# SPT 1834 Terminals

# GSM AT Command Set

# SPT 1834 GSM AT Command Set

**72E-57095-01**
**Revision A — May 2002**

Symbol Technologies, Inc.  One Symbol Plaza, Holtsville N.Y. 11742

# *SPT 1834*
# *GSM AT Command Set*

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*Revision A*
*May 2002*

symbol®

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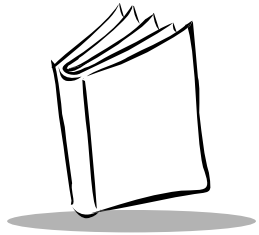

# *About This Guide*

## Introduction

The *SPT 1834 GSM AT Command Set* describes the messages exchanged between the SPT 1834 and the embedded modem. The AT commands are used to control incoming and outgoing calls, the data teleservices, and the short message teleservices.

## Notational Conventions

This document uses these conventions:

- “terminal” refers to the SPT 1834.
- “User” refers to anyone using an application on the SPT 1834.
- “You” refers to the developer or other person using this manual as a reference to develop applications for the SPT 1834.
- *Italics* are used to highlight specific items in the general text, and to identify chapters and sections in this and related documents. It also identifies names of dialog boxes and tabs within dialog boxes.
- `Courier text` indicates sample code.
- Bullets (•) indicate:
  - lists of alternatives or action items.
  - lists of required steps that are not necessarily sequential.
- Numbered lists indicate a set of sequential steps, i.e., those that describe step-by-step procedures.

# Abbreviations and Acronyms

The following abbreviations/acronyms are used throughout this guide:

- **AT:** ATtention, used to start a command line.
- **ETSI:** European Telecommunications Standards Institute.
- **GSM:** Global System for Mobile communications.
- **ITU-T:** International Telecommunication Union = Telecommunication Standardization Sector.
- **ME:** Mobile Equipment. Refers to the GSM Modem.
- **MOC:** Mobile Originated Call; a call from the SPT 1834 to the fixed network (outgoing call).
- **MS:** Mobile Station
- **MTC:** Mobile Terminated Call; a call from the fixed network to the SPT 1834 (incoming call).
- **PIN:** Personal Identification Number, 4-digit code used to protect the SIM.
- **PUK:** Unblocking Key, 8-digit code used to unblock SIM PIN.
- **SIM:** Subscriber Identity Module.
- **TA:** Terminal Adapter. Refers to the GSM Modem.
- **TE:** Terminal Equipment. Refers to the host device/application.

# References

The following table lists the documents referenced throughout this guide.

| | |
|---|---|
| **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) |
| **ETSI GSM 07.07** | Digital cellular telecommunications system (phase 2);<br>AT command set for GSM Mobile Equipment (ME) |
| **ITU-T Recommendation V.25 ter** | Serial asynchronous automatic dialling and control |
| **ETSI GSM 03.40** | Digital cellular telecommunications system (phase 2);<br>Technical realization of the Short Message Service (SMS) Point-to-Point (PP) |

| | |
|---|---|
| **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) |
| **ETSI GSM 03.38** | Digital cellular telecommunications system (phase 2); Alphabets and language-specific information |
| **ETSI GSM 04.80** | Digital cellular telecommunications system (Phase 2): Mobile radio interface layer 3, Supplementary services specification, Formats and coding |

# Service Information

If you have a problem with your equipment, contact the *Symbol Support Center* for your region. See page xi for contact information. Before calling, have the model number, serial number, and several of your bar code symbols at hand.

Call the Support Center from a phone near the scanning equipment so that the service person can try to talk you through your problem. If the equipment is found to be working properly and the problem is symbol readability, the Support Center will request samples of your bar codes for analysis at our plant.

If your problem cannot be solved over the phone, you may need to return your equipment for servicing. If that is necessary, you will be given specific directions.

**Note:** *Symbol Technologies is not responsible for any damages incurred during shipment if the approved shipping container is not used. Shipping the units improperly can possibly void the warranty. If the original shipping container was not kept, contact Symbol to have another sent to you.*

## *Symbol Support Center*

For service information, warranty information or technical assistance contact or call the Symbol Support Center in:

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Symbol Technologies, Inc.
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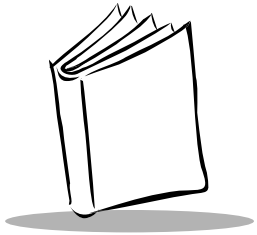
[1]Customer support is available 24 hours a day, 7 days a week.

If you purchased your Symbol product from a Symbol Business Partner, contact that Business Partner for service.

For the latest version of this guide go to:http://www.symbol.com/manuals.



# Chapter 1
# Introduction

The SPT 1834 dual-band GSM radio modem is fully integrated in the SPT 1834, allowing the terminal to communicate wirelessly using the GSM900/1800 cellular networks. This guide describes the AT command set supported by the SPT 1834 GSM radio modem.

## AT Command Features

### *Wavecom Line Settings*

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

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

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

### *Command Line*

All AT commands start with AT (meaning Attention) and end with a <CR> character.

## *Information Responses and Result Codes*

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

- If the syntax of the command is wrong, the modem returns an ERROR string.
- If the syntax command is correct but parameters are incorrect, the modem returns the strings +CME ERROR: <*Err*> or +CMS ERROR: <*SmsErr*> with varying error codes.
- If the command line is performed successfully, the modem returns the string: OK.

In some cases, such as with AT+CPIN?, AT+EXPKEY?, or incoming events (unsolicited); the modem does not return OK.

# General Behaviors

## *SIM Insertion and Removal*

The modem supports software functions that read the hardware SIM presence pin to determine whether a SIM card is inserted. This pin state (open/closed) is continuously monitored.

When the SIM presence pin indicates that a card is present in the SIM connector, the modem tries to set a logical SIM session. Depending on whether the detected card is a SIM card, the logical SIM session is or is not set. AT+CPIN? returns the following:

- If no card is present, AT+CPIN? returns: +CME ERROR 10 (SIM not inserted).
- If a SIM card is present AT+CPIN? returns:
  +CPIN: *xxx* depending on the SIM PIN state.
- If a card is present but is not a SIM Card, AT+CPIN? returns: CME ERROR 10

The last two are not immediately available due to background initialization. After the hardware SIM presence pin detects the card, the modem returns +CME ERROR: 515 (*Please wait, init in progress*) until the above responses occur.

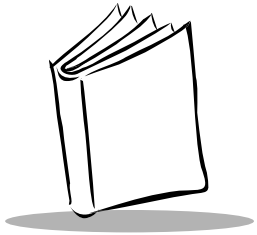
When the SIM presence pin indicates no card is present and a SIM card was previously inserted, an IMSI detach procedure deletes all user data from the module (Phonebooks, SMS etc.), placing the modem in emergency mode.

## Background Initialization

After PIN entry, the modem issues a response immediately after verification, although some SIM user data files are still loading in the background (e.g., Phonebooks, SMS status). Because these data files are not available immediately after the PIN entry verification response (OK), if you attempt to read these files (e.g., phonebooks) the modem issues the response: +CME ERROR: 515 or +CMS ERROR: 515, meaning “please wait, service is not available, init in progress”.

The modem may issue this response in several cases:

- When trying to execute another AT command before the previous one is complete.
- When swapping between ADN and FDN and trying to immediately read the phonebook involved.
- When requesting +CPIN? status just after a SIM insertion, before the module has determined if the card is a valid SIM card.



# Chapter 2
# General Commands

This chapter covers commands supported by your GSM modem, detailed in GSM 07.07.

## A/, *Repeat Last Command*

### *Description*

Repeats the previous command. The A/ command can not be repeated.

| Command | Possible Response |
|---|---|
| **A/** | (repeats previous command) |

# AT+CALA, *Alarm Management*

## *Description*

Sets alarms date/time in the ME. The string format of alarm:

yy/MM/dd,hh:mm:ss (see +CCLK)

Maximum number of alarms is 16. Seconds are ignored.

| Command | Possible Response |
|---|---|
| **AT+CALA?** | +CALA: <*list of alarms*> |
| **AT+CALA=<*date and time string*>** | OK<br>(or)<br>+CME ERROR 3 (invalid alarm) |
| **AT+CALA="",<*index*>** | OK (delete alarm <*index*>) |

## *Examples*

AT+CALA? *[list alarms]*

+CALA: “00/06/08,15:25:00”,0

+CALA: “00/06/09,07:30:00”,1

+CALA: “00/06/10,23:59:00”,2

+CALA: “00/06/08,15:25:00”,0 *[alarm occurs]*

AT+CALA="",2 *[delete alarm index 2]*

OK

AT+CALA?

+CALA: “00/06/09,07:30:00”,1

# AT+CCID, *Card Identification*

## *Description*

Orders the modem to read the EF-CCID file on the SIM card.

| Command | Possible Response |
|---|---|
| **AT+CCID=?** | (list of supported <*n*>s) |
| **AT+CCID?** | <*n*> (current value) |
| **AT+CCID** | <*n*> |

**where:**

<*n*>:

| | |
|---|---|
| 123456789AB111213141 | GSM digital cellular |

## *Note*

If EF-CCID file is not present on the SIM, the +CCID is not sent, but OK is returned.

# AT+CCLK, *Clock Management*

## *Description*

Sets or gets the current date and time of the ME real-time clock. The string format of date/time is :

yy/MM/dd,hh:mm:ss

Valid years are 98 (for 1998) to 97 (for 2097). Seconds field is optional.

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

| Command | Possible Response |
|---|---|
| **AT+CCLK?** | +CCLK: (current value) |
| **AT+CCLK=<*date*><*time*>** | OK |

## *Example*

AT+CCLK=”00/06/09,17:33:00” *[set date to June 9th, 2000, and time to 5:33pm]*

AT+CCLK=”00/13/13,12:00:00”

+CME ERROR 3 *[Bad month is entered]*

+CCLK: “00/06/09,17:34:23”

# AT+CFUN, *Set Phone Functionality*

## *Description*

Sets level of functionality provided by the ME.

When the application wants to stop the modem in order to power off, or force the modem to execute a IMSI DETACH procedure, it sends:

AT+CFUN=0 (equivalent to AT+CPOF)

This command executes a IMSI DETACH and creates a backup of some internal parameters in the SIM and the EEPROM. No access to the SIM card is possible.

- If the SPT 1834 is not turned off after this command, it receives another command to re-start the GSM process.
- If the SPT 1834 is turned off after this command, power-on automatically executes the GSM process.

When the application wants to re-start the modem (after a AT+CFUN=0 command without turning off the power supply), it sends:

AT+CFUN=1

This command restarts all GSM stack and functionality. All parameters are reset to their previous E2P value if AT&W was not used.

If you write entries in a phonebook (+CPBW), then reset the modem (by issuing AT+CFUN=1 before AT+CFUN=0), some entries may not be written (SIM task does not have enough time to write entries in SIM card). Also, an OK is sent at the last baud rate defined by the +IPR command. With no autobauding, the response may be sent at a different baud rate, so it is recommended to save the defined baud rate with AT&W before sending AT+CFUN=1.

| Command | Possible Response |
|---|---|
| **AT+CFUN?** | +CFUN: <*fun*> (current value) |
| **AT+CFUN=<*fun*>** | |

**where:**

<*fun*>:

| | |
|---|---|
| 0 | set minimum functionality, IMSI detach procedure |
| 1 | set full functionality with complete software reset |

# AT+CGMI, *Request Manufacturer Identification*

## *Description*

Returns the manufacturer-specific identity.

| Command | Possible Response |
|---|---|
| **AT+CGMI** | WAVECOM MODEM |

# AT+CGMM, *Request Model Identification*

## *Description*

Returns the manufacturer-specific model identity.

| Command | Possible Response |
|---|---|
| **AT+CGMM** | 900P |

# AT+CGMR, *Request Revision Identification*

## *Description*

Returns the manufacturer-specific software revision identity.

| Command | Possible Response |
|---|---|
| **AT+CGMR** | 310_G250.51 806216 032199 17:04 |

# AT+CGSN, *Request Product Serial Number Identification*

## *Description*

Returns the IMEI (International Mobile Equipment Identity) of the GSM modem.

| Command | Possible Response |
|---|---|
| **AT+CGSN** | 135790248939<br>(or)<br>+CME ERROR: 22 |

# AT+CIMI, *Request International Mobile Subscriber Identity*

## *Description*

Execution command causes the modem to return the International Mobile Subscriber Identity Number (IMSI), when IMSI is attached to a network. The PIN must be entered before reading the IMSI.

| Command | Possible Response |
|---|---|
| **AT+CIMI** | <*imsi*> |

**where:**

<*imsi*>: International Mobile Subscriber Identity number (15 digits), starting with MCC (3 digits)/ MNC (2 digits, 3 for PCS 1900)

# AT+CKPD, *Keypad Control*

## *Description*

Execution command emulates ME keypad by giving each keystroke as a character in a string <*keys*>.

- If emulating fails due to an ME error, the modem returns +CME ERROR: <*err*>.
- If emulating succeeds, the result depends on the GSM sequence <*keys*>: string of following characters (0-9,*,#).

| Command | Possible Response |
|---|---|
| **AT+CKPD=<*#21#>** | +CCFC: 0,7 |
| **AT+CKPD=<1234>** | +CME ERROR 3 |

# AT+CMEE, *Mobile Equipment Errors*

## *Description*

Controls the presentation of result codes, generated by errors relating to the functionality of the modem.

| Command | Possible Response |
|---|---|
| **AT+CMEE=<*n*>** | OK |

**where:**

<*n*>:

| | |
|---|---|
| 0 | disable ME error reports, use ERROR instead |
| 1 | enable +CME ERROR: <*xxx*> or<br>+CMS ERROR: <*xxx*> |

# AT+CPAS, *Phone Activity Status*

## *Description*

Returns the activity status of the ME.

| Command | Possible Response |
|---|---|
| **AT+CPAS** | +CFUN: <*pas*> |

**where:**

<*pas*>:

| | |
|---|---|
| 0 | ready (allow commands from TA/TE) |
| 1 | unavailable (does not allow cmds) |
| 2 | unknown |
| 3 | ringing (ringer is active) |
| 4 | call in progress |
| 5 | asleep (low functionality) |

# AT+CPOF, *Power Off*

## *Description*

Specific command stops the GSM software stack and the hardware layer.

| Command | Possible Response |
|---|---|
| **AT+CPOF** | OK |

## *Note*

The AT+CFUN=0 command is equivalent to +CPOF.

# AT+CRMP, *Ring Melody Playback*

## *Description*

Plays a melody on the modem's buzzer. There are two types of melodies available: incoming voice, data or fax call melodies; and incoming short message sounds.

- 10 manufacturer-defined voice, data or fax call melodies can be played (in a loop).
- 2 manufacturer-defined short message sounds can be played (one time). Melody #1: short beep; Melody #2: long beep.

**Note:** *To stop loop melodies (for voice/data/fax call) use the +CRMP command, setting the <index> field to 0 (e.g., +CRMP=0,,,0). The <volume> parameter overwrites the <sound level> value of +CRSL the command. If the <volume> parameter is not provided, the <sound level> value of +CRSL is used by default.*

| Command | Possible Response |
|---|---|
| **AT+CRMP=<*call type*>[, <*volume*>,<*type*>,<*index*>]** | OK |
| **AT+CRMP=0,,,0** | OK (stops melody) |

**where:**

<*call type*>:

| | |
|---|---|
| 0 | incoming voice call |
| 1 | incoming data call |
| 2 | incoming fax call |
| 3 | incoming short message (SMS) |

<*volume*>:

| | |
|---|---|
| 0 | min volume |
| ... | |
| 6 | default volume |

**where:**

| | |
|---|---|
| ... | |
| 15 | max volume |

<*type*>:

| | |
|---|---|
| 0 | manufacturer defined (default) |

<*index*>:

| | |
|---|---|
| 0 | stop melody playback |
| 1-10 | melody ID for voice/data/fax call type (default: 1) |
| 1-2 | melody ID for short message (default: 1) |

# AT+CRSL, *Ringer Sound Level*

## *Description*

Sets/gets the sound level of the incoming call ringer. Set command changes <*volume*> default value of +CRMP command.

Command syntax : AT+CRSL=<sound level>.

| Command | Possible Response |
|---|---|
| **AT+CRSL?** | +CRSL: <*sound level*> (current value) |
| **AT+CRSL=?** | +CRSL: <*supported levels*> |
| **AT+CRSL=<*sound level*>** | OK |

**where:**

<*sound level*>:

| | |
|---|---|
| 0 | min volume |
| 6 | default volume |
| 15 | max volume |

# AT+CSCS, *Select TE Character Set*

## *Description*

Selects the character set used by the modem, so that the character strings are converted correctly between the DTE and the modem.

| Command | Possible Response |
|---|---|
| **AT+CSCS=?** | +CSCS: (*GSM, PCCP437, CUSTOM, HEX*) |
| **AT+CSCS=<*Character Set*>** | OK |

**where:**

<*Character Set*>:

| | |
|---|---|
| GSM | GSM default alphabet |
| PCCP437 | PC character set code |
| CUSTOM | user-defined character set (cf. +WCCS command). |
| HEX | hexadecimal numbers from 00 to FF |

## *See Also*

*AT+WPCS, Set Phonebook Character Set* on page 2-21 for the phonebooks' character sets.

# AT+GCAP, *Request Complete Capabilities List*

## *Description*

Causes the modem to return a list of additional capabilities supported.

| Command | Possible Response |
|---|---|
| **AT+GCAP** | +CGSM +FCLASS |

# AT+WPCS, *Set Phonebook Character Set*

## *Description*

Specific command selects the character set used by the modem, so that the character strings are converted correctly between the DTE and the modem.

| Command | Possible Response |
|---|---|
| **AT+WPCS=?** | +WPCS: (*TRANSPARENT, HEX, CUSTOM*) |
| **AT+WPCS=<*Character Set*>** | OK |

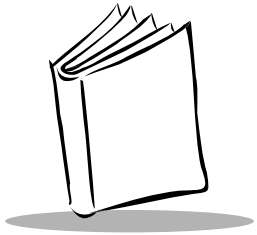
**where:**

<*Character Set*>:

| | |
|---|---|
| TRANSPARENT | transparent mode. Strings are displayed and entered as they are stored in SIM or in ME. |
| HEX | hexadecimal numbers from 00 to FF |
| CUSTOM | user-defined character set (cf. +WCCS command) |

## See Also

*AT+CSCS, Select TE Character Set* on page 2-19 for the short messages character sets.



# Chapter 3
# Call Control Commands

## ATA, *Answer*

### *Description*

When the GSM module receives a call, it sets the RingInd signal and sends the application the ASCII string “RING” or “+CRING: <*type*>” if cellular result code (+CRC) is enabled. Then it waits for the application to accept the call.

| Command | Possible Response |
|---|---|
| **ATA** | OK |

### *Example*

```
    RING
ATA
    OK                    [call accepted]
ATH                       [disconnect call]
    OK
```

# Remote Disconnection

The GSM module sends “NO CARRIER” to the application and sets the DCD signal to indicate that an active call has been released by the remote user.

In the case of AOC, the module can stop the communication if the credit is over (release cause 68 with +CEER command).

# ATD, *Dial Command*

## *Description*

Sets a speech, data or fax call. According to GSM 02.30, also controls supplementary services.

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

**ATD<*nb*>** where **<*nb*>** is the called phone number.

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

**ATD<*nb*>** where **<*nb*>** is the called phone number.

For international numbers, do not set the local international prefix (usually 00); replace this with the '+' character.

For example, to establish a voice call to Wavecom from another country, use the AT command:

**ATD+33146290800**;

Note that some countries have specific rules for GSM handset numbering.

Use the following commands for direct dialling from a phonebook location (stored in SIM card):

| | |
|---|---|
| **ATD><*index*>** | calls <*index*> from the selected phonebook (by +CPBS command). |
| **ATD>"BILL"** | calls "BILL" from the selected phonebook. Cannot be used with "RC", "MC", "LD", "EN" and "SN" phonebooks. |
| **ATD>mem<*index*>** | dials directly from a phonebook number. Not allowed with "ON" phonebook. **mem** represents a phonebook, see *AT+CPBS, Select Phone Book Memory Storage* on page 6-10. |
| **ATD>mem"BILL"** | calls "BILL" from the "mem" phonebook. Cannot be used with "RC", "MC", "LD", "EN" and "SN" phonebooks. |

| Command | Possible Response |
|---|---|
| **ATD<nb>[<I>][;]** | See Table 3-1. |
| **ATD>[<*mem*>]<*index*>[<I>][;]** | |
| **ATD>[<*mem*>]<*name*>[<I>][;]** | |

## Return Values

**Table 3-1. Result Codes**

| Verbose Result Code | Numeric Result Code | Description |
|---|---|---|
| **OK** | 0 | Command executed, for voice call only |
| **CONNECT <*speed*>** | 10,11,12,13,14,15 | If the call succeeds, for data calls only, <*speed*> takes the value negotiated by the GSM module |
| **NO CARRIER** | 3 | Call failed to connect or disconnected |
| **BUSY** | 7 | Called party is currently in another call |
| **NO ANSWER** | 8 | Connection failed up to timeout |

## Example

AT+CPBS? *[request which phonebook is selected]*

+CPBS:"SM",8,10 *[ADN phonebook is selected, 8 locations are used and 10 locations are available]*

ATD>SM6; *[call index 6 from ADN phonebook]*

OK

## Comments

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

For example, if “014629” is written in the FDN phonebook, all phone numbers beginning with these 6 digits can be called. You may override the CLIR supplementary service subscription for this call only.

- **I** = invocation (restrict CLI presentation)
- **i** = suppression (allow CLI presentation)

You may control the CUG supplementary service information using “G” or “g” for this call only. The index and info values set with *AT+CCUG, Closed User Group* on page 8-8 are used.

An outgoing call attempt may be refused if the AOC service is active and the credit is expired (NO CARRIER). When trying to set an outgoing call while there is an active call, the active call is first put on hold, then the call setup is made.

According to GSM 02.30, GSM sequences may be controlled using the dial command.

- sequences may contain *****, **#**
- **;** is forbidden.

If the sequence is not supported or fails, it is considered a phone number and a new communication begins.

## *Examples*

| | |
|---|---|
| ATD*#21# | *[check any call forwarding status]* |
| +CCFC: 0,7 | *[no call forwarding]* |
| ATD**61*+33146290800**25# | *[register call forwarding on no reply, with no reply timer fixed at 25 s]* |
| OK | |
| ATD*2# | |
| +CME ERROR 3 | *[bad sequence]* |

# ATDL, *Redial Last Telephone Number*

## *Description*

Redials the last number used in the ATD command. The last dialed number is displayed followed by “;” for speech calls only.

| Command | Possible Response |
|---|---|
| **ATDL** | OK |

## *Example*

ATDL

0146290800;

OK *[last call was a speech call]*

# AT%Dn, *Automatic Dialing with DTR*

## *Description*

Activates and deactivates:

- automatic dialing of the phone number stored in the first location of the ADN phonebook. The number is dialed on DTR OFF to ON transition.
- automatic sending of the short message (SMS) stored in the first location of the SIM. The short message is sent on DTR OFF to ON transition.

| Command | Possible Response |
|---|---|
| **AT%D<*n*>[;]** | OK |

**where:**

<*n*>:

| | |
|---|---|
| 0 | deactivates automatic DTR number dialing / message sending. |
| 1; | activates automatic DTR dialing if DTR switches from OFF to ON; dials the phone number in the first location of ADN phonebook. Speech call. |
| 1 | activates automatic DTR dialing if DTR switches from OFF to ON; dials the phone number in the first location of ADN phonebook. Data or Fax call. |
| 2 | activates automatic DTR message sending if DTR switches from OFF to ON. |

## *Example*

| | |
|---|---|
| AT%D1; | *[activate DTR number dialing]* |
| OK | |
| DTR is OFF | |
| DTR switches ON | *[the number in the first location of the ADN is dialed automatically]* |
| DTR switches OFF | *[module goes on-hook]* |
| AT%D2 | *[activates DTR sort message sending]* |
| OK | |

# ATH, *Hang-Up*

## *Description*

Disconnects the remote user. In case of multiple calls, all calls are released (active, held and waiting calls). The specific command ATH1 is appended to disconnect only the outgoing call, useful for multi-communication.

| Command | Possible Response |
|---|---|
| **ATH** | OK *(all calls released)* |
| **ATH1** | OK *(outgoing call released)* |

# ATS0, *Automatic Answer*

## *Description*

S0-parameter determines and controls the automatic answering feature of the terminal.

| **Command** | **Possible Response** |
|---|---|
| **ATS0?** | +CICB: <*value*> (current value) |
| **ATS0=<*value*>** | OK |

**where:**

<*value*>: Number of rings automatic answer occurs upon

0 No automatic answer

## *Note*

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

# AT+CEER, *Extended Error Report*

## *Description*

Requests the reason of the call release when the last call setup (originating or answering) failed.

| Command | Possible Response |
|---|---|
| **AT+CEER** | +CEER : Error <*xxx*><br><*xxx*> = cause information element values from GSM recommendation 04.08 or specific call accepted |

## *Example*

| | |
|---|---|
| ATD123456789; | *[outgoing voice call]* |
| NO CARRIER | *[call setup failure]* |
| AT+CEER | *[request for reason of release]* |
| +CEER : Error <xxx> | |
| OK | |

# AT+CICB, *Incoming Call Bearer*

## *Description*

Specific command used for incoming call type when no incoming bearer is provided (single numbering scheme, see *AT+CSNS, Single Numbering Scheme* on page 3-13).

Set command +CICB affects +CSNS current value.

| Command | Possible Response |
|---|---|
| **AT+CICB?** | +CICB: <*mode*> (current value) |
| **AT+CICB=?** | +CICB: (0,2) (list <*mode*> options) |
| **AT+CICB=<*mode*>** | OK |

**where:**

<*mode*>:

| | |
|---|---|
| 0 | if no incoming bearer, force a data call |
| 1 | if no incoming bearer, force a fax call |
| 2 | if no incoming bearer, force a speech call |

# AT+CMUT, *Microphone Mute Control*

## *Description*

Orders the module to set or not set the microphone mute for the active microphone (defined with +SPEAKER command). This command is only allowed during a call.

| Command | Possible Response |
|---|---|
| **AT+CMUT?** | +CMUT: <*mode*> (current value) |
| **AT+CMUT=?** | +CMUT: (0,1) (list <*mode*> options) |
| **AT+CMUT=<*mode*>** | OK |

**where:**

<*mode*>:

0 microphone mute off (default value)

1 microphone mute on

# AT+CSNS, *Single Numbering Scheme*

## *Description*

This command selects the bearer to be used when MT single numbering scheme call is established (Incoming Call Bearer, see *AT+CICB, Incoming Call Bearer* on page 3-11).

| Command | Possible Response |
|---|---|
| **AT+CSNS?** | +CSNS: <*mode*> (current value) |
| **AT+CSNS=?** | +CSNS: (0,2,4) (list <*mode*> options) |
| **AT+CSNS=<*mode*>** | OK |

**where:**

<*mode*>:

| | |
|---|---|
| 0 | force a voice call (default) |
| 2 | force a fax call |
| 4 | force a data call |

## *Note*

Set command +CSNS affects +CICB current value.

# AT+ECHO, *Echo Cancellation*

## *Description*

Specific command activates, deactivates, or configures the Echo Cancellation functions (for voice calls, in small rooms, cars…). You must tune the Microphone gain (AT+VGT) and the Speaker gain (AT+VGR) before activating the Echo Cancellation.

| Command | Possible Response |
|---|---|
| **AT+ECHO?** | +ECHO: <*Status*>,<*AlgoId*>, <*Param1*>, <*Param2*>, <*Param3*>,<*Param4*>, <*Param5*>,<*Param6*> (current settings) |
| **AT+ECHO= <*mode*> [,<*AlgoId*>, <*Param1*>,<*Param2*>,<*Param3*>, <*Param4*>,<*Param5*>,<*Param6*>]** | OK |

**where:**

<*mode*>:

| | |
|---|---|
| 0 | deactivate Echo |
| 1 | activate Echo |

<*AlgoId*>:

| | |
|---|---|
| 1 | echo cancellation 1 |
| 3 | echo cancellation 3 (optional) |

<*Status*>:

| | |
|---|---|
| 0 | echo deactivated |
| 1 | echo activated |
| 2 | echo activated for Mic/Speak two |
| 3 | reset module |

## *Note*

You may activate/deactivate the echo cancellation during a call without resetting the module if you don’t change the AlgoId.

## *Echo Cancellation 1 (4 Parameters)*

The parameter <*Volout*> specifies the maximum attenuation of the switch.

The parameter <*Step*> specifies the attenuation step between attenuation and no attenuation.

<*volout*>:

| | |
|---|---|
| 0 | 31 db (default) |
| 1 | 29 db |
| 2 | 27 db |
| 3 | 25 db |
| … | … |
| 14 | 3 db |
| 15 | 1 db |

<*Step*>:

| | |
|---|---|
| 0 | 1 db |
| 1 | 2 db |
| 2 | 3 db |
| 3 | 4 db (default) |

The parameter <*PcmThRel*> specifies the relative threshold between max and min energy information. The allowed range is [ 0 ; 31 ] (10 default).

The parameter <*PcmThMax* > specifies the threshold of max energy information. The allowed range is [ 0 ; 31 ] (7 default).

## Echo Cancellation 3 (3 Parameters)

- <*AlgoParam*> high value leads to high echo attenuation but the full-duplex quality is less efficient. The allowed range is [ 0 ; 63 ] (30 default).
- <*NoiseThres*> indicates the noise threshold. Low value leads to high noise attenuation. The threshold 32767 indicates no noise attenuation. The allowed range is [0 ;32767] (8000 default).
- <*NmbTaps*> indicates the number of taps of the adaptive filter. The allowed range is [64 ;256] (256 default).

  -64 taps: short Echo
  -256 taps: long Echo.

## Examples

| | |
|---|---|
| AT+CMEE=1 | *[enables the use of result code]* |
| OK | |
| AT+SPEAKER? | |
| + SPEAKER: 0 | |
| OK | *[Speaker ONE and Micro ONE are active]* |
| AT+SIDET=0 | *[deactivate the Sidetone]* |
| OK | |
| AT+SIDET? | |
| +SIDET: 0,0 | |
| AT+ECHO? | |
| +ECHO: 0,1,0,3,10,7 | |
| OK | |
| AT+ECHO=1,1,0,3,10,7 | *[active Echo cancellation 1 for Mic/Speak one]* |
| OK | |
| AT+ECHO? | |
| +ECHO: 1,1,0,3,10,7 | |
| OK | |
| AT+ECHO=1,3,30,8000,256 | *[activate the Echo cancellation 3]* |
| +CME ERROR: 519 | *[new algo is activated after a module reset]* |
| AT+ECHO? | |

```
    +ECHO: 3,3,30,8000,256
    OK
AT+CFUN=1                    [reset the module]
    OK
AT+ECHO?
    +ECHO: 1,3,30,8000,256
    OK
AT+ECHO=0                    [deeactivate the Echo cancellation]
    OK
```

# AT+SIDET, *SideTone Modification*

## *Description*

Specific command gets an echo of the voice in the speaker (to have a microphone feedback in the speaker).

| Command | Possible Response |
|---|---|
| **AT+SIDET=<*val1*>,<*val2*>** | OK |
| **AT+SIDET?** | +SIDET: <*value*> (current settings) |

**where:**

<*val1*>:

| | |
|---|---|
| 0 | disable SideTone |
| 1 | enable SideTone |

<*val2*>:

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

# AT+SPEAKER, *Speaker & Microphone Selection*

## *Description*

Specific command selects the speaker and the microphone.

| **Command** | **Possible Response** |
|---|---|
| **AT+SPEAKER=<*ActiveSpkMic*>** | OK |
| **AT+CMUT?** | +SPEAKER: <*mode*> (current value) |

**where:**

<*mode*>:

| | |
|---|---|
| 0 | Speaker One, Micro One |
| 1 | Speaker Two, Micro Two |

# AT+VGR, +VGT, *Gain Control*

## *Description*

Tunes the receive gain of the speaker and transmit gain of the microphone. The application sends:

**Table 3-2. Gain Control**

| AT+VGR=<val> | For Receive Gain | AT+VGT=<val> Controller 1 | For Transmit Gain Controller 1 | AT+VGT=<val> Controller 2 | 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 to 60 | 30 db |
| 128 to 143 | -10 db | | | 61 | 30,5 db |
| 144 to 159 | -12 db | | | 62 | 31 db |
| 160 to 175 | -14 db | | | … | … |
| 176 to 191 | -16 db | | | 101 | 50,5 db |
| 192 to 207 | -18 db | | | 102 to 127 | 51 db |
| 208 to 223 | -20 db | | | 128 to 243 | -6,5 db |
| 224 to 239 | -22 db | | | 244 | -6 db |
| 240 to 255 | -24 db | | | 245 | -5,5 db |
| | | | | 246 | -5 db |
| | | | | … | … |
| | | | | 255 | -0,5 db |

| **Command** | **Possible Response** |
|---|---|
| **AT+VGR?** | Current <*Rgain*> value |
| **AT+VGR=?** | Lists possible <*Rgain*> values (0-255) |
| **AT+VGR=<*Rgain*>** | OK |
| **AT+VGT?** | Current <*Tgain*> value |
| **AT+VGT=?** | Lists possible <*Tgain*> values (0-255) |
| **AT+VGT=<*Tgain*>** | OK |

# AT+VIP, *Initialize Voice Parameters*

## *Description*

Restores factory settings for voice parameters from EEPROM. These voice parameters include:

- Gain control (+VGR & +VGT commands)
- Microphone mute control (+CMUT command)
- Speaker & Microphone selection (+SPEAKER command)
- Echo cancellation (+ECHO command)
- Side tone modification (+SIDET command).

| Command | Possible Response |
|---|---|
| **AT+VIP=<*n*>** | OK |
| **AT+VIP?** | +VIP: <*n*> (current setting) |
| **AT+VIP=?** | +VIP:<*n*> (list supported options) |

**where:**

<*n*>:

1 restore all voice parameters

## *Examples*

| | |
|---|---|
| AT+VIP? | |
| +VIP: 1 | |
| OK | |
| AT+VIP=2 | |
| +CME ERROR: 3 | *[syntax error]* |
| AT+VIP=1 | *[restore the factory settings in EEPROM]* |
| OK | |
| AT+VIP=1 | *[restore the factory settings in EEPROM with the current Echo cancellation algo different of the default algo]* |
| CME ERROR: 519 | *[reset the module to accept the new algo]* |
| AT+VIP=? | *[list supported <n>s]* |
| +VIP: (1) | |
| OK | |

# AT+VTD, *DTMF Signal*

## *Description*

The user application can send DTMF tones on the GSM network. This command defines the length of the tones (default value is 300 ms).

| Command | Possible Response |
|---|---|
| **AT+VTD=<*n*>** | OK |

**where:**

<*n*>:

| | |
|---|---|
| * 100 | duration in ms |
| < 4 | 300ms |
| 0 | default value |

# AT+VTS, *DTMF Signal*

## *Description*

Transmits the tones defined by **+VTD**.

| **Command** | **Possible Response** |
|---|---|
| **AT+VTS=<*tone*>** | OK |

**where:**

<*tone*>:

0-9,*,#,A,B,C,D

## *Example 1*

AT+VTS=A

OK

AT+VTS=11 *[set manufacturer default value]*

+CME ERROR: 4 *[if <tone> is wrong]*

AT+VTS=4

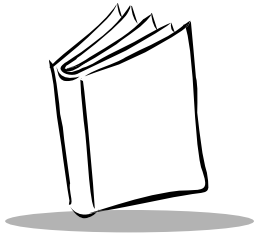
+CME ERROR: 3 *[if no communication]*

## *Example 2*

To send tone sequence 13#, the application sends:

AT+VTS=1;+VTS=3;+VTS=#

OK



# Chapter 4
# Network Service Commands

## AT+COPS, *Operator Selection*

### *Description*

Registers/displays network operators available. There are three options:

- The terminal enters manual mode, then tries to find an operator indicated by the application. If it finds and registers correctly, the terminal stays in idle mode.
- The terminal enters automatic mode, then tries to find the home operator. If it finds and registers the operator correctly, the terminal stays in idle mode; if not, the terminal searches for another network.
- The terminal enters manual/automatic mode, then tries to find an operator indicated by the application (as in manual mode). If this attempt fails, the terminal enters automatic mode. If this attempt succeeds, the operator indicated by the application is selected and registered, then the mobile enters automatic mode.

Read command returns the current mode and the currently selected operator. Note that in manual mode, this PLMN can not be the one the terminal has to register (searching phase).

| Command | Possible Response |
|---|---|
| **AT+COPS=?** | +COPS: ([list of supported <*stat*>, long alphanumeric <*oper*>,short alphanumeric <*oper*>,numeric <*oper*>)s][,,(list of supported <*mode*>s),(list of supported <*format*>s)] |
| **AT+COPS?** | +COPS: <*mode*>[,<*format*>,<*oper*>] (current values) |

| Command | Possible Response |
|---|---|
| **AT+COPS=<*mode*>[,<*format*>] [,<*oper*>]**<br>**e.g., AT+COPS=1,2,"23410"** | |

**where:**

<*stat*>: availability of operator

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

<*oper*>: shows the operator identity, within speech marks, in the format set by <*format*>.
(MCC/MNC in numeric format only for operator selection).
Long alphanumeric format can be up to 16 characters long
(see *Operator Names* on page A-20, field is “Name”)
Short alphanumeric format can be up to 8 characters long.

<*mode*>: registration mode

| | |
|---|---|
| 0 | automatic (<*oper*> field is ignored) (default) |
| 1 | manual (<*oper*> field is present) |
| 2 | de-register from network; ME remains unregistered until <*mode*>=0 or 1 is selected |
| 3 | set only <*format*> (for read command AT+COPS?) |
| 4 | manual/automatic (<*oper*> field is present); if manual selection fails, automatic mode (<*mode*>=0) is entered |

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

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

**Possible responses for AT+COPS=<*mode*>[,<*format*>][,<*oper*>] :**

- **OK** (network is selected in full service)
- **+CME ERROR: 30** (no network service)
- **+CME ERROR: 32** (network not allowed – emergency calls only)
- **+CME ERROR: 3**
- **+CME ERROR: 4** (wrong 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)

## *Examples*

AT+COPS? *[request current PLMN]*

+COPS: 0,2,20801 *[home PLMN is France Telecom Itinéris]*

OK

AT+COPS=? *[request PLMN list]*

+COPS: (2,”F Itinéris”,”Itline”,”20801”), (3,”FSFR”,”SFR”,”20810”)

OK *[home PLMN is France Telecom SFR network is detected]*

AT+COPS=1,2,20810 *[request registration on SFR network]*

+CME ERROR: 32 *[network not allowed – emergency calls only]*

AT+COPS=1,1,23433 *[request registration on UK Orange network]*

+CME ERROR: 529 *[selection failed – emergency calls only]*

AT+COPS=0 *[request registration on home network]*

OK

AT+COPS=3,0 *[set <format> to long alphanumeric]*

OK

AT+COPS? *[request current PLMN]*

+COPS: 0,0,”F Itinéris”

OK

AT+COPS=2 *[request deregistration from network]*

OK

AT+COPS?

+COPS: 2 *[ME is unregistered until <mode>=0 or 1 is selected]*

# AT+CPOL, *Preferred Operator List*

## Description

Edits the SIM preferred list of networks.

| Command | Possible Response |
|---|---|
| **AT+CPOL=?** | +CPOL: (list of supported <*index*>s),(list of supported <*format*>s) |
| **AT+CPOL?** | +CPOL: <*index1*>,<*format*>,<*oper1*> [<cr><lf><br>+CPOL: <*index2*>,<*format*>,<*oper2*>[...]] |
| **AT+CPOL=[<*index*>][,<*format*>[,<*oper*>]]** | |
| **AT+CPOL=<*index*>** | deletes an entry |
| **AT+CPOL=,<*format*>** | sets the format used by the read command (AT+CPOL?) |
| **AT+CPOL=,<*format*>,<*oper*>** | puts <*oper*> in the next free location |
| **AT+CPOL=<*index*>,<*format*>,<*oper*>** | writes <*oper*> in the <*format*> at the <*index*> |

## Notes

The supported formats are those of the +COPS command (see *AT+COPS, Operator Selection* on page 4-1). The length of this list is limited to 8 entries.

## Examples

AT+CPOL? *[request preferred list of networks]*

+CPOL:1,2,26201

+CPOL: 6,2,20810 *[preferred list of networks in numeric format]*

OK

AT+CPOL=,0 *[select long alphanumeric format]*

OK

AT+CPOL? *[provides wrong operator]*

+CPOL: 1,0,”D1-TELEKOM”

```
    +CPOL: 6,0,”F SFR”          [preferred list of networks in long alphanumeric format]
    OK
AT+CPOL=7,2,20801               [add a network to the list]
    OK
AT+CPOL?                        [provides wrong operator]
    +CPOL: 1,0,”D1-TELEKOM”
    +CPOL: 6,0,”F SFR”
    +CPOL: 7,0,”F Itinéris”     [preferred list of networks in long alphanumeric format]
    OK
AT+CPOL=7                       [delete 7th location]
    OK
AT+CPOL?
    +CPOL: 1,0,”D1-TELEKOM”
    +CPOL: 6,0,”F SFR”          [preferred list of networks in long alphanumeric format]
    OK
AT+CPOL=8,2,77777               [add new network to list]
    OK
AT+CPOL?
    +CPOL: 1,0,”D1-TELEKOM”
    +CPOL: 6,0,”F SFR”
    +CPOL: 8,2,77777”           [preferred list of networks in long alphanumeric format but
                                 8th entry is unknown so module edits it in numeric format]
    OK
AT+CPOL=9,0,”F Itinéris”        [add new network to list format text]
AT+CPOL?
    +CPOL: 1,0,”D1-TELEKOM”
    +CPOL: 6,0,”F SFR”
    +CPOL: 8,2,77777”
    +CPOL: 9,0,”F Itinértis”    [preferred list of networks in long alphanumeric format]
    OK
```

# AT+CREG, *Network Registration*

## *Description*

Displays network registration status.

| Command | Possible Response |
|---|---|
| **AT+CREG=?** | +CREG: (list of supported <*n*>s) |
| **AT+CREG?** | +CREG: <*n*>,<*stat*>[,<*lac*>,<*ci*>] |
| **AT+CREG=[<*n*>]** | |

**where:**

<*n*>:

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

<*stat*>:

| | |
|---|---|
| 0 | not registered, not searching a new operator |
| 1 | registered, home network |
| 2 | not registered, currently searching a new operator to register with |
| 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

## *Examples*

AT+CREG?

+CREG: <*mode*>,<*stat*>

OK

AT+CREG=0 *[disable network registration unsolicited result code]*

OK

AT+CREG=1 *[enable network registration unsolicited result code]*

OK

AT+CREG=2 *[enable network registration and location information unsolicited result code]*

OK

AT+CREG=? +CREG: (0-2) *[0,1,2 <mode> values are supported]*

# AT+CSQ, *Signal Quality*

## *Description*

Returns the received signal strength indication (*rssi*) and the channel bit error rate (*ber*) of the registered network.

| Command | Possible Response |
|---|---|
| **AT+CSQ=?** | +CSQ: (list of supported <*rssi*>s),(list of supported <*ber*>s) |
| **AT+CSQ** | +CSQ: <*rssi*>,<*ber*> |

**where:**

<*rssi*>:

| | |
|---|---|
| 0 | -113 dBm or less |
| 1 | -111 dBm |
| 2 - 30 | -109 to -53 dBm |
| 31 | -51 dBm or greater |
| 99 | not known or not detectable |

<*ber*>: (in percent)

| | |
|---|---|
| 0 - 7 | as RXQUAL values |
| 99 | unknown |

# AT+WOPN, *Read Operator Name*

## *Description*

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

| Command | Possible Response |
|---|---|
| **AT+WOPN=<*format*>,<*NumOper*>** | |
| **AT+WOPN?** | +WOPN: <*format*>,<*AlphaOper*> |
| **AT+WOPN=?** | +CREG: (list of supported <*n*>s) |

**where:**

<*format*>: the required format. Only long (0) and short (1) alphanumeric formats are supported.

<*NumOper*>: the operator in numeric format.

<*AlphaOper*>: the operator in long or short alphanumeric format (see *Operator Names* on page A-20 for operator names description)

## *Examples*

AT+WOPN=?

OK

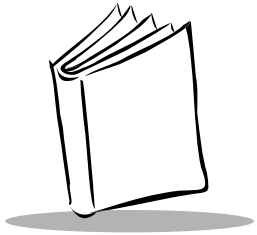
AT+WOPN=0,20801 *[provides an operator in numeric format]*

+WOPN : 0,”F Itinéris”

OK

AT+WOPN=0,99999 *[provides a wrong operator]*

+CME ERROR: 22 *[not found]*



# Chapter 5
# Security Commands

## AT+CLCK, *Facility Lock*

### *Description*

Locks, unlocks, or interrogates the ME or a network facility. A password is required for some actions.

| Command | Possible Response |
|---|---|
| **AT+CLCK=?** | +CLCK: (list of supported <*fac*>s) |
| **AT+CLCK=<*fac*>,<*mode*>[,<*passwd*>[,<*class*>]]**<br>**e.g., AT+CLCK="SC",0,"1111"** | +CLCK: <*status*>[,<*class1*>[<cr><lf><br>+CLCK: <*status*>,<*class2*>[...]] |

**where:**

<*fac*>:

| | |
|---|---|
| PS | SIM lock facility with 8-digit password |
| SC | PIN enable (<*mode*> = 1) / disable (<*mode*> = 0) |
| AO | BAOC (Bar All Outgoing Calls) |
| OI | BOIC (Bar Outgoing International Calls) |
| OX | BOIC-exHC (Bar Outgoing International Calls except to Home Country) |
| AI | BAIC (Bar All Incoming Calls) |

**where:**

| | |
|---|---|
| IR | BIC-Roam (Bar Incoming Calls when Roaming outside the home country) |
| AB | All Barring services |
| AG | All outGoing barring services |
| AC | All inComing barring services |
| PN | Network lock with 8-digit password (NCK) |
| PU | Network subset lock with 8-digit password (NSCK) |
| PP | Service provider lock with 8-digit password (SPCK) |
| PC | Corporate lock with 8-digit password (SPCK) |
| FD | SIM Fixed Dialling Numbers (FDN) memory feature, PIN2 is required as *<passwd>* |

*<mode>*:

| | |
|---|---|
| 0 | unlock |
| 1 | lock |
| 2 | query status |

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

| | |
|---|---|
| 1 | voice (telephony) |
| 2 | data (refers to all bearer services) |
| 3 | fax (facsimile services) |
| 4 | short message service |
| 5 | all classes (default) |

## Notes

Any attempt to combine different classes results in activation/deactivation/interrogation of all classes.

The password maximum length is provided with the AT+CPWD=? command (see *AT+CPWD, Change Password* on page 5-8).

# AT+CPIN, *Enter PIN*

## *Description*

Queries and enters a password (CHV1 / CHV2 / PUK1 / PUK2…), required before the ME will operate.

The CHV1/CHV2 length is between 4 and 8 digits, the PUK1/PUK2 length is 8 digits only.

If the application tries to set an outgoing call before validating the SIM PIN code (CHV1), the GSM module refuses the “ATD” command with the error +CME ERROR: 11 (SIM PIN required).

The application must validate the PIN after each reset or power on if the PIN was enabled.

| Command | Possible Response |
|---|---|
| **AT+CPIN=<*pin*>** | OK<br>+CME ERROR : 3 *(operation not allowed, PIN previously entered)* |
| **AT+CPIN=<*Puk*><*NewPin*>** | OK (PUK required after 3 unsuccessful PIN codes) |
| **AT+CPIN?** | +CPIN: <*response code*> (indicates which code must be entered. See Response Codes) |

After 3 unsuccessful codes, the PUK is required. PUK validation forces the user to enter as a second parameter a new PIN code to take affect if the PUK validation succeeds. The CHV1 is then enabled if the PUK1 is correct.

## +CPIN? Response Codes

| | |
|---|---|
| +CPIN: READY | no password required |
| +CPIN: SIM PIN | CHV1 required |
| +CPIN: SIM PUK | PUK1 required |
| +CPIN: SIM PIN2 | CHV2 required |
| +CPIN: SIM PUK2 | PUK2 required |
| +CPIN: PH-SIM PIN | SIM lock (phone-to-SIM) required |
| +CPIN: PH-NET PIN | network personalization required |
| +CME ERROR: <*err*> | SIM error |

Note in this case the terminal does not end its response with the OK string. The response +CME ERROR: 13 (SIM failure) is returned after 10 unsuccessful PUK presentations. The SIM card is then out of order and must be replaced.

## Example 1

**3 failed PIN validations + 1 successful PUK validation:**

```
AT+CPIN?
    +CPIN: SIM PIN                    [GSM module requires SIM PIN]
AT+CPIN=1235
    +CME ERROR: 16                    [bad PIN]
AT+CPIN=1236
    +CME ERROR: 16                    [bad PIN]
AT+CPIN=1237
    +CME ERROR: 16                    [bad PIN]
AT+CPIN?
    +CPIN: SIM PUK                    [GSM module requires PUK]
AT+CPIN=99999999,5678
    OK                                [PUK entered, new PIN is 5678]
AT+CPIN?
    +CPIN: READY
```

## Example 2

If you enter something which requires PIN2 (CHV2), the GSM module refuses the action with +CME ERROR: 17 (SIM PIN2 required). The GSM module waits for SIM PIN2. If SIM PIN2 is blocked, SIM PUK2 is required instead.

For example, the GSM module needs PIN2 to write in the fixed dialing phonebook (FDN) , so if SIM PIN2 authentification was not performed during the current session the SIM PIN2 is required:

| | |
|---|---|
| AT+CPBS=”FD” | |
| OK | |
| AT+CPBW=5,”01290917”,129,”Jacky” | *[write in FDN at location 5]* |
| +CME ERROR: 17 | |
| AT+CPIN? | |
| SIM PIN2 | *[SIM PIN2 is required]* |
| AT+CPIN=5678 | *[enter SIM PIN2]* |
| OK | |
| AT+CPBW=2,”01290917”,129,”Jacky” | *[write in FDN at location 5]* |
| OK | *[writing in FDN is allowed]* |

### Notes

- The GSM module only asks once for PIN2 or PUK2, so if they aren’t entered correctly, the next +CPIN? command returns “+CPIN: READY”.
- For Application to GSM, an “h” character must be added before the PIN value if in cyphering mode (with D.E.S algorithm). See *AT+EXPKEY, Key Management* on page 12-12. This also applies to the +CLCK and +CPWD commands.

# AT+CPIN2, *Enter PIN2*

## *Description*

Specific command validates the PIN2 code (CHV2) or the PUK2 code (UNBLOCK CHV2), and defines a new PIN2 code.

The +CPIN command validates PIN2 or PUK2 codes, but only when the last executed command resulted in PIN2 authentification failure.

The PIN2 length is between 4 and 8 digits, the PUK2 length is 8 digits only.

| Command | Possible Response |
|---|---|
| **AT+CPIN2=<*pin2*>** | OK<br>+CME ERROR : 3 *(operation not allowed, PIN previously entered)* |
| **AT+CPIN2=<*Puk2*><*NewPin2*>** | OK *(PUK required after 3 unsuccessful PIN codes)* |
| **AT+CPIN2?** | +CPIN2: <*response code*> (indicates which code must be entered. See Response Codes) |

After 3 unsuccessful codes, the PUK2 is required. PUK2 validation forces the user to enter as a second parameter a new PIN2 code to take affect if the PUK2 validation succeeds.

## *+CPIN2? Response Codes*

| | |
|---|---|
| +CPIN2: READY | no PIN2 required |
| +CPIN2: SIM PIN2 | PIN2 required |
| +CPIN2: SIM PUK2 | PUK2 required |
| +CME ERROR: <*err*> | SIM error |

# +CPINC, *PIN Remaining Attempt Number*

## *Description*

Specific command instructs the module to display the number of valid tries for PIN1 (CHV1), PIN2 (CHV2), PUK1 (UNBLOCK CHV1) and PUK2 (UNBLOCK CHV2) identifiers.

| Command | Possible Response |
|---|---|
| **AT+CPINC=?** | +CPINC: (list of supported values) |
| **AT+CPINC?** | +CPINC: (current values) |
| **AT+CPINC** | +CPINC : <*n1*>,<*n2*>,<*k1*>,<*k2*> |

**where:**

<*n1*>,<*n2*>: remaining tries of PIN1, PIN2 (0 = blocked, 3 max)

<*k1*>,<*k2*>: remaining tries of PUK1, PUK2 (0 = blocked, 10 max)

## *Note*

If the card is not present at the time of initialization, an error occurs (+CME ERROR: 10).

# AT+CPWD, *Change Password*

## *Description*

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

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

| Command | Possible Response |
|---|---|
| **AT+CPWD=?** | +CPWD: (list of supported *<fac>,<pwdlength>*)s |
| **AT+CPWD=*<fac>,<oldpwd>*, *<newpwd>*<br>e.g., AT+CPWD= “SC”,”1234”,”4321”** | |

**where:**

<*fac*>:

| | |
|---|---|
| PS | SIM lock facility with 8-digit password |
| SC | PIN enable (<*mode*> = 1) / disable (<*mode*> = 0) |
| AO | BAOC (Bar All Outgoing Calls) |
| OI | BOIC (Bar Outgoing International Calls) |
| OX | BOIC-exHC (Bar Outgoing International Calls except to Home Country) |
| AI | BAIC (Bar All Incoming Calls) |
| IR | BIC-Roam (Bar Incoming Calls when Roaming outside the home country) |
| AB | All Barring services |
| AG | All outGoing barring services |
| AC | All inComing barring services |
| PN | Network lock with 8-digit password (NCK) |
| PU | Network subset lock with 8-digit password (NSCK) |

**where:**

| | |
|---|---|
| PP | Service provider lock with 8-digit password (SPCK) |
| PC | Corporate lock with 8-digit password (SPCK) |
| FD | SIM Fixed Dialling Numbers (FDN) memory feature, PIN2 is required as *<passwd>* |

*<pwdlength>*: integer type, maximum length of the password for the facility (see *AT+CPWD, Change Password* on page 5-8)

*<oldpwd>*: string type; the same as password specified for the facility from the modem AT command interface or with command Change Password AT+CPWD

*<newpwd>*: string type; the new password for the facility from the modem AT command interface or with command Change Password AT+CPWD

## *Examples*

AT+CPWD=?

+CPWD:
(“PS”,8),(“SC”,8),(“AO”,4),(“OI”,4),(“OX”,4),(“AI”,4),(“IR,4),(“AB”,4),(“AG”,4),(“AC”,4),
(“P2”, 8), (“FD”,8),("PN",8),("PU",8),("PP",8),("PC",8)

OK *[CHV1/CHV2 must be 8 digits maximum (4mn); for call barring, 4 digits maximum]*

AT+CPWD=”SC”,1234,5555 *[change PIN]*

OK

AT+CPWD=”SC”,1234,5555 *[change PIN]*

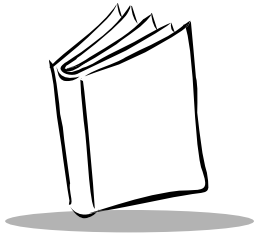
+CME ERROR: 16 *[PIN incorrect]*

AT+CPIN=5555 *[enter PIN]*

OK

AT+CPWD=”PN”,12345678,00000000 *[change NCK]*

OK *[NCK changed for net lock]*



# Chapter 6
# Phonebook Commands

## AT+CNUM, *Subscriber Number*

### *Description*

Returns the MSISDNs related to the subscriber. If a subscriber has different MSISDN for different services, each MSISDN is returned in a separate line.

| Command | Possible Response |
|---|---|
| **AT+CNUM=?** | |
| **AT+CNUM** | +CNUM: [<*alpha1*>],<*number1*>,<*type1*> <cr><lf><br>+CNUM: [<*alpha2*>],<*number2*>,<*type2*> ... |

**where:**

<*alpha*>: optional alphanumeric string associated with <*numberx*>

<*numberx*>: string type phone number of format specified by <*typex*>

<*typex*>: type of address octet in integer format

# AT+CPBF, *Find Phonebook Entries*

## *Description*

Returns phonebook entries in which the alphanumeric field starts with a given string.

| Command | Possible Response |
|---|---|
| **AT+CPBF=?** | +CPBF: *<max length for phone> <max length for characters>* |
| **AT+CPBF="*<index>*"**<br>**e.g., AT+CPBS="AD"** | +CPBF: (entries starting with *<index>*) |
| **AT+CPBF= ""**<br>**e.g., AT+CPBS="AD"** | +CPBF: (displays all phonebook entries in alphabetical order) |

## *Notes*

This command cannot be used with "LD", "RC", "MC", "SN" phonebooks or for "EN" phonebook, which does not contain an alphanumeric field. You may use this command with UCS2 strings. If you enter an incorrect UCS2 format, the string is considered an ASCII string.

## *Examples*

| | |
|---|---|
| AT+CPBF=? | |
| +CPBF: 20,10 | *[max length of 20 for phone, 10 characters for the text]* |
| OK | |
| AT+CPBF=“E” | *[read entries with “E”]* |
| +CPBF : 12,”112”,129,”Emergency” | |
| +CPBF : 15,”+331290101”,145,”Eric” | *[display locations with text field starting with “E”]* |
| OK | |
| AT+CPBF=”H” | |
| +CME ERROR: 22 | *[entry not found]* |
| AT+CPBF=”800001FFFF” | *[read entries starting with 0001 UCS2 character]* |
| +CPBF : 11, ”0146290921”,129,”8000010002FFFF” | |
| OK | *[display locations with text field starting with 0001 UCS2 character]* |
| AT+CPBF=”8045C” | *[read entries with “8045C” (ASCII format)]* |
| +CME ERROR: 22 | *[entry not found. String has bad UCS2 format; considered an ASCII string]* |

# AT+CPBN, *Move Action in Phonebook*

## *Description*

Specific command instructs the module to move forward or backward in the phonebook (in alphabetical order).

| Command | Possible Response |
|---|---|
| **AT+CPBN=?** | +CPBN: (list of supported <*mode*>s) |
| **AT+CPBN=<*mode*>** | +CPBN: (display location) |

**where:**

<*mode*>:

| | |
|---|---|
| 0 | first item |
| 1 | last item |
| 2 | next valid item in alphabetical order |
| 3 | previous valid item in alphabetical order |
| 4 | last read item (usable only if a read operation was performed on the current phonebook since the end of initialization (+WIND: 4)) |
| 5 | last written item (usable only if a write operation was performed on the current phonebook since the end of initialization (+WIND: 4)) |

## *Notes*

This command cannot be used with “EN” phonebook, which does not contain an alphanumeric field.

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

## *Example 1*

AT+CPBN=?

+CPBN: (0-5)

OK

AT+CPBN=0 *[read the first location]*

+CPBN : 15,”+331290101”,145,”Eric” *[display the first location]*

OK

AT+CPBN=2 *[read the next location]*

+CPBN : 5,”+33147658987”,145,”Frank” *[display the second location]*

OK

AT+CPBN=2

+CPBN : 6,”+331290302”,145,”Marc”

OK

AT+CPBN=3 *[read the previous location]*

+CPBN : 5,”+33147658987”,145,”Frank”

OK

## *Example 2*

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

AT+CPBF=”Er” *[find ”Er” in phonebook]*

+CPBF : 15,”+331290101”,145,”Eric”

OK

AT+CPBN=2 *[read the next location]*

+CPBN : 5,”+33147658987”,145,”Frank”

OK

AT+CPBF=”Er”

+CPBF : 15,”+331290101”,145,”Eric”

OK

AT+CPBN=4 *[read the last read location]*

+CPBF : 15,”+331290101”,145,”Eric”

OK

AT+CPBW=,”0146290800”,129,”WM” *[write an item at the first free location]*

OK *[no information about this location]*

AT+CPBN=4

+CPBF : 15,”+331290101”,145,”Eric”

OK

AT+CPBN=38,”0146290800,129,”WM” *[display the last written item with its location]*

AT+CPBN=4

AT+CPBN=38,”0146290800,129,”WM” *[last read item is also last written item]*

AT+CPBF=”800041FFFF” *[find”800041” in phonebook]*

+CPBF : 15,”+3312345”,145,”8000414339FFFF”

OK

AT+CPBN=4

+CPBF : 15,”+3312345”,145,”8000414339FFFF”

OK

# AT+CPBP, *Phonebook Phone Search*

## *Description*

Orders the module to look in the phonebook for an item with the same phone number defined in parameter.

| Command | Possible Response |
|---|---|
| **AT+CPBP=<*PhoneNumber*>** | +CPBP: (entries with this phone number) |

**where:**

<*PhoneNumber*>: coded like all phone numbers in GSM 07.07 or GSM 07.05

## *Examples*

AT+CPBP=”+331290101” *[read entries with this phone number]*

+CPBP : 15,”+331290101”,145,”Eric”

OK

AT+CPBP=”+331290101”

+CPBP : 15,”01290101”,129,”Eric”

OK

AT+CPBP=”01290202”

+CPBP : 15,”+331290202”,145,”David”

OK

AT+CPBP=”+331288575”

+CPBP : 15,”+331290101”,145,”8045682344FFFF”*[UCS2 format]*

OK

AT+CPBP=”0129”

+CME ERROR: 22 *[entry not found,”80xyz”]*

# AT+CPBR, *Read Phone Book Entries*

## *Description*

Returns the phonebook entry for a location range of the currently selected phone book (selected via +CPBS).

| Command | Possible Response |
|---|---|
| **AT+CPBR=?** | +CPBR: (list of supported <*index*>s),<br>[<*nlength*>],[<*tlength*>] |
| **AT+CPBR=<*index1*>,<*index2*>** | +CPBR: <*index1*>,<*number*>,<*type*>,<*text*> <cr><lf><br>...<br>+CPBR: <*index2*>,<*number*>,<*type*>,<*text*><br>(list locations between <*index1*> and <*index2*>) |

**where:**

<*index1*>,<*index2*>: range of location numbers of phonebook memory

<*number*>: phone number in format <*type*>

<*type*>: type of phone number

<*text*>: text field of maximum length <*tlength*>

<*nlength*>: value indicating the maximum length of field <*number*>

<*tlength*>: value indicating the maximum length of field <*text*>

## *Examples*

AT+CPBR=?

+CPBR: (1-50),20,10 *[50 locations (from 1 to 50), max length of 20 for phone, 10 charcters max for the associated text]*

OK

AT+CPBR=12,14 *[read entries from 12 to 14]*

+CPBR : 12,”112”,129,”Emergency”

+CPBR : 13,”+331290909”,145,”Fred”

+CPBR : 14,”0146290808”,129,”Zazi”

OK *[display locations 12,13,14 with location number, type (TON/NPI), Text]*

AT+CPBR=10 *[read entry 10]*

+CPBR :10,”0146290921”,129,”Rob”

OK *[display location 10]*

AT+CPBR=11 *[read entry 11 (UCS2 format)]*

+CPBR :11,”0146290921”,129,”8000010002FFFF”

OK *[display location 11]*

AT+CPBR=52 *[read entry 52 (wrong)]*

+CME ERROR: 21 *[invalid index]*

# AT+CPBS, *Select Phone Book Memory Storage*

## *Description*

Selects phonebook memory storage <*storage*>, which is used by other phonebook commands.

| Command | Possible Response |
|---|---|
| **AT+CPBS=?** | +CPBS: (list of supported <*storage*>s) |
| **AT+CPBS?** | +CPBS: <*storage*>[,<*used*>,<*total*>] |
| **AT+CPBS=<*storage*>**<br>**e.g., AT+CPBS="AD"** | |

**where:**

<*storage*>:

| | |
|---|---|
| SM | ADN (SIM phonebook) |
| FD | FDN (SIM fixdialing, restricted phonebook) |
| ON | MSISDN (SIM own numbers) |
| EN | EN (SIM emergency number) |
| LD | LND (combined ME and SIM last dialling phonebook) |
| MC | MSD (ME missed calls list) |
| ME | ME (ME phonebook) |
| MT | MT (combined ME and SIM phonebook) |
| RC | LIC (ME received calls list) |
| SN | SDN (Services dialling phonebook) |

<*used*>: indicates the number of used locations in selected memory

<*total*>: indicates the total number of locations in selected memory

# AT+CPBW, *Write Phonebook Entry*

## *Description*

Writes phonebook entry in location number <*index*> in the current phonebook memory storage.

| Command | Possible Response |
|---|---|
| **AT+CPBW=?** | +CPBW: (list of supported <*index*>,<*number*>,<*type*>,<*text*>) |
| **AT+CPBW=<*index*>[,<*number*>[,<*type*>[,<*text*>]]]** | +CPBW: <*index*>,<*number*>,<*type*>,<*text*> |

**where:**

<*index*>: integer type value depending on capacity of phonebook memory

<*number*>: phone number in ASCII format

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

<*text*>: string type

## *Notes*

This command cannot be used with “EN”, “LD”, “MC”, “RC”, “MT”, “SN” phonebooks, which are not writable.

When the fixed dialing phonebook (FDN) is locked, this command is not allowed. When FDN is unlocked, PIN2 is required to write in the FDN phonebook.

If PIN2 authentification was done during the current session, +CPBW command with FDN is allowed.

For the parameter <*text*> all strings starting with “80” , “81” or “81” are considered UCS2 format. The +CSCS (Select Character set) command does not affect the format of phonebook entries.

## Example 1

AT+CPBW=?

+CPBW: (1-50),20,(129,145),10 *[50 locations, phone length = 20, TON/NPI of 129 or 145, text length = 10]*

OK

AT+CPBW= 3 *[erase location 3]*

OK

AT+CPBW=5,”112”,129,”SOS” *[write at location 5]*

OK

AT+CPBW=5,”01290917”,129,”Jacky” *[overwrite location 5]*

OK

AT+CPBW=6,”01292349”,129,”8000410042” *[write location 6 (UCS2 format for <text> field)]*

OK

AT+CPBW=,”+33145221100”,145,”SOS” *[write at the first free location]*

OK

AT+CPBW=,”0345221100”,129,”SOS”

+CME ERROR: 20 *[phonebook full]*

AT+CPBW=57,”112”,129,”WM” *[write at location 57 (wrong)]*

+CME ERROR: 21 *[invalid index]*

AT+CPBW=7,”012345678901234567890”,129,”WAVE” *[write at location 7 a long phone number (21 digits)]*

+CME ERROR: 26 *[phone number too long]*

AT+CPBW=7,”0122334455”,129,”WAVECOM TEL” *[write at location 7 along text (11 characters)]*

+CME ERROR: 24 *[text too long]*

AT+CPBW=8,”01292349”,129,”80xyz”

OK *[location 8 is written. String has bad UCS2 format; considered as an ASCII string]*

## *Example 2*

| | |
|---|---|
| AT+CPBS=”FD” | *[choose FDN]* |
| OK | |
| AT+CPBW=5,”01290917”,129,”Jacky” | *[write in FDN at location 5]* |
| +CME ERROR: 17 | *[SIM PIN2 is required]* |
| AT+CPIN? SIM PIN2 | *[SIM PIN2 is required]* |
| AT+CPIN=5678 | |
| OK | |
| AT+CPBW=5,”01290917”,129,”Jacky” | *[write in FDN at location 5]* |
| OK | *[writing in FDN is allowed]* |

# AT+WAIP, *Avoid Phonebook Init*

## *Description*

Specific command inhibits the initialization of all phonebooks during the next boot.

| Command | Possible Response |
|---|---|
| **AT+WAIP=?** | +WAIP: (list supported <*mode*>s) |
| **AT+WAIP?** | +WAIP: (current <*mode*>) |
| **AT+WAIP=<*mode*>** | OK (sets mode) |

**where:**

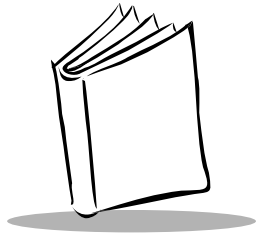
<*mode*>:

| | |
|---|---|
| 0 | normal initialization (with phonebooks) |
| 1 | no phonebook initialization |

## *Notes*

The given value is stored in EEPROM, so the command AT&W must be used to save the new <*mode*> value.

Phonebook commands are not allowed when +WAIP=1 (after boot). If you enter a phonebook command, “+CME ERROR: 3” is returned.



# Chapter 7
# Short Messages Commands

## Parameter Definitions

| | |
|---|---|
| **<da>** | Destination Address, coded like GSM 03.40 TP-DA |
| **<dcs>** | Data Coding Scheme, coded like in 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 Octet, coded like SMS-SUBMIT first octet 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 octets |
| **<mem1>** | Memory used to list, read and delete messages (+CMGL, +CMGR and +CMGD). |
| **<mem2>** | Memory used to write and send messages (+CMGW, +CMSS) |
| **<mid>** | CBM Message Identifier |
| **<mr>** | Message Reference |
| **<oa>** | Originator Address |
| **<pid>** | Protocol Identifier |
| **<pdu>** | For SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format, coded as specified in doc [4]<br>For CBS: GSM 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±TimeZone) |
| **<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 message locations in <mem1> |
| **<total2>** | Number of messages locations in <mem2> |
| **<used1>** | Total number of messages locations in <mem1> |
| **<used2>** | Total number of messages locations in <mem2> |
| **<vp>** | Validity Period of the short message, default value is 167 |

# AT+CMGD, *Delete Message*

## *Description*

Deletes one or several messages from preferred message storage (“BM” SMS CB ‘RAM storage’ or “SM” SMSPP storage ‘SIM storage’).

| Command | Possible Response |
|---|---|
| **AT+CMGD=<*index*>[,<*DelFalg*>]** | |

**where:**

<*index*> (1-20): when the preferred message storage is “BM” integer type values in the range of location numbers of SIM Message memory when the preferred message storage is “SM”

| | |
|---|---|
| 0 | compatible with GSM 07.05 Phase 2 version 4.7.0 |
| 1 | compatible with GSM 07.05 Phase 2+ version |

<*DelFlag*>

| | |
|---|---|
| 0 | delete message at the 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 |

## Examples

| | |
|---|---|
| +CMTI:”SM”,3 | *[new message received]* |
| AT+CMGR=3 | *[read message]* |
| +CMGR: “REC UNREAD”,”0146290800”,, | |
| “98/10/01,18 :19 :20+00” <CR><LF> | |
| Received Message ! | *[unread message received from 0146290800 on the 01/10/1998 at 18H19m 20s]* |
| AT+CMGD=3 | *[delete message]* |
| OK | |
| AT+CMGD=1,0 | |
| OK | *[message from preferred message storage at the location 1 is deleted]* |
| AT+CMGD=1,1 | |
| OK | *[all READ messages from preferred message storage are deleted]* |
| AT+CMGD=1,2 | |
| OK | *[all READ messages and SENT mobile originated messages are deleted]* |
| AT+CMGD=1,3 | |
| OK | *[all READ, SENT and UNSENT messages are deleted]* |
| AT+CMGD=1,4 | |
| OK | *[all messages deleted]* |

# AT+CMGF, *Preferred Message Format*

## *Description*

The formats implemented are text mode and PDU mode.

- In PDU mode, a complete SMS Message including all header information is passed as a binary string (in hexadecimal format, so 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 or 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 chosen format is stored in EEPROM by the command +CSAS.

| Command | Possible Response |
|---|---|
| **AT+CMGF=?** | +CMGF: (list of supported <*mode*>s) |
| **AT+CMGF?** | +CMGF: <*mode*> (current value) |
| **AT+CMGF=<*mode*>** | |

**where:**

<*mode*>:

| | |
|---|---|
| 0 | PDU mode |
| 1 | text mode |

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

<*mr*> **(TP-MR)**: 0x03 (Message Reference)

<*da*> **(TP-DA)**: 0x06 0x91 0x21 0x43 0x65 (Destination Address +123456)

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

<*dcs*> **(TP-DCS)**: 0x00 (Data Coding Scheme : 7 bits alphabet)

<*length*> **(TP-UDL)**: 0x04 (User Data Length, 4 characters of text)

**TP-UD:** 0xC9 0xE9 0x34 0x0B (User Data : ISSY)

## Note

TPDU in hexadecimal format must be converted to two ASCII characters, e.g., octet with hexadecimal value 0x2A is presented to the mobile as two characters ‘2’ (ASCII 50) and ‘A’ (ASCII 65).

## Example (Send SMS Message in PDU Mode)

| | |
|---|---|
| AT+CMGF=0 | *[PDU message format]* |
| OK | |
| AT+CMGS=14<CR> | |
| +CMGS: 4 | |
| 00010306912143650000004C9E9340B | *[send complete MSG in PDU mode, no SC address]* |
| OK | *[MSG correctly sent, <mr> is returned]* |

### Comments

- The message <pdu> 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 octets of the TPDU buffer is 14, coded as GSM 03.40
- In this case the TPDU is : 0x01 0x03 0x06 0x91 0x21 0x43 0x65 0x00 0x00 0x04 0xC9 0xE9 0x34 0x0B.

# +CMGL, *List Message*

## *Description*

Reads stored messages by indicating the type of message to read.

| Command | Possible Response |
|---|---|
| **AT+CMGL=<*stat*>** | *Text mode*:<br>+CMGL : <index>,<stat>,<da/oa>[,<alpha>], [<scts>, <tooa/toda>,<length>] <CR><LF><data><br>(for SMS-DELIVER and SMS-SUBMIT, may be followed by other <CR><LF>+CMGL:<index>…)<br><br>*PDU mode*:<br>+CMGL : <index>,<stat>, [<alpha>], <length> <CR><LF> <pdu><br>(for SMS-DELIVER and SMS-SUBMIT, may be followed by other <CR><LF>+CMGL:<index>…) |

**where:**

<*stat*>: **text mode**, status of messages in memory

| | |
|---|---|
| REC UNREAD | received unread messages |
| REC READ | received read messages |
| STO UNSENT | stored unsent messages |
| STO SENT | stored sent messages |
| ALL | all messages |

<*stat*>: **PDU mode**, status of messages in memory

| | |
|---|---|
| 0 | received unread messages |
| 1 | received read messages |
| 2 | stored unsent messages |
| 3 | stored sent messages |
| 4 | all messages |

## Examples

AT+CMGL=“REC UNREAD” *[list unread messages in text mode]*

+CMGL: 1,”REC UNREAD”,”0146290800”,
<CR><LF> Unread message !

+CMGL: 3,”REC UNREAD”, “46290800”,
<CR><LF>

Another unread message !

OK *[2 messages are unread, status will change to “REC READ” (+CSDH:0)]*

AT+CMGL=”REC READ”

+CMGL: 2,”REC READ”,”0146290800”,
<CR><LF>

*[list read messages in text mode]*

Keep cool

OK

AT+CMGL=”STO SENT” *[list stored and sent messages in text mode]*

OK *[no message found]*

AT+CMGL=1 *[list read messages in PDU mode]*

+CMGL: 1,1,,26

<CR><LF>

07913366003000F3040B913366920547F4001300119041253040074 1AA8E5A9C5201

OK

# AT+CMGR, *Read Message*

## *Description*

Allows the application to read stored messages.

| Command | Possible Response |
|---|---|
| **AT+CMGR=<*index*>** | *Text mode:*<br>+CMGR :<stat>,<oa>,[<alpha>,] <scts> [,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>] <CR><LF> <data><br>(for SMS-DELIVER only)<br>+CMGR : <stat>,<da>,[<alpha>,] [,<toda>,<fo>,<pid>,<dcs>, [<vp>], <sca>,<tosca>,<length>]<CR><LF> <data><br>(for SMS-SUBMIT only)<br>*PDU mode:*<br>+CMGR: <stat>, [<alpha>] ,<length> <CR><LF> <pdu> |

## *Examples*

A message read with status “REC UNREAD” is updated in memory with the status “REC READ” after it is read.

```
    AT+CMTI: “SM”,1                          [new message received
AT+CMGR=1                                    [read the message]
    +CMGR: “REC UNREAD”,”0146290800”,”98/10/01,18 :22 :11+00”,<CR><LF>
    ABCdefGHI
    OK
AT+CMGR=1                                    [read message again]
    +CMGR: “REC UNREAD”,”0146290800”,
    ”98/10/01,18 :22 :11+00”,<CR><LF>
    ABCdefGHI
    OK                                       [message is read]
```

| | |
|---|---|
| AT+CMGR=2 | *[read a bad index]* |
| +CMS ERROR: 321 | *[error : invalid index]* |
| AT+CMGF=0 ;+CMGR=1 | *[in PDU mode]* |
| +CMGR: 2,,<length> <CR><LF><pdu> | |
| OK | *[message is stored but unsent, no <alpha> field* |

# AT+CMGS, *Send Message*

## *Description*

Sends a short message from the modem to the network.

| Command | Possible Response |
|---|---|
| **If text mode;**<br>**AT+CMGS=<*da*>[,<*toda*>]<cr>**<br>**text is entered <ctrl+z / ESC>** | If text mode and sending successful:<br>+CMGS: <*mr*> |
| **If PDU mode;**<br>**AT+CMGS=<*length*><cr>**<br>**PDU mode is entered**<br>**<ctrl+z / ESC>** | If PDU mode and sending successful:<br>+CMGS: <*mr*> |

## *Notes*

The <*address*> field is the address of the terminal network where 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).

Use the <ESC> character when entering text to abort this command.

In PDU mode, only hexadecimal characters are used (‘0’…’9’,’A’…’F’).

The message reference <*mr*> which is returned to the application is allocated by the GSM module. This number begins with 0 and is incremented by one for each outgoing message (successful and failure case); it is cyclic on one byte (0 follows 255).

---

**Note:** *This number is not a storage number – outgoing messages are not stored.*

---

## Examples

AT+CMGS=”+33146290800”<CR>

Please call me soon, Fred. <ctr-Z> *[send a message in text mode]*

+CMGS: <mr>

OK

AT+CMGS=<length><CR><pdu><ctrl-Z> *[send a message in PDU mode]*

+CMGS: <mr>

OK

# AT+CMGW, *Write Message to Memory*

## *Description*

Writes a message (either SMS-DELIVER or SMS-SUBMIT) to memory storage. The memory location <*index*> is returned (no choice possible as with phonebooks +CPBW).

| Command | Possible Response |
|---|---|
| **If text mode;**<br>**AT+CMGW=<*oa/da*>[, <*tooa/toda*>[, <*stat*>]]<cr>**<br>**text is entered<ctrl+z/ESC>** | +CMGW: <*index*> |
| **If PDU mode;**<br>**AT+CMGW=<*length*>[,<*stat*>]<cr>**<br>**PDU is given<ctrl+z/ESC>**<br>**e.g., (text mode)** | |

**where:**

<*oa/da*>: Originating or Destination Adress value in string format

<*tooa/toda*>: Type of Originating / Destination Adress

<*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 a message to be sent.

| | |
|---|---|
| 0 | REC UNREAD |
| 1 | REC READ |
| 2 | STO UNSENT |
| 3 | STO SENT |

<*length*>: length of the actual data unit in octets

## Note

Text or PDU is entered in a similar manner as the command Send Message +CMGS (see *AT+CMGS, Send Message* on page 7-11).

## Examples

AT+CMGW=”+33146290800”<CR>

Hello how are you ?<ctrl-Z> *[write a message in text mode]*

+CMGW: 4

OK *[message stored in index 4]*

AT+CMGW=<length><CR><pdu><ctrl-Z> *[write a message in PDU mode]*

+CMGW: <index>

OK *[message stored in <index>]*

# AT+CMSS, *Send Message From Storage*

## *Description*

Sends message with location value <*index*> from storage to the network.

| Command | Possible Response |
|---|---|
| **AT+CMSS=<*index*>[,<da> [,<toda>] ]** | +CMSS: <*mr*> |

## *Note*

If new recipient address <da> is provided, it is used instead of the one stored with the message.

## *Examples*

AT+CMGW=0660123456<CR>

Today is my birthday

+CMGW : 5

OK *[message stored in index 5]*

AT+CMSS=5, 0680654321 *[send the message 5 to a different GSM]*

AT+CMSS :<mr>

OK

AT+CMSS=5, 0680654321 *[send the message 5 to a different GSM]*

+CMSS :<mr>

OK

# AT+CNMA, *New Message Acknowledgement*

## *Description*

Acknowledges the reception of a new message routed directly to the TE.

- 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.

Acknowledge with +CNMA is possible only if +CSMS parameter is set to 1 (+CSMS=1) when a +CMT or +CDS indication is shown (see *AT+CNMI, New Message Indications to TE* on page 7-18).

If no acknowledgement is provided within the network-timeout, RP-ERROR is sent to the network, then <*mt*> and <*ds*> parameters of the +CNMI command are reset to zero (don't show new message indication).

| Command | Possible Response |
|---|---|
| In text mode:<br>**AT+CNMA** | |
| In PDU mode:<br>**AT+CNMA [ = <*n*> [ , <*length*> [ <CR>**<br>*(PDU is entered)*<br>**<ctrl-Z / ESC> ] ] ]** | |

**where:**

<*n*>: type of acknowledgement in PDU mode

| | |
|---|---|
| 0 | 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

## *Note*

PDU is entered using <ackpdu> format instead of <pdu> format (i.e., SMSC address field is not present).

## *Example - Acknowledge in Text Mode*

AT+CMGF=1 *[TEXT message format]*

OK

AT+CNMI=2,2,0,0,0 *[<mt>=2]*

OK

+CMT : “123456”,”98/10/01,12 :3000+00”,129,4,32,240, “15379”,129,5<CR><LF>

Received message

AT+CNMA *[acknowledge message received]*

OK

AT+CNMA *[try to acknowledge again]*

+CMS ERROR : 340 *[no +CNMA acknowledgment expected]*

## *Example - Acknowledge in PDU Mode*

AT+CMGF=0 *[PDU message format]*

OK

+CMT: ,29

07913366003000F1240B913366920547F30000003003419404800B506215D42ECFE7E17319

AT+CNMA=2,<length> <CR>

… *Pdu message* … <Ctrl-Z/ESC> *[negative acknowledgement for the message]*

OK *[send negative acknowledgement to network (RP-ERROR) with PDU message (<ackpdu> format)]*

# AT+CNMI, *New Message Indications to TE*

## *Description*

Selects how to receive new messages from the network.

| Command | Possible Response |
|---|---|
| **AT+CNMI=?** | +CNMI: (list of supported <*mode*>s),(list of supported <*mt*>s),(list of supported <*bm*>s),(list of supported <*ds*>s),(list of supported <*bfr*>s) |
| **AT+CNMI?** | +CNMI: <*mode*>,<*mt*>,<*bm*>,<*ds*>,<*bfr*> |
| **AT+CNMI=<*mode*>,<*mt*>,<*bm*>,<*ds*>,<*bfr*>** | |

**where:**

<*mode*>: controls the processing of unsolicited result codes

| | |
|---|---|
| 0 | buffer unsolicited result codes in the TA. When the buffer is full, indications can be buffered in another place or the oldest indications may be discarded and replaced with the new indications. |
| 1 | discard indication and reject new received message unsolicited result codes when TA-TE link is reserved. Otherwise forward them directly to TE. |
| 2 | buffer unsolicited result codes in the TA when TA-TE link is reserved and flush them to TE after reservation. Otherwise forward them directly to TE. |
| 3 | forward unsolicited result codes directly to the TE. TA-TE link specific inband used to embed result codes and data when TA is in on-line data mode. |

**where:**

<*mt*>: sets the result code indication routing for SMS-DELIVERs

| | |
|---|---|
| 0 | no SMS-DELIVER indications are routed (default) |
| 1 | SMS-DELIVERs are routed using unsolicited code:<br>+CMTI : « SM », <index> |
| 2 | SMS-DELIVERs (except class 2 messages) are routed using unsolicited code:<br>+CMT: [<alpha>,] <length> <CR> <LF> <pdu> (PDU mode)<br>or<br>+CMT: <oa>,[<alpha>,] <scts> [,<tooa>, <fo>, <pid>,<dcs>, <sca>, <tosca>, <length>] <CR><LF><data> (text mode) |
| 3 | Class 3 SMS-DELIVERS are routed directly using code<br>in <*mt*>=2; message of other classes result in indication <*mt*>=1 |

<*bm*>: sets the rules for storing received CBMs (Cell Broadcast Message) types depend on its coding scheme, the setting of Select CBM Types (+CSCB command) and <*bm*>.

| | |
|---|---|
| 0 | no CBM indications are routed to the TE. CBMs are stored. (default) |
| 1 | CBM is stored and an indication of the memory location is routed to the customer application using unsolicited result code:<br>+CBMI: “BM”, <*index*> |
| 2 | new CBMs are routed directly to the TE using unsolicited result code.<br>+CBM: <length><CR><LF><pdu> (PDU mode)<br>or<br>+CBM :<sn>,<mid>,<dcs>,<page>,<pages>(Text mode)<br><CR><LF> <data> |
| 3 | Class 3 CBMs: as <*bm*>=2. Other classes CBMs : as <*bm*>=1. |

<*ds*>: for SMS-STATUS-REPORTs

| | |
|---|---|
| 0 | no SMS-STATUS-REPORTs are routed (default) |
| 1 | SMS-STATUS-REPORTs are routed using unsolicited result code<br>+CDS : <length> <CR> <LF> <pdu> (PDU mode)<br>or<br>+CDS : <fo>,<mr>, [<ra>] , [<tora>], <scts>,<dt>,<st> (Text mode) |

**where:**

*<bfr>*:

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

## Note

Only *<mode>*=2 is supported. Any other value for *<mode>* (0,1 or 3) is accepted (returns OK), but the processing of unsolicited result codes is the same as for *<mode>*=2.

## Examples

AT+CNMI=2,1,0,0,0 *[<mt>=1]*

OK

AT+CMTI : “SM”,1 *[message received]*

AT+CNMI=2,2,0,0,0 *[<mt>=2]*

OK

+CMT : “123456”,”98/10/01,12 :30

00+00”,129,4,32,240, “15379”,129,5<CR><LF>

Received message

AT+CNMI=2,0,0,1,0 *[<ds>=1]*

OK

AT+CMGS=”+33146290800”<CR> *[message to send <ctrl-Z>]*
*[send a message in text mode]*

+CMGS : 7

OK

+CDS : 2, 116, ”+33146290800”, 145, “98/10/01,12:30 :07+04”, “98/10/01 12 :30 :08+04”, 0

# AT+CPMS, *Preferred Message Storage*

## *Description*

Define the message storage area to be used for reading, writing, etc.

| **Command** | **Possible Response** |
|---|---|
| **AT+CPMS=?** | +CPMS: ((“SM”,”BM”),(“SM”)) |
| **AT+CPMS?** | +CPMS: (current values) |
| **AT+CPMS=<*mem1*>, [<*mem2*>]** | +CPMS: <*used1*>,<*total1*>,<*used2*>,<*total2*> |

**where:**

<*mem1*>: memory used to list, read and delete messages

SM SMS message storage (in SIM) (default)

BM CBM message storage (in volatile memory)

<*mem2*>: memory used to write and send messages

SM SMS message storage (in SIM) (default)

## *Note*

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

## Examples

AT+CPMS=?

+CPMS: ((“SM”,”BM”),(“SM”))

OK *[read, list, delete: SMS or CBM]*
*[write, send: SMS]*

AT+CPMS?

+CPMS: “SM”,3, 10,”SM”,3,10

OK *[read, write…SMS from/to SIM 3 SMS are stored in SIM 10 is the total available SIM memory]*

AT+CPMS=”AM” *[select false message storage]*

+CMS ERROR: 302

AT+CPMS=”BM” *[select CBM message storage]*

+CPMS: 2,20,3,10

OK *[read, list, delete CBM from RAM 2, CBM stored in RAM]*

AT+CPMS?,

+CPMS: “BM”,2,20,”SM”,3,10

OK *[read list, delete CBM from RAM]*
*[write SMS to SIM]*

# AT+CRES, *Restore Settings*

## *Description*

All settings specified in command +CSCA and +CSMP are restored from EEPROM if the SIM card is phase 1 or from the SIM card if it is phase 2.

| Command | Possible Response |
|---|---|
| **AT+CRES** | OK (restores +CSAS and +CSMP parameters) |

# AT+CSAS, *Save Settings*

## *Description*

All settings specified in command +CSCA and +CSMP are stored in EEPROM if the SIM card is a phase 1 card or in the SIM card if it is phase 2.

| Command | Possible Response |
|---|---|
| **AT+CSAS** | OK (stores +CSAS and +CSMP parameters) |

# AT+CSCA, *Service Center Address*

## *Description*

Indicates to which service center the message must be sent.

| Command | Possible Response |
|---|---|
| **AT+CSCA** | |

## *Notes*

The GSM module has no default value for this address. The application must indicate the service center address when initializing or an error is returned. This address is valid all the time, but the application may change it if needed.

## *Examples*

AT+CMGS= “+33146290800”<CR>

Hello, how are you?<ctrl-Z> *[send a message]*

+CMS ERROR: 330 *[service center unknown]*

AT+CSCA=”0696741234” *[service center initialization]*

OK

AT+CMGS=”+33146290800”<CR>

Happy Birthday ! <ctrl-Z>

+CMGS: 1

OK

# AT+CSCB, *Select Cell Broadcast Message Types*

## *Description*

Selects which types of CBMs are to be received by the ME. This command may be used in both PDU and text modes.

| Command | Possible Response |
|---|---|
| **AT+CSCB= <*mode*>, [ <*mids*>, [ <*dcss*> ] ]** | |

## *Notes*

The <*bm*> parameter of the +CNMI command controls the message indication.

Test read command (AT+CSCB ?) is not supported.

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

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

Supported languages (<*dcss*> parameter) are:

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

## Examples

| | |
|---|---|
| AT+CSCB=0,”15-17,50,86”,”” | *[accept SMS-CB types, 15,16,17,50 and 86 in any language]* |
| OK | *[CBMs can be received]* |
| +CBM: 10<CR><LF> | |
| 00112233445566778899 | *[CBM length of a received Cell Broadcast message (SMS-CB), CBM bytes in PDU mode]* |
| AT+CSCB=1 | *[deactivate the reception of CBMs]* |
| AOK | *[CBM reception is completely stopped]* |

# AT+CSDH, *Show Text Mode Parameters*

## *Description*

Provides additional information in text mode result codes, shown in brackets in the commands +CMTI, +CMT, +CDS, +CMGR, +CMGL.

| Command | Possible Response |
|---|---|
| **AT+CSDH?** | +CSDH: 0 (do not show header values) |
| **AT+CSDH** | |

# AT+CSMP, *Set Text Mode Parameters*

## *Description*

Selects value for <*vp*>, <*pid*>, and <*dcs*>.

| Command | Possible Response |
|---|---|
| **AT+CSMP?** | +CSMP: <*fo*>, <*vp*>, <*pid*>,<*dcs*> (current values) |
| **AT+CSMP=<*fo*>, <*vp*>, <*pid*>,<*dcs*>** | |

**where:**

<*fo*> byte is composed of 6 differents fields:

| | | |
|---|---|---|
| b7 | RP | Reply Path, not used in text mode |
| b6 | 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 by +CSMP command, but can be used in PDU mode (+CMGS). |
| b5 | SRR | Status Report Request, b5=1 if a status report is requested. |
| b4<br>b3 | VPF | Validity Period Format<br>b4=0 & b3=0 -> <*vp*> field is not present<br>b4=1 & b3=0 -> <*vp*> field is present in relative format<br>Others formats (absolute & enhanced) are not supported. |
| b2 | RD | Reject Duplicates, b2=1 to instruct the SC to reject an SMS-SUBMIT for an SM still held in the SC which has the same <*mr*> and <*da*> as the previously submitted SM from the same <*oa*>. |
| b1<br>b0 | MTI | Message Type Indicator<br>b1=0 & b0=0 -> SMS-DELIVER (for SC to MS)<br>b1=0 & b0=1 -> SMS-SUBMIT (for MS to SC) |

<*pid*> indicates the higher layer protocol used or indicates interworking with a certain type of telematic device. For example, 0x22 is for group 3 telefax, 0x24 is for voice telephone, 0x25 is for ERMES.

**where:**

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

## Notes

In text mode <*vp*> is only coded in “relative” format. The default value is 167 (24 hours). This means that one octet 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 |

## Examples

AT+CSMP?

+CSMP: 0,0,0,0

OK *[no validity period*

*<dcs>= PCCP437 alphabet (8 bits ‡ 7 bits)]*

AT+CMPS=17,23,64,244 *[<vp> = 23 (2 hours, relative format) <dcs> = GSM 8 bits alphabet]*

OK

# AT+CSMS, *Select Message Service*

## *Description*

Selects the messaging service and returns the type of messages supported.

| Command | Possible Response |
|---|---|
| **AT+CSMS=?** | +CSMS: (list of supported <*service*>s) |
| **AT+CSMS?** | +CSMS: <*service*>,<*mt*>,<*mo*>,<*bm*> (current values) |
| **AT+CSMS=<*service*>** | +CSMS: <*mt*>,<*mo*>,<*bm*> |

**where:**

<*service*>: type of PDU mode

| | |
|---|---|
| 0 | compatible with GSM 07.05 Phase 2 version 4.7.0 |
| 1 | compatible with GSM 07.05 Phase 2+ version |

<*SMS-MO*>: Mobile Originated (MO) messages

| | |
|---|---|
| 0 | type not supported |
| 1 | type supported |

<*SMS-MT*>: Mobile Terminated (MT) messages

| | |
|---|---|
| 0 | type not supported |
| 1 | type supported |

<*SMS-CB*>: Cell Broadcast Messages

| | |
|---|---|
| 0 | type not supported |
| 1 | type supported |

## Examples

| | |
|---|---|
| AT+CSMS=0 | *[SMS AT command Phase 2 version 4.7.0]* |
| +CSMS: 1,1,1 | |
| OK | *[SMS-MO, SMS-MT and SMS-CB supported]* |
| AT+CSMS=1 | *[SMS AT command Phase 2 +]* |
| +CSMS: 1,1,1 | *[SMS-MO, SMS-MT and SMS-CB supported]* |
| AT+CSMS? | |
| +CSMS: 0,1,1,1 | |
| OK | *[GSM 03.40 and 03.41 (SMS AT command Phase 2 version 4.7.0]* |
| AT+CSMS=? | |
| +CSMS: (0,1) | |
| OK | |

# AT+WCBM, *Cell Broadcast Message Identifiers*

## *Description*

Specific command reads the SIM file EF-CBMI.

| Command | Possible Response |
|---|---|
| **AT+WCBM?** | +WCBM: (current values) |
| **AT+WCBM= <*mids*>** | |

## *Notes*

This file is not used with +CSCB command, the application should read this file (AT+WCBM ?) and combine the Message Identifiers with those required for the application.

## *Examples*

| | |
|---|---|
| AT+WCMB=”10,100,1000,10000” | *[write 4 messages identifiers in EF-CBMI]* |
| OK | *[CBMIs are stored in EF-CBMI]* |
| AT+WCBM? | *[read CBMIs in EF-CBMI]* |
| +WCBM=”10,100,1000,100000” | *[4 CBMIs are stored in EF-CBMI]* |

# AT+WMGO, *Message Overwriting*

## *Description*

+CMGW writes an SMS to the first free location. The +WMGO command forces the module to write an SMS (with the +CMGW command) to a specific location. This only applies to one +CMGW command.

| Command | Possible Response |
|---|---|
| **AT+WMGO= <*loc*>** | OK (if <*loc*> is a valid SMS location, for AT+WMGO=? and for AT+WMGO?) |
| **AT+WMGO= <*loc*>** | +CMS ERROR: 321 (if <*loc*> is out of the SIM capacity range) |
| **AT+WMGO= <*loc*>** | +WMGO: <*loc*> (for AT+WMGO?) |

**where:**

<*loc*>*:* location number of the SIM record to write or overwrite

## *Notes*

On the next AT+CMGW command, the record number used is that specifed by AT+WMGO command. The location is forgotten; use +WMGO again to overwrite a second time.

If the external application specifies a free location, and if an incoming message is received before the AT+CMGW command, the module may store the incoming message in a free location, which may be that specified by +WMGO (the module does not prevent this). If you issue a AT+CMGW command without changing the AT+WMGO location, the new message is overwritten.

This location number is not retained upon a software reset.

# AT+WMSC, *Message Status Modification*

| Command | Possible Response |
|---|---|
| **AT+WMSC= <*loc*>, <*status*>** | OK (if the location is valid)<br>+CMS ERROR: 321 (if <*loc*> is invalid or free)<br>+CMS ERROR: 302 (if the new <*status*> and the previous <*status*> are incompatible (see Note)) |

**where:**

<*loc*>*:* location number of the stored message (integer)

<*status*>: new status to be stored, as for +CMGL command

| PDU Mode: | Text Mode: |
|---|---|
| 0 | REC UNREAD |
| 1 | REC READ |
| 2 | STO UNSENT |
| 3 | STO SENT |

## *Note*

The accepted status changes are from READ to NOT READ and vice versa, and from SENT to NOT SENT and vice versa.

If all the parameters are correct, the module overwrites the whole SMS in the SIM. Only the first byte (Status byte) is changed.

# AT+WUSS, *Unchange SMS Status*

## *Description*

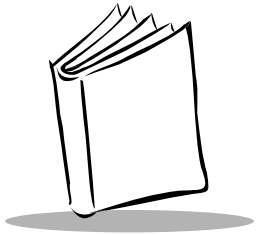
Retains SMS Status UNREAD after +CMGR or +CMGL.

| Command | Possible Response |
|---|---|
| **AT+WUSS = <*mode*>** | |

**where:**

<*mode*>:

| | |
|---|---|
| 0 | SMS status will change |
| 1 | SMS status will not change |



# Chapter 8
# Supplementary Services Commands

## AT+CACM, *Accumulated Call Meter*

### *Description*

Set command resets the Advice of Charge related accumulated call meter value in SIM file $EF_{ACM}$. 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.

| Command | Possible Response |
|---|---|
| **AT+CACM?** | +CACM: (current value) |
| **AT+CACM** | |

### *Notes*

Read command returns the current value of ACM.

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

### *Examples*

| | |
|---|---|
| AT+CACM? | *[request ACM value]* |
| +CACM: “000400” | *[display ACM value (ACM=1024)]* |
| OK | |

AT+CACM= 1234 *[request ACM reset, real PIN2 is “1234”]*

OK

AT+CACM= 0000

+CME ERROR : 16 *[incorrect password]*

AT+CACM ?

+CACM: “000000” *[display ACM value (ACM = 0)]*

OK

# AT+CAMM, *Accumulated Call Meter Maximum*

## *Description*

Sets the Advice of Charge related accumulated call meter maximum value in SIM file $EF_{ACMmax}$. ACMmax contains the maximum number of home units the subscriber is allowed to consume. When ACM (refer +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.

| Command | Possible Response |
|---|---|
| **AT+CACM?** | +CAMM: (current value) |
| **AT+CAMM** | |

## *Notes*

Read command returns the current value of ACMmax. ACMmax value (entered or displayed) is in hexadecimal format with 6 digits.

## *Examples*

| | |
|---|---|
| AT+CAMM=”000400”,1234 | *[request ACMmax update, real PIN2 is “1234”]* |
| OK | *[ACMmax updated to 1024]* |
| AT+CAMM=”000400”,0000 | *[request ACMmax update, real PIN2 is “1234”]* |
| +CME ERROR : 16 | *[incorrect password]* |
| AT+CAMM ? | *[request ACMmax value]* |
| +CAMM : “000400” | |
| OK | *[ACMmax = 1024]* |

# AT+CAOC, *Advice of Charge*

## *Description*

This refers to Advice of Charge supplementary service (GSM 02.24 [ ] and GSM 02.86 [ ]) which enables the subscriber to get information about the call's cost. With <*mode*>=0, the execute command returns the current call meter value (CCM) from the ME.

- If AOC is supported, you may also use the command to enable an unsolicited event reporting of the CCM information.
- The unsolicited result code +CCCM: <*ccm*> is sent when the CCM value changes. Deactivation of the unsolicited event reporting is made with the same command.
- If AOC is supported, the Read command indicates whether the unsolicited reporting is activated or not.

| Command | Possible Response |
|---|---|
| **AT+COAC?** | +COAC: <*mode*> (current value) |
| **AT+COAC=?** | +COAC: (list of supported values) |
| **AT+COAC=<*mode*>** | |

**where:**

<*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., "00001$^{E}$" indicates decimal value 30); value is in home units and bytes are similarly coded as ACMmax value in the SIM.

## *Examples*

| | |
|---|---|
| AT+CAOC=0 | *[query CCM value]* |
| +CAOC: “000A08” | |
| OK | *[display Current Call Meter value (CCM=2568)]* |
| AT+CAOC=1 | *[deactivate unsolicited report of CCM value]* |
| OK | |
| AT+CAOC=2 | *[activate unsolicited report of CCM value]* |
| OK | |
| AT+CAOC ? | *[request mode]* |
| +CAOC :<*mode*> | *[display unsolicited report mode (1 or 2)]* |
| OK | |
| AT+CAOC=? | *[request supported modes]* |
| +CAOC : (0-2) | *[0,1,2 modes supported]* |
| OK | |

# AT+CCFC, *Call Forwarding*

## *Description*

Controls the call forwarding supplementary service.

| Command | Possible Response |
|---|---|
| **AT+CCFC= <*reason*>, <*mode*> [, <*number*> [,<*type*> [,<*class*> [,<*subaddr*> [,<*satype*> [,<*time*> ] ] ] ] ] ]** | +CCFC: <*status*>, <*class1*> [, <*number*>, <*type*> [,<*subaddr*>, <*satype*> [,<*time*> ] ] ][ <CR><LF> +CCFC: <*status*>, <*class2*> [, <*number*>, <*type*> [,<*subaddr*>,<*satype*> [,<*time*> ] ] ] [ … ] ] |

**where:**

*<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 |

*<class>:*

| | |
|---|---|
| 1 | voice |
| 2 | data |
| 4 | fax |

**where:**

| | |
|---|---|
| 7 | all classes |
| 8 | short messages |

<*subaddr*>, <*satype*>: not managed

<*time*>: for Call Forwarding on No Reply, time to wait (1 to 30) in seconds before call is forwarded, default value is 20 seconds.

## Notes

The combination of different classes is not supported; this results in the activation / deactivation / status request of all classes (7).

## Examples

| | |
|---|---|
| AT+CCFC=0,3,”0146290800” | *[register call forwarding unconditional]* |
| OK | |
| AT+CCFC=0,2 | *[interrogate call forwarding unconditional]* |
| +CCFC:1,1,”0146290800”,129 | *[call forwarding active for voice]* |
| <CR><LF>+CCFC:1,2,”0146290802”,129 | *[call forwarding active for data]* |
| <CR><LF>+CCFC:1,4,”0146290804”,129 | |
| OK | *[call forwarding active for fax]* |
| AT+CCFC=0,4 | *[erase call forwarding unconditional]* |
| OK | |

**Note:** *The +CCFC responses are not sorted based on the <class> parameter, but on the order of the network response.*

# AT+CCUG, *Closed User Group*

## *Description*

Enables subscribers to form closed user groups to and from which access is restricted.

The CUG supplementary service is described by GSM 02.85. This service is provided after prior arrangement with the service provider. Select options at provision subscription.

+CCUG command is used to:

- activate/deactivate the control of the CUG information for all subsequent outgoing calls
- select a CUG index
- suppress the outgoing access (OA). The OA allows a member of a CUG to place calls outside the CUG
- suppress the preferential CUG, the default used by the network when it does not receive explicit CUG index.

| Command | Possible Response |
|---|---|
| **AT+CCUG = <*n*> [ ,<*index*> [ <*info*> ] ]** | |

**where:**

<*n*>:

| | |
|---|---|
| 0 | disable CUG mode (default) |
| 1 | enable CUG mode |

<*index*>:

| | |
|---|---|
| 0-9 | CUG index (0 default) |
| 10 | preferred CUG |

**where:**

*<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.

# AT+CCWA, *Call Waiting*

## *Description*

Allows control over the call waiting supplementary service. The module sends an unsolicited result code +CCWA when call waiting service is enabled.

| Command | Possible Response |
|---|---|
| **AT+CCWA=<n>[,<*mode*>[,<*class*>]]** | When <*mode*>=2 and command successful:<br>+CCWA: <*status*>,<*class1*>[<cr><lf><br>+CCWA: <*status*>,<*class2*>[...]] |
| unsolicited result code (when <*n*>=1) | +CCWA: <*number*>,<*type*>,<*class*>[,<*alpha*>] |

**where:**

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

| | |
|---|---|
| 0 | disable |
| 1 | enable |

<*mode*>:

| | |
|---|---|
| 0 | disable |
| 1 | enable |
| 2 | query status |

<*class*>:

| | |
|---|---|
| 1 | voice |
| 2 | data |
| 4 | fax |
| 7 | All classes |
| 8 | short message service |

<*alpha*>: optional string type alphanumeric representation of <number> corresponding to the entry found in FDN phonebook

## *Note*

The combination of different classes in not supported; this results in the activation / deactivation / status request of all classes (7).

## *Examples*

AT+CCWA=1,1,1 *[enable call waiting for speech]*

OK

AT+CCWA=1,2 *[interrogate call waiting]*

+CCWA:1,1

*OK* *[call waiting active for speech calls]*

+CCWA:”0146290800”,145,1,”FREDDY”

or

+CCWA:”0146290800”,145,1,”8023459678FFFF”

*[UCS2 format]*

*[number and name of waiting voice call]*

AT+CCWA=1,0,7 *[erase call waiting]*

OK

+CCWA:,,1 *[waiting voice call without number]*

# AT+CHLD, *Call Related Supplementary Services*

## *Description*

Manages call hold and multiparty conversation (conference call). Calls can be put on hold, recovered, released or added to conversation.

| Command | Possible Response |
|---|---|
| **AT+CHLD=?** | +CHLD: (list of supported <*n*>s) |
| **AT+CHLD=<*n*>** | |

**where:**

<*n*>:

| | |
|---|---|
| 0 | releases all held calls or sets User Determined User Busy (UDUB) for a waiting call |
| 1 | releases all active calls (if any exist) and accepts the other (held or waiting) call |
| 1x | releases a specific active call X (active, held or waiting) |
| 2 | places all active calls (if any exist) on hold and accepts the other (held or waiting) call |
| 2x | places 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 (ECT)) |

# AT+CLCC, *List Current Calls*

## *Description*

Returns a list of current calls.

| Command | Possible Response |
|---|---|
| **AT+CLCC** | [+CLCC: *<id1>,<dir>,<stat>,<mode>,<mpty>* [,*<number>,<type>*[,*<alpha>*]][<cr><lf> +CLCC: *<id2>,<dir>,<stat>,<mode>,<mpty>* [,*<number>,<type>*[,*<alpha>*]][...]]] |

**where:**

<*idx*>: integer type, call identification as described in GSM 02.30

<*dir*>:

| | |
|---|---|
| 0 | mobile originated (MO) call |
| 1 | mobile terminated (MT) call |

<*stat*>: state of the call

| | |
|---|---|
| 0 | active |
| 1 | held |
| 2 | dialing (MO call) |
| 3 | alerting (MO call) |
| 4 | incoming (MT call) |
| 5 | waiting (MT call) |

<*mode*>: teleservice

| | |
|---|---|
| 0 | voice |
| 1 | data |
| 2 | fax |
| 9 | unknown |

**where:**

<*mpty*>:

| | |
|---|---|
| 0 | call is not one of multiparty (conference) call parties |
| 1 | call is one of multiparty (conference) call parties |

<*number*>: phone number in format specified by <*type*>

<*type*>: type of address octet in integer format

<*alpha*>: optional string type alphanumeric representation of <*number*> corresponding to the entry found in phonebook. (For UCS2 format, see command examples +CLIP, +CCWA or +COLP)

# AT+CLCK, *Facility Lock*

## *Description*

Controls the call barring supplementary service. Locking, unlocking or querying the status of a call barring is possible for all or a specific class.

| Command | Possible Response |
|---|---|
| **AT+CLCK=?** | +CLCK: (list of supported <*fac*>s) |
| **AT+CLCK=<*fac*>,<*mode*>[, <*passwd*>[,<*class*>]]** | when <*mode*>=2 and command successful:<br>+CLCK: <*status*>[,<*class1*>[<cr><lf><br>+CLCK: <*status*>,<*class2*>[...]] |

**where:**

<*fac*>: (within speech marks)

| | |
|---|---|
| AO | BAOC (Bar All Outgoing Calls) |
| OI | BOIC (Bar Outgoing International Calls) |
| OX | BOIC-exHC (Bar Outgoing International Calls except to Home Country) |
| AI | BAIC (Bar All Incoming Calls) |
| IR | BIC-Roam (Bar Incoming Calls when Roaming outside the home country) |
| AB | All Barring services (<*mode*>=0 only) |
| AG | All outGoing barring services (<*mode*>=0 only) |
| AC | All inComing barring services (<*mode*>=0 only) |

<*mode*>:

| | |
|---|---|
| 0 | unlock |
| 1 | lock |
| 2 | query status |

<*class*>: see description for *AT+CLCK, Facility Lock* on page 8-15 or *AT+CCFC, Call Forwarding* on page 8-6

## Notes

The combination of different classes in not supported, this results in the activation / deactivation / status request of all classes (7).

Password code must be 4 digits maximum.

## Examples

AT+CLCK=”AO”,1,1234

OK

AT+CLCK=”AO”,0,5555

+CME ERROR: 16 *[wrong password]*

AT+CLCK=”AO”,0,1234

OK

# AT+CLIP, *Calling Line Identification Presentation*

## *Description*

Controls the calling line identification presentation supplementary service. When the presentation of the CLI (Calling Line Identification) is enabled (and calling subscriber allows), +CLIP response is returned after every RING (or +CRING) result code.

| **Command** | **Possible Response** |
|---|---|
| **AT+CLIP?** | +CLIP: <*n*>,<*m*> |
| **AT+CLIP=<*n*>** | +CLIP: <*number*>,<*type*>[ ,<subaddr>, <satype>, <alpha> ]<br>(for an incoming call, after each RING or +CRING indication) |

**where:**

<*n*>: parameter sets/shows the result code presentation status in the TA

| | |
|---|---|
| 0 | disable |
| 1 | enable |

<*m*>: parameter shows the subscriber CLIP service status in the network

| | |
|---|---|
| 0 | CLIP not provisioned |
| 1 | CLIP provisioned |
| 2 | unknown (e.g., no network) |

## Examples

| | |
|---|---|
| AT+CLIP=1 | *[enable CLIP]* |
| OK | |
| AT+CLIP? | *[request current functionality]* |
| +CLIP:<*n*>,<*m*> | |
| OK | |
| RING | *[incoming call]* |
| +CLIP: “0146290800”,129,1,,,”FRED” | *[or]* |
| +CLIP: “0146290800”,129,1,,,”8000204212FFFF” | |
| | *[UCS2 format]* |
| | *[incoming call with number and name presentation]* |
| AT+CLIP=0 | *[disable CLIP presentation]* |
| OK | |

# AT+CLIR, *Calling Line Identification Restriction*

## *Description*

Controls of the calling line identification restriction supplementary service.

| Command | Possible Response |
|---|---|
| **AT+CLIR=?** | +CLIR: (list of supported <*n*>s) |
| **AT+CLIR?** | +CLIR: <*n*>,<*m*> (current values) |
| **AT+CLIR=<*n*>** | |

**where:**

<*n*>: sets the adjustment for outgoing calls

| | |
|---|---|
| 0 | presentation indicator is used according to the subscription of the CLIR service |
| 1 | CLIR invocation |
| 2 | CLIR suppression |

<*m*>: shows the subscriber CLIR service status in the network

| | |
|---|---|
| 0 | CLIR not provisioned |
| 1 | CLIR provisioned in permanent mode |
| 2 | unknown (e.g., no network) |
| 3 | CLIR temporary mode presentation restricted |
| 4 | CLIR temporary mode presentation allowed |

# AT+COLP, *Connected Line Identification Presentation*

## *Description*

Controls of the connected line identification presentation supplementary service, useful for call forwarding of the connected line.

| Command | Possible Response |
|---|---|
| **AT+COLP?** | +CLOP: <*n*>,<*m*> (current values) |
| **AT+COLP=<*n*>** | +COLP: <*number*>,<*type*> [ ,<*subaddr*>, <*satype*>, <*alpha*> ]<br>(after ATD command, before OK or CONNECT <*speed*>) |

**where:**

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

| | |
|---|---|
| 0 | disable |
| 1 | enable |

<*m*>: shows the subscriber COLP service status in the network

| | |
|---|---|
| 0 | COLP not provisioned |
| 1 | COLP provisioned |
| 2 | unknown (e.g., no network) |

<*number*>: string type phone number in "brackets" of format specified by <*type*>

<*type*>: type of address octet in integer format. 145 when the dial string contains + otherwise 129

## *Examples*

| | |
|---|---|
| AT+COLP=1 | *[activate COLP]* |
| OK | |
| AT+COLP? | *[request current functionality]* |
| +COLP:1,1 | |
| OK | *[COLP is enabled and provisioned]* |
| ATD146290928; | *[outgoing call]* |
| +COLP:”0146290928”,129,,,”JOE” | *[or]* |
| +COLP:“0146290800”,129,1,,,”8000204212FFFF” | *[UCS2 format]* |
| OK | *[connected outgoing line number and name presentation]* |
| AT+COLP=0 | *[deactivate COLP]* |
| OK | |

# AT+CPUC, *Price Per Unit and Currency Table*

## *Description*

Sets the parameters of Advice of Charge related price per unit and 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.

| Command | Possible Response |
|---|---|
| **AT+CPUC** | |

## *Examples*

| | |
|---|---|
| AT+CPUC=”FFR”,”0.82”,1234 | *[request Currency and Price per unit update]* |
| OK | |
| AT+CPUC=”FFR”,”0.82”,1111 | *[request Currency and PPU update]* |
| + CME ERROR : 16 | *[incorrect password]* |
| AT+CPUC? | *[request Currency and Price]* |
| +CPUC:”FFR”,”0.82” | *[currency= “FFR”; price per unit= “0.82”]* |
| OK | |

# AT+CPWD, *Modify SS Password*

## *Description*

Changes the supplementary service password.

| Command | Possible Response |
|---|---|
| **AT+CPWD=<*fac*>,<*OldPassword*>, <*NewPassword*>** | |

**where:**

<*fac*>: (within speech marks)

| | |
|---|---|
| AO | BAOC (Bar All Outgoing Calls) |
| OI | BOIC (Bar Outgoing International Calls) |
| OX | BOIC-exHC (Bar Outgoing International Calls except to Home Country) |
| AI | BAIC (Bar All Incoming Calls) |
| IR | BIC-Roam (Bar Incoming Calls when Roaming outside the home country) |
| AB | All Barring services (<*mode*>=0 only) |
| AG | All outGoing barring services (<*mode*>=0 only) |
| AC | All inComing barring services (<*mode*>=0 only) |

## *Notes*

The “P2” facility is added (SIM PIN2).

The change of password is performed for all calls barring.

## Examples

| | |
|---|---|
| AT+CPWD=”AO”,1234,5555 | *[change Call Barring password]* |
| OK | |
| AT+CPWD=”AO”,1234,5555 | *[change password]* |
| +CME ERROR: 16 | *[wrong password]* |
| AT+CPWD=”AO”,5555,1234 | *[change password]* |
| OK | |

# AT+CSSN, *Supplementary Service Notifications*

## *Description*

Refers to supplementary service related network initiated notifications.

- 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.

| Command | Possible Response |
|---|---|
| **AT+CSSN?** | +CSSN: <*n*>, <*m*> (current values) |
| **AT+CSSN=?** | +CSSN: (list supported values) |
| **AT+CSSN= <*n*>, <*m*>** | |

**where:**

<*n*>: parameter sets/shows the +CSSI result code presentation status

| | |
|---|---|
| 0 | disable |
| 1 | enable |

<*m*>: parameter sets/shows the +CSSU result code presentation status

| | |
|---|---|
| 0 | disable |
| 1 | enable |

<*code1*>: parameter sets/shows the +CSSU result code presentation status

| | |
|---|---|
| 4 | Closed User Group call, with CUG <index> |
| 5 | outgoing calls are barred |
| 6 | incoming calls are barred |
| 7 | CLIR suppresssion rejected |

<*code2*>: parameter sets/shows the +CSSU result code presentation status

| | |
|---|---|
| 1 | Closed User Group call, with CUG <*index*> |

**where:**

| | |
|---|---|
| 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) |

<*index*>: Closed User Group index

<*number*>: string type phone number

<*type*>: type of address

# AT+CUSD, *Unstructured Supplementary Service Data*

## *Description*

The USSD supplementary service is described by the GSM 02.90.

It is based on digit sequences which may be entered by mobile user with a handset. An entered sequence is sent to the network which answers back with an alphanumerical string, only to display, or to display and to ask for the next sequence.

This command is used to :

- enable or disable the CUSD indication sent to the application by the module when an incoming USSD is received
- send and receive USSD strings.

| Command | Possible Response |
|---|---|
| **AT+CSSN?** | +CSSN: <*n*>, <*m*> (current values) |
| **AT+CSSN=?** | +CSSN: (list supported values) |
| **AT+CUSD = <*n*> [ ,<*str*> [ <*dcs*> ] ]** | |

**where:**

<*n*>: parameter sets/shows the +CSSI result code presentation status

| | |
|---|---|
| 0 | disable the result code presentation |
| 1 | enable the result code presentation |
| 2 | cancel session (not applicable to read command response) |

<*m*>: parameter sets/shows the +CSSU result code presentation status

| | |
|---|---|
| 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 |

**where:**

| | |
|---|---|
| 4 | Operation not supported |

<*str*>: USSD string to be sent

<*dcs*>: default alphabet and the UCS2 alphabet are supported

## *Notes*

In case of enabled presentation, a +CUSD (as direct answer to a send USSD) is indicated with:

+CUSD: <m> [,<str>,<dcs> ]

The send command asks the user to re-enter the enable/disable (<*n*>) parameter.

When the module sends a USSD, an OK response is first returned. The intermediate +CUSD indication comes after. If an error occurs, a +CUSD: 4 indication is returned.

# Chapter 9
# Data Commands

## AT%C, *Select Data Compression*

### *Description*

Enables or disables data compression negotiation if this feature is supported by the module. This command is available for WISMO2C only.

| Command | Possible Response |
|---|---|
| **AT%C?** | <*n*> (current values) |
| **AT%C<*n*>** | |

**where:**

<*n*>:

| | |
|---|---|
| 0 | no compression (default) |
| 2 | V42bis compression if supported |

# AT+CBST, *Bearer Type Selection*

## *Description*

Applies to both outgoing and incoming data calls. For outgoing calls the two parameters (e.g., <*speed*> and <*ce*>) apply, whereas for incoming calls only the <*ce*> parameter applies.

| Command | Possible Response |
|---|---|
| **AT+CBST?** | +CBST: <*speed*>, <*name*>, <*ce*> (current values) |
| **AT+CBST=?** | +CBST: (list supported values) |
| **AT+CBST= <*speed*>, <*name*>, <*ce*>** | |

**where:**

<*speed*>:

| | |
|---|---|
| 0 | autobauding (modem type: none) (default) |
| 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) |

**where:**

| | |
|---|---|
| 71 | 9600 bps (modem type: V.110) |
| 75* | 14400 bps (modem type: V.110) |

<*ce*>: connection element

| | |
|---|---|
| 0 | transparent only |
| 1 | non-transparent only (default) |
| 2 | transparent preferred |
| 3 | non-transparent preferred |

<*str*>: USSD string to be sent

<*dcs*>: default alphabet and UCS2 alphabet are supported

*Available for WISMO2C only

** Available for WISMO2C only. This speed configures the data and fax 14.4 kbps bearers.

## Notes

No data compression is provided and only asynchronous modem is supported (<*name*> = 0).

For incoming calls, if <*ce*> is set to T only and the network proposes NT only or vice versa, then the call is released.

Former values 100 and 101 for <*ce*> are retained for compatibility but are not used; values 2 and 3 are used instead.

## Examples

```
AT+CBST=?
    +CBST: (0-8,65,66,68,70,71),(0),(0-3)
    OK                                          [data 14,4 kbps not supported]
AT+CBST=?
    +CBST: (0-8,12,14,65,66,68,70,71,75),(0),(0-3)
    OK                                          [data 14,4 kbps not supported]
AT+CBST=7,0,1                                   [request bearer]
    OK
```

```
AT+CBST?
    +CBST:7,0,1
    OK
AT+CBST=81,0,0                    [request bearer]
    +CME ERROR : 4                [bearer not supported]
```

# AT+CR, *Service Reporting Control*

## *Description*

Enables a more detailed service reporting, for data incoming or outgoing calls. Before sending the CONNECT response to the application, the GSM module indicates the type of data connection established.

These report types are :

- **+CR: ASYNC** for asynchronous transparent
- **+CR: REL ASYNC** for asynchronous non-transparent

| Command | Possible Response |
|---|---|
| **AT+CR=<*n*>** | |

**where:**

<*n*>:

| | |
|---|---|
| 0 | disable extended reports |
| 1 | enable extended reports |

# AT+CRC, *Cellular Result Codes*

## *Description*

Enables a more detailed ring indication, for incoming calls (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 : FAX** for fax calls

| Command | Possible Response |
|---|---|
| **AT+CRC=<*n*>** | |

**where:**

<*n*>:

| | |
|---|---|
| 0 | disable extended reports |
| 1 | enable extended reports |

# AT+CRLP, *Radio Link Protocol Parameters*

## *Description*

Changes the radio link protocol parameters used for non-transparent data transmission.

| Command | Possible Response |
|---|---|
| **AT+CRLP?** | AT+CRLP: (current values) |
| **AT+CRLP=?** | AT+CRLP: (list supported values) |
| **AT+CRLP=<*iws*>,<*mws*>, <*T1*>,<*N2*>, <*ver*>** | |

**where:**

| | | |
|---|---|---|
| <*iws*> | 0-61 | down window size (default = 61) |
| <*mws*> | 0-61 | up window size (default = 61) |
| <*T1*> | 40-255 | acknowledgement timer in units of 10ms (default = 48) |
| <*N2*> | 1-255 | retransmission attempts (default = 6) |
| <*ver*> | 0-1 | version number<br>If the V42bis is supported (Wismo2C) the version is 1<br>If the V42bis is not supported the version is 0 |

## Examples

AT+CRLP=?

+CRLP: (0-61),(0-61),(40-255),(1,255),(0) *[V42bis not supported]*

OK

AT+CRLP=?

+CRLP: (0-61),(0-61),(40-255),(1,255),(0,1)*[V42bis supported]*

OK

AT+CRLP=61,61,48,6,0 *[set new parameters]*

OK

AT+CRLP?

AT+CRLP: 61,61,48,6,0

# AT+DOPT, *Others Radio Link Parameters*

## *Description*

Specific command changes some supplementary radio link protocol parameters.

| Command | Possible Response |
|---|---|
| **AT+DOPT?** | AT+DOPT: (current values) |
| **AT+DOPT=?** | AT+DOPT: (list of supported values) |
| **AT+DOPT=<*reset_allowed*>, <*dtx_allowed*>** | |

**where:**

<*reset_allowed*>:

| | |
|---|---|
| 0 | data communication is hung up in case of bad radio link |
| 1 | data communication goes on in case of bad radio link (possible loss of data) (default) |

<*dtx_allowed*>: (used for WISMO2C only)

| | |
|---|---|
| 0 | normal mode |
| 1 | economic battery mode (not supported by all networks) (default) |

## Examples

AT+DOPT=?

(0,1),(0) *[DTX not supported (WISMO1B)]*

OK

AT+DOPT=1,1 *[set new parameters]*

+CME ERROR : 3 *[command not valid]*

AT+DOPT=1 *[set new parameters]*

OK

AT+DOPT+?

(0,1),(0,1) *[DTX is supported (WISMO2C)]*

OK

AT+DOPT=1,1 *[set new parameters]*

OK

AT+DOPT?

1,1

OK

# AT+DR, *V42 bis Data Compression Report*

## *Description*

Provided by the module, this command determines whether or not the use of V42bis is informed in a data incoming or outgoing call.

The intermediate result code represents the 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.

| Command | Possible Response |
|---|---|
| **AT+DR=?** | +DR: (list of supported <*n*>s) |
| **AT+DR?** | +DR: <*n*> (current value) |
| **AT+DR=<*n*>** | |

**where:**

<*n*>:

| | |
|---|---|
| 0 | disable reporting |
| 1 | enable reporting |

# AT+DS, *V42 bis Data Compression*

## *Description*

Enables or disables V.42bis data compression if this feature is supported by the module. This command is available for WISMO2C only.

| Command | Possible Response |
|---|---|
| **AT+DS=?** | +DS: (list of supported <*n*>s) |
| **AT+DS?** | +DS: <*n*> (current value) |
| **AT+DS=<*dir*>,<*neg*>,<*P1*>,<*P2*>** | |

**where:**

<*dir*>: the desired direction(s) of operation of the data compression function; from the DTE point of view

| | |
|---|---|
| 0 | negotiated, no compression |
| 1 | transmit only |
| 2 | receive only |
| 3 | both directions, accept any direction (default) |

<*neg*>: specifies whether or not the DCE continues to operate if the desired result is not obtained

| | |
|---|---|
| 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*> |

| | | |
|---|---|---|
| <*P1*> | 512-4096 | specifies the maximum number of dictionary entries to be negotiated (default = 4096) |
| <*P2*> | 6-250 | specifies the maximum string length to be negotiated (default = 20) |

## *Examples*

AT+DS=?

+DS: (0-3),(0,1),(512-4096),(6-250)

OK

AT+DS=3,0,4096,250 *[set new parameters]*

OK

AT+DS?

+DS: 3,0,4096,20

OK

# AT+FCLASS, *Select Mode*

## Description

Puts the module into a particular mode of operation (data or fax).

| Command | Possible Response |
|---|---|
| **AT+FCLASS=?** | +FCLASS: (list of supported <*n*>s) |
| **AT+FCLASS?** | +FCLASS: <*n*> (current value) |
| **AT+FCLASS=<*n*>** | |

**where:**

<*n*>:

| | |
|---|---|
| 0 | data |
| 1 | fax class 1 |
| 2 | fax class 2 |

## *Examples*

AT+FCLASS=?
    +FCLASS: (0,1)
    OK *[fax class 2 not supported]*
AT+FCLASS=?
    +FCLASS: (0,1,2)
    OK *[fax class 2 supported]*
AT+FCLASS=0 *[request data mode]*
    OK
AT+FCLASS=1 *[request fax class 1 mode]*
    OK
AT+FCLASS?
    +FCLASS: 1
    OK

# AT+ILRR, *DTE-DCE Local Rate Reporting*

## *Description*

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 a data incoming or outgoing call, after any data compression report, and before any final result code (CONNECT).

<*rate*> can take the following values: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200.

| **Command** | **Possible Response** |
|---|---|
| **AT+ILRR=<*n*>** | |

**where:**

<*n*>:

| | |
|---|---|
| 0 | disable local port rate report |
| 1 | enable local port rate report |

# AT\N, *Select Data Error Correcting Mode*

## *Description*

Provided by the module, this command controls the preferred error correcting mode in a data connection. It can only be used for transparent data transmission. This command is available for WISMO2C only.

- If V42 feature is supported, the module authorizes the LAPM error correction mode.
- If MNP2 feature is supported, the module authorizes the MNP error correction mode.

| Command | Possible Response |
|---|---|
| **AT\N?** | <*n*> (current value) |
| **AT\N<*n*>** | |

**where:**

<*n*>:

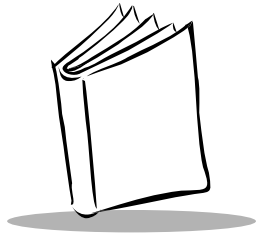
| | |
|---|---|
| 0 | disable error correction mode (default) |
| 2 | select auto reliable mode (LAPM connection, then MNP connection) |
| 4 | select LAPM error correction mode |
| 5 | select MNP error correction mode |

## *Note*

+E prefixed commands of V.25 ter are not used.

## Examples

| | |
|---|---|
| AT\N0 | *[no error correction]* |
| OK | |
| AT\N? | *[request current value]* |
| 0 | |
| OK | |
| AT\N4 | *[LAPM error correction selection]* |
| +CME ERROR: 3 | *[V42 feature not provided]* |



# Chapter 10
# Fax Commands

## Fax Class 1 Commands

The fax service provided by the module is Class 1 compatible. However only the core commands defined by ITU T.31 are supported; commands such as AT+FAR and +FCC are not supported.

Autobauding must be enabled to configure the module for fax support.

All set commands in this section return an ERROR response code if they are not issued during the communication.

### *Setting Up the PC Fax Application*

The recommended fax application is Delrina WinFax v8.0. Configure the modem as follows (menu Setup/Fax Modem Setup):

- **Port:** any COM port
- **Model:** generic Class 1 (hardware flow control); or generic Class 1 with software flow control
- **Init:** default string
- **Reset:** default string
- **Maximum Transmit Rate:** 9600 baud (if higher, rate is automatically set to 9600 baud).

Others settings may be modified as they are of no relevance to the GSM module.

# AT+FRH, *HDLC Receive Speed*

## Description

Sets the fax receive speed, using the HDLC protocol.

| Command | Possible Response |
|---|---|
| **AT+FRH=?** | (list of supported values) |
| **AT+FRH=<*speed*>** | |

**where:**

<*speed*>:

| | |
|---|---|
| 3 | V.21 channels 300 bps |

# AT+FRM, *Receive Speed*

## Description

Sets the fax receive speed.

| Command | Possible Response |
|---|---|
| **AT+FRM=?** | (list of supported values) |
| **AT+FRM=<*speed*>** | |

**where:**

<*speed*>:

| | |
|---|---|
| 24 | 2400 bps (modem type: V.27ter) |
| 48 | 4800 bps (modem type: V.27ter) |
| 72 | 7200 bps (modem type: V.29) |
| 73* | 7200 bps (long) (modem type: V.17) |
| 74* | 7200 bps (short) (modem type: V.17) |
| 96 | 9600 bps (modem type: V.29) |
| 97* | 9600 bps (long) (modem type: V.17) |
| 98* | 9600 bps (short) (modem type: V.17) |
| 121* | 12000 bps (long) (modem type: V.17) |
| 122* | 12000 bps (short) (modem type: V.17) |
| 145* | 14400 bps (long) (modem type: V.17) |
| 146* | 14400 bps (short) (modem type: V.17) |

## Examples

AT+FRM=?

(24,48,72,96) *[fax 14.4 kbps not supported (WISMO1B)]*

OK

AT+FRM=?

(24,48,72,73,74,96,97,98,121,122,145,146)

OK *[fax 14.4 kbps supported (WISMO2C)]*

# AT+FRS, *Receive Silence*

## Description

Causes the modem to stop listening from the network and report back to the DTE after the specified period.

It is aborted if any character is received from the application.

| Command | Possible Response |
|---|---|
| **AT+FRS=?** | (list supported values) |
| **AT+FRS=<*n*>** | |

**where:**

<*n*>: units of 10 ms, 0-255

## Examples

AT+FRS=?

(0-255)

OK

AT+FRS=50 *[stops transmission and waits 0.5 ms]*

OK

# AT+FTH, *HDLC Transmit Speed*

## Description

Sets the fax transmit speed using the HDLC protocol.

| Command | Possible Response |
|---|---|
| **AT+FTH=?** | (list supported values) |
| **AT+FTH=<*speed*>** | |

**where:**

<*speed*>:

| | |
|---|---|
| 3 | V.21 channels 300 bps |

# AT+FTM, *Transmit Speed*

## Description

Sets the fax transmit speed.

| Command | Possible Response |
|---|---|
| **AT+FTM=?** | (list supported values) |
| **AT+FTM=<*speed*>** | |

**where:**

<*speed*>:

| | |
|---|---|
| 24 | 2400 bps (modem type: V.27ter) |
| 48 | 4800 bps (modem type: V.27ter) |
| 72 | 7200 bps (modem type: V.29) |
| 73* | 7200 bps (long) (modem type: V.17) |
| 74* | 7200 bps (short) (modem type: V.17) |
| 96 | 9600 bps (modem type: V.29) |
| 97* | 9600 bps (long) (modem type: V.17) |
| 98* | 9600 bps (short) (modem type: V.17) |
| 121* | 12000 bps (long) (modem type: V.17) |
| 122* | 12000 bps (short) (modem type: V.17) |
| 145* | 14400 bps (long) (modem type: V.17) |
| 146* | 14400 bps (short) (modem type: V.17) |

*Available for WISMO 2C only

## Examples

AT+FTM=?

(24,48,72,96) *[fax 14.4 kbps not supported (WISMO1B)]*

OK

AT+FTM=?

(24,48,72,73,74,96,97,98,121,122,145,146)

OK *[fax 14.4 kbps supported (WISMO2C)]*

# AT+FTS, *Stop Transmission and Wait*

## Description

Stops the transmission for the specified period.

| Command | Possible Response |
|---|---|
| **AT+FTS=?** | (list supported values) |
| **AT+FTS=<*n*>** | |

**where:**

<*n*>: silence period (units of 10 ms, 0-255)

## Examples

AT+FTS=?

(0-255)

OK

AT+FTS=50 *[stops transmission and waits 0.5 ms]*

OK

# Fax Class 2 Commands

The following commands are available for WISMO2C only.

- If the feature is supported, the commands +FDT, +FDR, +FET, +FPTS and +FK must be used in communication only.
- The commands +FBOR, +FBUF, +FCQ, +FCR, +FDCC, +FDIS, +FLID and +FPHCTO can not be used in communication.

# AT+FBOR, *Page Transfer Bit Order*

## Description

Sets the bit order for negotiation and fax page transfer. The order is related to the bit order or radio link.

| Command | Possible Response |
|---|---|
| **AT+FBOR=?** | (list of supported values) |
| **AT+FBOR=<*n*>** | |

**where:**

<*n*>: bit order for negotiation

| | |
|---|---|
| 0 | same (default) |
| 1 | same |
| 2 | reverse |
| 3 | reverse |

<*n*>: bit order for page transfer

| | |
|---|---|
| 0 | same (default) |
| 1 | reverse |
| 2 | same |
| 3 | reverse |

# AT+FBUF, *Buffer Size Report*

## Description

Requests the size of the exchange buffer between the modem and the fax application. Only the read command is supported.

| Command | Possible Response |
|---|---|
| **AT+FBUF?** | (*current value*) |
| **AT+FBUF** | |

# AT+FCQ, *Copy Quality Checking*

## Description

Controls the Copy Quality checking for receiving faxes.

| Command | Possible Response |
|---|---|
| **AT+FCQ=?** | (0) (*supported value*) |
| **AT+FCQ=<*n*>** | |

# AT+FCR, *Capability to Receive*

## Description

Controls the capability of the modem to accept incoming faxes.

| Command | Possible Response |
|---|---|
| **AT+FCR=?** | (list of supported values) |
| **AT+FCR=<*n*>** | |

**where:**

<*n*>: bit order for negotiation

| | |
|---|---|
| 0 | modem will not accept incoming faxes |
| 1 | modem will accept incoming faxes (default) |

# AT+FDCC, *DCE Capabilities Parameters*

## Description

Allows the DTE to parameter the capabilities used for any sessions.

| Command | Possible Response |
|---|---|
| **AT+FDCC=<*vr*>,<*br*>,<*wd*>,<*ln*>,<*df*>,<*ec*>,<*bf*>,<*st*>** | |

**where:**

See *AT+FDIS, Current Sessions Parameters* on page 10-16 for variable values.

## Examples

AT+ FDCC=?

| | |
|---|---|
| (0,1),(0-5),(0-2),(0-2),(0,3),(0-2),(0),(0-7) | *[fax ECM supported]* |
| OK | *[fax 14,4 kbps supported]* |
| (0,1),(0-5),(0-2),(0-2),(0,3),(0),(0),(0-7) | *[fax ECM not supported]* |
| OK | *[fax 14,4 kbps supported]* |
| (0,1),(0-3),(0-2),(0-2),(0,3),(0-2),(0),(0-7) | *[fax ECM supported]* |
| OK | *[fax 14,4 kbps not supported]* |
| (0,1),(0-3),(0-2),(0-2),(0,3),(0),(0),(0-7) | *[fax ECM not supported]* |
| OK | *[fax 14,4 kbps not supported]* |

# AT+FDIS, *Current Sessions Parameters*

## Description

Allows the DTE to parameter the capabilities used for the current session.

| Command | Possible Response |
|---|---|
| **AT+FDIS=?** | (list of supported values) |
| **AT+FDIS=<*vr*>,<*br*>,<*wd*>, <*ln*>,<*df*>,<*ec*>,<*bf*>,<*st*>** | |

**where:**

<*vr*>: vertical resolution

| | |
|---|---|
| 0 | normal: 98 lpi (default) |
| 1 | fine: 196 lpi |

<*br*>: bit rate

| | |
|---|---|
| 0 | 2400 bps (modem type: V.27 ter) |
| 1 | 4800 bps (modem type: V.27 ter) |
| 2 | 7200 bps (modem type: V.29) |
| 3 | 9600 bps (modem type: V.29, V.17) |
| 4* | 12000 bps (modem type: V.33, V.17) |
| 5* | 14400 bps (modem type: V.33, V.17) |

*Only when module supports 14,4 kbps data feature. If this feature is supported, default is 5, otherwise default is 3.

<*wd*>: page width

| | |
|---|---|
| 0 | 1728 pixels in 215 mm (default) |
| 1 | 2048 pixels in 255 mm |
| 2 | 2432 pixels in 303 mm |

**where:**

<*in*>: page length

| | |
|---|---|
| 0 | A4, 297 mm |
| 1 | B4, 364 mm |
| 2 | unlimited (default) |

<*df*>: data compression format

| | |
|---|---|
| 0 | 1-D modified huffman (default) |
| 1 | 2-D modified read |
| 2 | 2-D uncompressed mode |
| 3 | 2-D modified modified read |

<*ec*>: error correction

| | |
|---|---|
| 0 | disable fax ECM |
| 1* | enable fax ECM, 64 bytes/frame |
| 2* | enable fax ECM, 256 bytes/frame |

*Only when module supports fax Error Correction Mode feature. If this feature is supported, default is 2, otherwise default is 0.

<*bf*>: binary file transfer, only <bf> set to 0 is supported

<*st*>: scan time per line, description <vr>=0

| | |
|---|---|
| 0 | 0 ms (default) |
| 1 | 5 ms |
| 2 | 10 ms |
| 3 | 10 ms |
| 4 | 20 ms |
| 5 | 20 ms |
| 6 | 40 ms |
| 7 | 40 ms |

**where:**

<*st*>: scan time per line, description <vr>=1

| | |
|---|---|
| 0 | 0 ms (default) |
| 1 | 5 ms |
| 2 | 5 ms |
| 3 | 10 ms |
| 4 | 10 ms |
| 5 | 20 ms |
| 6 | 20 ms |
| 7 | 40 ms |

## Examples

AT+FDIS=?

(0,1),(0-5),(0-2),(0-2),(0,3),(0-2),(0),(0-7) *[fax ECM supported]*

OK *[fax 14,4 kbps supported]*

AT+FDIS=?

(0,1),(0-5),(0-2),(0-2),(0,3),(0),(0),(0-7) *[fax ECM not supported]*

OK *[fax 14,4 kbps supported]*

AT+FDIS=?

(0,1),(0-3),(0-2),(0-2),(0,3),(0-2),(0),(0-7) *[fax ECM supported]*

OK *[fax 14,4 kbps not supported]*

(0,1),(0-3),(0-2),(0-2),(0,3),(0),(0),(0-7) *[fax ECM not supported]*

OK *[fax 14,4 kbps not supported]*

# AT+FDR, *Receive Data*

## Description

Initiates data reception.

| Command | Possible Response |
| --- | --- |
| **AT+FDR** | |

# AT+FDT, *Transmit Data*

## Description

Prefixes data transmission.

| Command | Possible Response |
|---|---|
| **AT+FDT** | |

# AT+FET, *Transmit Page Punctuation*

## Description

Punctuates page and document transmission after +FDT commands. It indicates that the current page is complete, and whether or not there are additional pages to be sent.

| Command | Possible Response |
|---|---|
| **AT+FET=<*ppm*>** | |

**where:**

<*ppm*>:

| | |
|---|---|
| 0 | another page next, same document |
| 1 | another document next |
| 2 | no more pages or documents |
| 3 | another partial page next |
| 4 | another page, procedure interrupt |
| 5 | another document, procedure interrrupt |
| 6 | all done, procedure interrupt |

## Note

The remote station responds with +FPTS:<*ppr*>

# AT+FK, *Terminate Session*

## Description

Causes the module to terminate the session.

| Command | Possible Response |
|---|---|
| **AT+FK** | |

# AT+FLID, *Local ID String*

## Description

Defines the local ID string.

| Command | Possible Response |
|---|---|
| **AT+FLID=?** | (20),(32-127)<br>(string size is limited; accepts characters between 32 and 127) |
| **AT+FLID=<*string*>** | |

# AT+FPHCTO, *Page Transfer Timeout Parameter*

## Description

Sets the period the modem waits for another page before it assumes there are no more pages and aborts.

| Command | Possible Response |
|---|---|
| **AT+FPHCT0=?** | (0-255)<br>(supported values; default = 30) |
| **AT+FPHCT0=<*n*>** | |

# AT+FPTS, *Page Transfer Status Parameters*

## Description

Sets post page transfer response.

| Command | Possible Response |
|---|---|
| **AT+FPTS=<*ppr*>** | |

**where:**

<*ppr*>:

| | |
|---|---|
| 1 | page good |
| 2 | page bad; retrain requested |
| 3 | page good; retrain requested |
| 4 | page bad; interrupt requested |
| 5 | page good; interrupt requested |

# Fax Class 2 Indication Messages

The following messages are used to indicate DCE Responses. They are used in communication only.

**Table 10-1. Fax Class 2 Indication Messages**

| DCE Response | Meaning |
|---|---|
| **+FCON:** | Indicates connection with a fax machine. |
| **+FDCS <*vr*>,<*br*>,<*wd*>,<*ln*>, <*df*>,<*ec*>,<*bf*>,<*st*>:** | Reports current session capabilities. The parameters are the same as those of AT+FDIS command. |
| **+FDIS <*vr*>,<*br*>,<*wd*>,<*ln*>, <*df*>,<*ec*>,<*bf*>,<*st*>:** | Reports remote capabilities. The parameters are the same as those of AT+FDIS command. |
| **+FCFR:** | Indicates confirmation to receive. |
| **+FTSI "<*string*>":** | Reports the received transmit station ID string. |
| **+FCSI "<*string*>":** | Reports the received called station ID string. |
| **+FPTS <*ppr*>:** | Reports received page transfer status. The parameter is the same as that of AT+FPTS command. |
| **+FET <*ppm*>:** | Reports post page message response. The parameter is the same as that of AT+FET command. |
| **+FHNG <*cause*>:** | Reports the hangup cause. Indicates that the call has been terminated.<br><*cause*> =<br>0: normal end of connection<br>10: unspecified transmit phase A error<br>20: unspecified transmit phase B error<br>40: unspecified transmit phase C error<br>50: unspecified transmit phase D error<br>70: unspecified receive phase B error<br>90: unspecified receive phase C error<br>100: unspecified receive phase D error |

# Chapter 11
# V24-V25 Commands

## AT&C, *Set DCD Signal*

### *Description*

Controls the Data Carrier Detect (DCD) signal.

| Command | Possible Response |
|---|---|
| **AT&C<*n*>** | |

**where:**

<*n*>:

| | |
|---|---|
| 0 | D always on |
| 1 | DCD matches state of the remote modem's data carrier |

# AT&D, *Set DTR Signal*

## *Description*

Controls the Data Terminal Ready (DTR) signal.

| Command | Possible Response |
|---|---|
| **AT&D<*n*>** | |

**where:**

<*n*>:

| | |
|---|---|
| 0 | ignore DTR signal |
| 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 cleardown |

# ATE, *Echo*

## *Description*

Determines whether or not the modem echoes characters received by an external application (DTE).

| Command | Possible Response |
|---|---|
| **ATE<*n*>** | |

**where:**

<*n*>:

| | |
|---|---|
| 0 | characters are not echoed |
| 1 | characters are echoed |

# AT&F, *Restore Factory Settings*

## *Description*

Restores the factory settings from EEPROM.

| Command | Possible Response |
|---|---|
| **AT&F** | |
| **AT&F0** | |

# AT+I, *Request Identification Information*

## *Description*

Causes the GSM module to transmit one or more lines of specific information text.

| Command | Possible Response |
|---|---|
| **ATI<*n*>** | |

**where:**

<*n*>:

| | |
|---|---|
| 0 | display the manufacturer followed by model identifications (equivalent to +CGMI and +CGMM) |
| 3 | display the revision identification (equivalent to +CGMR) |
| 4 | display the modem configuration in RAM (equivalent to &V0) |
| 5 | display the modem configuration in EEPROM (equivalent to &V1) |
| 6 | display the modem data features<br>enumerates the supported data rates, data modes, and fax classes |
| 7 | display the modem voice features |

If the value is different, an “OK” string is returned.

## *Examples*

| | |
|---|---|
| ATI0 | *[manufacturer and model identifications]* |
| WAVECOM MODEM | |
| 900P | *[GSM 900 MHz primary band]* |
| OK | |
| ATI3 | *[revision identification]* |
| 310_G250.51 806216 032199 17:04 | *[software release 3.10 ,revision 51,* |
| OK | *generated on the 21st of March 1999]* |
| ATI6 | *[modem data features]* |

DATA RATES:

AUTOBAUD,300,1200,1200/75,2400,4800,9600,14400

DATA MODES : T/NT,ASYNCHRONOUS

FAX CLASS 1,2

OK

ATI7 *[modem voice features]*

SPEECH CODINGS: FR,EFR,HR

OK

# AT+ICF, *DTE-DCE Character Framing*

## *Description*

Determines the local serial port start-stop (asynchronous) character framing that the DCE uses.

| Command | Possible Response |
|---|---|
| **AT+ICF?** | + ICF: (current value) |
| **AT+ICF=?** | + ICF: (list of supported values) |
| **AT+ICF= <*format*>, <*parity*>** | |

**where:**

<*format*>:

| | |
|---|---|
| 0 | autodetect (not supported) |
| 1 | 8 data 2 stop |
| 2 | 8 data 1 parity 1 stop |
| 3 | 8 data 1 stop |
| 4 | 7 data 2 stop |
| 5 | 7 data 1 parity 1 stop |
| 6 | 7 data 1 stop |

<*parity*>:

| | |
|---|---|
| 0 | odd |
| 1 | even |
| 2 | mark |
| 3 | space |
| 4 | none |

## Notes

Setting a character framing different from 8N1 disables autobauding (if it is activated). Setting it back to 8N1 does not re-enable autobaud.

Setting the framing to 8N1 allows autobauding to remain enabled (implying framing was already 8N1).

## Examples

AT+ICF?

+ICF: 3,4

OK

AT+ICF=?

+ICF: (1-6),(0-4)

OK

AT+IPR=38400 *[disable autobauding and set rate to 38400 bps]*

OK

AT+ICF=0,0

OK

# AT+IFC, *DTE-DCE Local Flow Control*

## *Description*

Controls the operation of local flow control between the DTE and DCE.

| Command | Possible Response |
|---|---|
| **AT+ICF?** | + ICF: (current value) |
| **AT+ICF=?** | + ICF: (list of supported values) |
| **AT+IFC=<*DCE_by_DTE*>, <*DTE_by_DCE*>** | |

**where:**

<*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) |

<*DTE_by_DCE*>:

| | |
|---|---|
| 0* | none (supported) |
| 1 | Xon/Xoff circuit 104 (not supported) |
| 2 | CTS (supported) |

*When set to 0 (none) then CTS is kept high.

## Notes

When <*DCE_by_DTE*> is set to 2 (DTE invokes flow control through RTS) the behavior of the DCE is as follows:

- If the DCE has not detected RTS in high (or ON) condition since startup it ignores RTS, assuming this signal is not connected.
- When DCE detects RTS high, this signal acts upon it. Therefore subsequent RTS transition to OFF prevents DCE from sending any further data online or offline.

This behavior allows the user to use the default settings (hardware flow control) and let RTS disconnect. If RTS is connected and is high at least once, it acts upon DCE.

## Examples

AT+IFC?

+IFC: 2,2

OK

AT+IFC=?

+ICF: (0,2),(0,2)

OK

AT+ICF=0,0

OK

# AT+IPR, *Fixed DTE Rate*

## *Description*

Specifies the data rate at which the DCE accepts commands.

| Command | Possible Response |
|---|---|
| **AT+IPR?** | + IPR: (current value) |
| **AT+IPR=?** | + IPR: (list of supported values) |
| **AT+IPR=<*n*>** | |

**where:**

<*n*>:

| | |
|---|---|
| 0 | enable autobauding |
| 300 ... 115200 | disable autobauding and set baud to <*n*> |

## *Note*

An autobauding is provided which operates from 2400 to 19200 baud, with the following constraints:

- Any AT command issued by DTE must start with a capital ‘A’ and ‘T’ (or ‘\’). If not, DCE may send back garbage characters and de-synchronize. If this happens, DTE issues ‘AT\r’ (at 2400 or 4800 baud) once or twice, or ‘AT’ (at 9600 baud) to re-synchronize 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. If this delay is ignored, DCE may de-synchronize. Send ‘AT\r’ once or twice, or just ‘AT’ to recover the DCE.

### *Caution*

When starting up, if autobauding is enabled and no AT command has been received, the module sends all unsolicited responses (like RING) at 9600 baud.

## Examples

AT+IPR?

+IPR: 9600 *[current rate is 9600 bps]*

OK

AT+IPR=?

+IPR0,2400,4800,9600,19200),(300,600,1200, 38400,57600,115200)*

OK *[possible values]*

AT+IPR=38400 *[disable autobauding and set rate to 38400 bps]*

OK

AT+IPR=0 *[enable autobauding]*

OK

*First set of values indicates the range of autodetectable speeds. The second set of values indicates all the possible speeds which can be used by DCE.

# ATO, *Back to Online Mode*

## *Description*

If you have established a connection and the mobile is in online command mode, issue this command to return to online data mode.

| Command | Possible Response |
| --- | --- |
| **ATO** | |

# ATQ, *Result Code Suppression*

## *Description*

Determines whether the mobile sends result codes or not.

| Command | Possible Response |
|---|---|
| **ATQ<*n*>** | |

**where:**

<*n*>:

| | |
|---|---|
| 0 | DCE transmits result codes |
| 1 | result codes are suppressed and not transmitted |

# AT&S, Set DSR Signal

## *Description*

Controls the Data Set Ready (DSR) signal.

| **Command** | **Possible Response** |
|---|---|
| **AT&S<*n*>** | |

**where:**

<*n*>:

| | |
|---|---|
| 0 | DSR always on |
| 1 | DSR off in command mode, DSR on in data mode |
| 2 | upon DTR switch from ON to OFF, the call is cleardown |

# AT&T, *Auto-tests*

## *Description*

Performs auto-test and audio loop test.

| Command | Possible Response |
|---|---|
| **AT&T<*n*>** | |

**where:**

<*n*>:

| | |
|---|---|
| 0 | perform software auto-tests. The response is OK if no software problem is detected (EEPROM, RAM and ROM checksums), otherwise an ERROR response is sent. |
| 1 | perform audio loop test (close audio loop) |
| 2 | stop audio loop test (open the audio loop).<br>This validates the audio loop (microphone to speaker). |

# ATV, *DCE Response Format*

## *Description*

This command determines the DCE response format, with or without header characters <CR><LF>, and with the use of numeric result codes.

| | V0 | V1 |
|---|---|---|
| **Information Responses** | <text><CR><LF> | <CR><LF><br><text><CR><LF> |
| **Result Codes** | <numeric code><CR> | <CR><LF><br><verbose code><CR><LF> |

| Command | Possible Response |
|---|---|
| **ATV<*n*>** | |

**where:**

<*n*>:

| | |
|---|---|
| 0 | DCE transmits limited headers and trailers and numeric result codes |
| 1 | DCE transmits full headers and trailers and verbose response text |

# AT&V, *Display Configuration*

## *Description*

Displays modem configuration.

| Command | Possible Response |
|---|---|
| **AT&V** | Q, V, S0, S2, S3, S4, S5, +CR, +CRC, +CMEE, +CBST, +SPEAKER, +ECHO, &C, &D, %C +IPR, +ICF, +IFC |
| **AT&V<*n*>** | |

**where:**

<*n*>:

| | |
|---|---|
| 0 | display the modem configuration in RAM |
| 1 | display the modem configuration in EEPROM |
| 2 | display the factory modem configuration |

## *Example*

AT&V *[RAM modem parameters]*

Q:0 V:1 S0:000 S2:043 S3:013 S4:010 S5:008
+CR:0 +CRC:0 +CMEE:0 +CBST:0,0,1
+SPEAKER:0 +ECHO:0,0 &C:1 &D:2 %C:0
+IPR:9600 +ICF:3,4 +IFC:2,2
OK

**Note:** *For Echo the first value corresponds to Echo cancelation 1.*

# AT&W, *Save Configuration*

## *Description*

Writes the active configuration to a non-volatile memory (EEPROM).

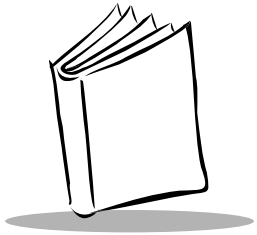
| Command | Possible Response |
| --- | --- |
| **AT&W** | |

# ATZ, *Default Configuration*

## *Description*

Restores the configuration profile. Any call is released.

| Command | Possible Response |
|---|---|
| ATZ | |



# Chapter 12
# Specific AT Commands

## AT+ADC, *Analog Digital Converters Measurements*

### *Description*

Gets the (DC level * 1024) of ADC A and ADC B (voltages coded on 10 bits) or the (DC level * 1024) of ADC A, ADC B and ADC C (voltages coded on 10 bits), depending on the ADC mode.

Also sets ADC mode:

- mode 0 displays the values of the 2 first converters on 10 bits
- mode 1 displays the values of the 3 converters coded on 10 bits

| Command | Possible Response |
|---|---|
| **AT+ADC?** | +ADC: (current values) |
| **AT+ADC=?** | +ADC: (lists supported values) |
| **AT+ADC=<*n*>** | |

**where:**

<*n*>:

| | |
|---|---|
| 0 | select 2 converters |
| 1 | select 3 converters |

## Note

For ADC A, the value returned includes the resistor bridge. These values are updated every 10 seconds.

## Examples

AT+ADC=0 *[select 2 converters (mode 0)]*

OK

AT+ADC=1 *[select 3 converters (mode 1)]*

OK

AT+ADC=?

+ADC: (0-1)

AT+ADC?

+ADC: 500,412 *[Adc A, Adc B on 10 bits]*

OK

AT+ADC?

+ADC: 712,698,997 *[Adc A, Adc B, Adc C on 10 bits]*

OK

# AT+ALEA, *Data Ciphering Mode Between ME and MSC*

## *Description*

Gets a random value from the mobile station and reenters its codes by the DES algorithm. For Application to GSM, an “h” character is added before the value.

| Command | Possible Response |
|---|---|
| **AT+ALEA?** | AT+ALEA=<*value*> (random value) |
| **AT+ALEA=<*coded value*>** | |

## *Examples*

| | |
|---|---|
| AT+ALEA? | *[get random value]* |
| AT+ALEA=1234567890123456 | |
| OK | |
| AT+ALEA =hA125B348ABCDEF9 | *[coded value]* |
| +ALEA=9876543210FBCADE0 | |
| OK | *[value coded valid – new random value sent]* |
| AT+ALEA=h12335678902234AB | *[new coded value]* |
| NO CARRIER | *[coded value false – communication hang up]* |
| AT | |
| OK | |

# AT+CCED, *Cell Environment Description*

## *Description*

Used by the application to retrieve the cell parameters of the main cell and of up to six neighbor cells.

There are two ways for the external application to know these cell parameters:

- on request of the application, or
- automatically by the module every 5 seconds.

Automatic mode is not supported during communication or registration.

| Command | Possible Response |
|---|---|
| **AT+CCED=<*mode*>**<br>**[, <*requested dump*>]** | |

**where:**

<*mode*>:

| | |
|---|---|
| 0 | one shot requested |
| 1 | automatic shots requested |
| 2 | stop automatic shots |

<*requested dump*>:

| | |
|---|---|
| 1 | Main Cell:<br>**if the Cell Identity is available:**<br>MCC, MNC, LAC, CI, BSIC, BCCH Freq (absolute), RxLev, RxLev Full, RxLev Sub, RxQual, RxQual Full, RxQual Sub,Idle TS<br>**if the Cell Identity is not available:**<br>MCC, MNC, LAC,, BSIC, BCCH Freq (absolute), RxLev, RxLev Full, RxLev Sub, RxQual, RxQual Full, RxQual Sub,Idle TS |
| 2 | Neighbour1 to Neighbour6:<br>**if the Cell Identity is available:**<br>MCC, MNC, LAC, CI, BSIC, BCCH Freq (absolute), RxLev<br>**if the Cell Identity is not available:**<br>MCC, MNC, LAC,, BSIC, BCCH Freq (absolute), RxLev |

**where:**

| | |
|---|---|
| 4 | Timing Advance |

## *Notes*

Combination (addition of the values) of the requested dump are supported.

In idle mode, only RxLev measures (on the main cell and on the neighbor cells) are done. The value of these RxLev is set in the RxLev Full field for the main cell.

The response is:

+CCED :<*value*>, … , <*value*>

OK

where <*value*> is the ASCII string of values (in decimal; LAC and CI values are in hexadecimal) of the parameters. If a field can not be measured or makes no sense, the parameter is not filled (two consecutive commas are found).

If the <*requested dump*> parameter is absent, that of the last +CCED command (or 15 by default) is used.

Values of MCC/MNC are set to 0 in case of “No service.”

# AT+CCED, *Automatic RxLev Indication*

## *Description*

The CCED command has been extended to indicate the received signal strength indication (*rssi*) of the main cell. The principle of the command does not change.

| Command | Possible Response |
|---|---|
| **AT+CCED=<*mode*>**<br>**[, <*requested dump*>]** | |

**where:**

<*mode*>:

| | |
|---|---|
| 0 | one shot requested |
| 1 | automatic shots requested |
| 2 | stop automatic shots |

<*requested dump*>:

| | |
|---|---|
| 8 | main cell RSSI indications (RxLev) from 0 to 31 |

## *Notes*

The response is a +CSQ response, not +CCED. The 07.07 format for the +CSQ is respected. The <*ber*> is not evaluated by this command, so this value is always 99.

+CSQ :<rssi>, 99
OK

This +CSQ answer, when automatic shots are selected, is sent every time the <*rssi*> measured by the module changes. Automatic shots are supported in idle mode and during communication.

Combination (addition of the values) of the requested dump (1,2,4,8) are supported but the activation or deactivation of this flow (8) does not affect the other flows. Both response +CCED and +CSQ may be then generated.

If the <*requested dump*> parameter is absent, the last +CCED command parameter (or 15 by default) is used.

# AT+CMER, *Mobile Equipment Event Reporting*

## *Description*

Enables or disables sending of unsolicited result codes during key pressing.

| Command | Possible Response |
|---|---|
| **AT+CMER=<*mode*>,<*keyp*>, <*disp*>,<*ind*>,<*bfr*>** | |

**where:**

<*keyp*>:

| | |
|---|---|
| 0 | no keypad event reporting |
| 1 | keypad event reporting are routed using unsolicited code: +CKEV : <*key*>, <*press*> |

<*press*>:

| | |
|---|---|
| 0 | key release |
| 1 | key press |

<*key*>: keyboard map is (5,5)

| | | | | |
|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 | 9 |
| 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 |
| 20 | 21 | 22 | 23 | 24 |

## *Note*

The parameters <*mode*>, <*disp*>, <*ind*> and <*bfr*> are not handled.

# AT+CPHS, *CPHS Command*

## *Description*

Specific command activates, deactivates, or interrogates CPHS functionality (i.e., Voice Mail Indicator).

| Command | Possible Response |
|---|---|
| **AT+CPHS?** | +CPHS: <*FctId1*>,<*Status*><CR<LF><br>(current values) |
| **AT+CPHS=<*Mode*>,<*FctId*>** | |

**where:**

<*mode*>:

| | |
|---|---|
| 0 | deactivate CPHS functionality |
| 1 | activate CPHS functionality |
| 2 | interrogate CPHS status |

<*FctId*>:

| | |
|---|---|
| 1 | voice mail indicator |

<*status*>:

| | |
|---|---|
| 0 | disable CPHS functionality |
| 1 | enable CPHS functionality |

## Examples

| | |
|---|---|
| AT+CPHS? | *[request status of CPHS functionality]* |
| +CPHS: 1,0 | *[deactivate voice mail indicator functionality]* |
| OK | |
| AT+CPHS=3,1 | |
| +CME ERROR: 3 | *[syntax error]* |
| AT+CPHS=1,1 | *[activate voice mail indicator functionality]* |
| OK | |
| AT+CPHS? | *[request status of CPHS functionality]* |
| +CPHS: 1,1 | *[voice mail indicator functionality is activated]* |
| OK | |
| +WVMI: 1,1 | *[message waiting on the line 1]* |
| +WVMI: 2,1 | *[message waiting on the line 2]* |
| AT+CPHS=2,1 | *[request status of voice mail indicator functionality]* |
| +WVMI: 1,1 | *[message is waiting on LINE 1]* |
| +WVMI: 2,1 | *[message is waiting on LINE 2]* |
| +WVMI: 3,0 | *[no FAX waiting]* |
| +WVMI:4,0 | *[no datas waiting]* |

# AT+CPLMN, *Information on PLMN*

## *Description*

Returns the status and the number of all PLMNs seen by the mobile. It also indicates the BCCH frequency number (absolute) of the strongest cell and its RxLev.

| Command | Possible Response |
|---|---|
| **AT+CPLMN=?** | +CPLMN : (<*Status*>,<*PLMN*>,<*BCCHFreq*>,<*RxLev*>)<br>(…)<br>OK |
| **AT+CPLMN** | |

**where:**

<*status*>:

| | |
|---|---|
| 1 | available |
| 2 | current |

<*PLMN*>, <*BCCHFreq*>, <*RxLev*> are ASCII strings (in decimal)

## *Example*

AT+CPLMN=?

+CPLMN: (2,20810,122,50),(1,20801,64,53)

OK

# AT+CRYPT, *Data Ciphering Mode*

## *Description*

Enables or disables the data ciphering (D.E.S algorithm) of the PIN and a random value sent periodically in order to insure a more secure communication.

| **Command** | **Possible Response** |
|---|---|
| **AT+CRYPT=<*n*>** | |

**where:**

<*n*>:

| | |
|---|---|
| 0 | disables ciphering |
| 1 | enables ciphering |

# AT+EXPKEY, *Key Management*

## *Description*

Enters the key used in the D.E.S algorithm to cipher the data (PIN). For Application to GSM, an “h” character is added before the value.

| Command | Possible Response |
|---|---|
| **AT+EXPKEY?** | +EXPKEY: NO KEY (if no key is present)<br>+EXPKEY: READY (if key is present) |
| **AT+EXPKEY=<*key*>** | |

## *Examples*

AT+EXPKEY? *[requests if key stored in EEPROM]*

+EXPKEY: NO KEY

AT+EXPKEY=h0111011101110111 *[enter new key]*

OK

AT+EXPKEY?

+EXPKEY: READY

# AT+W32K, *Wavecom 32kHz Powerdown Mode*

## *Description*

Specific command enables or disables the 32kHz powerdown mode. When powerdown mode is entered, the Wismo module uses 32kHz internal clock during inactivity stages.

| Command | Possible Response |
|---|---|
| **AT+W32K=<*mode*>** | |

**where:**

<*mode*>:

| | |
|---|---|
| 0 | disable 32kHz powerdown mode |
| 1 | enable 32kHz powerdown mode |

# AT+WAC, *Abort Command*

## *Description*

Specific command aborts SMS, SS and available PLMN.

| Command | Possible Response |
|---|---|
| **AT+WAC=?** | |
| **AT+WAC?** | |
| **AT+WAC** | |

## *Example*

AT+COPS=? *[available PLMN]*

AT+WAC *[abort request for PLMN list]*

OK

# AT+WCCS, *Wavecom Custom Character Set*

## *Description*

Specific command edits and displays the custom character set tables.

“CUSTOM” mode of +CSCS and +WPCS commands use this character set. In this mode, when the user enters a string, the string is converted into the GSM alphabet using the Custom To GSM table. Similarly, when the user requests a string display, the string is converted from the GSM alphabet using the GSM To Custom table.

In edition mode, the edition 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, or the command aborts with the error: +CME ERROR: 3.

| Command | Possible Response |
|---|---|
| **AT+WCCS=<*mode*>,<*table*>, <*char 1*>[,<*char 2*>]** | |

**where:**

<*mode*>:

| | |
|---|---|
| 0 | display table |
| 1 | edit table |

<*table*>:

| | |
|---|---|
| 0 | Custom To GSM conversion table |
| 1 | GSM To Custom conversion table |

<*char 1*>, <*char 2*>: character range to display/edit. If only <*char 1*> is present, only this char is displayed/edited.

| | |
|---|---|
| 0…127 | for GSM To Custom conversion table |
| 0…255 | for Custom To GSM conversion table |

## Examples

| | |
|---|---|
| AT+WCCS=0,0,120,130 | *[display from character 120 to character 130 of Custom To GSM conversion table]* |
| +WCCS: 11,78797A2020202020097E05 | *[11 characters displayed]* |
| OK | |
| AT+WCCS=1,0,115<CR> | |
| 20<ctrl-Z> | *[edit character 115 of Custom To GSM conversion table]* |
| OK | |
| AT+WCCS=1,1,0,4<CR> | |
| 40A324A5E8<ctrl-Z> | *[edit 5 first characters of GSM To Custom conversion table* |
| OK | |
| AT+WCCS=1,1,200 | *[edit character 200 of GSM To Custom conversion table]* |
| +CME ERROR: 3 | *[index out of range]* |

# AT+WCDM, *Wavecom Change Default Melody*

## *Description*

Specific command selects a default manufacturer defined melody, which is played on all further incoming voice calls, on the buzzer or on the speaker, according to the second parameter. If melody 0 is selected, no melody is heard.

| Command | Possible Response |
|---|---|
| **AT+WCDM?** | +WCDM=<*melody*>,<*player*> (current values) |
| **AT+WCDM=<*melody*>,<*player*>** | |

**where:**

<*melody*>:

| | |
|---|---|
| 0 | no melody (default) |
| 1…10 | melody 1 to 10 |

<*player*>:

| | |
|---|---|
| 0 | melody n°<*melody*> is played on the buzzer on all further incoming voice calls (default) |
| 1 | melody n°<*melody*> is played on the speaker on all further incoming voice calls |

## Examples

| | |
|---|---|
| AT+WCDM=0 | *[select no melody]* |
| OK | |
| AT+WCDM=5 | *[select melody n°5]* |
| OK | |
| AT+WCDM? | |
| +WCDM: 5,0 | *[melody n°5 is currently selected, and buzzer is selected to play it]* |
| OK | |
| RING | *[incoming call occurs, and melody n°5 is played on buzzer]* |
| AT+WCDM=,1 | *[select speaker to play melody]* |
| OK | |
| AT+WCDM? | |
| +WCDM: 5,1 | *[speaker is selected to play melody if* |
| OK | *incoming call occurs]* |

# AT+WDOP, *Date of Production*

## *Description*

Specific command requests the date of production. Format of the date is Week /Year.

| **Command** | **Possible Response** |
|---|---|
| **AT+WDOP** | Production date (W/Y): *xx*/200*x* |

## *Examples*

AT+WDOP

Production date (W/Y): 01/2000

OK *[date of production present in EEPROM is WEEK: 01 / YEAR: 2000 (1st week of year 2000)]*

AT+WDOP

Production date (W/Y): --/----

OK *[no date of production present in EEPROM]*

# AT+WDR, *Data Rate*

## *Description*

Specific command configures the data rate for the bearer data (available for outgoing call only).

| Command | Possible Response |
|---|---|
| **AT+WDR=?** | +WDR: (list of supported values) |
| **AT+WDR?** | +WDR: <*n*> (current value) |
| **AT+WDR=<*n*>** | |

**where:**

<*n*>: data type

| | |
|---|---|
| 0 | FR |
| 1 | FR, HR with HR preferred |
| 2 | HR, FR with FR preferred |

## *Examples*

AT+WDR=?

+WDR: (0-2) *[if Half Rate available]*

+WDR: (0) *[if Half Rate not available]*

AT+WDR=1 *[configure voice type FR,HR with HR preferred]*

OK

AT+WDR=3

+CME ERROR: 3 *[syntax error]*

AT+WDR?

+WDR: 1

OK

# AT+WDTMF, *Play DTMF Tone*

## *Description*

Specific command plays a DTMF tone on the current speaker. The DTMF, gain and duration can be set.

This command is only used to play a DTMF tone. To send a DTMF on the GSM network, use the command +VTS.

| Command | Possible Response |
|---|---|
| **AT+WDTMF=?** | +WDTMF: (list of supported values) |
| **AT+WDTMF?** | +WDTMF: (current value) |
| **AT+WDTMF=<*mode*>[,<*dtmf*>, <*gain*>,<*duration*>]** | OK<br>+CME ERROR: <*err*> |

**where:**

<*mode*>:

| | |
|---|---|
| 0 | stop playing |
| 1 | play a DTMF tone |

<*dtmf*>: sets the DTMF to play in {0-9,*,#,A,B,C,D} (mandatory if <*mode*>=1)

<*gain*>: sets the gain of the tone (0-15) (default = 9)
Values are the same as those of +WTONE (speaker) command.

<*duration*>: sets the duration of the tone (unit of 100 ms, (0-50)).
When this equals 0 (default), the duration is infinite, and the DTMF tone can be stopped by AT+WDTMF=0.

## Examples

AT+WDTMF=1,"*",9,100 *[play a DTMF tone]*

OK

AT+WDTMF=0 *[stop playing]*

OK

AT+WDTMF=?

+WDTMF: (0-1),(0-9,*,#,A,B,C,D),(0-15),(0-50)

OK

AT+WDTMF?

ERROR

# AT+WDWL, *Wavecom Downloading*

## *Description*

Specific command switches the module in downloading mode.

| Command | Possible Response |
|---|---|
| **AT+WDWL** | |

## *Notes*

The command is compatible with WISMO2C only.

On WISMO 1B, ERROR is returned.

Downloading is realized with the 1K-XMODEM protocol.

## *Example*

| | |
|---|---|
| AT+WDWL | *[switch on downloading mode]* |
| +WDWL: 0 | *[start downloading]* |
| … | *[downloading in progress]* |
| AT+CFUN=1 | *[reset the module at the end]* |
| OK | |

# AT+WHWV, *Hardware Version*

## *Description*

Specific command requests the hardware version.

| Command | Possible Response |
|---|---|
| **AT+WHWV** | Hardware Version <*x.xx*><br>(hardware version present in EEPROM is *x.xx)* |
| **AT+WHWV** | Hardware Version -.--<br>(no hardware version present in EEPROM) |

# AT+WIND, *General Indications*

## *Description*

A general mechanism sends unsolicited non-standardized indication to the application. These indications are:

- indication of a physical change on the SIM presence pin from connector (meaning SIM inserted, SIM removed)
- indication during a mobile originated call establishement, that the calling party is ringing
- indication of the availability of the module, after boot, to receive AT commands.

For each of these indications, a “bit flow” must be indicated.

| Command | Possible Response |
|---|---|
| **AT+WIND=?** | (lists supported values (0-511)) |
| **AT+WIND= <*IndLevel* >** | |

**where:**

<*IndLevel*>:

| | |
|---|---|
| 1 (bit-0) | hardware SIM insertion / removal indications (rack open/close) or SIM presence after software reset |
| 2 (bit-1) | calling party alert indication |
| 4 (bit-2) | module is ready to treat AT commands (except phonebooks, AOC, SMS), but still in emergency mode |
| 8 (bit-3) | indication that the module is ready to treat all AT commands, at the end of init or after swapping to ADN in case of FDN configuration |
| 16 (bit-4) | indication that a new call identifier has been created (after an ATD command, +CCWA indication) |
| 32 (bit-5) | indication that 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 |

**where:**

| | |
|---|---|
| 256 (bit-8) | audio ON indication |

## Notes

If <*IndLevel*> is equal to 0 (default value), no unsolicited +WIND: <*IndNb*> occurs.

Combination (addition of the values) is used to allow more than one indication flow.

0 IndLevel 511

The response is OK if the values are in the previous range.

The unsolicited response is then:

+WIND: <*event*> [ ,<*idx*> ]

**where:**

<*idx*>: call identifier, defined in +CLCC command

<*event*>:

| | |
|---|---|
| 0 | SIM presence pin has been detected as “SIM removed” (depending from the 0 bit flow) |
| 1 | SIM presence pin has been detected as “SIM inserted” |
| 2 | calling party is alerting |
| 3 | module is ready to treat AT commands (except phonebooks, AOC, SMS), at init or after AT+CFUN=1 |
| 4 | module is ready to treat all AT commands, end of phonebook init or swap (FDN to ADN) |
| 5 | call <*idx*> was created (after ATD, +CCWA, etc.) |
| 6 | call <*idx*> is released, after a NO CARRIER, a +CSSU: 5 indication, or after the release of a call waiting |
| 7 | network service is available for an emergency call |
| 8 | network is lost |
| 9 | audio ON |

AT+WIND? command is supported and indicates the <allowed bit flows>. AT+WIND is automatically stored in e2p. This means the &W command is not used. The selected flows are always activated after boot.

Default value is 0: No flow activated. No indication.

# AT+WIOR, *Read GPIO Value*

## *Description*

Sets the I/O port as an input and read the I/O pin, 0 if the pin is reset, 1 if the pin is set. Eight I/O ports are available, so the <*index*> value is between 0 and 7.

| Command | Possible Response |
|---|---|
| **AT+WIOR=<*index*>** | +WIOR: <*value*> |

**where:**

<*index*>: I/O value (0-7)

## *Note*

By default (after a reset), each I/O port is set as an output, and each pin is reset to 0.

## *Example*

| | |
|---|---|
| AT+WIOR=2 | *[read I/O (number 2) value]* |
| +WIOR: 0 | *[GPIO number 2 is reset]* |
| OK | |

# AT+WIOW, *Write GPIO Value*

## *Description*

Sets the I/O port as an output with a I/O pin value, 0 for reset, 1 for set.

| Command | Possible Response |
|---|---|
| **AT+WIOW=<*index*>, <*value*>** | |

## *Note*

By default (after a reset), each I/O port is set as an output, and each pin is reset to 0.

## *Example*

| | |
|---|---|
| AT+WIOW=2,0 | *[reset I/O (number 2)]* |
| OK | *[GPIO value is written]* |

# AT+WLCK, *Wavecom LoCK*

## *Description*

Specific command personalizes an ME for a specific operator.

| Command | Possible Response |
|---|---|
| **AT+WLCK=<*fac*>,<*passwd*>, <*NetId*>[,<*GID1*>[,*GID2*]]** | +WLCK: <*status*> |

**where:**

<*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) |

## Examples

| | |
|---|---|
| AT+WLCK="PN",12345678,20810 | *[activate network lock on SFR (208,10)]* |
| OK | |
| AT+WLCK="PS",12345678,208105923568974 | *[activate SIM lock]* |
| OK | |
| AT+WLCK="PU",12345678,2081035 | *[activate Network Subset lock on SFR (208, 10, 35)]* |
| OK | |
| AT+WLCK="PU",12345678,20810 | |
| +CME ERROR: 3 | *[need 7 digits of IMSI to perform service provider lock]* |
| AT+WLCK=”PP”,12345678,20810,”E5” | *[activate Service Provider lock on SFR (208, 10) and GID1 (0xE5)]* |
| OK | |
| AT+WLCK=”PC”,12345678,20810,”E5”,”10” | *[activate Corporate lock on SFR (208, 10), GID1 (0xE5) and GID2 (0x10)]* |
| OK | |

# AT+WLPR, *Read Language Preference*

## *Description*

Reads a Language Preference value of EF-LP. The first indexes have the highest priority.

| Command | Possible Response |
|---|---|
| **AT+WLPR?** | +WLPR: <*value*> (current value) |
| **AT+WLPR=<*index*>** | |

**where:**

<*index*>: EF-LP (Language Preference value)

## *Examples*

| | |
|---|---|
| AT+WLPR? | *[read command]* |
| +WLPR: 4 | *[four language preferences are available in EF-LP]* |
| OK | |
| AT+WLPR=1 | *[read first EF-LP index value]* |
| +WLPR: 5 | |
| OK | *[language preference is 5]* |

# AT+WLPW, *Write Language Preference*

## *Description*

Writes a Language Preference value in EF-LP.

| Command | Possible Response |
|---|---|
| **AT+WLPW=<*index*>, <*value*>** | OK<br>+CME ERROR: <*err*> |

**where:**

<*index*>: EF-LP (Language Preference value)

## *Example*

AT+WLPW=1,5 *[write Lang Pref equal to 5 in EF-LP with index 1]*

OK

# AT+WRIM, *Wavecom Ring Indicator Mode*

## *Description*

Specific command sets or returns the state of RI Mode.

In pulse RI mode, an electrical pulse is sent on the Ring Indicator wire just before sending any unsolicited AT response so these AT responses are not lost when client tasks are in a sleep state. While in this RI mode, when receiving incoming calls, electrical pulses are sent on the RI wire.

In up-down RI mode, no pulse is sent before unsolicited AT response, and up-down signals are sent when receiving an incoming call.

| Command | Possible Response |
|---|---|
| **AT+WRIM=?** | +WRIM: (list of supported values) |
| **AT+WRIM?** | +WRIM: <*n*> (current value) |
| **AT+WRIM=<*n*>** | |

**where:**

<*n*>:

| | |
|---|---|
| 0 | up-down RI mode |
| 1 | pulse RI mode |

## *Examples*

AT+WRIM=0 *[select up-down RI mode]*

OK

AT+WRIM=1 *[select pulse RI mode]*

OK

AT+WRIM=?

+WRIM: (0-1)

AT+WRIM?

+WRIM: 1 *[current RI mode is pulse RI]*

# AT+WSCAN, *Wavecom Scan*

## *Description*

Specific command requests the received signal strength indication (<*rssi*>) of a specified frequency (in absolute format).

| Command | Possible Response |
|---|---|
| **AT+WSCAN=<*absolute frequency*>** | +WSCAN: <*rssi*> |

**where:** **where:**

<*absolute frequency*>: frenquency in absolute format

<*rssi*>:

| | |
|---|---|
| 0 | -113 dBm or less |
| 1 | -111 dBm |
| 2...30 | -109 to -53 dBm |
| 31 | -51dBm or greater |
| 99 | not known or not detectable |

## *Examples*

AT+WSCAN=50 *[request <rssi> of absolute frequency 50]*

+WSCAN: 23 *[<rssi> is 23]*

OK

AT+WSCAN=1025 *[request power of absolute frequency 1025]*

CME ERROR: 3 *[1025 is not a valid absolute frequency]*

# AT+WSSW, *Wavecom Software Version*

## *Description*

Specific command displays the internal software information.

| Command | Possible Response |
|---|---|
| **AT+WSSW** | |

## *Example*

| | |
|---|---|
| AT+WSSW | *[get software version]* |
| A00_00gm.2c 000000008F5DC6EA | *[internal software information]* |
| OK | |

# AT+WSTR, *Wavecom Status Request*

## *Description*

Specific command returns the state of a specified status. It checks the state of the initialization sequence. The return values are Not Started, OnGoing, Finished.

| **Command** | **Possible Response** |
|---|---|
| **AT+WSTR=?** | +WSTR: (list of supported values) |
| **AT+WSTR=<*status*>** | +WSTR=<*status*><*value*> |

**where:**

<*status*>:

1 initialization sequence

<*value*>:

0 not started

1 ongoing

2 finished

2 network status

<*value*>:

0 no network

1 network available

## Examples

| | |
|---|---|
| AT+WSTR=1 | *[select the status 1 (INIT SEQUENCE)]* |
| +WSTR: 1,2 | |
| OK | *[init complete]* |
| AT+WSTR=2 | *[select the status 2 (NETWORK STATUS)]* |
| +WSTR: 2,1 | |
| OK | *[network available]* |
| AT+WSTR=? | |
| +WSTR: (1-2) | |

# AT+WSVG, *Wavecom Select Voice Gain*

## *Description*

The module disposes of 2 voice gain controllers. This specific command selects the microphone gain controler.

| **Command** | **Possible Response** |
|---|---|
| **AT+WSVG=?** | +WSVG: (list of supported values) |
| **AT+WSVG?** | +WSVG: <*n*> (current value) |
| **AT+WSVG=<*n*>** | |

**where:**

<*n*>: controller

| | |
|---|---|
| 0 | controller 1 (default) |
| 1 | controller 2 |

## *Examples*

AT+WSVG=0 [select controller 1]

OK

AT+WSVG=1 [Select the controller 2]

OK

AT+WSVG=?

+WSVG: (0-1)

AT+WSVG?

+WSVG: 1

# AT+WTONE, *Play Tone*

## *Description*

Specific command plays a tone on the current speaker or on the buzzer. The frequency, gain and duration can be set.

| Command | Possible Response |
|---|---|
| **AT+WTONE=<*mode*>[,<*dest*>, <*freq*>,<*gain*>,<*duration*>]** | OK<br>+CME ERROR: <*err*> |

**where:**

<*mode*>:

| | |
|---|---|
| 0 | stop playing |
| 1 | play a tone |

<*dest*>: sets the destination (mandatory if <*mode*>=1)

| | |
|---|---|
| 1 | speaker |
| 2 | buzzer |

<*freq*>: sets the frequency (in Hz) of the tone (mandatory if <*mode*>=1)

If <*dest*> is the speaker, range is between 1Hz and 3999Hz.

If <*dest*> is the buzzer, range is between 1Hz and 50000Hz.

<*gain*>: sets the gain of the tone (0-15) (default = 9)

<*duration*>: sets the duration of the tone (unit of 100 ms, 0-50)

When this equals 0 (default), the duration is infinite, and the tone can be stopped by AT+WTONE=0

| <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 |

## *Examples*

AT+WTONE=1,1,300,9,50 *[play a tone]*

OK

AT+WTONE=0 *[stop playing]*

OK

AT+WTONE=?

OK

AT+WTONE?

ERROR

# AT+WVMI, *Wavecom Voice Mail Indicator (Unsolicited Result)*

## *Description*

Indicates the status of the LINE 1, LINE 2, FAX or DATA.

| Command | Possible Response |
|---|---|
| **AT+WVMI: <*LineId*>,<*Status*>** | |

**where:**

<*LineId*>:

| | |
|---|---|
| 1 | line 1 |
| 2 | line 2 |
| 3 | fax |
| 4 | data |

<*status*>:

| | |
|---|---|
| 0 | no message waiting |
| 1 | message is waiting |

# AT+WVR, *Wavecom Voice Rate*

## *Description*

Specific command configures the voice rate for the bearer voice (for outgoing calls only).

| Command | Possible Response |
|---|---|
| **AT+WVR=?** | +WVR: (list of supported values) |
| **AT+WVR?** | +WVR: <*n*> (current value) |
| **AT+WVR=<*n*>** | |

**where:**

<*n*>: speech type

| | |
|---|---|
| 0 | FR |
| 1 | FR and EFR |
| 2 | FR, HR with HR preferred |
| 3 | HR, FR with FR preferred |
| 4 | EFR, HR with HR preferred |
| 5 | HR, EFR with EFR preferred |

## Examples

AT+WVR=?

| | |
|---|---|
| +WVR: (0,2,3) | *[if Half Rate available]* |
| +WVR: (0,1) | *[if EFR available]* |
| +WVR: (0) | *[if HR and EFR not available]* |
| +WVR: (0-5) | *[if HR and EFR available]* |

AT+WVR=1 *[configure voice type FR and EFR]*

OK

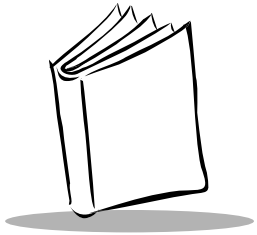
AT+WVR=6

+CME ERROR: 3 *[syntax error]*

AT+WVR?

+WVR: 1

OK



# Chapter 13
# SIM Toolkit

## Introduction

The SIM ToolKit, or SIM Application ToolKit, introduces new functionalities supporting a broad range of value added services. This allows service providers to develop new applications (e.g., for banking, travel, ticket booking) for subscribers and to download them to the SIM.

This solution allows users to access future services by adding new SIM-based applications without modifying the handset.

### *Functionality*

The SIM Toolkit introduces about 25 new commands for the SIM. Three classes of ToolKit functionalities are defined, with Class 1 offering a subset of commands and Class 3 offering the full range of commands (see Table A-12 on page A-34).

The SIM Application Toolkit supports:

- profile download
- proactive SIM
- data download into the 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, and indicates which SIM Application Toolkit features the customer application supports.

The AT command used for this feature is *AT+STSF, SIM ToolKit Set Facilities* on page 13-23.

## Proactive SIM

A proactive SIM provides a mechanism whereby the SIM can ask the customer application to perform certain actions, including:

- 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 on the network.

The commands used for this feature are:


- *AT+STGI, SIM ToolKit Get Informations* on page 13-7
- *AT+STGR, SIM ToolKit Give Response* on page 13-15
- *AT+STIN, SIM ToolKit Indication* on page 13-21


## Data Download to SIM

Data downloading to the SIM allows data (SMS, phonebook, etc.) or programs (Java applets) received by SMS or by Cell Broadcast to be transferred directly to the SIM application.

This feature does not need an 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 be used to inform the SIM Application on which menu the item is selected.

The commands used for this feature are:


- *AT+STGI, SIM ToolKit Get Informations* on page 13-7
- *AT+STGR, SIM ToolKit Give Response* on page 13-15
- *AT+STIN, SIM ToolKit Indication* on page 13-21.


## 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 feature are:


- *AT+STCR, SIM ToolKit Control Response (Unsolicited Result)* on page 13-6
- *AT+STGR, SIM ToolKit Give Response* on page 13-15.

# Exchanged Messages During SIM ToolKit Operation

The following scheme shows the SIM Toolkit commands and unsolicited results that will be implemented.

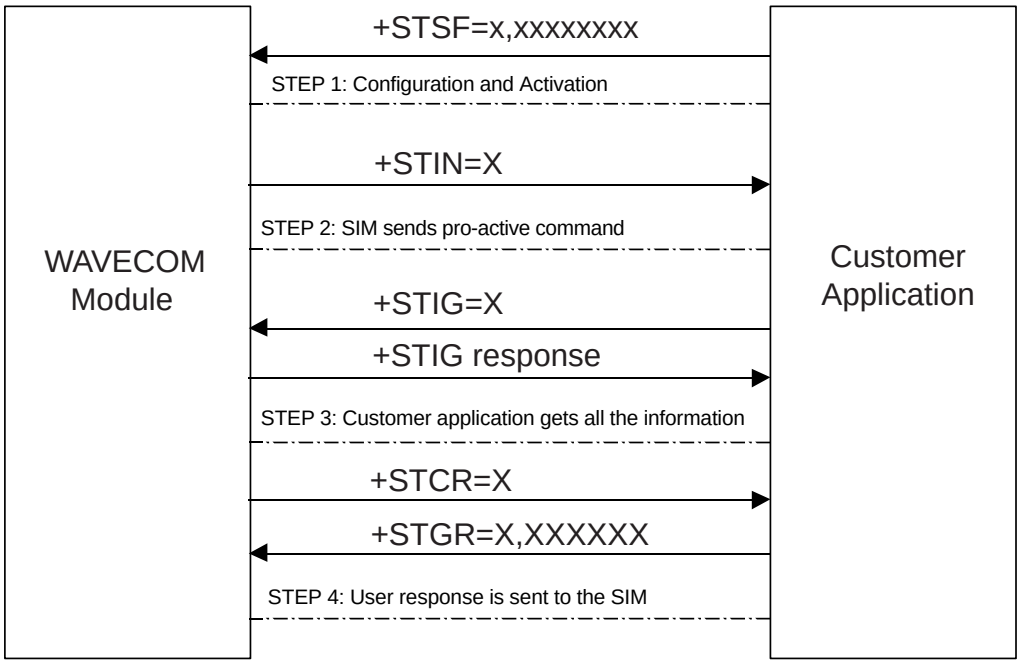



**Figure 13-1. Exchanged Messages During SIM Toolkit Operation**

1. The customer application informs the module which facilities are supported, using the +STSF (SIM ToolKit Set Facilities) command, which also activates or deactivates the SIM Toolkit functionality.
2. An unsolicited result +STIN (SIM ToolKit indication) is sent by the module, to indicate to the customer application which command type the SIM Application Toolkit is running on the SIM card. Use the +STIN? command to request the last SIM Toolkit indication.
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.

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

## AT+STCR, *SIM ToolKit Control Response (Unsolicited Result)*

### Description

When the customer application makes an outgoing call or an outgoing SMS, if the call control facility is activated, CALL CONTROL and SMS CONTROL responses can be identified. This also applies to SS calls.

| Command | Possible Response |
|---|---|
| **AT+STCR**<br>**<*Result*>[,<*Number*>,**<br>**<*MODestAddr*>,<*TextInfo*>]** | |

**where:**

<*Result*>:

| | |
|---|---|
| 0 | control response not allowed |
| 1 | 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

# AT+STGI, *SIM ToolKit Get Informations*

## Description

Gets the information (text to display, Menu information, priorities, etc.) of a pro-active command sent from the SIM.

The information is returned only after receiving a SIM Toolkit indication (+STIN).

| Command | Possible Response |
|---|---|
| **AT+STGI=?** | +STGI: (supported values) |
| **AT+STGI=<*CmdType*>]** | |

**Table 13-1. <*CmdType*> Values**

| Cmd Type | Description | Possible responses |
|---|---|---|
| **0** | Get information about 'Setup Menu' pro-active command | +STGI: <Alpha Identifier menu><br>+STGI: <Id1>,<NbItems>,<Alpha Id1 Label>,<Help Info> [,<NextActionId>]<CR><LF><br>+STGI: <Id2>,<NbItems>,<Alpha Id2 Label>,<Help Info> [,<NextActionId>]<CR><LF><br>[…]]<br>*No action expected from SIM* |
| **1** | Get information about 'Display text' pro-active command. | +STGI: <Prior>,<Text>,<ClearMode><br>*No action expected from SIM* |
| **2** | Get information about 'Get Inkey' pro-active command. | +STGI: <Format>,<HelpInfo>[,<TextInfo>]<br>*SIM expects key pressed (+STGR)* |
| **3** | Get information about 'Get Input' pro-active command. | +STGI: <Format>,<EchoMode>,<SizeMin>,<SizeMax>, <HelpInfo>[,<TextInfo>]<br>*SIM expects key input (+STGR)* |
| **4** | Get information about 'Setupt call' pro-active command. | +STGI: <Type>,<CalledNb>,<SubAddress>,<Class><br>*SIM expects user authorization (+STGR)* |

**Table 13-1. <*CmdType*> Values (continued)**

| Cmd Type | Description | Possible responses |
|---|---|---|
| **5** | Get information about 'Play Tone' pro-active command. | +STGI:<br><ToneType>[,<TimeUnit>,<TimeInterval>,<TextInfo>]<br>*No action* |
| **6** | Get information about 'Sel Item' pro-active command. | +STGI: <DefaultItem>, <Alpha Identifier menu><CR><LF><br>+STGI: <Id1>,<NbItems>,<Alpha Id1 Label>,<Help Info> [,<NextActionId>]<CR><LF><br>+STGI: <Id2>,<NbItems>,<Alpha Id2 Label>,<Help Info> [,<NextActionId>]<CR><LF><br>[…]]<br>*SIM expects an item choice (+STGR)* |
| **7** | Get information about 'Refresh' pro-active command. | +STGI: <RefreshType><br>*No action (refresh done automatically by module)* |
| **8** | Get information about 'Send SS' pro-active command. | +STGI:<TextInfo><br>*No action (send SS done automatically by module)* |
| **9** | Get information about 'Send SMS' pro-active command. +STGI: <TextInfo> No action (Send SMS done automatically by module). | +STGI:<TextInfo><br>*No action (send SMS done automatically by module)* |
| **10** | Get information about 'Send USSD' pro-active command. | +STGI: <TextInfo><br>*No action (send USSD done automatically by module)* |
| **11** | Get information about 'SETUP EVENT LIST' pro-active command. | +STGI: <Evt> |

**where:**

**Values when CmdType=0 (Setup menu)**

<*Alpha Idenitifer menu*>: alpha identifier of the main menu

<*Idx*>: menu item Identifier (1-255)

<*NbItems*>: number of items in the main menu (1-255)

<*Alpha Idx Label*>: alpha identifier label of items in ASCII format

<*help info*>:

| | |
|---|---|
| 0 | no help information available |
| 1 | help information available |

<*NextActionId*>: contains a pro-active command identifier
(see Table A-14 on page A-40)

***Compared to other commands, the customer application can get information about the setup menu after receiving the +STIN:0 indication.***

**Values when CmdType=1 (Display text)**

<*Prior*>:

| | |
|---|---|
| 0 | normal priority of display |
| 1 | high priority of display |

<*text*>: text to display in ASCII format

<*ClearMode*>:

| | |
|---|---|
| 0 | clear message after a delay (3 seconds) |
| 1 | wait for user to clear message |

**where:**

**Values when CmdType=2 (Get Inkey)**

<*Format*>:

| | |
|---|---|
| 0 | digit (0-9, *, #,and +) |
| 1 | SMS alphabet default |
| 2 | UCS2 |

<*HelpInfo*>:

| | |
|---|---|
| 0 | no help information available |
| 1 | help information available |

<*TextInfo*>: text information in ASCII format

**Values when CmdType=3 (Get Input)**

<*Format*>:

| | |
|---|---|
| 0 | digit (0-9, *, #,and +) |
| 1 | SMS alphabet default |
| 2 | UCS2 |
| 3 | unpacked format |
| 4 | packed format |

<*EchoMode*>:

| | |
|---|---|
| 0 | echo off |
| 1 | echo on |

<*SizeMin*>: minimum length of input (1-255)

<*SizeMax*>: maximum length of input (1-255)

<*HelpInfo*>:

| | |
|---|---|
| 0 | no help information available |
| 1 | help information available |

<*TextInfo*>: text information in ASCII format

**where:**

**Values when CmdType=4 (Setup Call)**

<*Type*>:

| | |
|---|---|
| 0 | set up call but only if not currently busy on another call |
| 1 | set up call, putting all other calls (if any) on hold |
| 2 | set up call, disconnecting all other calls (if any) |

<*CalledNb*>: called party number in ASCII format

<*SubAdress*>: called party sub-address in ASCII format

<*Class*>:

| | |
|---|---|
| 0 | voice call |
| 1 | data call |
| 2 | fax call |

**Values when CmdType=5 (Play tone)**

<*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 | tone negative beep |

**where:**

<*TimeUnit*>:

| | |
|---|---|
| 0 | time unit expressed in minutes |
| 1 | time unit expressed in seconds |
| 2 | time unit expressed in tenths of seconds |

<*TimeInterval*>: time required expressed in units (1-255)

<*TextInfo*>: text information in ASCII format

**Values when CmdType=6 (Sel Item)**

<*DefaultItem*>: default Item Identifier (1-255)

<*Alpha Idenitifer menu*>: alpha identifier of the main menu

<*Idx*>: identifier items (1-255)

<*NbItems*>: number of items in the menu (1-255)

<*Alpha Idx Label*>: alpha identifier label of items in ASCII format

<*help info*>:

| | |
|---|---|
| 0 | no help information available |
| 1 | help information available |

<*NextActionId*>: contains a pro-active command identifier
(see Table A-14 on page A-40)

**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

**where:**

**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 |
| 3 | reporting asked for 'Idle Screen' and 'User Activity' events |
| 4 | cancellation of reporting event |

## Note

For UCS2 format, text is displayed in Hexa ASCII format. For example, when the SIM sends a TextString containing 0x00 0x41, the text displayed is "0041".

## Error Codes

| | |
|---|---|
| **+ CME ERROR: 3** | Operation not allowed. Returned when a wrong parameter is detected. |
| **+CME ERROR: 4** | Operation not supported. 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. 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 report mobile equipment errors]* |
| OK | |
| AT+WIND=15 | *[request Wavecom indications]* |

```
    OK
AT+STSF?
    +STSF: 1,”5FFFFFFF7F”,3          [SIM ToolKit functionality activated with
                                      all facilities]
    OK
    +STIN: 0                         [main menu sent from SIM]
AT+STIN?
    +STIN: 0
    OK
AT+STGI=0                            [get information about 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
```

# AT+STGR, *SIM ToolKit Give Response*

## Description

Allows the application/user to select an item in the main menu, or to answer the following proactive commands:

- GET INKEY - Key pressed from the user.
- GET INPUT - 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.

You may also 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.

| Command | Possible Response |
|---|---|
| **+STGR=<*CmdType*>[,<*Result*>,<*Data*>]** | |

**where:**

<*CmdType*>:

| | |
|---|---|
| 0 | 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’ |

**where:**

| | |
|---|---|
| 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*>:

| | |
|---|---|
| 0 | session ended by user |
| 1 | response given by the user |
| 2 | help information required by user |

<*Data*>: contains the string of characters entered by the user

***For Inputs in UCS2 format. Data is entered in ASCII format. For example, if "8000410042FFFF" is entered, the SIM receives 0x80 0x00 0x41 0x00 0x42 0xFF 0xFF. (See Coding of Alpha Fields in the SIM for UCS2 on page A-42 about the different UCS2 syntaxes).***

**Values when CmdType=4 (Setup call)**

<*result*>:

| | |
|---|---|
| 0 | user refuses call |
| 1 | user accepts call |

**Values when CmdType=6 (Select Item)**

<*result*>:

| | |
|---|---|
| 0 | session ended by 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 of the item 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.

## Notes

You may send a Terminal Response after the +STIN indication, or after the +STGI command.

For the SETUP MENU Proactive Command, you may only send a Terminal Response after the +STIN: 0 indication, not after a +STGI=0 request.

All Terminal Responses are not possible with all Proactive Commands. Compatibility between available Terminal Responses and Proactive Commands is given in Table A-13 on page A-36. If a Terminal Response is attempted during an incompatible Proactive Command session, a +CME ERROR: 3 is 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) was not received.

## Example

Initially all facilities are activated, the PIN is not required and SIM toolkit functionality is activated.

```
+STIN: 0                                  [main menu was sent from SIM]
AT+STGI=0                                 [get information about main menu]
    +STGI: 1,3,”BANK”,0                   [main menu contains 3 items]
    +STGI: 2,3,”QUIZ”,0
    +STGI: 3,3,”WEATHER”,0
    OK
AT+STGR=0,1,1                             [item 2 of the main menu selected]
    OK
    +STIN: 6                              [Sel item menu was sent from SIM]
AT+STGI=6                                 [get information about BANK menu]
    +STGI: 1,”BANK”                       [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 request]
    +STGI: 0,0,4,4,0,”Enter Account Password:’
    OK
AT+STGR=3,1<CR>                           [user enters password]
>0000<Ctrl Z>
    OK
    +STIN:1                               [a text info was 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 bank account update from bank via network (SEND SMS)]*

AT+STGI=9 *[get all information about SEND SMS]*

+STGI: ”Send account balance of user, authorization ok”

OK

*[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

# AT+STIN, *SIM ToolKit Indication*

## Unsolicited Result Description

To allow the customer application to identify the pro-active command sent by the SIM ToolKit, a mechanism of unsolicited SIM ToolKit indications (+STIN) is implemented.

| Command | Possible Response |
|---|---|
| **AT+STIN?** | +STIN: <*CmdType*>]<br>(last SIM toolkit indication sent by the SIM) |
| **AT+STIN: <*CmdType*>]** | |

**where:**

<*CmdType*>:

| | |
|---|---|
| 0 | indicates that a ‘Setup Menu’ pro-active command was sent from the SIM |
| 1 | indicates that a ‘Display Text’ pro-active command was sent from the SIM |
| 2 | indicates that a ‘Get Inkey’ pro-active command was sent from the SIM |
| 3 | indicates that a ‘Get Input’ pro-active command was sent from the SIM |
| 4 | indicates that a ‘Setup Call’ pro-active command was sent from the SIM |
| 5 | indicates that a ‘Play Tone’ pro-active command was sent from the SIM* |
| 6 | indicates that a ‘Sel Item’ pro-active command was sent from the SIM |
| 7 | indicates that a ‘Refresh’ pro-active command was sent from the SIM* |
| 8 | indicates that a ‘Send SS’ pro-active command was sent from the SIM* |
| 9 | indicates that a ‘Send SMS’ pro-active command was sent from the SIM* |

**where:**

| | |
|---|---|
| 10 | indicates that a ‘Send USSD’ pro-active command was sent from the SIM* |
| 11 | indicates that a ‘SETUP EVENT LIST’ pro-active command was sent from the SIM |
| 98 | indicates the timeout when no response from user |
| 99 | indicates that an “End Session” was sent from the SIM |

*If the automatic response parameter is activated, this indication is followed by the corresponding +STGI response.

## Last SIM Toolkit Indication

The +STIN command can be used to request the last SIM toolkit indication sent by the SIM. This command must be issued after the STIN indication is sent by the SIM, and before the user responds with the +STGI command.

## Example

| | |
|---|---|
| +STIN? | *[requests the last SIM toolkit indication sent by the SIM]* |
| +STIN: 0 | *[the last SIM toolkit indication was a Setup Menu]* |
| OK | |
| +STGI=0 | *[display the SIM toolkit application menu]* |
| +STIN? | |
| +CME ERROR: 4 | *[operation not supported, the +STGI command was already used]* |

# AT+STSF, *SIM ToolKit Set Facilities*

## Description

Activates, deactivates, or configures SIM ToolKit facilities.

| Command | Possible Response |
|---|---|
| **AT+STSF=?** | +STSF: (list of SIM ToolKit Set Facilities) |
| **AT+STSF?** | +STSF: <*Mode*>,<*Config*>,<*Timeout*>,<*Autoresponse*> (current value) |
| **+STSF=<*mode*>[,<*config*>][,<*Timeout*>][,<*AutoResponse*>]** | |

**where:**

<*mode*>:

| | |
|---|---|
| 0 | deactivate SIM Toolkit functionalities |
| 1 | activate SIM Toolkit functionalities |
| 2 | configure SIM Toolkit functionalities |

<*config*>: (160060C01F – 5FFFFFFF7F) (hex format)

<*Timeout*>: timeout for user responses (1-255, multiple of 10 seconds)

<*Autoresponse*>:

| | |
|---|---|
| 0 | deactivate automatic response |
| 1 | activate automatic response |

## Notes

To activate or deactivate SIM Toolkit functionalities, use the +CFUN (Set phone functionality) command to reset the module (this is not necessary if the PIN has not been entered).

The <*Config*> parameter contains the coding of TERMINAL PROFILE, the list of SIM Application Toolkit facilities that are supported by the customer application.

The <*Timeout*> parameter indicates the time (multiple of 10 seconds) the user has to answer (to select an item, input text, etc).

When <*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.

Some bits apply to the module and not the customer application. The module sets these bits to the value the user enters with +STSF command (0 or 1). These values are provided in *Structure of TERMINAL PROFILE* on page A-37.

Each facility is coded on 1 bit:

- bit = 1: facility supported by the customer application
- bit = 0: facility not supported by the customer application.

Only the first 5 bytes of TERMINAL PROFILE (Class 2) can be configured; others are set to 0 (see *Structure of TERMINAL PROFILE* on page A-37).

## Example 1

+STSF=?

+STSF: (0-2), (160060C01F - 5FFFFFFF7F),(1-255),(0-1)

OK

## Example 2

AT+CMEE=1 *[enable reporting of mobile equipment errors]*

OK

AT+WIND=15 *[request Wavecom indications]*

OK

AT+CPAS *[query ME status]*

+CPAS: 0 *[ME is ready]*

OK

AT+STSF=?

+STSF: (0-2), (160060C01F – 5FFFFFFF7F),(1-255)

OK

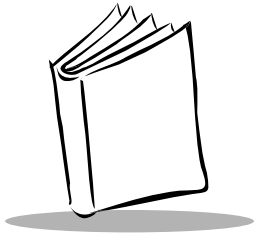
AT+STSF?

+STSF: 0,”160060C000”,3 *[deactivate SIM ToolKit functionality]*

OK

AT+STSF=2,”5FFFFFFF7F” *[set all facilities SIM ToolKit (class 3)]*

```
    OK
AT+STSF=3                    [syntax error]
    +CME ERROR: 3
AT+STSF=1                    [activate SIM ToolKit functionality]
    OK
AT+CFUN=1                    [reboot software]
    OK
AT+CPIN?                     [request if ME is asking password]
    +CPIN: SIM PIN           [SIM PIN required]
AT+CPIN=0000
    OK
    +WIND: 4                 [init phase is complete]
AT+STSF?
    +STSF: 1,”5FFFFFFF7F”,3 [SIM ToolKit functionality activated with all facilities]
    OK
```



# *Appendix A*
# *Developer Reference Information*

## Introduction

This appendix includes helpful reference information for the developer, such as error conditions and result codes encountered, parameter storage modes for the various GSM commands, and GSM sequences and operator names.

# Error Codes and Result Codes

## *ME Error Result Code: +CME ERROR: <error>*

<*error*> is defined as follows:

**Table A-1. ME Error Result Code: +CME 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 |
| **30** | No network service | +VTS, +COPS=?, +CLCK, +CCFC, +CCWA, +CUSD |
| **32** | Network not allowed – emergency calls only | +COPS |
| **40** | Network personalization PIN required (Network lock) | All GSM 07.07 commands (+CME ERROR: 40) |

# Message Service Failure Result Code: +CMS ERROR : <error>

<*er*> is defined as follows:

**Table A-2. Message Service Failure Result Code: +CME ERROR: <*er*>**

| <*error*> | Meaning | Resulting from the following commands |
|---|---|---|
| **1 to 127** | Error causes values from the GSM recommendation 04.11 Annex E-2 | +CMGS, +CMSS |
| **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 acknowledge-ment expected | +CNMA |

# Specific Error Result Codes

**Table A-3. Specific Error Result Codes**

| *<error>* | Meaning | Resulting 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 |
| **514** | CP error (for SMS). | +CMGS, +CMSS |
| **515** | Please wait, init or command processing in progress | All commands (“+CME ERROR: 515” or “+CMS ERROR: 515”) |
| **517** | Facility Sim Toolkit not supported | +STGI |
| **518** | Sim Toolkit indication not received | +STGI |
| **519** | Reset the module to activate or change a new echo cancellation algo | +ECHO, +VIP |
| **520** | Automatic abort of get plmn list for an incomming 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 |

# Failure Cause from GSM 04.08 Recommendation (+CEER)

**Table A-4. Failure Cause from GSM 04.08 Recommendation (+CEER)**

| Cause value | Meaning |
|---|---|
| **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 |

**Table A-4. Failure Cause from GSM 04.08 Recommendation (+CEER) (continued)**

| Cause value | Meaning |
|---|---|
| **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 |

- All other values in the range 0 to 31 are treated as cause 31.
- All other values in the range 32 to 47 are treated as cause 47.
- All other values in the range 48 to 63 are treated as cause 63.
- All other values in the range 64 to 79 are treated as cause 79.
- All other values in the range 80 to 95 are treated as cause 95.
- All other values in the range 96 to 111 are treated as cause 111.
- All other values in the range 112 to 127 are treated as cause 127.

## Specific Failure Cause for +CEER

**Table A-5. Failure Cause for +CEER**

| Cause Value | Meaning |
|---|---|
| **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 may appear for SMS commands (+CMGS, +CMSS, +CMGD, etc.)

**Table A-6. SMS Command Error Causes**

| Cause No. | Error | Meaning |
|---|---|---|
| **1** | Unassigned (unallocated) number | The destination requested by the Mobile Station cannot be reached because, although the number is in a valid format, it is not currently assigned (allocated). |
| **8** | Operator determined barring | The MS attempted to send a mobile originating short message when the MS's network operator or service provider has forbidden such transactions. |
| **10** | Call barred | The outgoing call barred service applies to the short message service for the called destination. |
| **21** | Short message transfer rejected | The equipment sending this cause will not accept this short message, although it is neither busy nor incompatible. |
| **27** | Destination out of service | The destination indicated by the MS cannot be reached because the interface to the destination is not functioning properly, meaning a signaling message could not be delivered to the remote user; e.g., a physical layer or data link layer failure at the remote user, or user equipment off-line. |
| **28** | Unidentified subscriber | The subscriber is not registered in the PLMN (i.e., IMSI not known). |
| **29** | Facility rejected | The facility requested by the MS is not supported by the PLMN. |
| **30** | Unknown subscriber | The subscriber is not registered in the HLR (i.e., IMSI or directory number is not allocated to a subscriber). |
| **38** | Network out of order | The network is not functioning properly and the condition is likely to last a relatively long period of time; e.g., immediately reattempting the short message transfer is not likely to be successful. |
| **41** | Temporary failure | The network is not functioning properly and the condition is not likely to last a long period of time; e.g., the MS can attempt another short message transfer. |
| **42** | Congestion | The short message service cannot be serviced because of high traffic. |

**Table A-6. SMS Command Error Causes (continued)**

| Cause No. | Error | Meaning |
|---|---|---|
| **47** | Resources unavailable, unspecified | A resource unavailable event (when no other cause applies). |
| **6** | Requested facility not implemented | The network is unable to provide the requested short message service. |
| **81** | Invalid short message transfer reference value | The equipment sending this cause has received a message with a short message reference which is not currently in use on the MS-network interface. |
| **95** | Invalid message, unspecified | An invalid message event (when no other cause in the invalid message class applies). |
| **96** | Invalid mandatory information | The equipment sending this cause has received a message where a mandatory information element is missing and/or has a content error (the two cases are undistinguishable). |
| **97** | Message type non-existent or not implemented | The equipment sending this cause has received a message type it does not recognize either because the message is not defined, or defined but not implemented by the equipment. |
| **98** | Message not compatible with short message protocol state | The equipment sending this cause has received a message that is not permissible in the short message transfer state. |
| **99** | Information element non-existent or not implemented | The equipment sending this cause received a message which includes information elements not recognized because the information element identifier is not defined, or it is defined but not implemented by the equipment. However, the information element is not required to be present in the message in order for the equipment to process the message. |
| **111** | Protocol error, unspecified | Reports a protocol error event (when no other cause applies). |
| **127** | Interworking, unspecified | There is communication with a network which does not provide causes for its actions; the precise cause for a message cannot be determined. |
| **All other values are treated as error Cause No 41.** | | |

# Unsolicited Result Codes

**Table A-7. Unsolicited Result Codes**

| Verbose Result Code | Numeric (V0 set) | Description |
|---|---|---|
| **+CALA: < *time string*>,<*index*>** | As verbose | Alarm notification |
| **+CBM: <*length*><*pdu*> (PDU) or +CBM:<*sn*>,<*mid*>,<*dcs*>, <*page*>, <*pages*>… (Text mode)** | As verbose | Cell Broadcast Message directly displayed |
| **+CBMI: "BM",<*index*>** | As verbose | Cell Broadcast Message stored in mem at location <*index*> |
| **+CCCM : <*ccm*>** | As verbose | Current Call Meter value |
| **+CCED: <*values*>** | As verbose (specific) | Cell Environment Description indication |
| **+CCWA :<*number*>,<*type*>,<*class*> [,<*alpha*>]** | As verbose | Call Waiting number |
| **+CDS: <*fo*>, <*mr*>… (text mode) or +CDS: <*length*>,… (PDU)** | As verbose | SMS status report after sending a SMS |
| **+CKEV: <*keynb*>** | As verbose | Key press or release |
| **+CLIP : <*number*>, <*type*> [,,,<*alpha*>]** | As verbose | Incoming Call Presentation |
| **+CMT: <*oa*>… (text mode) or +CMT: [<*alpha*>,]… (PDU)** | As verbose | Incoming message directly displayed |
| **+CMTI: <*mem*>,<*index*>** | As verbose | Incoming message stored in <*mem*> ("SM") at location <*index*> |
| **+CREG : <*stat*> [,<*lac*>,<*ci*>]** | As verbose | Network registration indication |
| **+CRING : <*type*>** | As verbose | Incoming call type (VOICE, FAX ...) |
| **+CSQ: <*RxLev*>,99** | As verbose | Automatic RxLev indication with AT+CCED=1,8 command |
| **+CSSU: <*code2*>[<*number*>,<*type*>]** | As verbose | Supplementary service notification during a call |
| **+STIN: <*ind*>** | As verbose (specific) | SIM Toolkit Indication |

**Table A-7. Unsolicited Result Codes (continued)**

| Verbose Result Code | Numeric (V0 set) | Description |
|---|---|---|
| **+WIND: <*IndicationNb*> [,<*CallId*>]** | As verbose (specific) | Specific unsolicited indication (SIM Insert/ Remove, End of init, Reset, Alerting, Call creation/release) |
| **+WVMI: <*LineId*>,<*Status*>** | As verbose (specific) | Voice Mail Indicator notification (cf.+CPHS command) |
| **RING** | 2 | Incoming call signal from network |

## *Final Result Codes*

**Table A-8. Final Result Codes**

| Verbose Result Code | Numeric (V0 set) | Description |
|---|---|---|
| **+CME ERROR: <*err*>** | As verbose<br>Error from GSM 07.05 commands | |
| **+CMS ERROR: <*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

**Table A-9. Intermediate Result Codes**

| Verbose Result Code | Numeric (V0 set) | Description |
|---|---|---|
| **+COLP :<*number*>,<*type*>** | As verbose | Outgoing Call Presentation |
| **+CR : <*type*>** | As verbose | Outgoing Call report control |
| **+ILRR: <*rate*>** | As verbose | Local TA-TE data rate |
| **CONNECT 300** | 10 | Data connection at 300 baud |
| **CONNECT 1200** | 11 | Data connection at 1200 baud |
| **CONNECT 1200/75** | 12 | Data connection at 1200/75 baud |
| **CONNECT 2400** | 13 | Data connection at 2400 baud |
| **CONNECT 4800** | 14 | Data connection at 4800 baud |
| **CONNECT 9600** | 15 | Data connection at 9600 baud |
| **CONNECT 14400** | 16 | Data connection at 14400 baud |
| **+CSSI: <*code1*>[,<*index*>]** | As verbose | Supplementary service notification during a call setup |

# Parameter Storage

**Table A-10. Parameter Storage**

| Command | Parameters Storage Mode | | | AT&F (SIM, E2P) | Initial Values WISMO1B | Initial Values WISMO2C |
|---|---|---|---|---|---|---|
| | AT&W (E2P) | Command (E2P) | AT+CSAS (SIM, E2P) | | | |
| **General Commands** | | | | | | |
| **+CSCS** | X | | | X | “PCCP437” | “PCCP437” |
| **+WPCS** | X | | | X | --- | “TRANSPARENT” |
| **+CMEE** | X | | | X | 0 | 0 |
| **Call Control Commands** | | | | | | |
| **%D** | | X | | X | 0 | 0 |
| **ATS0** | X | | | X | 0 (no auto-answer) | 0 (no auto-answer) |
| **+CICB** | X | | | X | 2 (speech) | 2 (speech) |
| **+CSNS** | X | | | X | 0 (voice) | 0 (voice) |
| **+VGR** | X | | | X | 64 (speaker 1)<br>32 (speaker 2) | 64 (speaker 1)<br>32 (speaker 2) |
| **+VGT** | X | | | X | 64 (mic 1 & ctrl 1)<br>0 (others) | 64 (mic 1 & ctrl 1)<br>0 (others) |
| **+SPEAKER** | X | | | X | 0 (Spk 1 & Mic 1) | 0 (Spk 1 & Mic 1) |
| **+ECHO** | | X | | X | 0,255,1000,5,<br>500,63 | 0,1,0,3,10,7<br>(Echo cancel)<br>0,0,3,10,7,0<br>(Switch Attenuation) |
| **+SIDET** | X | | | X | 1,1 | 1,1 |
| **Network Service Commands** | | | | | | |
| **+COPS** | X | X | | X | 0,2 | 0,2 |
| **+CREG** | X | | | X | 0 | 0 |

## Table A-10. Parameter Storage (continued)

| Command | Parameters Storage Mode | | | AT&F (SIM, E2P) | Initial Values WISMO1B | Initial Values WISMO2C |
|---|---|---|---|---|---|---|
| | AT&W (E2P) | Command (E2P) | AT+CSAS (SIM, E2P) | | | |
| **Phonebook Commands** | | | | | | |
| **+WAIP** | X | | | X | 0 | 0 |
| **SMS Commands** | | | | | | |
| **+CSMS** | | X | | | 0 | 0 |
| **+CMGF** | X | | | X | 1 (text) | 1 (text) |
| **+CSDH** | X | | | X | 0 | 0 |
| **+CNMI** | | | X | X | 0,1,0,0,0 | 0,1,0,0,0 |
| **+CSMP** | | | X | X | 1,167,0,0 | 1,167,0,0 |
| **+CSCA** | | | X | | SIM dependant (phase 2) | SIM dependant (phase 2) |
| **+WUSS** | | X | | X | 0 | 0 |
| **Supplementary Services Commands** | | | | | | |
| **+CCWA** | X | | | X | 0 | 0 |
| **+CLIP** | X | | | X | 0 | 0 |
| **+COLP** | X | | | X | 0 | 0 |
| **+CSSN** | X | | | X | 0,0 | 0,0 |
| **+CUSD** | | X | | X | 0 | 0 |
| **+CCUG** | | X | | | 0,0,0 | 0,0,0 |
| **Data Commands** | | | | | | |
| **+CBST** | X | | | X | 0,0,1 | 0,0,1 |
| **+CR** | X | | | X | 0 | 0 |
| **+CRC** | X | | | X | 0 | 0 |
| **+ILRR** | X | | | X | 0 | 0 |
| **+CRLP** | X | | | X | 61,61,48,6,0 | 61,61,48,6,1 |
| **+DOPT** | X | | | X | 1,0 | 1,1 |

**Table A-10. Parameter Storage (continued)**

| Command | Parameters Storage Mode | | | AT&F (SIM, E2P) | Initial Values WISMO1B | Initial Values WISMO2C |
|---|---|---|---|---|---|---|
| | AT&W (E2P) | Command (E2P) | AT+CSAS (SIM, E2P) | | | |
| **%C** | X | | | X | | 2 |
| **+DS** | X | | | X | | 3,0,4096,20 |
| **+DR** | X | | | X | | 0 |
| **\N** | X | | | X | | 0 |
| **Fax Class 2 Commands** | | | | | | |
| **+FBOR** | X | | | X | | 0 |
| **+FCQ** | X | | | X | | 0 |
| **+FCR** | X | | | X | | 1 |
| **+FDCC,+FDIS** | X | | | X | | 0,5,0,0,2,0,0,0,0 |
| **+FPHCTO** | X | | | X | | 30 |
| **V24 – V25 Commands** | | | | | | |
| **+IPR** | X | | | | 0 (autobaud) | 9600 |
| **+ICF** | X | | | | 3,4 | 3,4 |
| **+IFC** | X | | | | 2,2 | 2,2 |
| **E** | X | | | | 1 | 1 |
| **&C** | X | | | | 1 | 1 |
| **&D** | X | | | | 1 | 1 |
| **&S** | X | | | | 1 | 1 |
| **Q** | X | | | X | 0 | 0 |
| **V** | X | | | X | 1 | 1 |
| **E** | X | | | | 1 | 1 |
| **Specific Commands** | | | | | | |
| **+WIND** | | X | | X | 0 | 0 |
| **+ADC** | | X | | X | 0 | 0 |

## Table A-10. Parameter Storage (continued)

| Command | Parameters Storage Mode | | | AT&F (SIM, E2P) | Initial Values WISMO1B | Initial Values WISMO2C |
|---|---|---|---|---|---|---|
| | AT&W (E2P) | Command (E2P) | AT+CSAS (SIM, E2P) | | | |
| **+CMER** | X | | | X | 0 | 0 |
| **+WVR** | | X | | | 5 | 5 |
| **+WDR** | | X | | | 2 | 2 |
| **+WSVG** | | X | | X | 0 | 0 |
| **+WRIM** | | X | | X | 0 | 0 |
| **+WCDM** | | X | | X | --- | 0,0 |
| **+CPHS** | | X | | X | --- | 0 |
| **SIM Toolkit Commands** | | | | | | |
| **+STSF** | | X | | | --- | 0,”160060C01F”, 3,0 |

# GSM Sequences List

In accordance with GSM 02.30, the module implements the following GSM sequences, which can be acceded by 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#** — Activate
- ****SC*PhoneNumber#** or ****SC*PhoneNumber*BS#** or ****SC*PhoneNumber*[BS]*T#** — Register and activate
- ***#SC#** or ***#SC**BS#** — Check status
- **#SC#** — Deactivate
- **##SC#** or **##SC**BS#** — Unregister and deactivate

The Service codes (SC) are as follows:

- **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 as follows:

- **No code** All tele and bearer services
- **10** All teleservices
- **11** Telephony
- **12** All data teleservices
- **13** Fax services
- **16** Short Message Services
- **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

The no reply condition timer (T), is only used for SC=61.

## *Call Barring*

- ***SC*Password#** or ***SC*Password*BS#** Activate
- ***#SC#** or ***#SC**BS#** Check status
- **#SC*Password#** or **#SC*Password*BS#** Deactivate
- ****03*330*OLDPWD*NEWPWD*NEWPWD#** Change password for call barring
- ****03**OLDPWD*NEWPWD*NEWPWD#**
- ***03*330*OLDPWD*NEWPWD*NEWPWD#**
- ***03**OLDPWD*NEWPWD*NEWPWD#**

The Service codes (SC) are as follows:

- **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)

The Network service codes (BS) are the same as these of the call forwarding sequences.

## *Call Waiting*

- ***43#** Activate
- ***#43#** Check status
- **#43#** Deactivate

## *Number Presentation*

- ***#30#** CLIP check status
- ***#31#** CLIR check status
- ***31#PhoneNumber** Invoke CLIR for a voice call
- **#31#PhoneNumber** Suppress CLIR for a voice call
- ***#76#** COLP check status

# Operator Names

**Table A-11. Operator Names**

| Country Initials | MCC | MNC | Preferred Presentation of Country Initials and Mobile Network Name | Abbreviated Mobile Network Name | Type of Network |
|---|---|---|---|---|---|
| **A** | 232 | 01 | A1 | A1 | GSM900 |
| **A** | 232 | 03 | A max. | max. | GSM900/1800 |
| **A** | 232 | 05 | A one | one | GSM1800 |
| **A** | 232 | 07 | A tele.ring | telering | GSM1800 |
| **AL** | 276 | 01 | AMC - AL | A M C | GSM900 |
| **ALG** | 603 | 01 | ALGERIAN MOBILE NETWORK | AMN | GSM900 |
| **AN** | 344 | 30 | APUA PCS ANTIGUA | ATUA-PCS | PCS1900 |
| **AND** | 213 | 03 | STA-MOBILAND | M-AND | GSM900 |
| **AUS** | 505 | 01 | Telstra MobileNet | Telstra | GSM900/1800 |
| **AUS** | 505 | 02 | YES OPTUS AUS | Optus | GSM900 |
| **AUS** | 505 | 03 | VODAFONE AUS | VFONE | GSM900 |
| **AUS** | 505 | 08 | One.Tel | One.Tel | GSM1800 |
| **AZE** | 400 | 01 | AZE - AZERCELL GSM | ACELL | GSM900 |
| **AZE** | 400 | 02 | BAKCELL GSM 2000 | BKCELL | GSM900 |
| **B** | 206 | 10 | B mobistar | mobi* | GSM900 |
| **B** | 206 | 20 | Orange | Orange | GSM1800 |
| **BD** | 470 | 03 | BD ShebaWorld | SHEBA | GSM900 |
| **BEL** | 206 | 01 | BEL PROXIMUS | PROXI | GSM900 |
| **BG** | 284 | 01 | M-TEL GSM BG | M-TEL | GSM900 |
| **BGD** | 470 | 01 | BGD-GP | GP | GSM900 |
| **BGD** | 470 | 02 | BGD AKTEL | AKTEL | GSM900 |

**Table A-11. Operator Names (continued)**

| Country Initials | MCC | MNC | Preferred Presentation of Country Initials and Mobile Network Name | Abbreviated Mobile Network Name | Type of Network |
|---|---|---|---|---|---|
| **BHR** | 426 | 01 | BHR MOBILE PLUS | M.PLUS | GSM900 |
| **BIH** | 218 | 03 | BIH-ERONET | ERONET | GSM900 |
| **BIH** | 218 | 05 | GSM-MS1 | GSM-MS1 | GSM900 |
| **BIH** | 218 | 90 | PTT-GSMBIH | BHGSM | GSM900 |
| **BRU** | 528 | 11 | BRU-DSTCom | DSTCom | GSM900 |
| **BW** | 652 | 01 | BW MASCOM | MASCOM | GSM900 |
| **BY** | 257 | 01 | BY VELCOM | VELCOM | GSM900 |
| **CAN** | 302 | 37 | CAN-MCELL | MCELL | PCS1900 |
| **CH** | 228 | 01 | SWISS GSM | SWISS | GSM900/1800 |
| **CH** | 228 | 02 | diAx Swiss | diAx | GSM900/1800 |
| **CH** | 228 | 03 | orange CH | orange | GSM1800 |
| **CHN** | 460 | 00 | CHINA TELECOM | CT-GSM | GSM900 |
| **CHN** | 460 | 01 | CHN-CUGSM | CU-GSM | GSM900 |
| **CI** | 612 | 03 | CI Ivoiris | Ivoir | GSM900 |
| **CI** | 612 | 05 | TELECEL-CI | TELCEL | GSM900 |
| **CL** | 730 | 01 | CL ENTEL PCS | ENTEL | PCS1900 |
| **CL** | 730 | 10 | CL ENTEL PCS | ENTEL | PCS1900 |
| **CMR** | 624 | 02 | Mobilis | CAM 02 | GSM900 |
| **CPV** | 625 | 01 | CPV MOVEL | CMOVEL | GSM900 |
| **CY** | 280 | 01 | CY CYTAGSM | CY-GSM | GSM900 |
| **CZ** | 230 | 01 | PAEGAS- CZ | PAEGAS | GSM900 |
| **CZ** | 230 | 02 | EUROTEL - CZ | ET - CZ | GSM900 |
| **D** | 262 | 01 | T-D1 | T-D1 | GSM900/1800 |
| **D** | 262 | 02 | D2 | D2 | GSM900 |

## Table A-11. Operator Names (continued)

| Country Initials | MCC | MNC | Preferred Presentation of Country Initials and Mobile Network Name | Abbreviated Mobile Network Name | Type of Network |
|---|---|---|---|---|---|
| **D** | 262 | 03 | E-Plus | E-Plus | GSM1800 |
| **D** | 262 | 07 | D Interkom | Ik | GSM1800 |
| **DK** | 238 | 01 | DK TDK-MOBIL | TD MOB | GSM900 |
| **DK** | 238 | 02 | DK SONOFON | SONO | GSM900/1800 |
| **DK** | 238 | 20 | TELIA DK | TELIA | GSM1800 |
| **DK** | 238 | 30 | DK mobilix | #mbix | GSM1800 |
| **E** | 214 | 01 | E AIRTEL | AIRTL | GSM900 |
| **E** | 214 | 03 | E AMENA | AMENA | GSM1800 |
| **E** | 214 | 07 | MOVISTAR | MSTAR | GSM900/1800 |
| **EE** | 248 | 01 | EE EMT GSM | EMT | GSM900/1800 |
| **EE** | 248 | 02 | EE RLE | RLE | GSM900 |
| **EE** | 248 | 03 | EE Q GSM | Q GSM | GSM900 |
| **EGY** | 602 | 01 | EGY MobiNiL | MobiNiL | GSM900 |
| **EGY** | 602 | 02 | EGY CLICK GSM | CLICK | GSM900 |
| **ETH** | 636 | 01 | ETH-MTN | ET-MTN | GSM900 |
| **F** | 208 | 01 | F Itineris | Itine | GSM900/1800 |
| **F** | 208 | 10 | F SFR | SFR | GSM900 |
| **F** | 208 | 20 | F - BOUYGUES TELECOM | BYTEL | GSM1800 |
| **F** | 340 | 01 | F AMERIS | AMERIS | GSM900 |
| **F** | 547 | 20 | F-VINI | VINI | GSM900 |
| **F** | 647 | 10 | SFR REUNION | SFR RU | GSM900 |
| **FI** | 244 | 03 | FI TELIA | TELIA | GSM1800 |
| **FI** | 244 | 05 | FI RADIOLINJA | RL | GSM900 |
| **FI** | 244 | 09 | FI FINNET | FINNET | GSM1800 |

**Table A-11. Operator Names (continued)**

| Country Initials | MCC | MNC | Preferred Presentation of Country Initials and Mobile Network Name | Abbreviated Mobile Network Name | Type of Network |
|---|---|---|---|---|---|
| **FI** | 244 | 91 | FI SONERA | SONERA | GSM900/1800 |
| **FIJ** | 542 | 01 | VODAFONE FIJ | VODAFJ | GSM900 |
| **GEO** | 282 | 01 | GEO-GEOCELL | GCELL | GSM900 |
| **GEO** | 282 | 02 | MAGTI-GSM-GEO | MAGTI | GSM900/1800 |
| **GH** | 620 | 01 | GH SPACEFON | SPACE | GSM900 |
| **GH** | 620 | 02 | GH GTGSM | GTGSM | GSM900 |
| **GIB** | 266 | 01 | GIBTEL GSM | GIBTEL | GSM900 |
| **GN** | 611 | 02 | GN LAGUI | LAGUI | GSM900 |
| **GR** | 202 | 01 | GR COSMOTE | C-OTE | GSM1800 |
| **GR** | 202 | 05 | GR PANAFON | PAN | GSM900 |
| **GR** | 202 | 10 | GR TELESTET | TLSTET | GSM900 |
| **GRL** | 238 | 01 | TELE Greenland | TELE GRL | GSM900 |
| **H** | 216 | 01 | H PANNON GSM | PANNON | GSM900 |
| **H** | 216 | 30 | H-WESTEL 900 | W-900 | GSM900 |
| **H** | 216 | 70 | Vodafone | H-70 | GSM1800 |
| **HK** | 454 | 00 | CABLE & WIRELESS HKT | C&W HKT | GSM900/1800 |
| **HK** | 454 | 04 | HK ORANGE | ORANGE | GSM900/1800 |
| **HK** | 454 | 06 | HK SMARTONE | HKSMC | GSM900/1800 |
| **HK** | 454 | 10 | HK NEW WORLD | NWPCS | GSM1800 |
| **HK** | 454 | 12 | HK PEOPLES | PEOPLES | GSM1800 |
| **HK** | 454 | 16 | HK SUNDAY | SUNDAY | GSM1800 |
| **HR** | 219 | 01 | HR - CRONET | CRON | GSM900 |
| **HR** | 219 | 10 | HR VIP | VIP | GSM900 |
| **I** | 222 | 01 | I TELECOM | TIM | GSM900/1800 |

## Table A-11. Operator Names (continued)

| Country Initials | MCC | MNC | Preferred Presentation of Country Initials and Mobile Network Name | Abbreviated Mobile Network Name | Type of Network |
|---|---|---|---|---|---|
| **I** | 222 | 10 | I -OMNITEL | OMNI | GSM900/1800 |
| **I** | 222 | 88 | I WIND | I WIND | GSM900/1800 |
| **I** | 222 | 98 | I BLU | BLU | GSM1800 |
| **IL** | 425 | 01 | IL ORANGE | ORANGE | GSM900 |
| **INA** | 404 | 01 | INA ESSAR CELLPHONE | ESSARH | GSM900 |
| **INA** | 404 | 07 | INA - TATA CELLULAR | TATA | GSM900 |
| **INA** | 404 | 10 | INA-AIRTL | AIRTL | GSM900 |
| **INA** | 404 | 11 | INA ESSAR CELLPHONE | ESSAR | GSM900 |
| **INA** | 404 | 12 | INA - ESCOTEL | ESCOTL | GSM900 |
| **INA** | 404 | 14 | MODICOM INA | MODICO | GSM900 |
| **INA** | 404 | 15 | INA ESSAR CELLPHONE | ESSARU | GSM900 |
| **INA** | 404 | 20 | INA MaxTouch | MAXTCH | GSM900 |
| **INA** | 404 | 21 | BPL MOBILE | BPL MOBILE | GSM900 |
| **INA** | 404 | 27 | BPL MOBILE | BPL MOBILE | GSM900 |
| **INA** | 404 | 30 | INA COMMAND | COMMND | GSM900 |
| **INA** | 404 | 41 | INA RPG | RPG | GSM900 |
| **INA** | 404 | 42 | INA AIRCEL | AIRCEL | GSM900 |
| **INA** | 404 | 43 | BPL MOBILE | BPL MOB | GSM900 |
| **INA** | 404 | 46 | BPL MOBILE | BPL MOB | GSM900 |
| **INA** | 404 | 60 | INA ESSAR CELLPHONE | ESSARR | GSM900 |
| **IND** | 510 | 01 | IND SATELINDOCEL | SAT-C | GSM900 |
| **IND** | 510 | 10 | IND TELKOMSEL | T-SEL | GSM900 |
| **IND** | 510 | 11 | IND GSM-XL | EXCEL | GSM900 |

**Table A-11. Operator Names (continued)**

| Country Initials | MCC | MNC | Preferred Presentation of Country Initials and Mobile Network Name | Abbreviated Mobile Network Name | Type of Network |
|---|---|---|---|---|---|
| **IND** | 404 | 44 | IN-44 | SPICE | GSM900 |
| **IRL** | 272 | 01 | IRL Eircell | Eircell | GSM900 |
| **IRL** | 272 | 02 | IRL DIGIFONE | DIGI | GSM900 |
| **IS** | 274 | 01 | IS SIMINN | SIMINN | GSM900 |
| **IS** | 274 | 02 | IS TAL | TAL | GSM900 |
| **JOR** | 416 | 01 | Fastlink | FSTLNK | GSM900 |
| **KGZ** | 437 | 01 | BITEL KGZ | BITEL | GSM900 |
| **KHM** | 456 | 01 | MOBITEL - KHM | MT-KHM | GSM900 |
| **KHM** | 456 | 02 | KHM-SAMART-GSM | KHM-SM | GSM900 |
| **KSA** | 420 | 01 | ALJAWWAL | KSA | GSM900 |
| **KSA** | 420 | 07 | EAE-ALJAWWAL | EAE | GSM900 |
| **KT** | 419 | 02 | KT MTCNet | MTC | GSM900 |
| **KT** | 419 | 03 | KT WATANIYA | WATANIYA | GSM900/1800 |
| **KZ** | 401 | 01 | KZ K-MOBILE | K-MOBILE | GSM900 |
| **KZ** | 401 | 02 | KZ KCELL | KCELL | GSM900 |
| **L** | 270 | 01 | L LUXGSM | LUXGSM | GSM900/1800 |
| **L** | 270 | 77 | L TANGO | TANGO | GSM900/1800 |
| **LAO** | 457 | 01 | - - - | LAO GSM | GSM900 |
| **LBR** | 618 | 01 | LBR OMEGA | OMEGA | GSM900 |
| **LSO** | 651 | 01 | VCL COMMS | VCLCOM | GSM900 |
| **LT** | 246 | 02 | LT BITE GSM | BITE | GSM900 |
| **LTU** | 246 | 01 | OMNITEL LT | OMT | GSM900 |
| **LV** | 247 | 01 | LV LMT GSM | LMT | GSM900 |
| **LV** | 247 | 02 | LV BALTCOM | B-COM | GSM900 |

## Table A-11. Operator Names (continued)

| Country Initials | MCC | MNC | Preferred Presentation of Country Initials and Mobile Network Name | Abbreviated Mobile Network Name | Type of Network |
|---|---|---|---|---|---|
| **M** | 278 | 01 | VODAFONE MLA | VODA M | GSM900 |
| **MAC** | 455 | 01 | MAC-CTMGSM | CTMGSM | GSM900 |
| **MD** | 259 | 01 | MD VOXTEL | VOXTEL | GSM900 |
| **MDG** | 642 | 02 | MDG ANTARIS | ANTARI | GSM900 |
| **MKD** | 294 | 01 | MKD-MOBIMAK | MOBI-M | GSM900 |
| **MOR** | 604 | 00 | MOR MEDITEL | MEDITEL | GSM900 |
| **MOR** | 604 | 01 | MOR IAM | IAM | GSM900 |
| **MOZ** | 643 | 01 | MOZ - mCel | mCel | GSM900 |
| **MRU** | 617 | 01 | CELLPLUS-MRU | CELL + | GSM900 |
| **MRU** | 617 | 10 | EMTEL-MRU | EMTEL | GSM900 |
| **MV** | 472 | 01 | MV DHIMOBILE | D-MOBILE | GSM900 |
| **MW** | 650 | 01 | MW CP 900 | CP 900 | GSM900 |
| **MW** | 650 | 10 | CELTEL MW | CELTEL | GSM900 |
| **MY** | 502 | 12 | MY maxis mobile | maxis | GSM900 |
| **MY** | 502 | 13 | MY TMTOUCH | TMTOUCH | GSM1800 |
| **MY** | 502 | 16 | MY DIGI 1800 | MT18 | GSM1800 |
| **MY** | 502 | 17 | MY - ADAM 017 | ADAM | GSM1800 |
| **MY** | 502 | 19 | MY CELCOM | CELCOM | GSM900 |
| **N** | 242 | 01 | N Telenor | TELENOR | GSM900/1800 |
| **N** | 242 | 02 | N NetCom GSM | N COM | GSM900 |
| **NCL** | 546 | 01 | NCL MOBILIS | MOBNCL | GSM900 |
| **NL** | 204 | 04 | NL LIBERTEL | LIBTEL | GSM900 |
| **NL** | 204 | 08 | NL KPN TELECOM | NL KPN | GSM900 |
| **NL** | 204 | 12 | NL TELFORT | TELFORT | GSM1800 |

**Table A-11. Operator Names (continued)**

| Country Initials | MCC | MNC | Preferred Presentation of Country Initials and Mobile Network Name | Abbreviated Mobile Network Name | Type of Network |
|---|---|---|---|---|---|
| **NL** | 204 | 16 | Ben NL | Ben NL | GSM1800 |
| **NL** | 204 | 20 | dutchtone | Dtone | GSM1800 |
| **NZ** | 530 | 01 | VODAFONE NZ | VODA | GSM900 |
| **OMN** | 422 | 02 | OMAN MOBILE | OMAN | GSM900 |
| **P** | 268 | 01 | P TELECEL | TLCL | GSM900/1800 |
| **P** | 268 | 03 | P OPTIMUS | OPTIM | GSM900/1800 |
| **P** | 268 | 06 | P TMN | TMN | GSM900/1800 |
| **PGY** | 744 | 01 | HOLA PARAGUAY S.A. | HPGYSA | PCS1900 |
| **PH** | 515 | 01 | ISLACOM | ISLA | GSM900 |
| **PH** | 515 | 02 | Globe Telecom-PH | GLOBE | GSM900 |
| **PH** | 515 | 03 | PH SMART | SMART | GSM900/1800 |
| **PL** | 260 | 01 | PL-PLUS | PLUS | GSM900 |
| **PL** | 260 | 02 | PL-ERA GSM | ERAGSM | GSM900 |
| **PL** | 260 | 03 | PL IDEA | IDEA | GSM1800 |
| **PSE** | 425 | 05 | JAWWAL-PALESTINE | JAWWAL | GSM900 |
| **QAT** | 427 | 01 | QAT-QATARNET | Q-NET | GSM900 |
| **R** | 635 | 10 | R-CELL | RCELL | GSM900 |
| **RA** | 283 | 01 | RA-ARMGSM | ARMMO1 | GSM900 |
| **RL** | 415 | 01 | RL Cellis | CLLIS | GSM900 |
| **RL** | 415 | 03 | RL LibanCell | LibCL | GSM900 |
| **RO** | 226 | 01 | RO CONNEX | CONNEX | GSM900 |
| **RO** | 226 | 10 | RO dialog | dialog | GSM900 |
| **ROC** | 466 | 92 | ROC LDTA GSM | LDGSM | GSM900 |
| **RUS** | 250 | 01 | MTS-RUS | MTS | GSM900 |

## Table A-11. Operator Names (continued)

| Country Initials | MCC | MNC | Preferred Presentation of Country Initials and Mobile Network Name | Abbreviated Mobile Network Name | Type of Network |
|---|---|---|---|---|---|
| **RUS** | 250 | 02 | North-West GSM RUS | NWGSM | GSM900 |
| **RUS** | 250 | 05 | SCS | SCS | GSM900 |
| **RUS** | 250 | 07 | RUS BMT | BMT | GSM900 |
| **RUS** | 250 | 07 | RUS SMARTS | SMARTS | GSM900 |
| **RUS** | 250 | 12 | RUS 12, Far East RUS | FEast | GSM900 |
| **RUS** | 250 | 13 | Kuban-GSM RUS | KUGSM | GSM900 |
| **RUS** | 250 | 17 | RUS 17 | ERMAK | GSM900 |
| **RUS** | 250 | 28 | EXTEL RUS | EXTEL | GSM900 |
| **RUS** | 250 | 39 | Uraltel | UTL | GSM900 |
| **RUS** | 250 | 39 | RUS-SUCT | SUCT | GSM900 |
| **RUS** | 250 | 44 | RUS North Caucasian GSM | NC-GSM | GSM900 |
| **RUS** | 250 | 93 | | - - - - - - | GSM1800 |
| **RUS** | 250 | 99 | Bee Line GSM | Bee Line | GSM1800 |
| **RUS** | 250 | 99 | RUS Bee Line | Bee Line | GSM1800 |
| **S** | 240 | 01 | TELIA S | TELIA | GSM900/1800 |
| **S** | 240 | 07 | S COMVIQ | IQ | GSM900 |
| **S** | 240 | 08 | S EUROPOLITAN | EURO | GSM900 |
| **SA** | 655 | 01 | VodaCom-SA | VODA | GSM900 |
| **SA** | 655 | 10 | MTN-SA | MTN | GSM900 |
| **SDN** | 634 | 01 | SDN MobiTel | SD-MOB | GSM900 |
| **SEZ** | 633 | 01 | SEZ CELLULAR SERVICES | SEYCEL | GSM900 |
| **SEZ** | 633 | 10 | SEZ AIRTEL | AIRTEL | GSM900 |
| **SGP** | 525 | 01 | ST-GSM-SGP | STGSM | GSM900 |
| **SGP** | 525 | 02 | ST-GSM1800-SGP | GSM1800 | GSM1800 |

**Table A-11. Operator Names (continued)**

| Country Initials | MCC | MNC | Preferred Presentation of Country Initials and Mobile Network Name | Abbreviated Mobile Network Name | Type of Network |
|---|---|---|---|---|---|
| **SGP** | 525 | 03 | M1-GSM-SGP | M1-GSM | GSM900 |
| **SGP** | 525 | 05 | STARHUB-SGP | STARHUB | GSM1800 |
| **SI** | 293 | 40 | SI.MOBIL | SI.MOBIL | GSM900 |
| **SI** | 293 | 41 | SI MOBITEL GSM | SI-GSM | GSM900 |
| **SK** | 231 | 01 | SVK GT | SVK GT | GSM900 |
| **SK** | 231 | 02 | EUROTEL-SK | ET-SK | GSM900/1800 |
| **SN** | 608 | 01 | SN ALIZE | ALIZE | GSM900 |
| **SN** | 608 | 02 | SN-SENTEL SG | SENTEL | GSM900 |
| **SRI** | 413 | 02 | SRI DIALOG | DALOG | GSM900 |
| **SRI** | 413 | 03 | SRI - CELLTEL | CELLTEL | GSM900 |
| **SYR** | 417 | 09 | SYR MOBILE SYR | MOBILE | GSM900 |
| **SZ** | 653 | 10 | Swazi-MTN | SwaziMTN | GSM900 |
| **TG** | 615 | 01 | TG-TOGO CELL | TGCELL | GSM900 |
| **TH** | 520 | 01 | TH AIS GSM | TH AIS | GSM900 |
| **TH** | 520 | 10 | TH WCS | TH WCS | GSM1800 |
| **TH** | 520 | 23 | TH-HELLO | HELLO | GSM1800 |
| **TN** | 605 | 02 | TUNISIE TELECOM | TT | GSM900 |
| **TR** | 286 | 01 | TR PTT/TURKCELL GSM | TCELL | GSM900 |
| **TR** | 286 | 02 | TR TELSIM | TELSIM | GSM900 |
| **TWN** | 466 | 01 | Far EasTone | FET | GSM900/1800 |
| **TWN** | 466 | 06 | TWN Tuntex GSM 1800 | TUNTEX | GSM1800 |
| **TWN** | 466 | 88 | KGT-Online | KGT | GSM1800 |
| **TWN** | 466 | 93 | TWN MOBITAI | TW MOB | GSM900 |
| **TWN** | 466 | 97 | TWN GSM 1800 | PCC | GSM1800 |

## Table A-11. Operator Names (continued)

| Country Initials | MCC | MNC | Preferred Presentation of Country Initials and Mobile Network Name | Abbreviated Mobile Network Name | Type of Network |
|---|---|---|---|---|---|
| **TZ** | 640 | 01 | Tritel - TZ | TRITEL | GSM900 |
| **TZ** | 640 | 03 | ZANTEL-TZ | ZANTEL | GSM900/1800 |
| **UA** | 255 | 01 | UA UMC | UMC | GSM900 |
| **UA** | 255 | 03 | UA-KYIVSTAR | UA-KS | GSM900 |
| **UA** | 255 | 05 | UA - GOLDEN TELECOM | UA-GT | GSM1800 |
| **UAE** | 424 | 02 | UAE ETISALAT | ETSLT | GSM900 |
| **UG** | 641 | 01 | UG CelTel | CELTEL | GSM900 |
| **UG** | 641 | 10 | MTN-UGANDA | MTN-UG | GSM900 |
| **UK** | 234 | 10 | BTCELLNET | BTCNET | GSM900/1800 |
| **UK** | 234 | 15 | UK VODAFONE | VODA | GSM900 |
| **UK** | 234 | 30 | ONE 2 ONE | ONE2ONE | GSM1800 |
| **UK** | 234 | 33 | ORANGE | ORANGE | GSM1800 |
| **UK** | 234 | 50 | JERSEY TELECOMS GSM UK | JT GSM | GSM900 |
| **UK** | 234 | 55 | GUERNSEY TEL UK | GSY-TEL | GSM900 |
| **UK** | 234 | 58 | MANX TELECOM PRONTO GSM | MANX | GSM900 |
| **UKR** | 255 | 02 | FLASH-UKR | FLASH | GSM900 |
| **USA** | 310 | 010 | USA MCI | | PCS1900 |
| **USA** | 310 | 011 | USA Wireless 2000 Telepho | WTTCKy | PCS1900 |
| **USA** | 310 | 012 | USA D&E Com | | PCS1900 |
| **USA** | 310 | 013 | USA MobileTel | | PCS1900 |
| **USA** | 310 | 020 | USA Sprint | | PCS1900 |
| **USA** | 310 | 030 | USA PCS PRIME | | PCS1900 |
| **USA** | 310 | 031 | USA-AERIAL | AERIAL | PCS1900 |
| **USA** | 310 | 040 | USA PCS PRIME | | PCS1900 |

**Table A-11. Operator Names (continued)**

| Country Initials | MCC | MNC | Preferred Presentation of Country Initials and Mobile Network Name | Abbreviated Mobile Network Name | Type of Network |
|---|---|---|---|---|---|
| **USA** | 310 | 050 | USA PCS PRIME | | PCS1900 |
| **USA** | 310 | 060 | USA PCS PRIME | | PCS1900 |
| **USA** | 310 | 070 | USA PCS PRIME | | PCS1900 |
| **USA** | 310 | 080 | USA PCS PRIME | | PCS1900 |
| **USA** | 310 | 090 | USA PCS PRIME | | PCS1900 |
| **USA** | 310 | 100 | USA PCS PRIME | | PCS1900 |
| **USA** | 310 | 110 | USA PCS PRIME | | PCS1900 |
| **USA** | 310 | 120 | USA PCS PRIME | | PCS1900 |
| **USA** | 310 | 130 | USA PCS PRIME | | PCS1900 |
| **USA** | 310 | 140 | USA PCS PRIME | | PCS1900 |
| **USA** | 310 | 150 | BellSouth Mobility DCS | BSMDCS | PCS1900 |
| **USA** | 310 | 160 | USA OMNIPOINT | | PCS1900 |
| **USA** | 310 | 170 | USA PAC BELL | | PCS1900 |
| **USA** | 310 | 180 | USA PAC BELL | | PCS1900 |
| **USA** | 310 | 190 | USA COX | | PCS1900 |
| **USA** | 310 | 200 | VoiceStream | VStream | PCS1900 |
| **USA** | 310 | 210 | VoiceStream | VStream | PCS1900 |
| **USA** | 310 | 220 | VoiceStream | VStream | PCS1900 |
| **USA** | 310 | 230 | VoiceStream | VStream | PCS1900 |
| **USA** | 310 | 240 | VoiceStream | VStream | PCS1900 |
| **USA** | 310 | 250 | VoiceStream | VStream | PCS1900 |
| **USA** | 310 | 260 | VoiceStream | VStream | PCS1900 |
| **USA** | 310 | 270 | USA PowerTel, Inc. | USA 27 | PCS1900 |
| **USA** | 310 | 280 | USA PowerTel | | PCS1900 |

## Table A-11. Operator Names (continued)

| Country Initials | MCC | MNC | Preferred Presentation of Country Initials and Mobile Network Name | Abbreviated Mobile Network Name | Type of Network |
|---|---|---|---|---|---|
| **USA** | 310 | 290 | USA PowerTel | | PCS1900 |
| **USA** | 310 | 300 | USA Aerial | | PCS1900 |
| **USA** | 310 | 310 | USA-AERIAL | AERIAL | PCS1900 |
| **USA** | 310 | 320 | USA Aerial | | PCS1900 |
| **USA** | 310 | 330 | USA Aerial | | PCS1900 |
| **USA** | 310 | 340 | USA Aerial | | PCS1900 |
| **USA** | 310 | 350 | USA Aerial | | PCS1900 |
| **USA** | 310 | 380 | USA Pocket | | PCS1900 |
| **USA** | 310 | 390 | USA Pocket | | PCS1900 |
| **USA** | 310 | 400 | USA Pocket | | PCS1900 |
| **USA** | 310 | 410 | USA Pocket | | PCS1900 |
| **USA** | 310 | 420 | USA Pocket | | PCS1900 |
| **USA** | 310 | 430 | USA Pocket | | PCS1900 |
| **USA** | 310 | 440 | USA Pocket | | PCS1900 |
| **USA** | 310 | 450 | USA Pocket | | PCS1900 |
| **USA** | 310 | 460 | USA OMNIPOINT | | PCS1900 |
| **USA** | 310 | 470 | USA OMNIPOINT | | PCS1900 |
| **USA** | 310 | 480 | USA OMNIPOINT | | PCS1900 |
| **USA** | 310 | 490 | USA OMNIPOINT | | PCS1900 |
| **USA** | 310 | 500 | USA OMNIPOINT | | PCS1900 |
| **USA** | 310 | 510 | USA OMNIPOINT | | PCS1900 |
| **USA** | 310 | 520 | USA OMNIPOINT | | PCS1900 |
| **USA** | 310 | 530 | USA OMNIPOINT | | PCS1900 |
| **USA** | 310 | 540 | USA OMNIPOINT | | PCS1900 |

**Table A-11. Operator Names (continued)**

| Country Initials | MCC | MNC | Preferred Presentation of Country Initials and Mobile Network Name | Abbreviated Mobile Network Name | Type of Network |
|---|---|---|---|---|---|
| **USA** | 310 | 550 | USA OMNIPOINT | | PCS1900 |
| **USA** | 310 | 560 | USA OMNIPOINT | | PCS1900 |
| **USA** | 310 | 570 | USA OMNIPOINT | | PCS1900 |
| **USA** | 310 | 580 | USA OMNIPOINT | | PCS1900 |
| **USA** | 310 | 610 | USA OMNIPOINT | | PCS1900 |
| **USA** | 310 | 620 | USA OMNIPOINT | | PCS1900 |
| **USA** | 310 | 630 | USA OMNIPOINT | | PCS1900 |
| **USA** | 310 | 640 | USA Einstein | | PCS1900 |
| **USA** | 310 | 660 | USA DiGiPH | | PCS1900 |
| **USA** | 310 | 670 | USA WTTCKy | | PCS1900 |
| **USA** | 310 | 680 | USA NPI | | PCS1900 |
| **USA** | 310 | 690 | USA Conestoga | | PCS1900 |
| **USA** | 310 | 770 | Iowa Wireless USA | IWS | PCS1900 |
| **USA** | 310 | 790 | USA PinPoint Wireless | PnPt | PCS1900 |
| **UZB** | 434 | 04 | UZB DAEWOO-GSM | DW-GSM | GSM900 |
| **UZB** | 434 | 05 | UZB CSOCOM GSM | COSCOM | GSM900 |
| **VN** | 452 | 01 | VN MOBIFONE | VMS | GSM900 |
| **VN** | 452 | 02 | VN VINAFONE | GPC | GSM900 |
| **VZ** | 734 | 01 | VZ INFO | INFONT | GSM900 |
| **VZ** | 734 | 02 | DIGITEL | DIGITEL | GSM900 |
| **YU** | 220 | 01 | YU MOBTEL | MOBTEL | GSM900 |
| **ZW** | 648 | 01 | ZW NET*ONE | NET*1 | GSM900 |
| **ZW** | 648 | 03 | TELECEL ZW | TELECEL | GSM900 |
| **ZW** | 648 | 04 | ZW ECONET | ECONET | GSM900 |

# Commands Supported by SIM Toolkit Classes

**Table A-12. SIM Toolkit Class Support**

| Command Description | Classes | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| **CALL CONTROL** | | X | X |
| **CELL BROADCAST DOWNLOAD** | | X | X |
| **DISPLAY TEXT** | | X | X |
| **EVENT DOWNLOAD** | | | |
| **- MT call** | | | X |
| **- Call connected** | | | X |
| **- Call disconnected** | | | X |
| **- Location status** | | | X |
| **- User activity** | | | X |
| **- Idle screen available** | | | X |
| **GET INKEY** | | X | X |
| **GET INPUT** | | X | X |
| **GET READER STATUS $(MultipleCard)$** | | | Lc |
| **MENU SELECTION** | | X | X |
| **MO SHORT MESSAGE CONTROL** | | X | |
| **MORE TIME** | | X | X |
| **PERFORM CARD APDU $(MultipleCard)$** | | | Lc |
| **PLAY TONE** | | X | X |
| **POLLING OFF** | | X | X |
| **POLL INTERVAL** | | X | X |
| **POWER ON CARD $(MultipleCard)$** | | | Lc |
| **POWER OFF CARD $(MultipleCard)$** | | | Lc |
| **PROVIDE LOCAL INFORMATION** | | X | X |

**Table A-12. SIM Toolkit Class Support (continued)**

| Command Description | Classes | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| **REFRESH** | X | X | X |
| **RUN AT COMMAND $(AT$)** | | | Lc |
| **SELECT ITEM** | | X | X |
| **SEND SHORT MESSAGE** | | X | X |
| **SEND SS** | | X | X |
| **SEND USSD** | | | X |
| **SET UP CALL** | | X | X |
| **SET UP EVENT LIST** | | | X |
| **SET UP IDLE MODE TEXT $(IdleModeText)$** | | | X |
| **SET UP MENU** | | X | X |
| **SMS-PP DOWNLOAD** | X | X | X |
| **TIMER MANAGEMENT $(Timer)$** | | | Lc |
| **TIMER EXPIRATION $(Timer)$** | | | Lc |

# Compatibility Between Available Terminal Responses and Proactive Commands

**Table A-13. Compatibility between Available Terminal Responses and Proactive Commands**

| Terminal Reponses | Proactive Commands | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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) | Send USSD (10) | 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)** | | • | • | • | • | • | • | | | | | |

# Structure of TERMINAL PROFILE

## First Byte (Download):

- **b1:** Profile download; User choice
- **b2:** SMS-PP data download; Force by WM module to 1
- **b3:** Cell Broadcast data download; Force by WM module to 1
- **b4:** Menu selection; User choice
- **b5:** '9E XX' response code for SIM data download error; Force by WM module to 1
- **b6:** Timer expiration; Force by WM module to 0
- **b7:** USSD string data object supported in Call Control; User choice
- **b8:** RFU, bit=0

## Second Byte (Other):

- **b1:** Command result; User choice
- **b2:** Call Control by SIM; User choice
- **b3:** Cell identity included in Call Control by SIM; User choice
- **b4:** MO short message control by SIM; User choice
- **b5:** Handling of the alpha identifier according to subclause 9.1.3; User choice
- **b6:** UCS2 Entry supported; User choice
- **b7:** UCS2 Display supported; User choice
- **b8:** Display of the extension text; User choice

## Third byte (Proactive SIM):

- **b1:** Proactive SIM: DISPLAY TEXT; User choice
- **b2:** Proactive SIM: GET INKEY; User choice
- **b3:** Proactive SIM: GET INPUT; User choice
- **b4:** Proactive SIM: MORE TIME; User choice
- **b5:** Proactive SIM: PLAY TONE; User choice
- **b6:** Proactive SIM: POLL INTERVAL; Force by WM module to 1
- **b7:** Proactive SIM: POLLING OFF; Force by WM module to 1
- **b8:** Proactive SIM: REFRESH; User choice

## Fourth Byte (Proactive SIM):

- **b1:** Proactive SIM: SELECT ITEM; User choice
- **b2:** Proactive SIM: SEND SHORT MESSAGE; User choice
- **b3:** Proactive SIM: SEND SS; User choice
- **b4:** Proactive SIM: SEND USSD; User choice
- **b5:** Proactive SIM: SET UP CALL; User choice
- **b6:** Proactive SIM: SET UP MENU; User choice
- **b7:** Proactive SIM: PROVIDE LOCAL INFORMATION (MCC, MNC, LAC, Cell ID & IMEI); Force by WM module to 1
- **b8:** Proactive SIM: PROVIDE LOCAL INFORMATION (NMR); Force by WM module to 1

## Fifth Byte (Event Driven Information):

- **b1:** Proactive SIM: SET UP EVENT LIST; Force by WM module to 1
- **b2:** Event: MT call; Force by WM module to 1
- **b3:** Event: Call connected; Force by WM module to 1
- **b4:** Event: Call disconnected; Force by WM module to 1
- **b5:** Event: Location status; Force by WM module to 1
- **b6:** Event: User activity; User choice
- **b7:** Event: Idle screen available; User choice
- **b8:** Event: Card reader status; Force by WM module to 0

## Sixth Byte: (reserved for Event driven information extensions)

- **b1 - b8:** RFU, bit = 0

## Seventh Byte (Multiple card proactive commands) for class "a"

- **b1:** Proactive SIM: POWER ON CARD; Force by WM module to 0
- **b2:** Proactive SIM: POWER OFF CARD; Force by WM module to 0
- **b3:** Proactive SIM: PERFORM CARD APDU Force by WM module to 0
- **b4:** Proactive SIM: GET READER STATUS Force by WM module to 0
- **b5 - b8:** RFU, bit = 0; Force by WM module to 0

## Eighth Byte (Proactive SIM):

- **b1:** Proactive SIM: TIMER MANAGEMENT (start, stop); Force by WM module to 1
- **b2:** Proactive SIM: TIMER MANAGEMENT (get current value); Force by WM module to 1
- **b3:** Proactive SIM: PROVIDE LOCAL INFORMATION (date, time and time zone); Force by WM module to 0
- **b4:** Binary choice in GET INKEY; Force by WM module to 0
- **b5:** SET UP IDLE MODE TEXT; Force by WM module to 0
- **b6:** RUN AT COMMAND (i.e. class "b" is supported); Force by WM module to 0
- **b7:** 2nd alpha identifier in SET UP CALL; Force by WM module to 0
- **b8:** 2nd capability configuration parameter (see 9.1.6); Force by WM module to 0

## Ninth Byte:

- **b1:** Sustained DISPLAY TEXT (see 6.4.1); Force by WM module to 0
- **b2:** ProSEND DTMF command (see 6.4.24); Force by WM module to 0
- **b3 - b8:** RFU, bit = 0

## Subsequent Bytes:

- **b1 - b8:** RFU, bit = 0

# Command Type and Next Action Indicator

**Table A-14. Command Type/Next Action Indicator**

| Value | Name | Used for Type of Command Coding | Used for Next Action Indicator Coding |
|---|---|---|---|
| **00** | | - | - |
| **01** | REFRESH | X | |
| **02** | MORE TIME | X | |
| **03** | POLL INTERVAL | X | |
| **04** | POLLING OFF | X | |
| **05** | SET UP EVENT LIST | X | |
| **10** | SET UP CALL | X | X |
| **11** | SEND SS | X | X |
| **12** | SEND USSD | X | X |
| **13** | SEND SHORT MESSAGE | X | X |
| **14** | SEND DTMF | X | |
| **20** | PLAY TONE | X | X |
| **21** | DISPLAY TEXT | X | X |
| **22** | GET INKEY | X | X |
| **23** | GET INPUT | X | X |
| **24** | SELECT ITEM | X | X |
| **25** | SET UP MENU | X | X |
| **26** | PROVIDE LOCAL INFORMATION | X | |
| **27** | TIMER MANAGEMENT | X | |
| **28** | SET UP IDLE MODEL TEXT | X | X |
| **30** | PERFORM CARD APDU class "a" only | X | X |
| **31** | POWER ON CARD class "a" only | X | X |
| **32** | POWER OFF CARD class "a" only | X | X |
| **33** | GET READER STATUS class "a" only | X | X |

**Table A-14. Command Type/Next Action Indicator (continued)**

| Value | Name | Used for Type of Command Coding | Used for Next Action Indicator Coding |
|---|---|---|---|
| **34** | RUN AT COMMAND class "b" only | X | |
| **81** | End of the proactive session | not applicable | X |

# Coding of Alpha Fields in the SIM for UCS2

Coding of alpha fields can take one of three schemes described in the following sections.

- If the ME supports UCS2 coding of alpha fields in the SIM, it supports all three coding schemes for character sets containing 128 characters or less.
- For character sets containing more than 128 characters, the ME supports at least the first coding scheme.
- If the alpha field record contains GSM default alphabet characters only, none of these schemes are used in that record.

Within a record, only one coding scheme, either GSM default alphabet, or one of the three described as follows, is used.

## Coding Scheme 1

**If the first octet in the alpha string is '80'**, the remaining octets are 16-bit UCS2 characters, with the more significant octet (MSO) of the UCS2 character coded in the lower numbered octet of the alpha field, and the less significant octet (LSO) of the UCS2 character coded in the higher numbered alpha field octet, i.e., octet 2 of the alpha field contains the more significant octet (MSO) of the first UCS2 character, and octet 3 of the alpha field contains the less significant octet (LSO) of the first UCS2 character (as shown below). Unused octets are set to 'FF', and if the alpha field is an even number of octets in length, the last (unusable) octet is set to 'FF'.

**Example:**

| Octet 1 | Octet 2 | Octet 3 | Octet 4 | Octet 5 | Octet 6 | Octet 7 | Octet 8 | Octet 9 |
|---|---|---|---|---|---|---|---|---|
| '80' | $Ch1_{MSO}$ | $Ch1_{LSO}$ | $Ch2_{MSO}$ | $Ch2_{LSO}$ | $Ch3_{MSO}$ | $Ch3_{LSO}$ | 'FF' | 'FF' |

## Coding Scheme 2

**If the first octet of the alpha string is set to '81',** the second octet contains a value indicating the number of characters in the string, and the third octet contains an 8-bit number which defines bits 15 to 8 of a 16-bit base pointer, where bit 16 and bits 7 to 1 are set to zero. These 16 bits constitute a base pointer to a "half-page" in the UCS2 code space, to be used with some or all of the remaining octets in the string.

The fourth and subsequent octets in the string are coded as follows:

- if bit 8 of the octet is set to zero, the remaining 7 bits of the octet contain a GSM Default Alphabet character.
- if bit 8 of the octet is set to one, the remaining seven bits are an offset value added to the 16 bit base pointer defined earlier, and the resulting 16-bit value is a UCS2 code point, and completely defines a UCS2 character.

**Example:**

| Octet 1 | Octet 2 | Octet 3 | Octet 4 | Octet 5 | Octet 6 | Octet 7 | Octet 8 | Octet 9 |
|---|---|---|---|---|---|---|---|---|
| '81' | '05' | '13' | '53' | '95' | 'A6' | 'XX' | 'FF' | 'FF' |

In this example:

- Octet 2 indicates there are 5 characters in the string.
- Octet 3 indicates bits 15 to 8 of the base pointer, and indicates a bit pattern of 0hhhhhhh h000 0000 as the 16-bit base pointer number. Bengali characters, for example, start at code position 0980 (0000 1001 1000 0000), indicated by the coding '13' in octet 3.
- Octet 4 indicates GSM Default Alphabet character ‘53’, i.e., "S".
- Octet 5 indicates a UCS2 character offset to the base pointer of '15', expressed in binary as 001 0101, which, when added to the base pointer value results in a 16-bit value of 0000 1001 1001 0101, i.e., '0995', which is the Bengali letter KA.
- Octet 8 contains the value 'FF', but as the string length is 5, this is 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 (i.e., '09FF').

## Coding Scheme 3

**If the first octet of the alpha string is set to '82',** the second octet contains a value indicating the number of characters in the string, and the third and fourth octets contain a 16-bit number which 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 octets in the string. The fifth and subsequent octets in the string are coded as follows:

- if bit 8 of the octet is set to zero, the remaining 7 bits of the octet contain a GSM Default Alphabet character.

- if bit 8 of the octet is set to one, the remaining seven bits are an offset value added to the base pointer defined in octets three and four, and the resulting 16-bit value is a UCS2 code point, and defines a UCS2 character.

**Example:**

| Octet 1 | Octet 2 | Octet 3 | Octet 4 | Octet 5 | Octet 6 | Octet 7 | Octet 8 | Octet 9 |
|---|---|---|---|---|---|---|---|---|
| '82' | '05' | '05' | '30' | '2D' | '82' | 'D3' | '2D' | '31' |

In this example:

- Octet 2 indicates there are 5 characters in the string.
- Octets 3 and 4 contain a 16-bit base pointer number of '0530', pointing to the first character of the Armenian character set.
- Octet 5 contains a GSM Default Alphabet character of '2D', which is a dash "-".
- Octet 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.
- Octet 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.

# Execution Conditions and SIM Dependence of AT Commands

**Table A-15. Execution Conditions/SIM Dependence**

| AT Commands | Execution Conditions | SIM Dependence |
|---|---|---|
| **General Commands** | | |
| **AT+CGMI** | Without | N |
| **AT+CGMM** | Without | N |
| **AT+CGMR** | Without | N |
| **AT+CGSN** | Without | N |
| **AT+CSCS** | +WIND: 4 | N |
| **AT+WPCS** | +WIND: 4 | N |
| **AT+CIMI** | +WIND: 4 | Y |
| **AT+CCID** | +WIND: 1 | Y |
| **AT+GCAP** | Without | N |
| **A/** | Depends on previous command | Depends on previous command |
| **AT+CPOF** | +WIND: 3 without SIM,<br>+WIND: 1 with SIM | N |
| **AT+CFUN** | Without | N |
| **AT+CPAS** | Without | N |
| **AT+CMEE** | Without | N |
| **AT+CKPD** | Depends on sequence used | Y/N |
| **AT+CCLK** | +WIND: 4 | Y |
| **AT+CALA** | Without | N |
| **AT+CRMP** | Without | N |
| **AT+CRSL** | Without | N |

**Table A-15. Execution Conditions/SIM Dependence (continued)**

| AT Commands | Execution Conditions | SIM Dependence |
|---|---|---|
| **Call Control Commands** | | |
| **ATD** | Depends on sequence used | Y/N |
| **ATH** | Without | N |
| **ATA** | Without | N |
| **AT+CEER** | +WIND: 4 | Y |
| **AT+VTD** | Without | N |
| **AT+VTS** | Without | N |
| **ATDL** | Without | N |
| **AT%D** | Without | N |
| **ATS0** | Without | N |
| **AT+CICB** | Without | N |
| **AT+CSNS** | Without | N |
| **AT+VGR** | Without | N |
| **AT+VGT** | Without | N |
| **AT+CMUT** | Without | N |
| **AT+SPEAKER** | Without | N |
| **AT+ECHO** | Without | N |
| **AT+SIDET** | Without | N |
| **AT+VIP** | Without | N |
| **Network Service Commands** | | |
| **AT+CSQ** | Without | N |
| **AT+COPS** | +WIND: 4 | Y |
| **AT+CREG** | Without | N |
| **AT+WOPN** | Without | N |
| **AT+CPOL** | +WIND: 7 | Y |

**Table A-15. Execution Conditions/SIM Dependence (continued)**

| AT Commands | Execution Conditions | SIM Dependence |
|---|---|---|
| **Security Commands** | | |
| **AT+CPIN** | +WIND: 1 | Y |
| **AT+CPIN2** | after PIN entered | Y |
| **AT+CPINC** | +WIND: 1 | Y |
| **AT+CLCK** | +WIND: 4 | Y |
| **AT+CPWD** | +WIND: 4 | Y |
| **Phonebook Commands** | | |
| **AT+CPBS** | +WIND: 4 | Y |
| **AT+CPBR** | +WIND: 4 | Y |
| **AT+CPBF** | +WIND: 4 | Y |
| **AT+CPBW** | +WIND: 4 | Y |
| **AT+CPBP** | +WIND: 4 | Y |
| **AT+CPBN** | +WIND: 4 | Y |
| **AT+CNUM** | +WIND: 4 | Y |
| **AT+WAIP** | Without | N |
| **Short Messages Commands** | | |
| **AT+CSMS** | +WIND: 4 | Y |
| **AT+CNMA** | +WIND: 4 | Y |
| **AT+CPMS** | +WIND: 4 | Y |
| **AT+CMGF** | +WIND: 4 | Y |
| **AT+CSAS** | +WIND: 4 | Y |
| **AT+CRES** | +WIND: 4 | Y |
| **AT+CSDH** | +WIND: 4 | Y |
| **AT+CNMI** | +WIND: 4 | Y |
| **AT+CMGR** | +WIND: 4 | Y |
| **AT+CMGL** | +WIND: 4 | Y |

**Table A-15. Execution Conditions/SIM Dependence (continued)**

| AT Commands | Execution Conditions | SIM Dependence |
|---|---|---|
| **AT+CMGS** | +WIND: 4 | Y |
| **AT+CMGW** | +WIND: 4 | Y |
| **AT+CMSS** | +WIND: 4 | Y |
| **AT+CSMP** | +WIND: 4 | Y |
| **AT+CMGD** | +WIND: 4 | Y |
| **AT+CSCA** | +WIND: 4 | Y |
| **AT+CSCB** | +WIND: 4 | Y |
| **AT+WCBM** | +WIND: 4 | Y |
| **AT+WMSC** | +WIND: 4 | Y |
| **AT+WMGO** | +WIND: 4 | Y |
| **AT+WUSS** | Without | N |
| **Supplementary Services Commands** | | |
| **AT+CCFC** | +WIND: 4 | Y |
| **AT+CLCK** | +WIND: 4 | Y |
| **AT+CPWD** | +WIND: 4 | Y |
| **AT+CCWA** | +WIND: 4 | Y |
| **AT+CLIR** | +WIND: 4 | Y |
| **AT+CLIP** | +WIND: 4 | Y |
| **AT+COLP** | +WIND: 4 | Y |
| **AT+CAOC** | +WIND: 4 | Y |
| **AT+CACM** | +WIND: 4 | Y |
| **AT+CAMM** | +WIND: 4 | Y |
| **AT+CPUC** | +WIND: 4 | Y |
| **AT+CHLD** | +WIND: 4 | Y |
| **AT+CLCC** | Without | N |
| **AT+CSSN** | Wtihout | N |

**Table A-15. Execution Conditions/SIM Dependence (continued)**

| AT Commands | Execution Conditions | SIM Dependence |
|---|---|---|
| **AT+CUSD** | Without | N |
| **AT+CCUG** | +WIND: 4 | Y |
| **Data Commands** | | |
| **AT+CBST** | Without | N |
| **AT+FCLASS** | Without | N |
| **AT+CR** | Without | N |
| **AT+CRC** | Without | N |
| **AT+ILRR** | +WIND: 4 | N |
| **AT+CRLP** | Without | N |
| **AT+DOPT** | Without | N |
| **AT%C** | Without | N |
| **AT+DS** | Without | N |
| **AT+DR** | Without | N |
| **\N** | Without | N |
| **Fax Commands** | | |
| **AT+FTM** | Without | N |
| **AT+FRM** | Without | N |
| **AT+FTH** | Without | N |
| **AT+FRH** | Without | N |
| **AT+FTS** | Without | N |
| **AT+FRS** | Without | N |
| **Fax Class 2 Commands** | | |
| **AT+FDT** | Without | N |
| **AT+FDR** | Without | N |
| **AT+FET** | Without | N |
| **AT+FPTS** | Without | N |

**Table A-15. Execution Conditions/SIM Dependence (continued)**

| AT Commands | Execution Conditions | SIM Dependence |
|---|---|---|
| **AT+FK** | Without | N |
| **AT+FBOR** | Without | N |
| **AT+FBUF** | Without | N |
| **AT+FCQ** | Without | N |
| **AT+FCR** | Without | N |
| **AT+FDIS** | Without | N |
| **AT+FDCC** | Without | N |
| **AT+FLID** | Without | N |
| **AT+FPHCTO** | Without | N |
| **V24-V25 Commands** | | |
| **AT+IPR** | Without | N |
| **AT+ICF** | Without | N |
| **AT+IFC** | Without | N |
| **AT&C** | Without | N |
| **AT&D** | Without | N |
| **AT&S** | Without | N |
| **ATO** | +WIND: 4 | N |
| **ATQ** | Without | N |
| **ATV** | Without | N |
| **ATZ** | Without | N |
| **AT&W** | Without | N |
| **AT&T** | Without | N |
| **ATE** | Without | N |
| **AT&F** | Without | N |
| **AT&V** | Without | N |
| **ATI** | Without | N |

**Table A-15. Execution Conditions/SIM Dependence (continued)**

| AT Commands | Execution Conditions | SIM Dependence |
|---|---|---|
| **Specific AT Commands** | | |
| **AT+CCED** | Without | N |
| **AT+WIND** | Without | N |
| **AT+ADC** | Without | N |
| **AT+CMER** | +WIND: 4 | N |
| **AT+WLPR** | +WIND: 1 | N |
| **AT+WLPW** | +WIND: 1 | N |
| **AT+WIOR** | Without | N |
| **AT+WIOW** | Without | N |
| **AT+WAC** | Without | N |
| **AT+WTONE** | Without | N |
| **AT+WDTMF** | Without | N |
| **AT+WDWL** | Without | N |
| **AT+WVR** | Without | N |
| **AT+WDR** | Without | N |
| **AT+WHWV** | Without | N |
| **AT+WDOP** | Without | N |
| **AT+WSVG** | Without | N |
| **AT+WSTR** | Without | N |
| **AT+WSCAN** | Without | N |
| **AT+WRIM** | Without | N |
| **AT+W32K** | Without | N |
| **AT+WCDM** | Without | N |
| **AT+WSSW** | Without | N |
| **AT+WCCS** | +WIND: 4 | N |
| **AT+WLCK** | Without | N |

**Table A-15. Execution Conditions/SIM Dependence (continued)**

| AT Commands | Execution Conditions | SIM Dependence |
|---|---|---|
| **AT+CPHS** | +WIND: 4 | Y |
| **SIM Toolkit Commands** | | |
| **AT+STSF** | Without | N |
| **AT+STIN** | +WIND: 4 | Y |
| **AT+STGI** | +WIND: 4 | Y |
| **AT+STGR** | +WIND: 4 | Y |

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# *Tell Us What You Think...*

We'd like to know what you think about this Manual. Please take a moment to fill out this questionnaire and fax this form to: (631) 738-3318, or mail to:

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How familiar were you with this product before using this manual?

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Did this manual meet your needs? If not, please explain.

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What topics need to be added to the index, if applicable?

_____

_____

What topics do you feel need to be better discussed? Please be specific.

_____

_____

What can we do to further improve our manuals?

_____

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