD=589,500 CONNECT … 500 bytes of DATA read from the flash … OK

14.2. +KFLSHWR Command Write Flash command

AT+KFLSHWR : Write into flash module	
Read command Syntax **AT+KFLSHWR?**	Response **+KFLSH : <MAX_MEM>** **OK (command supported)** **or** **OK**
Write command Syntax **AT+KFLSHWR=<ADD>,<NB_DATA>,[<TIMEOUT>]**	Response **CONNECT** **OK** **+CME ERROR <err>** Parameters **<ADD> :** Decimal value indicating the address of the first byte to write. 0 is for the first byte. **<NB_DATA> :** Decimal value indicating the number of byte to write. **[<TIMEOUT>] :** Decimal value indicating the time from "connect" message in seconds before MT automatically closes the data mode connection. By default, this time is 10s. **< MAX_MEM > :** Constant decimal value (in byte) indicating the maximum space available.
Reference SAGEM SA Proprietary	Notes • 256K or 512K bytes are available. • The user can abort the downloading by DTR. • This command can write blocks of a maximum size of 1024 bytes. • If data are sending when module returns to command mode (Timeout action), no data are stored, all data transmitted are lost.
Example	• Write 1024 bytes from address 0. Timeout is set to 5s. 5s after "connect" message, the module will return to command mode (even if data are transmitting) : AT+KFLSHWR=0,1024,5 CONNECT … 1024 bytes of DATA to write to the flash. … OK

APPENDIX

APPENDIX 1. RESULT CODES AND UNSOLICITED MESSAGES

Verbose result code	Numeric	Type	Description
+CCCM: <ccm>	like verbose	Unsolicited	
+CCWA: <number>,<type>,<class>[,<alpha>]	like verbose	Unsolicited	
+CLIP: <number>,<type>[,<subaddr>,<satype>[,<alpha>]]	like verbose	Unsolicited	
+CME ERROR: <err>	like verbose	Final	
+CMS ERROR: <err>	like verbose	Final or unsolicited	
+CMTI	like verbose	Unsolicited	
+CBM	like verbose	Unsolicited	
+CDS	like verbose	Unsolicited	
+COLP: <number>,<type>[,<subaddr> ,<satype>[,<alpha>]]	like verbose	Intermediate	
+CR: <type>	like verbose	Intermediate	
+CREG: <stat>[,<lac>,<ci>]	like verbose	Unsolicited	
+CRING: <type>	like verbose	Unsolicited	
+CSSI: <code1>[,<index>]	like verbose	Intermediate	
+CSSU: <code2>[,<index>[,<number>,<type>[,<subaddr>,< satype>]]]	like verbose	Unsolicited	
+CUSD: <m>[,<str>,<dcs>]	like verbose	Unsolicited	
BUSY	6	Final	
CONNECT	1	Intermediate	connection has been established
CONNECT <text>	manufacturer specific	Intermediate	like CONNECT but manufacturer specific <text> gives additional information (e.g. connection data rate)
ERROR	4	Final	command not accepted
NO ANSWER	7	Final	connection completion timeout
NO CARRIER	3	Final	connection terminated
NO DIALTONE	5	Final	no dial tone detected
OK	0	Final	acknowledges execution of a command line
RING	2	Unsolicited	incoming call signal from network

APPENDIX 2. ERROR CODES

A2.1. CME ERROR codes

Code of <err>	Meaning
0	Phone failure
1	No connection to phone
2	Phone-adapter link reserved
3	Operation not allowed
4	Operation not supported
5	PH-SIM PIN required
10	SIM not inserted
11	SIM PIN required
12	SIM PUK required
13	SIM failure
14	SIM busy
15	SIM wrong
16	Incorrect password
17	SIM PIN2 required
18	SIM PUK2 required
20	Memory full
21	Invalid index
22	Not found
23	Memory failure
24	Text string too long
25	Invalid characters in text string
26	Dial string too long
27	Invalid characters in dial string
30	No network service
31	Network timeout
32	network not allowed - emergency call only
40	network 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	Synchronization error, see details below for additional parameter

The error +CME ERROR: 100, 65xxx means a synchronization error, where 65xxx may be

65501	content type unsupported
65502	empty binary
65503	too much objects
65504	mobile memory full
65505	unknown object
65506	no activity log
65507	reading error
65508	writing error
65509	invalid parameters
65510	operation aborted by user
65511	mobile busy
65512	invalid index
65535	invalid parameters
65534	error allocating memory
65533	write error
65532	read error
65531	too many opened sessions
65530	unknown session
65529	too many (sub-)objects
65528	object unknown
65527	wap communication aborted
65526	read error in multimedia processing
65525	object type not supported
65524	object format not supported
65523	not enough memory for object upload
65522	invalid object size
65521	empty object
65001	network problem
65003	Wap session has been stopped
65004	Memory full
65005	Message too big

The error +CME ERROR: 100, 645xx means a protocol error, where 645xx may be :

+CME ERROR: 100,6450x	FTP errors :
64500	the file sent is corrupted
64501	the file received is corrupted
64502	the file does not exist
64503	the file has not been deleted
64504	an user abort is queried during the downloading
64505	DTR drop from active to inactive during the data transfer
64506	no FTP context is open
64507	the directory does not exist
64540	GPS_LTO_DATA_CORRUPTED
+CME ERROR: 100,6452x	TCP errors :
64520	DTR drop from active to inactive during the data transfer
64521	data send by ktcpsnd are incoherent
64522	no more data in tcp socket (ktcprcv)
64523	TCP disconnection by the server not properly (ktcpsnd)
+CME ERROR: 100,6453x	TCP and FTP errors :
64530	The profile index doesn't exist
64531	The active profile index doesn't exist

A2.2. CMS ERROR codes

Code of <err>	Meaning
1	Unassigned (unallocated) number
8	Operator determined barring
10	Call barred
21	Short message transfer rejected
27	Destination out of service
28	Unidentified subscriber
29	Facility rejected
30	Unknown subscriber
38	Network out of order
41	Temporary failure
42	Congestion
47	Resources unavailable, unspecified
50	Requested facility not subscribed
69	Requested facility not implemented
81	Invalid short message transfer reference value
95	Invalid message, unspecified
96	Invalid mandatory information
97	Message type non-existent or not implemented
98	Message not compatible with short message protocol state
99	Information element non-existent or not implemented
111	Protocol error, unspecified
127	Interworking, unspecified
128	Telematic interworking not supported
129	Short message Type 0 not supported
130	Cannot replace short message
143	Unspecified TP-PID error
144	Data coding scheme (alphabet) not supported
145	Message class not supported
159	Unspecified TP-DCS error
160	Command cannot be actioned
161	Command unsupported
175	Unspecified TP-Command error
176	TPDU not supported
192	SC busy
193	No SC subscription
194	SC system failure
195	Invalid SME address
196	Destination SME barred
197	SM Rejected-Duplicate SM
198	TP-VPF not supported
199	TP-VP not supported
208	D0 SIM SMS storage full
209	No SMS storage capability in SIM
210	Error in MS
211	Memory Capacity Exceeded
212	SIM Application Toolkit Busy
213	SIM data download error
255	Unspecified error cause
300	ME failure
301	SMS service of ME reserved
302	Operation not allowed
303	Operation not supported
304	Invalid PDU mode parameter
305	Invalid text mode parameter
310	SIM not inserted

311	SIM PIN required
312	PH-SIM PIN required
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 service
332	Network timeout
340	NO +CNMA ACK EXPECTED
500	Unknown error

A2.3. GPRS ERROR codes

Code of <err>	Meaning
Errors related to a failure to perform an Attach	
103	Illegal MS (#3)
106	Illegal ME (#6)
107	GPRS services not allowed (#7)
111	PLMN not allowed (#11)
112	Location area not allowed (#12)
113	Roaming not allowed in this location area (#13)
Errors related to a failure to activate a Context	
132	service option not supported (#32)
133	requested service option not subscribed (#33)
134	service option temporarily out of order (#34)
Other GPRS Errors	
149	PDP authentication failure
148	unspecified GPRS error
150	invalid mobile class

Values in parentheses are TS 24.008 cause codes.

Other values in the range 101 - 150 are reserved for use by GPRS.

APPENDIX 3. PIN CODE REQUIREMENT

Most of the AT Commands are rejected (i.e. an error is returned to the DTE) if the PIN Code has not been entered before (SIM requirement as described in [SIM]).

The list of the main commands which can be sent without code PIN is given below:

- ATD (emergency calls)
- AT+CPIN
- ATI
- AT+CGMI, AT+GMI
- AT+CGMM, AT+GMM
- AT+CGMR, AT+GMR
- AT+CGSN, AT+GSN
- AT+GCAP
- AT+CPAS
- AT+CIND
- AT+CMEE
- AT+KSREP
- AT+IPR
- ATE, ATV, ATS, ATZ
- AT&F, AT&K, AT&D, AT&C
- AT+CBST,
- AT+CLVL
- …

This list may be modified in case of special needs from the customer (contact SAGEM S.A. directly to treat this kind of request)

Moreover, some of the commands required the PIN2 code. The list will be added in a next release of this document. If need be, the reader can find the information in the [SIM] document.

APPENDIX 4. GSM 27.010 MULTIPLEXING PROTOCOL

Main options	BASIC	YES
	ADVANCED	NO
	ADVANCED WITH ERROR RECOVERY	NO
Frames	SABM	YES
	UA	YES
	DM	YES
	DISC	YES
	I (ERM)	NO
	RR (ERM)	NO
	RNR (ERM)	NO
	REJ (ERM)	NO
	UI (optional)	NO
	UIH	YES
Multiplexer Controls	DLC parameters negotiation (PN) (optional)	NO
	Power Saving control (PSC)	YES
	Multiplexer Close Down (CLD)	YES
	Test Command (Test)	YES
	Flow control On Command (Fcon)	YES
	Flow control Off Command (Fcoff)	YES
	Modem Status Command (MSC)	PARTIAL
	Non Supported Command response (NSC)	YES
	Remote Port Negotiation (RPN). (optional)	NO
	Remote Line Status command (RLS).(optional)	NO
	Service Negotiation Command (SNC)	YES
Convergence Layers	Type 1 - Unstructured Octet Stream	YES
	Type 2 - Unstructured Octet Stream with flow control, break signal handling and transmission of v24 signal states	NO
	Type 3 – Uninterruptible Framed Data	NO
	Type 4 - Interruptible Framed Data	NO
CMUX parameters	Link speed	9600, 19200, 38400, 57600, 115200
	Maximum frame size	
	Acknowledgment timer	100
	Maximum number of retransmissions	3
	Response timer for control channel	30
	Wake up response timer	10
Others	Wake up procedure (see [RE2] sub clause 5.4.7)	YES
	Priority management	YES
	DLCI number limitation	2

APPENDIX 5. SET OF AT COMMANDS SUPPORTED BY THE HILO

The following table lists all the commands available for the SAGEM HiLo module.
Legend:

- ● Command is Supported
- ○ Command is optional and may be activated or not based on the product definition discussed between SAGEM and the customer
- ✪ Command is supported and can be set according to different options

		HILO
2.	**V25TER AT COMMANDS**	
2.1.	A/ Command : Repeat previous command line	●
2.2.	+++ Command : Switch from data mode to command mode	●
2.3.	O Command : Switch from command mode to data mode	●
2.4.	E Command : Enable command echo	●
2.5.	Q Command : Set result code presentation mode	●
2.6.	S0 Command : Set number of rings before automatically answering the call	●
2.7.	S2 Command : Set character for the escape sequence (data to command mode)	●
2.8.	S3 Command : Write command line termination character	●
2.9.	S4 Command : Set response formatting character	●
2.10.	S5 Command : Write command line editing character	●
2.11.	S7 Command : Set number of seconds to wait for connection completion	●
2.12.	V Command : Set result code format mode	●
2.13.	X Command : Set CONNECT result code format and call monitoring	●
2.14.	&C Command : Set circuit Data Carrier Detect (DCD) function mode	●
2.15.	&D Command : Set circuit Data Terminal Ready (DTR) function mode	●
2.16.	&F Command : Restore manufactory configuration	●
2.17.	&W Command : Save stored profile	●
2.18.	&V Command : Display current configuration	●
2.19.	+IPR Command : Set fixed local rate	●
2.20.	B: Data rate selection	●
2.21.	\N: Data transmission mode	○
2.22.	&K Command : Flow control command	●
3.	**GENERAL AT COMMANDS**	●
3.1.	I Command : Request Identification Information	●
3.2.	Z Command : Reset and restore user configuration	●
3.3.	+CGMI Command : Request manufacturer identification	●
3.4.	+CGMM Command : Request model identification	●
3.5.	+CGMR Command : Request revision identification	●
3.6.	+CGSN Command : Request product serial number identification (IMEI)	●
3.7.	+KGSN Command : Request product serial number identification and SW Version	●
3.8.	+KSGV Command : Read creation/modification date of SGV file	●
3.9.	+CSCS Command : Set TE character Set	●
3.10.	+CIMI Command : Request international subscriber identity	●
3.11.	+GCAP Command : Request complete TA capability list	●
3.12.	+GMI Command : Request manufacturer identification	●
3.13.	+GMM Command : Request model identification	●
3.14.	+GMR Command : Request revision identification	●
3.15.	+GSN Command : Request product serial number identification (IMEI)	●

3.16.	+CMUX Command : Multiplexing mode	●
4.	**CALL CONTROL COMMANDS**	
4.1.	A Command : Answer a call	●
4.2.	H Command : Disconnect existing connection	●
4.3.	D Command : Mobile originated call to dial a number	●
4.4.	D> : Direct dialing from phonebook	●
4.5.	+CHUP Command : Hang up call	●
4.6.	+CRC Command : Set Cellular Result Codes for incoming call indication	●
5.	**MOBILE EQUIPMENT CONTROL AND STATUS COMMANDS**	
5.1.	+CACM Command : Accumulated call meter (ACM) reset or query	●
5.2.	+CAMM Command : Accumulated call meter maximum (ACM max)	●
5.3.	+CCWE Command : Call meter maximum event	●
5.4.	+CALA Command : Set alarm time	●
5.5.	+CALD Command : Delete alarm	●
5.6.	+CCLK Command : Real time clock	●
5.7.	*PSCPOF Command : Power off	●
5.8.	+CIND Command : Indicator control (without <smsfull>)	●
5.9.	+CLAC Command : List all available AT commands	●
5.10.	+CMEC Command : Mobile Equipment control mode	●
5.11.	+CFUN Command : Set Phone Functionality	●
5.12.	+CMER Command : Mobile Equipment event reporting	●
5.13.	+CMEE Command : Report Mobile Termination error	●
5.14.	+CMUT Command : Mute control	●
5.15.	+CPIN Command : Enter pin	●
5.16.	+PSPRAS Command : PS Pin Remaining Attempt Status	●
5.17.	+CPUC Command : Price per unit and currency table	●
5.18.	+CPWC Command : Power class	○
5.19.	*PSRDBS Command : Change Frequency Band	●
5.20.	+CPAS Command : Phone Activity Status	●
5.21.	+CSQ Command : Signal quality	●
5.22.	+KRIC Command : Ring Indicator control	●
5.23.	+KSREP Command : Mobile start-up reporting	●
5.24.	+KGPIO Command : Hardware IO control	●
5.25.	+KSLEEP Command : Power Management control	●
5.26.	+KCELL Command : Cell Environnent Information	●
5.27.	+CRMP Command : Ring Melody Playback	●
5.28.	+CRMC Command : Ring Melody Control	○
5.29.	*PSVMWN Command : Voice Message Waiting Notification	●
5.30.	+CRSM Command : Restricted SIM Access	●
5.31	*PSPWM Command : PWM control	●
6.	**NETWORK SERVICE RELATED COMMANDS**	
6.1.	+CAOC Command : Advice of charge Information	●
6.2.	+CCFC Command : Call forwarding number and conditions control	●
6.3.	+CCWA Command : Call waiting	●
6.4.	+CHLD Command : Call hold and multiparty	●
6.5.	+CUSD Command : Unstructured Supplementary Service Data	●
6.6.	+CLCC Command : List current call	●
6.7.	+CLCK Command : Facility lock	●
6.8.	+CLIP Command : Calling line identification presentation	●
6.9.	+CLIR Command : Calling line identification restriction	●
6.10.	+CNUM Command : Subscriber number	●
6.11.	+COLP Command : Connected line identification presentation	●
6.12.	+COPN Command : Read operator name	●
6.13.	+COPS Command : Operator selection	●
6.14.	+CPOL Command : Preferred PLMN list	●

6.15.	+CPWD Command : Change password	●
6.16.	+CREG Command : Network registration	●
6.17.	+CSSN Command : Supplementary service notification	●
7.	**PHONE BOOK MANAGEMENT**	
7.1.	+CPBF Command : Find phonebook entries	●
7.2.	+CPBR Command : Read current phonebook entries	●
7.3	+CPBS Command : Select phonebook memory storage	●
7.4.	+CPBW Command : Write phonebook entries	●
8.	**SMS AT COMMANDS**	
8.3.	+CMGD Command : Delete SMS message	●
8.4.	+CMGF Command : Select SMS message format	●
8.5.	+CMGL Command : List SMS messages from Preferred store	●
8.6.	+CMGR Command : Read SMS message	●
8.7.	+CMGS Command : Send SMS message	●
8.8.	+CMGW Command : Write SMS message to memory	●
8.9.	+CMSS Command : Send SMS message from storage	●
8.10.	+CNMI Command : New SMS message indication	●
8.11.	+CSCB Command : Select Cell broadcast message	●
8.12.	+CSCA Command : SMS service center address	●
8.13.	+CSMP Command : Set SMS text mode parameters	●
8.14.	+CSMS Command : Select message service	●
8.15.	+CPMS Command : Preferred message storage	●
8.16.	+CSDH Command : Show text mode parameters	●
8.17.	+CSAS Command : Save settings	●
8.18.	+CRES Command : Restore settings	●
9.	**DATA AND FAX AT COMMANDS**	
9.1.	+CBST Command : Select bearer service type	●
9.2.	+CRLP Command : Select radio link protocol parameter	●
9.3.	+CR Command : Service reporting control	●
9.4.	+FCLASS Command : Fax : Select, read or test service class	●
9.5.	+FAE Command : Data/Fax auto answer	○
9.6.	+FRM Command : Receive data	●
9.7.	+FTM Command : Transmit data	●
9.8.	+FRS Command : Receive silence	○
9.9.	+FTS Command : Stop transmission and wait	○
9.10.	+FRH Command : Receive data using HDLC framing	●
9.11.	+FTH Command : Transmit data using HDLC framing	●
10	**GPRS AT COMMANDS**	
10.1.	+CGATT Command : PS Attach or Detach	●
10.2.	+CGACT Command : PDP context activate or deactivate	●
10.3.	+CGCLASS Command : GPRS Mobile station class	●
10.4.	+CGDCONT Command : Define PDP context	●
10.5.	+CGDATA Command : Enter data state	●
10.6.	+CGPADDR Command : Show PDP address	●
10.7.	+CGQMIN Command : Quality of service profile (minimum acceptable)	●
10.8.	+CGQREQ Command : Request quality of service profile	●
10.9.	+CGREG Command : GPRS Network registration Status	●
11.	**SIM APPLICATION TOOLKIT AT COMMANDS**	●
11.2.	*PSSTKI Command : SIM ToolKit Interface configuration	●
11.3.	*PSSTK Command : SIM Toolkit command	●
12	**AUDIO COMMANDS**	
12.1.	+CLVL Command : Loudspeaker volume level	●
12.2.	+VIP Command : Initialize Voice parameters	●
12.3.	+VTS Command : DTMF and Tone generation	●
12.4.	+VTD Command : Tone duration	●

12.5.	+VGR Command : Received Gain Selection	●
12.6.	+VGT Command : Transmit Gain Selection	●
13.	**PROTOCOL SPECIFIC COMMANDS**	
13.2.1.	+KCNXCFG : GSM Connection Configuration	○
13.2.2.	+KCNXCFG : GPRS Connection Configuration	○
13.2.3.	+KCNXTIMER : Connection Timer Configuration	○
13.2.4.	+KCNXPROFILE : Connection current profile configuration	○
13.3.1.	+KTCPCFG : TCP Connection Configuration	○
13.3.2.	+KTCPCNX : TCP Connection	○
13.3.3.	+KTCP_DATA: Incoming data through a TCP Connection	○
13.3.4.	+KTCPRCV : Receiveing data through a TCP Connection	○
13.3.5.	+KTCPSND : Sending data through a TCP Connection	○
13.3.6.	+KTCPCLOSE : Closing current TCP operation	○
13.4.1..	+KFTPCFG : FTP Configuration	○
13.4.2	+KFTPRCV : Downloading FTP files	○
13.4.3.	+KFTPSND : Uploading FTP files	○
13.4.4..	+KFTPDEL : Deleting FTP files	○
13.4.5.	+KFTPCLOSE : Ending current FTP connection	○
13.5.1.	+KUDPCFG : UDP Connection Configuration	○
13.5.2.	+KUDPCLOSE : Closing current UDP operation	○
13.5.3.	+KUDPSND : Sending data through a UDP Connection	○
13.5.4.	+KUDPRCV : Receiveing data through a UDP Connection	○
13.6.1.	+KSMTPPARAM: Connection Configuration	○
13.6.2.	+KSMTPPWD: Authentication Configuration	○
13.6.3.	+KSMTPTO: Receivers Configuration	○
13.6.4.	+KSMTPSUBJECT: Subject Configuration	○
13.6.5.	+KSMTPUL: Send Message	○
13.6.6.	+KSMTPCLEAR: Clear Parameters	○
13.7.1.	+KPOPCNX: Connection Configuration	○
13.7.2.	+KPOPLIST: List Available Mail	○
13.7.3.	+KPOPREAD: Download A Mail	○
13.7.4.	+KPOPDEL: Delete a Mail	○
13.7.5.	+KPOPQUIT: Close Connection	○
14.	**Specific flash commands**	
14.1.	+KFLSHRD : Read data from the flash	○
14.2.	+KFLSHWR : Write data to the flash	○

APPENDIX 6. HOW TO USE TCP SPECIFIC COMMANDS

at&k3 OK **AT+KCNXCFG=0,"GPRS","APN","log","password",”0.0.0.0”,”0.0.0.0”,”0.0.0.0”** OK **AT+KCNXTIMER=0,60,2,70** OK **AT+CGATT=1** OK **AT+KTCPCFG=0,0,"www.free.fr",80** OK **AT+KTCPCNX** OK **AT+KTCPSND=18** CONNECT …Data send… OK **AT+KTCPRCV=10000** CONNECT HTTP/1.0 200 OK Age: 0 Content-Type: text/html; charset=iso-8859-1 Server: Apache Last-Modified: Wed, 24 Jan 2007 10:45:27 GMT <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"> <html> <head> <title>Bienvenue sur Free :)</title> <meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1"> <META HTTP-EQUIV="Refresh" content="1200;URL=http://www.free.fr/"> … a lot of data… OK +KTCP_DATA: 1380 **AT+KTCPRCV=10000** CONNECT ?cat=37" class="linknav" c.free.fr/index.php?cat=188" … a lot of data… OK +KTCP_DATA: 1380 **AT+KTCPCLOSE=1** OK	**hardware flow control activation** **Set GPRS parameters (APN, login, password…)** **Set Timers** **Be sure to attach to network** **Set TCP address and port number** **Initiate the connection** **Send TCP data after “CONNECT”. Do not forget the ETX character. For example :** **GET / HTTP/1.0**□ **Read data (10000 bytes)** **DATA read** **+KTCP_DATA notification :** **There are still 1380 bytes available on the socket** **You can read again the data** **DATA read** **+KTCP_DATA notification :** **There are still 1380 bytes available on the socket** **Then you can close the socket**

APPENDIX 7. HOW TO USE FTP SPECIFIC COMMANDS

at&k3 OK	**hardware flow control activation**
AT+KCNXCFG=0,"GPRS","APN","log","password",,, OK	**Set GPRS parameters (APN, login, password…)**
AT+KCNXTIMER=0,60,2,70 OK	**Set Timers**
AT+CGATT=1 OK	**Be sure to attach to the network**
AT+KFTPCFG=0,"ftp.test.fr","userlogin","user password",21,0 OK	**Set FTP server address, login,password and port number**
AT+KFTPSND="","TestFile.txt" CONNECT …Data send… OK	**Send data, store them in "TestFile.txt" file. After "CONNECT". Do not forget the ETX character.**
AT+KFTPRCV="","TestFile.txt" CONNECT **F6E6E656374696F6E20746573742E** OK	**Read the file called "TestFile.txt", data are sent and end by ETX character.**
AT+KFTPDEL="","TestFile.txt" OK	**Delete the file called "TestFile.txt"**
AT+KFTPCLOSE OK	**Then you can close the connection**

APPENDIX 8. HOW TO USE UDP SPECIFIC COMMANDS

at&k3 OK	**hardware flow control activation**
AT+KCNXCFG=0,"GPRS","APN","log","password",,, OK	**Set GPRS parameters (APN, login, password…)**
AT+KCNXTIMER=0,60,2,70 OK	**Set Timers**
AT+CGATT=1 OK	**Be sure to attach to the network**
AT+KUDPCFG=0 +KUDPCFG: **2** OK	**Create a new UDP socket (returned handle 2) with the parameters associated to the connection profile id number 0**
AT+KUDPSND= 2,"82.234.17.52",32,18 CONNECT …Data send… OK	**Send UDP data after "CONNECT". Do not forget the ETX character. For example :** **GET / HTTP/1.0**
… +KUDP_DATA: 35 …	**Received notification that indicates the presence of 35 bytes in the socket.**
AT+KUDPRCV=2,"82.234.17.52",32,35 CONNECT This is a simple UDP Protocol test. OK	**Try to read 35 bytes from client port 32 and socket 2.**
AT+KUDPRCV=2,"82.234.17.52",32,16 CONNECT This is a simple OK +KUDP_DATA_MISSED: 19	**Same test but try to read 16 bytes (instead of 35) from client port 32 and socket 2:** **there are 19 unread bytes left and missed in the UDP socket**
AT+KUDPCLOSE OK	**Definitely close the UDP socket.**

APPENDIX 9. HOW TO USE MAIL SPECIFIC COMMANDS

A9.1. Mail Overview

The aim of this overview is to give several bases about how to build a mail body with or without attachment. For a better understanding of mail transfer we recommend the reading of the following RFCs:

- RFC 2822 or STD11: Internet Message Format.
- RFC 2045: Multipurpose Internet Mail Extensions Part 1.
- RFC 2046: Multipurpose Internet Mail Extensions Part 2.
- RFC 2047: Multipurpose Internet Mail Extensions Part 3.
- RFC 2049: Multipurpose Internet Mail Extensions Part 5.

A9.1.1. Mail Layout

Messages are divided into lines of characters. Theses lines are delimited with the two characters carriage-return and line-feed; that is, the carriage return (CR) character (ASCII value 13) followed immediately by the line feed (LF) character (ASCII value 10). The carriage-return/line-feed pair will be written in this document as CRLF.)

A message consists of header fields (collectively called "the header of the message") followed by a body. The header is a sequence of lines of characters with special syntax that are used to describe the mail environment (from whom, for whom, when, subject, body format …). The body is simply a sequence of characters that follows the header and is separated from the header by an empty line (i.e., a line with nothing preceding the CRLF).

Note that, from the RFC, There are two limits that this standard places on the number of characters in a single line. Each line of characters must be no more than 998 characters, and should be no more than 78 characters, excluding the CRLF.

A9.1.2. Mail Header

Header fields are lines composed of a field name, followed by a colon (":"), followed by a field body, and terminated by CRLF. The header must only be composed of US-ASCII characters. Here is an example of field presents in a mail header:

MIME-Version: 1.0*<CRLF>*
to: first.receiver@a.domain.com, second.receiver@a.domain.com*<CRLF>*
cc: first.copy@a.domain.com*<CRLF>*
from: sender@another.domain.com*<CRLF>*
subject: mail example*<CRLF>*
<CRLF>

The first field is to assume conformity with the MIME specification. The others fields will be parsed by the mail application to present the message.
The header is closed by the last empty line, each character behind will be considered as part of the body.

A9.1.3. Mail Body

The body of a message is simply lines of US-ASCII characters. The only two limitations on the body are as follows:

- CR and LF MUST only occur together as CRLF; they MUST NOT appear independently in the body.
- Lines of characters in the body MUST be limited to 998 characters, and SHOULD be limited to 78 characters, excluding the CRLF.

Note that mail attachment are encapsulated in the body an defined with specific header fields of the header, this are called multipart message (cf. 3.2 MAIL ATTACHEMENT)

Here is the example of a simple mail:

MIME-Version: 1.0*<CRLF>*
to: first.receiver@a.domain.com*<CRLF>*
cc: first.copy@a.domain.com*<CRLF>*
from: sender@another.domain.com*<CRLF>*
subject: Simple mail example*<CRLF>*
<CRLF>
Hello,*<CRLF>*
<CRLF>
This is a mail example*<CRLF>*
<CRLF>
BR. *<CRLF>*
<CRLF>

A9.2. Mail Attachment

A9.2.1. Multipart Message

As we have seen before, attachments are enclosed in the message body. This kind of message is called multipart messages. Multipart messages are defined by a field in the header, the usual format is:

Content-type: multipart/mixed; boundary=<some text or hash><CRLF>

This field "*Content-Type*" defines the body as a suite of part separated by boundaries – Note that with MIME 1.0 specifications the field "*Content-type*" can be omitted an the default value is "*Content-type : text/plain; charset=us-ascii*" which means a simple body in US-ASCII characters.

Boundaries format is a double hyphen, "--", followed by the boundary value defined in the header field and the CRLF pair. In order to signify the end of the body, we use a special form of the boundary that format is a double hyphen followed by the boundary value, another double hyphen and the CRLF pair.

Each part is structured as a regular internet message with a header that describes the content and the body. The content of each part will also be described by the field "*Content-type*".

Here is an example of two part message:

MIME-Version: 1.0<*CRLF*>
to: first.receiver@a.domain.com<*CRLF*>
from: sender@another.domain.com<*CRLF*>
subject: Multipart mail example<*CRLF*>
Content-type: multipart/mixed; boundary=myboundary<*CRLF*>
<*CRLF*>
--myboundary<*CRLF*>
Content-type : text/plain; charset=us-ascii<*CRLF*>
<*CRLF*>
this is the first part<*CRLF*>
<*CRLF*>
--myboundary<*CRLF*>
<*CRLF*>
This is the second part<*CRLF*>
<*CRLF*>
--myboundary--<*CRLF*>

In the first part the content type of the body is specified and, as the second part does not specify anything, both are US-ASCII text.

A9.2.2. Attachment Format

As the body must only embed US-ASCII characters, the payload attached might be encoded. The encoding algorithm will be signified in the part's header with the field "*Content-transfer-encoding*". The commonly used encoding algorithm is Base64

The MIME type of attachment is described by the "*Content-type*" field in the part's header. For example, we want to send the image file landscape.jpg, we will build the following message:

MIME-Version: 1.0<*CRLF*>
to: first.receiver@a.domain.com<*CRLF*>
from: sender@another.domain.com<*CRLF*>
subject: Image example<*CRLF*>
Content-type: multipart/mixed; boundary=myboundary<*CRLF*>
<*CRLF*>
--myboundary<*CRLF*>
Content-type : text/plain; charset=us-ascii<*CRLF*>
<*CRLF*>
Hello,<*CRLF*>
Here is the image I was talking about :<CRLF>
<*CRLF*>
--myboundary<*CRLF*>
Content-type: image/jpeg; name="landscape.jpg"<*CRLF*>
Content-transfer-encoding: base64<*CRLF*>
<*CRLF*>
"base64 encoded file"<*CRLF*>
<*CRLF*>
--myboundary--<*CRLF*>

A9.3. How To Use SMTP Specific Commands

A9.3.1. Simple Mode

We send the following mail to *receiver.addr@domain* and *copy.addr@domain* :

Hello,<*CRLF*>
<*CRLF*>
This is a mail example<*CRLF*>
<*CRLF*>
BR. <*CRLF*>
<*CRLF*>

And another mail to receiver.addr@domain only:

Hello,<*CRLF*>
<*CRLF*>
I forgot to tell…<*CRLF*>
<*CRLF*>

at&k3 OK	**hardware flow control activation**
AT+KCNXCFG=0,"GPRS","APN","log","password" **,,,** OK	**Set GPRS parameters (APN, login, password…)**
AT+KCNXTIMER=0,60,2,70 OK	**Set Timers**
AT+KCNXPROFILE=0 OK	**Activate GPRS profile**
AT+CGATT=1 OK	**Be sure to attach to the network**
AT+KSMTPPARAM=”smtp.domain.com”, 580, “sender.addr@domain” +KSMTPPARAM: **”smtp.domain.com”, 580, “sender.addr@domain”** OK	**Fill in the connection parameters, the SMTP server URL is smtp.domain.com at port 580.**
AT+KSMTPPWD=”mylogin”,”mypassword” +KSMTPPWD: **”mylogin”, “mypassword”** OK	**Fill in the authentication parameters.**
AT+KSMTPTO=”receiver.addr@domain”,””,”copy.addr@domain”,”” +KSMTPTO: **”receiver.addr@domain”,,”copy.addr@domain”,** OK	**Fill in the receiver parameters, one direct et a copy.**
AT+KSMTPSUBJECT=”Simple mail example” +KSMTPSUBJECT: **”Simple mail example”** OK	**Fill in the subject parameter.**

AT+KSMTPUL=1,46	**Send the mail in simple mode, we send 46 bytes to the module.** **The module connect the SMTP server and send the header:** MIME-Version: 1.0<*CRLF*> to: receiver.addr@domain<*CRLF*> cc: copy.addr@domain<*CRLF*> from: sender.addr@domain<*CRLF*> subject: Simple mail example<*CRLF*> <*CRLF*>
CONNECT <*CRLF*> Hello,<*CRLF*> <*CRLF*> This is a mail example<*CRLF*> <*CRLF*> BR. <*CRLF*> <*CRLF*> <*ETX*> OK	**The mail is successfully sent.**
	We prepare to send the second mail
AT+KSMTPTO="receiver.addr@domain","","","","" +KSMTPTO: **"receiver.addr@domain",,,**	**Fill in the receiver parameter.**
OK	
AT+KSMTPSUBJECT="Second mail example" +KSMTPSUBJECT: **"Second mail example"** OK	**Fill in the subject parameter.**
AT+KSMTPUL=1,36	**Send the mail in simple mode, we send 36 bytes to the module.** **The module connect the SMTP server and send the header:** MIME-Version: 1.0<*CRLF*> to: receiver.addr@domain<*CRLF*> from: sender.addr@domain<*CRLF*> subject: Second mail example<*CRLF*> <*CRLF*>
CONNECT <*CRLF*> Hello,<*CRLF*> <*CRLF*> I forgot to tell…<*CRLF*> <*CRLF*> <*ETX*> OK	**The mail is successfully sent.**
AT+KSMTPCLEAR OK	**Clear the parameter's set.**

A9.3.2. Complex Mode

We send a mail to *receiver.addr@domain* with the image *landscape.jpg* attached. In complex mode the first part of the header is handled by the module thus we will send the following data through the KSMTPUL Command :

Content-type: multipart/mixed; boundary=myboundary<*CRLF*>
<*CRLF*>
--myboundary<*CRLF*>
<*CRLF*>
Hello,<*CRLF*>
<*CRLF*>
Here is the image I was talking about :<CRLF>
<*CRLF*>
--myboundary<*CRLF*>
Content-type: image/jpeg; name="landscape.jpg"<*CRLF*>
Content-transfer-encoding: base64<*CRLF*>
<*CRLF*>
AR15qfGTmlk[...]AAADJqdf462==<*CRLF*>
<*CRLF*>
--myboundary--<*CRLF*>
<*ETX*>

Note that the encoded file in this example is not complete. We assume that the final size of the whole data block to send is 15360.

at&k3 OK	**hardware flow control activation**
AT+KCNXCFG=0,"GPRS","APN","log","password" **,,,** OK	**Set GPRS parameters (APN, login, password…)**
AT+KCNXTIMER=0,60,2,70 OK	**Set Timers**
AT+KCNXPROFILE=0 OK	**Activate GPRS profile**
AT+CGATT=1 OK	**Be sure to attach to the network**
AT+KSMTPPARAM=”smtp.domain.com”, 580, “sender.addr@domain” +KSMTPPARAM: **”smtp.domain.com”, 580, “sender.addr@domain”** OK	**Fill in the connection parameters, the SMTP server URL is smtp.domain.com at port 580.**
AT+KSMTPPWD=”mylogin”,”mypassword” +KSMTPPWD: **”mylogin”, “mypassword”** OK	**Fill in the authentication parameters.**
AT+KSMTPTO=”receiver.addr@domain”,””,””,”” +KSMTPTO: **”receiver.addr@domain”,,””,** OK	**Fill in the receiver parameters, one direct et a copy.**
AT+KSMTPSUBJECT=”Complex mail example” +KSMTPSUBJECT: **”Complex mail example”** OK	**Fill in the subject parameter.**

AT+KSMTPUL=0,15360 CONNECT Content-type:multipart/mixed; boundary=myboundary<*CRLF*> <*CRLF*> --myboundary<*CRLF*> <*CRLF*> Hello,<*CRLF*> <*CRLF*> Here is the image I was talking about :<CRLF> <*CRLF*> --myboundary<*CRLF*> Content-type: image/jpeg; name="landscape.jpg"<*CRLF*> Content-transfer-encoding: base64<*CRLF*> <*CRLF*> AR15qfGTmlk[...]AAADJqdf462==<*CRLF*> <*CRLF*> --myboundary--<*CRLF*> <*ETX*> OK	**Send the mail in simple mode, we send 15360 bytes to the module.** **The module connect the SMTP server and send the first part of the header:** MIME-Version: 1.0<*CRLF*> to: receiver.addr@domain<*CRLF*> from: sender.addr@domain<*CRLF*> subject: Complex mail example<*CRLF*> **The mail is successfully sent.**
AT+KSMTPCLEAR OK	**Clear the parameter's set.**

A9.4. How To Use POP3 Specific Commands

at&k3 OK	**hardware flow control activation**
AT+KCNXCFG=0,"GPRS","APN","log","password" **,,,** OK	**Set GPRS parameters (APN, login, password…)**
AT+KCNXTIMER=0,60,2,70 OK	**Set Timers**
AT+KCNXPROFILE=0 OK	**Activate GPRS profile**
AT+CGATT=1 OK	**Be sure to attach to the network**

AT+KPOPCNX=”pop.domain.com”, 580, ”mylogin”,”mypassword” +KPOPCNX: **”pop.domain.com”, 580, ”mylogin”,”mypassword”** OK	**Connect the POP3 server URL is pop.domain.com at port 580.** ***… Connection established …***
AT+POPLIST +KPOPLIST: 7 messages (214222 octets) +KPOPLIST: 1,1566 +KPOPLIST: 2,146257 +KPOPLIST: 3,7081 +KPOPLIST: 4,1190 +KPOPLIST: 5,28034 +KPOPLIST: 6,1191 +KPOPLIST: 7,28036 OK	**Checkout available messages.**
AT+POPREAD=6 CONNECT *X-Apparently-To: receiver.addr@domain via 217.146.182.108; Fri, 04 May 2007 01:48:13 -0700<CRLF>* [...] *MIME-Version: 1.0<CRLF>* *from: mailmodule@yahoo.fr<CRLF>* *subject: TEST SMTP in MODE : SIMPLE<CRLF>* *to: receive.addrr@domain <CRLF>* *cc:* copy.addr@domain*<CRLF>* *<CRLF>* *<CRLF>* *Hello. This is a dummy MAIL text.<CRLF>* *If you read this, test is successful<CRLF>* *<CRLF>* *<ETX>* OK	**Download mail #6** **Note that header is modified by the SMTP server, this might induce heavier payload.** **… Start of body …**
AT+KPOPDEL=6 OK	**Delete mail #6**
AT+POPLIST +KPOPLIST: 6 messages (213031 octets) +KPOPLIST: 1,1566 +KPOPLIST: 2,146257 +KPOPLIST: 3,7081 +KPOPLIST: 4,1190 +KPOPLIST: 5,28034 +KPOPLIST: 7,28036 OK	**Check out list again:** **The mail #6 has been marked as deleted**
AT+KPOPQUIT OK	**Close the connection with the POP3 server.** ***… Connection closed …***

APPENDIX 10. HOW TO USE SIM TOOLKIT

AT+CPIN="1234"	Enter PIN CODE
OK	
*PSSTK:"SETUP MENU",1,4,"SIMMAX",0,0,1,0,0,6	Soon the module sends an unsolicited message *PSSTK:"SETUP MENU" , it is the STK Setup menu
AT*PSSTK="SETUP MENU",1,0	There are 6 items in STK menu. Give response to URC "SETUP MENU". "1" is the Command Number. Send Terminal response, OK
OK	
*PSSTK: "END SESSION"	URC for Session Status : End of STK session
AT*PSSTK="GET ITEM LIST",6	Use "GET ITEM LIST" command to get the list of items
*PSSTK: "GET ITEM LIST",1,16,4,"Switch Number",0,0,0	Item 1: "Switch number".
*PSSTK: "GET ITEM LIST",2,17,4,"Utilities",0,0,0	Item 2: "Utilities"
*PSSTK: "GET ITEM LIST",3,18,4,"Auto Switch",0,0,0	Item 3: "Auto Switch"
*PSSTK: "GET ITEM LIST",4,19,4,"Hidden Phone Book",0,0,0	Item 4:"Hidden Phone Book"
*PSSTK: "GET ITEM LIST",5,20,4,"IP Call",0,0,0	Item 5: "IP Call"
*PSSTK: "GET ITEM LIST",6,22,4,"Product Info.",0,0,0	Item 6:"Product Info"
OK	
AT*PSSTK="MENU SELECTION",22	Select menu 6, whose ItemIdentifier is 22. After this operation, it will enter into submenu of menu item 6.
OK	
*PSSTK: "SELECT ITEM",0,0,"",0,0,1,0,0,2	Totally 2 menus in this level.
AT*PSSTK="GET ITEM LIST",2	
*PSSTK: "GET ITEM LIST",1,1,4,"Customer service",0,0,0	Item 1 is "Customer service", no more sub menus
*PSSTK: "GET ITEM LIST",2,2,4,"LOT",0,0,0	Item 2 is "LOT", no more sub menus
OK	
AT*PSSTK="SELECT ITEM",1,1,0,0	Select item 1 "Customer service", whose ItemIdentifier is 1
OK	
*PSSTK: "DISPLAY TEXT",1,0,1,0,4,"http://www.sim-max.com/",0,0	URC "DISPLAY TEXT" info will be showed with Customer information, "http://www.sim-max.com/"
AT*PSSTK="DISPLAY TEXT",1,0	You have to use "DISPLAY TEXT" command to give a response to STK.
OK	
	URC for session status.

***PSSTK: "END SESSION"**	

APPENDIX 11. HOW TO SWITCH FROM DATA MODE TO COMMAND MODE

AT+CPIN=”0000” OK	**Enter PIN CODE**
AT+CGDCONT=1,"IP","APN","0.0.0.0",0,0 OK	**Configure the GPRS parameters**
atd*99*1#** **CONNECT** **~ÿ}#À!}!} } }2}!}$}%Ü}"}&} }*} }** **}#}$À#kZ~~ÿ}#À!}!}!} }2}!}$}%Ü}"}&} }*} }** **}#}$À#dJ~~ÿ}#À!}!}"} }2}!}$}%Ü}"}&} }*} }** **}#}$À#uz~**	**Dial up to have a data connection** **DATA exchanges (PPP)**
---------- **OK**	**---- > Send “+++” characters** **Switch to command mode is done**
at OK	**It is possible to use AT commands**
ato **CONNECT** **~ÿ}#À!}!}#} }2}!}$}%Ü}"}&} }*} }** **}#}$À#zj~~ÿ}#À!}!}$} }2}!}$}%Ü}"}&} }*} }** **}#}$À#W}:~~ÿ}#À!}!}%} }2}!}$}%Ü}"}&} }*} }** **}#}$À#X}*~~ÿ}#À!}!}&} }2}!}$}%Ü}"}&} }*} }** **}#}$À#I:~~ÿ}#À!}!}'} }2}!}$}%Ü}"}&} }*} }** **}#}$À#F*~~ÿ}#À!}!}(} }2}!}$}%Ü}"}&} }*} }** **}#}$À#}3Ú~~ÿ}#À!}!})} }2}!}$}%Ü}"}&} }*} }** **}#}$À#}<Ê~~ÿ}#À!}!}*} }2}!}$}%Ü}"}&} }*} }** **}#}$À#}-ú~**	**Switch to data mode, resume the data connection** **DATA exchanges continue**
NO CARRIER	**End of connection**