GPRS AT Commands

AT Commands Reference Guide



GPRS AT Commands

Reference Guide

This Command Set Applies to the Following Products:

MultiModem® GPRS (MTCBA-G)

MultiModem® GPRS-USB (MTCBA-G-U)

MultiModem® GPRS with Ethernet Interface (MTCBA-G-EN)

MMCModemTM GPRS (MTMMC-G)

SocketModem® GPRS (MTSMC-G)

MultiModem® iCell (MTCMR-G)

MultiConnect™ AW (MT100A2W)

PN S000293K, Revision K

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Revisions

Revision Level	Date	Description	
Α	07/15/03	Initial release.	
В	03/08/04	Added Values to each command. Added new commands.	
С	09/28/04	Changed data/fax call to ATD <nb>; and voice call to ATD<nb></nb></nb>	
		Changed Autobauding is supported (operating from 2400 to 115200)	
D	08/04/05	Added "Length of Phone Numbers" section to Chapter 3. Changed maximum length of phone numbers to 60 digits. Added <mode> to +CMGF values. Added new command, +CMMS. Removed values 2 and 4 from \N. Increased I/O ports to ten in the index value of +WIOR and +WIOW. Added more text to +WRIM. Removed one note from +CGCONT. Changed the font size from 10 point to 9 point; this brought the manual under 200 pages.</mode>	
Е	01/23/06	Added ®and ™ to products listed on the cover.	
F	05/10/07	Added the +WMBS, a command that supports quad band builds. Updated the Technical Support contact list.	
G	08/24/07	11	
Н	01/16/08	Updated the cover and MMCModem product name.	
I	09/25/08	Updated the +ECHO commands and removed Fax commands. Removed all references to HR (Half Rate). Added four new Phonebook commands: WCOS, WPGW, WPGR, WPGS. Added SMS Command: WMCP. Updated to version 6.57d.	
J	01/16/09	Added the MultiModem iCell to the list of products that use this command set. Removed references to fax commands.	
К	07/10/09	Added the MultiConnect AW to the list of products that use this command set. Incorporated editorial changes.	

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Chapter 1 - Introduction

Scope of This Document

This document describes the AT-command based messages exchanged between an application and the Multi-Tech Systems, Inc. products in order to manage GSM-related events or services.

Related Documents

This interface specification is based on the following recommendations:

- [1] ETSI GSM 07.05: Digital cellular telecommunications system (Phase 2);
 Use of DTE-DCE interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)
- [2] ETSI GSM 07.07: Digital cellular telecommunications system (Phase 2);AT command set for GSM Mobile Equipment (ME)
- [3] ITU-T Recommendation V.25 ter: Serial asynchronous automatic dialing and control
- [4] ETSI GSM 03.40: Digital cellular telecommunications system (Phase 2); Technical implementation of the Short Message Service (SMS) Point-to-Point (PP)
- [5] ETSI GSM 03.38: Digital cellular telecommunications system (Phase 2);Alphabets and language-specific information
- [6] ETSI GSM 04.80: Digital cellular telecommunications system (Phase 2): Mobile radio interface layer 3, Supplementary service specification, Formats and coding

Definitions

The words, "Mobile Station" (MS) or "Mobile Equipment" (ME) are used for mobile terminals supporting GSM services.

Terminal Equipment (TE) is the Man-Machine Interface of a GSM device (modem or handset). A **TE** can be a handset MMI or the AT Command interface.

A call from a GSM mobile station to the PSTN is called a "mobile originated call" (MOC) or "outgoing call", and a call from a fixed network to a GSM mobile station is called a "mobile terminated call" (MTC) or "incoming call".

In this document, the word "product" refers to any Multi-Tech product supporting the AT commands interface.

Chapter 2 – AT Command Features

Line Settings

A serial link handler is set with the following default values (factory settings):

- Autobaud
- 8 bits data
- 1 stop bit
- no parity
- RTS/CTS flow control

Please use the +IPR, +IFC and +ICF commands to change these settings.

Command Line

Commands always start with AT (which means ATtention) and finish with a <CR> character.

Information Responses and Result Codes

Responses start and end with <CR><LF>, except for the ATV0 DCE response format and the ATQ1 (result code suppression) commands.

- If the command syntax is incorrect, an **ERROR** string is returned.
- If the command syntax is correct but transmitted with the wrong parameters, the +CME ERROR: <Err> or +CMS ERROR: <SmsErr> strings are returned with adequate error codes if the CMEE was previously set to 1. By default, CMEE us set to 0, and the error message is only "ERROR".
- If the command line has been performed successfully, an **OK** string is returned.

In some cases, such as "AT+CPIN?" or (unsolicited) incoming events, the product does not return the **OK** string as a response.

Chapter 3 - General Behaviors

SIM Card Insertion and Removal Procedures

SIM card Insertion and Removal procedures are supported. Software functions rely on positive reading of the hardware SIM detect pin. This pin state (open/closed) is permanently monitored.

When the SIM detect pin indicates that a card is present in the SIM connector, the product tries to set up a logical SIM session. The logical SIM session will be set up or not depending on whether the detected card is a SIM Card or not. The AT+CPIN? command delivers the following responses:

- If the SIM detect pin indicates "absent", the response to AT+CPIN? is "+CME ERROR 10" (SIM not inserted).
- If the SIM detect pin indicates "present", and the inserted Card is a SIM Card, the response to AT+CPIN? is "+CPIN: xxx" depending on SIM PIN state.
- If the SIM detect pin indicates "present", and the inserted Card is not a SIM Card, the response to AT+CPIN? is CME ERROR 10.
- These last two states are not given immediately due to background initialization. Between the hardware SIM
 detect pin indicating "present" and the previous results the AT+CPIN? sends "+CME ERROR: 515" (Please wait,
 init in progress).

When the SIM-detect pin indicates card absence, and if a SIM Card was previously inserted, an IMSI detach procedure is performed, all user data is removed from the product (Phonebooks, SMS etc.). The product then switches to **emergency mode**.

When the hardware SIM detect pin is not managed, the software cannot know the state of the SIM (SIM inserted or SIM removed) except for the initialization of the modem. In this case, the SIM must be present in the rack before the initialization of the modem can be taken into account.

If the SIM is removed and it had been detected at the time of initialization of the modem, the following message is displayed: +CME ERROR: 13. If the SIM is inserted in the rack and it was not present at the time of the initialization of the modem, the state of the SIM remains unchanged (SIM removed). It will have to initialize the modem again so that it is detected.

Background Initialization

After entering the PIN (Personal Identification Number), some SIM user data files are loaded into the product (Phonebooks, SMS status, etc.). Please be aware that it might take some time to read a large phonebook.

The AT+CPIN? command response comes just after the PIN is checked. After this response user data is loaded (in background). This means that some data may not be available just after PIN entry is confirmed by 'OK'. The reading of phonebooks will then be refused by "+CME ERROR: 515" or "+CMS ERROR: 515" meaning, "Please wait, service is not available, init in progress".

This type of answer may be sent by the product at several points:

- When trying to execute another AT command before the previous one is completed (before response),
- When switching from ADN to FDN (or FDN to ADN) and trying to read the relevant phonebook immediately,
- When asking for +CPIN? status immediately after SIM insertion and before the product has determined if the inserted card is a valid SIM Card.

About the Length of Phone Numbers

Phone numbers can consist of up to 60 digits. The first 20 digits are stored in the SIM in the phonebook file (EF_{ADN} , EF_{FDN} or EF_{LND}) corresponding to the selected phonebook. The next digits are stored in other extension SIM files (EF_{EXT1} or EF_{EXT2}).

Example:

Number of Digits	Nb of Records in EF _{ADN}	Nb of Records in EF _{EXT1}
1 to 20	1	0
21 to 40	1	1
41 to 60	1	2

If there are no more free records in the EF_{EXT1}, the behavior is:

- if the user tries to store an entry that exceeds 20 digits: +CME: 20
- if the user tries to dial an number that exceeds 20 digits: +CME: 20

Since the maximum length for the numbers in the ADN, FDN, and LND phonebooks is 60 digits:

• if the user tries to dial a number that exceeds 60 digits: +CME: 3

Before the user can perform a call, the number of free records in the $\mathsf{EF}_{\mathsf{EXT1}}$ is checked for availability of free space to store this number.

- If there are free records left, the call is setup.
- Otherwise, +CME: 20 error is returned (Memory Full).

See Recommendation 3GPP 11.11 for more details.

Chapter 4 – General AT Commands

Manufacturer Identification +CGMI

Description: Displays the manufacturer identification.

Values: No parameters Syntax: AT+CGMI

Command	Possible Responses
AT+CGMI	WAVECOM MODEM
	OK
Note: Get manufacturer identification	Note: Command valid, Wavecom modem

Request Model Identification +CGMM

Description: Displays the supported frequency bands. With multi-band products the response may be a combination

of different bands.

Values: No parameters
Syntax: AT+CGMM

Command	Possible responses
AT+CGMM	MULTIBAND 900E 1800
	OK
Note: Get hardware version	Note: Multiband: GSM 900 MHz extended band and DCS
	1800 (default configuration)
AT+CGMM	900E
Note: Get hardware version	OK
	Note: 900 Extended
AT+CGMM	1800
Note: Get hardware version	OK
	Note: DCS
AT+CGMM	1900
Note: Get hardware version	OK
	Note: PCS
AT+CGMM	G850
Note: Get hardware version	OK
	Note: GSM 850
AT+CGMM	MULTIBAND G850 1900
Note: Get hardware version	OK
	Note: Multiband: GSM 850 and PCS

Request Revision Identification +CGMR

Description: Displays the revised software version.

Values: No parameters
Syntax: AT+CGMR

Command	Possible responses
AT+CGMR	657_09gg.Q2406B 2015268 100506 17:01 OK
Note: Get software version	Note: Software release 6.57, generated on the 5th of October 2006

Product Serial Number +CGSN

Description: Allows the user application to get the IMEI (International Mobile Equipment Identity, 15-digit number) of

the product.

Values: No parameters
Syntax: AT+CGSN

Command	Possible responses
AT+CGSN	012345678901234
	OK
Note: Get the IMEI	Note: IMEI read from EEPROM
AT+CGSN	+CME ERROR: 22
Note: Get the IMEI	Note: IMEI not found in EEPROM

Select TE Character Set +CSCS

Description: Informs the modem which character set is used by the DTE. The modem can convert each character of

entered or displayed strings. This is used to send, read or write short messages. See also +WPCS for

the phonebooks' character sets.

Values: <Character Set>

GSM GSM default alphabet.

PCCP437 PC character set code page 437.

CUSTOM User defined character set (cf. +WCCS command).

HEX Hexadecimal mode. No character set used; the user can read or write hexadecimal

values.

Default: GSM alphabet

Syntax: AT+CSCS=<Character Set>

Command	Possible responses
AT+CSCS="GSM"	OK
Note: GSM default alphabet	Note: Command valid
AT+CSCS="PCCP437"	OK
Note: PC character set code	Note: Command valid
AT+CSCS=?	+CSCS: ("GSM","PCCP437","CUSTOM","HEX")
	OK
Note: Get possible values	Note: Possible values

Phonebook Character Set +WPCS

Description: Informs the modem which character set is used by the DTE for the phonebooks. The modem can

convert each character of entered or displayed strings. This is used to read or write phonebook entries.

See also +CSCS for the short messages character sets.

Values: <Character Set>

TRANSPARENT Transparent mode. The strings are displayed and entered as they are stored in

SIM or in ME.

CUSTOM User defined character set (cf. +WCCS command).

HEX Hexadecimal mode. No character set used; the user can read or write

hexadecimal values.

Syntax: AT+WPCS=<Character Set>

Command	Possible responses
AT+WPCS="TRANSPARENT"	OK
Note: Transparent mode	Note: Command valid
AT+WPCS="CUSTOM"	OK
Note: Custom character set	Note: Command valid
AT+WPCS=?	+WPCS: ("TRANSPARENT","HEX","CUSTOM")
	OK
Note: Get possible values	Note: Possible values

Request IMSI +CIMI

Description: Reads and identifies the IMSI (International Mobile Subscriber Identity) of the SIM card. The PIN may

need to be entered before reading the IMSI.

Values: No parameters
Syntax: AT+CIMI

Command	Possible responses
AT+CIMI	208200120320598
Note: Read the IMSI	OK
	Note: IMSI value (15 digits), starting with MCC (3 digits) / MNC (2 digits,
	3 for PCS 1900)

Card Identification +CCID

Description: Orders the product to read the EF-CCID file on the SIM card.

Values: No parameters
Syntax: AT+CCID

Command	Possible responses
AT+CCID	+CCID: "123456789AB111213141"
Note: Get card ID	Note: EF-CCID is present, hexadecimal format
AT+CCID?	+ CCID: "123456789AB111213141"
Note: Get current value	Note: Same result as +CCID
AT+CCID= ?	OK
Note: Get possible value	Note: No parameter but this command is valid

Note: If there is no EF-CCID file present on the SIM, the +CCID answer will not be sent, but the OK message will be returned.

Capabilities List +GCAP

Description: Displays the complete list of capabilities.

Values: No parameters
Syntax: AT+GCAP

Command	Possible responses
AT+GCAP	+GCAP: +CGSM +FCLASS
	OK
Note: Get capabilities list	Note: Supports GSM commands

Repeat Last Command A/

Description: Repeats the previous command. Only the A/ command itself cannot be repeated.

Values: No parameters

Syntax: A/

Command	Possible responses
A/	
Note: Repeat last command	

Power Off +CPOF

Description: Stops the GSM software stack as well as the hardware layer or modem activity. The AT+CFUN=0

command is equivalent to +CPOF.

Values: No parameters Syntax: AT+CPOF[=1]

Command	Possible responses
AT+CPOF	OK
Note: Stop GSM stack	Note: Command valid
AT+CPOF=1	OK
Note: Stop the modem	Note: Command valid

Note: After AT+CPOF[=1], the modem will not respond to AT commands. To reset it, use the hard

reset.

Note: In autobaud mode, after an AT+CPOF, unsolicited information that wakes up the modem is

sent at 9600 bps until an AT command is sent. When an AT command is sent, the modem

will synchronize to the sender's speed.

Caution: When starting up, if autobauding is enabled and no AT command has yet been received, the

product sends all unsolicited responses (like RING) at 9600 baud.

Set Phone Functionality +CFUN

Description:

Selects the mobile station's level of functionality. When the application wants to stop the product with a power off, or if the application wants to force the product to execute an IMSI DETACH procedure, then it must send: AT+CFUN=0 (equivalent to AT+CPOF).

This command executes an IMSI DETACH and makes a backup copy of some internal parameters in SIM and in EEPROM. The SIM card cannot then be accessed.

If the mobile equipment is not powered off by the application after this command has been sent, a restart command (AT+CFUN=1) will have to issued to restart the whole GSM registration process.

If the mobile equipment is turned off after this command, then a power on will automatically restart the whole GSM process.

The AT+CFUN=1 command restarts the entire GSM stack and GSM functionality: a complete software reset is performed. All parameters are reset to their previous values if AT&W was not used.

If you write entries in the phonebook (+CPBW) and then reset the product directly (AT+CFUN=1, with no previous AT+CFUN=0 command), some entries may not be written (the SIM task does not have enough time to write entries in the SIM card).

In addition, the OK response will be sent at the last baud rate defined by the +IPR command. With the autobauding mode the response can be at a different baud rate, it is therefore preferable to save the defined baud rate with AT&W before directly sending the AT+CFUN=1 command.

Values: <functionality level>

- 0 Set minimum funtionality; IMSI detach procedure
- 1 Set the full functionality mode with a complete software reset

Syntax: AT+CFUN=<functionality level>

Command	Possible responses
AT+CFUN?	+CFUN: 1
Note: Ask for current functionality level	OK
·	Note: Full functionality
AT+CFUN=0	OK
Note: Set minimum functionality, IMSI detach procedure	Note: Command valid
AT+CFUN=1	OK
Note: Set the full functionality mode with a complete software reset	Note: Command valid

Phone Activity Status +CPAS

Description: Returns the activity status of the mobile equipment.

Values: <pas>

ready (allow commands from TA/TE)unavailable (does not allow commands)

2 unknown

3 ringing (ringer is active)

4 call in progress

5 asleep (low functionality)

Syntax: AT+CPAS

Command	Possible responses
AT+CPAS	+CPAS: <pas></pas>
Note: Current activity status	OK .

Report Mobile Equipment Errors +CMEE

Description: Disables or enables the use of the "+CME ERROR: <xxx>" or "+CMS ERROR: <xxx>" result code

instead of simply "ERROR". See the Appendix for +CME ERROR Result Codes description and +CMS

ERROR result codes.

Values: <error reporting flag>

0 Disable ME error reports; use only << ERROR >>

Enable <<+CME ERROR: <xxx> >> or

<< +CMS ERROR: <xxx> >>

Syntax: AT+CMEE=<error reporting flag>

Command	Possible responses
AT+CMEE=?	+CMEE: (0,1)
	OK
AT+CMEE=0	OK
Note: Disable ME error reports, use only << ERROR >>	
AT+CMEE=1	OK
Note: Enable << +CME ERROR: <xxx> << or</xxx>	
<< +CMS ERROR: <xxx> >></xxx>	

Keypad Control +CKPD

Description: Emulates the modem keypad by sending each keystroke as a character in a <keys> string.

The supported GSM sequences are listed in the Appendix A.

If emulation fails, a +CME ERROR: <err> is returned.

If emulation succeeds, the result depends on the GSM sequence activated.

Note: In the case where the FDN phonebook is activated, the sequences concerning "call forwarding"

are allowed only if the entire sequence is written in the FDN.

Values: <keys>

Keyboard sequence; string of the following characters (0-9, *, #)

Syntax: AT+CKPD=<keys>

3 -	
Command	Possible responses
AT+CKPD="*#21#"	+CCFC: 0,7
Note: Check every call forwarding status	
AT+CKPD="1234"	+CME ERROR 3
Note: Sequence not allowed	

Clock Management +CCLK

Description: Sets or gets the current date and time of the ME real-time clock.

Values: <date and time string>

String format for date/time is "yy/MM/dd,hh:mm:ss"

Note: Valid years are 98 (for 1998) to 97 (for 2097). The second field is not mandatory. Default

date/time is "98/01/01,00:00:00" (January 1st, 1998 / midnight).

Syntax: AT+CCLK=<date and time string>

Command	Possible responses
AT+CCLK="00/06/09,17:33:00"	OK
Note: set date to June 9th, 2000, and	Note: Date/Time stored
time to 5:33pm	
AT+CCLK="00/13/13,12:00:00"	+CME ERROR 3
Note: Incorrect month entered	
AT+CCLK?	+CCLK: "00/06/09,17:34:23"
Note: Get current date and time	OK
	Note: current date is June 9th, 2000 current time is 5:34:23 pm

Alarm Management +CALA

Description: Sets the alarm date/time in the modem. The maximum number of alarms is 16.

Note: The date/time should be set with the AT+CCLK command prior to using AT+CALA.

Values: <date and time string> String format for alarms: "yy/MM/dd,hh:mm:ss" (see +CCLK)

Note: Seconds are taken into account. <index> Offset in the alarm list, range 1 to 16

Syntax: AT+CALA=<date and time string> (set alarm)

AT+CALA="",<index> (delete alarm)

Command	Possible responses
AT+CALA="00/06/09,07:30"	OK
Note: set an alarm for June 9 th , 2000 at 7:30 am	Note: Alarm stored
AT+CALA="99/03/05,13:00:00"	+CME ERROR 3
Note: set an alarm for March 5 th , 1999 at 1:00 pm	Note: Invalid alarm (date/time expired)
AT+CALA?	+CALA: "00/06/08,15:25:00",1
	+CALA: "00/06/09,07:30:00",2
Note: list all alarms	+CALA: "00/06/10,23:59:00",3
	Note: three alarms are set (index 1, 2, 3)
	+CALA: "00/06/08,15:25:00",1
	Note: an alarm occurs (index 1)
AT+CALA="",3	OK
Note: delete alarm index 3	Note: Alarm index 3 deleted
AT+CALA?	+CALA: "00/06/09,07:30:00",2
Note: list all alarms	Note: Only one alarm (index 2)

Chapter 5 - Call Control Commands

Dial Command D

Description:

The ATD command sets a voice or data call. As per GSM 02.30, the dial command also controls supplementary services.

Data Calls

For a data call, the application sends the following ASCII string to the product (the bearer must be previously selected with the +CBST command):

ATD<nb> where <nb> is the destination phone number. **Note:** If a GPRS PPP session is already running, the setting of CSD (GSM data call) is not supported.

Voice Calls

For a voice call, the application sends the following ASCII string to the product: (the bearer may be selected previously, if not a default bearer is used).

ATD<nb>; where <nb> is the destination phone number.

Emergency Calls

For emergency calls:

These Emergency Numbers are available without a SIM card:

000, 08, 110, 112, 118, 119, 911 and 999.

These Emergency Numbers are available with a SIM card:

When EF_ECC file is missing from SIM: 112 and 911.

When SIM includes an EF_ECC file: 112, 911 and any emergency numbers available in the EF_ECC file.

International Numbers

For an international number, the local international prefix does not need to be set (usually 00) but does need to be replaced by the '+' character.

Example: to set up a voice call to Multi-Tech offices from another country, the AT command is:

"ATD+17637853600;"

Some countries/regions may have specific numbering rules for their GSM handset numbering.

Values:

<nb> Destination phone number

<I> Optional parameter.

<I> means "invocation" (restrict CLI presentation)
<i> means "suppression" (allow CLI presentation)

<mem> Phonebook (one of SM, LD, MC, ON, ME, RC, MT or SN). A default value can be selected

by using the +CPBS command.

<index> Call number at indicated offset from the phonebook selected by the +CPBS command.
<name> Call number corresponding to given name from the phonebook selected by the +CPBS

command.

The response to the ATD command is one of the following:

Verbose result code	Numeric code (with ATV0 set)	Description
OK	0	if the call succeeds, for voice call only
CONNECT <speed></speed>	10,11,12,13,14,15	if the call succeeds, for data calls only, <speed> takes</speed>
		the value negotiated by the product.
BUSY	7	If the called party is already in communication
NO ANSWER	8	If no hang up is detected after a fixed network time-out
NO CARRIER	3	Call setup failed or remote user release. Use the
		AT+CEER command to know the failure cause

Direct Dialing from a Phonebook (stored in the SIM card) can be performed with the following commands:

ATD> <index>; to call <index> from the selected phonebook (by the +CPBS command)

ATD> "BILL"; to call "BILL" from the selected phonebook

ATD> mem <index> allows direct dialing from a phonebook number

<mem> is SM, LD, MC, ME, RC, MT or SN.

See +CPBS command

Syntax: ATD<nb>[<I>][;]

ATD>[<mem>]<index>[<I>][;] ATD>[<mem>]<name>[<I>][;]

Command	Possible responses
AT+CPBS?	+CPBS:"SM",8,10
Note: Which phonebook is selected?	Note: ADN phonebook is selected, 8
	locations are used and 10 locations are
	available
ATD>SM6;	OK
Note: Call index 6 from AND phonebook	Note: Call succeeds

When the **FDN phonebook** has been **locked**, only numbers beginning with the digits of FDN phonebook entries can be called.

For example, if "014629" is entered in the FDN phonebook all the phone numbers beginning with these 6 digits can be called.

The CLIR supplementary service subscription can be overridden for this call only.

"I" means "invocation" (restrict CLI presentation).

"i" means "suppression" (allow CLI presentation).

Control of CUG supplementary service information by "G" or "g" is allowed for **this call only**. The index and info values set with the +CCUG command are used.

An outgoing call attempt could be refused if the AOC service is active and credit has expired (NO CARRIER).

When trying to set up an outgoing call while there is an active call, the active call is first **put on hold**, then the call set up is carried out.

As per GSM 02.30, GSM sequences may be controlled using dial commands. These sequences can contain "*", "#", but ";" is forbidden.

If the sequence is not supported or fails, +CME ERROR: <err> is returned. In the case, where the FDN phonebook is activated, the sequences concerning call forwarding are allowed only if they are written in the FDN. See Codes and Values Appendix for the list of supported sequences.

Command	Possible responses
ATD*#21#	+CCFC: 0,7
Note: Check any call forwarding status	Note: No call forwarding
ATD**61*+33146290800**25#	OK
Note: Register call forwarding on no reply, with no reply	Note: done
timer fixed at 25 s.	
ATD*2#	+CME ERROR 3
Note: Bad sequence	

Hang-Up Command H

Description: The ATH (or ATH0) command disconnects the remote user. In the case of multiple calls, all calls are

released (active, on-hold and waiting calls). The specific ATH1 command has been appended to disconnect the current outgoing call, only in dialing or alerting state (i.e., ATH1 can be used only after the ATD command, and before its terminal response (OK, NO CARRIER, ...)

It can be useful in the case of multiple calls.

Values: <n>

• Ask for disconnection (default value)

1 Ask for outgoing call disconnection

Syntax: ATH<n>

Command	Possible responses
ATH	OK
Note: Ask for disconnection	Note: Every call, if any, is released
ATH1	OK
Note: Ask for outgoing call disconnection	Note: Outgoing call, if any, is released

Answer a Call A

Description: When the product receives a call, it sets the RingInd signal and sends the ASCII "RING" or "+CRING:

<type>" string to the application (+CRING if the cellular result code +CRC is enabled). Then it waits for

the application to accept the call with the ATA command.

Values: No parameters.

Syntax: ATA

Command	Possible responses
	RING
	Note: Incoming call
ATA	OK
Note: Answer to this incoming call	Note: Call accepted
ATH	OK
Note: Disconnect call	Note: Call disconnected

Remote Disconnection

This message is used by the product to inform the application that an active call has been released by the remote user.

The product sends "NO CARRIER" to the application and sets the DCD signal.

In addition, for AOC, the product can release the call if credit has expired (release cause 68 with +CEER command).

Extended Error Report +CEER

Description: This command gives the cause of call release when the last call set up (originating or answering) failed.

Values: No parameters
Syntax: AT+CEER

Command	Possible responses
ATD123456789;	NO CARRIER
Note: Outgoing voice call	Note: Call setup failure
AT+CEER	+CEER: Error <xxx></xxx>
	OK
Note: Ask for reason of release	Note: <xxx>is the cause information element values from GSM recommendation 04.08 or specific Call accepted</xxx>

Note: "NO CARRIER" indicates that the AT+CEER information is available for failure diagnosis.

DTMF Signals +VTD, +VTS

+VTD

Description: The product enables the user application to send DTMF tones over the GSM network. This command is

used to define tone duration (the default value is 70 ms \pm 5 ms according to 3GPP 23.014).

Values: <n> tone duration.

This refers to an integer <n> that defines the length of tones emitted as a result of the +VTS

command. This does not affect the D command.

A value different than zero causes a tone of duration <n> *100 milliseconds. A value of zero (default value) causes a tone duration of 70 ms \pm 5 ms.

Note: The value is used modulo 256.

Syntax: AT+VTD=<n>

Command	Possible responses
AT+VTD=6	OK
Note: To define 600 ms tone duration	Note: Command valid
AT+VTD=0	OK
Note: To set the default value (70 ms \pm 5 ms)	
AT+VTD?	AT+VTD: <n></n>
Note: Query current tone duration	OK
AT+VTD=?	AT+VTD: <0-255>
	OK

+VTDS

Description: The product enables the user application to send DTMF tones over the GSM network. This command

enables tones to be transmitted only when there is an active call.

Values: <Tone> DTMF tone to transmit.

Tone is in {0-9, *, #, A, B, C, D}

Syntax: Command Syntax: AT+VTS=<Tone>

Command	Possible responses
AT+VTS=A	OK
	Note: Command valid
AT+VTS=11	+CME ERROR: 3
Note: To set the default value	Note: If the <tone> is wrong</tone>
AT+VTS=4	+CME ERROR: 3
	Note: If there is no communication
AT+VTS="1";+VTS="3";+VTS="#"	
OK	
Note: Set tone sequence 13#	

Redial Last Telephone Number DL

Description: This command redials the last number used in the ATD command. The last number dialed is displayed

followed by ";" for voice calls only.

Values: No parameters

Syntax: ATDL

Command	Possible responses
ATDL	0146290800;
Note: Redial last number	OK
	Note: Last call was a voice call. Command valid

Automatic Dialing with DTR %D

Description:

This command enables and disables:

- Automatic dialing of the phone number stored in the first location of the ADN phonebook, (or FDN phonebook, if it is activated using the +CLCK command).
- Automatic sending of the short message (SMS) stored in the first location of the SIM.

The number is dialed when the DTR OFF switches ON. The short message is sent when DTR OFF switches ON.

Values:

<n> (0-2) Enables or disables automatic message transmission or number dialing. Informs the

product that the number is a voice number rather than a data number.

%D0 Disables automatic DTR number dialing / message transmission.

%D1; Enables automatic DTR dialing if DTR switches from OFF to ON. Dials the phone number

in the first location of the ADN phonebook (or FDN phonebook, if it is activated using the

+CLCK command). Voice call with semicolon.

%D1 Activates automatic DTR dialing if DTR switches from OFF to ON. Dials the phone

number in the first location of the ADN phonebook (or FDN phonebook, if it is activated

using the +CLCK command). Data call without semicolon.

%D2 Activates automatic DTR message transmission if DTR switches from OFF to ON. Sends

the short message in the first location of the SIM.

Note: If the first location is empty:

AT%D1 and AT%D2 commands will receive an OK response.

• The DTR ON event will trigger a CME ERROR: 21 or a CMS ERROR: 321

Syntax:

Command Syntax: AT%D<n>[;]

Command	Possible responses
AT%D1;	OK
Note: Activates DTR number dialing	Note: Command has been executed
DTR is OFF	
DTR switches ON	OK
Note: Number in the ADN's first location is dialed automatically	
DTR switches OFF	
Note: The product goes on-hook	
AT%D2	OK
Note: Activates DTR short message sending	Note: Command has been executed
DTR is OFF	
DTR switches ON	+CMSS: x
Note: The first short message is being sent	
AT%D1;	OK
DTR is OFF	
DTR switches ON	+CME ERROR: 21
Note: No phone number in the ADN phonebook's first location	
(or FDN phonebook if it's activated using the +CLCK command)	
AT%D2;	OK
DTR is OFF	
DTR switches ON	+CME ERROR: 321
Note: No short message in the first location of the SIM	

Automatic Answer So

Description: This S0 parameter determines and controls the product automatic answering mode.

Values: <value> The number of rings before an automatic answer (3 characters padded with zeros)

Range of values is 0 to 255.

Syntax: Command Syntax: ATS0=<value>

Command	Possible responses
ATS0=2	OK
Note: Automatic answer after 2 rings	
ATS0?	002
	OK
Note: Current value	Note: always 3 characters padded with zeros
ATS0=0	OK
Note: No automatic answer	Note: Command valid

All others S-parameters (S6,S7,S8 ...) are not implemented.

Incoming Call Bearer +CICB

Description: This command sets the type of incoming calls when no incoming bearer is given (see +CSNS).

Note: Setting the +CICB command affects the current value of +CSNS.

Values: <mode>

0 Data

2 Speech

Syntax: AT+CICB=<mode>

Command	Possible responses
AT+CICB=2	OK
Note: If no incoming bearer, force a voice call	Note: Command accepted
AT+CICB?	+CICB: 2
Note: Interrogate value	OK
-	Note: Default incoming bearer: voice call
AT+CICB=?	+CICB: (0-2)
Note: Test command	OK
	Note: Speech or data default incoming bearer

Single Numbering Scheme +CSNS

Description: Selects the bearer to be used when an modem single numbering scheme call is set up (see +CICB).

Note: Setting the +CSNS command affects the current value of +CICB.

Values: <mode>

VoiceData

Syntax: AT+CSNS

Command		Possible responses	
AT+CSNS=0	Note: force a voice call	OK	Note: Command accepted
AT+CSNS?	Note: Interrogate value	+CSNS: 0	Note: Default incoming bearer: voice call
AT+CSNS=?	Note: Test command	+CSNS: (0,2,4)	Note: Voice or data default incoming
			bearer

Gain Control +VGR, +VGT

Description: This command is used by the application to tune the receive gain of the speaker and the transmit gain

of the microphone.

Values: < **Rgain>** is the reception gain

<Tgain> is the transmission gain

Syntax: AT+VGR=<Rgain> and AT+VGT=<Tgain>

Command	Possible responses	
AT+VGR=25	OK	Note: Command valid
AT.11/OT-45	OK	Note: Commond valid
AT+VGT=45	OK	Note: Command valid
AT+VGR?	+VGR: 128	
Note: Interrogate value	OK	Note: Default receive gain
AT+VGR=?	+VGR: (0-255)	
Note: Test command	OK	Note: Possible values
AT+VGT?	+VGT: 32	
Note: Interrogate value	OK	Note: Default transmit gain
AT+VGT=?	+VGT: (0-255)	
Note: Test command	OK	Note: Possible values

Note: For the **AT+VGT?** command with controller 1, the value is the lower value of range; whereas, with controller 2, the value corresponds to the entered value using AT+VGT=xx.

The application sends the following:

AT+VGR= <val></val>	for receive gain	AT+VGT= <val> Controller 1</val>	for transmit gain Controller 1	AT+VGT= <val> Controller 2</val>	for transmit gain Controller 2
0 to 15	+6 db	0 to 31	+30 db	0	+0 db
16 to 31	+4 db	32 to 63	+33 db	1	+0,5 db
32 to 47	+2 db	64 to 95	+36 db	2	+1 db
48 to 63	+0 db	96 to 127	+39 db	3	+1,5 db
64 to 79	-2 db	128 to 159	+42 db		
80 to 95	-4 db	160 to 191	+45 db	19	+9,5 db
96 to 111	-6 db	192 to 223	+48 db	20	+10 db
112 to 127	-8 db	224 to 255	+51 db	21	+10.5 db
128 to 143	-10 db			22	+11 db
144 to 159	-12 db	1		23	+11.5 db
160 to 175	-14 db	1			
176 to 191	-16 db			58	+29 db
192 to 207	-18 db			59	+29.5 db
208 to 223	-20 db	1		60	+30 db
224 to 255	-22 db			61	+30,5 db
		_		62	+31 db
				101	+50,5 db
				102 to 127	+51 db
				128 to 243	-6,5 db
				244	-6 db
				245	-5,5 db
				246	-5 db
				255	-0,5 db

The gain values listed here are relative, for absolute (electrical) values please refer to the specific hardware documentation of the module used in the application.

Microphone Mute Control +CMUT

Description: This command mutes the microphone input on the product (for the active microphone set with the

+SPEAKER command). This command is only allowed during a call.

Values: <mode>

0 microphone mute off (default value).

1 microphone mute on.

Syntax: AT+CMUT=<mode>

Command	Possible responses
AT+CMUT=?	+CMUT: (0,1)
	OK
Note: Test command	Note: Enable / disable mute
AT+CMUT?	+CMUT: 0
	OK
Note: Ask for current value	Note: Current value is OFF
AT+CMUT=1	OK
Note: Mute ON (call active)	Note: Command valid
AT+CMUT?	+CMUT: 1
	OK
Note: Ask for current value	Note: Mute is active (call active)
AT+CMUT=0	+CME ERROR:3
Note: Mute OFF (call not active)	Note: Command not valid

Speaker & Microphone Selection +SPEAKER

Description: This **specific** command selects the speaker and the microphone set.

Values: <ActiveSpkMic>

Speaker One, Micro OneSpeaker Two, Micro Two

Syntax: AT+SPEAKER=<ActiveSpkMic>

Command	Possible responses
AT+SPEAKER=0	OK
Note: Speaker ONE and Micro ONE	Note: Command valid
AT+SPEAKER?	+SPEAKER: 0
	OK
	Note: Speaker ONE and Micro ONE are active
AT+SPEAKER=?	+SPEAKER: (0,1)
	OK

Echo Cancellation +ECHO

Description:

This command enables, disables or configures the Echo Cancellation functions for voice calls (in rooms, in cars. etc.).

It is necessary to tune the Microphone gain (AT+VGT) and the Speaker gain (AT+VGR) before activating the Echo Cancellation.

- You can activate/deactivate the echo cancellation during a call without resetting the product if the <Algold> parameter is not changed, but have to used the syntax with all parameters: AT+ECHO=1,6,30,8000,256 for instance.
- To use Echo Cancellation 6, the ECHO feature must be activated.
- Note that Echo Cancellation algorithms may not be available on some modems:

Modem	Algorithm 6 Support	Algorithm 3 Support
Q24 Plus (AMR)	Yes	No

Values:

<mode>

- n Deactivate Echo
- 1 Activate Echo

When mode = 1 is choosen, **Algold** is mandatory.

<status>

- Echo Deactivated
- Echo Activated for Mic/Spk One
- Echo Activated for Mic/Spk Two 2
- Reset the product

Note: <Status> does not indicate the currently selected speaker. If Echo is activated, it indicates the speaker for which Echo parameters are set. Echo can be activated on a non-selected speaker.

<Algold>

- 1 Echo cancellation 1
- Echo cancellation 6: AEC algorithm

Note that Echo Cancellation algorithms may not be available on some modems. Refer to the description above.

Echo Cancellation 1 (4 parameters):

- <Volout> Specifies the maximum attenuation of the switch
 - 0 31 db (default)
 - 29 db 1
 - 27 db 2
 - 3 25 db
 - 3 db 14

 - 15 1 db
- **<Step>** Specifies the attenuation step between attenuation and no attenuation.
 - 0 1 db
 - 1 2 db
 - 3 db
 - 4 db (default)
- <PcmThRel> Specifies the relative threshold between max and min energy information. The allowed range is [0 - 31]. Default = 10.
- <PcmThMax> Specifies threshold of max energy information.

The allowed range is [0 - 31]. Default = 7.

Echo Cancellation 6 (12 parameters):

<AlgoParam> High value leads to high echo attenuation but the full-duplex quality will be less efficient.

The allowed range is [0 - 63]. (30 by default)

- < Noise Thres> indicates the noise threshold. Low value leads to high noise attenuation. The threshold 32767 indicates no noise attenuation. The allowed range is [0 - 32767]. The default is 50. The values above 512 have no effect (noise reduction will be disabled)
- <NmbTaps> indicates the Number of Taps of the Adaptive Filter. The allowed range is [2 -2561.

The default is 256.

64 taps = short Echo

256 taps = long Echo

<ConvergenceTime1> Convergence time in quiet condition:

This parameter expresses duration as the number of GSM speech frames (20 ms each) containing far end speech, upon which the switch only mechanism must run in quiet conditions. The allowed range is [162 - 32767]. The default is **200**.

<ConvergenceTime2> Convergence time in noise condition:

This parameter is the same as ConvergenceTime1 but for the *noise* condition. The allowed range is [162 - 32767]. The default is **550**.

Important Note: <ConvergenceTime2> must be greater than or equal to <ConvergenceTime1>

<NoiseLevelMAX> Upper bound of the noise floor estimate:

This parameter is expressed as an integer of 16 bits and corresponds to the rounded value of the noise floor estimate expressed in dB (log2). The allowed range is [NOISE_LEVEL_MIN+1 - 31] with NOISE_LEVEL_MIN being a constant (NOISE_LEVEL_MIN=4 in the current implementation). The default is **15**.

<DetectionThreshold> Far-end speech detection threshold:

In order to detect far end speech on the loudspeaker's signal, the SNR is computed regarding the far end signal power and the far end signal noise floor level. This parameter specifies a threshold on the SNR above which the switch mechanism will be activated. This parameter is expressed as an integer of 16 bits and must be in the range [0 - 32767]. The default is **32767**.

<CNGAdjust> Comfort noise volume gain:

Although the comfort noise volume will self adjust to the estimated ambient noise level, it is possible to artificially reduce its level. This parameter is expressed in fixed point as a signed Q15, meaning that 32767 stands for 1.0, and 0 for 0.0. It ranges fro 0 to 32767. Setting this value to 0 means no comfort noise.

The default is **32767**.

<CNGParam1>. <CNGParam2>: 16 bits comfort noise AR2 coefficients:

The user will set the AR2 coefficients for a specific car. Their value will be estimated on a recorded noise sequence by means of a tool provided by Wavecom (C or Matlab source code) The recorded sequence shall be made in the noisy conditions and contain noise only.

The allowed range is [0 - 65535].

The default for CNGParam1 is 27484.

The default for CNGParam2 is 38697.

♦ <CNGGain>: 16 bits comfort noise AR2 gain coefficients:

This specifies the gain of the AR2 filter used for comfort noise generation. It will be estimated by the same tools use to estimate **<CNGParam1>** and **<CNGParam2>**. It is represented as a Q15 of 16 bits. The allowed range is [0 - 32767]. The default is **7311**.

<SOMValue>: Switch attenuation value at the beginning of the call:

This parameter will range from 1 to 16 and set the depth of the attenuation of the transmit audio signal when speech is detected on the distant side. The default is **4**.

<NoiseEstimate>: Value of the noise floor estimate written by the DSP (only in case of active communication):

The allowed range is [0 - 32] when a communication is active. Otherwise, the returned value is 65535.

Notes:

- The field <NoiseEstimate> is present only for Algold 6 and only in the response to AT+ECHO?
- When a new algoid is selected, AT+ECHO? returns 3 for the mode. The changes will be taken into account after a reset.

Syntax: Command Syntax:

For AlgoId=1:

AT+ECHO=<mode>[,<Algold>[,<VolOut>,<Step>,<PcmThRel>,<PcmThMax>]]

For Algold=6:

AT+ECHO=<mode>[,<AlgoId>[,<AlgoParam>,<NoiseThres>,<NmbTaps>,<ConvergenceTime 1>,<ConvergenceTime2>,<NoiseLevelMAX>,<DetectionThreshold>,<CNGAdjust>,<CNGPara m1>,<CNGParam2>,<CNGGain>,<NmbDelay>]]

Response Syntax:

For AlgoId=1:

ECHO: <status>,<Algold>,<VolOut>,<Step>,<PcmThRel>,<PcmThMax>

For Algold=6:

ECHO: <status>,<Algold>,<AlgoParam>,<NoiseThres>,<NmbTaps>,<ConvergenceTime1>,<ConvergenceTime2>,<NoiseLevelMAX>,<DetectionThreshold>,<CNGAdjust>,<CNGParam1>,<CNGParam2>,<CNGGain>,<NoiseEstimate>

Command	Possible responses
AT+CMEE=1	OK
Note: Enables the use of result code	
AT+SPEAKER?	+ SPEAKER: 0
	OK
	Note: Speaker ONE and Micro ONE are active
AT+SIDET=0	OK
Note: Deactivate the Sidetone	
AT+SIDET?	+SIDET: 0,0
AT+ECHO?	+ECHO: 0,1,0,6,10,7
Note: Read current settings	OK
AT+ECHO=1,1,0,6,10,7	OK
Note: Active Echo cancellation 1 for Mic/Spk one.	
AT+ECHO?	+ECHO: 1,1,0,3,10,7
Note: Read current settings	OK
AT+ECHO=1,6,30,8000,256	+CME ERROR: 519
Note: Activate the Echo cancellation 6	Note: The new algorithm will be activated after a
	reset of the product
AT+ECHO?	+ECHO: 6,30,8000,256
Note: Read the Echo cancellation settings	OK
AT+CFUN=1	OK
Note: Reset the product	
AT+ECHO?	+ECHO: 1,6,30,8000,256
Note: Read current settings	OK
AT+ECHO=0	OK
Note: Deactivate the Echo Cancellation	
AT+ECHO=0	OK
Note: Deactivate the Echo Cancellation	
AT+ECHO=1,6,30,50,256,200,	+CME ERROR:519
550,15,32767,27484,38697,7311,2	Note: The new algorithm will be activated after a
Note: Activate the Echo Cancellation 6	reset of the product
AT+ECHO?	+ECHO: 6,30,50,256,200,550,15,32767,32767,
Note: Read the Echo Cancellation settings	27484,38697,7311,2,65535
	OK
AT+CFUN=1	OK
Note: Reset the product	
AT+ECHO?	+ECHO: 1,6,30,50,256,200,550,15,32767,32767,
Note: Read the Echo Cancellation settings	27484,38697,7311,2,65535
	OK

SideTone Modification +SIDET

Description: This command sets the level of audio feedback in the speaker (microphone feedback in the speaker).

Values: <val1>

SideTone is disabledSideTone is enabled

<val2> (default value 0 will be used if this parameter is not given)

0 0 db
1 - 6 db
2 - 12 db
3 - 18 db

Syntax: AT+SIDET=<val1>,<val2>

Command	Possible responses
AT+SIDET=1,0	OK
	Note: Command valid
AT+SIDET?	+SIDET: 1,0
Note: Current value	OK
	Note: Command valid
AT+SIDET=?	+SIDET: (0-1),(0-3)
	OK

Initialize Voice Parameters +VIP

Description: This command allows factory settings for voice parameters to be restored from EEPROM.

These voice parameters include:

• Gain control (+VGR & +VGT commands)

• Gain controller (+WSVG command)

Microphone mute control (+CMUT command)

Speaker & Microphone selection (+SPEAKER command)

• Echo cancellation (**+ECHO** command)

• Side tone modification (+SIDET command)

Values: <n>

1 Restore all voice parameters.

Other values are not supported.

Syntax: AT+VIP=<n>

Command	Possible responses
AT+VIP?	+VIP: 1
	OK
AT+VIP=2	+CME ERROR: 3
Note: Syntax error	
AT+VIP=1	OK
Note: Restore the factory settings from EEPROM	Note: The command has been executed
AT+VIP=1	CME ERROR: 519
Note: Restore the factory settings from EEPROM	Note: Reset the product to accept the new
with the current Echo cancellation algorithm	algorithm.
(different of the default algorithm).	
AT+VIP=?	+VIP: (1)
Note: List of supported <n>s</n>	OK

Chapter 6 – Network Service Commands

Signal Quality +CSQ

Description: This command determines the *received signal strength indication* (<rssi>) and the *channel bit error rate*

(<ber>) with or without a SIM card inserted.

Values: <rssi>:

0 -113 dBm or less 1 -111 dBm 2 to 30 -109 to -53 dBm 31 -51dBm or greater

99 not known or not detectable

<ber>:

0...7: as RXQUAL values in the table GSM 05.08

99 not known or not detectable

Syntax: AT+CSQ

	Command	Possible responses
Ī	AT+CSQ	+CSQ: <rssi>,<ber></ber></rssi>
		OK
		(Note: <rssi> and <ber> as defined below)</ber></rssi>

Operator Selection +COPS

Description:

There are three possible ways of selecting a Public Land Mobile Network (PLMN) operator:

- The product is in manual mode. It then tries to find the operator specified by the application and if found, tries to register.
- The product is in **automatic** mode. It then tries to find the home operator and if found, tries to register. If not found, the product automatically searches for another network.
- The product enters into manual/automatic mode, and then tries to find an operator as specified by the application (as in manual mode). If this attempt fails, it enters automatic mode. If this is successful, the operator specified by the application is selected. The mobile equipment then enters into automatic mode.

Note: The read command returns the current mode and the currently selected operator. In manual mode, this PLMN may not be the one set by the application (as it is in the search phase).

These commands are not allowed during communication.

Values: <mode>

- 0 automatic (default value)
- 1 manual
- 2 deregistration; ME will be unregistered until <mode>=0 or 1 is selected.
- **3** set only <format> (for read command AT+COPS?)
- 4 manual / automatic (<oper> shall be present), if manual selection fails, automatic mode is entered.

<format> <format>: format of <oper> field

- 0 long alphanumeric format <oper>
- 1 short alphanumeric format < oper>
- 2 numeric <oper> (default value)

<stat> Status of operator

- 0 unknown
- 1 available
- 2 current
- 3 forbidden

<oper> Operator identifier (MCC/MNC in numeric format only for operator selection)

The long alphanumeric format can be up to 16 characters long (see Codes and Values Appendix for operator names description, field is "Name"). The short alphanumeric format can be up to 8 characters long.

Syntax:

To force an attempt to select and register on a network, the application must send this command: **Command Syntax:** AT+COPS=<mode>, [<format> [, <oper>]]

Possible Responses for AT+COPS=<mode>

Possible Responses	Meaning
OK	Network is selected with full service
+CME ERROR: 30	No network service
+CME ERROR: 32	Network not allowed – emergency calls only
+CME ERROR: 3	Not allowed during communication
+CME ERROR: 4	Incorrect parameters
+CME ERROR: 527	Please wait, and retry your selection later
+CME ERROR: 528	Location update failure – emergency calls only
+CME ERROR: 529	Selection failure – emergency calls only
+CME ERROR: 546	Emergency call is not allowed without SIM
+CME ERROR: 547	Emergency call is allowed without SIM

Note: The error codes **+CME ERROR: 546** and **+CME ERROR: 547** are only returned if the SIM is not present. The fact that network support emergency call (**+CME ERROR: 547**) does not imply that emergency call without the SIM is working. To find out if it is working is to use the ATD112 command.

Response Syntax for AT+COPS?: +COPS: <mode> [, <format>, <oper>]

Response Syntax for AT+COPS=?: +COPS: [list of supported (<stat>, long alphanumeric <oper>,

short alphanumeric <oper>s, numeric <oper>) s]

Notes:

- If an incoming call occurs during a PLMN list request, the operation is aborted (+CME ERROR: 520) and the unsolicited RING appears.
- If SPN (Service Provider Name) is present in the SIM, it will be returned in both long and short alphanumeric <oper> fields. The string in the "short" field will be the SPN truncated to the appropriate character number.

The following operations are allowed with the SIM inserted or the PIN activated:

AT+COPS? Get Current PLMN AT+COPS=? List allowed PLMN

AT+COPS=1.2.<plm> Manually set current PLMN

Command	Possible responses
AT+COPS?	+COPS: 0,2,20801
Note: Ask for current PLMN	OK
	Note: Home PLMN is France Telecom Orange
AT+COPS=?	+COPS: (2,"F SFR","SFR","20801"), (3,"F-BOUYGUES
	TELECOM","BYTEL","20820"),(3,"Orange
	F","Orange","20801"
Note: Ask for PLMN list	OK
	Note: Home PLMN is France Telecom SFR, BYTEL and
	Orange networks have been detected
AT+COPS=1,2,20810	+CME ERROR: 32
Note: Ask for registration on SFR network	Note: Network not allowed – emergency calls only
AT+COPS=1,2,23433	+CME ERROR: 529
Note: Ask for registration on UK Orange	Note: Selection failed – emergency calls only
network	
AT+COPS=0	OK
Note: Ask for registration in automatic mode	Note: Succeeded
AT+COPS=3,0	OK
Note: Set <format> to long alphanumeric</format>	
AT+COPS?	+COPS: 0,0,"Orange F"
	OK
Note: Ask for current PLMN	Note: Home PLMN is France Telecom Orange
AT+COPS=2	OK
Note: Ask for deregistration from network	Note: Succeeded
AT+COPS?	+COPS: 2
Note: Ask for current PLMN	Note: ME is unregistered until <mode>=0 or 1 is selected</mode>

Network Registration +CREG

Description: This command is used by the application to ascertain the registration status of the product.

Values: <mode>

- **0** Disable network registration unsolicited result code (**default**)
- 1 Enable network registration code result code +CREG: <stat>
- 2 Enable network registration and location information unsolicited result code +CREG: <stat>,<lac>,<ci> if there is a change of network cell.

<stat>

- **0** Not registered, ME is not currently searching for a new operator.
- Registered, home network.
- 2 Not registered, ME currently searching for 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.

Syntax: Command Syntax: AT+CREG= <mode>

Response syntax: +CREG: <mode>, <stat> [,<lac>,<ci>] for AT+CREG? Command only

Command	Possible responses
AT+CREG?	+CREG: <mode>,<stat></stat></mode>
	OK
	Note: As defined here-above
AT+CREG=0	OK
Note: Disable network registration unsolicited result code	Note: Command valid
AT+CREG=1	OK
Note: Enable network registration unsolicited result code	Note: Command valid
AT+CREG=2	OK
Note: Enable network registration and location	Note: Command valid
information unsolicited result code	
AT+CREG=?	+CREG: (0-2)
	Note: 0,1,2 <mode> values are supported</mode>

Operator List Management +WOLM

Description:

This command allows a new or modified operator to be added to the PLMN list. Up to 10 PLMNs can be created and stored in the flash memory.

Please note that if two entries with the same network (MCC+MNC), but have different names, are entered, the first entry will be used.

Values:

<mode>

- 0 Delete
- 1 Write
- 2 Read

<loc>

Location. If this parameter is not filled with <mode>=1, the location will be the first empty one.

<NumOper>

Operator in numeric format.

<short name>

The short name of the PLMN.

<long name>

The long name of the PLMN.

Syntax:

Command Syntax: AT+WOLM=<mode>,<loc>,[,<NumOper>,<short name>,<long name>

Response Syntax for AT+WOLM=? OK

Response Syntax for AT+WOLM? (lists all the available PLMN)

Command	Possible responses
AT+WOLM=1,1,20812,"WM","WM PLMN"	OK
Note: Add a new PLMN at location 1	
AT+WOLM=2,1	+WOLM: 1,20812,"WM","WM PLMN"
Note: Read the PLMN at location 1	OK
AT+WOLM=2,11	+CME ERROR: 21
Note: Read the PLMN at location 11	Note: Invalid index
AT+WOLM=1,1,20812,"WM1","WM1 PLMN"	OK
Note: Modify and existing PLMN	Done
AT+WOLM=?	OK
Note: Test command	
AT+WOLM?	+WOLM: 1,20812,"WM1","WM1 PLMN"
Note: Display current list	OK
	Note: List the created PLMN in flash
AT+WOLM=1,,20813,"PLMN2",PLMN2 LONG"	OK
Note: Add a new PLMN at available location	Or
	+CME ERROR: 20
	Note: Error returns if no more PLMN can be created
AT+WOLM=0,1	OK
Note: Delete an entry at location 1	
AT+WOLM=0,11	+CME ERROR: 21
Note: Delete an entry at location 11	Note: Invalid index

Read Operator Name +WOPN

Description:

This command returns the operator name in alphanumeric format when given the numeric format being given.

With the E-ONS (Enhanced Operator Name Service) feature, <lac> is an optional parameter to read names from OPL/PNN sim files. If it is not entered, name will be given with current <lac>. Note that in limited service, current <lac> is set to 0.

It also allows the erasing of NITZ PLMN names stored in the flash memory by using AT+WOPN=3,0".

When the modem receives a NITZ (Network Information and Time Zone) message with Long Name or Short Name information, an entry with registered PLMN and names in the message is created in the flash memory. These names will then be used with +COPS, +COPN, +WOPN and +CPOL with the priority order defined in 3GPP TS 22.101. The modem supports only network names with the GSM default alphabet coding schemes.

The user can choose which of the following methods will be used for getting PLMN names using the command: AT+WOPN=4,<PlmnOns>.

The priority order is:

1 E-ONS First entry if on Home PLMN or matching entry if existing in OPL/PNN
--

2	CPHS	If on Home PLMN, use SIM file CPHS ONS (0x6F14) for Long Name if present and SIM
		file CPHS SONS (0x6F18) for Short Name if present; if not present, reuse SIM file
		CPHS ONS.

SPN If on Home PLMN, use SIM file SPN (0x6F46) if present.

4 NITZ If there is a matching entry in the list of names received so far, use it. Note that in France, for example, all the operators use the NITZ message for the Date and Time

feature, but not for PLMN names, so the list is always empty. In France, the NITZ

message is sent on a GPRS attachment.

FLASH If there is a matching entry in the flash PLMN list (created by +WOLM), use it.

5 ROM PLMN names in the ROM defined according to MoU SE.13 and NAPRD Operator

Names documents.

Note: Once a long name is found following this priority order, it is given as a response to the

AT command.

Values: <mode>

- **0** Use long alphanumeric format
- 1 Use short alphanumeric format
- 2 Reserved for future use
- 3 Erase NITZ PLMN list if <NumOper> = 0
- 4 Access to EEPROM to read or write the method to use for getting PLMN names Read access if <NumOper> omitted Write access if <NumOper>(=<PlmnOns>) provided.
- <NumOper> is the operator in numeric format.
- <a>AlphaOper> is the operator in long or short alphanumeric format (see Codes and Values for Operator Names in the Appendix).
- <lac> is the two byte Location Area Code to be used to get the PLMN name. If it is not entered, the current lac will be used (0 if limited service). It is provided as an integer value.
- **<PImnOns>** is a bit-field with the following coding:
 - Bit 0 E-ONS
 Bit 1 CPHS
 Bit 2 SPN
 Bit 3 NITZ
 Bit 4 FLASH

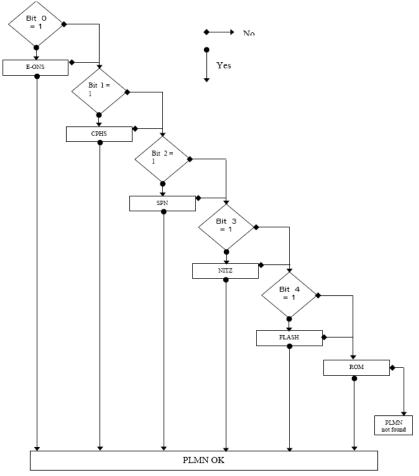
Bit 4 (FLASH)	Bit 3 (NITZ)	Bit 2 (SPN)	Bit 1 (CPHS)	Bit 0 (E-ONS)

Bit value is 1 for Activate and 0 for Deactivate the method. <PImnOns> value should be provided as a decimal value.



Example: <PImnOns>=31 means that the four methods will be used for PLMN names (bit-field value is 1111 or 0x1F).

Operation Flow for Field PlmnOns



Syntax: Command syntax: AT+WOPN=<format>,<NumOper>[,<lac>]

Response syntax: +WOPN: <format>,<AlphaOper>

Command	Possible responses
AT+WOPN=?	OK
Note: Test command	
AT+WOPN=0,20801	+WOPN: 0,"Orange F"
Note: Give an operator in numeric format	OK
	Note: Alphanumeric answer
AT+WOPN=0,99999	+CME ERROR: 22
Note: Give a wrong operator	Note: Not found
AT+WOPN=0,2081,36	+WOPN: 0, "OrangeF"
Note: Give an operator in numeric format for lac 36	OK
	Note: Alphanumeric answer
AT+WOPN=3,0	OK
Note: Erase NITZ PLMN names stored in flash	
memory.	
AT+WOPN=4	+WOPN:31
Note: Read from EEPROM which method will be	OK
used for PLMN names.	
AT+WOPN=4, <pimnons></pimnons>	OK
Note: Write to EEPROM which method will be used	
for PLMN names.	

Selection of Preferred PLMN List +CPLS

Description: This command selects one PLMN selector with access technology list in the SIM card that is used by

AT+CPOL command.

Values: <List>:

0 User controlled PLMN selector with access technology EF_PLMNwAct

Note: if this file is not found EF_PLMNSel will be selected

1 Operator controlled PLMN selector with access technology EF_OPLMNwAct

2 Home PLMN selector with access technology EF_HPLMNwAct

Syntax: AT+CPLS= <List>

Command	Possible responses
AT+CPLS?	+CPLS: 1
	OK
Note: Ask for selection of the SIM file	Note: EF_OPLMNwAct is selected
AT+CPLS=0	Note: if EF_PLMNwAct is not present, EF_PLMNsel will be
Note: selection of EF_PLMNwAct	selected
AT+CPLS=1	+CME ERROR: 3
Note: selection of EF_OPLMNwAct	Note: EF_OPLMNwAct is not present
AT+CPLS=?	+CPLS: (0,1,2)
Note: Get possible values	OK
	Note: The 3 files with Access technology are present and can
	be selected
AT+CPLS=?	+CPLS: (0)
	OK
Note: Get possible values	Note: Only EF_PLMNwAct or EF_PLMNsel can be selected

Preferred Operator List +CPOL

Description: This command edits (or updates) the SIM preferred list of networks.

This list is read in the SIM file selected by the command AT+CPLS.

Values: <index>: position of the operator record in the Sim preferred operator list. Use AT+CPOL=? to view the

maximum index of the selected EF.

<format>

0 long alphanumeric format for <oper>

1 short alphanumeric format for <oper>

2 numeric format for <oper>

<oper>: character string or integer (see <format>) indicating operator identifier.

<GSM AcT>: GSM access technology

<GSMcomp_Act>: GSM compact access technology

<Utran_Act>: UTRA access technology

0 access technology not selected

1 access technology selected

Syntax: AT+CPOL= [<index>] [,<format>[,<oper>[,<GSM_AcT>,<GSMcomp_Act>,<Utran_Act>]]]

The different possibilities are:

AT+CPOL = <index> to delete an entry.

AT+CPOL = , <format> to set the format used by the read command (AT+CPOL?).

AT+CPOL = , <format>, <oper> to put <oper> in the next free location.

AT+CPOL = <index>, <format>, <oper> to write <oper> in the <format> at the <index>.

AT+CPOL = <index>,<format>,<oper>,<GSM_AcT>,<GSMcp_Act>,<Utran_Act>

To write <oper> in the <format> at the <index> using access technology (in the case of EF_PLMNwact, EF_HPLMNwact or EF_OPLMNwact is present).

Note: Per default if Access technology parameters are not given, the GSM access technology will be chosen.

The supported format are those of the +COPS command.

The length of this list is limited to 85 entries for EF_PLMNsel, and 51 for EF_PLMNwAct, EF_OPLMNwAct, EF_HPLMNwAct.

(See table on next page)

AT+CPOL? AT+CPOL: Note: Ask for preferred list of networks With only EF_PLMNsel present AT+CPOL: AT+C	
Note: Ask for preferred list of networks With only EF_PLMNsel present AT+CPOL? HCPOL: 6,2,20810 OK Note: Preferred list of networks in numeric format (real EF_PLMNsel) +CPOL:1,2,26201,1,0,0 +CPOL: 6,2,20810,1,0,0 OK Note: Preferred list of networks in numeric format (real EF_PLMNwAct)	
Note: Ask for preferred list of networks With only EF_PLMNsel present AT+CPOL? AT+CPOL? OK Note: Preferred list of networks in numeric format (rea EF_PLMNsel) +CPOL:1,2,26201,1,0,0 +CPOL: 6,2,20810,1,0,0 OK Note: Preferred list of networks in numeric format (rea EF_PLMNwAct)	
With only EF_PLMNsel present Note: Preferred list of networks in numeric format (rea EF_PLMNsel) AT+CPOL? +CPOL: 1,2,26201,1,0,0 +CPOL: 6,2,20810,1,0,0 OK Note: Preferred list of networks in numeric format (rea EF_PLMNwAct)	
EF_PLMNsel) AT+CPOL? +CPOL:1,2,26201,1,0,0 +CPOL: 6,2,20810,1,0,0 OK Note: Preferred list of networks in numeric format (real EF_PLMNwAct)	
AT+CPOL? +CPOL:1,2,26201,1,0,0 +CPOL: 6,2,20810,1,0,0 OK Note: Preferred list of networks in numeric format (real EF_PLMNwAct)	d in
+CPOL: 6,2,20810,1,0,0 OK Note: Ask for preferred list of networks Note: Ask for preferred list of networks +CPOL: 6,2,20810,1,0,0 OK Note: Preferred list of networks in numeric format (real EF_PLMNwAct)	d in
OK Note: Preferred list of networks in numeric format (rea EF_PLMNwAct)	d in
Note: Preferred list of networks in numeric format (real EF_PLMNwAct)	d in
Note: Ask for preferred list of networks EF_PLMNwAct)	
With EF_PLMNwAct selected and present GSM access technology selected	
GSM compact access technology not selected	
Utran access technology not selected	
AT+CPOL=,0 OK	
Note: Select long alphanumeric format	
AT+CPOL? +CPOL: 1,0,"D1-TELEKOM"	
+CPOL: 6,0,"F SFR"	
Note: Ask for preferred list of networks OK	
With only EF_PLMNsel present Note: Preferred list of networks in long alphanumeric for	rmat
AT+CPOL=7,2,20801 OK	
Note: Add a network to the list	
AT+CPOL? +CPOL: 1,0,"D1-TELEKOM"	
+CPOL: 6,0,"F SFR"	
Note: Ask for preferred list of networks +CPOL: 7,0,"Orange F"	
With only EF_PLMNsel present OK	
Note: Preferred list of networks in long alphanumeric for	rmat
AT+CPOL=7 OK	
Note: Delete 7 th location	
AT+CPOL? +CPOL: 1,0,"D1-TELEKOM"	
+CPOL: 6,0,"F SFR"	
Note: Ask for preferred list of networks OK	
With only EF_PLMNsel present Note: Preferred list of networks in long alphanumeric for	ımaı
AT+CPOL=8,2,77777 Note: Add a new network to the list	
Note: Add a new network to the list	
With only EF_PLMNsel present	
AT+CPOL=8,2,77777,0,0,1 OK	
Note: Add a new network to the list Note: Access technology UTRAN is selected	
With EF_PLMNwact present	
AT+CPOL=8,2,77777 OK	
Note: Add a new network to the list Note: Per default Access technology GSM is selected	
With EF_PLMNwact present	
AT+CPOL? +CPOL: 1,0,"D1-TELEKOM"	
+CPOL: 6,0,"F SFR"	
+CPOL: 8,2,77777"	
OK Note: Ask for preferred list of networks OK Note: Preferred networks list in long alphanumeric form	act: oth
Note: Ask for preferred list of networks With only EF_PLMNsel present Note: Preferred networks list in long alphanumeric form entry is unknown so the product edits it in the numeric	
AT+CPOL=9,0,"Orange F"	ioiiiiat
Note: Add a new network to the list (text format)	
AT+CPOL? +CPOL: 1,0,"D1-TELEKOM"	
+CPOL: 6,0,"F SFR"	
+CPOL: 8,2,77777"	
+CPOL: 9,0,"Orange F"	
Note: Ask for preferred list of networks OK	
With only EF_PLMNsel present Note: Preferred list of networks in long alphanumeric for	rmat
AT+CPOL=? +CPOL: (1-16),(0-2)	
OK , , , , ,	
Note: The EF can accept 16 records. Supported forma	ts are
0, 1, or 2.	

Read Operator Name +COPN

Description: This command returns the list of all operator names (in numeric and alphanumeric format) stored in the

module.

Values: < NumOper>: is the operator in numeric format

<AlphaOper>: is the operator in long alphanumeric format

Syntax: Command Syntax: AT+COPN

Response Syntax: +COPN: <NumOper>,<AlphaOper>

Command	Possible responses
AT+COPN	+COPN: 23201,"A1"
	+COPN: 23203,"Amax."
Note: Ask for list of operators	+COPN: 23207,"A tele.ring"
	+COPN: 23205,"one"
	OK
	+CME ERROR: <err></err>
AT+COPN=?	OK

Chapter 7 - Security Commands

Enter PIN +CPIN

Description:

This command enters the ME passwords (CHV1 / CHV2 / PUK1 / PUK2, etc.), that are required before any ME functionality can be used. **CHV1/CHV2** is between **4** and **8** digits long, **PUK1/PUK2** is **only 8 digits** long.

If the user application tries to make an outgoing call before the SIM PIN code (CHV1) has been confirmed, then the product will refuse the "ATD" command with a "+CME ERROR: 11" (SIM PIN required).

The application is responsible for checking the PIN after each reset or power on - if the PIN was enabled.

Values:

<pi><pin> is the Personal Identification Number. A four-digit number.

<puk> is the Personal Unblocking Key needed to change the PIN. An eight-digit number.

Syntax: AT+CPIN=<pin>

Command	Possible responses
AT+CPIN=1234	OK
Note: Enter PIN	Note: PIN code is correct
AT+CPIN=5678	+CME ERROR: 3
Note: Enter PIN	Note: Operation not allowed, PIN previously entered

After 3 unsuccessful attempts to enter the PIN (Personal Identification Number), the PUK (Personal Unblocking Key) will be required.

PUK validation forces the user to enter a new PIN code as a second parameter and this will be the new PIN code if PUK validation succeeds. CHV1 is then enabled if PUK1 is correct. The application therefore uses this command:

AT+CPIN=<Puk>,<NewPin>

Command	Possible responses
AT+CPIN=00000000,1234	+CME ERROR: 16
Note: Enter PUK and new PIN	Note: Incorrect PUK
AT+CPIN=12345678,1234	OK
Note: Enter PUK and new PIN, 2nd attempt	Note: PUK correct, new PIN stored

To determine which code must be entered (or not), the following guery command can be used:

AT+CPIN? The possible responses are:

+CPIN: READY	ME is not pending for any password
+CPIN: SIM PIN	CHV1 is required
+CPIN: SIM PUK	PUK1 is required
+CPIN: SIM PIN2	CHV2 is required
+CPIN: SIM PUK2	PUK2 is required
+CPIN: PH-SIM PIN	SIM lock (phone-to-SIM) is required
+CPIN: PH-NET PIN	Network personalization is required
+CME ERROR: <err></err>	SIM failure (13) absent (10) etc.

Please note that in this case the mobile equipment does not end its response with the OK string.

The response +CME ERROR: 13 (SIM failure) is returned after 10 unsuccessful PUK attempts. The SIM card is then out of order and must be replaced by a new one.

Example:

Three failed PIN validations + one successful PUK validation

AT+CPIN? +CPIN: SIM PIN	Read the PIN status The product requires SIM PIN
AT+CPIN=1235 +CME ERROR: 16	First attempt to enter a SIM PIN Wrong PIN
AT+CPIN=1236 +CME ERROR: 16	Second attempt Wrong PIN
AT+CPIN=1237 +CME ERROR: 16	Third attempt Wrong PIN
AT+CPIN? +CPIN: SIM PUK	Read PIN state The product requires PUK
AT+CPIN=99999999,5678 OK AT+CPIN?	The PUK is entered, the new PIN shall be 5678 PUK validation is OK. New Pin is 5678 Read PIN state
+CPIN: READY	The product is ready

If the user tries to do something which requires PIN2 (CHV2), the product will refuse the action with a "+CME ERROR: 17" (SIM PIN2 required). The product then waits for SIM PIN2 to be given.

Of course, if SIM PIN2 is blocked, SIM PUK2 is required instead of SIM PIN2.

For example, the product needs PIN2 to write in the fixed dialing phonebook (FDN), so if SIM PIN2 authentication has not been performed during the current session, SIM PIN2 is required

Command	Possible responses
AT+CPBS="FD"	OK
Note: Choose FDN	
AT+CPBW=5,"01290917",129,"Jacky"	+CME ERROR: 17
Note: Write in FDN at location 5	Note: SIM PIN2 is required
AT+CPIN?	SIM PIN2
	Note: SIM PIN2 is required
AT+CPIN=5678	OK
Note: Enter SIM PIN2	
AT+CPBW=2,"01290917",129,"Jacky"	OK
Note: Write in FDN at location 5	Note: Now writing in FDN is allowed

Please note that the product only requests PIN2 or PUK2 once. Therefore, if they are not entered properly, the next +CPIN? command will return "+CPIN: READY".

Enter PIN2 +CPIN2

Description: This command validates the PIN2 code (CHV2) or the PUK2 code (UNBLOCK CHV2) and defines a

new PIN2 code.

Of course, the +CPIN command allows PIN2 or PUK2 codes to be validated, but only when the last

command executed resulted in PIN2 authentication failure.

PIN2 length is between 4 and 8 digits; PUK2 length is 8 digits only.

Values: <pin2> is the personal identification number 2

<puk2> is the personal unblocking key 2 needed to change the PIN 2

<newpin2>

Note: PIN2 length is between 4 and 8 digits; PUK2 length is 8 digits only.

Syntax: AT+CPIN2=<pin2>

Command	Possible responses
AT+CPIN2=1234	OK
Note: Enter PIN2	Note: PIN2 code is correct
AT+CPIN2=5678	+CME ERROR: 3
Note: Enter PIN2	Note: Operation not allowed, PIN2 previously entered

After 3 unsuccessful attempts, PUK2 will be required. PUK2 validation forces the user to enter a new PIN2 code as a second parameter and this will be the new PIN2 code if PUK1 validation succeeds. The application uses this command:

AT+CPIN2=<puk2>,<NewPin2>

Command	Possible responses
AT+CPIN2=00000000,1234	+CME ERROR: 16
Note: Enter PUK2 and new PIN2	Note: Incorrect Password (PUK2)
AT+CPIN2=12345678,1234	OK
Note: Enter PUK2 and new PIN2, 2 nd attempt	Note: PUK2 correct, new PIN2 stored

To determine which code must be entered (or not), the following query command can be used: **AT+CPIN2?**

The possible responses are:

+CPIN2: READY	No PIN2 is needed
+CPIN2: SIM PIN2	PIN2 is required
+CPIN2: SIM PUK2	PUK2 is required
+CME ERROR: <err></err>	Absent (10) etc

PIN Remaining Attempt Number +CPINC

Description: This command gets the number of valid attempts for PIN1 (CHV1), PIN2 (CHV2), PUK1 (UNBLOCK

CHV1) and PUK2 (UNBLOCK CHV2) identifiers.

Values <n1>, <n2> are the attempts left for PIN1, PIN2 (0 = blocked, 3 max)

<k1>, <k2> are the attempts left for PUK1, PUK2 (0 = blocked, 10 max)

For this to work, the card should be present at the time of initialization; otherwise, an error will be sent

(+CME ERROR: 10).

Syntax: Command Syntax: AT+CPINC

Response syntax: +CPINC: <n1>,<n2>,<k1>,<k2>

Command	Possible responses
AT+CPINC	+CPINC: 2,3,10,10
Note: Get the number of attempts left	OK
·	Note: First CHV1 attempt was a failure
AT+CPINC?	+CPINC: 2,3,10,10
Note: Get current values	OK
	Note: First attempt was a failure
AT+CPINC=?	OK
Note: Get possible values	

Facility Lock +CLCK

Description: This command locks, unlocks or interrogates an ME or network facility <fac>.

Note: Test SIM cards (with MCC=001 & MNC=01) do not check "PS", "PN", "PU", "PP" and "PC" locks.

Values: <fac> supported facilities:

"PS": SIM lock facility with an 8-digit password.

"SC": PIN enabled (<mode> = 1) / disabled (<mode> = 0)

"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 Inc. When Roaming outside Home Country)

"AB": All Barring services

"AG": All outGoing barring services

"AC": All inComing barring services

"PN": Network lock with an 8-digit password (NCK).

"PU": Network Subset lock with an 8-digit password (NSCK).

"PP": Service Provider lock with an 8-digit password (SPCK).

"PC": Corporate lock with an 8-digit password (CCK).

"FD": SIM Fixed Dialing Numbers (FDN) memory feature (PIN2 is required as <password>)

<mode>

0 unlock the facility

1 lock the facility

2 query status

<class> A facility status can be changed for only one class, or for all classes (7 or omitted).

1 Voice (telephony)

Data (apply to all bearer services)

8 Short Message service

7 Equal to all classes (Default value)

Any attempt to combine different classes will result in activation / deactivation / interrogation of Voice and Data.

If <class> is omitted, the default value 7 will be used.

Password maximum length is given with the AT+CPWD=? Command.

It will not possible to lock the FDN phonebook if this one is not loaded.

Syntax: Command syntax: AT+CLCK= <fac>,<mode>[,<passwd>[,<class>]]

Response syntax: +CLCK: <status> [,<class1>]<CR><LF>+CLCK: <status>,<class2> [...]]

Command	Possible responses
AT+CLCK="SC",1,1234	OK
Note: Enable PIN	Note: PIN was correct
AT+CLCK?	+CLCK:("PS",0),("SC",0),("FD",0),("PN",0),("PU",0),("PP",0),("PC",0)
Note: Read PIN status	OK
	Note: PIN is enabled, no SIM lock, no network lock, no information
	on Call barring (no longer supported in GSM Technical
	Specification 07.07)
AT+CLCK="SC",0,5555	+CME ERROR: 16
Note: Disable PIN	Note: PIN was wrong
AT+CPIN=1234	OK
Note: Enter PIN	Note: PIN was good
AT+CLCK=?	+CLCK: ("PS","SC","AO","OI","OX","AI","IR","AB","AC",
Note: Request supported	"FD","PN","PU","PP","PN")
facilities	OK Note: Supported facilities
AT+CLCK="PN",1,12345678	OK
Note: Activate network lock	Network lock activated
AR+CLCK="AO",1,1234,2	OK
Note: Activate all outgoing calls	Note: Call barring is activate
except data calls	
AT+CLCK="AO",2	+CLCK: 1,2
Note: Query BAOC status	OK Note: BAOC activate for data calls only
AT+CLCK="SC",0,0000	+CME ERROR: 521
Note: Disable PIN	Note: PIN deactivation is forbidden with this SIM card

Change Password +CPWD

Description:

This command changes a password (PIN, call barring, NCK, etc.). The facility values (<fac>) are the same as for the +CLCK command with a "P2" facility to manage SIM PIN2.

For the network lock ("PN"), unlocking is forbidden after 10 failed attempts to disable (unlock) the network lock with an incorrect password.

Values:

<fac> supported facilities:

"PS": SIM lock facility with an 8-digit password.

"SC": PIN enabled (<mode> = 1) / disabled (<mode> = 0)

"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 Inc. When Roaming outside Home Country)

"AB": All Barring services

"AG": All outGoing barring services "AC": All inComing barring services

"P2"

"FD": SIM Fixed Dialing Numbers (FDN) memory feature (PIN2 is required as <password>)

"N" "U" "P" "C"

<oldpwd>,<newpwd> 4 or up to 8 or 16 digits according to the facility.

Syntax:

AT+CPWD= <fac>, <oldpwd>, <newpwd>

Command	Possible responses
AT+CPWD=?	+CPWD: ("PS",8),("SC",8),("AO",4),("OI",4),("OX",4),
Note: Possible values	("AI",4),("IR,4),("AB",4),("AG",4),("AC",4),
	("P2",8),("FD",8),("PN",8),("PU",8),("PP",8), ("PC",8)
	OK
	Note: CHV1/CHV2 must be on 8 digits maximum
	(4minimum)
	For call barring, on 4 digits maximum
AT+CPWD="SC",1234,5555	OK
Note: Change PIN	Note: PIN was correct
AT+CPWD="SC",1234,5555	+CME ERROR: 16
Note: Change PIN	Note: PIN was wrong
AT+CPIN=5555	OK
Note: Enter PIN	Note: PIN was correct
AT+CPWD="PN",12345678,00000000	OK
Note: Change NCK	Note: NCK changed for net lock

Chapter 8 – Phonebook Commands

Introduction to Phonebook Commands

A phonebook group can hold up to 100 entries. These entries can come from different phonebooks (SIM and/or Flash phonebook).

When a SIM is inserted, the phonebook selected by default is set by the command +CPBS.

About the Parameters

SIM Contact Structure

<num_Home> Home phone number

<Name> Name

Extended SIM Contact Structure

<num_Home> Home phone number

<Name> Name

<Phb_Group> Phonebook group

This structure can be used to write and read contacts in mode extended (+WCOS=1) and with ADN phonebook selected (+CPBS="SM").

Extended Contact Structure

<num_Home> Home phone number

<Name> Name

<num_Mobile>
Mobile phone number

<num_Work>
Work phone number

<num_Data>
Data phone number

<Email>
E-Mail address

Address>
Postal address

Phb_Group>
Phonebook group

The structure including <num_Mobile>, <num_Work>, <num_Data>, <Email>, and <Address> will be represented by <Contact> in the rest of the document.

Phonebook Groups Parameter Definition

<index> Group index <name> Group name

<phb entry index> Phonebook entry index

<restrict call> Restrict call mode for incoming calls

Select Phonebook Memory Storage +CPBS

Description: This command selects phonebook memory storage.

Note on ADN and FDN activation: When FDN has been activated with the +CLCK command, the selection of ADN phonebook is possible only if ADN status bit3 is set to 1 (EF file "is readable and can be updated when invalidated"). Please refer to Recommendation 3GPP 11.11 for more details.

Note: The previously selected phonebook remains the same when the modem is switched on or reset, even if the new SIM card is inserted. However, in the case when the replacement SIM card does not contain any selected phonebook, the ADN phonebook is selected.

Values: <pb> Phonebook

ADN Abbreviated Dialing Numbers (SIM phonebook) "SM" "FD" FDN Fixed Dialing Numbers (SIM restricted phonebook) "ON" MSISDN (SIM own numbers) "EN" ECC Emergency Call Codes (SIM or Mobile Equipment) LND Last Number Dial "LD" "MC" Mobile Equipment missed (unanswered received) calls list Mobile Equipment phonebook "ME" "MT" Combined Mobile Equipment and SIM phonebook (ME + SM)

"RC" Mobile Equipment received calls list

"SN" SDN Services Dialing Numbers (SIM special service numbers)

Notes: "EN" will be available even if ECC SIM file is not present.

When the SIM is not present, the following emergency numbers are available:

000, 08, 112, 110, 118, 119, 911, 999

When the SIM is present, the following emergency numbers are available:

112, 911, emergency number from ECC SIM files (if existing)

<pin2> Personal Identification Number 2

Notes: The following emergency numbers are stored in E2P:

112, 911, 999, 08

<EN> will be available even if ECC SIM file is not present.

Maximum Entries: The maximum number of entries for the Mobile Equipment phonebook is 500.

Syntax: AT+CPBS=<pb>[,<pin2>]

Command	Possible responses
AT+CPBS="SM"	OK
Note: Select ADN phonebook	Note: ADN phonebook is selected
AT+CPBS=?	+CPBS: ("SM","LD","MC","ON","ME","RC","MT","SN","EN")
Note: Possible values	OK
	Note: only "EN" phonebook is not supported with this SIM card.
AT+CPBS?	+CPBS:"SM",10,20
Note: Status	OK
	Note: ADN phonebook selected, 10 locations used, 20 locations available

Selection of the ADN phonebook when FDN is active is SIM dependent.

Selection of the "FD" phonebook with <pin2>, when <pin2> is already verified, will give the error: CME ERROR:3

Read Phonebook Entries +CPBR

Description: This command returns phonebook entries for a range of locations from the current phonebook memory

storage selected with +CPBS.

Note: For all phonebook read commands (+CPBR, +CPBF, +CPBN, +CPBP, +CNUM), the TON/NPI MSB of each number is set to 1 (ex: a TON/NPI stored as 17 is displayed as 145).

If the AT+WCOS =1 command has been used, the response will include <Contact> structure.

Values: <first_entry>,<last_entry> Location or range of locations of the phonebook entry or entries.

<type (TON/NP)> Type of address byte in integer format. Value is 145 if the dialing string (<number>

response value) includes the international access code character + ; otherwise, the

value is 129.

Syntax: Command Syntax: AT+CPBR

Response Syntax:

The entry is stored in the ADN phonebook and AT+WCOS=0

<CR><LF>+CPBR: <loc>,<num>,<type>,<name>
[<CR><LF>+CPBR: <loc>,<num>,<type>,<name>[...]]

The entry is stored in the ADN phonebook and AT+WCOS=1

<CR><LF>+CPBR: <loc>,<num>,<type>,<name>,<Phb_group>
[<CR><LF>+CPBR: <loc>,<num>,<type>,<name>,<Phb_group>[...]]

• The entry is stored in the Mobile Equipment phonebook and AT+WCOS=0

<CR><LF>+CPBR: <loc>,<num>,<type>,<name>
[<CR><LF>+CPBR: <loc>,<num>,<type>,<name>[...]]

• The entry is stored in the Mobile Equipment phonebook and AT+WCOS=1

<CR><LF>+CPBR: <loc>,<num>,<type>,<name>,<Contact>,<Phb_group>

[<CR><LF>+CPBR: <loc>,<num>,<type>,<name>,<Contact>, <Phb_group>[...]]

Command	Possible responses
AT+CPBR=?	+CPBR: (1-50),20,10
Note: Test command	OK
	Note: 50 locations (from 1 to 50), max length for phone number is 20
	digits, 10 characters max for the text
AT+WCOS?	+WCOS: 0
Note: Test command	OK
	Note: Contact not selected
AT+CPBR=12,14	+CPBR: 12,"112",129,"Emergency"
Note: Read entries from 12	+CPBR: 13,"+331290909",145,"Fred"
to 14	+CPBR: 14,"0146290808",129,"Zazi"
	OK
	Note: Display locations 12,13,14 with location, number, type
	(TON/NPI), Text
AT+CPBR=10	+CPBR:10,"0146290921",129,"Rob"
Note: Read entry 10	OK
	Note: Display location 10
AT+CPBR=11	+CPBR:11,"0146290921",129,"8000010002FFFF"
Note: Read entry 11 (UCS2	OK
format)	Note: Display location 11
AT+CPBR=52	+CME ERROR: 21
Note: Read entry 52 (wrong)	Note: Invalid index
AT+CPBS="ME"	OK
Note: Flash memory	
AT+WCOS=1	OK
	Note: Contact selected
AT+CPBR=13	+CPBR:13,"+331290909",145,"Fred",
Note: Read entry	"0141284549", 129, "0600003210", 129, "0141280000", 129,
_	"019876543210", 129,
	fred@mail_address.com, "Becker Street London",1
	OK _
	Note: Display locations 13 with location, number, type (TON/NPI), Text
	and Contact and Phonebook Group n1

CPBR Command Table Continued

Command	Possible responses
AT+CPBS="SM"	OK
Note: ADN phonebook	
AT+CPBR=1	+CPBR=1,"0123456",129,"test"
	OK
AT+CPBW=1,"0123456",,	OK
"test",1	
Note: Add an external entry	
in the SIM with group	
number (1)	
AT+CPBR=1	+CPBR=1"0123456",129,"test",1
	OK

Write Phonebook Entry +CPBW

Description:

This command writes a phonebook entry in location number <index> in the current phonebook memory storage.

Notes:

- "RC" and "MC" phonebooks could be erased only by +CPBW. Adding a field and/or modifying a field is not allowed for these phonebooks.
- This command is not allowed for "EN", "LD", "MC", "RC", "MT", and "SN" phonebooks (they cannot be written).
- If the AT+WCOS=1 command was used, the request would include the "Contact" structure.

Values:

<index>
<number>

<type>

Integer type value depending on the capacity of the phonebook memory.

Phone number in ASCII format.

TON/NPI (Type of address octet in integer format).

Note: The value is 145 if the dialing string (<number> response value) includes the international access code character +; otherwise, the value is 129 (Example: a <type> value of 17 will be written as 145).

<text> String type. Maximum length of <text> field is:

For the Mobile Equipment phonebook, 30 ASCII characters.

• For the ADN phonebook, SIM dependent (use AT+CPBW=?)

Notes:

- For the <text> parameter all strings starting with "80", "81" or "81" are considered in UCS2 format.
- The +CSCS (Select Character Set) command does not affect the format for phonebook entries.

<contact>

Contact structure.

<Phb_Group>

Phonebook group number in which the entry should be saved.

The range is 1 to 10. If the entry must not be saved in a group, <Phb_Group> = 0 or can be omitted.

Syntax: Command Syntax:

For ADN phonebook with AT+WCOS=0
 AT+CPBW=<index>[,<number>[,<type>[,<text>]]]

• For ADN phonebook with AT+WCOS=1

AT+CPBW=<index>[,<number>[,<type>[,<text> [,Phb_group>]]]]

 For the Mobile Equipment phonebook with AT+WCOS=0 AT+CPBW=<index>[,<number>[,<type>[,<text>]]]

• For the Mobile Equipment phonebook with AT+WCOS=1

AT+CPBW=<index>[,<number>[,<type>[,<text> [<contact> [,Phb group>]]]]]

Command	Possible responses
AT+CPBS="SM"	OK
Note: ADN phonebook	
AT+CPBS?	+CPBS:"SM",1,10
Note: Which phonebook is selected	OK
·	Note: ADN phonebook is selected, 1 location is used and 10 locations are available.
AT+WCOS=0	OK
Note: phonebook not extended	
AT+CPBW=?	+CPBW: (1-50),20,(129,145),10
Note: Test command	OK
	Note: 50 locations, phone number = 20 digits max, TON/NPI of 129 or 145, text length = 10
AT+CPBW=5,"112",129,"SOS"	OK
Note: Write at location 5	Note: Location 5 written
AT+CPBR=5	+CPBR=5,"112",129,"SOS"
Note: Read the entry at location 5	Note: Location 5 written
AT+CPBS?	+CPBS:"SM",2,10
Note: Which phonebook is selected	OK
	Note: ADN phonebook is selected, 2 locations are used and 10 locations are available.

+CPBW Command Table Continued

+CPBW Command Table Continued	
Command	Possible responses
AT+CPBW=5,"01290917",129,"Jacky"	OK
Note: Overwrite location 5	Note: Location 5 overwritten
AT+CPBW=6,"01292349",129,"8000410042"	OK
Note: write location 6 (UCS2 format for the <text> field)</text>	Note: Location 6 is written
AT+CPBW=8,"01292349",129,"80xyz"	OK
Note: write location	Note: Location 8 is written. The string has a
	wrong UCS2 format. It is, therefore,
	considered as an ASCII string.
AT+CPBW=5,"01290917",129,"Jacky"	+CME ERROR: 3
Note: write an extended entry	Note: Error because +WCOS: 0
AT+WCOS=1	OK
Note: Phonebook extended	
AT+CPBW=5,"01290917",129,"Jacky"1	OK
Note: Write an extended entry	
AT+WCOS=0	OK
Note: Phonebook not extended	
AT+CPBS="ME"	OK
Note: ME Phonebook	
AT+CPBS?	+CPBS: "ME",2,500
Note: How many entries are used	Note: in ME phonebook, 2 locations are used
·	and 500 locations are available.
AT+CPBW=1,"0123456798",129,"first entry"	OK
Note: Write a not extended entry	
AT+CPBW=1,"0123456798",129,"first	+CME ERROR: 3
entry","9876543210",129	
Note: Write an extended entry	Note: Error because +WCOS: 0
AT+CPBR=1	+CPBR: 1,"0123456798",129,"first entry"
Note: Read the first entry	•
AT+WCOS=1	OK
Note: Phonebook extended	
AT+CPBW=1,"0123456798",129,"first entry"	OK
Note: Write an entry not extended	
AT+CPBW=2,"9876543210",129,"second	OK
entry","6543210987",129	
Note: Write an extended entry	
AT+CPBR=1,2	+CPBR: 1,"0123456798",129,"first entry"
Note: Read entry 1 and 2	
AT+CPBW=13,"+331290909",145,"Fred",	OK
"0141284549",129, "0600003210",129, "0141280000",	Note: Location 13 is written
129, "019876543210", 129,	
fred@mail_address.com, "Becker Street London",1	
Note: Write location with Contact and Phonebook	
Group n1	
AT+CPBW=,"+33145221100",145,"SOS"	OK
Note: Write at the first location available	Note: First location available is written
AT+CPBW=,"+0345221100",145,"SOS"	+CME ERROR: 20
Note: Write at the first location available	Note: Phonebook full
AT+CPBW=57,"112",129,"WM"	+CME ERROR: 21
Note: Write at location 57 (wrong)	Note: Invalid index
AT+CPBW=7,"012345678901234567890",129,"WAVE"	+CME ERROR: 26
Note: Write at location 7 a phone number exceeding	
the limit (21 digits)	Note: Phone number too long
AT+CPBW=7,"0122334455",129,"WAVECOMTEL"	+CME ERROR: 24
Note: Write at location 7 along text (11 characters)	Note: Text too long
AT+CPBS="SM"	OK
Note: ADN phonebook	
AT+WCOS?	+WCOS: 1
	OK
	Note: Extended phonebook
AT+CPBR=1	+CPBR:1,"0123456",129,"test"
	OK
AT+CPBW=1,"0123456,,"test",1	OK
Note: Add an extended entry in SIM with group	

+CPBW Command Table Continued

Command	Possible responses
AT+CPBR=1	+CPBR:1,"0123456,"129,"test"
	OK
AT+CPBW=1,"0123456,,"test",1	OK
Note: Add an extended entry in SIM with group	
number 1	
AT+CPBR=1	+CPBR:1,"0123456,"129,"test",1
	OK
AT+CPBW=13,"+331290909",145,"Fred",	OK
"0141284549",129,"0600003210",129,"0141280000",	
129, "019876543210",129,	
fred@mail_address.com, "Becker Street London",1	
Note: Save the entry in the phonebook group #1	
AT+CPBW=13,"+331290909",145,"Fred",	OK
"0141284549",129,"0600003210",129,"0141280000",	
129, "019876543210",129,	
fred@mail_address.com, "Becker Street London"	
Note: Save the entry in the phonebook without a	
group	01/
AT+CPBW=13,"+331290909",145,"Fred",	OK
"0141284549",129,"0600003210",129,"0141280000",	
129, "019876543210",129,	
fred@mail_address.com, "Becker Street London",0	
Note: Save the entry in the phonebook without a	
group	

This command is not allowed when the fixed dialing phonebook (FDN) is locked. Moreover, **when the FDN is unlocked**, **PIN2 is required** to write in the FDN phonebook.

But if PIN2 authentication has been performed during the current session, the +CPBW command with FDN is allowed.

Command	Possible responses
AT+CPBS="FD"	OK
Note: Choose FDN	
AT+CPBW=5,"01290917",129,"Jacky	+CME ERROR: 17
"	Note: SIM PIN2 is required
Note: Write in FDN at location 5	
AT+CPIN?	+CPIN: SIM PIN2
	Note: SIM PIN2 is required
AT+CPIN=5678	OK
Note: Enter SIM PIN2	
AT+CPBW=5,"01290917",129,"Jacky	OK
"	Note: Writing in FDN is now allowed
Note: Write in FDN at location 5	

Find Phonebook Entries +CPBF

Description:

This command returns phonebook entries with alphanumeric fields starting with a given string. The AT+CPBF= "" command can be used to display all phonebook entries sorted in alphabetical order. This command is not allowed for "LD", "RC", "MC" phonebooks and for the "EN" phonebook, which does not contain alphanumeric fields.

It is possible to use this command with UCS2 strings. If a wrong UCS2 format is entered, the string is considered as an ASCII string.

Values:

<string> Searched pattern string (depends on the format of the data stored in the phonebooks)

Location number (20 digits maximum)
Phone number (20 digits maximum)

<type> TON/NPI (Type of address byte in integer format)

<contact> Extended contact structure

Syntax:

Command Syntax: AT+CPBF=<string>

Response Syntax:

 The entry is stored in the ADN phonebook and AT+WCOS=0 <CR><LF> +CPBF=<loc>,<num>,<type>,<name>

- The entry is stored in the ADN phonebook with AT+WCOS=1
 CR><LF> +CPBF=<loc>,<num>,<type>,<name>,<Phb group>
- The entry is stored in the Mobile Equipment phonebook with AT+WCOS=0 <CR><LF> +CPBF=<loc>,<num>,<type>,<name>
- The entry is stored in the Mobile Equipment phonebook with AT+WCOS=1
 CR><LF> +CPBF=<loc>,<num>,<type>,<name>,<Contact>,<Phb group>

Command	Possible responses
AT+CPBF=?	+CPBF: 20,10
Note: Test command	OK
	Note: Maximum length for a phone number is 20 digits; 14 characters for
	the text
AT+CPBF="E"	+CPBF: 12,"112",129,"Emergency"
Note: Read entries with "E"	+CPBF: 15,"+331290101",145,"Eric"
	OK
	Note: Display locations with text field starting with "E"
AT+CPBF="H"	+CME ERROR: 22
Note: Read entries with "H"	Note: Entry not found
AT+CPBF="800001"	+CPBF: 11, "0146290921",129,"8000010002FFFF"
Note: Read entries starting with	OK
0001 UCS2 character	Note: Display locations with text field starting with 0001 UCS2 character
AT+CPBF="8045C"	+CME ERROR: 22
Note: Read entries with "8045C"	Note: Entry not found. The string has a wrong UCS2 format; it is therefore
(ASCII format)	considered as an ASCII string
AT+CPBS="SM"	OK
Note: ADN phonebook	
AT+WCOS=0	OK
Note: Phonebook not extended	
AT+CPBF="Test"	+CPBF: 1,"0123456789",129,"Test ADN"
Note: Read entries with "Test"	Note: Display locations with text field starting with "Test"
AT+WCOS=1	OK
Note: Phonebook extended	
AT+CPBF="Test"	+CPBF: 1,"0123456789",129,"Test ADN",0
Note: Read entries with "Test"	Note: Display locations with text field starting with "Test", extended entry.
AT+CPBS="ME"	OK
Note: ADN phonebook	
AT+WCOS=0	OK
Note: Phonebook not extended	
AT+CPBF="Test"	+CPBF: 1,"0123456789",129,"Test ME"
Note: Read entries "Test"	Note: Display locations with text field starting with "Test"
AT+WCOS=1	OK
Note: Phonebook extended	
AT+CPBF="Test"	+CPBF: 1,"0123456789",129,"Test
Note: Read entries with "Test"	ME","9876543210",129,"","",",email@mail_address.com,
	"post address',0
	Note: Display locations with text field starting with "Test", extended entry.

Phonebook Phone Search +CPBP

Description:

This command orders the product to search the phonebook for an item with the same phone number as that defined in the parameter.

The searched phone number is the FIRST one that the user can enter with AT+CPBW. For example, with this command string, we can search only the phone number (+331290909):

AT+CPBW=13,"+331290909",145,"Fred","0141284549",129,"0600003210",129,"0141280000", 129, "010876543340" 129, fred@mail.oddrson.com "Booker Street Lendon" 0

"019876543210",129,fred@mail_address.com, "Becker Street London",0

Values: < PhoneNumber> Phone number (coded according to any GSM 07.07 or GSM 07.05 phone number)

Location numbernum>Phone number

<type> TON/NPI (type of address octet in integer format)

<contact> Contact structure

Syntax: Command Syntax: AT+CPBP=<PhoneNumber>

Response Syntax:

 The entry is stored in the ADN phonebook and AT+WCOS=0 <CR><LF> +CPBP=<loc>,<num>,<type>,<name>

 The entry is stored in the ADN phonebook with AT+WCOS=1 <CR><LF> +CPBP=<loc>,<num>,<type>,<name>,<Phb_group>

 The entry is stored in the Mobile Equipment phonebook with AT+WCOS=1 <CR><LF> +CPBP=<loc>,<num>,<type>,<name>,<Contact>,<Phb_group>

Command	Possible responses
AT+CPBP=?	+CPBP: (1-50),20,10
Note: Test command	OK Note: 50 locations (from 1 to 50), maximum length for phone
	number is 20 digits, 10 characters maximum for the text.
AT+CPBP="+331290101"	+CPBP: 15,"+331290101",145,"Eric"
Note: Search entries corresponding	OK
to this phone number	Note: Display the entry corresponding to the specified phone number
AT+CPBP="+331290101"	+CPBP: 15,"01290101",129,"Eric"
Note: Search entries corresponding	OK
to this phone number	Note: Display the entry corresponding to the specified phone number
AT+CPBP="01290202"	+CPBP: 15,"+331290202",145,"David"
Note: Search entries corresponding	OK
to this phone number	Note: Display the entry corresponding to the specified phone number
AT+CPBP="+331288575"	+CPBP: 15,"+331290101",145,"8045682344FFFF"
Note: Search entries corresponding	OK
to this phone number	Note: Display entry corresponding to the specified phone number (UCS2 format)
AT+CPBP="0129"	+CME ERROR: 22
Note: Search entries corresponding	Note: Entry not found
to this phone number	
AT+CPBS="SM"	OK
Note: ADN phonebook	
AT+WCOS=0	OK
Note: Phonebook not extended	
AT+CPBP="0123456789"	+CPBP: 1,"0123456789",129,"Test ADN"
Note: Search entries corresponding	Note: Display the entry corresponding to the specified phone number
to this phone number	
AT+WCOS=1	OK
Note: Phonebook extended	
AT+CPBP="0123456789"	+CPBF: 1,"0123456789",129,"Test ADN",0
Note: Search entries corresponding	Note: Display locations with text field starting with "Test", extended entry.
to this phone number	
AT+CPBS="ME"	OK
Note: ADN phonebook	
AT+WCOS=0	OK
Note: Phonebook not extended	
AT+CPBP="0123456789"	+CPBP: 1,"0123456789",129,"Test ME"
Note: Search entries corresponding	Note: Display locations with text field starting with "Test"
to this phone number	

Continued on next page

AT+CPBP=<PhoneNumber> continued

Command	Possible responses
AT+WCOS=1	OK
Note: Phonebook extended	
AT+CPBP="Test"	+CPBF: 1,"0123456789",129,"Test
Note: Read entries with "Test"	ME","9876543210",129,"","","email@mail_address.com,"post address',0
	Note: Display locations with text field starting with "Test", extended entry.

Move Action in Phonebook +CPBN

Description: This specific command performs a forward or backward move in the phonebook (in alphabetical order).

It is not allowed in the "EN" phonebook since it does not contain alphanumeric fields.

Values: <mode>

First itemLast item

Next valid item in alphabetical orderPrevious valid item in alphabetical order

Last item read (usable only if a read operation has been performed on the current phonebook since the end of initialization

5 Last item written (usable only if a write operation has been performed on the current phonebook since the end of initialization

Location numbernum>Phone number

<type> TON/NPI (Type of address octet in integer format)

<contact> Contact structure

Syntax: Command Syntax: AT+CPBN=<mode>

Response Syntax:

 The entry is stored in the ADN phonebook and AT+WCOS=0 CR><LF> +CPBN=<loc>,<num>,<type>,<name>

 The entry is stored in the Mobile Equipment phonebook with AT+WCOS=0 <CR><LF> +CPBN=<loc>,<num>,<type>,<name>

 The entry is stored in the Mobile Equipment phonebook with AT+WCOS=1 <CR><LF> +CPBN=<loc>,<num>,<type>,<name>,<Contact>,<Phb_group>

Command	Possible responses
AT+CPBN=?	+CPBN: (0-5)
Note: Test command	OK Note: Possible modes
AT+CPBS="SM"	OK
Note: ADN phonebook	
AT+WCOS=0	OK
Note: Phonebook not extended	
AT+CPBN=0	+CPBN: 15,"+331290101",145,"Eric"
Note: Read the first location	OK Note: Display the first location
AT+WCOS=1	OK
Note: Phonebook extended	
AT+CPBN=2	+CPBN: 5,"+33147658987",145,"Frank",0
Note: Read the next location	OK
	Note: Display the second location, extended entry
AT+CPBN=2	+CPBN: 6,"+331290302",145,"Marc",0
Note: Read the next location	OK Note: Display the third location, extended entry
AT+WCOS=0	OK
Note: Phonebook not extended	
AT+CPBN=3	+CPBN: 5,"+33147658987",145,"Frank"
Note: Read the previous location	OK Note: Display the second location
AT+CPBN=1	+CPBN: 6,"+331290302",145,"Marc"
Note: Read the last location	OK Note: Display the last location
AT+CPBN=2	+CPBP: 15,"+331290101",145,"Eric"
Note: Read the next location	OK Note: Display the first location

Using mode 4 and 5 with +CPBF command and CPBW:

Command	Possible responses
AT+CPBF="Er"	+CPBF: 15,"+331290101",145,"Eric"
Note: Find "Er" in phonebook	OK
	Note: Display the location
AT+CPBN=2	+CPBN: 5,"+33147658987",145,"Frank"
Note: Read the next location	OK
	Note: Display the following location
AT+CPBF="Er"	+CPBF: 15,"+331290101",145,"Eric"
Note: Find "Er" in phonebook	OK
	Note: Display the location
AT+CPBN=4	+CPBF: 15,"+331290101",145,"Eric"
Note: Get the last location read	OK
	Note: Display the last location read
AT+CPBW=,"0146290800",129,"WM"	OK
Note: Write an item at the first location	Note: No information about this location
available	
AT+CPBN=4	+CPBF: 15,"+331290101",145,"Eric"
Note: Get the last location read	OK
	Note: Display the last location read
AT+CPBN=5	AT+CPBN=38,"0146290800,129,"WM"
Note: Display the last item written with	Note: Display the last item written with its location
its location	
AT+CPBN=4	AT+CPBN=38,"0146290800,129,"WM"
Note: Get the last item read	Note: Now the last item read is the last written item too
AT+CPBF="800041FFFF"	+CPBF: 15,"+3312345",145,"8000414339FFFF"
Note: Find"800041" in phonebook	OK
	Note: Display this location
AT+CPBN=4	+CPBF: 15,"+3312345",145,"8000414339FFFF"
Note: Get the last location read	OK
	Note: Display the last location read

Note: The AT+CPBN=5 command is useful after an AT+CPBW command is used without a location.

Subscriber Number +CNUM

Description: This command returns the subscriber MSISDN(s). If the subscriber has different MSISDNs for different

services, each MSISDN is returned in a separate line.

Values: <alphax> optional alphanumeric string associated with <numberx>

<numberx> string type phone number with format as specified by <typex>

<typex> type of address byte in integer format

Syntax: Command syntax: AT+CNUM

Response syntax: +CNUM: <alpha1>, <number1>, <type1> <CR><LF> +CNUM: <alpha2>,

<number2>, <type2>

Command	Possible responses
AT+CNUM	+CNUM:"Phone", "0612345678",129
	+CNUM: "80001002FFFF", "+0183773", 145 (UCS2 format)
Note: Get MSISDN(s)	OK
	Note: MSISDNs
AT+CNUM=?	OK

Avoid Phonebook Initialization +WAIP

Description: This specific command allows the initialization of all phonebooks to be inhibited during subsequent

boots.

Values: <mode>

Normal initialization (with phonebooks)

1 No phonebook initialization

Syntax: Command Syntax: AT+WAIP=<mode>

Command	Possible responses
AT+WAIP?	+WAIP:0
	OK
Note: Current values ?	Note: Default value (init phonebooks)
AT+WAIP=?	+WAIP: (0,1)
Note: Possible values ?	OK
	Note: Disable / enable
AT+WAIP =1	OK
Note: Inhibit initialization of phonebooks (next boot)	Note: no answer
AT&W	
Note: Save modifications in EEPROM	

Caution: The given value should be stored in EEPROM. Therefore, the AT&W command must be used to save the

new <mode> value.

Note: No phonebook commands are allowed if +WAIP=1 (after boot). If a phonebook command is entered, a "+CME

ERROR: 3" is returned.

Delete Calls Phonebook +WDCP

Description: This specific command deletes the calls listed in some phonebooks.

Values: <calls phonebook>

"LD" SIM (ME extended) Last dialing phonebook

"MC" ME missed calls list phonebook"RC" ME received calls list phonebook

Syntax: Command Syntax: +WDCP=<calls phonebook>

Command	Possible responses
AT+WDCP?	OK
AT+WDCP=?	+WDCP: ("LD","MC","RC")
	OK
Note: Possible values ?	Note: Identifiers of the phonebooks supporting a list of calls
AT+WDCP="LD"	OK
Note: Delete all the content of Last Dialing phonebook.	Note: Last Dialing phonebook is now empty.

Set Voice Mail Number +CSVM

Description: This commands sets/gets and enables/disables the voice mail number in memory.

Values: <mode>

0 Disable the voice mail number1 Enable the voice mail number<number> Phone number in ASCII format.

<type> TON/NPI (Type of address byte in integer format).

Note: The value is 145 if the dialing string includes the international access code character '+'. Otherwise, the value is 129. Example: A <type> value of 17 will be written as 145.

Syntax: Command Syntax: AT+CSVM=<mode>[,<number>[,<type>]]

Command	Possible responses
AT+CSVM?	+CSVM: 1,"660",129
Note: Get mail number	OK Note: Voice mail number "660" is activated
AT+CSVM=?	+CSVM: (0-1),(129,145)
	OK
Note: Possible values ?	Note: activation/deactivation and format 129 & 145 are supported
AT+CSVM=0,"888",129	OK
Note: Disable Voice Mail number and	
change value to "888".	

Contact Selector +WCOS

Description: This commands enables/disables the displaying of extended contact.

Values: <mode>

Select the SIM contacts

1 Select the extended contacts for phonebook entries

2 Internal use only.

3

Syntax: Command Syntax: AT+WCOS=<mode>

Command	Possible responses
AT+WCOS?	+WCOS: 1
Note: Test command	OK
	Note: Extended contact selected
AT+WCOS=?	+WCOS: (0-2)
Note: List all possible values	OK
-	Note: Displays all possible responses
AT+WCOS=0	OK
Note: Contact not selected	
AT+WCOS=3	+CME ERROR: 3
	Note: Mode not allowed

Create and Delete a Phonebook Group +WPGW

Description: This commands creates or deletes a phonebook group.

Values: <index> Index a new group

<name> Name of the group. It can be up to 30 ASCII characters or 13 UCS2 characters long

Syntax: Command Syntax: AT+WPGW=<index>[,<name>]

Command	Possible responses
AT+WPGW=?	+WPGW: (1-10),30
Note: Test command	OK
	Note: 10 possible groups, group name can be 30 characters
	maximum
AT+WPGW=1,"group 1"	OK
Note: Create group #1	Note: Group 1 created
AT+WPGW=1,"phb group 1"	OK
Note: Rename group #1	Note: Group 1 created
AT+WPGW=1	OK
Note: Delete group #1	Note: Group 1 deleted

Read a Phonebook Group +WPGR

Description: This commands reads the phonebook group entries, the phonebook group name or the number or used

records in a group.

Values: <mode>

1 Read the name of one phonebook group

2 Read the names of all phonebook groups

3 List all entries of one phonebook group

4 Read the number of used records in a phonebook group

<index>

Index of the group (for use with mode = 3 or mode = 4)

Syntax: Command Syntax: AT+WPGR=<mode>,<index>

Command	Possible responses
AT+WPGR=?	+WPGR: (1-4),(1-10)
Note: Test command	OK
	Note: 10 possible groups
AT+WPGR=1,1	+WPGR: 1,"group 1"
Note: Read the name of phonebook group 1	OK
AT+WPGR=2	+WPGR: 1,"group 1"
Note: Read the name of all phonebook groups	+WPGR: 2,"group 2"
	OK
AT+WCOS=0	OK
Note: Phonebook not extended	
AT+WPGR=3,1	+WPGR: 1,"+33123456789",145,"John"
Note: List all entries of phonebook group 1	+WPGR: 2,"+33567891234",145,"Elvis"
	+WPGR: 31,"+331290909",145,"Fred"
	+WPGR: 32,"+0123456789",129,"Test"
	OK
	Note: SIM entries: index 1 and 2; Flash entries; index 31
	and 32 (The SIM supports 30 entries in this example)
AT+WCOS=1	OK
Note: Phonebook extended	
AT+WPGR=3,1	+WPGR: 1,"+33123456789",145,"John", 1
Note: List all extended entries of phonebook	+WPGR: 2,"+33567891234",145,"Elvis",1
group 1	+WPGR: 31,"+331290909",145,"Fred","0141284549",
	129,"060003210",129,"0141280000",129,
	"019876543210",129,fred@mail_address.com,
	"Becker Street London",1
	+WPGR: 32,"+0123456789",129,"Test",0141284549",
	129,"0600003210",129,0141280000",129,
	"6549873210",129,test@mail_address.com,"",1
	OK
	Note: SIM entries: index 1 and 2; Flash entries; index 31
	and 32 (The SIM supports 30 entries in this example)

Note: The entries list displayed with AT+WPGR=3,1 contains records from both the Mobile Equipment and the SIM phonebooks (MT phonebook).

Settings of a Phonebook Group +WPGS

Description: This commands sets the parameters of a phonebook group.

Values: <mode>

Syntax:

Read group settingsWrite group settings

<index>

Index of the group

<restrict call>

Parameter is optional if <mode.=0. It is mandatory if <mode>=1. **0** All refused. Incoming call is forwarded to the voice mailbox

All accepted. Incoming call is received (RING message is displayed)

7 Wil accepted. Incoming call is received (141140 message is displ

Command Syntax: AT+WPGS=<mode>,<index>[,<restrict call>]

Command	Possible responses
AT+WPGS=1,1,1	OK
Note: Set restrict call to "All Accepted"	
AT+WPGS=0,1	+WPGS: 1,
Note: Read group 1 settings	OK
	Note: Group1: all accepted
AT+WPGS=?	+WPGS: (0-1),(1-10),(0-1)
Note: Test command	OK

Chapter 9 - Short Messages

Parameters Definition

<da> Destination Address, coded according to the GSM Technical Specification 03.40 TP-DA

<dcs> Data Coding Scheme, coded according to document [5]

<dt> Discharge Time in string format:

"yy/MM/dd,hh:mm:ss±zz"(Year [00-99], Month [01-12],

Day [01-31], Hour, Minute, Second and Time Zone [quarters of an hour])

<fo> First Byte, coded according to SMS-SUBMIT first byte in document [4], default value is 17 for SMS-

SUBMIT

<index> Place of storage in memory

<length> Text mode (+CMGF=1): number of characters PDU mode (+CMGF=0): length of the TP data unit in

bytes

<mem1> Memory used to list, read and delete messages (+CMGL, +CMGR and +CMGD)

<mem2> Memory used to write and send messages (+CMGW, +CMSS)
<mem3> Preferred memory to which received SMS are to be stored

<mid> CBM Message Identifier</m>
<mr> Message Reference</m>
<oa> Originator Address</mi>
pid> Protocol Identifier

<pdu> For SMS: GSM 04.11 SC address followed by GSM Technical Specification 03.40 TPDU in

hexadecimal format, coded as specified in doc [4] For CBS: GSM Technical Specification 03.41 TPDU

in hexadecimal format

<ra> Recipient Address
<sca> Service Center Address

<scts> Service Center Time Stamp in string format: "yy/MM/dd,hh:mm:ss±zz"

(Year/Month/Day, Hour: Min: Seconds ± Time Zone)

<sn> CBM Serial Number

<st> Status of a SMS-STATUS-REPORT
<stat> Status of message in memory
<tooa> Type-of-Address of <oa>
<tora> Type-of-Address of <ra>
<tosca> Type-of-Address of <sca>

<total1> Number of locations for messages in <mem1> <total2> Number of locations for messages in <mem2> <total3> Number of locations for messages in <mem3> <used1> Total number of messages in <mem1>

<used2> Total number of messages in <mem2> <used3> Total number of messages in <mem3>

vp> Validity Period of the short message, default value is 167

Select Message Service +CSMS

Description: The Supported Services include originated (SMS-MO) and terminated short messages (SMS-MT) as

well as Cell Broadcast Message (SMS-CB) services.

Values: <service>

SMS AT commands are compatible with GSM 07.05 Phase 2 version 4.7.0.
SMS AT commands are compatible with GSM 07.05 Phase 2 + version .

Syntax: Command Syntax: AT+CSMS=<service>

Command	Possible responses
AT+CSMS=0	+CSMS: 1,1,1
Note: SMS AT command Phase 2	OK
version 4.7.0	Note: SMS-MO, SMS-MT and SMS-CB supported
AT+CSMS=1	+CSMS: 1,1,1
Note: SMS AT command Phase 2 +	Note: SMS-MO, SMS-MT and SMS-CB supported
AT+CSMS?	+CSMS: 0,1,1,1
Note: Current values ?	OK
	Note: GSM 03.40 and 03.41 (SMS AT command Phase 2 version 4.7.0
AT+CSMS=?	+CSMS: (0,1)
Note: Possible services	OK

New Message Acknowledgement +CNMA

Description: This command allows reception of a new message routed directly to the DTE to be acknowledged.

•In TEXT mode, only positive acknowledgement to the network (RP-ACK) is possible.

•In PDU mode, either positive (RP-ACK) or negative (RP-ERROR) acknowledgement to the network is possible.

Acknowledgement with +CNMA is possible only if the +CSMS parameter is set to 1 (+CSMS=1) when a +CMT or +CDS indication is shown (see +CNMI command).

If no acknowledgement occurs within the network timeout, an RP-ERROR is sent to the network. The <mt> and <ds> parameters of the +CNMI command are then reset to zero (do not show new message indication).

Values:

<n>: Type of acknowledgement in PDU mode

- o send RP-ACK without PDU (same as TEXT mode)
- 1 send RP-ACK with optional PDU message
- 2 send RP-ERROR with optional PDU message

Length >: Length of the PDU message

Syntax:

Command syntax in text mode: AT+CNMA

Command syntax in PDU mode: AT+CNMA [= <n> [, <length> [<CR>

Note: PDU is entered using <ackpdu> format instead of <pdu> format (e.g., SMSC address field is not

present). PDU is entered <ctrl-Z / ESC>]]]

Example of New Message Acknowledgement in TEXT Mode

Command	Possible responses
AT+CSMS=1	OK
Note: SMS AT Commands compatible with	
GSM 07.05 Phase 2 + version	
AT+CMGF=1	OK
Note: Set TEXT mode	Note: TEXT mode valid
AT+CNMI=2,2,0,0,0	OK
Note: <mt>=2</mt>	
	+CMT: "123456","98/10/01,12:30 00+00",129,4
	,32,240, "15379",129,5 <cr><lf></lf></cr>
	Received message
	Note: message received
AT+CNMA	OK
Note: acknowledge the message received	Note: send positive acknowledgement to the network
AT+CNMA	+CMS ERROR: 340
Note: try to acknowledge again	Note: no +CNMA acknowledgment expected

Example of New Message Acknowledgement in PDU Mode:

Command	Possible responses
AT+CSMS=1	OK
Note: SMS AT Commands compatible with	
GSM 07.05 Phase 2 + version	
AT+CMGF=0	OK
Note: Set PDU mode	Note: PDU mode valid
AT+CNMI=2,2,0,0,0	OK
Note: <mt>=2</mt>	
	+CMT: ,29
	07913366003000F1240B913366920547F30000003003419404800
	B506215D42ECFE7E17319
	Note: message received
AT+CNMA=2,2 <cr></cr>	OK
>00D3 <ctrl-z></ctrl-z>	
Note: Negative ACK to the SMS.	
Reason is: memory capacity exceeded	
AT+CNMA=2,2 <cr></cr>	OK
>00D3 <ctrl-z></ctrl-z>	
Note: Negative ACK to the SMS.	
Reason is: SIM memory storage is full	
AT+CNMA=2,2 <cr></cr>	OK
>00D3 <ctrl-z></ctrl-z>	
Note: Negative ACK to the SMS.	
Reason is: Error in modem	
AT+CNMA=2,2 <cr></cr>	OK
>00FF <ctrl-z></ctrl-z>	
Note: Negative ACK to the SMS.	
Unspecified error	

Preferred Message Storage +CPMS

Description: This command allows the message storage area to be selected (for reading, writing, etc).

Values: <mem1>: Memory used to list, read and delete messages. It can be:

SM SMS message storage in SIM (default)

ME SMS message storage in Flash

BM CBM message storage (in volatile memory).

SR Status Report message storage (in SIM if the EF-SMR file exists, otherwise in the ME non

volatile memory)

Note: SR ME non-volatile memory is cleared when another SIM card is inserted. It is kept,

even after a reset, while the same SIM card is used.

<mem2>: Memory used to write and send messages

SM SMS message storage in SIM (default)

ME SMS message storage in Flash

<mem3>: Memory to which received SMS are preferred to be stored

SM SMS message storage in SIM (default)
ME SMS message storage in Flash

If the command is correct, the following message indication is sent:

+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3>

When <mem1> is selected, all following +CMGL, +CMGR and +CMGD commands are related to the type of SMS stored in this memory.

The maximum number of SMS is Flash is 99.

When the modem is switched on, <mem1>,<mem2>, and <mem3> are initialized to SM.

Syntax: Command Syntax: AT+CPMS=<mem1>,[<mem2>],[<mem3>]

Command	Possible responses	
AT+CPMS=?	+CPMS: (("SM","ME","BM","SR"),("SM","ME"),("SM","ME"))	
	OK	
Note: Possible message storages	Note: Read, list, delete: SMS or SMS Status Report	
	Write, send: SMS	
AT+CPMS?	+CPMS: "SM",3, 10,"SM",3,10,"SM",3,10	
	OK	
Note: Read	Note: Read, writeSMS from/to SIM	
	3 SMS are stored in SIM. 10 is the total memory available in SIM	
AT+CPMS= "SM","ME","SM"	+CPMS: 3,10,3,99,3,10	
Note: Select SM for reading, ME	OK	
for writing and SM for storing		
AT+CPMS="AM"	+CMS ERROR: 302	
Note: Select false message storage		
AT+CPMS="BM"	+CPMS: 2,20,3,10	
	OK	
Note: Select CBM message storage		
AT+CPMS?	+CPMS: "SM",3,10,"ME",3,99,"SM",3,10,	
	OK	
Note: Read	Note: Read, storeSMS from/to flash, write SMS to flash. 3SMS	
	are stored in flash. 99 is the total memory available in flash	
	CMTI: "SM",4	
AT+CPMS= "ME","ME", "ME"	+CPMS: 3,99,3,99,3,99	
Note: Select ME for reading, ME	OK	
for writing and ME for storing		
AT+CPMS?	+CPMS: "ME",3,99,"ME",3,99	
	OK	
Note: Read	Note: Read, write, store SMS from/to flash. 3 SMS are stored in	
	flash. 99 is the total memory available in flash	
	CMTI: "ME",4	
	Note: Receive an SMS stored in flash at location 4	
AT+CPMS= "AM"	+CMS ERROR: 302	
Note: Select wrong message		
storage		

Command Syntax: AT+CPMS=<mem1>,[<mem2>],[<mem3>] continued

Command	Possible responses
AT+CPMS= "SM"	+CPMS: "4,10,4,99,4,99
Note: Selecting SM for reading,	OK
writing and storing has not	
changed	
AT+CPMS?	+CPMS: "SM",4,10,"ME",4,99,"ME",4,99
	OK
	Note: Read SMS from SIM. Write and store SMS from/to flash

Preferred Message Format +CMGF

Description:

The message formats supported are text mode and PDU mode.

In PDU mode, a complete SMS Message including all header information is given as a binary string (in hexadecimal format). Therefore, only the following set of characters is allowed:

{'0','1','2','3','4','5','6','7','8','9', 'A', 'B','C','D','E','F'}. Each pair of characters is converted to a byte (e.g., '41' is converted to the ASCII character 'A', whose ASCII code is 0x41 or 65).

In Text mode, all commands and responses are in ASCII characters. The format selected is stored in EEPROM by the +CSAS command.

Values:

<mode> PDU or Text Mode

0 PDU mode

1 Text mode

The <pdu> message is composed of the SC address (00 means no SC address given, use default SC address, read with +CSCA command) and the TPDU message.

In this example, the length of <u>bytes</u> of the TPDU buffer is 14, coded according to GSM Technical Specification 03.40.

In this case, the TPDU is: 0x01 0x03 0x06 0x91 0x21 0x43 0x65 0x00 0x00 0x04 0xC9 0xE9 0x34 0x0B, which is GSM 03.40:

<fo> 0x01 (SMS-SUBMIT, no validity period)

<mr> (TP-MR) 0x03 (Message Reference)</ri>

<da> (TP-DA) 0x06 0x91 0x21 0x43 0x65 (destination address +123456)

<pi><pid>(TP-PID) 0x00 (Protocol Identifier)

TPDU in hexadecimal format must be converted into two ASCII characters; e.g., an byte with hexadecimal value 0x2A is presented to the ME as two characters '2' (ASCII 50) and 'A' (ASCII 65).

Syntax:

Command Syntax: AT+CMGF<mode>

<u> </u>	
Command	Possible responses
AT+CMGF?	+CMGF: 1
	OK
Note: Current message format	Note: Text mode
AT+CMGF=?	+CMGF: (0,1)
	OK
Note: Possible message format	Note: Text or PDU modes are available

Example: Sending an SMS Message in PDU mode:

Command	Possible responses
AT+CMGF=0	OK
Note: Set PDU mode	Note: PDU mode valid
AT+CMGS=14 <cr></cr>	+CMGS: 4
0001030691214365000004C9E9340B	OK
Note: Send complete MSG in PDU mode, no	Note: MSG correctly sent, <mr> is returned</mr>
SC address	

Save Settings +CSAS

Description: All settings specified by the +CSCA and +CSMP commands are stored in EEPROM if the SIM card is a

Phase 1 card or in the SIM card if it is a Phase 2 SIM card.

Values: No parameters

Syntax: Command Syntax: AT+CSAS

Command	Possible responses
AT+CSAS	OK
Note: Store +CSCA and +CSMP parameters	Note: Parameters saved

Restore Settings +CRES

Description: All settings specified in the +CSCA and +CSMP commands are restored from EEPROM if the SIM card

is Phase 1 or from the SIM card if it is a Phase 2 SIM card.

Values: No parameters

Syntax: Command Syntax: AT+CRES

Command	Possible responses
AT+CRES	OK
Note: Restore +CSCA and +CSMP parameters	Note: Parameters restored

Show Text Mode Parameters +CSDH

Description: This command gives additional information about text mode result codes. This information can be found

in the description of the +CMT, +CMGR, +CMGL commands.

Values: <n>: show indicator

do not show header valuesshow the values in result codes

Syntax: Command Syntax: AT+CSDH

Command	Possible responses
AT+CSDH=0	OK
Note: Set value to "do not how"	
AT+CSDH?	+CSDH: 0
Note: Current value	OK
	Note: Do not show header values

New Message Indication +CNMI

Description: This command selects the procedure for message reception from the network.

Values: <mode> Controls the processing of unsolicited result codes

Important Note: Only <mode>=2 is supported.

Any other value for <mode> (0,1 or 3) is accepted (return code will be OK), but the processing of unsolicited result codes will be the same as with <mode>=2.

- 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 and flush them to the TE after reservation. Otherwise forward them directly to the TE
- 3 Forward unsolicited result codes directly to the TE. TA-TE link specific in-band used to embed result codes and data when TA is in on-line data mode

<mt> Sets the result code indication routing for SMS-DELIVERs. Default is 1.

- 0 No SMS-DELIVER indications are routed.
- 1 SMS-DELIVERs are routed using unsolicited code: +CMTI: "SM",<index>
- 2 SMS-DELIVERs (except class 2 messages) are routed using unsolicited code:

If PDU mode:

+CMT: [<alpha>,] <length> <CR> <LF> <pdu>

If text mode:

+CMT: <oa>,[<alpha>,] <scts> [,<tooa>, <fo>, <pid>, <dcs>, <sca>, <tosca>, <length>] <CR><LF><data>

- 3 Class 3 SMS-DELIVERs are routed directly using code in <mt>=2; Message of other classes result in indication <mt>=1
- Sets the rules for storing the received CBMs (Cell Broadcast Message) types. They depend on the coding scheme (text or PDU) and the setting of Select CBM Types (+CSCB command). Default is 0.
 - No CBM indications are routed to the TE. The CBMs are stored. **Default.**
 - 1 The CBM is stored and an indication of the memory location is routed to the customer application using unsolicited result code: +CBMI: "BM", <index>
 - 2 New CBMs are routed directly to the DTE using an unsolicited result code. If PDU mode:

+CBM: <length><CR><LF><pdu> (PDU mode)

If text mode:

+CBM:<sn>,<mid>,<dcs>,<page>,<page>(Text mode) <CR><LF> <data>

- 3 Class 3 CBMs: as

 S of the classes CBMs: as

- <ds> Used for SMS-STATUS-REPORTs. Default is 0.
 - 0 No SMS-STATUS-REPORTs are routed.
 - 1 SMS-STATUS-REPORTs are routed using unsolicited code:

If PDU mode:

+CDS: <length> <CR> <LF> <pdu>

If text mode:

+CDS: <fo>,<mr>, [<ra>], [<tora>], <scts>,<dt>,<st>

2 SMS-STATUS-REPORTs are stored and routed using the unsolicited result code: +CDSI: "SR",<index>

bfr> Default is 0.

- **0** TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1...3 is entered (OK response shall be given before flushing the codes)
- 1 TA buffer of unsolicited result codes defined within this command is cleared when <mode>
 1...3 is entered.

Syntax:

Command Syntax: AT+CNMI=<mode>,<mt>,<bm>,<ds>,<bfr>

Command	Descible vernence	
Command	Possible responses	
AT+CNMI=2,1,0,0,0	OK	
Note: <mt>=1</mt>		
	AT+CMTI: "SM",1	
	Note: message received	
AT+CNMI=2,2,0,0,0	OK	
Note: <mt>=2</mt>		
	+CMT: "123456","98/10/01,12:30 00+00",129,4,32,240,	
	"15379",129,5 <cr><lf></lf></cr>	
	Note: message received	
AT+CNMI=2,0,0,1,0	OK	
Note: <ds>=1</ds>		
AT+CMGS="+33146290800" <cr></cr>	+CMGS: 7	
Happy Birthday! <ctrl-z></ctrl-z>	OK	
Note: Send a message in text mode	Note: Successful transmission	
	+CDS: 2, 116, "+33146290800", 145, "98/10/01,12:30:07+04",	
	"98/10/01	
	12:30:08+04", 0	
	Note: message was correctly delivered	

Read Message +CMGR

Description: This command allows the application to read stored messages. The messages are read from the

memory selected by the **+CPMS** command.

Syntax: Command syntax: AT+CMGR=<index>

Response syntax for text mode:

For SMS-DELIVER only

+CMGR: <stat>,<oa>,[<alpha>,] <scts> [,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]

<CR><LF> <data>

For SMS-SUBMIT only

+CMGR: <stat>,<da>,[<alpha>,] [,<toda>,<fo>,<pid>,<dcs>, [<vp>], <sca>,

<tosca>,<length>]<CR><LF> <data>

For **SMS-STATUS-REPORT** only)

+CMGR: <stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>

Response syntax for PDU mode:

+CMGR: <stat>, [<alpha>] ,<length> <CR><LF> <pdu>

Notes: A message read with status "REC UNREAD" will be updated in memory with the status "REC READ".

The <stat> parameter for the SMS Status Reports is always "READ".

Syntax: Command Syntax: AT+CMGR=<index>

Command	Possible responses
	AT+CMTI: "SM",1
	Note: New message received
AT+CMGR=1	+CMGR: "REC UNREAD","0146290800",
Note: Read the message	"98/10/01,18:22:11+00", <cr><lf></lf></cr>
	ABCdefGHI
	OK
AT+CMGR=1	+CMGR: "REC UNREAD","0146290800",
Note: Read the message again	"98/10/01,18:22:11+00", <cr><lf></lf></cr>
	ABCdefGHI
	OK
	Note: Message is read now
AT+CMGR=2	OK
	Note: Location empty
AT+CMGF=0 ;+CMGR=1	+CMGR: 2,, <length> <cr><lf><pdu></pdu></lf></cr></length>
	OK
Note: In PDU mode	Note: Message is stored but unsent, no <alpha>field</alpha>
AT+CMGF=1;+CPMS="SR";+CNMI=,,,2	OK
Reset to text mode, set read memory to	
"SR", and allow storage of further SMS	
Status Report into "SR" memory	01100 100
AT+CMSS=3	+CMSS: 160
Send an SMS previously stored	OK
	+CDSI: "SR",1
	New SMS Status Report stored in "SR" memory at
ATLONOR 4	index 1
AT+CMGR=1	+CMGR: "REC UNREAD",6,160, "+33612345678",129,
Read the SMS Status Report	"01/05/31,15:15:09+00",
	"01/05/31,15:15:09+00",0
	OK

List Message +CMGL

Description: This command allows the application to read stored messages, by indicating the type of the message to

read. The messages are read from the memory selected by the **+CPMS** command.

Values: <stat> possible values (status of messages in memory):

Text mode possible values	PDU mode possible values	Status of messages in memory
"REC UNREAD"	0	received unread messages
"REC READ"	1	received read messages
"STO UNSENT"	2	stored unsent messages
"STO SENT"	3	stored sent messages
"ALL"	4	all messages

Note: For SMS Status Reports, only "ALL" / 4 and "READ" / 1 values of the <stat> parameter will list messages; other values will only return OK.

Syntax:

Command syntax: AT+CMGL=<stat> Response syntax for text mode:

+CMGL: <index>,<stat>,<da/oa>[,<alpha>], [<scts>, <tooa/toda>, <length>] <CR><LF><data> (for **SMS-DELIVER and SMS-SUBMIT.** May be followed by other <CR><LF>+CMGL:<index>...)

+CMGL: <index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> (for **SMS-STATUS-REPORT** only. May be followed by other <CR><LF>+CMGL:<index>...)

Response syntax for PDU mode:

+CMGL: <index>,<stat>, [<alpha>], <length> <CR><LF> <pdu> (for SMS-DELIVER, SMS-SUBMIT and SMS-STATUS-REPORT. May be followed by other <CR><LF>+CMGL:<index>...)

Command	Possible responses
AT+CMGL="REC UNREAD"	+CMGL: 1,"REC UNREAD","0146290800",
Note: List unread messages in text	<cr><lf>I will be late</lf></cr>
mode	+CMGL: 3,"REC UNREAD", "46290800",
	<cr><lf>See you tonight!</lf></cr>
	OK
	Note: 2 messages are unread, these messages will then
	have their status changed to "REC READ"
AT+CMGL="REC READ"	+CMGL: 2,"REC READ","0146290800", <cr><lf></lf></cr>
Note: List read messages in text	Keep cool
mode	OK
AT+CMGL="STO SENT"	OK
Note: List stored and sent messages	Note: No message found
in text mode	
AT+CMGL=1	+CMGL: 1,1,,26
Note: List read messages in PDU	<cr><lf></lf></cr>
mode	07913366003000F3040B913366920547F400130011904125
	30400741AA8E5A9C5201
	OK

Send Message +CMGS

Description: The <address> field is the address of the terminal to which the message is sent. To send the message,

simply type, <ctrl-Z> character (ASCII 26). The text can contain all existing characters except <ctrl-Z>

and <ESC> (ASCII 27).

This command can be aborted using the <ESC> character when entering text. In PDU mode, only

hexadecimal characters are used ('0'...'9','A'...'F').

Values: See the Parameters Definition list at the beginning this chapter.

Syntax: Command syntax in text mode:

AT+CMGS= <da> [,<toda>] <CR>
Text is entered: <ctrl-Z / ESC >

Command syntax in PDU mode:

AT+CMGS= <length> <CR>
PDU is entered: <ctrl-Z / ESC >

Command Syntax: AT+CMGS

Command	Possible responses
AT+CMGS="+33146290800" <cr></cr>	<mark>></mark>
Please call me soon, Fred. <ctrl-z> Note: Send a message in text mode</ctrl-z>	
	+CMGS: <mr> OK Note: Successful transmission</mr>
AT+CMGS= <length><cr></cr></length>	>
Note: Send a message in PDU mode (1/3)	
<pre><pdu></pdu></pre> Note: Enter message in PDU mode (2/3)	
<pre><</pre>	+CMGS: <mr> OK Note: Successful transmission</mr>

The message reference <mr> is returned to the application and allocated by the product. This number begins with 0, is incremented by one for each outgoing message (successes and failures), and is cyclic on one byte (0 follows 255).

Note: This number is not a storage number. Outgoing messages are not stored.

Write Message to Memory +CMGW

Description: This command stores a message in memory (either SMS-SUBMIT or SMS-DELIVERs).

The memory location <index> is returned (no choice possible as with phonebooks +CPBW).

Text or PDU is entered as described for the Send Message +CMGS command.

Values: <oa/da> Originating or Destination Address Value in string format

<tooa/toda> Type of Originating / Destination Address

<stat> Integer type in PDU mode (default 2 for +CMGW) or string type in text mode (default

"STO UNSENT" for +CMGW). Indicates the status of message in memory. If <stat> is

omitted, the stored message is considered as a message to send

0 "REC UNREAD"

1 "REC READ"

2 "STO UNSENT"

3 "STO SENT"

Length of the actual data unit in bytes

Command syntax in text mode: (<index> is returned in both cases)

AT+CMGW= <oa/da> [,<tooa/toda> [,<stat>]] <CR>

Enter text: <ctrl-Z / ESC>

Command syntax in PDU mode:

AT+CMGW= <length> [,<stat>] <CR>

Give PDU: <ctrl-Z / ESC>

Response syntax:

Syntax:

+CMGW: <index> or +CMS ERROR: <err> if writing fails

Command Syntax: +CMGW

Command	Possible responses
AT+CMGW="+33146290800" <cr></cr>	>
Hello how are you ? <ctrl-z> Note: Write a message in text mode</ctrl-z>	
	+CMGW: 4 OK Note: Message stored in index 4
AT+CMGW= <length><cr><pdu><ctrl-z> Note: Write a message in PDU mode (1/3)</ctrl-z></pdu></cr></length>	>
<pre><pdu> Note: Enter message in PDU mode (2/3)</pdu></pre>	
<ctrl-z> Note: End the message (3/3)</ctrl-z>	+CMGW: <index> OK Note: Message stored in <index></index></index>

Send Message from Storage +CMSS

Description: This command sends a message stored at location value <index>.

Values: <index> Location of stored message

<da> Destination address

<toda> Type of destination address

<mr> Message reference</ri>

Syntax: Command syntax: AT+CMSS=<index>[,<da>[,<toda>]]

Response syntax: +CMSS: <mr> or +CMS ERROR: <err> if sending fails

If a new recipient address <da> is given, it will be used instead of the one stored with the message.

Command	Possible responses
AT+CMGW=0660123456 <cr></cr>	+CMGW: 5
Today is my birthday	OK
	Note: Message stored with index 5
AT+CMSS=5, 0680654321	AT+CMSS: <mr></mr>
	OK
Note: Send the message 5 to a different destination number	Note: Successful transmission

Set Text Mode Parameters +CSMP

Description: This command selects values for <vp>, <pid>, and <dcs>.

Values: <fo> byte comprises 6 different fields:

b7	b6	b5	b4	b3	b2	b1	b0
RP	UDHI	SRR	VPF		RD	MTI	

Note: <fo> must be entered in DECIMAL format. Hexadecimal format would lead to

irrelevant results

RP Reply Path, not used in text mode.

UDHI User Data Header Information, b6=1 if the beginning of the User Data field contains a

Header in addition to the short message. This option is not supported in +CSMP

command, but can be used in PDU mode (+CMGS).

SRR Status Report Request, b5=1 if a status report is requested. This mode is supported.

VPF Validity Period Format

b4=0 & b3=0 -> <vp> field is not present

b4=1 & b3=0 -> <vp> field is present in relative format

Others formats (absolute & enhanced) are not supported.

RD Reject Duplicates, b2=1 to instruct the SC to reject an SMS-SUBMIT for an SM still

held in the SC that has the same <mr> and <da> as the previously submitted SM

from the same <oa>.

MTI Message Type Indicator

b1=0 & b0=0 -> SMS-DELIVER (in the direction SC to MS)

b1=0 & b0=1 -> SMS-SUBMIT (in the direction MS to SC)

In text mode <vp> is only coded in "relative" format. The default value is 167 (24 hours). This means that one byte can describe different values:

VP value	Validity period value
0 to 143	(VP + 1) x 5 minutes (up to 12 hours)
144 to 167	12 hours + ((VP – 143) x 30 minutes)
168 to 196	(VP – 166) x 1 day
197 to 255	(VP – 192) x 1 week

<pid> This is used to indicate the higher layer protocol being used or indicates interworking with a certain type of telematic device. For example, 0x24 is for voice telephone, 0x25 is for ERMES

(European Radio Messaging System).

<dcs> This is used to determine the way the information is encoded. Compressed text is not supported. Only GSM default alphabet, 8 bit data and UCS2 alphabet are supported.

Syntax: Command Syntax: AT+CSMP=<fo>, <vp>, <pid>, <dcs>

Command	Possible responses
AT+CSMP?	+CSMP: 0,0,0,0
	OK
Note: current values	Note: No validity period <dcs>= PCCP437</dcs>
	alphabet (8 bits → 7 bits)
AT+CMPS=17,23,64,244	OK
Note: <vp> = 23 (2 hours, relative format)</vp>	Note: Command correct
<dcs> = GSM 8 bits alphabet</dcs>	
Reminder: Enter <fo> value in decimal format</fo>	

Delete Message +CMGD

Description: This command deletes one or several messages from preferred message storage ("BM" SMS CB 'RAM

storage', "SM" SMSPP storage 'SIM storage' or "SR" SMS Status-Report storage).

Refer to the Preferred Message Storage +CPMS command.

Values: <index> If <DelFlag>=0

(1-20) If the preferred message storage is "BM"

• Sim dependent integer values (in the range of SIM location number) if the preferred message storage is "SM" or "SR".

If **<DelFlag>** is **> 0**, <index> is ignored.

<DelFlag>

0 Delete message at location <index>.

1 Delete All READ messages

2 Delete All READ and SENT messages

3 Delete All READ, SENT and UNSENT messages

4 Delete All messages.

Notes: If **<DelFlag>** is omitted, default value is used.

When the preferred message storage is "SR", as SMS status reports are assumed to have a "READ" status, if <DelFlag> is greater than 0, all SMS status reports will be deleted.

Syntax: Command Syntax: AT+CMGD=<Index> [,<DelFalg>]

Command	Possible responses
	+CMTI:"SM",3
	Note: New message received
AT+CMGR=3	+CMGR: "REC UNREAD","0146290800",
Note: Read it	"98/10/01,18:19:20+00" <cr><lf></lf></cr>
	Message received!
	Note: Unread message received from 0146290800 on the 01/10/1998 at 18H19m
	20s
AT+CMGD=3	OK
Note: Delete it	Note: Message deleted
AT+CMGD=1,0	OK
	Note: The message from the preferred message storage at the location 1 is deleted
AT+CMGD=1,1	OK
	Note: All READ messages from the preferred message storage are deleted
AT+CMGD=1,2	OK
	Note: All READ messages and SENT mobile originated messages are deleted
AT+CMGD=1,3	OK
	Note: All READ, SENT and UNSENT messages are deleted
AT+CMGD=1,4	OK
	Note: All messages are deleted

Service Center Address +CSCA

Description: This command indicates the service center to which the message must be sent.

The product has no default value for this address. If the application tries to send a message without

having indicated the service center address, an error will be generated.

Therefore, the application must indicate the SC address when initializing the SMS. This address is then

permanently valid. The application may change it if necessary.

Values: <sca> service center address

Syntax: Command Syntax: AT+CSCA=<sca>

Command	Possible responses
AT+CMGS= "+33146290800" <cr></cr>	+CMS ERROR: 330
Hello, how are you? <ctrl-z></ctrl-z>	Note: service center unknown
Note: Send a message	
AT+CSCA="0696741234"	OK
Note: Service center initialization	
AT+CMGS="+33146290800" <cr></cr>	+CMGS: 1
Happy Birthday ! <ctrl-z></ctrl-z>	OK
Note:	Note: Successful transmission

Select Cell Broadcast Message Types +CSCB

Description: This command selects which types of CBMs are to be received by the ME. This command is allowed in

both PDU and text modes.

Values: The

The

parameter of +CNMI command controls the message indication.

The activation of **CBM reception (<mode>=0)** can select only specific **Message Identifiers (list in <mids>)** for specific **Languages (list in <dcss>)**, but the deactivation stops any reception of CBMs (only AT+CSCB=1 is allowed).

(only A1+C5CB=1 is allowed)

Message Identifiers (<mids> parameter) indicates the type of message identifiers for which the ME should listen.

<dcss> Supported languages

0 for German 8 for Portuguese 1 for English 9 for Finnish 2 for Italian 10 for Norwegian 3 for French 11 for Greek 4 for Spanish 12 for Turkish 5 for Dutch 13 for Hungarian 6 for Swedish 14 for Polish 7 for Danish 32 for Czech

Syntax: Command Syntax: AT+CSCB= <mode>, [<mids>, [<dcss>]]

Important Note: Test/Read command AT+CSCB? is not supported.

Command	Possible responses
AT+CSCB=0,"15-17,50,86"," "	OK
Note: Accept SMS-CB types, 15,16,17,50 and	Note: CBMs can be received
86 in any language	
	+CBM: 10 <cr><lf></lf></cr>
	00112233445566778899
	Note: CBM length of a received Cell Broadcast
	message (SMS-CB), CBM bytes in PDU mode
AT+CSCB=1	OK
Note: Deactivate the reception of CBMs	Note: CBM reception is completely stopped

Cell Broadcast Message Identifiers +WCBM

Description: This specific command is used to read the EF-CBMI SIM file.

The EF-CBMI file is not used with the +CSCB command.

The application should read this file (using AT+WCBM?) and combine the Message Identifiers with

those required by the application.

Values: <mids> message identifiers

Syntax: Command Syntax: AT+WCBM= <mids>

Command	Possible responses
AT+WCBM="10,100,1000,10000"	OK
Note : Write 4 messages identifiers in EFCBMI	Note : CBMIs are stored in EF-CBMI
AT+WCBM?	+WCBM="10,100,1000,100000"
Note : Read the CBMIs in EF-CBMI	OK
	Note : 4 CBMIs are stored in EF-CBMI

Message Status Modification +WMSC

Description: This command allows the manipulation of a message status. The accepted status changes are from

READ to NOT READ and vice versa, and also from SENT to NOT SENT and vice versa.

Values: <loc> Location number of the stored message <integer>

<status> New status to be stored, as in the +CMGL command

PDU Mode	Text Mode
0	"REC UNREAD"
1	"REC READ"
2	"STO UNSENT"
3	"STO SENT"

Syntax: Command Syntax: AT+WMSC= <loc>, <status>

Command	Possible responses
AT+CMGR=2	+CMGR: "REC READ","+336290918",,"99/05/01 14:19:44+04" <cr><lf> Hello All of you! OK</lf></cr>
AT+WMSC=2,"REC UNREAD"	
AT+CMGR=2	+CMGR: "REC UNREAD","+336290918",,"99/05/01 14:19:44+04" <cr><lf> Hello All of you! OK</lf></cr>

Possible responses:

OK If the location is valid +CMS ERROR: 321 If <loc> is invalid or free

+CMS ERROR: 302 If the new <status> and the previous one are incompatible (1)

Note: If all parameters are correct, the product overwrites the whole SMS in SIM.

Only the first byte (Status byte) is changed.

Message Overwriting +WMGO

Description:

The +CMGW command specifies a location in the SMS or Flash memory for the next SMS to be stored when the +CMGW indicates a message is ready to be stored. The defined location is used only once: +WMGO has to used again to perform another overwrite.

Important Notes:

- If the external application specifies a free location and an incoming message is received before the AT+CMGW command occurs, the product may store the incoming message at the specified available location. If the user then issues an AT+CMGW command without changing the location with another AT+WMGO, the received message will be overwritten.
- The location number is not kept over a software reset.

Values:

Location number of the SIM record to write or overwrite. The number depends on the SIM or Flash memory capacity.

Syntax: Command Syntax: AT+WMGO= <loc>

Command	Possible responses
AT+CPMS?	+CPMS: "SM",3,10,"SM",3,10,"SM",3,10
Note: Check the storage area	
AT+CMGW="+33146290800" <cr></cr>	+CMGW: 4
Hello how are you? <ctrl-z></ctrl-z>	OK
Note: Write a message in text mode	Note: Message stored in index 4 in the SIM
AT+WMGO=?	+WMGO: (1-10)
	OK
	Note: Possible values for the SIM
AT+WMGO=4	
AT+CMGW="+33146299704" <cr></cr>	+CMGW: 4
You are overwritten <ctrl-z></ctrl-z>	OK
	Note: New Message stored in index 4
AT+WMGO?	+WMGO: 4
	OK
	Note: The value was used, so re-initialization
AT+WMGO=4	OK
AT+CPMS="SM","ME,""SM"	+CPMS: 3,10,0,99,3,10
	OK
	Note: Change the storage area from SIM to Flash
AT+WMGO?	+WMGO: (1-99)
	OK
	Note: Possible values for Flash
AT+WMGO?	+WMGO: 0
	OK
	Note: We changed the storage area, so the value
	was reinitialized
AT+WMGO=999	+CMS ERROR: 321

Note: If the storage area is changed with the AT+CPMS command, the value of WMGO will be reset to zero.

Change or Do Not Change SMS Status +WUSS

Description: The +WUSS command allows the SMS Status to be kept at UNREAD after the +CMGR or +CMGL

commands are used.

Values: <mode>

The SMS Status will changeThe SMS Status will not change

Syntax: Command Syntax: AT+WUSS=<mode>

Command	Possible responses
AT+WUSS=?	+WUSS: (0-1)
	OK
AT+WUSS=1	OK
	+CMTI: "SM",10
	Note: SMS has been received in index 10
AT+CMGR=10	+CMGR: "REC UNREAD","+33660669023",,"03/02/13,18:36:35+00" <cr><lf></lf></cr>
	Do you want to change state?
	OK
AT+CMGR=10	+CMGR: "REC UNREAD","+33660669023",,"03/02/13,18:36:35+00" <cr><lf></lf></cr>
	Do you want to change state?
	OK _
	Note: The state hasn't been updated
AT+WUSS=0	OK
	+CMTI: "SM",11
	Note: SMS has been received in index 11
AT+CMGR=11	+CMGR: "REC UNREAD","+33660669023",,"03/02/13,18:56:55+00" <cr><lf></lf></cr>
	It is me again.
AT: 0140D 44	OK
AT+CMGR=11	+CMGR: "REC UNREAD","+33660669023",,"03/02/13,18:56:55+00" <cr><lf></lf></cr>
	It is me again.
	OK Note: The state has been undated
AT+WUSS?	Note: The state has been updated. +WUSS: 0
ATTWUSS!	OK
AT+CMGR=10	+CMGR: "REC READ","+33660669023",,"03/02/13,18:56:55+00" <cr><lf></lf></cr>
ATTOMOR-10	It is me again.
	OK
	Note: The state has been updated
AT+WUSS?	+WUSS: 0
711.440001	OK
	1 510

Copy Messages +WMCP

Description: This command copies the SMS from the SIM to the Flash or from the Flash to the SIM.

Values: <mode>

From SIM to the FlashFrom the Flash to the SIM

<loc>

Location of the SMS to copy (mandatory for <mode>=1)
If this location is not defined, all the SMS will be copied
Note: The SMS copied will be placed in the first free location

Syntax: Command Syntax: AT+WMCP=<mode>[,<loc>]

Command	Possible responses
AT+WMCP=?	+WMCP: 0,(1-12)
AT TWINGF - !	+WMCP: 0,(1-12) +WMCP: 1,(1-99)
	OK
	Note: The location of the SMS that can be copied from the
	SIM to the Flash is 1 to 12 (maximum available in the SIM).
	The location of the SMS that can be copied from the Flash to
	the SIM is 1 to 99 (the maximum available in the Flash).
AT+CPMS?	+CPMS: "SM",3,10,"ME",0,99,"SM",3,10
711 OF MO.	OK
Note: Read the SMS storage	Note: Read, writeSMS from/to SIM. 3 SMS are stored in the
Total Float and Sime Storage	SIM. 10 is the total memory available in SIM. No SMS in
	Flash.
AT+CMGR=1	+CMGR: "REC UNREAD","0146290800",
	"98/10/01,18:22:11+00", <cr><lf></lf></cr>
Note: Read the first SMS from the	My test message: SMS in the SIM at location 1
SIM	OK
AT+WMCP=0,1	OK
Note: Copy the SMS at location 1 in	
the SIM to the Flash	
AT+CPMS?	+CPMS: "SM",3,10,"ME",0,99,"SM",3,10
	OK
Note: Read the SMS storage	Note: Read, writeSMS from/to SIM. 3 SMS are stored in the
	SIM. 10 is the total memory available in SIM. No SMS in
	Flash.
AT+CPMS="ME","ME","ME"	+CPMS: 1,99,1,99,1,99
Note: Select ME for reading, ME for	OK
writing and ME for storing	
AT+CMGR=1	+CMGR: "REC READ", "0146290800",
Nata Dand the first OMO frame the	"98/10/01,18:22:11+00", <cr><lf></lf></cr>
Note: Read the first SMS from the	My test message: SMS in the SIM at location 1 OK
Flash	-
AT+CMGW="+33146290800" <cr></cr>	+CMGW: 2
Other test message: SMS in the Flash at location 2	1
<pre><ctrl-z></ctrl-z></pre>	Note: Message stored in index 2in the Flash
Note: Write a message in text mode	
AT+CPMS?	+CPMS: "ME",2,99,"ME",2,99
7.1.5.1.10.	OK
Note: Read the SMS storage	Note: Read, writeSMS from/to the Flash. 2 SMS are stored
	in the Flash.
AT+WMCP=1,2	OK
Note: Copy the SMS at location 2 in	
the Flash to the SIM	
AT+CPMS="SM","ME","SM"	+CPMS: 4,10,2,99,4,10
Note: Select SM for reading, ME for	OK
writing and SM for storing	
AT+CMGR=4	+CMGR: "REC UNREAD","+33146290800",
	"98/10/01,8:22:11+00", <cr><lf></lf></cr>
Note: Read the first SMS from the	Other test message: SMS in the Flash at
SIM	location 2
	OK

Continued on the next page.

Command Syntax: AT+WMCP=<mode>[,<loc>] Continued

Command	Possible responses
AT+CPMS="ME"	+CPMS: 2,99,2,99,4,10
Note: Select ME for reading	OK
AT+CMGD=0,4	OK
Note: Erase all the SMS stored in the	
Flash	
AT+CPMS?	+CPMS: "ME",0,99,"ME",0,99,"SM",4,10
	OK
Note: Read the SMS storage	Note: No SMS is stored in the Flash
AT+WMCP=0	OK
Note: Copy all the SMS from the SIM	
to the Flash	
AT+CPMS?	+CPMS: "ME",4,99,"ME",4,99,"SM",4,10
	OK
Note: Read the SMS storage	Note: 4 SMS are stored in the Flash

More Messages to Send +CMMS

Description:

This short message service-oriented AT command allows the link to be kept open while sending several short messages with only a short delay.

Values: <

<mode>

- 0 Disable feature
- 1 Keep link opened while messages are sent. If the delay between two messages exceeds 5 seconds, the link is closed and the mode is reset to 0: the feature is disabled.
- 2 Keep link opened while messages are sent. If the delay between two messages exceeds 5 seconds, the link is closed but the mode remains set to 2: the feature is still enabled.

Notes:

- IMPORTANT: Before sending the last SMS in the link, you must use the AT+CMSS=0 command. This command will indicate that the FOLLOWING SMS will be the last one.
- The delay of 5 seconds complies with Rec 3GPP 27.005...3.5.6

Syntax:

Command Syntax: AT+CMMS=<mode>

Command	Possible responses
AT+CMMS=0	OK
Note: Disable feature	Note: Feature is disabled
AT+CMMS=1	OK
Note: Enable feature 1 time	Note: Feature is enabled; link is open
AT+CMMS=2	OK
Note: Enable feature	Note: Feature is enabled; link is open
AT+CMMS?	+CMMS: 2
	OK
AT+CMMS=?	+CMMS: (0-2)
	OK

Chapter 10 – Supplementary Services Commands

Call Forwarding +CCFC

Description: This commands allows control of the "call forwarding" supplementary service.

Values:

<reason>

- 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 Interrogate
- 3 Registration
- 4 Erasure

<type> TON/NPI (Type of address byte in integer format) (default 145 when dialing string includes international access code character "+"; otherwise, 129).

<class>

- 1 Voice
- 2 Data
- 4 Short Messages
- 5 All classes

Note: The combination of different classes is not supported, it will only result in the activation / deactivation / status request of all classes (7).

In the case where the FDN phonebook is activated, the registration is restricted to the phone numbers written in the FDN.

If <Class> parameter is not given in the command, 7 is used as the default value.

<subaddr> not managed

<satype> not managed

<time> For <reason> = 2 (No reply), 4 (all call forwarding) and 5 (all conditional call forwarding), time to wait (1 to 30) in seconds before call is forwarded. Default value is 20.

<status>

- 0 not active
- 1 active

Syntax:

Command syntax: AT+CCFC= <reason>, <mode> [, <number> [,<type> [,<class> [,<subaddr>[,<satype>[,<time>]]]]]]

Command	Possible responses
AT+CCFC=0,3,"0146290800"	OK
Note: Register to an unconditional call forwarding	Note: Command valid
AT+CCFC=0,2	+CCFC:1,1,"0146290800",129
Note: Interrogate unconditional call forwarding	Note: Call forwarding active for voice
	<cr><lf>+CCFC:1,2,"0146290802",129</lf></cr>
	Note: Call forwarding active for data
AT+CCFC=0,4	OK
Note: Erase unconditional call forwarding	Note: Command valid

⁺CCFC responses are not sorted by <class> parameter, but only by the order of network response.

Call Barring +CLCK

Description: This command allows control of the call barring supplementary service. Locking, unlocking or querying

the status of call barring is possible for all classes or for a specific class, but not for a combination of

some.

Values: <fac>

"AO", "OI", "OX" barring outgoing calls barring incoming calls

"AG", "AC", "AB barring all calls (<mode>=0 only)

<mode>

Unlocks the facilityLocks the facilityQuery status

<class>

See description for the +CLCK command (Facility Lock) or +CCFC (Call forwarding). **Note:** A combination of different classes is not supported. It will only result in the activation/deactivation/status_request for all classes (7).

<status>

0 Not active1 Active

Syntax: Command Syntax: AT+CLCK= <fac>, <mode> [, <password> [, <class>]]

Response Syntax: (for <mode>=2 and command successful)

+CLCK: <status> [, <class1> [<CR><LF>+CLCK: <status>, <class2> [...]]

Command	Possible responses
AT+CLCK="AO",1,1234	OK
	Note: Command valid
AT+CLCK="AO",0,5555	+CME ERROR: 16
	Note: Wrong password
AT+CLCK="AO",0,1234	OK
	Note: Command valid

Modify SS Password +CPWD

Description: This command changes the supplementary service password.

Values: <fac> See +CLCK command with only "P2" facility added (SIM PIN2).

Note: Regardless of the specified facility, the change of password applies to barring all calls.

<OldPassword>, (NewPassword> The password code is over 8 digits for P2 facility (4 to 8 digits)

The password code is over 4 digits for other facilities (1 to 4 digits)

Syntax: Command Syntax: AT+CPWD=<fac>,<OldPassword>,<NewPassword>

Command	Possible responses
AT+CPWD="AO",1234,5555	OK
Note: Change Call Barring password	Note: Password changed
AT+CPWD="AO",1234,5555	+CME ERROR: 16
Note: Change password	Note: Wrong password
AT+CPWD="AO",5555,1234	OK
Note: Change password	Note: Password changed

Call Waiting +CCWA

Description: This command controls the call waiting supplementary service.

The product will send a +CCWA unsolicited result code when the call waiting service is enabled.

Values: <n>: result code presentation status in the TA

0 Disable

1 Enable

<mode>

0 Disable

1 Enable

2 Query status

<type>

0 Type of address byte in integer format (refer to Rec GSM 04.08 [8] sub clause 10.5.4.7)

<class>

- 1 Voice
- 2 Data
- 8 Short Messages
- 7 All classes (voice, data)

Note: A combination of different classes is **not supported**. It will only result in the activation / deactivation / status request for all classes (7).

<status>

- 0 Not Active
- 1 Active

<alpha>: Optional string type alphanumeric representation of <number> corresponding to the entry found in the ADN or FDN phonebook.

Syntax: Command Syntax: AT+CCWA=<n>, [<mode> [, <class>]]

Response Syntax: (for <mode>=2 and command successful)

+CCWA: <status> [, <class1> [<CR><LF>+CCWA: <status>, <class2> [...]]

Unsolicited Result: +CCWA: <number>, <type>, <class> [,<alpha>] (when waiting service is enabled)

Command Possible responses AT+CCWA=1,1,1 OK Note: Enable call waiting for voice Note: Command valid calls AT+CCWA=1,2 +CCWA:1,1 OK Note: Interrogate call waiting Note: Call waiting active for voice calls +CCWA:"0146290800",145,1,"FREDDY" Note: Number and name of the waiting voice call or +CCWA:"0146290800",145,1,"8023459678FFFF" (UCS2 format) AT+CCWA=1,0,7 OK Note: Erase call waiting Note: Command valid +CCWA:,,1 Note: voice call waiting (no number) AT+CCWA? +CCWA: <n> OK AT+CCWA=? +CCWA: List of supported <n> OK

Calling Line Identification Restriction +CLIR

Description: This command controls the Calling Line Identification restriction supplementary service.

Values: <n> Sets the line ID restriction for outgoing calls

- 0 Presentation indicator is used according to the subscription of the CLIR service
- 1 CLIR invocation2 CLIR suppression

<m> Shows the subscriber CLIR status in the network

- 0 CLIR not provisioned
- 1 CLIR provisioned in permanent mode
- 2 Unknown (no network...)
- 3 CLIR temporary mode presentation restricted
- 4 CLIR temporary mode presentation allowed

Syntax: Command syntax: AT+CLIR=<n>

Response syntax: +CLIR:<n>,<m> (for AT+CLIR?)

Command	Possible responses
AT+CLIR=2	OK
	Note: Command valid
AT+CLIR ?	+CLIR: <n>,<m></m></n>
Note: Ask for current functionality	OK
	Note: <n> and <m> as defined above</m></n>

Calling Line Identification Presentation +CLIP

Description: This command controls the calling line identification presentation supplementary service. When

presentation of the CLI (Calling Line Identification) is enabled (and calling subscriber allows), +CLIP

response is returned after every RING (or +CRING) result code.

Values: <n> Parameter sets/shows the result code presentation 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 (no network...)

Syntax: Command syntax: AT+CLIP=<n>

Response syntax: +CLIP: <n>,<m> (as response to AT+CLIP)

+CLIP: <number>, <type>[, <subaddr>, <satype>, <alpha>] (for an incoming call,

after each RING or +CRING indication)

Command	Possible responses
AT+CLIP=1	OK
Note: Enable CLIP	Note: CLIP is enabled
AT+CLIP?	+CLIP: <n>,<m></m></n>
Note: Ask for current functionality	OK
	Note: <n> and <m> defined as below</m></n>
	RING
	Note: Incoming call
	+CLIP: "0146290800",129,1,,,"FRED"
	Note: Incoming call with number and name presentation
	RING
	Note: Incoming call
	+CLIP: "0146290800",129,1,, "8000204212FFFF"
	Note: Incoming call with number and name presentation
	(UCS2 format)
AT+CLIP=0	OK
Note: Disable CLIP presentation	Note: Command valid

Connected Line Identification Presentation +COLP

Description: This command controls the connected line identification presentation supplementary service - useful for

call forwarding of the connected line.

Values: <n> Parameter sets/shows the result code presentation status in the TA

0 Disable1 Enable

<m> Parameter shows the subscriber COLP service status in the network

COLP not provisionedCOLP provisionedUnknown (no network)

Syntax: Command syntax: AT+COLP=<n>

Response syntax: +COLP: <n>,<m> (as response to AT+COLP?)

+COLP: <number>,<type> [,<subaddr>, <satype>, <alpha>]
After ATD command, before OK or CONNECT <speed>

Command	Possible responses
AT+COLP=1	OK
Note: Activate COLP	Note: Command valid
AT+COLP?	+COLP:1,1
Note: Ask for current	OK
functionality	Note: COLP is enabled and provisioned
ATD146290928;	+COLP:"0146290928",129,,,"JOE"
Note: Outgoing call	or
	+COLP: "0146290800",129,1,,,"8000204212FFFF" (UCS2 format)
	OK
	Note: Connected outgoing line number and name presentation
AT+COLP=0	OK
Note: Deactivate COLP	Note: Command valid

Advice of Charge +CAOC

Description:

This refers to the Advice of Charge supplementary service (GSM 02.24 and GSM 02.86), which enables the subscriber to obtain information on call cost. With <mode>=0, the command returns the current call meter value (CCM) from the modem (ME).

If AOC is supported, the command can also enable unsolicited event reporting on CCM information. The unsolicited result code +CCCM: <ccm> is sent when the CCM value changes. Deactivation of unsolicited event reporting is performed with the same command.

If AOC is supported, the Read command indicates whether unsolicited reporting is activated or not.

Values:

<mode>

- 0 Query CCM value
- 1 Deactivate the unsolicited reporting of CCM value
- 2 Activate the unsolicited reporting of CCM value

<ccm>

String type; three bytes of the current call meter value in hexadecimal format (e.g., "00001E" corresponds to the decimal value 30); value is in home units and bytes are coded in a similar way as the ACMmax value in SIM

Syntax:

Command syntax: AT+CAOC= <mode>

Command	Possible responses
AT+CAOC=0	+CAOC: "000A08"
Note: Query CCM value	OK
	Note: Display Current Call Meter value (CCM=2568)
AT+CAOC=1	OK
Note: Deactivate unsolicited report of CCM value	Note: CCM report deactivated
AT+CAOC=2	OK
Note: Activate unsolicited report of CCM value	Note: CCM report activated
AT+CAOC?	+CAOC: <mode></mode>
Note: Request mode	OK
	Note: Display unsolicited report mode (1 or 2)
AT+CAOC=?	+CAOC: (0-2)
Note: Request supported modes	OK
	Note: 0,1,2 modes supported

Accumulated Call Meter +CACM

Description:

This command resets the Advice of Charge for accumulated call meter value in SIM file EF_{ACM}. The ACM contains the total number of home units for both the current and preceding calls. SIM PIN2 is required to reset the value. If setting fails in an ME error, +CME ERROR: <err> is returned.

The Read command returns the current value of the ACM.

The ACM value (entered or displayed) is in hexadecimal format with 6 digits.

Values:

<pin2 passwd> string type

<acm value> string type coded as <ccm> under +CAOC

Syntax:

Command Syntax: AT+CACM=<pin2 passwd>
Possible Response: +CACM: <acm value>

Command	Possible responses
AT+CACM?	+CACM: "000400"
Note: Request ACM value	OK
	Note: Display ACM value (ACM=1024)
AT+CACM= 1234	OK
Note: Request ACM reset, real PIN2 is "1234"	Note: ACM value is reset
AT+CACM= 0000	+CME ERROR: 16
Note: Request ACM reset with wrong PIN2 value	Note: Incorrect password
AT+CACM?	+CACM: "000000"
Note: Request ACM value	OK
	Note: Display ACM value (ACM = 0)

Accumulated Call Meter Maximum +CAMM

Description: The set command sets the Advice of Charge related to accumulated call meter maximum value in SIM

file $\mathsf{EF}_{\mathsf{ACMmax}}$. ACMmax contains the maximum number of home units the subscriber is allowed to consume. When ACM (see +CACM) reaches ACMmax, calls are prohibited. SIM PIN2 is required to set

the value. If setting fails in an ME error, +CME ERROR: <err> is returned.

The Read command returns the current value of ACMmax.

The ACMmax value (entered or displayed) is in hexadecimal format with 6 digits.

Values: <ACMmax> String type coded as <ccm> under +CAOC. Value 0 disables ACMmax feature.

<pin2 passwd> String type

Syntax: Command syntax: AT+CAMM:<ACMmax>,<pin2 passwd>

Command	Possible responses
AT+CAMM="000400",1234	OK
Note: Request ACMmax update, PIN2 is "1234"	Note: ACMmax updated to 1024
AT+CAMM="000400",0000	+CME ERROR: 16
Note: Request ACMmax update, PIN2 is "1234"	Note: Incorrect password
AT+CAMM?	+CAMM: "000400"
Note: Request ACMmax value	OK
	Note: ACMmax = 1024

Price Per Unit and Currency Table +CPUC

Description: The set command sets the parameters for Advice of Charge related to price per unit and the currency

table in SIM file EF_{PUCT}. PUCT information can be used to convert the home units (as used in +CAOC, +CACM and +CAMM) into currency units. SIM PIN2 is required to set the parameters. If setting fails in

an ME error, +CME ERROR: <err> is returned..

Values: <currency> String type

<ppu> String type

<pin2 passwd> String type

Syntax: Command syntax: AT+CPUC <currency>,<ppu>,<pin2 passwd>

Command	Possible responses
AT+CPUC="FFR","0.82",1234	OK
Note: Request Currency and Price per unit update	
AT+CPUC="FFR","0.82",1111	+ CME ERROR: 16
Note: Request Currency and PPU update (wrong PIN2)	Note: Incorrect password
AT+CPUC?	+CPUC:"FFR","0.82"
Note: Request Currency and Price	OK
	Note: Currency= "FFR"
	Price per unit= "0.82"

Call Related Supplementary Services +CHLD

Description: This command manages call hold and multiparty conversation (conference call). Calls can be put on

hold, recovered, released or added to a conversation.

Values: <n>

Release all held calls or set User Determined User Busy (UDUB) for a waiting call.

1 Release all active calls (if any exist) and accepts the other (held or waiting) call.

1x Release a specific call *X* (active, held or waiting)

2 Place all active calls (if any exist) on hold and accepts the other (held or waiting) call.

2x Place all active calls on hold except call X with which communication is supported.

3 Adds a held call to the conversation.

4 Connects the two calls and disconnects the subscriber from both calls (Explicit Call Transfer).

Syntax: Command syntax: AT+CHLD=< n >

Command	Possible responses
AT+CHLD= <n></n>	OK
	Note: If n is within the defined values
AT+CHLD=?	+CHLD: (0-4, 11-17, 21-27)
	OK

List Current Calls +CLCC

Description: This command returns a list of current calls.

Values: <idx> integer type, call identification as described in GSM 02.30

<dir> direction of the call

0 mobile originated (MO) call1 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> (teleservice)

0 voice

1 data

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 byte in integer format

<alpha> optional string type alphanumeric representation of <number>

corresponding to the entry found in phonebook. (for UCS2 format see commands examples

+CLIP, +CCWA or +COLP)

Syntax: Command syntax: AT+CLCC

Response syntax: OK (if no calls are available)

Else:

+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type> [<alpha>]]

[<CR><LF>

+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[<alpha>]][...]]]

<CR><LF>

OK

Command	Possible responses
RING	
Note: Incoming call	
AT+CLCC	+CLCC: 1,1,4,0,0,"0146294079",129
	OK
ATA	OK
Note: Answering the call	
AT+CLCC	+CLCC: 1,1,1,0,0,"0146294079",129
	OK
ATD0146299704	OK
Note: Outgoing Call	
AT+CLCC	+CLCC: 1,0,2,0,0,"0146294079",129
Note: Before the phone called is ringing	OK
AT+CLCC	+CLCC: 1,0,3,0,0,"0146294079",129
Note: The phone called is ringing	OK
AT+CLCC	+CLCC: 1,0,0,0,0,"0146294079",129
Note: The call is being answered	OK

Supplementary Service Notifications +CSSN

Description: This command refers to supplementary service related network initiated notifications.

Values: <n> Parameter sets/shows the +CSSI result code presentation status

0 disable1 enable

<m> Parameter sets/shows the +CSSU result code presentation status

0 disable1 enable

<code1>

0 unconditional call forwarding is active

1 some of the conditional call forwarding calls are active

4 closed User Group call, with CUG <index>

5 outgoing calls are barred6 incoming calls are barred7 CLIR suppression rejected

<code2>

0 this is a forwarded call (MT call setup)

1 closed User Group call, with CUG <index>

2 call has been put on hold (during a voice call, <number> & <type> fields may be present)

3 call has been retrieved (during a voice call, <number> & <type> fields may be present)

4 multiparty call entered (during a voice call, <number> & <type> fields may be present)

5 call on hold has been released (during a voice call)

7 call is being connected (alerting) with the remote party in alerting state in Explicit Call Transfer operation (during a voice call)

8 call has been connected with the other remote party in Explicit Call Transfer operation (during a voice call, <number> & <type> fields may be present)

<number> Closed User Group index
<number> String type phone number
<type> Type of address

Syntax: Command syntax: AT+CSSN= <n>, <m>

When <n>=1 and a supplementary service notification is received after a mobile originated call setup, intermediate result code +CSSI:<code1>[,<index>] is sent before any other MO call setup result codes.

When <m>=1 and a supplementary service notification is received during a call, unsolicited result code +CSSU:<code2>[,<index>[,<number>,<type>]] is sent.

Unstructured Supplementary Service Data +CUSD

Description:

The USSD supplementary service is described in GSM 02.90. It is based on sequences of digits which may be entered by a mobile user with a handset. A sequence entered is sent to the network which replies with an alphanumerical string, for display only, or for display plus request for the next sequence.

This command is used to:

- Enable or disable the CUSD indication sent to the application by the product when an incoming USSD is received
- · Send and receive USSD strings

Values:

<n>

- **0** Disable the result code presentation
- 1 Enable the result code presentation
- 2 Cancel session (not applicable to read command response)

<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
- 4 Operation not supported

<str>is network string, converted in the selected character set <dcs> is the data coding scheme received (GSM TS 03.38).

Syntax:

Command syntax: AT+CUSD = <n>[,<str>[<dcs>]]

Note: In case of enabled presentation, a +CUSD (as direct answer to a send

USSD) is then indicated with: +CUSD: <m> [,<str>,<dcs>]

Command Syntax To Send and Receive USSD: AT+CUSD= <n> [,<str> [,<dcs>]]

Note: Please be aware that the send USSD command needs the user to re-enter

the <n> parameter!

Values for Send and Receive USSD

<str> The USSD string to be sent.

<dcs>The default alphabet and the UCS2 alphabet are supported.

When the product sends a USSD, an OK response is first returned, the intermediate +CUSD indication comes subsequently. In case of error, a +CUSD: 4 indication is returned.

Closed User Group +CCUG

Description:

The Closed User Group Supplementary Service enables subscribers to form closed user groups with restricted access (both access to and from).

The CUG supplementary service is described in GSM 02.85. This service is provided on prior arrangement with the service provider. Subscription options should be selected at implementation.

The +CCUG command is used to:

- · Activate/deactivate the control of CUG information for all following outgoing calls
- Select a CUG index
- Suppress outgoing access (OA). OA allows a member of a CUG to place calls outside the CUG
- Suppress the preferential CUG. Preferential is the default CUG used by the network when it does not receive an explicit CUG index

Values:

<n>

- 0 Disable CUG mode (default)
- Enable CUG mode

<index>

- 0-9 CUG index (0 default),
- 10 Preferred CUG

<info>

- 0 No information (default)
- 1 Suppress OA
- 2 Suppress preferential CUG
- 3 Suppress OA and preferential CUG

Note: To activate the control of the CUG information by call, add [G] or [g] to the ATD command. Index and info values will be used.

Syntax:

Command syntax: AT+CCUG = <n> [,<index> [<info>]]

Chapter 11 - Data Commands

Using AT Commands During a Data Connection

To use AT Commands during a data connection (such as while the product is in online mode), it is necessary either to switch to offline mode, or to use the **+WMUX** command to enable Commands / Data multiplexing.

Switch from Online to Offline Mode

To switch from online mode to offline mode, the "+++" sequence must be sent. Following this, the product gets back to offline mode with an "OK" response, and an AT command can be sent.

Note: The "+++" sequence only works with the +ICF command using the following settings:

- 8 data bits, with no parity
- 7 data bits, with even parity

Switch from Offline to Online Mode

See the ATO command description.

Bearer Type Selection +CBST

Description:

This command applies to both outgoing and incoming data calls, but in a different way. For an outgoing call, the two parameters (e.g., <speed> and <ce>) apply; whereas, for an incoming call, only the <ce> parameter applies.

Notes:

- For incoming calls, if <ce> is set to T, only and the network offers NT only or vice versa. Then the
 call is released.
- The values 2 and 3 for the <ce> parameter are equivalent to the former values of 100 and 101. Those values are managed for compatibility purposes, but they should no longer be used in the new code (2 as former 100 and 3 as former 101).

Values: <speed>

0 (default)	Autobauding	(modem type: none)
1	300 bps	(modem type: V.21)
2	1200 bps	(modem type: V.22)
3	1200/75 bps	(modem type: V.23)
4	2400 bps	(modem type: V.22bis)
5	2400 bps	(modem type: V.26ter)
6	4800 bps	(modem type: V.32)
7	9600 bps	(modem type: V.32)
8	Specific	
12	9600 bps	(modem type: V.34)
14(*)	1400 bps	(modem type: V.34)
65	300 bps	(modem type: V.110)
66	1200 bps	(modem type: V.110)
68	2400 bps	(modem type: V.110)
70	4800 bps	(modem type: V.110)
71	9600 bps	(modem type: V.110)
75(*)	14400 bps (n	nodem type: V.110)
(*) This speed configures data 14.4 khrs hearers		14.4 khns hearers

(*) This speed configures data 14.4 kbps bearers.

<name> No data compression is provided and only asynchronous modem is supported (<name> = 0).

<ce> Connection element

Transparent only
 (default) Non transparent only
 Transparent preferred
 Non transparent preferred

Syntax:

Command syntax: AT+CBST= <speed>, <name>, <ce>

Command	Possible responses
AT+CBST=?	+CBST: (0-8,65,66,68,70,71),(0),(0-3)
Note: Test command	OK
	Note: Data 14,4 kbps not supported
AT+CBST=?	+CBST: (0-
Note: Test command	8,12,14,65,66,68,70,71,75),(0),(0-3)
	OK
	Note: Data 14,4 kbps not supported
AT+CBST=7,0,1	OK
Note: Ask for a bearer	Note: Bearer supported
AT+CBST?	+CBST:7,0,1
	OK
Note: Current values	Note: Command valid
AT+CBST=81,0,0	+CME ERROR: 4
Note: Ask for a bearer	Note: Bearer not supported

Select Mode +FCLASS

Description: This command puts the product into a particular operating mode (data).

Values: <n>

0 Data

Syntax: Command syntax: AT+FCLASS= <n>

Command	Possible responses
AT+FCLASS=?	+FCLASS: (0)
Note: Test command	OK
AT+FCLASS=?	+FCLASS: (0)
Note: Test command	OK
AT+FCLASS=0	OK
Note: Data mode requested	Note: Command valid
	OK
	Note: Command valid
AT+FCLASS?	+FCLASS:
	OK
Note: Current value	Note: Command valid

Service Reporting Control +CR

Description: This command enables a more detailed type of service reporting in the case of incoming or outgoing

data calls. Before sending the CONNECT response to the application, the product will specify the type

of data connection that has been set up.

These report types are:

+CR: ASYNC For asynchronous transparent +CR: REL ASYNC For asynchronous non-transparent

Values: <mode>

0 Disable extended reports1 Enable extended reports

Syntax: Command syntax: AT+CR=<mode>

Command	Possible responses
AT+CR=0	OK
Note: Extended reports disabled	Note: Command valid
AT+CR=1	OK
Note: Extended reports enabled	Note: Command valid
AT+CR?	+CR: 1
	OK
AT+CR=?	+CR: (0,1)
	OK

Cellular Result Codes +CRC

Description:

This command shows more detailed ring information for an incoming call (voice or data). Instead of the string "RING", an extended string is used to indicate which type of call is ringing (e.g. +CRING: VOICE).

These extended indications are:

+CRING: ASYNC for asynchronous transparent +CRING: REL ASYNC for asynchronous non-transparent

+CRING: VOICE for normal speech.

Values: <mode>

0 Disable extended reports1 Enable extended reports

Syntax: Command syntax: AT+CRC=<mode>

Command	Possible responses
AT+CRC=0	OK
Note: Extended reports disabled	Note: Command valid
AT+CRC=1	OK
Note: Extended reports enabled	Note: Command valid
AT+CRC?	+CRC: 1
	OK
AT+CRC=?	+CRC: (0,1)
	OK

DTE-DCE Local Rate Reporting +ILRR

Description:

This parameter controls whether or not the extended-format "+ILRR:<rate>" information text is transmitted from the DCE to the DTE. The <rate> reported represents the current (negotiated or renegotiated) DTE-DCE rate.

If enabled, the intermediate result code is transmitted in an incoming or outgoing data call, after any data compression report, and before any final result code (CONNECT).

Values:

<value>

0 Disable local port rate report1 Enable local port rate report

<rate> Can take the following values: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Khos

Syntax:

Command syntax: AT+ILRR = <value>

-	
Command	Possible responses
AT+ILRR=0	OK
Note: Local port rate report disabled	Note: Command valid
AT+ILRR=1	OK
Note: Local port rate report enabled	Note: Command valid
AT+ILRR?	+ILRR: 1
	OK
AT+ILRR=?	+ILRR: (0,1)
	OK

Radio Link Protocol Parameters +CRLP

Description: This command changes the radio link protocol parameters used for non transparent data transmission.

Values: Value: Range: Description:

<mws> 0-61 Down window size, (default is 61) <mws> 0-61 Up window size, (default is 61)

<T1> 40-255 Acknowledgement timer in units of 10ms, (default is 48)

<N2> 1-255 Retransmission attempts, (default is 6)

Syntax: Command syntax: AT+CRLP=<iws>,<mws>,<T1>,<N2>,<ver>

Command	Possible responses
AT+CRLP=?	+CRLP: (0-61),(0-61),(40-255),(1,255),(0)
Note: Test command	OK
	Note: V42bis not supported
AT+CRLP=?	+CRLP: (0-61),(0-61),(40-255),(1,255),(0,1)
Note: Test command	OK
	Note: V42bis supported
AT+CRLP=61,61,48,6,0	OK
Note: Set new parameters	Note: Command valid
AT+CRLP?	AT+CRLP: 61,61,48,6,0
Note: Current values	Note: Command valid

Other Radio Link Parameters +DOPT

Description: This command modifies some supplementary radio link protocol parameters.

Values: <reset_allowed>

Data communication is hung up in case of bad radio link.

Default. Data communication continues in case of bad radio link (possible loss of data)

<dtx allowed>

0 Normal mode

1 Default. Economic battery mode (not supported by all networks)

Syntax: Command syntax: AT+DOPT=<reset allowed>,<dtx allowed>

Command	Possible responses
AT+DOPT=1	OK
Note: Set new parameters (2 nd value is the default)	Note: Command valid
AT+DOPT+?	(0,1),(0,1)
Note: Test command	OK
	Note: DTX is supported
AT+DOPT=1,1	OK
Note: Set new parameters	Note: Command valid
AT+DOPT?	1,1
Note: Current values	OK
	Note: Command valid

Select Data Compression %C

Description: This command enables or disables data compression negotiation if this feature is supported on the

product.

Values: <n>

Values:

0 no compression (default)

2 V42bis compression if supported

Syntax: Command syntax: AT%C<n>

Command	Possible responses
AT%C0	OK
Note: Command	Note: Feature supported
AT%C2	OK
Note: Command	Note: V42bis supported
AT%C?	2
Note: Current value	OK
	Note: Command valid

V42bis Data Compression +DS

Description: This command enables or disables V.42bis data compression if this feature is supported on the product.

Note that the product allows only the MNP2 protocol.

<dir> Specifies the desired direction(s) of operation of the data compression function; from the DTE point of view, (default is 3)

0 Negotiated ... no compression

1 Transmit only

2 Receive only

3 Both directions, accept any direction. Default.

< neg > Specifies whether or not the DCE should continue to operate if the desired result is not

obtained, (default is 0)

0 Do not disconnect if V.42 bis is not negotiated by the remote DCE as specified in <dir>
 Default.

1 Disconnect if V.42 bis is not negotiated by the remote DCE as specified in <dir>
Specifies the maximum number of dictionary entries that should be negotiated,

Range is 512 to 2048. Default is 2048.

< P2 > Specifies the maximum string length to be negotiated. Range is 6 to 250. Default is 20.

Syntax: Command syntax:AT+DS=[[<dir>][,[<neg>][,[<P1>][,[<P2>]]]]

Command	Possible responses
AT+DS=?	+DS: (0-3),(0,1),(512-2048),(6-250)
Note: Test command	OK
AT+DS=3,0,2048,250	OK
Note: Set new parameters	Note: Command valid
AT+DS?	+DS: 3,0,2048,20
Note: Current values	OK
	Note: Command valid

V42bis Data Compression Report +DR

Description:

This command determines whether or not the use of V42bis is allowed for an incoming or outgoing data call, if this feature is provided by the product. The intermediate result code represents current DCE-DCE data compression type. The format of this result code is as follows:

+DR: NONE Data compression is not in use

+DR: V42B Rec. V.42 bis is in use in both directions
+DR: V42B RD Rec. V.42 bis is in use in receive direction only
+DR: V42B TD Rec. V.42 bis is in use in transmit direction only

The +DR intermediate result code, if enabled, is issued before the final result code, before the +ILRR intermediate report and after the service report control +CR.

Values: <status> State of the V42bis

0 Disable. Default value.

1 Enable

Syntax: Command syntax: AT+DR=<status>

Command	Possible responses
AT+DR=?	+DR: (0-1)
Note: Test command	OK
AT+DR=1	OK
Note: Reporting enabled	Note: Command valid
AT+DR?	+DR: 1
Note: Current value	OK
	Note: Command valid

Select Data Error Correcting Mode \N

Description:

If this feature is provided by the product, this command controls the preferred error correcting mode for a data connection. It can only be used for transparent data transmission.

If the MNP2 feature is provided, the product authorizes MNP error correction mode.

Values: <n>

Default. Disables error correction modeSelects MNP error correction mode

Note: +E prefixed commands of V.25 ter are not used.

Syntax: Command syntax: AT\N<n>

Command	Possible responses
AT\N0	OK
Note: no error correction	
AT\N?	0
Note: Current value	OK
	Note: Command valid
AT\N4	+CME ERROR: 3

Chapter 12 – V.24 and V.25 Commands

Important

All commands described hereafter will to the currently selected (and used) UART.

Fixed DTE Rate +IPR

Description: This

This commands specifies the data rate at which the DCE will accept commands.

Notes:

- The serial autobauding feature is supported and covers the following serial speeds only: 2400, 4800, 9600, 19200, 38400, 57600 bps. Beyond those serial speeds, proper operation of the modem is not guaranteed.
- Any AT command issued by the DTE must start with both capital 'A' and 'T' (or '/') or both lower case 'a' and 't' (or '/'); otherwise, the DCE may return some garbage characters and become desynchronized. Should this happen, the DTE simply issues 'AT\r' (at 2400 or 4800 bauds) once or twice or just 'AT' (at 9600 bauds) to resynchronize the modem.
- The DTE waits for 1ms after receiving the last character of the AT response (which is always '\n' or 0x0A) to send a new AT command at either the same rate or a new rate. Should this delay be ignored, the DCE can become desynchronized. Once again, sending 'AT\r' once or twice or just 'AT' causes the DCE to recover.

Caution: When starting up, if autobauding is enabled and no AT command has yet been received, the product sends all unsolicited responses (like RING) at 9600 bauds.

Values:

<value> Baud rates that can be used by the DCE

0 Enables autobauding

300

600

1200

2400

4800

9600

19200

38400

57600

115200

Syntax:

Command syntax: AT+IPR=<value>

Command	Possible responses
AT+IPR?	+IPR: 9600
	OK
	Note: Current rate is 9600 bps
AT+IPR=?	+IPR: (0,2400,4800,9600,19200,38400,57600,115200), (300,600,1200)
	OK
	Note: Possible values, according to V25ter Recommendation:
	The first set of values indicates the range of auto-detectable baud rates (including
	0). The second set of values indicates the baud rates supported by the DCE but not
	auto-detectable.
AT+IPR=38400	OK
	Note: Disable autobauding and set rate to 38400 bps
AT+IPR=0	OK
	Note: Enable autobauding

DTE-DCE Character Framing +ICF

Description: This command determines the local serial port start-stop (asynchronous) character framing that the

DCE uses.

Values: <format>

0 Auto detect (not supported)

1 8 Data 2 Stop (supported) <parity> parameter is ignored

2 8 Data 1 Parity 1 Stop (supported)

If no <parity> provided, 3 is used by default as <parity> value

3 8 Data 1 Stop (supported) <parity> parameter is ignored

7 Data 2 Stop (supported)<parity> parameter is ignored

5 7 Data 1 Parity 1 Stop (supported)

If no <parity> provided, 3 is used by default as <parity> value

7 Data 1 Stop (supported) <parity> parameter is ignored

<parity>

0	Odd	(supported)
1	Even	(supported)
2	Mark	(supported)
3	Space	(supported)
4	None	(supported)

Note: All character framing formats settings of the serial interface (i.e., 801, 8E1, 8S1, 8N1, 7N1, 7O1, 7E1, 7S1 and 7N2) are supported on autobauding operation.

Syntax: Command syntax: AT+ICF= <format>[, <parity>]

Command	Possible responses
AT+ICF?	+ICF: 3,4
	OK
	Note: Current values
AT+ICF=?	+ICF: (1-6),(0-4)
	OK
	Note: Possible values
AT+ICF=2,0	OK
	Note: New values

DTE-DCE Local Flow Control +IFC

Description: This command is controls the operation of local flow control between the DTE and DCE.

Values: < DCE_by_DTE >

0 none (supported)
 1 Xon/Xoff local circuit 103 (not supported)
 2 RTS (supported)
 3 Xon/Xoff global on circuit 103 (not supported)

Important Note: When this parameter is set to 2 (DTE invokes flow control through RTS) DCE behavior is as follows:

- If the DCE has never detected RTS in the high (or ON) condition since startup then it ignores RTS as it assumes that this signal is not connected.
- As soon as the DCE detects RTS high the signal acts on it. Therefore subsequent RTS transition to OFF will prevent the DCE from sending any further data in both online and offline modes.
- This behavior allows the user to use the default settings (hardware flow control) and leave RTS disconnected. In the case where RTS is connected and is high at least once, it acts on the DCE.

< DTE_by_DCE >

0 none (supported)
1 Xon/Xoff circuit 104 (not supported)
2 CTS (supported)

Note: When this parameter is set to 0 (none), then CTS is kept high all the time.

Syntax: Command syntax: AT+IFC=<DCE by DTE>,<DTE by DCE>

Command	Possible responses
AT+IFC?	+IFC: 2,2
	OK
	Note: Current values
AT+IFC=?	+IFC: (0,2),(0,2)
	OK
	Note: Possible values
AT+IFC=0,0	OK
	Note: New values

Set DCD Signal &C

Description: This commands controls the Data Carrier Detect (DCD) signal.

Values: <n>

0 DCD always on

1 DCD matches the state of the remote modem's data carrier

Syntax: Command syntax: AT&C <n>

Command	Possible responses
AT&C0	OK
Note: DCD always on	Note: Command valid
AT&C1	OK
Note: DCD matches state of the remote modem's data carrier	Note: Command valid

Set DTR Signal &D

Description: This commands controls the Data Terminal Ready (DTR) signal.

Values: <n>

0 The DTR signal is ignored

1 Modem switches from data to command mode when DTR switches from ON to OFF

2 Upon DTR switch from ON to OFF, the call is released

Syntax: Command syntax: AT&D<n>

Command	Possible responses
AT&D0	OK
Note: The DTR signal is ignored	Note: Command valid
AT&D1	OK
Note: Modem switches from data to command mode when	Note: Command valid
DTR switches from ON to OFF	
AT&D2	OK
Note: Upon DTR switch from ON to OFF, the call is released	Note: Command valid

Set DSR Signal &S

Description: This commands controls the Data Set Ready (DSR) signal.

Values: <n>

0 DSR always on

1 DSR off in command mode. DSR on in data mode.

Syntax: Command syntax: AT&S<n>

Command	Possible responses
AT&S0	OK
Note: DSR always on	Note: Command valid
AT&S1	OK
Note: DSR off in command mode, DSR on in data mode	Note: Command valid

Back to Online Mode O

Description: If a connection has been established and the ME is in command mode, this command allows you to

return to online data mode.

Values: No parameters

Syntax: Command syntax: ATO

Command	Possible responses
ATO	OK
Return from offline mode to online mode	

Result Code Suppression Q

Description: This command determines whether the mobile equipment sends result codes or not.

Values: <n>

DCE transmit result codes

1 Result codes are suppressed and not transmitted

Syntax: Command syntax: ATQ<n>

Command	Possible responses
ATQ0	OK
Note: DCE transmits result codes	Note: Command valid
ATQ1	Note: No response
Note: Result codes are suppressed and not transmitted	·

DCE Response Format V

Description: This command determines the DCE response format, with or without header characters <CR><LF>.

Result codes are provided as numeric or verbose.

Values:

	<n>=0</n>	<n>=1</n>
Information	<text><cr><lf></lf></cr></text>	<cr><lf></lf></cr>
responses		<text><cr><lf></lf></cr></text>
Result codes	<numeric code=""><cr></cr></numeric>	<cr><lf></lf></cr>
		<verbose code=""><cr><lf></lf></cr></verbose>

Syntax: Command syntax: ATV<n>

Command	Possible responses
ATV0	0
Note: DCE transmits limited headers and trailers and	Note: Command is valid (0 means OK)
numeric result codes	
ATV1	OK
Note: DCE transmits full headers and trailers and	Note: Command valid
verbose response text	

Default Configuration Z

Description: This command restores the configuration profile. Any call is released.

Values: No parameters

Syntax: Command syntax: ATZ

Command	Possible responses
ATZ	OK
	Note: Command valid

Save Configuration &W

Description: This command writes the active configuration to a non-volatile memory (EEPROM). For description of

the stored parameters, refer to Appendix A.

Values: No parameters

Syntax: Command syntax: AT&W

	l =
Command	Possible responses
AT&W	OK
Note: Writes current configuration to EEPROM	Note: Command valid

Auto-Tests &T

Description: This command runs various auto-tests.

Values: <n>

0 Perform software auto-tests

The response will be OK if no software problem is detected (EEPROM, RAM, and ROM checksums); otherwise, a simple ERROR response is sent.

1 Perform the audio loop test (close)

This is used to validate the audio loop (microphone to speaker)

2 Stop the audio loop test (open)

This is used to validate the audio loop (microphone to speaker)

Syntax: Command syntax: AT&T<n>

Command	Possible responses
AT&T0	OK
Note: Perform software auto-tests	Note: No software problem detected, all checksums are
	correct
AT&T1	OK
Note: Do the audio loop test (close)	Note: Command valid
AT&T2	OK
Note: Stop the audio loop test (open)	Note: Command valid

Echo E

Description: This command is used to determine whether or not the modem echoes characters received by an

external application (DTE).

Values: <n>

Characters are not echoedCharacters are echoed

Syntax: Command syntax: ATE<n>

Command	Possible responses
ATE0	OK
Note: Characters are not echoed	Note: Done
ATE1	OK
Note: Characters are echoed	Note: Done

Restore Factory Settings &F

Description: This command is used to restore the factory settings from EEPROM.

It only restores the parameters that can be found in the Parameters Storage table with column AT&F checked. Those parameters are restored in RAM and in E2P, overwriting the profile set with AT&W.

Values: <n>

Restore factory settingsNote: No other value is supported.

Syntax: Command syntax: AT&F<n>

Command	Possible responses
AT&F	OK
Note: Ask for restoring the factory settings	Note: Done
AT&F0	OK
Note: Ask for restoring the factory settings	Note: Done

Display Configuration &V

Description: This command is used to display the modem configuration.

Values: <n>

0 Displays the modem configuration in RAM. Default value if no parameter provided.

1 Displays the modem configuration in EEPROM.

2 Displays the modem factory configuration.

Syntax: Command syntax: AT&V<n>

The parameters displayed are the following:

Q: val 1, V: val 2, S0: val 3, S2: val 4, S3: val 5, S4: val 6, S5: val 7,

+CR: val 8, +CRC: val 9, +CMEE: val 10, +CBST: val 11,

+SPEAKER: val 12, +ECHO: val 13, &C: val 14, &D: val 15, %C: val 16,

+IPR: val 17, +ICF: val 18, +IFC: val 19

Command	Possible responses
AT&V	Q:0 V:1 S0:000 S2:043 S3:013 S4:010 S5:008
Note: Display active	+CR:0 +CRC:0 +CMEE:0 +CBST:0,0,1
parameters in RAM	+SPEAKER:0 +ECHO:0,0 &C:1 &D:2 %C:0
l ·	+IPR:9600 +ICF:3,4 +IFC:2,2
	OK
	Note: Done
	For Echo the first value corresponds to Echo cancellation 1.

Request Identification Information I

Description: This command causes the product to transmit one or more lines of specific information text.

Values: <n>

0 Displays manufacturer followed by model identification. Equivalent to +CGMI and +CGMM.

3 Displays revision identification. Equivalent to +CGMR.

4 Displays modem configuration in RAM. Equivalent to &V0.

5 Displays modem configuration in EEPROM. Equivalent to &V1.

6 Displays modem data features. Lists the supported data rates and data modes.

7 Displays modem voice features.

Other values: OK string will be sent back.

Syntax: Command syntax: ATI<n>

Command	Possible responses
ATI0	WAVECOM MODEM
Note: Manufacturer and model	900P
identifications	OK
	Note: GSM 900 MHz primary band
ATI3	657_09gg.Q2406B 2015268 100506 17:01
Note: Revision identification	OK
	Note: Software release 6.57, generated on the 5th of October
	2006
ATI6	DATA RATES:
Note: Modem data features	AUTOBAUD,300,1200,1200/75,2400,4800,9600,14400
	DATA MODES: T/NT,ASYNCHRONOUS
	OK
	Note: Done
ATI7	SPEECH CODINGS: FR,EFR,HR,AMR
Note: Modem voice features	OK
	Note: Done

Multiplexing Mode +WMUX

Description: This command manages the data/AT commands in multiplexing mode. See Appendix B for the

Data/Commands multiplexing protocol description.

Values: <mode>

Multiplexing disabled. When the product is online (data communication in progress), no AT command can be used (default).

1 Multiplexing enabled. Data flows and AT commands are multiplexed while in online mode (data communication in progress).

Note: The Multiplexing mode is available to only one UART. If this mode is available on UART1 and the AT+WMUX=1 command is sent through UART2, the multiplexing mode will be available on UART2 and disabled on UART1.

Syntax: Command syntax: AT+WMUX=<mode>

Command	Possible responses
AT+WMUX=?	+WMUX: (0-1)
	OK
AT+WMUX?	+WMUX: 0
	OK
	Note: Data/Commands multiplexing disabled
AT+WMUX=1	OK
Note: Enable Data/Commands multiplexing	

Chapter 13 – Specific AT Commands

Cell Environment Description +CCED

Description:

This command can be used by the application to retrieve the parameters of the main cell and of up to six neighboring cells.

There are two possible methods for the external application to determine these cell parameters:

- On request by the application
- Automatically by the product every 5 seconds.

Automatic mode is not supported during registration.

Values:

<mode>

- One shot requested
- 1 Automatic shots requested
- 2 Stop automatic shots

<requested dump>

- 1 Main Cell:
 - If the Cell Identity is available

MCC, MNC, LAC, CI, BSIC, BCCH Freq (absolute), RxLev, RxLev Full, RxLev Sub, RxQual, RxQual Full, RxQual Sub,Idle TS

• If the Cell Identity is not available

MCC, MNC, LAC, BSIC, BCCH Freq (absolute), RxLev, RxLev Full, RxLev Sub, RxQual, RxQual Full, RxQual Sub,Idle TS

- 2 Neighbor1 to Neighbor6:
 - If the Cell Identity is available

MCC, MNC, LAC, CI, BSIC, BCCH Freq (absolute), RxLev

• If the Cell Identity is not available

MCC, MNC, LAC,, BSIC, BCCH Freq (absolute), RxLev

- 4 Main Cell Timing Advance
- 8 Main cell RSSI indications (RxLev) in a range from 0 to 31
- 16 <requested dump>=1 + <requested dump>=2 + <requested dump>=4 + Neighbor1 to Neighbor6 Timing Advance (only available for mode=0) Neighbor1 to Neighbor6 Timing Advance are only available in Idle Mode.

<CsqStep> Indicates the step required for RSSI indications between 2 + CSQ unsolicited response. The range of this step is [1,5]. Default value: 1. If this field is not indicated, the previous value is used.

Notes:

• The response for the requested dump 1, 2, and 4 will be:

```
+CCED:<value>, ... , <value n>
```

Where <value> is the ASCII string of the values (in decimal form except the LAC and CI values which are in hexadecimal form) of the parameters. If a field cannot be measured – or is meaningless – the parameter is not filled in and two consecutive commas are sent.

The response for the requested dump 8 will be a +CSQ response and not a +CCED. The 7.07 format for +CSQ is respected. The <ber> is not evaluated by this command, so the <ber> value will always be 99.

+CSQ:<rssi>, 99

When automatic shots are selected, this +CSQ response is sent every time the <rssi> measured by the product is equal or greater than the value <CsqStep>. So the <rssi> level between 2 successive +CSQ responses is equal or greater than <CsqStep>. Automatic shots are supported in idle mode and during communication. The activation or deactivation of this flow (8) does not affect the other flows.

• Combination of the requested dump is supported (addition of the values 1, 2, 4, and 8):

Value	Requested Dump	Value	Requested Dump
1	+CCED response: Main Cell only	9	+CSQ response; then +CCED response with
			Main Cell only
2	+CCED response: Neighbors 1 to 6	10	+CSQ response; then +CCED response with
			Neighbors 1 to 6
3	+CCED response: Main Cell; then Neighbors 1	11	+CSQ response; then +CCED response with
	to 6		Main Cell; then Neighbors 1 to 6
4	+CCED response: Timing Advance Only	12	+CSQ response; then +CCED response with
			Timing Advance Only
5	+CCED response: Main Cell; then Timing	13	+CSQ response; then +CCED response with
	Advance		Main Cell; then Timing Advance
6	+CCED response: Neighbors 1 to 6; then	14	+CSQ response; then +CCED response with
	Timing Advance		Neighbors 1 to 6; then Timing Advance
7	+CCED response: Main Cell; then Neighbors 1	15	+CSQ response; then +CCED response: Main
	to 2, then Timing Advance		Cell, then Neighbors 1 to 6, then Timing Advance
8	+CSQ response: Main Cell RSSI indications	16	+CCED response: Main Cell, then Neighbors 1 to
			6, then Main Cell Timing Advance, then
			Neighbor1 to Neighbor6 Timing Advance
		No	Last value used for CCED request or 15
		value	

- If requested dump parameter is not provided, one of the last +CCED commands sill be used (or 15 by default) will be used.
- Values of MCC/MNC are set to 0 in the case of "No service".

Syntax: Command syntax: AT+CCED=<mode>[, <requested dump>]

Command	Possible responses
AT+CCED=0 Note: Last request was AT_CCED=0,3 (main cell and neighbors 1 to 6): you can see MCC,MNC sequences (here 208,20)	+CCED:208,20,0002,0418,37,706,24,,,,0,,,0,208,20,0006,98 9b,37,835,20,208,,20,0002,02a9,37,831,12,208,20,0101,79 66,34,818,508,20,0006,9899,39,713,9,208,20,0002,0a72,3 3,711,12,208,20,0101,03fb,36,824,10,1
AT+CCED=0,1 Note: Only Main Cell request	OK +CCED:208,20,0002,0418,37,706,25,,,0,,,0 OK
AT+CCED=0,1 Note: Call in progress: RxLev and RxQual are empty, RxLevFull, RxLevSub, RxQualFull, and RxQualSub have data	+CCED:208,10,189C,,19,85,,31,32,,0,0 OK
AT+CCED=1,8,1	OK +CSQ: 12,99 +CSQ: 13,99
AT+CCED=0,16	+CCED: 208,20,0006,0418,54,789,,,,255,,,0,208,20,0,0006,57,1018, 20,208,01,7500,6497,17,55,17,208,10,54c4,f0ed,31,700,9, 208,20,0006,7d9a,50,1023,8,208,20,0002,9a29,48,1015,7, 1,1,1,2,1,2
Note: idle mode	Note: 1,1,1,2,1,2 correspond to the Main Cell Timing Advance and 5 Neighbors Timing Advance
AT+CCED=0,16	+CCED: 208,20,0006,0418,54,789,,19,19,0,0,,,,,41,801,6,,,,57,101 8,20,,,,48,1015,10,,,,57,1006,4,,,,50,1023,7,,,,57,814,3,1,
Note: dedicated mode	OK Note: Neighbors Timing Advances are not available in dedicated mode
AT+CCED=1,16	+CME ERROR: 3

General Indications +WIND

Description:

This command provides a general mechanism to send unsolicited non-standardized indications to the application. The indicators are:

- Indication of a physical change on the SIM detect pin from the connector (meaning SIM inserted, SIM removed)
- · Indication during mobile originated call setup that the calling party is ringing.
- Indication of the availability of the product to receive AT commands after boot.
- NITZ indication (Network Information and Time Zone)

For each of these indications, a "bit flow" has to be indicated.

Values:

<indlevel></indlevel>	
0	No unsolicited "+WIND: <indnb>" will occur. Default.</indnb>
1 (bit-0)	Hardware SIM Insert/Remove indications or SIM presence after software reset.
2 (bit-1)	Calling party alert indication.
4 (bit-2)	Product is ready to process AT commands (except phonebooks, AOC, SMS), but still in emergency mode.
8 (bit-3)	The product is ready to process all AT commands at the end of init or after swapping to ADN in case of FDN configuration
16 (bit-4)	A new call identifier has been created (after an ATD command, +CCWA indication)
32 (bit-5)	An active, held or waiting call has been released by network or other party
64 (bit-6)	Network service available indication
128 (bit-7)	Network lost indication
256 (bit-8)	Audio ON indication
512 (bit-9)	SIM phonebooks reload status
1024 (bit-10)	SIM phonebooks checksum indication
2048 (bit-11)	Interruption indication (only if FTR_INT is activated)
4096 (bit-12)	Hardware rack open/closed indication
8192 (bit-13)	NITZ indication
16384 (bit-14)	SMS service ready indication

Combination (addition of the values) is used to allow more than one indication flow: 0 ≤ IndLevel ≤ 32767

- To activate a specific WIND indication, <IndLevel> must have a value described above. AT+WIND=16384 only activates SMS service indication.
- To activate several WIND indications, <IndLevel> must have a value just before the last indication required.

AT+WIND=32767 all unsolicited indications.

<event>

- The SIM presence pin has been detected as "SIM removed"
- 1 The SIM presence pin has been detected as "SIM inserted"
- 2 Calling party is alerting
- 3 Product is ready to process AT commands (except phonebooks, AOC, SMS), at init or after AT+CFUN=1
- 4 Product is ready to process all AT commands, end of phonebook init or swap (FDN to ADN)
- 5 Call <idx> has been created (after ATD or +CCWA...)
- 6 Call <idx> has been released, after a NO CARRIER, a +CSSU: 5 indication, or after the release of a call waiting.
- 7: The network service is available for an emergency call.
- 8 The network is lost.
- 9 Audio ON.
- Show reload status of each SIM phonebook after init phase (after Power-ON or SIM insertion).
- 11 Show the checksum of SIM phonebooks after loading.
- **12** An interruption has occurred.
- 13 The rack has been detected as Closed.

- 14 The rack has been detected as Open.
- 15 The modem received a NITZ information message from the network.
- 16 SMS and SMS CB services are ready.

For Event 10:

<phonebook>: SIM phonebook

"SM"

"FD"

"ON"

"SN"

"EN"

<status>:

- **0** Not Reloaded from SIM (no change since last init or SIM remove)
- 1 Reloaded from SIM to internal memory (at least one entry has changed)

For Event 11:

<checksum>: 128-bit "fingerprint" of the phonebook.

Note: If the service of the phonebook is not loaded or not present, the checksum is not displayed and two commas without checksum are displayed (,,).

For Event 15:

<Full name>: String. Updated long name for current network.

<Short name>: String. updated short name for current network.

Local time zone>: Signed integer. Time Zone indicates the difference, expressed in quarters of an hour, between the local time and GMT.

<Universal time and local time zone>: String, Universal Time and Time Zone, in format

"yy/MM/dd,hh:mm:ss±zzz" (Year/Month/Day,Hour:Min:Seconds± Time Zone).

The Time Zone indicates the difference, expressed in quarters of an hour, between the level time and CMT.

between the local time and GMT.

LSA Identity>: Hexa string. LSA identity of the current cell in hexa format (3 bytes).

<Daylight Saving Time>: Integer (0-2). When the LTZ is compensated for DST (Daylight Saving Time or summertime), the serving PLMN shall provide a DST parameter to indicate it. The adjustment for DST can be + 1h or +2h.

Note: For the NITZ indication, all the fields indicated here are optional. That is why there is an index related to each of the following:

- 1: Full name for network
- 2: Short name for network
- 3: Local time zone
- 4: Universal time and local time zone
- 5: LSA identity
- 6: Network Daylight Saving Time

Syntax: Command syntax: AT+WIND= <IndLevel >

Command	Possible Responses
AT+WIND?	+WIND: 0
	OK
AT+WIND=255	OK
Note: The SIM has been removed.	+WIND: 0
	Note :The SIM presence pin has been detected as "SIM removed"
Note: The SIM has been inserted.	+WIND: 1
	Note :The SIM presence pin has been detected as "SIM inserted"
Note: The network service is available	+WIND: 7
for an emergency call	
Note: The initialization has been completed	+WIND: 4
Note: The modem received a NITZ	+WIND: 15,1,"Cingular Extended",2,"Cingular",3,"+08",
information message	4,"03/14/27,16:59:48+08",5,"123456",6,"2"

Additional Notes:

- The AT+WIND? command is supported and indicates the <allowed bit flows>.
- AT+WIND settings are automatically stored in non volatile memory (EEPROM). This means the &W command does not need to be used and the selected flows are always activated after boot.
- Default value is 0: no flow activated, no indication.
- AT+WIND=? gives the possible value range (0-4095)
- The unsolicited response will then be:

+WIND: <event> [,<idx>]

<idx>: Call identifier, defined in +CLCC command.

· Or for event 10:

+WIND: <event>,<phonebook>,<status>,...,<phonebook>,<status>

Or for event 11:

+WIND: <event>,["<checksum of SM>"],["<checksum of FD>"],["<checksum of ON>"],["<checksum of SN>"],["<checksum of EN>"],["<checksum of LD>"]

• Or for event 15 (NITZ indication):

+WIND: <event>[,1,"Full name>"][,2,"<Short name>"][,3,"<Local time zone>"][,4,"<Universal time and local time zone>"][,5,"<LSA identity>"][,6,"<Daylight Saving Time>"]

Analog Digital Converter Measurements +ADC

Description:

This command gets the (DC level * 1024) of ADC A and ADC B, and possibly ADC C. These voltages are coded on 10 bits.

Values:

<n>

Select 2 converters 0

Select 3 converters

<ADCVaIA>

ADC A value, coded on 10 bits. The value returned includes the resistor bridge. Values are updated every 10 seconds. Displayed on modes 0 and 1.

<ADCVaIB>

ADC B value, coded on 10 bits. Displayed on modes 0 and 1.

ADC C value, coded on 10 bits. Displayed on mode 1 only.

<ADCVaID>

ADC D value, coded on 10 bits. Displayed on mode 1 only.

Syntax:

Command syntax: AT+ADC<n>

Response syntax: +ADC: <ADCValA>,<ADCValB>[,<ADCValC>][,<ADCValD>]

Command	Possible responses
AT+ADC=?	+ADC: (0-1)
Note: Ask for the list of possible values	Note: possible values 0 or 1
AT+ADC=0	OK
Note: Select 2 converters (mode 0)	Note: 2 converters mode selected
AT+ADC?	+ADC: 500,412
	OK
Note: Ask for the current values of	Note: ADC A, ADC B on 10 bits
converters in mode 0	
AT+ADC=1	OK
Note: Select extended mode (mode 1)	Note: Extended mode selected

Mobile Equipment Event Reporting +CMER

Description: This command enables or disables sending of unsolicited result codes in the case of a key press.

Values:

<keyp> (keypad)

- 0 No keypad event reporting.
- 1 Keypad event reports are routed using unsolicited code: +CKEV: <key>, only those key pressings, which are not caused by +CKPD are indicated.
- 2 Keypad event reports are routed using unsolicited code: +CKEV: <key>, , , press> all key pressings are indicated.

Note: As AT software does not manage the emulation of key press, the values 1 and 2 lead to the same results.

<ind>

- 0 No indicator event reporting
- 1 Indicator event reporting using unsolicited result code. Only the indicator events not caused by +CIND shall be indicated by the TA to the TE.
- 2 Indicator event reporting using unsolicited result code. All indicator events shall be directed from TA to TE (DTE).

<key> Keyboard map is (5,5)

0	1	2	3	4
5	6	7	8	9
10	11	12	13	14
10 15 20	16	17	18	19
20	21	22	23	24

- 1 key press
- 0 key release

<indresp> Indicator order number (as specified for +CIND)

<value> New value of the indicator

Syntax:

Command Syntax: AT+CMER=<mode>,<keyp>,<disp>,<ind>,<bfr>

Response Syntax:+CKEV: <key>, <press> (key press event report)

Response Syntax:+CIEV: <indresp>, <value> (indicator event report)

Command	Possible responses
AT+CMER=1	OK
Note: Ask for key press event report	
	+CKEV:12,1
	+CKEV:12,0
	Note: Key 12 has been pressed and released
AT+CMER?	+CMER: 3,1,0,0,0
	OK

Read Language Preference +WLPR

Description: Read a Language Preference value of EF-LP. The first indices should have the highest priority.

Values: <index> Offset in the available languages range (SIM dependent)

<value> Values for language. See Recommendation 3GPP TS 23.038. Language example:

<value></value>	Language
0	German
1	English
3	Italian
	French
4	Spanish
5	Dutch
6	Swedish
7	Danish
8	Portuguese
9	Finnish
10	Norwegian
11	Greek
12	Turkish
13	Hungarian
14	Polish
32	Czech
33	Hebrew
34	Arabic
35	Russian
36	Icelandic

Syntax: Command syntax:AT+WLPR= <index >

Response syntax: +WLPR: <value>

Command	Possible responses
AT+WLPR?	+WLPR: 4
Note: Read command	OK
	Note: Four language preferences are available in EF-LP
AT+WLPR=1	+WLPR: 5
Note: Read first EF-LP index value	OK
	Note: Language preference is 5

Write Language Preference +WLPW

Description: Write a Language Preference value in EF-LP.

Values: <index> Offset in the available languages range (SIM dependent)

<value> See <values> examples above (Read Language Preference +WLPR)

Syntax: Command syntax: AT+WLPW=<index >,<value>

Response syntax: OK or +CME ERROR: <err>

Command	Possible responses
AT+WLPW=1,5	OK
Note: Write Lang Pref equal to 5 in EF-LP with index 1	Note: EF-LP correctly updated

Read GPIO Value +WIOR

Description: Read the requested GPI or GPIO pin value.

Notes:

- By default (e.g., after a reset), the I/O ports configuration is set by the +WIOM command.
- This command is allowed only on a GPIO not allocated by an Open-AT embedded application or for bus operations.
- When the BT chip is switched on, the GPIO5 is not available anymore.

Values: <index>

Up to ten I/O ports are available. The <index> value is between 0 and 9.

<value>

I/O port number <index> is reset.I/O port number <index> is set.

Syntax: Command syntax:AT+WIOR=<index>
Response syntax: +WIOR: <value>

Command	Possible responses
AT+WIOR=0	+WIOR: 0
Read I/O (number 0) value	OK
	GPIO number 0 is reset

Write GPIO Value +WIOW

Description: Set the requested GPO or GPIO pin value.

Notes:

- By default (e.g., after a reset), the I/O ports configuration is set by the +WIOM command.
- This command is allowed only on a GPIO not allocated by an Open-AT embedded application or for bus operations.
- When the BT chip is switched on, the GPIO5 is not available anymore. It is not possible to change the state of the GPIO using this command.

Values: <index>

Up to ten I/O ports are available. The <index> value is between 0 and 9.

<value>

0 I/O port number <index> is reset.

1 I/O port number <index> is set.

Syntax: Command syntax: AT+WIOW=<index >,<value>

Command	Possible responses
AT+WIOW=2,0	OK
Reset I/O (number 2)	GPIO value is written

Input/Output Management +WIOM

Description:

This command sets the default GPIO's configuration (input or output) after reset, and each GPIO default value (if set as an output) after reset.

Notes:

- This command is allowed only on a GPIO not allocated by the Open-AT embedded application or for bus operations.
- When UART is activated, GPIOs 0 and 5, GPO2 and GPI are not available anymore. When you try to do writable or readable operations on these I/O, CME ERROR: 3 will be returned. This applies for modems running AT X50 software and supporting the multi-UART feature.
- When the BT chip is switched on, the GPIO5 is not available anymore. It is not possible to change the state of the GPIO using this command.

Values:

- <GpioDir> Bit table parameter indicating each GPIO direction.
 - 0 Input
 - 1 Output. Default.

Default value: 2047 (all GPIOs set as outputs).

<GpioVal> Bit table parameter indicating each output-configured GPIO value (each bit gives the corresponding GPIO default value).

0 Reset. Default.

1 Set

The GPIOs set as inputs by the <GpioDir> parameter are not affected by the value set by the <GpioVal> parameter.

Notes:

- <GpioDir> bit values for GPI and GPO are ignored.
- <GpioVal> bit values for GPI are ignored.

Syntax:

Command syntax: AT+WIOM=[<GpioDir>],[<GpioVal>]

Command	Possible responses
AT+WIOM?	+WIOM: 2047,0
	OK
	On reset, all GPIOs are set to 0, as an output
AT+WIOM=?	+WIOM: (0-2047),(0-2047)
	OK
	Range allowed for the parameters.
AT+WIOM=254	OK
Set GPIO 0 as an input, and all others as outputs	
AT+WIOM=,128	OK
Set GPIO 3; default output value to 1	
AT+WIOM=,128	OK
Note: Set GPIO 8 or GPIO12 or GPIO7; default	
output value to 1	

Abort Command +WAC

Description: This command allows SMS, SS and PLMN selection related commands to be aborted.

Values: No parameters

Syntax: Command syntax: AT+WAC

Command Syntax	Return
AT+WAC	
AT+WAC=?	OK
AT+WAC?	OK

Example 1

•				
Command	Possible responses			
AT+COPS=?				
Note: Available PLMN				
AT+WAC	OK			
Note: Abort the request of PLMN list	Note: PLMN list request aborted			

Example 2

Command	Possible responses
AT+CCFC=0,2	
Note: Query status of Call Forwarding service	
AT+WAC	CME ERROR: 551
Note: Abort the request of the query of the	Note: Query of Call Forwarding service request failed
Call Forwarding service	-

Play Tone +WTONE

Description: This command allows a tone to be played on the current speaker or on the buzzer. Frequency, gain and

duration can be set.

Values: <mode>

Syntax:

Stop playing.

1 Play a tone

<dest> Sets the destination (mandatory if <mode>=1)

Speaker

2 Buzzer

<freq> Sets tone frequency (in Hz) (mandatory if <mode>=1).

<freq2> Sets the 2nd tone frequency (in Hz) (mandatory if <mode>=1). Available with speaker only.

If <dest>=1 speaker:

Range is 1 Hz to 3999 Hz

If <dest>=2 buzzer:

Range is between 1 Hz and 50000 Hz.

<gain> Sets the tone gain for the <freq>. The default is 9.

<gain2> Sets the tone gain for the <freq2>. The default is 9.

Range of values is 0 to 15

<gain></gain>	Speaker (db)	Buzzer (db)
0	0	-0.25
1	-0.5	-0.5
2	-1	-1
3	-1.5	-1.5
4	-2	-2
5	-3	-3
6	-6	-6
7	-9	-9
8	-12	-12
9	-15	-15
10	-18	-18
11	-24	-24
12	-30	-30
13	-36	-40
14	-42	-infinite
15	-infinite	-infinite

<duration> Sets tone duration (unit of 100 ms).

Range is 0 to 50. Default 0. 1 -> 0,1 s., 50 -> 5 s.)

When this <duration>=0, the duration is infinite, and the tone can be stopped by AT+WTONE=0.

Note: The frequency <freq2> and gain <gain2> are allowed for the speaker only.

Caution: Hardware can only generate the following frequencies:

Freq = $(13\ 000\ 000\ /\ (N*64))$

N: Integer value in the recommended range 1 to 2048.

With N=1, the frequency 203 125 Hz is generated.

With N=2048, the frequency 99.18 Hz is generated.

Some noise problems have been detected if the frequency is below 100 Hz.

The lowest frequency possible is 12 Hz.

Command syntax:AT+WTONE=<mode>[,<dest>,<freq>,<gain>,<duration>[,<freq2>,[gain2>]]]]]

Response syntax: OK or +CME ERROR: <err>

Command	Possible responses
AT+WTONE=1,1,300,9,50	OK
Note: Play a tone	Note: Done
AT+WTONE=0	OK
Note: Stop playing	Note: Done
AT+WTONE=?	OK
Note: Test command	Note: Done
AT+WTONE?	ERROR
Note: Current value	
AT+WTONE=1,1,300,9,50,600,9	OK
Note: Play a tone with 2 frequencies (allowed with speaker only)	Note: Done
AT+WTONE=1,2,300,9,50,600,9	+CME ERROR: 3 (Note: Dual
Note: Play a tone with 2 frequencies with the buzzer	frequency for speaker only)

Play DTMF Tone +WDTMF

Description: This command allows a DTMF tone to be played on the current speaker. DTMF, gain, and duration can

be set.

Note: This command is only used to play a DTMF tone. To send a DTMF over the GSM network, use

the +VTS command.

Values: <mode>

0 Stop playing.

1 Play a DTMF tone

<dtmf> Sets the DTMF to play in (mandatory if <mode>=1).
Value must be in {0-9,*,#,A,B,C,D}

<gain> (0-15) Sets tone gain. The values are identical to those of the +WTONE (speaker) command.

Range is 0 to 15 (see array on previous page). By default, the value is 9.

<duration> (0-50) Sets the tone duration (unit of 100 ms).

Range 0 to 50. Default 0 (1-> 0,1 s., 50 -> 5 s.)

When this parameter is 0 (default value), the duration is infinite, and the DTMF tone

can be stopped by AT+WDTMF=0.

Syntax: Command syntax: AT+WDTMF=<mode>[,<dtmf>,<gain>,<duration>]

Response syntax: OK or +CME ERROR: <err>

Command	Possible responses
AT+WDTMF=1,"*",9,50	OK
Note: Play a DTMF tone	Note: Done
AT+WDTMF=0	OK
Note: Stop playing	Note: Done
AT+WDTMF=?	+WDTMF: (0-1),(0-9,*,#,A,B,C,D),(0-15),(0-50)
Note: Test command	OK
	Note: Done
AT+WDTMF?	ERROR
Note: Current value	

Downloading +WDWL

Description: This command switches the product to download mode.

AT+WDWL allows the download process to launch on UART1 only.

Downloading is performed using the 1K-XMODEM protocol.

Important Note: Software damages may occur if power is lost or if a hardware reset occurs during the

downloading phase. This would seriously affect the modem.

Values: No parameters

Syntax: Command syntax: AT+WDWL

Command	Possible responses	
AT+WDWL	+WDWL: 0	
Note: Switch on downloading mode	Note: Start the downloading	
	Note: Downloading in progress	
	AT+CFUN=1	
	Note: Reset the product at the end	
	OK	
	Note: Reset completed. New software running	
AT+WDWL?	+WDWL: VO2.12	
	OK	

Voice Rate +WVR

Description: This command allows the voice rate for bearer voice to be configured for outgoing and incoming calls.

Note: According to the modem's capabilities, the following voice coding type are allowed:

- Modem that supports AMR: FR, EFR, AMR-FR, AMR-HR are supported.
- Modem that does not support AMR: FR, EFR, HR are supported.

Values: Voice coding type.

Voice Coding Type	Preferred Type	Other Supported Types	Default Values
0	FR		Default incoming voice calls rate
1	EFR	FR	
2	HR	FR	
3	FR	HR	
4	HR	EFR	
5	EFR	HR, FR	Default outgoing voice calls rate
6	AMR-FR	EFR, AMR-HR, FR	
7	AMR-FR	EFR, AMR-HR, HR, FR	
8	AMR-HR	HR, AMR-FR, EFR, FR	
9	AMR-HR	AMR-FR, EFR, FR	
10	AMR-HR	AMR-FR, FR	
11	AMR-HR	HR, AMR-FR, FR	
12	AMR-FR	AMR-HR, FR	
13	AMR-FR	FR, AMR-HR	
14	AMR-FR	FR, AMR-HR, HR	
15	EFR	FR, HR	

Command syntax: AT+WVR= <out_coding_type>[,<in-coding_type>]

AT+WVR= [<out_coding_type>],<in-coding_type>
AT+WVR? +WDR: <out_coding_type>,<in-coding_type>

OK

Note: <out_coding_type> is related to outgoing calls; <in-coding_type> to incoming calls.

Command	Possible responses
AT+WVR=1	OK
Note: Configure voice type FR and EFR	Note: Bearer is configured for outgoing calls
for outgoing calls only	
AT+WVR=1,4	OK
Note: Configure voice type FR and EFR	Note: Bearer is configured for outgoing calls and
for outgoing calls and HR and EFR for	incoming calls
incoming calls	
AT+WVR=,4	OK
Note: Configure voice type HR and	Note: Bearer is unchanged for outgoing calls and
EFR for incoming calls	configured for incoming calls
AT+WVR=6	+CME ERROR: 3
Note: Syntax error	Note: Syntax error
AT+WVR?	+WVR: 1,1
Note: Ask for the current values	OK
AT+WVR=?	+WVR: (0,2,3),(0,2,3)
	Note: If Half Rate is available
AT+WVR=?	+WVR: (0,1),(0,1)
	Note: If EFR available.
AT+WVR=?	+WVR: (0),(0)
	Note: If neither HR nor EFR is available
AT+WVR=?	+WVR: (0-5,15),(0-5,15)
	Note: If HR and EFR are available
AT+WVR=?	+WVR:
	(0,2,3,10,11,12,13,14),(0,2,3,10,11,12,13,14)
	Note: If Half Rate and AMR are available
AT+WVR=?	+WVR: (0,1,6,9,10,11,12,13),(0,1,6,9,10,11,12,13)
	Note: If EFR and AMR are available
AT+WVR=?	+WVR: (0,10,12,13),(0,10,12,13)
	Note: If AMR is available
AT+WVR=?	+WVR: (0-15),(0-15)
	Note: If HR,EFR, and AMR are available

Data Rate +WDR

Description: This command allows the data rate for bearer data to be configured for outgoing and incoming calls.

Values: coding_type>: Data Coding Type for Outgoing Calls.

Data Coding Type	Preferred Type	Other Supported Types	Default Values
0	FR		Default incoming voice calls rate
1	HR	FR	
2	FR	HR	
3	FR	HR	

<in_coding_type>: Data Coding Type for Incoming Calls.

Data Coding Type	Type	Default Values
0	HR	
1	FR	Default incoming data calls rate

Command syntax: AT+WDR= <out_coding_type>[,<in-coding_type>]

AT+WDR= [<out_coding_type>],<in-coding_type>

AT+WDR? +WDR: <out_coding_type>[,<in-coding_type>

Note: <out_coding_type> is related to outgoing calls, and <in_coding_type to incoming calls.

Command	Possible responses
AT+WDR=?	+WDR: (0-2),(0-2)
	Note: If Half Rate is available in both directions
AT+WDR=?	+WDR: (0),(1)
	OK
	Note: If Half Rate is not available.
AT+WDR=1	OK
Note: Configure data type FR, HR with HR	Note: Bearer is configured
preferred for outgoing calls	
(<in_coding_type> parameter is omitted)</in_coding_type>	
AT+WDR=1	OK
Note: Configure data type FR for incoming	Note: Bearer is configured
calls (<out_coding_type> parameter is</out_coding_type>	
omitted)	
AT+WDR=3	+CME ERROR: 3
Note: Illegal value	Note: Syntax error
AT+WVR?	+WVR: 1,1
Note: Ask for the current values	OK

Select Voice Gain +WSVG

Description: The product has 2 voice gain controllers. This **specific** command selects the microphone gain

controller.

Values: <n> Controller

0 Controller 1 (Default)

1 Controller 2

Syntax: Command syntax: AT+WSVG = <n>

Command	Possible responses
AT+WSVG= <n></n>	
AT+WSVG=0	OK
Note: Select Controller 1 (Default)	Note: Controller 1 selected
AT+WSVG=1	OK
Note: Select Controller 2 (Default)	Note: Controller 2 selected
AT+WSVG=?	+WSVG: (0-1)
Note: Get the list of possible values	Note: possible values 0 or 1
AT+WSVG?	+WSVG: 1
Note: Get the current value	Note: Controller 1 is selected

Status Request +WSTR

Description: This command returns some operation status. It can be used to check the state of the initialization

sequence; the different values returned are Not started, Ongoing, Finished.

Values: <status>

1 Initialization sequence

<value>

0 Not started

1 On going

2 Finished

2 Network status

<value>

0 No network

1 Network available

Syntax; Command syntax: AT+WSTR=<status>

Response syntax: +WSTR: <status>,<value>

Command	Possible responses
AT+WSTR= <status></status>	+WSTR: <status>,<value></value></status>
AT+WSTR=1	+WSTR: 1,2
Note: Select the status 1 (INIT SEQUENCE)	OK
	Note: Init finished
AT+WSTR=2	+WSTR: 2,1
Note: Select the status 2 (NETWORK STATUS)	OK
·	Note: The network is available
AT+WSTR=?	+WSTR: (1-2)
Note: Ask the list of possible values	Note: possible values: 1, 2

Scan +WSCAN

Description:

absolute format). This command is not allowed during communication.

Values: <absolute frequency> frequency in absolute format <rssi>

> -113 dBm or less -111 dBm 1 2...30 -109 to -53 dBm -51dBm or greater 31

not known or not detectable 99

Syntax: Command syntax: AT+WSCAN=<absolute frequency>

Response syntax: +WSCAN: <rssi>

Command	Possible responses
AT+WSCAN=50	+WSCAN: 23
	OK
Note: Request <rssi> of absolute frequency 50</rssi>	Note: <rssi> is 23.</rssi>
AT+WSCAN=1025	CME ERROR: 3
Note: Request power of absolute frequency 1025	Note: 1025 is not a valid absolute frequency

This command displays the received signal strength indication (<rssi>) for a specified frequency (in

Ring Indicator Mode +WRIM

Description: This command sets or returns the state of the Ring Indicator Mode.

- In up-down RI mode, no pulses are sent before unsolicited AT response, and up-down signals are sent when receiving an incoming call.
- In pulse RI mode, an electrical pulse is sent on the Ring Indicator signal just before sending any unsolicited AT response in order not to lose AT responses when client tasks are in sleep state. Still in RI mode, when receiving incoming calls, electrical pulses are sent on the RI signal.
- Pulse RI Mode + Pulse On Packet Downloaded: based on Pulse RI mode but an electrical pulse is also sent on the Ring Indicator signal just before sending a downloaded data packet (GPRS or CSD) if the remote client has dropped down his RTS signal.

Values: <mode>

- 0 Up-down RI mode
- Pulse RI mode
- 2 Pulse RI mode + Pulse on Downloaded Packet

<n> used only in mode RI Pulse + Pulse on Downloaded Packet (<mode>=2).

- **0** Duration of pulse is 5 μs
- 1-31 Duration of pulse is n x 30 µs

Important: Pulse duration may be increased by up to 3 ms, due to interrupt processes

Note: Remind that this mode corresponds to the case where the remote equipment has dropped its RTS signal to stop its flow control.

Syntax: Command syntax: AT+WRIM=<n>

Command	Possible responses
AT+WRIM=0	OK
Note: Select up-down RI mode	Note: up-down RI mode selected
AT+WRIM=1	OK
Note: Select pulse RI mode	Note: pulse RI mode selected
AT+WRIM=2,0	OK
Note: Select mode pulse RI on downloaded packet,	Note: mode pulse RI + Pulse on
pulse duration is 5 μs	downloaded packet selected
AT+WRIM=?	+WRIM: (0-2),(0-33)
Note: Ask the list of possible values	OK
·	Note: possible values 0, 1 or 2
AT+WRIM?	+WRIM: 1
Note: Ask the current value	OK
	Note: current RI mode is pulse RI

32kHz Power Down Mode +W32K

Description: This command allows the 32kHz power down mode to be enabled or disabled:

 When power down mode is entered, the product uses a 32kHz internal clock during inactivity stages (regardless of its nominal internal clock).

 When enabled, power down mode is active after 1 to 15 minutes. The mode is not stored in EEPROM: the command has to be repeated after a reset.

Values: <mode>

0 Disable 32kHz power down mode1 Enable 32kHz power down mode

Syntax: Command syntax: AT+W32K=<mode>

Command	Possible responses
AT+W32K=1	OK
Note: Enable 32kHz power down mode	Note: 32kHz power down mode is enabled
AT+W32K=0	OK
Note: Disable 32kHz power down mode	Note: 32kHz power down mode is disabled

Change Default Melody +WCDM

Description: This command allows a the selection of a manufacturer-specific melody. This default melody will be

played for any new incoming voice call, either on the buzzer or on the speaker.

Values: <melody>

0 No melody (default)1...10 Melody 1 to 10

<player>

Melody n <melody> will be played on the buzzer for any new incoming voice call. **Default**.

Melody n <melody> will be played on the speaker for any new incoming voice call.

Syntax: Command syntax: AT+WCDM=<melody>,<player>

Command	Possible responses
AT+WCDM=0	OK
Note: Select no melody	
AT+WCDM=5	OK
Note: Select melody n5	
AT+WCDM?	+WCDM: 5,0
Note: Indicate the current melody	OK
	Note: Melody n5 is currently selected, and the buzzer is
	selected to play it.
	RING
	Note: An incoming call occurs, and the melody n°5 is played
	on the buzzer.
AT+WCDM=,1	OK
Note: Select the speaker to play the	
melody on.	
AT+WCDM?	+WCDM: 5,1
	OK
	Note: Now the speaker is selected to play the melody if an
	incoming call occurs.

Custom Character Set +WCCS

Description:

This command allows you to edit and display the custom character set tables. These tables are used by the "CUSTOM" mode of +CSCS and the +WPCS commands. In this CUSTOM mode, when you enter a string, it is converted into the GSM alphabet using the Custom To GSM table. In a similar way, when the user requests a string display, the string is converted from the GSM alphabet using the Custom alphabet and Custom alphabet extension tables.

In edition mode, the session is terminated by <ctrl-Z> or aborted by <ESC>. Only hexadecimal characters ('0'...'9', 'A'...'F') can be used. The number of characters entered must equal the edition range requested; otherwise, the command will return "+CME ERROR: 24".

The default Customer alphabet extension table contains the following extended characters:



Values:

<mode>

- 0 Display the table
- 1 Edit the table

- **0** Custom to GSM conversion table (default table is PCCP437 to GSM table)
- 1 Custom alphabet table (default table is GSM 7 bit default alphabet)
- 2 Custom alphabet extension table (default table is GSM 7 bit default alphabet extended)

<char 1>, <char 2> Character range to display/edit

- **0...127** for table 1 and 2
- **0...255** for Custom to GSM conversion table

Notes:

- <char1> and <char2> are not ASCII codes; they stand for the range of a given character in the tables.
- If only <char 1> is provided, only this char is displayed/edited
- See Appendix C for informative examples of the use of these characters.

Syntax:

Command syntax: AT+WCCS=<mode>,,<char 1>[,<char 2>]

Command	Possible responses
AT+WCCS=0,0,120,130	+WCCS: 11,
Note: Display from character 120 to character 130 of the	78797A2020202020097E05
Custom to GSM conversion table	OK
	Note: 11 characters displayed
AT+WCCS=1,0,115 <cr></cr>	OK
20 <ctrl-z></ctrl-z>	Note: Edition successful
Note: Edit character 115 of the Custom to GSM conversion	
table	
AT+WCCS=1,1,0,4 <cr></cr>	OK
40A324A5E8 <ctrl-z></ctrl-z>	Note: Edition successful
Note: Edit the 5 first characters of the GSM to Custom	
conversion table	
AT+WCCS=0,2,20 <cr></cr>	+WCCS: 1,5E
Note: Display character 20 of the Custom alphabet extension	OK
table	
AT+WCCS=1,1,200	+CME ERROR: 3
Note: Edit character 200 of GSM to Custom conversion table	Note: Index out of range

Lock +WLCK

Description: This command allows the modem to be locked on a specific network operator.

Note: Test SIM cards (with MCC=001 & MNC=01) doesn't check these locks.

Values: <fac>

"PS" SIM lock facility with a 8 digits password (PCK).
"PN" Network lock with a 8 digits password (NCK).

"PU" Network subset lock with a 8 digits password (NSCK).

"PP" Service provider lock with a 8 digits password (SPCK).

"PC" Corporate lock with a 8 digits password (CCK).

<psswd> password code, 8 digits

<NetId> IMSI for SIM lock (<fac>)="PS"), operator in numeric format (MCC and MNC) for other

locks (other <fac> values).

<GID1> Group Identifier level 1, mandatory for Service provider lock (<fac>)="PP") and for

Corporate lock (<fac>="PC").

<GID2> Group Identifier level 2, mandatory for Corporate lock (<fac>="PC").

<CnlType> Type of lock for co-operative network list (CNL)

Automatic (co-operative network list retrieved from EFCNL SIM file)

Note: EFCNL file must be present in SIM to use automatic mode.

1 Manual (co-operative network list is given in the <CnlData> parameter)

<CnIData> Co-operative network list (hexa string type) using same format as in EFCNL SIM file (ETSI

GSM 11.11 or 3GPP 04.08).

Note: Only if <CnlType> = 1

Syntax: Command syntax:AT+WLCK=<fac>,<passwd>,<NetId>[,<GID1>[,GID2]] [,<CnlType>[,<CnlData>]]

Response syntax: +WLCK: <status>

Descible reconstruct
Possible responses
OK
Note: Network lock activated
OK
Note: SIM lock activated
OK
Note: Network Subset lock activated
+CME ERROR: 3
Note: Need 7 digits of IMSI to perform a service
provider lock
OK
Note: Service Provider lock activated.
OK
Note: Corporate lock activated.
,
OK
Note: Network lock activated on SFR and co-
operative network list present in SIM
,
OK
Note: Network lock activated on F ORANGE
(primary network), SFR and Bouygues Telecom
(co-operative networks)
(1.1.4)

CPHS Command +CPHS

Description:

This command is used to activate, deactivate or interrogate a CPHS feature (e.g., Voice Mail Indicator, Mail Box Number...)

Note: This command may answer +CME ERROR: 3 if the CPHS feature is disabled or if the SIM card does not support this CPHS feature.

Values:

<mode>

- 0 Deactivate a CPHS feature
- 1 Activate a CPHS feature
- 2 Interrogate a CPHS status

Note: The deactivate or activate command has no effect on Alternate Line Service, Network Operator Name, CPHS Information, and Customer Profile Service features.

<fctld>

- 1 Voice Mail Indicator
- 2 Mail Box Number
- 3 Alternate Line Service
- 4 Diverted Call Indicator
- 5 Network Operator Name
- 6 CPHS Information
- 7 Customer Service Profile

Note: The Customer Profile Service and Alternate Line Service features are activated if the field is set in CPHS Information and CSP files. The Network Operator is activated if at least one of the two format names exist (Long or Short format). This is done in initialization.

if <fctId>=5, this field is <type format> (See +WNON)

if <fctId>=6, this field is <date field> (See +WCPI)

if <fctld>=7, this field is <service> (See +WCSP)

<Status>

- 0 CPHS feature disabled
- 1 CPHS feature enabled

Syntax:

Command syntax: AT+CPHS=<Mode>, <FctId>[, <precision>]

Command	Possible responses
AT+CPHS= <mode>,<fctid></fctid></mode>	OK
[,precision]	
AT+CPHS= <mode>,<fctid></fctid></mode>	+CME ERROR: 3
[,precision]	
AT+CPHS?	+CPHS: <fctid1>,<status><cr<lf></cr<lf></status></fctid1>
	+CPHS: <fctid2>,<status><cr<lf></cr<lf></status></fctid2>
	+CPHS: <fctidn>,<status><cr<lf></cr<lf></status></fctidn>
	OK
AT+CPHS=?	OK

Examples:

Δ٦	$\Gamma + C$	יםי	HS?

	Interrogate the status of CPHS functionality
+CPHS: 1,0	Voice mail indicator functionality is deactivated
+CPHS: 2,0	Mail box number functionality is deactivated
+CPHS: 3,1	Alternate Line Serve functionality is activated
+CPHS: 4,0	Divert Call Indicator functionality is deactivated
+CPHS: 5,1	Network Operator functionality is activated
+CPHS: 6,1	CPHS Information functionality is activated
+CPHS: 7,1	Customer Service Profile functionality is activated
OK	•

AT+CPHS=3,1

Syntax error

+CME ERROR: 3

Activate the voice mail indicator functionality

AT+CPHS=1,1

OK

Examples continued on next page

```
AT+CPHS?
                                                 Interrogate the status of CPHS functionality
                        +CPHS: 1,1
                                                  Voice mail indicator functionality is activated
                        +CPHS: 2,0
                                                 Mail box number functionality is deactivated
                                                 Alternate Line Serve functionality is activated
                        +CPHS: 3,1
                        +CPHS: 4,0
                                                 Divert Call Indicator functionality is deactivated
                                                 Network Operator functionality is activated
                        +CPHS: 5,1
                        +CPHS: 6.1
                                                 CPHS Information functionality is activated
                        +CPHS: 7,1
                                                  Customer Service Profile functionality is activated
                        OK
**** the message box contains 1 message *****
                        +WVMI: 1,1
                                                 A message is waiting on Line 1
***** The message box contains a second message *
                        +WVMI: 2,1
                                                 A message is waiting on Line 2
AT+CPHS=1,4
                                                 Activate Divert Call Indicator functionality
                        OK
****call forwarding is active on Line 1 *****
                        +WDCI: 1,1
AT+CPHS=2,1
                                                 Interrogate the status of voice mail indicator functionality
                        +WVMI: 1,1
                                                 a message is waiting on LINE 1
                        +WVMI: 2,1
                                                 a message is waiting on LINE 2
                        +WVMI: 3,0
                                                 no data waiting
                        OK
AT+CPHS=1,2
                                                 Activate the mail box number functionality
                        OK
AT+WALS=1
                                                 Interrogate the status of activated Line
                        +WALS:2
                                                  Current line is number 2
                        OK
AT+CPHS=0.4
                                                 Deactivate the Divet Call Indicator functionality
                        OK
AT+CPHS?
                                                 Interrogate the status of CPHS functionality
                        +CPHS: 1,1
                                                  Voice mail indicator functionality is activated
                        +CPHS: 2,1
                                                  The mail box number functionality is activated
                        +CPHS: 3,1
                                                 Alternate Line Serve functionality is activated
                        +CPHS: 4,0
                                                 Divert Call Indicator functionality is deactivated
                        +CPHS: 5,1
                                                 Network Operator functionality is activated
                        +CPHS: 6,1
                                                  CPHS Information functionality is activated
                        +CPHS: 7,1
                                                 Customer Service Profile functionality is activated
                        OK
                                                 Query current mail box numbers in SIM
AT+CPHS=2.2
                        +WMBN: 1,"19254871234",129,1 Mail box number for Line 1
                        +WMBN: 2,,,1
                                                 Mail box number for Line 2
                        +WMBN: 3,,,1
                                                 Mail box number for data Line
                        OK
                                                  Only Line1 can be updated
```

Unsolicited Result: Voice Mail Indicator +WVMI

Description: This unsolicited indication gives the status of the LINE 1, LINE 2, or Data mailbox. The +CPHS

command can be used to know the status of the voice mail indicator for each line.

Values: <LineId>

1 Line 1

2 Line 2

3 Data

<Status>

0 No message waiting.

1 At least one message is waiting

Syntax: +WVMI=<LineId>,<Status>

Response Syntax to AT+CPHS=2,1:

WVMI: <LineId>,<Status>

Command	Possible responses
AT+CPHS=1,1	OK
Note: Activate Voice Mail Indicator feature	
AT+CPHS=2,1	+WVMI: 1,1 a message is waiting on Line 1
Note: Get the current status of Voice Mail	+WVMI: 2,1 a message is waiting on Line 2
Indicator	+WVMI: 3,0 no data waiting
AT+CPHS=2,1	+CME ERROR: 3
	Note: CPHS feature is not allowed
AT+CPHS=1,1	OK
Note: Activation of Voice Mail Indicator feature	Note: Voice Mail Indicator feature is activated
	+WVMI: 1,1
	Note: A message is waiting on Line 1

Unsolicited Result: Diverted Call Indicator +WDCI

Description: This unsolicited indication provides the call forwarding flags. The +CPHS command can be used to

know the status of the Divert Call Indicator for each line.

Values: <LineId>

1 Line 1

2 Line 2

3 Data

<flag>, <status>

0 Call forwarding is deactivated.

1 Call forwarding is activated.

Note: Call forwarding SS is set by the AT+CCFC command.

Syntax: +WDCI: <LineId>,<Status>
Response Syntax to AT+CPHS: +WDCI: <LineId>,<flaq>

,	, 3
Command	Possible responses
AT+CPHS=1,4	OK
Note: Activate Divert Call Indicator feature	
AT+CPHS=2,4	+WDCI: 1,1 divert call indicator is active on Line 1
Note: Get the current status of Divert Call	+WDCI: 2,1 divert call indicator is active on Line 2
Indicator	+WDCI: 3,0 divert call indicator is deactivated on
	data
AT+CPHS=2,4	+CME ERROR: 3
	Note: CPHS feature is not allowed
AT+CPHS=1,4	OK
Note: Activation of Divert Call Indicator	Note: Divert Call Indicator feature is activated
feature	
	+WDCI: 1,1
	Note: Call forwarding is active on Line 1

Network Operator Name +WNON

Description: This indication provides the name of the network operator (as a character string). This command is the

response to the AT+CPHS 2,5 [,<type format>] command.

Values: <type format>

0 Long format operator name

1 Short format operator name. Default.

<operator name> The name of the operator in long or short format

Syntax: Command Syntax: AT+CHPS=2,5[,<type format>]
Response Syntax:+WNON: <type format>,<operator name>

Command	Possible responses
AT+CPHS=2,5	+WNON: 0,"Orange F"
Note: Get Operator Name	OK
AT+CPHS=2,5,1	+WNON: 1,"Orange"
Note: Get short format Operator Name	OK
AT+CPHS=2,5,0	+CME ERROR: 3
	Note: CPHS feature is not allowed or format name is not
	accessible
AT+CPHS=2,5,1	+CME ERROR: 3
	Note: CPHS feature is not allowed or format name is not
	accessible
AT+CPHS=0,5	OK
Note: Deactivation of Network	Note: No effect
Operator Name feature	

CPHS Information +WCPI

Description: This indication provides CPHS information; i.e., which data fields are present in the SIM. This command

is the response to the AT+CPHS 2,6 [,<data field>] command.

Values: <data field> value indicating the field of CPHS information

If crecision> field is omitted in the AT+CPHS command, all fields of CPHS Information will be
displayed

displayed.

<status>

0 data field is set

1 data field is unset

When all CPHS Information is requested, the status corresponds to a bit field. See Codes and Values in the Appendix.

Note: The field CSP Service (<data field> = 1) is used to set the CSP feature at initialization.

Syntax: Command Syntax:AT+CHPS=2,6[,<data field>]

Response Syntax:+WCPI: <data field>,<status>

Command	Possible responses
AT+CPHS=2,6	+WCPI: 0,"0033000F"
Note: Get current status for all CPHS Information fields	OK
AT+CPHS=2,6,13	+WCPI: 13,1
Note: Get the current status of Call Forward Activated	OK
Indicator for Line 1	Note: Call Forward is active for Line 1
AT+CPHS=2,6,22	+WCPI: 22,0
Note: Get current status for Line 2 Mailbox Number	OK
	Note: Mailbox Number for Line 2 is not
	available
AT+CPHS=2,6,17	+CME ERROR: 3
	Note: Wrong data field
AT+CPHS=2,6,22	+CME ERROR: 3
Note: Get current status for Line 2 Mailbox Number	Note: CPHS feature is not allowed
AT+CPHS=0,6	OK
Note: Deactivation of CPHS Information feature	Note: No effect

Customer Service Profile +WCSP

Description: This indication tells whether or not a service is accessible to the customer. This command is the

response to the AT+CPHS 2,7,<service>] command.

Values: <service> value indicating the CSP field to display (See Codes and Values in the Appendix).

<status>

service is not customer-accessibleservice is customer-accessible

Note: The field Alternate Line Service (CPHS Teleservices Group) sets the ALS feature at

initialization.

Syntax: Command Syntax: AT+CHPS=2,7,<service>

Response Syntax:+WCSP: <service>, <status>

Command	Possible responses
AT+WCSP=?	ERROR
AT+WCSP?	ERROR
AT+CPHS=2,7	+CME ERROR: 3
	Note: Syntax error
AT+CPHS=2,7,9	+WCSP: 9,1
Note: Get current status of Barring All Outgoing Calls	OK
	Note: Barring or All Outgoing Calls is
	customer accessible
AT+CPHS=2,7,11	+WCSP: 11,1
Note: Get current status of Barring All Outgoing	OK
International Calls	Note: Barring or All International Outgoing
	Calls is customer accessible
AT+CPHS=2,7,2	+CME ERROR: 3
Note: Get current status of Call Forwarding on User Busy	Note: CPHS feature is not allowed
AT+CPHS=0,7	OK
Note: Deactivation of CPHS Information	Note: No effect

Customer Storage Mirror +WMIR

Description: This command allow you to make a mirror copy of the current configuration parameters in the

EEPROM. In the case of a memory problem for the storage: if a customer mirror already exists, this one

will be restored. Otherwise, the default mirrored parameters are restored.

Warning: This command should be used only on special advice from a Technical Support person.

Values: No parameters

Syntax: Command syntax: AT+WMIR

Command	Possible responses
AT+WMIR=?	OK
AT+WMIR	OK
Note: Build the Customer Mirror	

Change Default Player +WCDP

Description: This command allows the default melody player to be selected.

Values: <player>

0 Buzzer1 Speaker

Syntax: Command syntax: AT+WCDP = <player>

Command	Possible responses
AT+WCDP=?	+WCDP: (0-1)
	OK
AT+WCDP=0	OK
Note: Select the buzzer	
AT+WCDP?	+WCDP: 0
	OK

CPHS Mail Box Number +WMBN

Description: This command sets the different mailbox numbers in SIM. The +CPHS command can be used to know

which mailbox numbers can be updated.

Values: <LineId>

1 Line 1

2 Line 2

3 Data

<number> Phone number in ASCII format

<type> TON/NPI (Type of address byte in integer format)

<name> name of mailbox

Notes:

• For the <name> parameter, all strings starting with "80", "81", or "82" are considered in UCS2 format. See the *Appendix G - Coding of Alpha Fields in the SIM for UCS2*. If a wrong UCS2 format is entered, the string is considered as an ASCII string.

• The AT command +WPCS affects the format of the Mailbox <name> entry.

<status> When checked with "AT+CPHS=2,2", it indicates if the number can be updated or not:

Update is not possibleUpdate is possible

Syntax: Command syntax: AT+WMBN = <LineId>,<number>,<type>,<name>

Response syntax to AT+CPHS=2,2: +WMBN = <LineId>,<number>,<type>,<name>,<status>

Command	Possible responses
AT+WMBN=?	OK
AT+WMBN?	OK
AT+CPHS=2,2	+WMBN: 1,"0123456789",129,"Maison", 1
Note: Get the current Mail Box Numbers in SIM	+WMBN: 2,"9876543210",129,"Travail", 1
	+WMBN: 3,,,,1
	+WMBN: 4,,,,1
	OK
AT+WMBN=1,"+33122334455",145	OK
Note: Set mailbox number for line.	Note: Mailbox number for Line 1 is set.
AT+WMBN=2	OK
Note: Erase mailbox number & name for line 2	
AT+CPHS=2,2	+WMBN: 1,"+ 33122334455",145,1
Note: Get current Mail Box Numbers again	+WMBN: 2,,,,1
	+WMBN: 3,,,,1
	+WMBN: 4,,,,1
	OK

Alternate Line Service +WALS

Description: This command allows you to set and to get the active line. The CPHS command can be used to know

which line is active.

Values: <CmdType>

Set active lineGet active line

<LineId> Used only for <CmdType>

Line 1
 Line 2

Syntax: Command syntax: AT+WALS = <CmdType>[,<Lineld>]

Response syntax to AT+CPHS=2,3: +WALS = <LineId>

Command	Possible responses
AT+WALS?	+WALS: 1
	OK
	Note: Display current active line
AT+WALS=?	+WALS: (0-1),(1-2)
	OK
AT+WALS = 0,1	+WALS: 1
Note: Activate Line 1	OK
AT+WALS = 0,2	+CME ERROR: 3
Note: Activate Line 2	Note: When the ALS feature is not allowed
AT+WALS = 1	+WALS: 1
Note: Get the current Active Line	Note: Display the current Active Line
AT+WALS = 1,2	+CME ERROR: 3
	Note: Syntax error
AT+CPHS=0,3	OK
Note: Deactivation of ALS feature	Note: No effect
AT+CPHS=2,3	+WALS: 1
Note: Interrogate ALS feature	Note: Display the current Active Line
	+CME ERROR: 3
	Note: In the case where the ALS feature is not allowed

Wavecom Open AT Control Command +WOPEN

Description:

This command starts, stops, deletes, and gets information about the current Open AT[®] embedded application.

This command also allows you to erase the Open AT[®] flash objects storage place and to configure the Application and Data (A&D) storage place size.

Values:

<Mode>

- **0** Stop the Open AT embedded application. If this one was running, the product resets
- 1 Start the Open AT embedded application. If this one was stopped, the product resets
- 2 Get the Open AT library versions
- 3 Erase the objects flash of Open AT embedded application
- 4 Erase the Open AT embedded application
- 5 Suspend (in Wavecom software kernel) the Open AT embedded application tasks
- If the (A&D size) parameter is used, configure the Application & Data storage size. Otherwise, display the current A&D storage place size and Open AT application space size. If the A&D storage place size has changed, the product resets.

Notes:

- For Mode=1: If the main version numbers returned by the AT+WOPEN=2 command do not match, the command will reply +CME ERROR: 541.
- Mode=3 and 4 are only available only if the Open AT embedded application is stopped (AT+WOPEN=0).
- Open AT embedded applications can be resumed with the AT+OPENRES command or INTERRUPT feature (see +WCFM).
- Warning: With Mode 6, any A&D size change will lead to this area format process (this
 process will take some seconds on start-up, before the +WIND:3 indication display (up to
 1.5 seconds per 64 Kbytes flash sector size can be considered as a maximum; all A&D
 cells data will be erased).

<IntVersion> ASCII string giving the internal Open AT library version.

<ExtVersion> ASCII string giving the external Open AT library version.

Note: If no embedded application is loaded, the <ExtVersion> parameter does not

appear.

<A&DSize> Usable only with <mode>=6

[0 -1344] Kbytes size allocated for the Application & Data storage place. Default = 768

Kbytes.

Provided parameter value will be updated with the nearest flash sector subdivision (64 Kbytes). For example, if a 100 Kbytes size is required, a 128 Kbytes size will

effectively be set.

<OATSize> Returned with <mode>=6

Open AT Application reserved size (in Kbytes). This size is deducted from the <A&D size> one, since the whole available size for Open AT and A&D storage

places are 1600 Kbytes (<OATSize> + <A&D size> = 1600).

Syntax:

Command syntax: AT+WOPEN=<Mode>[,<A&D size>]

Response syntax according to mode: +WOPEN: <Mode>[,<IntVersion>[<ExtVersion>]]

or

+WOPEN: <Mode>,<A&DSize>,<OATSize>]

Command	Possible responses
AT+WOPEN=?	+WOPEN: (0-6),(0-1344)
	OK
AT+WOPEN?	+WOPEN: 0
	OK
AT+WOPEN=2	+WOPEN: 2, "AT v3.01", "AT v2.10"
Note: Get the Open AT library	OK
versions	Note: Open AT v2.10 library version. An embedded application has been
	downloaded on this product
AT+WOPEN=1	+CME ERROR: 541
	Note: Since main versions do not match, the Open AT Application
	cannot be started
AT+WOPEN=2	+WOPEN: 2, "AT v2.00", "AT v2.00"
Note: Get the Open AT library	OK
versions	Note: Open AT v2.00 library version. An embedded application has been
	downloaded on this product.

AT+WOPEN=3 OK Note: The objects flash are erased AT+WOPEN=1 Note: Start the embedded application OK +WIND: 3 Note: Product reset in order to start the embedded		
Note: The objects flash are erased AT+WOPEN=1 OK Note: Start the embedded +WIND: 3		
Note: Start the embedded +WIND: 3		
	OK	
Tabbildation TNOTE. I TOUTCH TESET III OLUEL 10 STALL LITE ELIDEUUEU	application	
AT+WOPEN=3 +CME ERROR: 532	1-1-	
	Note: The embedded application is activated so the objects flash are not	
erased	e objects hash are not	
AT+WOPEN=4 +CME ERROR: 532		
Note: The embedded application is activated so it of	cannot he erased	
AT+WOPEN=0 OK	carriot be crased	
Note: Stop the embedded +WIND: 3		
application TwinD. 3 Application Note: Product reset in order to stop the embedded	application	
	аррисации	
Note: The objects flash are erased.		
AT+WOPEN=4 OK		
Note: The embedded application is erased		
AT+WOPEN=6 +WOPEN: 6,768,832		
OK		
Note: 768 Kbytes are reserved for A&D storage pla	ace, and 832 for the	
Open AT Application		
AT+WOPEN=6,1280 +CME ERROR: 550		
Note: The current Open AT Application size is too	Note: The current Open AT Application size is too big to allow this new	
A&D storage place size		
AT+WOPEN=6,768 +WOPEN: 6,768,832		
OK		
Note: No product reset (same size used)		
AT+WOPEN=6,900 +WOPEN: 6,960,640		
OK		
+WIND: 3		
Note: Size updated according to the nearest flash	sector sub-division:	
product reset in order to set the new A&D storage		
AT+WOPEN=6 +WOPEN: 6,960,640	place size.	
OK		
Note: 960 Kbytes are served for the A&D storage p	place, and 640 for the	
Open AT application	place, and 040 for the	
AT+WOPEN=5 +CME ERROR: 3		
Note: The Open AT Application is not running		
AT+WOPEN=1 OK		
Note: Start the embedded +WIND: 3	!:!:	
application Note: Product reset in order to start the embedded	application	
+WOPEN=5 OK		
Note: Suspend Open AT tasks		
AT+WOPEN? +WOPEN:5		
OK		

Reset +WRST

Description: This command resets the modem after the time specified by the <delay> parameter.

Values: <val1>

0 timer reset is disabled1 timer reset is enabledDelay> specify the time for reset

Range "000:00" - "168:59" (format hhh:mm)

<RemainTime> time before next reset

Range "000:01" - "168:59" (format hhh:mm)

Syntax: Command syntax: AT+WRST =<Mode>,<Delay>

Response syntax: +WRST: <Mode>, <Delay>, <RemainTime>

Command	Possible responses
AT+WRST=?	OK
AT+WRST=0	OK
Note: Disable timer	
AT+WRST=1,"001:03"	OK
Note: Enable timer and put delay at 1 hour 3	
minutes	
AT+WRST?	+WRST: 1,"001:03","001:01"
	OK
	Note: Timer activated to reset after 1 hour and 3
	minutes. At this point, 1 hour and 1 minute remain
	before next reset.

Set Standard Tone +WSST

Description: This command sets and gets the sound level of the Standard Tones.

Values: <sound level> Range [0; 15]

Maximum volume (default)

15 Minimum volume

<ring tone level> Range [0; 15]

Maximum volume (default)

15 Minimum volume

Syntax: Command syntax: AT+WSST=[<sound level>][,<ring tone level>]

Command	Possible responses
AT+WSST=0	OK
Note: Set volume to Maximum	
AT+WSST=15	OK
Note: Set volume to Minimum	
AT+WSST=,5	OK
Note: Set ring tone level to 5	
AT+WSST?	+WSST: 15,5
Note: get current standard tones	OK
sound level	Note: current standard tones level is 15
	(minimum), and ring tone level is 5.
AT+WSST=?	+WSST: (0-15),(0-15)
Note: supported parameters	OK

Hang-up +WATH

Description: This command disconnects the remote user, specifying a release cause and the location. In the case of

multiple calls, all calls are released (active, on-hold and waiting calls).

Values: <RelCause>:

decimal value from 1 to 127

See table "Failure Cause from GSM 04.08 recommendation."

<location>:

optional parameter (default value =0)

values as defined in 04.08

0 user

1 private network serving the local user

2 public network serving the local user

3 transit network

4 public network serving the remote user

5 private network serving the remote user

7 international network

10 network beyond interworking point

Note: In order to have a "Normal Release", use the ATH command.

Syntax: Command Syntax: AT+WATH=<RelCause>,<location>

Command	Possible responses
AT+WATH=31	OK
Note: Ask for disconnection with release	Note: All calls, if any, are released
cause=normal and location=USER	
AT+WATH=?	+WATH: (1-127),(0-5,7,10)
AT+WATH=17,2	OK
Note: Ask for disconnection with release	Note: All calls, if any, are released
cause=user busy and location= public network	
serving the local user	

Multi-Band Selection +WMBS

Description:

Use this command to select the GSM bands on which the modem will work. This command is allowed only if the selected bands are supported.

You can choose whether the change is immediate or not:

- Either the modem has to be reset to take this change into account (this is the default)
- or the GSM stack restarts immediately on the specified band(s). In this mode, the command +WMBS is forbidden during the initialization phase of the modem and during calls.

Values:

<Band> frequency band configuration to be supported

- 0 mono-band mode 850 MHz
- 1 mono-band mode 900 MHz
- 2 mono-band mode 1800 MHz
- 3 mono-band mode 1900 MHz
- 4 dual-band mode 850/1900 MHz
- 5 dual-band mode 900E (extended) /1800 MHz
- 6 dual-band mode 900E (extended) /1900 MHz

<Param> indicates the type of change

- the modem will have to be reset in order to start on the specified band(s). <ResetFlag> is set to 1.
- the change is effective immediately. The GSM stack is restarted with the specified band(s). <ResetFlag> stays at 0. This mode is forbidden while in communication and during modem initialization.

Note: If <Param> is not given, the modem has to be reset to start on the specified band(s), as for <param>=0.

<ResetFlag>

- the feature was not modified since the last boot of the product
- the feature has been modified since the last boot of the product; it has to be reset in order to take the modification into account. This is the case when the band was changed with "AT+WMBS=<band>" or "AT+WMBS=<band>".0"

Syntax:

Command Syntax: AT+WMBS=<Band>[,<param>]
Response Syntax: +WMBS: <Band>,<ResetFlag>

Command	Possible responses	
AT+WMBS= <band></band>	OK	
	Note: The modem has to reset for the change to be effective	
AT+WMBS= <band>,0</band>	OK	
	Note: The modem has to reset for the change to be effective	
AT+WMBS= <band>,1 OK</band>		
	Note: Band mode selected and GSM stack restarted	
AT+WMBS= <band> +CME ERROR: 3</band>		
	Note: Band not allowed	
AT+WMBS?	+WMBS: <band>,<resetflag></resetflag></band>	
	OK	
	Note: Current selected band mode is returned.	
AT+WMBS=?	WMBS: (0,3,4),(0-1)	
	OK	
	Note: Only 850 mono-band or 850/1900 bi-band are available	
AT+WMBS=?	WMBS: (01,2,3,4,5,6),(0-1)	
	OK	
	Note: All bands are available	

Chapter 14 - SIM Toolkit

Overview of SIM Application Toolkit

SIM Toolkit, also known as "SIM Application Toolkit," introduces new functionalities which open the way to a broad range of value added services. The principle is to allow service providers to develop new applications (e.g., for banking, travel, ticket booking, etc.) for subscribers and to download them into the SIM.

This solution allows new services to be accessible to the user by adding new SIM-based applications without modifying the handset.

Functionality

The term *SIM Toolkit* refers to the functionalities described in the GSM Technical Specification 11.14. It introduces about twenty-five new commands for the SIM. Three classes of Toolkit functionalities have been defined, with Class 1 offering a subset of commands and Class 3 offering the full range of commands (*See the Support of SIM Toolkit Classes table in APPENDIX D*).

The SIM Application Toolkit supports:

- profile download
- proactive SIM
- data download into SIM
- menu selection
- call control by SIM

Profile Download

The Profile Download instruction is sent by the customer application to the SIM as part of the initialization. It is used to indicate which SIM Application Toolkit features the customer application supports. The AT command used for this operation is **+STSF** (SIM Toolkit Set Facilities).

Proactive SIM

A proactive SIM provides a mechanism whereby the SIM can ask the customer application to perform certain actions. These actions include:

- display menu
- display given text
- get user input
- send a short message
- play the requested tone
- set up a call
- provide location information

This mechanism allows SIM applications to generate powerful menu-driven sequences on the customer application and to use services available in the network.

The commands used for this operation are:

- +STIN (SIM Toolkit Indication),
- +STGI (SIM Toolkit Get Information),
- +STGR (SIM Toolkit Give Response).

Data Download to SIM

Data downloading to the SIM allows (SMS, phonebook...) data or programs (Java applets) received by SMS or by Cell Broadcast to be transferred directly to the SIM Application.

This feature does not need any AT command. It is transparent to the customer application.

Menu Selection

A set of menu items is supplied by the SIM Application Toolkit. The menu selection command can then be used to inform the SIM Application which menu item is selected.

The commands used for this operation are **+STIN**, **+STGI** and **+STGR**.

Call Control by SIM

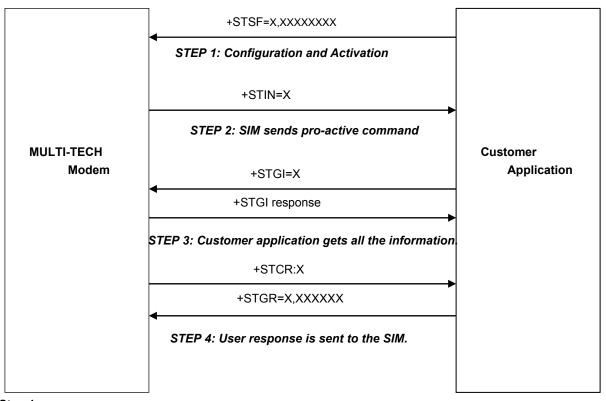
The call control mechanism allows the SIM to check all dialed numbers, supplementary service control strings and USSD strings before connecting to the network. This gives the SIM the ability to allow, bar or modify the string before the operation starts.

The commands used for this operation are:

- **+STCR** (SIM Toolkit Control Response)
- **+STGR** (SIM Toolkit Give Response)

Messages Exchanged During a SIM Toolkit Operation

The following scheme shows the SIM Toolkit commands and unsolicited results that are exchanged.



Step 1:

The customer application informs the modem which facilities are supported. This operation is performed with the **+STSF** (SIM Toolkit Set Facilities) command, which also activates or deactivates the SIM Toolkit functionality.

Step 2:

An unsolicited result **+STIN** (SIM Toolkit indication) is sent by the product in order to indicate to the customer application which command type the SIM Application Toolkit is running. The last SIM Toolkit indication can be requested by the **+STIN?** command.

Step 3:

The customer application uses the **+STGI** (SIM Toolkit Get Information) command to get all the information about the SIM Toolkit command, given by **+STIN**.

Step 4:

The customer application uses the **+STGR** (SIM Toolkit Give Response) to send its response (if any) to the SIM Toolkit Application.

The **+STCR** (SIM Toolkit Control response) indication is an unsolicited result sent by the SIM when Call control functionality is activated and before the customer application has performed any outgoing call, SMS, SS, or USSD.

SIM Toolkit Commands

SIM Toolkit Set Facilities +STSF

Description: This command allows SIM Toolkit facilities to be activated, deactivated or configured.

Values:

<mode>

- Deactivates the SIM Toolkit functionalities.Activates the SIM Toolkit functionalities.
- 2 Configures the SIM Toolkit functionalities.

<Config>

(160060C01F - 5FFFFFFFF) (hex format)

Default: 1F6BFFF1F

<Timeout>

1-255 Timeout for user responses (multiple of 10 seconds).

Default: 3 < Autoresponse >

Automatic response is not activated

1 Automatic response is activated

Default: 1

Notes about Values:

- The activation or deactivation of the SIM Toolkit functionalities requires the use of the +CFUN (Set phone functionality) command to reset the product (this operation is not necessary if PIN is not entered yet).
- The <Config> parameter gives the coding of the TERMINAL PROFILE, precisely the list of SIM Application Toolkit facilities that are supported by the customer application.
- The <Timeout> parameter (multiple of 10 seconds) sets the maximum time the user has for reacting (to select an item, to input a text, etc).
- When the <Autoresponse> is activated, the +STIN indication for Play Tone (5), Refresh (7), Send SS (8), Send SMS (9) or Send USSD (10) is automatically followed by the corresponding +STGI response.

Note about Bits:

Some bits are related to the product only and not to the customer application. The product automatically sets these bits to either 0 or 1 whatever the user enters with the +STSF command. Those values are given in Appendix D.

Each facility is coded on 1 bit:

- bit = 1: facility is supported by the customer application.
- bit = 0: facility is not supported by the customer application.

Only the first five bytes of the TERMINAL PROFILE (Class 2) can be configured. The other are set to 0. (See structure of TERMINAL PROFILE in APPENDIX E.)

Syntax:

Command syntax: +STSF=<mode>[,<config>][,<Timeout>][,<AutoResponse>]

Command	Possible responses
AT+STSF= <mode>[,<config>]</config></mode>	OK
[, <timeout>][,<autoresponse>]</autoresponse></timeout>	+CME ERROR: <err></err>
AT+STSF?	+STSF: <mode>,<config>,<timeout>,<autoresponse></autoresponse></timeout></config></mode>
AT+STSF=?	+STSF: (0-2), (160060C01F - 5FFFFFFF7F),(1-255),(0-1)
	OK

SIM Toolkit Facilities Error Codes

+CME ERROR: 3 Operation not allowed.

This error is returned when a wrong parameter is entered.

Example

AT+CMEE=1 Enable the reporting of mobile equipment errors
OK

AT+WIND=15 Set indications

OK Set Indications

AT+CPAS Query ME Status +CPAS: 0 ME is ready.

OK WE IS

AT+STSF=? Test command SIM Toolkit Set Facilities

+STSF: (0-2), (160060C01F - 5FFFFFFF7F),(1-255)

AT+STSF?

+STSF: 0,"160060C000",3 No activation of SIM Toolkit functionality

OK

AT+STSF=2,"5FFFFFFFF" Set all SIM Toolkit facilities (class 3).

OK

AT+STSF=3 Syntax Error +CME ERROR: 3

AT+STSF=1 Activation of SIM Toolkit functionality

OK

AT+CFUN=1 Reboot Software.
OK

AT+CPIN? Is the ME requiring a password?

+CPIN: SIM PIN Yes, SIM PIN required

AT+CPIN=0000 OK PIN OK

+WIND: 4 Init phase is complete

AT+STSF?

+STSF: 1,"5FFFFFFF7F",3 SIM Toolkit functionality activated with all facilities

OK

SIM Toolkit Indication +STIN or +STRIL

Unsolicited Result

In order to allow the customer application to identify the pro-active command sent via SIM Toolkit, a mechanism of unsolicited SIM Toolkit indications (+STIN) is implemented.

Syntax: AT+STIN: <CmdType>

	· ·
Option:	<cmdtype></cmdtype>
0	Indicates that a 'Setup Menu' pro-active command has been sent from the SIM.
1	Indicates that a 'Display Text' pro-active command has been sent from the SIM.
2	Indicates that a 'Get Inkey' pro-active command has been sent from the SIM.
3	Indicates that a 'Get Input' pro-active command has been sent from the SIM.
4	Indicates that a 'Setup Call' pro-active command has been sent from the SIM.
5	Indicates that a 'Play Tone' pro-active command has been sent from the SIM. (*)
6	Indicates that a 'Sel Item' pro-active command has been sent from the SIM.
7	Indicates that a 'Refresh' pro-active command has been sent from the SIM. (*)
8	Indicates that a 'Send SS' pro-active command has been sent from the SIM. (*)
9	Indicates that a 'Send SMS' pro-active command has been sent from the SIM. (*)
10	Indicates that a 'Send USSD' pro-active command has been sent from the SIM. (*)
11	Indicates that a 'SETUP EVENT LIST' pro-active command has been sent from the SIM.
93	An "SMS-PP Download" failed due to SIM BUSY
94	An "SMS-PP Download" failed due to SIM ERROR
98	Indicates the timeout when no response from user.
99	Indicates that a "End Session" has been sent from the SIM.
(*) if the	automatic response parameter is activated, this indication is followed by the corresponding

(*) if the automatic response parameter is activated, this indication is followed by the corresponding +STGI response.

Second SIM Toolkit Indication

If the customer application needs to exchange a SIM Toolkit message directly with the SIM card, the second indication (+STRIL) gives the full command string provided by the SIM.

Values: <CmdTreated>

0 The command must be treated by the application

1 The is already treated by the modem

<Command string> string type: SIM command string in hexadecimal format.

Syntax: +STRIL: <CmdTreated>,<Command string>

Last SIM Toolkit Indication

The last SIM Toolkit indication sent by the SIM can be requested by the **AT+STIN?** command. This command is only usable between the sending of the STIN indication by the SIM (Step 2, *Messages exchanged during a SIM Toolkit operation*) and the response of the user with the +STGI command (Step 3).

Syntax: Command syntax: AT+STIN?

Command	Possible responses
AT+STIN?	
Note: Ask for the last SIM Toolkit	+STIN: 0
indication sent by the SIM	OK
-	Note: the last SIM Toolkit indication was a Setup Menu
AT+STGI=0	Note: Display the SIM Toolkit application menu
AT+STIN?	+CME ERROR: 4
Note: Ask for the last SIM Toolkit	Note: Operation not supported. The +STGI command has
indication sent by the SIM	been already used

SIM Toolkit Get Information +STGI

Description: This command allows to get the information (text to display, menu information, priorities...) of a pro-

active command sent from the SIM.

The information is returned only after receiving a SIM Toolkit indication (+STIN).

Values: Values are listed after the Command Table

Syntax: Command syntax: +STGI=<CmdType>

Command	Possible responses
AT+STGI= <cmdtype></cmdtype>	+CME ERROR: <err></err>
AT+STGI=?	+STGI: (0-11) OK

Table of Command Types

Cmd	Description	Possible responses
Type		LCTOL Alpha Identifies many
0	Get information about Setup Menu	+STGI: <alpha identifier="" menu=""></alpha>
	pro-active command.	+STGI: <ld1>,<nbitems>,<alpha id1="" label="">,<help Info>[,<nextactionid>]<cr><lf></lf></cr></nextactionid></help </alpha></nbitems></ld1>
		+STGI: <ld2>,<nbitems>,<alpha id2="" label="">,<help< td=""></help<></alpha></nbitems></ld2>
		Info>[, <nextactionid>]<cr><lf></lf></cr></nextactionid>
		[]
		No action expected from SIM.
1	Get information about Display text	+STGI: <prior>,<text>,<clearmode></clearmode></text></prior>
	pro-active command.	No action expected from SIM.
2	Get information about Get Inkey	+STGI: <format>,<helpinfo>[,<textinfo>]</textinfo></helpinfo></format>
	pro-active command.	SIM expects key pressed (+STGR).
3	Get information about Get Input	+STGI: <format>, <echomode>, <sizemin>, <sizemax>,</sizemax></sizemin></echomode></format>
	pro-active command.	<helpinfo>[,<textinfo>]</textinfo></helpinfo>
		SIM expects key input (+STGR).
4	Get information about Setup call	+STGI: <type>,<callednb>,<subaddress>,<class></class></subaddress></callednb></type>
	pro-active command.	SIM expects user authorization (+STGR).
5	Get information about Play Tone	+STGI: <tonetype>[,<timeunit>,<timeinterval>,<textinfo>]</textinfo></timeinterval></timeunit></tonetype>
	pro-active command.	No action.
6	Get information about Sel Item	+STGI: <defaultitem>, <alpha identifier="" menu=""><cr><lf></lf></cr></alpha></defaultitem>
	pro-active command.	+STGI: <ld1>,<nbitems>,<alpha label="" ld1="">,<help< td=""></help<></alpha></nbitems></ld1>
		Info>[, <nextactionid>]<cr><lf></lf></cr></nextactionid>
		+STGI: <ld2>,<nbltems>,<alpha id2="" label="">,<help< td=""></help<></alpha></nbltems></ld2>
		Info>[, <nextactionid>]<cr><lf></lf></cr></nextactionid>
		[]]
		SIM expects an item choice (+STGR).
7	Get information about Refresh	+STGI: <refreshtype></refreshtype>
	pro-active command.	No action (Refresh done automatically by product).
8	Get information about Send SS	+STGI: <textinfo></textinfo>
	pro-active command.	No action (Send SS done automatically by product).
9	Get information about Send SMS	+STGI: <textinfo></textinfo>
	pro-active command.	No action (Send SMS done automatically by product).
10	Get information about Send USSD	+STGI: <textinfo></textinfo>
	pro-active command.	No action (Send USSD done automatically by product).
11	Get information about SETUP EVENT LIST	+STGI: <evt></evt>
	pro-active command.	

Values for the SIM Toolkit Get Information Command:

Values when CmdType=0 (Setup menu)

<Alpha Identifier menu> Alpha identifier of the main menu

<ld><ldx> (1-255) Menu item Identifier

<Nbltems> (1-255) Number of items in the main menu

<al>Alpha Idx Label>Alpha identifier label of items in ASCII format

<HelpInfo>

No help information availableHelp information available

NextActionId> Contains a pro-active command identifier (see the table in APPENDIX F)

Compared to other commands the customer application can always get information about setup menu after having received the +STIN:0 indication.

Values when CmdType=1 (Display text)

<Prior>

Normal priority of display
 High priority of display
 Text> Text to display in ASCII format

<ClearMode>

O Clear message after a delay (3 seconds)

1 Wait for user to clear message

Values when CmdType=2 (Get Inkey)

<Format>

Digit (0-9, *, #, and +)
 SMS alphabet default

2 UCS2

<HelpInfo>

No help information available
 Help information available
 TextInfo>

Values when CmdType=3 (Get Input)

<Format>

0 Digit (0-9, *, #, and +)
1 SMS alphabet default

2 UCS2

3 Unpacked format4 Packed format

<EchMode>

0 Echo off 1 Echo on

<SizeMin> (1-255) Minimum length of input <SizeMax> (1-255) Maximum length of input

<HelpInfo>

No help information available
 Help information available
 TextInfo>

Values when CmdType=4 (Setup Call)

<Type>

Set up call but only if not currently busy on another call
Set up call, putting all other calls (*if any*) on hold
Set up call, disconnecting all other calls (*if any*)

<Called party number in ASCII format <SubAdress> Called party sub-address in ASCII format

<Class>

Voice callData call

<Alpha Id>

Values when CmdType=5 (Play tone)

<tonetype></tonetype>	
0	Tone Dial
1	Tone Busy
2	Tone Congestion
3	Tone Radio ack
4	Tone Dropped
5	Tone Error
6	Tone Call waiting
7	Tone Ringing
8	Tone General beep
9	Tone Positive beep

10 <TimeUnit>

Time unit used is minutesTime unit used is seconds

2 Time unit used is tenths of seconds
<TimeInterval> (1-255)
<TextInfo> Time unit used is tenths of seconds
Time required expressed in units
Text information in ASCII format

Tone Negative beep

Values when CmdType=6 (Sel Item)

<DefaultItem> (1-255)
Default Item Identifier

Alpha Identifier menu> Alpha identifier of the main menu

<ld><ldx> (1-255) Identifier items

<Nbltems> (1-255) Number of items in the menu

<Alpha Idx Label>
Alpha identifier label of items in ASCII format

<HelpInfo>

No help information availableHelp information available

<NextActionId> Contains a pro-active command identifier. (see the table in APPENDIX F)

Values when CmdType=7 (Refresh)

<RefreshType>

0 SIM initialization and full file change notification

1 File change notification

2 SIM initialization and file change notification

3 SIM initialization 4 SIM reset

Values when CmdType=8 (Send SS)

<TextInfo> Text information in ASCII format

Values when CmdType=9 (Send SMS)

<TextInfo> Text information in ASCII format

Values when CmdType=10 (Send USSD)

<TextInfo> Text information in ASCII format

Values when CmdType=11 (Setup Event List)

<Evt>

1 Reporting asked for an 'Idle Screen' event 2 Reporting asked for an 'User Activity' event

Reporting asked for 'Idle Screen' and 'User Activity' events

4 Cancellation of reporting event

<u>Note:</u> For the UCS2 format texts are displayed in Hexa ASCII format. Example: When the SIM sends a TextString containing 0x00 0x41 the text displayed is "0041".

Error Codes for the SIM Toolkit Get Information Command:

+ CME ERROR: 3

+CME ERROR: 4

Operation not allowed. This error is returned when a wrong parameter is detected.

Operation not supported. This error is returned when the user wants to get information

about a SIM Toolkit pro-active command (with SIM Toolkit functionality not activated.)

+CME ERROR: 518 SIM Toolkit indication not received. This error is returned when the SIM Toolkit indication

(+STIN) has not been received.

Example

Initially, all facilities are activated. The PIN is not required and SIM Toolkit functionality is activated.

AT+CMEE=1 Enable the reporting of mobile equipment errors

OK

AT+WIND=15 Set indications

OK

AT+STSF?

+STSF: 1,"5FFFFFFF7",3 SIM Toolkit functionality activated with all facilities.

OK

+STIN: 0 The main menu has been sent from the SIM.

AT+STIN? +STIN: 0 OK

AT+STGI=0 Get information about the main menu

+STGI: "SIM TOOLKIT MAIN MENU" Main menu contains 3 items.

+STGI: 1,3,"BANK",0 +STGI: 2,3,"QUIZ",0

+STGI: 3,3,"WEATHER",0

OK AT+STIN? +CME ERROR: 4

Unsolicited Result: SIM Toolkit Control Response +STCR

Description: When the customer application makes an outgoing call or an outgoing SMS and if the call control facility

is activated, CALL CONTROL and SMS CONTROL responses can be identified. This is also applicable

to SS calls.

Values: <Result>

Control response not allowed.Control response with modification.

< Number> Called number, Service Center Address or SS String in ASCII format.

<modestAddr> MO destination address in ASCII format.

<TextInfo> Text information in ASCII format.

Syntax: Command Syntax: +STCR: <Result>[,<Number>,<MODestAddr>,<TextInfo>]

SIM Toolkit Give Response +STGR

Description: This command allows the application/user to select an item in the main menu or to answer the following proactive commands:

GET INKEY
 GET INPUT
 Key Pressed By The User.
 Message Entered By The User.

SELECT ITEM Selected Item.
 SETUP CALL User Confirmation.

DISPLAY TEXT
 User Confirmation To Clear The Message.

SETUP EVENT LIST Reporting events.

It is also possible to terminate the current proactive command session by sending a Terminal Response to the SIM, with the following parameters:

BACKWARD MOVE Process a backward move
 BEYOND CAPABILITIES Command beyond ME capabilities

• UNABLE TO PROCESS ME is currently unable to process command

NO RESPONSE
 No response from the user

END SESSION User abort.

Values: The values are listed after the Command Syntax Table.

Syntax: Command syntax: +STGR=<CmdType>[,<Result>,<Data>]

Command	Possible responses
AT+STGR= <cmdtype>[,<result>,<data< td=""><td>OK</td></data<></result></cmdtype>	OK
	+CME ERROR: <err></err>
For GetInput with <result>=1:</result>	OK
AT+STGR=3,1 <cr></cr>	+CME ERROR: <err></err>
<data><ctrl z=""></ctrl></data>	
For GetInkey with <result>=1</result>	OK
AT+STGR=2,1," <data>"</data>	+CME ERROR: <err></err>
AT+STGR=?	OK

Values: <CmdType>

- Item selection in the main menu.
- 1 User confirmation to clear a 'Disp Text'.
- 2 Response for a 'Get Inkey'.
- 3 Response for a 'Get Input'.
- 4 Response for a 'Setup call'.
- 6 Response for a 'Sel Item'.
- 11 Response for a 'Setup event list'.
- 95 Backward move
- 96 Command beyond ME capabilities
- 97 ME currently unable to process command
- **98** No response from the user.
- 99 User abort.

Values when CmdType=0 (Select an item from the main menu)

<Result>

- 1 Item selected by the user.
- 2 Help information required by user.
- <Data> Contains the item identifier of the item selected by the user.

Values when CmdType=1 (Confirm the display text clearing)

No values.

Values when CmdType=2 (Get Inkey)

<Result>

- **0** Session ended by user.
- 1 Response given by the user.
- 2 Help information required by user.
- <Data> Contains the key pressed by the user.

Values when CmdType=3 (Get Input)

<Result>

- Session ended by user.
- Response given by the user.
- 2 Help information required by user.

<Data> Contains the string of characters entered by the user.

Note: For Inputs in UCS2 format, the data are entered in ASCII format. Example: For "8000410042FFFF" entered, the SIM receives 0x00 0x41 0x00 0x42 with UCS2 DCS. (See the Appendix G about the different UCS2 syntaxes).

Values when CmdType=4 (Setup call)

<Result>

- 0 User refuses the call.
- 1 User accepts call.

Values when CmdType=6 (Select Item)

<Result>

- **0** Session terminated by the user
- 1 Item selected by the user
- 2 Help information required by the user
- 3 Return to the back item
- <Data> Contains the item identifier selected by the user

Values when CmdType=11 (Setup Event List)

<Result>

- 1 Idle screen available.
- **2** User activity event.

Sending a Terminal Response to the SIM:

Values when CmdType=95 (Backward Move)

Values when CmdType=96 (Command beyond ME capabilities)

Values when CmdType=97 (ME currently unable to process command)

Values when CmdType=98 (No response from the user)

Values when CmdType=99 (SIM Toolkit Session aborting by the user)

No values

It is possible to send a Terminal Response after the **+STIN** indication (step 2, of *Messages exchanged during a SIM Toolkit operation*), or after the **+STGI** command (step 3).

Note: For the SETUP MENU Proactive Command, it is only possible to send a Terminal Response after the **+STIN**:

0 indication, not after a **+STGI=0** request. All of the Terminal Responses are not possible with all of the Proactive Commands. Compatibility between available Terminal Responses and Proactive Commands is given in Appendix D, Table 2. If a Terminal Response is attempted during a incompatible Proactive Command session, a **+CME ERROR**: 3 will be returned.

Possible error codes

- +CME ERROR: 3 Operation not allowed. This error is returned when a wrong parameter is detected.
- +CME ERROR: 4 **Operation not supported**. This error is returned when the user gives a response with SIM Toolkit functionality not activated. Or if the SIM Toolkit indication (+STIN) has not been received.

Example

Initially, all facilities are activated, the PIN is not required and the SIM Toolkit functionality is activated. +STIN: 0 The main menu has been sent from the SIM. Get information about the main menu AT+STGI=0 +STGI: 1,3,"BANK",0 The main menu contains 3 items. +STGI: 2,3,"QUIZ",0 +STGI: 3,3,"WEATHER",0 OK AT+STGR=0,1,1 The item 2 of the main menu has been selected. OK +STIN: 6 The Sel item menu has been sent from the SIM. AT+STGI=6 Get information about the BANK menu +STGI: 1,"BANK" The BANK menu contains two items. +STGI: 1,2,"PERSONAL ACCOUNT ENQUIRY",1 +STGI: 2,2,"NEWS",0 OK AT+STGR=6,1,1 Select Item 1. OK +STIN: 3 User request to enter Password sent. AT+STGI=3 Get information about this request. +STGI: 0,0,4,4,0,"Enter Account Password:" OK AT+STGR=3,1<CR> The user enters the Password. >0000<Ctrl Z> OK +STIN:1 A text info has been sent from the SIM. AT+STGI=1 Get information about this text. +STGI: 0,"Password correct, please wait for response",0 OK +STIN: 9 SIM requests a bank account update from bank server via the network (SEND SMS) AT+STGI=9 Get all information about the SEND SMS +STGI: "Send account balance of user, authorization ok" ****** After a short period of time. ****** +STIN: 5 Transaction is complete: BEEP +STGI=5 Get information about the Tone +STGI: 9,1,1 +STIN: 1 Display text indication AT+STGI=1 +STGI: 0,"Your account balance is 1000 \$",0 OK

Chapter 15 - GPRS commands

Important: GPRS commands are not available under GSM-only software.

Define PDP Context +CGDCONT

Description:

This command specifies PDP context parameter values for a PDP context identified by the local context identification parameter, <cid>.

Four PDP contexts can be defined through the software.

A special form of the set command, +CGDCONT= <cid> causes the values for context number <cid> to become undefined.

The test command returns values supported as a compound value. If the modem supports several PDP types, <PDP_type>, the parameter value ranges for each <PDP_type> are returned on a separate line.

The read command returns the current settings for each defined context.

The test command returns values supported as a compound value. If the modem supports several PDP types, <PDP_type), the parameter value ranges for each <PDP_type> are returned on a separate line.

Values:

- <cid> (PDP Context Identifier) a numeric parameter (1-4) which specifies a particular PDP context definition. The parameter is local to the DTE-modem interface and is used in other PDP context-related commands.
- <PDP_type> (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol
 - IP Internet Protocol
 - PPP Point to Point Protocol
- <aPN> (Access Point Name) a string parameter, which is a logical name that is used to select the GGSN or the external packet data network.

If the value is null or omitted, then the subscription value will be requested.

<PDP_address> a string parameter that identifies the modem in the address space applicable to the PDP

If the value is null or omitted, then a value may be provided by the DTE during the PDP startup procedure or a dynamic address will be requested. The read form of the command will continue to return the null string even if an address has been allocated during the PDP startup procedure. The allocated address may be read using the **+CGPADDR** command.

- <d_comp> a numeric parameter that controls PDP data compression
 - **0** Off (default if value is omitted)
 - **1** On

Other values are reserved.

- <h_comp> a numeric parameter that controls PDP header compression
 - **0** Off (default if value is omitted)
 - 1 On

Other values are reserved.

Notes:

- The data compression algorithm (V.42bis) provided in SNDCP is V.42bis.
- Four CIDs are available to specify four PDP contexts, but only 11 NSAPIs are available for PDP activation. Only one can be activated at a time.

Syntax: Command Syntax: AT+CGDCONT

Command	Possible responses
AT+CGDCONT=[<cid>[,<pdp_type> [,<apn> [,<pdp_addr> [,<d_comp> [,<h_comp>]]]]]]</h_comp></d_comp></pdp_addr></apn></pdp_type></cid>	OK ERROR
AT+CGDCONT?	+CGDCONT: <cid>, <pdp_type>, <apn>,<pdp_addr>, <data_comp>, <head_comp> [<cr><lf>+CGDCONT: <cid>, <pdp_type>, <apn>,<pdp_addr>, <data_comp>, <head_comp> []] OK</head_comp></data_comp></pdp_addr></apn></pdp_type></cid></lf></cr></head_comp></data_comp></pdp_addr></apn></pdp_type></cid>
AT+CGDCONT=?	+CGDCONT: (range of supported <cid>s),</cid>
AT+CGDCONT: 1, "IP" "internet"; AT+CGCONT=2, "IP", "abc.com"	OK
AT+CGDCONT=?	+CGCONT: (1-4), "IP",,,(0-1),(0-1) +CGCONT: (1-4), "PPP",,,0,0,0 OK
AT+CGCONT?	+CGCONT: 1, "IP","internet",,0,0 +CGCONT: 2, "IP","abc.com",,0,0 OK

Quality of Service Profile Requested +CGQREQ

Description:

This command allows the DTE to specify a Quality of Service Profile that is used when the modem sends an Activate PDP Context Request message to the network.

The set command specifies a profile for the context identified by the local context identification parameter, <cid>. Since this is the same parameter that is used in the **+CGDCONT** command, the **+CGQREQ** command is effectively an extension to the **+CGDCONT** command. The QoS profile consists of a number of parameters, each of which may be set to a separate value.

A special form of the set command, +CGQREQ= <cid>, causes the requested profile for context number <cid> to become undefined.

The read command returns the current settings for each defined context. The test command returns values supported as a compound value. If the modem supports several PDP types, the parameter value ranges for each PDP type are returned on a separate line.

Values:

<cid>Numeric parameter that specifies a particular PDP context definition Range 1- 3

- Subscribed precedence Subscribed by the Network by default if value is omitted
- 1 High priority. Service commitments shall be maintained ahead of precedence classes 2 & 3
- 2 Normal priority Service commitments shall be maintained ahead of precedence class 3
- 3 Low priority Service commitments shall be maintained after precedence classes 1 and 2

<delay> Numeric parameter that specifies the delay class

- Subscribed
- 1 Delay class 1
- 2 Delay class 2
- 3 Delay class 3
- 4 Delay class 4

	•			
	Delay (maximum values)			
Delay Class	SDU size: 128 bytes		SDU size: 1024 b	ytes
	Mean Transfer	95 percentile Delay	Mean Transfer Delay	95 percentile Delay (sec)
	Delay (sec)	(sec)	(sec)	
0	Subscribed	Subscribed by the I	Nwk / default if value is	omitted
1. (Predictive)	< 0.5		< 2	< 7
2. (Predictive)	< 5	< 25	< 15	< 75
3. (Predictive)	< 50	< 250	< 75	< 375
4. (Best Effort)	Unspecified			

<reliability>

- Subscribed
- 1 Up to 1 000 (8 kbit/s)
- 2 Up to 2 000 (16 kbit/s)
- 3 Up to 4 000 (32kbit/s)
- 4 Up to 8 000 (64 kbit/s)
- **5** Up to 16 000 (188 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)

Reliability Class	GTP Mode	LLC Frame Mode	LLC Data Protection	RLC Block Mode	Traffic Type
0	Subscribed	Subscribed by the	Nwk / defa	ault if value is omitte	ed
1	Acknowledged	Acknowledged	Protected	Acknowledged	Non real-time traffic, error-sensitive application that cannot cope with data loss.
2	Unacknowledged	Acknowledged	Protected	Acknowledged	Non real-time traffic, error-sensitive application that can cope with infrequent data loss.
3	Unacknowledged	Unacknowledged	Protected	Acknowledged	Non real-time traffic, error-sensitive application that can cope with data loss, GMM/SM, & SMS.
4	Unacknowledged	Unacknowledged	Protected	Unacknowledged	Real-time traffic, error-sensitive application that can cope with data loss.
5	Unacknowledged	J	ď	Unacknowledged	Real-time traffic, error non-sensitive application that can cope with data loss.
Note: Fo	lote: For real-time traffic, the QoS profile also requires appropriate settings for delay and throughput.				

<peak>

- Subscribed 0
- Up to 1 000 (8 kbit/s) 1
- 2 Up to 2 000 (16 kbit/s)
- 3 Up to 4 000 (32kbit/s)
- 4 Up to 8 000 (64 kbit/s)
- 5 Up to 16 000 (188 kbit/s) 6 Up to 32 000 (256 kbit/s)
- 7 Up to 64 000 (512 kbit/s)
- Up to 128 000 (1 024 kbit/s) 8
- 9 Up to 256 000 (2 048 kbit/s)

<mean>

- Subscribed by the Network by default if value is omitted 0
- 100 (~0.22 bit/s) 1
- 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)
- 50 000 (~111 bit/s) 9 10
- 100 000 (~0.22 kbit/s) 200 000 (~0.44 kbit/s) 500 000 (~1.11 kbit/s) 11
- 12
- 1 000 000 (~2.2 kbit/s) 13
- 2 000 000 (~4.4 kbit/s) 14
- 5 000 000 (~11.1 kbit/s) 15
- 10 000 000 (~22 kbit/s) 16
- 20 000 000 (~44 kbit/s) 17
- 50 000 000 (~111 kbit/s) 18
- 31 Best effort

Syntax: Command Syntax:

Command	Possible Response(s)
AT+CGQREQ=[<cid> [,<precedence></precedence></cid>	OK
[, <delay> [,<reliability.> [,<peak></peak></reliability.></delay>	ERROR
[, <mean>]]]]]]</mean>	
AT+CGQREQ?	+CGQREQ: <cid>, <pre>, <delay>, <reliability>,</reliability></delay></pre></cid>
	<pre><pre><pre><pre><pre><pre><pre><pre></pre></pre></pre></pre></pre></pre></pre></pre>
	[<cr><lf>+CGQREQ: <cid>, <pre>, <delay>,</delay></pre></cid></lf></cr>
	<reliability.>, <peak>, <mean></mean></peak></reliability.>
	[]] OK
AT+CGQREQ=?	+CGQREQ: <pdp_type>, (list of supported</pdp_type>
ATTOOUNEQ-:	<pre><pre><pre><pre><pre><pre><pre><pre></pre></pre></pre></pre></pre></pre></pre></pre>
	supported <reliability>s), (list of supported <peak>s), (list</peak></reliability>
	of supported <mean>s)</mean>
	[<cr><lf>+CGQREQ: <pdp_type>, (list of supported</pdp_type></lf></cr>
	<pre><pre><pre><pre><pre><pre><pre><pre></pre></pre></pre></pre></pre></pre></pre></pre>
	supported <reliability>s), (list of supported <peak>s), (list</peak></reliability>
	of supported <mean>s)</mean>
	[]]
	OK
AT +CGQREQ=1,1,4,5,2,14	OK
AT+CGQREQ=?	+CGQREG: "IP", (1-3), (1-4), (1-5), (1-9), (1-31)
	+CGQREQ: "PPP", (1-3), (1-4), (1-5), (1-9), (1-31)
	OK
AT+CGQREQ?	+CGQREQ: 1,1,4,5,2,14
	OK

Quality of Service Profile Minimum Acceptable +CGOMIN

Description:

This command allows the DTE to specify a minimum acceptable profile which is checked by the modem against the negotiated profile returned in the Activate PDP Context Accept message.

The set command specifies a profile for the context identified by the local context identification parameter, <cid>. Since this is the same parameter that is used in the **+CGDCONT** command, the **+CGQMIN** command is effectively an extension to the **+CGDCONT** command. The QoS profile consists of a number of parameters, each of which may be set to a separate value.

A special form of the set command, +CGQMIN= <cid> causes the minimum acceptable profile for context number <cid> to become undefined. In this case no check is made against the negotiated profile.

The read command returns the current settings1 for each defined context.

The test command returns values supported as a compound value. If the modem supports several PDP types, the parameter value ranges for each PDP type are returned on a separate line.

Values: <cid>: a numeric parameter which specifies a particular PDP context .

< a numeric parameter which specifies the precedence class.</pre>

<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.

Note: If a value is omitted for a particular class then this class is not checked.

Syntax: Command Syntax: AT+CGQMIN

Command	Possible Response(s)
AT+CGQMIN=[<cid> [,<precedence> [,<delay> [,<reliability.> [,<peak> [,<mean>]]]]]]</mean></peak></reliability.></delay></precedence></cid>	OK ERROR
AT+CGQMIN?	+CGQMIN: <cid>, <pre>, <delay>, <reliability>, <peak>, <mean> [<cr><lf>+CGQMIN: <cid>, <pre>, <delay>, <reliability.>, <peak>, <mean> []] OK</mean></peak></reliability.></delay></pre></cid></lf></cr></mean></peak></reliability></delay></pre></cid>
AT+CGQMIN=?	+CGQMIN: <pdp_type>, (list of supported <pre>cprecedence>s), (list of supported <delay>s), (list of supported <pre>supported <reliability>s), (list of supported <pre>cpeak>s), (list of supported <mean>s) [<cr><lf>+CGQMIN: <pdp_type>, (list of supported <pre>cprecedence>s), (list of supported <delay>s), (list of supported <reliability>s), (list of supported <pre>cpeak>s), (list of supported <mean>s) []] OK</mean></pre></reliability></delay></pre></pdp_type></lf></cr></mean></pre></reliability></pre></delay></pre></pdp_type>
AT+CGQMIN=1,1,4,5,2,31	OK
AT+CGQMIN=?	+CGQMIN: "IP",(1-3),(1-4),(1-5),(1-9),(1-31) +CGQMIN: "PPP",(1-3),(1-4),(1-5),(1-9),(1-31) OK
AT+CGQMIN?	+CGQMIN=? 1,1,4,5,2,14 OK

GPRS Attach or Detach +CGATT

Description:

The execution command is used to attach the modem to, or detach the modem from, the GPRS service. After the command has completed, the modem remains in V.25ter command state. If the modem is already in the requested state, the command is ignored and the OK response is returned. If the requested state cannot be achieved, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command.

Any active PDP contexts will be automatically deactivated when the attachment state changes to detached.

The read command returns the current GPRS service state.

The test command is used for requesting information on the supported GPRS service states.

Values:

<state> Indicates the state of GPRS attachment

- 0 Detached
- 1 Attached
- 2 Combined detach (GPRS and GSM detach in the same network request)
 Other values are reserved and will result in an ERROR response to the execution command.

Syntax:

Command Syntax: AT+CGATT

Command	Possible Responses
AT+CGATT= [<state>]</state>	OK
	ERROR
AT+CGATT?	+CGATT: <state></state>
	OK
AT+CGATT=?	+CGATT: (list of supported
	<state>s)</state>
	OK ´
AT+CGATT=1	OK

PDP Context Activate or Deactivate +CGACT

Description:

The execution command activates or deactivates the specified PDP context (s). After the command has completed, the modern remains in V.25ter command state. If any PDP context is already in the requested state, the state for that context remains unchanged.

If the requested state for any specified context cannot be achieved, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command.

If the modem is not GPRS attached when the activation form of the command is executed, the modem first performs a GPRS attach and them attempts to activate the specified contexts. If the attach fails then the modem responds with ERROR or, if extended error responses are enabled, with the appropriate failure-to-attach error message.

If no <cid>s are specified, the activation form of the command activates the first available defined contexts. If no <cid>s are specified the deactivation form of the command deactivates all active contexts.

One PDP context can be activated at the same time.

The read command returns the current activation states for all the defined PDP contexts.

The test command is used for requesting information on the supported PDP context activation states.

Note: See "Full GPRS AT Command Examples" later in this chapter.

Values:

<state> Indicates the state of PDP context activation

0 Deactivated

1 Activated

Other values are reserved and will result in an ERROR response to the execution command.

<cid> A numeric parameter which specifies a particular PDP context.

Before a context can be activated, the modem must be attached to the GPRS network by performing an automatic GPRS attach.

Note: If a GPRS PPP session is already running, the setting of a CSD (GSM data call) is not

supported.

Syntax: Command Syntax: AT+CGACT

Command	Possible Response(s)
AT+CGACT=[<state></state>	OK
[, <cid>[,<cid>[,]]]]</cid></cid>	ERROR
AT+CGACT?	+CGACT: <cid>, <state></state></cid>
	[<cr><lf>+CGACT: <cid>, <state></state></cid></lf></cr>
	[]]
	OK
AT+CGACT=?	+CGACT: (list of supported <state>s)</state>
	OK
AT+CGACT=1,1	OK
AT+CGACT?	+CGACT: 1,1
	OK
AT+CGACT=?	+CGACT: (0-1)
	OK

Enter Data State +CGDATA

Description:

The command causes the modem to perform the necessary actions to set up communication between the DTE and the network. This may include performing a GPRS attach and one PDP context activation.

If the <cid> value is not defined to the modem, the modem will return an ERROR or +CME ERROR response. Otherwise, the modem issues the intermediate result code CONNECT and enters V.25ter online data state.

GPRS attachment and PDP context activation procedures may take place prior to or during the PDP startup if they have not already been performed using the **+CGATT** and **+CGACT** commands.

If no <cid> is given, the modem attempts to activate the context with whatever information is available to the modem. The other context parameters is set to their default values (No APN, default QOS parameters, dynamic IP address requested).

If the activation is successful, data transfer may proceed.

After data transfer and layer 2 protocol termination procedure completion, the V.25ter command state is re-entered and the modem returns the final result code OK.

In case of an abnormal termination or start up, the V.25ter command state is re-entered and the modem returns the final result code NO CARRIER or, if enabled, +CME ERROR. Attach, activate and other errors may be reported.

This command may be used in both normal and modem compatibility modes.

Note: The goal of this command is the same than ATD*99***.

Note: If a GPRS PPP session is already running, the setting of a CSD (GSM data call) is not supported.

Values: <cid> A numeric parameter which specifies a particular PDP context definition.

Syntax: Command Syntax: AT+CGDATA

Command	Possible Response(s)
AT+CGDATA=[<cid>]</cid>	CONNECT ERROR
AT+CGDATA=?	+CGDATA: OK
AT+CGDATA=?	+CGDATA: OK
AT+CGDATA=1	CONNECT

GPRS Mobile Station Class +CGCLASS

Description:

The set command is used to set the modern to operate according to the specified GPRS mobile class. If the requested class is not supported, an ERROR or +CME ERROR response is returned.

The read command returns the current GPRS mobile class.

The test command is used for requesting information on the supported GPRS mobile classes.

Values:

A string parameter which indicates the GPRS mobile class (in descending order of

functionality)

Class A (highest) Α

В Class B

CG Class C in GPRS only mode

CC Class C in circuit switched only mode (lowest)

Other values are reserved and will result in an ERROR response to the set command.

If the modem is GPRS attached when the set command is issued with a <class> = CC specified, a GPRS detach request is sent to the network.

If the modem is GSM attached when the set command is issued with a <class> = CG specified, a GSM detach request is sent to the network.

Class A is not supported.

Note: During switch-On in CG class, the modern always performs an automatic GPRS attach (the ATTACH-STATUS parameter of +WGPRS is ignored). But if the modem is not already GPRSattached when switching from B/CC class to CG class, then no automatic GPRS attach is performed.

Example of the Automatic Attachment (See Note Above):

AT+CGCLASS? +CGCLASS: "B"

<class>

OK

AT+CGATT?

+CGATT: 0

OK

AT+CGCLASS="CG"

OK

AT+CGATT?

+CGATT: 0

OK

AT+CGATT=1

OK

AT+CPOF OK

AT+CFUN=1

OK AT+CGCLASS?

+CGCLASS: "CG"

OK AT+CGATT?

+CGATT: 1

Syntax: Command Syntax: AT+CGCLASS

Command	Possible Response(s)
AT+CGCLASS= [<class>]</class>	OK
	ERROR
AT+CGCLASS?	+CGCLASS: <class></class>
	OK
AT+CGCLASS=?	+CGCLASS: (list of supported <class>s)</class>
	OK
AT+CGCLASS="CG"	OK
Note: Enter GPRS Class C	
mode	
AT+CGCLASS="CC"	OK
Note: Enter GMS mode	
AT+CGCLASS="A"	+CME ERROR: 150
Note: Chosen class not	
supported	
AT+CGCLASS=?	+CGCLASS: ("CG","CC")
	OK
AT+CGCLASS?	+CGCLASS: ("CC")
	OK

Select Service for MO SMS Messages +CGSMS

Description: The set command specifies the service or service preference that the modem will use to send MO SMS

messages.

The read command returns the currently selected service or service preference.

The test command requests information on the currently available services and service preferences.

Values:

<service>: a numeric parameter which indicates the service or service preference to be used

- 0 GPRS
- 1 Circuit switched
- **2** GPRS preferred (use circuit switched if GPRS is not available)
- 3 Circuit switched preferred (use GPRS if circuit switched not available)

Other values are reserved and will result in an ERROR response to the set command.

Syntax:

Command Syntax:

Command	Possible Responses
AT+CGSMS= [<service>]</service>	OK
	ERROR
At+CGSMS?	+CGSMS: <service></service>
	OK
AT+CGSMS=?	+CGSMS: (list of currently available
	<service>s)</service>
	OK
AT +CGSMS=0	OK
AT+CGSMS=?	+CGSMS=(0-3)
	OK

GPRS Event Reporting +CGEREP

Description:

Set command enables or disables sending of unsolicited result codes, +CGEV: XXX from modem to DTE in the case of certain events occurring in the GPRS modem or the network.

<mode> controls the processing of unsolicited result codes specified within this command.

Read command returns the current mode and buffer settings.

Test command returns the modes and buffer settings supported by the modem as compound values.

Values:

<mode>:

- Buffer unsolicited result codes in the modem; if modem result code buffer is full, the oldest ones can be discarded. No codes are forwarded to the DTE.
- 2 Buffer unsolicited result codes in the modem when modem-DTE link is reserved (e.g. in on-line data mode) and flush them to the DTE when modem-DTE link becomes available; otherwise forward them directly to the DTE.

<bfr>

- Modem buffer of unsolicited result codes defined within this command is cleared when <mode> 1 or 2 is entered. This is the only case supported.
- 1 Modem buffer of unsolicited result codes defined within this command is flushed to the DTE when <mode> 2 is entered. This case is not supported.

The software provides a combination of all modes. When a serial link is available, indications are forwarded directly to the DTE. If a serial link is reserved (e.g., in on-line data mode) or the modem result code buffer is full, the oldest ones can be discarded.

Syntax:

Command Syntax: AT+CGEREP

Command	Possible Responses
AT+CGEREP=[<mode>]</mode>	OK
	ERROR
AT+CGEREP?	+CGEREP: <mode>,<bfr></bfr></mode>
	OK
AT+CGEREP=?	+CGEREP: (list of supported <mode>s), (list of supported bfr>s) OK</mode>

Unsolicited Result Codes and Corresponding Events:

The following unsolicited result codes and the corresponding events are defined:

+CGEV: REJECT <PDP type>, <PDP addr>

A network request for PDP context activation occurred when the modem was unable to report it to the DTE with a +CRING unsolicited result code and was automatically rejected.

+CGEV: NW REACT <PDP_type>, <PDP_addr>, [<cid>]

The network has requested a context reactivation. The <cid> that was used to reactivate the context is provided if known to the modem.

+CGEV: NW DEACT <PDP_type>, <PDP_addr>, [<cid>]

The network has forced a context deactivation. The <cid> that was used to activate the context is provided if known to the modem.

+CGEV: ME DEACT <PDP_type>, <PDP_addr>, [<cid>]

The mobile equipment has forced a context deactivation. The <cid> that was used to activate the context is provided if known to the modem.

+CGEV: NW DETACH

The network has forced a GPRS detach. This implies that all active contexts have been deactivated. These are not reported separately.

+CGEV: ME DETACH

The mobile equipment has forced a GPRS detach. This implies that all active contexts have been deactivated. These are not reported separately.

+CGEV: NW CLASS <class>

The network has forced a change of MS class. The highest available class is reported.

+CGEV: ME CLASS <class>

The mobile equipment has forced a change of MS class. The highest available class is reported.

GPRS Network Registration Status +CGREG

Description:

The set command controls the presentation of an unsolicited result code +CGREG: <stat> when <n>=1 and there is a change in the modem's GPRS network registration status, or code +CGREG: <stat>[,<lac>,<ci>] when <n>=2 and there is a change of the network cell.

The read command returns the status of result code presentation and an integer <stat> which shows whether the network has currently indicated the registration of the modem. Location information elements <lac> and <ci> are returned only when <n>=2 and modem is registered in the network.

Values:

- <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; the modem is not currently searching a new operator to which to register
- 1 Registered, home network
- 2 Not registered, but modem is currently searching a new operator to which to register
- 3 Registration denied
- 4 Unknown
- 5 Registered, roaming

<lac>

String type; two byte location area code in hexadecimal format

<ci>

String type; two byte cell ID in hexadecimal format

Syntax:

Command Syntax: AT+CGREG

Command	Possible response(s)
AT+CGREG=[<n>]</n>	+CGREG: stat>[, <lac>,<ci>]</ci></lac>
	OK
AT+CGREG?	+CGREG: <n>,<stat>[,<lac>,<ci>]</ci></lac></stat></n>
	OK
	Note: +CME ERROR: <err></err>
AT+CGREG=?	+CGREG: (list of supported <n>s)</n>
	OK

Request GPRS IP Service D

Description:

This command causes the modem to perform whatever actions are necessary to establish communication between the DTE and the external PDN.

The V.25ter 'D' (Dial) command causes the modem to enter the V.25ter online data state and, with the DTE, to start the specified layer 2 protocol. The modem returns CONNECT to confirm acceptance of the command prior to entering the V.25ter online data state. No further commands may follow on the AT command line.

The detailed behavior after the online data state has been entered is described briefly in clause 9, for IP, of GSM 07.60. GPRS attachment and PDP context activation procedures may take place prior to or during the PDP startup if they have not already been performed using the +CGATT and +CGACT commands.

If <cid> is supported, its usage is the same as in the +CGDATA command. The +CGDCONT, +CGQREQ, etc. commands may then be used in the modem initialization AT command string to set values for PDP type, APN, QoS etc.

If <cid> is not supported or is supported but omitted, the modem attempt to activate the context using the 'Empty PDP type' (GSM 04.08). (No PDP address or APN is sent in this case and only one PDP context subscription record is present in the HLR for this subscriber.)

Note: If a GPRS PPP session is already running, the setting of a CSD (GSM data call) is not supported.

Values: <GPRS_SC_IP>

(GPRS Service Code for IP) a digit string (value 99), which identifies a request to

use the GPRS with IP (PDP types IP and PPP)

<cid> A digit string which specifies a particular PDP context definition.

Syntax: Command Syntax:

Command	Possible Responses
D* <gprs_sc_ip>[***<cid>]#</cid></gprs_sc_ip>	CONNECT
	ERROR

Example: ATD*99***1#

CONNECT ATD*99***2# ERROR

Network Requested PDP Context Activation

In this mode of operation, the modem behaves like an answering modem and accepts the normal V.25ter commands associated with answering a call. If GPRS-specific configuration commands are required, they may be sent to the modem as part of the modem initialization commands. The +CGAUTO command is used to select modem compatibility mode.

Automatic Response to a Network Request for PDP Context Activation S0

The V.25ter 'S0=n' (Automatic answer) command may be used to turn off (n=0) and on (n>0) the automatic response to a network request for a PDP context activation. When the 'S0=n' (n>0) command is received, the modem attempt to perform a GPRS attach if it is not already attached. Failure will result in ERROR being returned to the DTE. Subsequently, the modem will announce a network request for PDP context activation by issuing the unsolicited result code RING to the DTE, followed by the intermediate result code CONNECT. The modem then enters V.25ter online data state and follows the same procedure as it would after having received a +CGANS=1 with no <L2P> or <cid> values specified.

Note: The 'S0=n' (n=0) command does not perform an automatic GPRS detach.

Manual Acceptance of a Network Request for PDP Aontext Activation A

The V.25ter 'A' (Answer) command may be used to accept a network request for a PDP context activation announced by the unsolicited result code RING. The modem responds with CONNECT, enters V.25ter online data state and follows the same procedure as it would after having received a +CGANS=1 with no <cid> value specified. It is an error to issue the 'A' command when there is no outstanding network request.

Manual Rrejection of a Network Request for PDP Context Activation H

The V.25ter 'H' or 'H0' (On-hook) command may be used to reject a network request for PDP context activation announced by the unsolicited result code RING. The modern responds with OK. It is an error to issue the 'H' command when there is no outstanding network request.

Note: This is an extension to the usage of the 'H' command that is described in ITU-T V.25ter.

Automatic Response to a Network Request for PDP Context Activation +CGAUTO

Description:

The set command disables or enables an automatic positive response (auto-answer) to the receipt of a Request PDP Context Activation message from the network. It also provides control over the use of the V.25ter basic commands 'S0', 'A and 'H' for handling network requests for PDP context activation. The setting does not affect the issuing of the unsolicited result code RING or +CRING.

The test command returns values of <n> supported by the modem as a compound value.

When the +CGAUTO=0 command is received, the modem will not perform a GPRS detach if it is attached. Subsequently, when the modem announces a network request for PDP context activation by issuing the unsolicited result code RING or +CRING, the DTE may manually accept or reject the request by issuing the +CGANS command or may simply ignore the network request.

When the +CGAUTO=1 command is received, the modem will attempt to perform a GPRS attach if it is not already attached. Failure will result in ERROR or, if enabled, +CME ERROR being returned to the DTE. Subsequently, when the modem announces a network request for PDP context activation by issuing the unsolicited result code RING or +CRING to the DTE, this is followed by the intermediate result code CONNECT. The modem then enters V.25ter online data state and follows the same procedure as it would after having received a +CGANS=1 with <cid> values specified.

Values:

<n>

- Turn off automatic response for GPRS only For <n> = 0 GPRS network requests are manually accepted or rejected by the +CGANS command.
- 1 Turn on automatic response for GPRS only For <n> = 1 GPRS network requests are automatically accepted according to the description above.
- 2 Modem compatibility mode, GPRS only For <n> = 2, automatic acceptance of GPRS network requests is controlled by the 'S0' command. Manual control uses the 'A' and 'H' commands, respectively, to accept and reject GPRS requests. (+CGANS may also be used.) Incoming circuit switched calls can be neither manually nor automatically answered
- 3 Modem compatibility mode, GPRS and circuit switched calls (default)
 For <n> = 3, automatic acceptance of both GPRS network requests and incoming circuit switched calls is controlled by the 'S0' command. Manual control uses the 'A' and 'H' commands, respectively, to accept and reject GPRS requests. (+CGANS may also be used.)
 Circuit switched calls are handled as described elsewhere in this specification.

Note:

In class C GPRS the modem can't receive GPRS and GSM incoming calls

simultaneously.

Syntax:

Command Possible response(s) AT+CGAUTO=[<n>] OK ERROR +CGAUTO: <n>OK AT+CGAUTO=? +CGAUTO: (0-3) OK

Command Syntax: AT+CGAUTO

Example:

AT+CGAUTO=? +CGAUTO: (0-2) OK AT+CGAUTO? +CGAUTO: 2

AT+CGAUTO=0

OK

Manual Response to a Network Request for PDP Context Activation +CGANS

Description:

The execution command requests the modem to respond to a network request for GPRS PDP context activation which has been signaled to the DTE by the RING or +CRING: unsolicited result code. The <response> parameter allows the DTE to accept or reject the request.

If <response> is 0, the request is rejected and the modem returns OK to the DTE.

If <response> is 1, the following procedure is followed by the modem.

PDP context activation procedures take place prior to or during the PDP startup.

One <cid> may be specified in order to provide the values needed for the context activation request.

During the PDP startup procedure the modem has the PDP type and the PDP address provided by the network in the Request PDP Context Activation message.

If a <cid> is given, this information must match with the PDP type and PDP address in the network request as follows -

The PDP type must match exactly.

The PDP addresses are considered to match if they are identical or if the address in the context definition is unspecified. If any of this information is in conflict, the command will fail.

The context is activated using the values for PDP type and PDP address provided by the network, together with the other information found in the PDP context definition. An APN may or may not be required, depending on the application.

If no <cid> is given, the modem will attempt to activate the context using the values for PDP type and PDP address provided by the network, together with any other relevant information known to the modem. The other context parameters will be set to their default values.

If the activation is successful, data transfer may proceed.

After data transfer is complete, and the layer 2 protocol termination procedure has completed successfully, the V.25ter command state is re-entered and the modem returns the final result code OK.

In the event of an erroneous termination or a failure to startup, the V.25ter command state is re-entered and the modem returns the final result code NO CARRIER or, if enabled, +CME ERROR. Attach, activate and other errors may be reported. It is also an error to issue the +CGANS command when there is no outstanding network request.

This command may be used in both normal and modem compatibility modes.

Values:

<response> A numeric parameter which specifies how the request should be responded to.

- reject the request
- 1 accept and request that the PDP context be activated

If <response> is omitted it is assumed to be 0. Other values are reserved and will result in the ERROR response.

<cid>: a numeric parameter which specifies a particular PDP context definition.

Syntax:

Command Syntax: AT+CGANS

Command	Possible response(s)
AT+CGANS=[<response>,</response>	OK
[<cid>]]</cid>	ERROR
AT+CGANS=?	+CGANS: (list of supported <response>s), (list of supported <l2p>s)</l2p></response>
	OK

Example:

+CRING: GPRS "IP", "122.41.74.238"

AT+CGANS=1 CONNECT AT+CGANS=? +CGANS= (0-1) OK

Show PDP Address +CGPADDR

Description: The execution command returns a list of PDP addresses for the specified context identifiers.

The test command returns a list of defined <cid>s.

Values: <cid> A numeric parameter which specifies a particular PDP context definition. If no <cid> is

specified, the addresses for all defined contexts are returned.

<PDP_address> A string that identifies the modem 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.

Syntax: Command Syntax: AT+CGPADDR

Command	Possible response(s)
AT+CGPADDR=[<cid>[,<cid>[,]]]</cid></cid>	
	[<cr><lf>+CGPADDR: <cid>,<pdp_addr></pdp_addr></cid></lf></cr>
	[]]
	OK
AT+CGPADDR=?	+CGPADDR: (list of defined <cid>s)</cid>
	OK

Example:

In this example, 1 <cid> is defined:

AT+CGPADDR=1

+CGPADDR=1,"107.210.5.4"

OK

AT+CGPADDR=? +CGAPDDR= (1)

OK

AT+CGPADDR +CGPADDR: 1,

Cellular Result Codes +CRC

Description:

This command enables a more detailed ring indication, in case of incoming call (voice or data). Instead of the string "RING", an extended string is used to indicate which type of call is ringing (e.g. +CRING: VOICE).

These extended indications are:

+CRING: ASYNC	for asynchronous transparent	
+CRING: REL ASYNC	for asynchronous non-transparent	
+CRING: VOICE	for normal speech.	
+CRING: GPRS	GPRS network request for PDP context activation	

If the modem is unable to announce to the DTE the network's request (for example it is in V.25ter online data state) the modem reject the request. No corresponding unsolicited result code is issued when the modem returns to a command state.

Values: No parameters

Syntax: Command Syntax: AT+CRC

Command	Possible responses
AT+CRC=0	OK
Note: Extended reports disabled	Note: Command valid
AT+CRC=1	OK
Note: Extended reports enabled	Note: Command valid
AT+CRC?	+CRC: 1
	OK
AT+CRC=?	+CRC: (0,1)
	OK

Service Reporting Control +CR

Description: This command enables a more detailed service reporting for incoming or outgoing calls. Before sending

the CONNECT response to the application, the GSM modem will precisely define the type of data

connection being established. These report types are:

+CR: ASYNC For asynchronous transparent
+CR: REL ASYNC For asynchronous non-transparent
+CR: GPRS For GPRS

Values: No parameters

Syntax: Command syntax: AT+CR

Command	Possible responses
AT+CR=0	OK
Note: Extended reports disabled	Note: Command valid
AT+CR=1	OK
Note: Extended reports enabled	Note: Command valid

Extended Error Report +CEER

Description: This command gives the reason of the call release when the last call setup (originating or answering)

failed. New indication for GPRS is the reason of the last unsuccessful PDP context activation and the

last GPRS detach or PDP context activation.

Values: No parameters

Syntax: Command Syntax: AT+CEER

Command	Possible Responses
ATD123456789 ;	NO CARRIER
Note: Outgoing voice call	Note: Call setup failure
AT+CEER	+CEER: Error <xxx></xxx>
	OK
Note: Ask for reason of release	Note: <xxx>is the cause information element values form GSM recommendation 04.08 or specific Call accepted</xxx>

"NO CARRIER" indicates that the AT+CEER information is available for a failure diagnostic. See *Failure Cause from GSM 04.08 Recommendation* in Appendix A.

GPRS Parameters Customization +WGPRS

Description:

This command modifies some of the GPRS parameters:

- The ATTACH-STATUS (the modern doesn't automatically make a GPRS attachment after initialization)
- The PDP-INIT-STATUS (activate automatically some defined PDP Contexts after initialization) and
- The user-defined multislot class. This parameter represents the GPRS class chosen by the user to perform power saving (by reducing TX [or uplink] time slots).

In addition, this command allows you to:

- Automatically set some defined PDP contexts to be activated after initialization.
- Set some parameters for the PALM® OS software: PPP Silent Mode (PPP waits for PPP Client
 to start the dialog) and Slow CONNECT due to the delay of the processing of PALM® OK, the
 CONNECT is sent one second after the dialing command request.

Important Note: The modem must be rebooted to activate the new setup except for <mode> 3, 5, 6 and 7 (refer to the Values section).

Values:

<mode> A numeric parameter which specifies a GPRS parameter:

- **0** ATTACH-STATUS (the modern doesn't automatically make a GPRS attachment after init)
- 1 PDP-INIT-STATUS (declare some PDP contexts liable to be activated automatically after initialization by <mode>=2)
- 2 Set "ACTIVABLE" automatically after init a define PDP context
- 3 PPP silent mode
- 4 Definition of the GPRS multislot class
- 5 Slow CONNECT for PALM® OS
- 6 PPP Filtering
- 7 Automatic GPRS roaming inter-operator: if activated, the modem automatically reattaches itself to the network and reactivates its PDP context by changing the operator when reaching border areas.

Notes:

- If <mode>=0, 1, 3, 4, 5, 6 or 7 <cid> and <class> will be ignored.
- If <mode>=0, 1, 2, 3, 5, or 6 <class> will be ignored.
- If <mode>=4 <parameter> and <cid> will be ignored. The modem must be restarted to take the modification into account.
- PPP Filtering is a test-purpose functionality. It avoids sending some OS-specific frames on the radio link, for accurate transfer rate measurements.

<parameter> A numeric parameter that controls the operation defined by <mode> if it is equal to 0, 1, 2 or 3

- Operation Off (disabled)
- 1 Operation On (enabled)

<cid> (PDP Context Identifier). A numeric parameter that specifies a particular PDP context definition. The parameter is local to the DTE-modem interface and is used in other PDP context-related commands. The range of values is 0 to 4.

<class> GPRS multislot class number. It may be loser than the maximum possible class. Possible values are 2, 8, 10, 12. Note that the range of values is dependent upon the modem.

Multislot Class	Maximum Number of Slots		Min	linimum Number of Slots			Type of MS	
	Rx	Tx	Sum	T _{ta}	T _{tb}	T _{ra}	T _{rb}	
2	2	1	3	3	2	3	1	1
8	4	1	5	3	1	2	1	1
10	4	2	5	3	1	2	1	1
12	4	4	5	2	1	2	1	1

Notes:

When the modem is set in CG class, the modem always makes an automatic GPRS attachment after initialization. AT+WGPRS? always gives +WGPRS: 0,0 for the parameter 0.

The default value for mode 7 is 0. In this case, no automatic GPRS reconnection to a new operator is done when reaching border areas.

Syntax:

Command Syntax: AT+WGPRS=<mode>,<parameter>,[<cid>],[<class>]

Command	Possible Responses
AT+WGPRS=?	+WGPRS: <mode>, <parameter1>,[<cid>] [<cr><lf>+WGPRS: <mode>, <parameter>,[<cid>] []] OK</cid></parameter></mode></lf></cr></cid></parameter1></mode>
AT+WGPRS?	+WGPRS: <mode>(list of supported <parameter>),[(list of supported <cid>)][<cr><lf>+WGPRS:<mode>(list of supported <parameter>),[(list of supported <cid>)] []] OK</cid></parameter></mode></lf></cr></cid></parameter></mode>
AT+WGPRS=2,1,3 Note: Set ACTIVABLE to ON on PDP context 3	OK
AT+WGPRS=7,1 Note: Set automatic re-attachment to the network and reactivation of PDP context in case of change of operator for MCC/MNC	ОК
AT+WGPRS=4,,,18 Note: Choose GPRS multislot class 8	ОК
AT+WGPRS=? Note: Request range of values	AT+WGPRS: (0-7),(0-1),(0-4),(2,8,10,12) OK
AT+WGPRS? Note:	
Automatic re-attachment at init not activated Automatic reactivation of PDP context at init not activated	+WGPRS: 0,0 +WGPRS: 1,0
3 PDP contexts and automatic reactivation only for cid 1	+WGPRS: 2,1,1 +WGPRS: 2,0,2 +WGPRS: 2,0,3 +WGPRS: 2,0,4
 PPP silent mode activated GPRS class is 8 GPRS slow connect activated PPP filtering activated Automatic re-attachment and PDP reactivation at operator board area 	+WGPRS: 3,1 +WGPRS: 4,8 +WGPRS: 5,1 +WGPRS: 6,1 +WGPRS: 7,1

Examples of Full GPRS AT Commands

Activation of an IP PDP Context

Example 1

```
AT +CGDCONT=1, "IP", "internet"; +GCDCONT=2, "IP", "abc.com" OK ATD*99***1# CONNECT
```

Example 2

```
AT +CGCLASS="CG"
OK
+CGREG: 1
AT +CGDCONT=1, "IP", "internet"
AT +CGQREQ=1,1,4,5,2,14
OK
AT +CGQMIN=1,1,4,5,2,14
OK
AT +CGATT=1
OK
AT +CGACT=1,1
//Remark about +CGDATA: the goal of this command is the same as ATD*99***
AT +CGDATA=1
CONNECT
. . . . . .
           Data transfer
+CGEV: NW DETACH
```

Network Request

```
AT+CGAUTO=0
OK
+CRING: GPRS "IP", "211.45.89.152"
AT+CGANS=1
CONNECT
...... Data transfer
```

Chapter 16 – Other AT Commands

V.25ter Recommendation

The commands not listed in this document are not supported. For these commands, the product will then answer with "ERROR". All modulation control, error control and data compression commands are not recognized. An "ERROR" string will be returned.

GSM 07.05 Recommendation

All the 07.05 commands not described in this manual are not implemented. The product will answer "ERROR" to these commands.

GSM 07.07 Recommendation

All the 07.07 commands not described in this manual are not implemented. The product will answer "ERROR" to these commands.

Appendix A – Result Codes, Failure Causes, Other Tables

Chapter Summary

The following tables are included in Appendix A:

- ME error result code: +CME ERROR: <error>
- Message service failure result code: +CMS ERROR <er>
- · Specific error results codes
- Failure Cause from GMS 05.08 recommendation (+CEER)
- Specific Failure Cause for +CEER
- GSM 04.11 Annex E-2: Mobile originating SM-transfer
- Unsolicited result codes
- · Final result codes
- · Intermediate result codes
- Parameter storage
- GMS sequences list
- Operator names
- CPHS Information field
- CSP constraints

ME Error Result Code: +CME ERROR: <error>

<error></error>	Meaning	Resulting from the following commands
3	Operation not allowed	All GSM 07.07 commands (+CME ERROR: 3)
4	Operation not supported	All GSM 07.07 commands (+CME ERROR: 4)
5	PH-SIM PIN required (SIM lock)	All GSM 07.07 commands (+CME ERROR: 5)
10	SIM not inserted	All GSM 07.07 commands (+CME ERROR: 10)
11	SIM PIN required	All GSM 07.07 commands (+CME ERROR: 11)
12	SIM PUK required	All GSM 07.07 commands (+CME ERROR: 12)
13	SIM failure	All GSM 07.07 commands (+CME ERROR: 13)
16	Incorrect password	+CACM, +CAMM, +CPUC, +CLCK, +CPWD, +CPIN, +CPIN2 (+CME ERROR: 16)
17	SIM PIN2 required	+CPBW (FDN), +CLCK (FDN),
18	SIM PUK2 required	+CACM, +CAMM, +CPUC, +CPBW (FDN), +CPIN, +CPIN2, +CLCK (FDN), +CPWD
20	Memory full	+CPBW
21	Invalid index	+CPBR, +CPBW, ATD>[mem]index, +WMGO
22	Not found	+CPBF, +CPBP, +CPBN, +CGSN, +WOPN,
		ATD>[mem]"name"
24	Text string too long	+CPBW, +CPIN, +CPIN2, +CLCK, +CPWD
26	Dial string too long	+CPBW, ATD, +CCFC
27	Invalid characters in dial string	+CPBW
30	No network service	+VTS, +COPS=?, +CLCK, +CCFC, +CCWA, +CUSD
32	Network not allowed – emergency calls only	+COPS
40	Network personal PIN required (Network lock)	All GSM 07.07 commands (+CME ERROR: 40)
42	Network personal PIN required (Network subset lock)	All GSM 07.07 commands (+CME ERROR: 42)
44	Network personal PIN required (Service Provider lock)	All GSM 07.07 commands (+CME ERROR: 44)
46	Network personal PIN required (Corporate lock)	All GSM 07.07 commands (+CME ERROR: 46)
103	Illegal MS (#3)	+CGATT
106	Illegal ME (#6)	+CGATT
107	Mobile Station is not allowed to operate in GPRS	+CGATT
111	Mobile Station is not allowed to operate in the requested PLMN	+CGATT
112	Mobile Station is not allowed to make location updating in this area	+CGATT
113	Roaming not allowed in this area (#13)	+CGATT
132	service option not supported (#32)	+CGACT +CGDATA ATD*99
133	requested service option not subscribed (#33)	+CGACT +CGDATA ATD*99
134	service option temporarily out of order (#34)	+CGACT +CGDATA ATD*99
148	unspecified GPRS error	All GPRS commands
149	PDP authentication failure	+CGACT +CGDATA ATD*99
150	invalid mobile class	+CGCLASS +CGATT

Message Service Failure Result Code +CMS ERROR <er> is defined as below:

<er></er>	Meaning	Resulting from the following commands
1 to 127	Error cause values from the GSM	+CMGS, +CMSS
	recommendation 04.11 Annex E-2	
301	SMS service of ME reserved	+CSMS (with +CMS: ERROR 301)
302	Operation not allowed	All SMS commands (+CMSS, +CMGL, +CPMS, +CSMP
303	Operation not supported	All SMS commands
304	Invalid PDU mode parameter	+CMGS, +CMGW
305	Invalid text mode parameter	+CMGS, +CMGW, +CMSS
310	SIM not inserted	All SMS commands
311	SIM PIN required	All SMS commands
312	PH-SIM PIN required	All SMS commands
313	SIM failure	All SMS commands
316	SIM PUK required	All SMS commands
317	SIM PIN2 required	All SMS commands
318	SIM PUK2 required	All SMS commands
321	Invalid memory index	+CMGR, +CMSS, +CMGD
322	SIM memory full	+CMGW
330	SC address unknown	+CSCA?, +CMSS, +CMGS
340	no +CNMA acknowledgement expected	+CNMA

Specific Error Result Codes

<error></error>	Meaning	Results from the following commands
500	unknown error.	All commands
512	MM establishment failure (for SMS).	+CMGS, +CMSS (+CMS ERROR: 512)
513	Lower layer failure (for SMS)	+CMGS, +CMSS (+CMS ERROR: 513)
514	CP error (for SMS).	+CMGS, +CMSS (+CMS ERROR: 514)
515	Please wait, init or command processing in progress.	All commands ("+CME ERROR: 515" or
		"+CMS ERROR: 515") except ATHO,
		ATH1, AT+WOIR, AT+WIOW, AT+CFUN=1, AT+CLCC, AT+WAC,
		AT+CPAS, AT+VGR, AT+VTS,
		AT+SPEAKER
517	SIM Toolkit facility not supported.	+STGI
518	SIM Toolkit indication not received.	+STGI
519	Reset product to activate or change a new echo cancellation	+ECHO, +VIP
	algo.	
520	Automatic abort about get plmn list for an incoming call.	+COPS=?
526	PIN deactivation forbidden with this SIM card.	+CLCK
527	Please wait, RR or MM is busy. Retry your selection later.	+COPS
528	Location update failure. Emergency calls only.	+COPS
529	PLMN selection failure. Emergency calls only.	+COPS
531	SMS not sent: the <da> is not in FDN phonebook, and FDN lock</da>	+CMGS, +CMSS (+CMS ERROR: 531)
	is enabled. (for SMS)	
532	Embedded application is activated so objects flash are not erased	
533	Missing or Unknown APN	ATD*99 +GACT +CGDATA
536	Class locked: A command has been launched from a port. The	All commands
	effect is to lock all commands belonging to the same class. If	
	another port launches a command of this class, this error will	
	occur as long as the class is not released (at first command's	
537	completion time). Phonebook group full.	+CPBW
538	Not enough space to copy SMS	+WMCP
539	Invalid SMS	+CMGR
541	Open AT® application and AT software version do not match	+WOPEN
543	CMUX connection is refused by remote, after a restart of CMUX	+CMUX
J -1 J	protocol by the modem, due to a 27.010 connection loss during	OWIOX
	virtual channels establishment.	
	tas. c	

continued on next page

Continued: Specific Error Result Codes

<error></error>	Meaning	Results from the following commands
544	CMUX connection Timeout (no answer from the remote); i.e., no DLCO opened response.	+CMUX
545	A CMUX session has been started on a physical UART, and the user tries to start another CMUX session on another physical UART. The error, +CME ERROR: 545 is raised on the UART where AT+CMUX command is trying to be started again.	+CMUX
546	Emergency call is not allowed without SIM	+COPS
547	Emergency call is allowed without SIM	+COPS
548	No flash objects to delete	+WOPEN
549	The phone number of the requested phonebook entry is empty	ATD> <index>[;],ATD><phonebook><index>[;]</index></phonebook></index>
550	Unable to resize the Application & Data storage place since the new required size would overlap with the current Open AT® application storage place	+WOPEN
551	Service abort request has failed	AT+WAC
552	Unsolicited responses for autodiag or charge indication are already activated on another port	+WDIAG, +WBCM

Failure Cause from GSM 04.08 Recommendation +CEER

Cause Value	Diagnostic
1	Unassigned (unallocated) number
3	No route to destination
6	Channel unacceptable
8	Operator determined barring
16	Normal call clearing
17	User busy
18	No user responding
19	User alerting, no answer
21	Call rejected
22	Number changed
26	Non selected user clearing
27	Destination out of order
28	Invalid number format (incomplete number)
29	Facility rejected
30	Response to STATUS ENQUIRY
31	Normal, unspecified
34	No circuit/channel available
38	Network out of order
41	Temporary failure
42	Switching equipment congestion
43	Access information discarded
44	Requested circuit/channel not available
47	Resources unavailable, unspecified
49	Quality of service unavailable
50	Requested facility not subscribed
55	Incoming calls barred with in the CUG
57	Bearer capability not authorized
58	Bearer capability not presently available
63	Service or option not available, unspecified
65	Bearer service not implemented
68	ACM equal to or greater than ACMmax
69	Requested facility not implemented
70	Only restricted digital information bearer capability is available
79	Service or option not implemented, unspecified
81	Invalid transaction identifier value
87	User not member of CUG
88	Incompatible destination
91	Invalid transit network selection
95	Semantically incorrect message
96	Invalid mandatory information
97	Message type non-existent or not implemented
98	Message type not compatible with protocol state
99	Information element non-existent or not implemented
100	Conditional IE error
101	Message not compatible with protocol state
102	Recovery on timer expiry
111	Protocol error, unspecified
127	Interworking, unspecified
224	MS requested detach
225	NWK request Detach
226	Unsuccessful attach cause NO SERVICE
227	Unsuccessful attach cause NO ACCESS
228	Unsuccessful attach cause GPRS SERVICE REFUSED
229	PDP deactivation requested by NWK
230	PDP deactivation requested by NVVN PDP deactivation cause LLC link activation failed
231	PDP deactivation cause NWK reactivation with same TI
232	PDP deactivation cause GMM abort
233	PDP deactivation cause LLC or SNDCP failure
234	PDP unsuccessful activation cause GMM error
204	Ti Di unauccessiui activation cause Giviivi endi

Continued on next page.

Continued: Failure Cause from GSM 04.08 Recommendation +CEER

Cause Value	Diagnostic
235	PDP unsuccessful activation cause NWK reject
236	PDP unsuccessful activation cause NO NSAPI available
237	PDP unsuccessful activation cause SM refuse
238	PDP unsuccessful activation cause MMI ignore
239	PDP unsuccessful activation cause Nb Max Session Reach

All Other Values in the Range	Will Be Treated as Cause
[0,31]	31
[32,47]	47
[48,63]	63
[64,79]	79
[80,95]	95
[96,111]	111
[112,127]	127

Specific Failure Cause for +CEER

Cause value	Diagnostic
240	FDN is active and number is not in FDN
241	Call operation not allowed
252	Call barring on outgoing calls
253	Call barring on incoming calls
254	Call impossible
255	Lower layer failure

GSM 04.11 Annex E-2: Mobile Originating SM-Transfer

These error causes could appear for **SMS commands** (+CMGS, +CMSS, +CMGD...)

Error #	Error Label	Description	
1	Unassigned	The destination requested by the Mobile Station cannot be reached because,	
	(unallocated) number	although the number is in a valid format, it is not currently assigned (allocated).	
8	Operator determined	The MS has tried to send a mobile originating short message when the MS's	
10	barring Call barred	network operator or service provider has forbidden such transactions. The outgoing call barred service applies to the short message service for the	
		called destination.	
21	Short message transfer	The equipment sending this cause does not wish to accept this short message,	
	rejected	although it could have accepted the short message. This cause is neither busy nor incompatible.	
27	Destination out of	The destination indicated by the Mobile Station cannot be reached because the	
	service	interface to the destination is not functioning correctly. The term "not functioning	
		correctly" indicates that a signaling message was unable to be delivered to the	
		remote user; e.g., a physical layer or data link layer failure at the remote user, user equipment off-line, etc.	
28	Unidentified subscriber	The subscriber is not registered in the PLMN (e.g., IMSI not known)	
29	Facility rejected	The facility requested by the Mobile Station is not supported by the PLMN.	
30	Unknown subscriber	The subscriber is not registered in the HLR (e.g., IMSI or directory number is	
		not allocated to a subscriber).	
38	Network out of order	The network is not functioning correctly and the condition is likely to last a	
		relatively long period of time; e.g., immediately reattempting the short message	
44	Tamananan (failum	transfer is not likely to be successful.	
41	Temporary failure	The network is not functioning correctly and the condition is not likely to last a long period of time; e.g., the Mobile Station may wish to try another short	
		message transfer attempt almost immediately.	
42	Congestion	The short message service cannot be serviced because of high traffic.	
47	Resources unavailable,	This cause is used to report a resource unavailable event only when no other	
	unspecified	cause applies.	
50	Requested facility not subscribed	The requested short message service could	
69	Requested facility not implemented	The network is unable to provide the requested short message service.	
81	Invalid short message	The equipment sending this cause has received a message with a short	
	transfer reference value	message reference which is not currently in use on the MS-network interface.	
95	Invalid message, unspecified	This cause is used to report an invalid message event only when no other cause in the invalid message class applies.	
96	Invalid mandatory	The equipment sending this cause has received a message where a mandatory	
	information	information element is missing and/or has a content error (the two cases are undistinguishable).	
97	Message type non-	The equipment sending this cause has received a message with a message	
	existent or not	type it does not recognize either because this is a message not defined or	
	implemented	defined but not implemented by the equipment sending this cause.	
98	Message not compatible	The equipment sending this cause has received a message such that the	
	with short message	procedures do not indicate that this is a permissible message to receive while in	
00	protocol state	the short message transfer state.	
99	Information element non- existent or not	The equipment sending this cause has received a message which includes unrecognized information elements because the information element identifier is	
	implemented	not defined or it is defined but not implemented by the equipment sending the	
		cause.	
		However, the information element is not required to be present in the message	
		so that the equipment sends the cause to process the message.	
111	Protocol error,	This cause is used to report a protocol error event only when no other cause	
407	unspecified	applies.	
127	Interworking, unspecified	There has been interworking with a network which does not provide causes for actions it takes; thus, the precise cause for a message which is being sent	
		cannot be ascertained.	
L	1		

Note: All values other than specified should be treated as error #41.

Unsolicited Result Codes

Verbose Result Code	Numeric (V0 set)	Description	
+CALA: < time string>, <index></index>	As verbose	Alarm notification	
+CBM: <length><pdu> (PDU) or</pdu></length>	As verbose	Cell Broadcast Message directly displayed	
+CBM: <sn>,<mid>,<dcs>,<page>,<pages></pages></page></dcs></mid></sn>			
(Text mode)			
+CBMI: "BM", <index></index>	As verbose	Cell Broadcast Message stored in mem at location	
		<index></index>	
+CCCM: <ccm></ccm>	As verbose	Current Call Meter value	
+CCED: <values></values>	As verbose (specific)	Cell Environment Description indication	
+CCWA: <number>,<type>, <class> [,<alpha>]</alpha></class></type></number>	As verbose	Call Waiting number	
+CDS: <fo>, <mr> (text mode)</mr></fo>	As verbose	SMS status report after sending a SMS	
or +CDS: <length>, (PDU)</length>			
+CDSI: <mem>,<index></index></mem>	As verbose	Incoming SMS Status Report after sending a SMS,	
		stored in <mem> ("SR") at location <index></index></mem>	
+CKEV: <keynb></keynb>	As verbose	Key press or release	
+CLIP: <number>, <type> [,,,<alpha>]</alpha></type></number>	As verbose	Incoming Call Presentation	
+CMT: <oa>(text mode)</oa>	As verbose	Incoming message directly displayed	
or +CMT: [<alpha>,] (PDU)</alpha>			
+CMTI: <mem>,<index></index></mem>	As verbose	Incoming message stored in <mem> ("SM") at</mem>	
		location <index></index>	
+CREG: <stat> [,<lac>,<ci>]</ci></lac></stat>	As verbose	Network registration indication	
+CRING: <type></type>	As verbose	Incoming call type (VOICE)	
+CSQ: <rxlev>,99</rxlev>	As verbose	Automatic RxLev indication with AT+CCED=1,8	
+CSSU: <code2>[<number>,<type>]</type></number></code2>	As verbose	Supplementary service notification during a call	
+STIN: <ind></ind>	As verbose (specific)		
+WIND: <indicationnb> [,<callid>]</callid></indicationnb>	As verbose (specific)	·	
		End of init, Reset, Alerting, Call creation/release)	
+WVMI: <lineid>,<status></status></lineid>	As verbose (specific)		
+WDCI: <lineid>,<status></status></lineid>	As verbose (specific)	Diverted call indicator	
RING	2	Incoming call signal from network	
+CIEV	As verbose (specific)	Indicator event reporting	
+CUSD: <m>,[<str>,<dcs>]</dcs></str></m>	As verbose	USSD unsolicited response	

Final Result Codes

Verbose Result Code	Numeric (V0 set)	Description
+CME ERROR: <err></err>	As verbose	Error from GSM 07.05 commands
+CMS ERROR: <err></err>	As verbose	Error from SMS commands (07.07)
BUSY	7	Busy signal detected
ERROR	4	Command not accepted
NO ANSWER	8	Connection completion timeout
NO CARRIER	3	Connection terminated
OK	0	Acknowledges correct execution of a command line
RING	2	Incoming call signal from network

Intermediate Result Codes

Verbose Result Code	Numeric (V0 set)	Description	
+COLP: <number>,<type></type></number>	as verbose	Outgoing Call Presentation	
+CR: <type></type>	as verbose	Outgoing Call report control	
+ILRR: <rate></rate>	as verbose	Local TA-TE data rate	
CONNECT 300	10	Data connection at 300 bauds	
CONNECT 1200	11	Data connection at 1200 bauds	
CONNECT 1200/75	12	Data connection at 1200/75 bauds	
CONNECT 2400	13	Data connection at 2400 bauds	
CONNECT 4800	14	Data connection at 4800 bauds	
CONNECT 9600	15	Data connection at 9600 bauds	
CONNECT 14400	16	Data connection at 14400 bauds	
+CSSI: <code1>[,<index>]</index></code1>	As verbose	Supplementary service notification during a call setup	

Parameter Stor	age Mode				
Command	AT&W (E2P)	Command (E2P)	AT+CSAS (SIM, E2P)	AT&F (SIM, E2P)	Default values
General comm	ands				
+CMEE	X			Х	0
+CSCS	X			X	"PCCP437"
+WPCS	X			X	"TRANSPARENT"
					110 01017 01011
Call Control co	mmands				
%D		X		X	0
ATS0	Х			X	0 (no auto-answer)
+CICB	Х			Х	2 (speech)
+CSNS	Х			Х	0 (voice)
+ECHO		Х		X	,1,0,3,10,7 (Algo ID 1)
_00					,3,30,8000,256 (Algo ID 3)
+SIDET	Х			Х	1,2
+SPEAKER	X			X	0 (Spk 1 & Mic 1)
+VGR	X			X	128 (speaker 1)
· VOIC				Α	32 (speaker 2)
+VGT	X			Х	32 (mic 1 & ctrl 1)
				^	0 (others)
					0 (001010)
Network Service	ce comman	ds			
+COPS	Х	Х		Х	0,2
+CREG	Х			Х	0
	•	•		-1	
Phonebook co	mmands				
+CSVM		X		X	0
+WAIP	X			X	0
+WCOS		X			0
SMS command	IS				
+CNMI			Х	X	0,1,0,0,0
+CMGF	X			X	1 (text)
+CMMS					0
+CSCA			X		SIM dependant (phase 2)
+CSDH	X			X	0
+CSMP			Χ	X	1,167,0,0
+CSMS		X			0
+WUSS		Х		Х	0
Supplementary	Services c				
+CCUG		X			0,0,0
+CCWA	X			X	0
+CLIP	X			X	0
+COLP	Х			Х	0
+CSSN	Х			X	0,0
+CUSD		Х		Х	0
				.	
Data command	ls				
%C	X			X	0
\N	Х			Х	0
+CBST	Х			Х	0,0,1
+CR	Х			Х	0
+CRC	Х			Х	0
+CRLP	X			X	61,61,48,6,1
+DOPT	X			X	1,1
+DS	X			X	3,0,2048,20
+DR	X		1	X	0
		1		_ ^	Į U

+ILRR

0

Parameter Stora	ge Mode				
Command	AT&W (E2P)	Command (E2P)	AT+CSAS (SIM, E2P)	AT&F (SIM, E2P)	Default values

V24 - V25 cor	V24 – V25 commands			
&C	Х		1	
&D	X		2	
&S	Х		1	
E	X		1	
Q	X	X	0	
V	X	X	1	
+ICF	X		3,4	
+IFC	X		2,2	
+IPR	Х		115200	
+WMUX	X	X	0	

Specific commands				
+ADC		Х	Х	0
+CMER	X		X	0,0
+CPHS		Х	X	1,0 for VMI 2,0 for MBN 4,0 for DCI
+WCCS		Х		Custom table is the same as PCCP437 to GSM table
+WCDM		Х	X	0,0
+WCDP		Х	X	0
+WDR		Х		0,1
+WIND		Х	Х	0
+WIOM		Х		May be 1023,0 or 0,0
+WRIM		Х	Х	0
+WSVG		Х	X	0
+WVR		Х		5

SIM Toolkit co	mmands		
+STSF	X		0,"1F6BFFF1F",3,1

GPRS commands						
+GCAUTO	Х			Х	3	
+GCCLASS		Χ			"B"	
+GCDCONT		X				
+GCEREP	X			X	0	
+GCREG	X			X	0	
+GCSMS		X			1	
+WGPRS		Х			0,1	
					1,0	
					3,0	
					5,0	
					6,0	

GSM Sequences List

In accordance with **GSM Technical Specification 02.30**, the product supports the following GSM sequences, which can be used through the ATD and the +CKPD commands.

Security

**04*OLDPIN*NEWPIN*NEWPIN#	Change PIN code
**042*OLDPIN2*NEWPIN2*NEWPIN2#	Change PIN2 code
**05*PUK*NEWPIN*NEWPIN#	Unlock PIN code
**052*PUK2*NEWPIN2*NEWPIN2#	Unlock PIN2 code
*#06#	Show the IMEI number

Call Forwarding

*SC# or	Activate
*SC**bs#	or
**SC*PhoneNumber# or	Register and activate
**SC*PhoneNumber*BS# or	or
**SC*PhoneNumber*[BS]*T# or	or
*SC*PhoneNumber# or	or
*SC*PhoneNumber*BS# or	or
*SC*PhoneNumber*[BS]*T#	or
*#SC#	Check status
*#SC**BS#	or
#SC#	Deactivate
#SC**BS#	or
##SC#	Unregistered and deactivate
##SC**BS#	or

The Service codes (SC) are:

THE SELVICE C	oues (30) are.	
002	all call forwarding	
004	all conditional call forwarding	
21	call forwarding unconditional	
61	call forwarding on no answer	
62	call forwarding on not reachable	
67	call busy	

The Network service codes (BS) are:

No code	All tele and bearer services
10	All teleservices
11	Telephony
12	All data teleservices
16	Short Message Services
17	Voice Group Call Service
18	Voice Broadcast Service
19	All teleservices except SMS
20	All bearer services
21	All asynchronous services
22	All synchronous services
24	All data circuit synchronous
25	All data circuit asynchronous
26	All dedicated packet access
27	All dedicated PAD access

Note: The no reply condition timer (T) is only used for SC = 002, 004 or 61.

Call Barring

Note: SC values are listed below. BS values are covered in Call Forwarding

*SC*Password#	Activate
*SC*Password*BS#	or
*#SC#	Check status
*#SC**BS#	or
#SC*Password#	Deactivate
#SC*Password*BS#	or
**03*330*OLDPWD*NEWPWD*NEWPWD#	Change password for call barring
03OLDPWD*NEWPWD*NEWPWD#	or
*03*330*OLDPWD*NEWPWD*NEWPWD#	or
*03**OLDPWD*NEWPWD*NEWPWD#	or

The Service codes (SC) are:

33	call barring of outgoing call
330	all barring service (only for deactivation)
331	call barring of outgoing international call
332	call barring of outgoing international calls except to HPLMN
333	all outgoing barring service (only for deactivation)
35	call barring of incoming calls
351	call barring of incoming calls if roaming
353	all incoming barring service (only for deactivation)

Note: Network service codes (BS) are the same the call forwarding sequences.

Call Waiting

*43*BS#	Activate	
*#43*BS#	Check status	
#43*BS#	Deactivate	

Number Presentation

*#30#	CLIP check status
*#31#	CLIR check status
*31#PhoneNumber	Suppress CLIR for a voice call
#31#PhoneNumber	Invoke CLIR for a voice call
*#76#	COLP check status

Operator Names

Refer to the following documentation:

- SE13 (22nd August, 2005)
- NAPRD10 2.6.8

CPHS Information Field

CPHS Information		
Description	Data Field	Bit Field
All information	0	None
CSP service activated and allocated	1	0
SST service activated and allocated	2	1
Mailbox Number service activated and allocated	3	2
Operator Name Shortform service activated and allocated	4	3
Information Numbers service activated and allocated	5	4
RFU	6	5
RFU	7	6
RFU	8	7
Voice Message Waiting Indicator for Line 1	9	8
Voice Message Waiting Indicator for Line 2	10	9
Data Message Waiting Indicator	11	10
Call Forward Activated Indicator for Line 1	13	12
Call Forward Activated Indicator for Line 2	14	13
Call Forward Activated Indicator for Data	15	14
Reserved	17	16
Reserved	18	17
Reserved	19	18
Reserved	20	19
Line 1 Mailbox Number Available	21	20
Line 2 Mailbox Number Available	22	21
Date Mailbox Number Available	23	22
EF Mn Updatable	25	24

CSP Constants

Service Group: Call Offering

Service	External Value
Call Forwarding Unconditional	1
Call Forwarding on User Busy	2
Call Forwarding on No Rely	3
Call Forwarding on User Not Reachable	4
Call Transfer	5

Service Group: Call Restriction

Service	External Value
Barring of All Outgoing Calls	9
Barring of Outgoing International Calls	10
Barring of Outgoing International Calls except those directed to	11
the Home PLMN country	
Barring of All Outgoing Calls	12
BIC Roam	13

Service Group: Other Supplementary Services

Service	External Value
Multi-Party Service	17
Closed User Group	18
Advice of Charge	19
Perferential CUG	20
CUG Outgoing Access	21

Service Group: Group Completion

Service	External Value
Call Hold	25
Call Waiting	26
Completion of Call to Busy Subscriber	27
Restriction of the menus allowing use of user to user signaling	28

Service Group: Teleservices

Service	External Value
Short Message – Mobile Terminated	33
Short Message – Mobile Originated	34
Short Message – Cell Broadcast	35
Restricts menu options for the ability to set reply path active on	36
outgoing Short Messages	
SMS Delivery Confirmation	37
Restriction of menus for SMS Protocol ID options	38
Validity Period, restriction of menus for SMS Validity period options	39

Service Group: CPHS Teleservices

Service	External Value
Alternate Line Service	41

Service Group: Number Identification

Service	External Value
Calling Line Identification Presentation	57
Connected Line Identification Restriction	59
Connected Line Identification Presentation	60
Malicious Call Indicator	61
CLI per call mode – default block CLI – menu to send CLI	63
CLI per call mode – default block CLI – menu to block CLI	64

Service Group: Phase 2+ Services

Service	External Value
Menus concerned with GPRS functionality	65
Menus concerned with High Speed Circuit Switched Data	66
functionality	
ASCII Voice Group call menus	67
ASCII Voice Broadcast service menus	68
Multi Subscriber profile menus	69
Multi band: Restriction of menus allowing user to select a	70
particular GSM 900/1800 or 1900 band	

Service Group: Value Added Services

Service	External Value
Restriction of menus options for manual PLMN selection	73
Restriction of menus options for Voice Mail or other similar menus	74
Restriction of menus options for the ability to send Short	75
Messages with type Paging	
Restriction of menus options for the ability to send Short	76
Messages with type Email	
Restriction of menus options for Data calls	78
Restriction of menus allowing the user to change language	80

Service Group: Information Numbers

Service	External Value
The ME shall only present information numbers to the user if this	81
field is set to FF	

Appendix B - ME SIM Toolkit Support

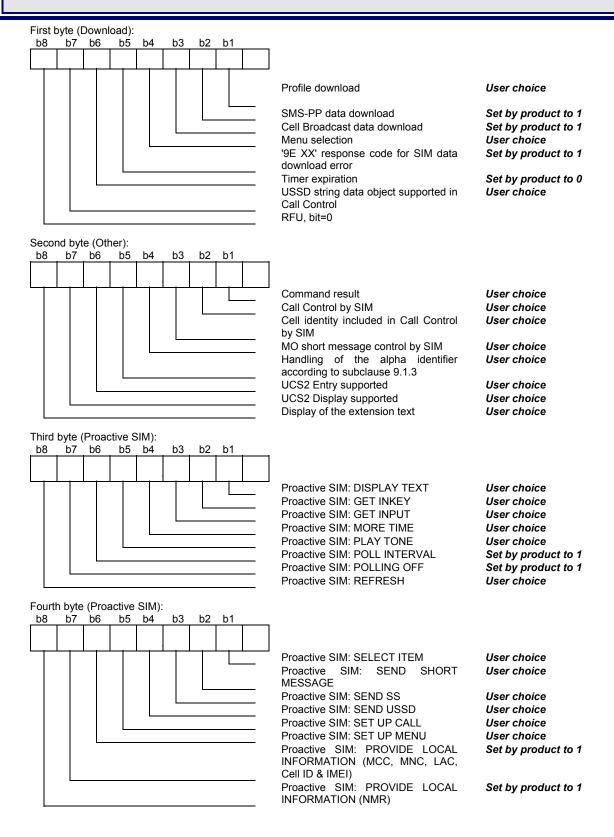
TABLE 1 – Support of SIM Toolkit classes (This has been extracted from the GMS Technical Specification 11.14.)

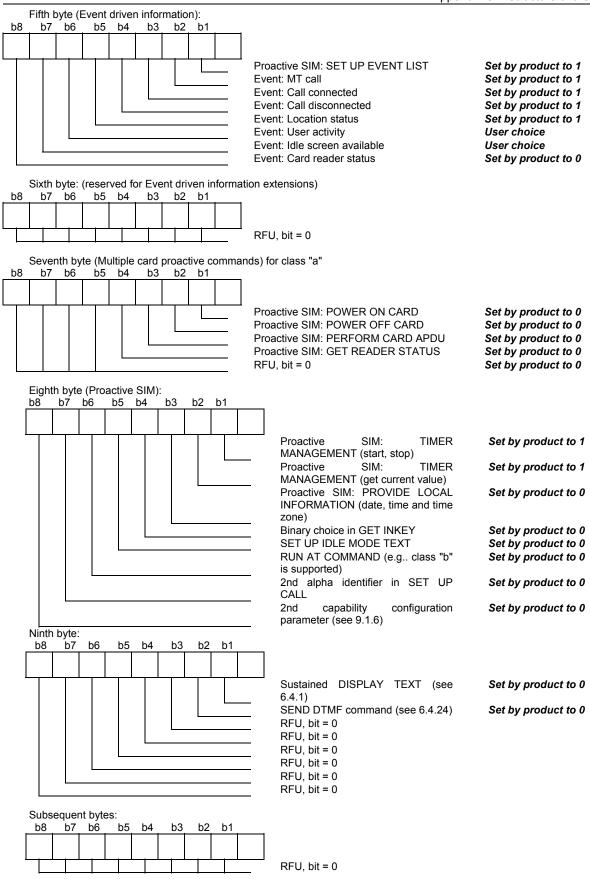
Command description		Class 1	Class 2	Class 3
CALL CONTROL			Х	Х
CELL BROADCAST DOWNLOAD			Х	Χ
DISPLAY TEXT			Х	Х
EVENT DOWNLOAD				
- MT call				Χ
- Call connected				Χ
- Call disconnected				Х
- Location status				Х
- User activity				Х
- Idle screen available				Х
GET INKEY			Χ	Х
GET INPUT			Χ	Х
GET READER STATUS	\$(MultipleCard)\$			Lc
MENU SELECTION			Χ	Х
MO SHORT MESSAGE CONTROL				Х
MORE TIME			Х	Х
PERFORM CARD APDU	\$(MultipleCard)\$			Lc
PLAY TONE			Х	Х
POLLING OFF			Х	Х
POLL INTERVAL			Х	Х
POWER ON CARD	\$(MultipleCard)\$			Lc
POWER OFF CARD	\$(MultipleCard)\$			Lc
PROVIDE LOCAL INFORMATION			Х	Х
REFRESH		X	Х	Х
RUN AT COMMAND	\$(AT\$)			Lc
SELECT ITEM			Х	Χ
SEND SHORT MESSAGE			Х	Х
SEND SS			Х	X
SEND USSD				Χ
SET UP CALL			Х	Х
SET UP EVENT LIST				Х
SET UP IDLE MODE TEXT	\$(IdleModeText)\$			Х
SET UP MENU			Х	Х
SMS-PP DOWNLOAD		X	Х	Х
TIMER MANAGEMENT	\$(Timer)\$			Lc
TIMER EXPIRATION	\$(Timer)\$			Lc

TABLE 2 - Compatibility between Available Terminal Responses and Proactive Commands

	Proactive commands											
Terminal Reponses	Setup Menu (0)	Display Text (1)	Get Inkey (2)	Get Input (3)	Setup Call (4)	Play Tone (5)	Select Item (6)	Refresh (7)	Send SS (8)	Send SMS (9)	USSD	Setup event list (11)
Backward Move (95)		•	•	•			•					
Command beyond ME capabilities (96)	•	•	•	•	•	•	•	•	•	•	•	•
ME currently unable to process command (97)	•	•	•	•	•	•	•	•	•	•	•	•
No response from the user (98)		•	•	•			•					
SIM session terminated by the user (99)		•	•	•	•	•	•					

Appendix C – Structure of the Terminal Profile





Appendix D - Command Type and Next Action Indicator

This table has been extracted from the GMS Technical Specification 11.14.

Value	Name	Used for Type of Command coding	Used for Next Action Indicator coding
'00'		-	-
'01'	REFRESH	Χ	
'02'	MORE TIME	Χ	
'03'	POLL INTERVAL	Χ	
'04'	POLLING OFF	X	
'05'	SET UP EVENT LIST	Х	
'10'	SET UP CALL	Χ	X
'11'	SEND SS	Χ	X
'12'	SEND USSD	Χ	X
'13'	SEND SHORT MESSAGE	Χ	Χ
'14'	SEND DTMF	Χ	
'20'	PLAY TONE	Χ	X
'21'	DISPLAY TEXT	Χ	X
'22'	GET INKEY	Χ	Χ
'23'	GET INPUT	X	X
'24'	SELECT ITEM	Χ	X
'25'	SET UP MENU	Χ	X
'26'	PROVIDE LOCAL INFORMATION	Χ	
'27'	TIMER MANAGEMENT	Χ	
'28'	SET UP IDLE MODEL TEXT	Х	X
'30'	PERFORM CARD APDU class "a" only	Х	X
'31'	POWER ON CARD class "a" only	Х	X
'32'	POWER OFF CARD class "a" only	Х	X
'33'	GET READER STATUS class "a" only	Χ	X
'34'	RUN AT COMMAND class "b" only	Х	
'81'	End of the proactive session	not applicable	Х

Appendix G – Coding of Alpha fields in the SIM for UCS2

The coding can take one of the three following structures. If the ME supports UCS2 coding of alpha fields in the SIM, the ME shall support all three coding schemes for character sets containing 128 characters or less; for character sets containing more than 128 characters, the ME shall at least support the first coding scheme. If the alpha field record contains GSM default alphabet characters only, then none of these schemes shall be used in that record. Within a record, only one coding scheme, either GSM default alphabet, or one of the three described below, shall be used.

1. If the **first byte in the alpha string is '0x80'**, then the other bytes are 16 bit UCS2 characters. The more significant byte (MSB) of the UCS2 character is coded in the lower numbered byte of the alpha field, and the less significant byte (LSB) of the UCS2 character is coded in the higher numbered alpha field byte. In other words, byte 2 of the alpha field contains the more significant byte (MSB) of the first UCS2 character, and byte 3 of the alpha field contains the less significant byte (LSB) of the first UCS2 character (as shown below). Unused bytes shall be set to 'FF', and if the alpha field has an even number of bytes, then the last (unusable) byte shall be set to 'FF'.

Example 1

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Byte 9
'80'	Ch1 _{MSB}	Ch1 _{LSB}	Ch2 _{MSB}	Ch2 _{LSB}	Ch3 _{MSB}	Ch3 _{LSB}	'FF'	'FF'

- 2. If the first byte of the alpha string is set to 0x'81', then the second byte contains a value indicating the number of characters in the string. The third byte contains an 8-bit number that defines bits 15 to 8 of a 16-bit base pointer, where bit 16 is set to zero, and bits 7 to 1 are also set to zero. These sixteen bits represent a base pointer to a "half-page" in the UCS2 code space, to be used with some or all of the remaining bytes in the string. The fourth and subsequent bytes in the string contain codings as follows:
 - If bit 8 of the byte is set to zero, the remaining bits of the byte contain a GSM Default Alphabet character
 - If bit 8 of the byte is set to one, then the remaining bits are an offset value added to the 16-bit base pointer defined by byte 3, and the resulting 16-bit value is a UCS2 code point and defines a UCS2 character.

Example 2

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Byte 9
'81'	'05'	'13'	'53'	'95'	'A6'	'XX'	'FF'	'FF'

In the above example:

- Byte 2 indicates there are 5 characters in the string
- Byte 3 indicates bits 15 to 8 of the base pointer, and indicates a bit pattern of 0hhh hhhh h000 0000 as the 16 bit base pointer number. Bengali characters for example start at code position 0980 (0000 1001 1000 0000), which is indicated by the coding '13' in byte 3 (shown by the italicized digits).
- Byte 4 indicates GSM Default Alphabet character '53'; e.g., "S".
- Byte 5 indicates a UCS2 character offset to the base pointer of '15', expressed in binary as follows 001 0101, which, when added to the base pointer value results in a sixteen bit value of 0000 1001 1001 0101, e.g.. '0995', which is the Bengali letter KA.
- Byte 8 contains the value 'FF', but as the string length is 5, this a valid character in the string, where the bit pattern 111 1111 is added to the base pointer, yielding a sixteen bit value of 0000 1001 1111 1111 for the UCS2 character (e.g., '09FF').
- · Byte 9 contains the padding value 0xFF.
- 3. If the first byte of the alpha string is set to '0x82', then the second byte contains the length of the string (number of characters). The third and fourth bytes contain a 16-bit number that defines the complete 16-bit base pointer to a "half-page" in the UCS2 code space for use with some or all of the remaining bytes in the string. The fifth and subsequent bytes in the string contain coding as follows:
 - If bit 8 of the byte is set to zero, the remaining 7 bits of the byte contain a GSM Default Alphabet character
 - If bit 8 of the byte is set to one, the remaining 7 bits are an offset value added to the base pointer defined in bytes three and four, and the resultant 16 bit value is a UCS2 code point, and defines a UCS2 character.

Example 3

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Byte 9
'82'	'05'	'05'	'30'	'2D'	'82'	'D3'	'2D'	'31'

In the above example

- Byte 2 indicates there are 5 characters in the string
- Bytes 3 and 4 contain a sixteen bit base pointer number of '0530', pointing to the first character of the Armenian character set.
- Byte 5 contains a GSM Default Alphabet character of '2D', which is a dash "-".
- Byte 6 contains a value '82', which indicates it is an offset of '02' added to the base pointer, resulting in a UCS2 character code of '0532', which represents Armenian character Capital BEN.
- Byte 7 contains a value 'D3', an offset of '53', which when added to the base pointer results in a UCS2 code point of '0583', representing Armenian Character small PIWR.

Appendix F – Command Execution and Dependence on SIM

The following table lists AT command execution syntax and the execution condition. The SIM dependency column indicates if the command behavior will vary if another card is used. For example, it will vary for phonebook reading commands. The Intermediate column indicates if intermediate response can occur.

General Commands

AT Commands	Conditions	SIM dependence	Intermediate
AT+CGMI	+WIND: 3	N	N
AT+CGMM	+WIND: 3	N	N
AT+CGMR	+WIND: 3	N	N
AT+CGSN	+WIND: 3	N	N
AT+CSCS	+WIND: 4	N	N
AT+WPCS	+WIND: 4	N	N
AT+CIMI	+WIND: 4	Υ	N
AT+CCID	+WIND: 1	Υ	N
AT+GCAP	+WIND: 3	N	N
A/	Depends on previous command	Depends on prev. command	N
AT+CPOF	+WIND: 3 without SIM,	N	N
	+WIND: 1 with SIM		
AT+CFUN	+WIND: 3	N	N
AT+CPAS	+WIND: 3	N	N
AT+CMEE	+WIND: 3	N	N
AT+CKPD	Depends of the sequence used	Y/N	N
AT+CCLK	+WIND: 3	Υ	N
AT+CALA	+WIND: 3	N	Υ
AT+CRMP	+WIND: 3	N	N
AT+CRSL	+WIND: 3	N	N
AT+CMUX		N	N

Call Control Commands

AT commands	Conditions	SIM dependence	Intermediate
ATD	Depends of sequence used	Y/N	Υ
ATH	+WIND: 3	N	N
ATA	+WIND: 3	N	N
AT+CEER	+WIND: 4	Υ	N
AT+VTD	+WIND: 3	N	N
AT+VTS	+WIND: 5	N	N
ATDL	+WIND: 3	N	Υ
AT%D	+WIND: 3	N	N
ATS0	+WIND: 3	N	N
AT+CICB	+WIND: 3	N	N
AT+CSNS	+WIND: 3	N	N
AT+VGR	+WIND: 3	N	N
AT+VGT	+WIND: 3	N	N
AT+CMUT	+WIND: 5	N	N
AT+SPEAKER	+WIND: 3	N	N
AT+ECHO	+WIND: 3	N	N
AT+SIDET	+WIND: 3	N	N
AT+VIP	+WIND: 3	N	N

Network Service Commands

AT commands	Conditions	SIM dependence	Intermediate
AT+CSQ	+WIND: 3	N	N
AT+COPS	+WIND: 4	Υ	N
AT+CREG	+WIND: 3	N	Υ
AT+WOPN	+WIND: 3	N	N
AT+CPLS	PIN	Υ	N
AT+CPOL	After PIN entered	Υ	Υ
AT+COPN	After PIN entered	N	N

Security Commands

AT commands	Conditions	SIM dependence	Intermediate
AT+CPIN	+WIND: 1	Υ	N
AT+CPIN2	after PIN entered	Υ	N
AT+CPINC	+WIND: 1	Υ	N
AT+CLCK	+WIND: 4	Υ	N
AT+CPWD	+WIND: 4	Υ	N

Phonebook Commands

AT commands	Conditions	SIM dependence	Intermediate
AT+CPBS	+WIND: 4	Υ	N
AT+CPBR	+WIND: 4	Υ	Υ
AT+CPBF	+WIND: 4	Υ	Υ
AT+CPBW	+WIND: 4	Υ	N
AT+CPBP	+WIND: 4	Υ	Υ
AT+CPBN	+WIND: 4	Υ	Υ
AT+CNUM	+WIND: 4	Υ	N
AT+WAIP	+WIND: 3	N	N
AT+WDCP	+WIND: 4	Υ	N
AT+CSVM	+WIND: 4	N	N
AT+WCOS	+WIND: 3	N	N
AT+WPGW	+WIND: 4	N	N
AT+WPGR	+WIND: 4	N	Υ
AT+WPGS	+WIND: 4	N	Υ

Short Messages Commands

AT commands	Conditions	SIM dependence	Intermediate
AT+CSMS	+WIND: 16	Υ	N
AT+CNMA	+WIND: 16	Υ	N
AT+CPMS	+WIND: 16	Υ	N
AT+CMGF	+WIND: 3	Υ	N
AT+CSAS	+WIND: 3	Υ	N
AT+CRES	+WIND: 3	Υ	N
AT+CSDH	+WIND: 16	Υ	N
AT+CNMI	+WIND: 16	Υ	N
AT+CMGR	+WIND: 16	Υ	Υ
AT+CMGL	+WIND: 16	Υ	Υ
AT+CMGS	+WIND: 16	Υ	N
AT+CMGW	+WIND: 16	Υ	Υ
AT+CMSS	+WIND: 16	Υ	N
AT+CSMP	+WIND: 16	Υ	N
AT+CMGD	+WIND: 16	Υ	N
AT+CSCA	+WIND: 16	Υ	N
AT+CSCB	+WIND: 16	Υ	N
AT+WCBM	+WIND: 16	Υ	N
AT+WMSC	+WIND: 16	Υ	Υ
AT+WMGO	+WIND: 16	Υ	N
AT+WUSS	+WIND: 3	N	N
AT+WMCP	+WIND: 16	Υ	N
AT+CMMS	+WIND: 3	Υ	N

Supplementary Services Commands

AT commands	Conditions	SIM dependence	Intermediate
AT+CCFC	+WIND: 4	Υ	N
AT+CLCK	+WIND: 4	Υ	N
AT+CPWD	+WIND: 4	Υ	N
AT+CCWA	+WIND: 4	Υ	N
AT+CLIR	After PIN entered	Υ	N
AT+CLIP	After PIN entered	Υ	N
AT+COLP	After PIN entered	Υ	N
AT+CAOC	After PIN entered	Υ	Υ
AT+CACM	After PIN entered	Υ	N
AT+CAMM	After PIN entered	Υ	N
AT+CPUC	After PIN entered	Υ	N
AT+CHLD	+WIND: 5,2	Υ	N
AT+CLCC	+WIND: 3	N	N
AT+CSSN	+WIND: 3	N	N
AT+CUSD	+WIND: 3	N	N
AT+CCUG	+WIND: 4	Υ	Υ

Data Commands

AT commands	Conditions	SIM dependence	Intermediate
AT+CBST	+WIND: 3	N	N
AT+FCLASS	+WIND: 3	N	N
AT+CR	+WIND: 3	N	N
AT+CRC	+WIND: 3	N	N
AT+ILRR	After PIN entered	N	N
AT+CRLP	+WIND: 3	N	N
AT+DOPT	+WIND: 3	N	N
AT%C	+WIND: 3	N	N
AT+DS	+WIND: 3	N	N
AT+DR	+WIND: 3	N	N
\N	+WIND: 3	N	N

V24-V25 Commands

AT commands	Conditions	SIM dependence	Intermediate
AT+IPR	+WIND: 3	N	N
AT+ICF	+WIND: 3	N	N
AT+IFC	+WIND: 3	N	N
AT&C	+WIND: 3	N	N
AT&D	+WIND: 3	N	N
AT&S	+WIND: 3	N	N
ATO	+CLCC:X,0,0,1,X	N	N
	(data call)		
ATQ	+WIND: 3	N	N
ATV	+WIND: 3	N	N
ATZ	+WIND: 3	N	N
AT&W	+WIND: 3	N	N
AT&T	+WIND: 3	N	N
ATE	+WIND: 3	N	N
AT&F	+WIND: 3	N	N
AT&V	+WIND: 3	N	N
ATI	+WIND: 3	N	N
AT+WMUX	+WIND: 3	N	N

Specific AT Commands

Conditions	CIM dependence	Intermediate
-		N
		N
		N
		N
		N
The state of the s		N
		N
		N
_		N
+WIND: 3		N
+WIND: 3		N
+WIND: 3	N	N
+WIND: 4	N	N
None (PIN for auto CNL)	N (Y for auto CNL)	N
+WIND: 4	Y	N
+WIND: 3	N	N
+WIND: 3	N	N
PIN	Υ	N
+WIND: 4		
	N	N
	N	N
	N	N
+WIND: 3	N	N
The state of the s		N
	+WIND: 3 +WIND: 4 +WIND: 4 +WIND: 3	+WIND: 3

SIM Toolkit Commands

AT commands	Conditions	SIM dependence	Intermediate
AT+STSF	None	N	N
AT+STIN	+WIND: 4	Υ	N
AT+STGI	+WIND: 4	Υ	N
AT+STGR	+WIND: 4	Υ	N

GPRS Commands

AT commands	Conditions	SIM dependence	Intermediate
AT+CGDCONT	+WIND: 4		
AT+CGQREQ	+WIND: 4		
AT+CGQMIN	+WIND: 4		
AT+CGATT	+WIND: 4		
AT+CGACT	+WIND: 4		
AT+CGDATA	+WIND: 4		
AT+CGCLASS	+WIND: 3	N	N
AT+CGCLASS	+WIND: 4		
AT+CGSMS	+WIND: 4		
AT+CGREP	+WIND: 4		
AT+CGREG	+WIND: 4		
AT+CGAUTO	+WIND: 4		
AT+CGANS	+WIND: 4		
AT+CGADDR	+WIND: 4		
AT+WGPRS	+WIND: 3	None	N

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%C Select Data Compression97	+CMGR Read Message	68
%D Automatic Dialing with DTR23	+CMGS Send Message	70
·	+CMGW Write Message to Memory	
&	+CMMS More Messages to Send	
&C Set DCD Signal101	+CMS ERROR Message Service Failure Result Code.	
&D Set DTR Signal102	+CMSS Send Message from Storage	
&F Restore Factory Settings104	+CMUT Microphone Mute Control	
&S Set DSR Signal102	+CNMA New Message Acknowledgement	
&T Auto-Tests104	+CNMI New Message Indication	
&V Display Configuration105	+CNUM Subscriber Number	55
&W Save Configuration	+COLP Connected Line Identification Presentation	
avv cave comiguration	+COPN Read Operator Name	
<i>+</i>	+COPS Operator Selection	
+ADC Analog Digital Converter Measurements111	+CPAS Phone activity status	
+CACM Accumulated Call Meter85	+CPBF Find Phonebook Entries	
+CALA Alarm Management	+CPBN Move Action in Phonebook	
+CAMM Accumulated Call Meter Maximum86	+CPBP Phonebook Phone Search	
+CAOC Advice of Charge85	+CPBR Read Phonebook Entries	
+CBST Bearer Type Selection	+CPBS Select Phonebook Memory Storage	
+CCED Cell Environment Description	+CPBW Write Phonebook Entry	49
+CCFC Call Forwarding80	+CPHS CPHS Command	
+CCID Card Identification	+CPIN Enter PIN	
	+CPIN2 Enter PIN2	
+CCLK Clock Management	+CPINC PIN Remaining Attempt Number	
+CCUG Closed User Group	+CPLS Selection of Preferred PLMN List	
+CCWA Call Waiting	+CPMS Preferred Message Storage	
+CEER Extended Error Report	+CPOF Power off	
+CFUN Set phone functionality	+CPOL Preferred Operator List	
+CGACT PDP Context Activate or Deactivate	+CPUC Price Per Unit and Currency Table	
+CGANS Manual Response to Network Request for PDP	+CPWD Change Password	
Context Activation	+CPWD Modify SS Password	
+CGATT Attach or Detach	+CR Service Reporting Control94,	
+CGAUTO Automatic Response to Network Request for	+CRC Cellular Result Codes	
PDP Context Activation	+CREG Network Registration	
+CGCLASS GPRS Mobile Station Class	+CRLP Radio Link Protocol Parameters	
+CGDATA Enter Data State	+CSAS Save Settings	
+CGDCONT Define PDP Context	+CSCA Service Center Address	
+CGEREP GPRS Event Reporting	+CSCB Select Cell Broadcast Message Types	
+CGMI Manufacturer identification	+CSCS Select TE character set	
+CGMM Request Model Identification	+CSDH Show Text Mode Parameters	
+CGMR Request revision identification	+CSMP Set Text Mode Parameters	
+CGPADDR Show PDP Address	+CSMS Select Message Service	
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+CGQREQ Quality of Service Profile Requested151	+CSSN Supplementary Service Notifications	
+CGREG GPRS Network Registration Status161	+CSVM Set Voice Mail Number	
+CGSMS Select Service for MO SMS Messages159	+CUSD Unstructured Supplementary Service Data	
+CHLD Call Related Supplementary Services87	+DOPT Others Radio Link Parameters	
+CICB Incoming Call Bearer24	+DR V42bis Data Compression Report	
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+CME Error Result Code		
+CMEE Report Mobile Equipment errors	+IPR Fixed DTE Rate	
+CMER Mobile Equipment Event Reporting112	+SIDET SideTone Modification	
+CMGD Delete Message73	+SPEAKER Speaker & Microphone Selection	20
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+STCR Unsolicited Result SIM ToolKit Control Res	ponse	Advice of Charge +CAOC	
		Alarm Management +CALA	
+STGI SIM ToolKit Get Information		Alternate Line Service +WALS	
+STGR SIM ToolKit Give Response		Analog Digital Converter Measurements +ADC	
+STIN or STRIL SIM ToolKit Indication		Answer a Call A	
+STSF SIM ToolKit Set Facilities		Automatic Answer S0	
+VGR, +VGT Gain Control		Automatic Dialing with DTR %D	
+VIP Initialize Voice Parameters		Automatic Response to Network Request for PDP (
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+WAIP Avoid Phonebook Initialization		\boldsymbol{B}	
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+WCCS Custom Character Set		<i>C</i>	
+WCDM Change Default Melody		_	
+WCDP Change Default Player	130	Call Barring +CLCK	
+WCOS Contact Selector	57	Call Forwarding +CCFC	
+WCPI CPHS Information		Call Related Supplementary Services +CHLD	
+WCSP Customer Service Profile		Call Waiting +CCWA	
+WDCI Unsolicited Result Diverted Call Indicator		Calling Line Identification Presentation +CLIP	
+WDCP Delete Calls Phonebook		Calling Line Identification Restriction +CLIR	
+WDR Data Rate		Capabilities list +GCAP	15
+WDTMF Play DTMF Tone		Card Identification +CCID	
+WDWL Downloading +WGPRS GPRS Parameters Customization		Cell Broadcast Message Identifiers +WCBM	
+WIND General Indications		Cell Environment Description +CCED	
+WIOM Input/Output Management		Cellular Result Codes +CRC	
+WIOR Read GPIO Value	114	Change Default Blover JWCDB	
+WIOW Write GPIO Value		Change Default Player +WCDP Change or Do Not Change SMS Status +WUSS	
+WLCK Lock		Change Password +CPWD	
+WLPR Read Language Preference		Clock Management +CCLK	
+WLPW Write Language Preference		Closed User Group +CCUG	
+WMBN CPHS Mail Box Number		Command line	
+WMBS Multi-Band Selection	137	AT	10
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+WPGS Settings of a Phonebook Group		Echo Cancellation +ECHO	
+WPGW Create and Delete a Phonebook Group +WPGW Read a Phonebook Group		Extended Error Report +CEER	
+WRIM Ring Indicator Mode		Gain Control +VGR, +VGT	
+WRST Reset		Hang-Up command H	
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+WSTR Status Request		Redial Last Telephone Number DL	
+WSVG Select Voice Gain		Remote Disconnection A	
+WTONE Play Tone		SideTone Modification +SIDET	
+WUSS Change or Do Not Change SMS Status	77	Single Numbering Scheme +CSNS	
+WVMI Unsolicited Result Voice Mail Indicator	128	Speaker & Microphone Selection +SPEAKER	
+WVR Voice Rate	119	Commands, Data	
		Bearer Type Selection +CBST	93
<i>3</i>		Cellular Result Codes +CRC	
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A Remote Disconnection		Select Data Error Correcting Mode \N	
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