# CDMA AT Commands Interface Specification

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Reference :



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## Document History

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# CDMA AT Commands Interface Specification

## Contents





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# 1 Introduction

As a wireless module, the AT command set is one of the main interfaces for the module to interact with an external application layer. CDMA AT commands are defined in TIA/EIA/IS707.3. However, as the wireless applications increases, TIA/EIA/IS707.3 is not sufficient. In addition, a lot of GSM applications already exist and GSM customers would like to maintain the same interface in order to make no or minimum changes to the applications to be used with CDMA module. To meet the all these needs, Wavecom WISMOQ CDMA AT command set is designed to cover: 1) IS707.3 AT commands; 2) GSM 07.07 when applicable; 3) GSM 07.05 when applicable, 4) ITU-T v25 when applicable; 5) Wavecome proprietary AT set; 6) Customer specific AT commands; 7) Qualcomm defined AT commands. Please note that is several instances, the GSM 7.07 and 7.05 specifications could not be followed because of fundamental differences between CDMA and GSM call processing behaviors. In these cases, minimal changes were made to the GSM related commands.

## 1.1 Scope of this document

This document describes the WISMOQ CDMA AT command, its syntax, its response, and result codes. It serves as the reference for wireless application development based on WISMOQ CDMA module, and for the integrtiona and testing.

This document is also intended to be used for North American market, SIM/R-UIM and its related AT commands are not documented here.

## 1.2 Related references

This interface specification is based on the following recommendations or standards:

*[1] ETSI GSM 07.05: Digital cellular telecommunications system (Phase 2);*
*Use of DTE-DCE interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)*

*[2] ETSI GSM 07.07: Digital cellular telecommunications system (Phase 2);*
*AT command set for GSM Mobile Equipment (ME)*

*[3] ITU-T Recommendation V.25 ter: Serial asynchronous automatic dialling and control*

*[4] ETSI GSM 03.40: Digital cellular telecommunications system (Phase 2);*
*Technical implementation of the Short Message Service (SMS) Point-to-Point (PP)*

*[5] ETSI GSM 03.38: Digital cellular telecommunications system (Phase 2);*
*Alphabets and language-specific information*

*[6] ETSI GSM 04.80: Digital cellular telecommunications system (Phase 2):*
*Mobile radio interface layer 3, Supplementary service specification, Formats and coding*

*[7] WAVECOM AT Commands Interface Guide version 001/9.1*

*[8] TIA/EIA/IS-707.3: Data Service Options for Wideband Spread Spectrum Systems: AT Command Processing and the Rm Interface*

*[9] Qualcomm Application Note (CL93-V0327-1 X10): AT COMMANDS FOR DMSS*


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## 1.3 Definitions

This is an alphabetical list of terms and acronyms used throughout this document and the CDMA cellular industry:

2G: Second Generation. All digital cellular systems developed to replace the first analog cellular systems (GSM and CDMA).

3G: Third Generation. Next generation digital cellular systems designed to have high speed data access and higher voice capacity (WCDMA & CDMA2000).

CBM: Cell Broadcast Message. An SMS meesage that is broadcast to all mobiles on the network.

CDMA : Code Division Multiple Access. CDMA is a spread spectrum, digital wireless modulation scheme for cellular communication systems. It has approximately 3 times the voice capacity of GSM networks. See IS-95, IS-95A, IS-95B, IS-2000.

CDMA2000: See IS-2000.

DCE: Data Communications Equipment. This is the modem in the traditional serial commnunication paradigm of a computer connected via two modems to another computer.

DTE: Data Terminal Equipment. This is the computer in the traditional serial commnunication paradigm of a computer connected via two modems to another computer.

DTMF: Dual Tone Multi-Frequency: A pre-defined set of tones sents over the air when keys are pressed on the keypad.

Handset (Path): The audio path (microphone & speaker) that connects to a traditional hand held telephone receiver, usually dual balanced electrical lines.

Headset (Path): The audio path (microphone & speaker) that connects to a earpiece with a microphone, usually single electrical lines.

IMSI: International Mobile Station ID. This a international 15 digital phone number that uniquely identifies a mobile. IMSI = MCC + MNC + MIN.

IS-95: The first CDMA standard published by Qualcomm in 1993.

IS-95A: A CDMA standard with improved voice quality. This standard is widely used throughout the world.

IS-95B: This CDMA standard contains Medium Data Rate capabilities and bug fixes for system access failures. It is considered a 2.5G system. This standard is mostly deployed in Korea.

IS-2000: The first 3G CDMA standard based on IS-95B. It contains a significant increase in voice capacity and high speed data rates. It is backward compatable with IS-95B and IS-95A. The CDMA WISMOQ is IS-2000 compatable.

MCC: Mobile Contry Code. A pre-defined 3-digital number that represents a country in the IMSI.

MIN: Mobile ID Number: The traditional 10 digit phone number of the mobile.


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MNC: Mobile Network Code. A pre-defined 2-digital number that represents a sub-network in the IMSI (usually set to “00”).

MO: Mobile Originated. An action (usually a call) that is first started from the phone. An outgoing call or SMS.

MS: Mobile Station. The term MS is commonly used to represent the phone or mobile.

MT: Mobile Terminated: An action (usually a call) that is first started from a land based network. An incoming call or SMS.

MSM: Mobile Station Modem. This is the main processing ASIC for a CDMA phone.

NAM: Number Assignment Module. The NAM is collection of internal parameters that define a working phone for a given network (phone number, access parameters, etc.). The WISMOQ supports up to four NAMs.

NID: Network ID. The NID is an identification number that represents geographic location of a common coverage area; but is a subset of the SID, usually a neighborhood in a large city. NID is usually not used and is set to zero. Also see SID.

NV-RAM: Non-Volitile Random Access Memeory. NV-RAM is a data storage device that does not lose it’s data when power is turn off.

OTAPA: Over The Air Parameter Administration. An automatic update in internal software parameters (PRL for example) by means of a specially defined CDMA data call that is mobile terminated (MT).

OTASP: Over The Air Service Programming. An automatic update in internal software parameters (PRL for example) by means of a specially defined CDMA data call that is mobile originated (MO).

PDU: A GSM SMS standard where any type of binary data can be transported via an SMS message.

PN Offset: Psuedorandom Noise Offset: In a CDMA network, the PN offset is a variable time delay offset of a repeating random noise generator that is used to distinguish individual sectors of a base station.

P-REV: The CDMA revision of the mobile or base station.

PRL: Preferred Roaming List. The PRL is a collection of Frequencys, SIDs, and NIDs that the call processing software uses to search for approved and unapproved CDMA networks. The PRL is loaded into the phone and is save in NV-RAM.

PSTN: Public Switching Telephone Network. The traditional telephone network.

RF: Radio Frequency.

RSSI: Receive Signal Strength Indicator: This parameter represents the total RF received signal power from the base station(s) the mobile sees.

SID: System ID. The SID is an identification number that represents geographic location of a common coverage area, usually a large city. Also see NID.

SMS: Short Messaging Service: A suppliment service that is capable to sended and receiving short length text messages to/from the mobile.


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TA/TE: Terminal Application/Terminal Equipment. This is the end “device” (combination of hardware and software) that communicates with a modem via a serial link. In this context, it is the device (PDA/Computer) connected to the WISMOQ. Also see DTE.

V24-V25: A data compression algorithm.

V42: A data compression algorithm.


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# 2 AT commands features

## 2.1 Wavecom line settings

A serial link handler is set with the following default values (factory settings):
autobaud, 8 bits data, 1 stop bit, no parity, RTS/CTS flow control.
Please use the +IPR, +IFC and +ICF commands to change these settings.

## 2.2 Command line

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

## 2.3 Information responses and result codes

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

- If command syntax is incorrect, an **ERROR** string is returned.
- If extended error reports are enabled (+CMEE), the **+CME ERROR:** <Err> or **+CMS ERROR:** <SmsErr> strings are returned with different error codes.
- If the command line has been performed successfully, an **OK** string is returned.

In the following examples <CR> and <CR><LF> are intentionally omitted.


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# 3 General commands

## 3.1 Manufacturer identification +CGMI

### 3.1.1 Description :

This command gives the manufacturer identification.

### 3.1.2 Syntax :

Command syntax : AT+CGMI

| Command | Possible responses |
|---|---|
| AT+CGMI<br><br>*Note : Get manufacturer identification* | +CGMI: WAVECOM MODEM<br>OK<br>*Note : Command valid, Wavecom modem* |

## 3.2 Request model identification +CGMM

### 3.2.1 Description :

This command is used to get the supported frequency bands. With multi-band products the response may be a combination of different bands.

### 3.2.2 Syntax :

Command syntax : AT+CGMM

| Command | Possible responses |
|---|---|
| AT+CGMM<br><br>*Note : Get hardware version* | +CGMM: 800 1900<br>OK<br>*Note : CDMA 800 MHz band and 1900 (PCS)* |

## 3.3 Request revision identification +CGMR

### 3.3.1 Description :

This command is used to get the revised software version.


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### 3.3.2 Syntax :

Command syntax : AT+CGMR

| Command | Possible responses |
|---|---|
| AT+CGMR<br><br>*Note : Get software version* | +CGMR: S/W VER: WISMOQ WQ1.1 Mar 20 2002 17:30:00<br>OK<br>*Note : Software Version WISMOQ, revision WQ1.1 generated on the March 20th, 2002 at 17:30:00* |

## 3.4 Product Serial Number +CGSN

### 3.4.1 Description :

This command allows the user application to get the ESN of the product.

### 3.4.2 Syntax :

Command syntax : AT+CGSN

| Command | Possible responses |
|---|---|
| AT+CGSN<br><br>*Note : Get the ESN* | +CGSN: FE7A7704<br>OK<br>*Note : ESN read from NV* |

## 3.5 Select TE character set +CSCS

### 3.5.1 Description :

This command informs the MS which character set is used by the TE. The MS can convert each character of entered or displayed strings. This is used to send, read or write short messages.

### 3.5.2 Syntax :

Command syntax : AT+CSCS=<Character Set>

| Command | Possible responses |
|---|---|
| AT+CSCS="CDMA"<br>*Note : CDMA default alphabet* | OK<br>*Note : Command valid* |
| AT+CSCS="PC437"<br>*Note : PC character set code page 437* | OK<br>*Note : Command valid* |
| AT+CSCS=?<br><br>*Note : Get possible values* | +CSCS: ("PC437", "CDMA", "CUST")<br>OK<br>*Note : Possible values* |

### 3.5.3 Defined values :

**<Character Set>**
**"CDMA"** CDMA default alphabet.
**"PC437"** PC character set code page 437.


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**"CUST"** Custom Character set.

## 3.6 Request IMSI +CIMI

### 3.6.1 Description:

This command is used to read and identify the IMSI (International Mobile Subscriber Identity) of the SIM card. The PIN may need to be entered before reading the IMSI.

### 3.6.2 Syntax:

Command syntax : AT+CIMI

| Command | Possible responses |
|---|---|
| AT+CIMI<br>*Note : Read the IMSI* | +CIMI: 310008585551212<br>*Note : IMSI value (15 digits)* |

## 3.7 Capabilities list +GCAP

### 3.7.1 Description:

This command gets the complete list of capabilities.

### 3.7.2 Syntax:

Command syntax : AT+GCAP

| Command | Possible responses |
|---|---|
| AT+GCAP<br><br>*Note : Get capabilities list* | +GCAP: +CGSM, +CIS707, +MS, +ES, +DS, +FCLASS<br>OK |

## 3.8 Repeat last command A/

### 3.8.1 Description:

This command repeats the previous command. Only the A/ command itself cannot be repeated.

### 3.8.2 Syntax:

Command syntax : A/

| Command | Possible responses |
|---|---|
| A/<br>*Note : Repeat last command* | |


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## 3.9 Power off +CPOF

### 3.9.1 Description :

This **specific** command stops the CDMA software stack as well as the hardware layer. The AT+CFUN=0 command is equivalent to +CPOF.

### 3.9.2 Syntax :

Command syntax : AT+CPOF

| Command | Possible responses |
|---|---|
| AT+CPOF<br>*Note : Stop CDMA stack* | OK<br>*Note : Command valid* |

## 3.10 Set phone functionality +CFUN

### 3.10.1 Description :

This command selects the mobile station's level of functionality.
When the application wants to stop the product with a power off, then it must send:
AT+CFUN=0 (equivalent to AT+CPOF)

The AT+CFUN=1 command restarts the entire CDMA stack and CDMA functionality: a complete software reset is performed. In addition, the OK response will be sent at the last baud rate defined by the +IPR command.

### 3.10.2 Syntax :

Command syntax : AT+CFUN=<functionality level>

| Command | Possible responses |
|---|---|
| AT+CFUN?<br>*Note : Ask for current functionality level* | +CFUN: 1<br>OK<br>*Note : Full functionality* |
| AT+CFUN=0<br>*Note : Perform power off* | *Note : Command valid* |
| AT+CFUN=1<br>*Note : Perform software reset* | *Note : Command valid* |

## 3.11 Phone activity status +CPAS

### 3.11.1 Description :

This command returns the activity status of the mobile equipment.


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### 3.11.2 Syntax :

Command syntax : AT+CPAS

| Command | Possible responses |
|---|---|
| AT+CPAS<br>*Note : Current activity status* | +CPAS: <pas><br>OK |

### 3.11.3 Defined values :

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

## 3.12 Report Mobile Equipment errors +CMEE

### 3.12.1 Description :

This command disables or enables the use of the "+CME ERROR : <xxx>" or "+CMS ERROR :<xxx>" result code instead of simply "ERROR". See section 14.1 for +CME ERROR result codes description and section 14.2 for +CMS ERROR result codes.

### 3.12.2 Syntax :

Command syntax : AT+CMEE=<error reporting flag>

| Command | Possible responses |
|---|---|
| AT+CMEE=0<br>*Note : Disable MS error reports, use only « ERROR »* | OK |
| AT+CMEE=1<br>*Note : Enable «+CME ERROR: <xxx>» or «+CMS ERROR: <xxx>»* | OK |

## 3.13 Keypad control +CKPD

### 3.13.1 Description :

This command emulates the MS keypad by sending each keystroke as a character in a <keys> string.
If emulation fails, a +CME ERROR: <err> is returned.
If emulation succeeds, the result depends on the CDMA sequence activated: <keys>: string of the following characters (0-9,*,#).

### 3.13.2 Syntax :

Command syntax : AT+CKPD=<keys>

| Command | Possible responses |
|---|---|


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| | |
|---|---|
| AT+CKPD="*#21#"<br>*Note : Key sequence allowed* | OK |
| AT+CKPD="1234"<br>*Note : Sequence not allowed* | +CME ERROR 3 |

## 3.14 Clock Management +CCLK

### 3.14.1 Description :

This command is used to set or get the current date and time of the MS real-time clock.
String format for date/time is: "yy/MM/dd,hh:mm:ss".
Valid years are 98 (for 1998) to 97 (for 2097). The seconds field is not mandatory.
Default date/time is "98/01/01,00:00:00" (January 1st, 1998 / midnight).

### 3.14.2 Syntax :

Command syntax : AT+CCLK=<date and time string>

| Command | Possible responses |
|---|---|
| AT+CCLK="00/06/09,17:33:00"<br>*Note : set date to June 9th, 2000, and time to 5:33pm* | OK or ERROR<br>*Note : Date/Time stored – ERROR returned when RTC not enabled.* |
| AT+CCLK="00/13/13,12:00:00"<br>*Note : Incorrect month entered* | +CME ERROR 3 |
| AT+CCLK?<br>*Note : Get current date and time* | +CCLK: "00/06/09,17:34:23"<br>*Note : current date is June 9th, 2000 current time is 5:34:23 pm – network time if available, otherwise RTC time if enabled.* |

## 3.15 Ring Melody Playback +CRMP

### 3.15.1 Description

This command allows a melody to be played. All melodies are manufacturer defined. Ten manufacturer-defined melodies can be played back (in a loop).

Note:
*loop melodies (for voice/data/fax call) must be stopped by a +CRMP command with the <index> field set to 0 (example: +CRMP=0,,,0).*
*When the <volume> parameter is given, this overwrites the <sound level> value of the +CRSL command. If the <volume> parameter is not given, the <sound level> value of +CRSL is used as default value.*

### 3.15.2 Syntax :

Command syntax : AT+CRMP=<call type>[,<volume>,<type>,<index>]

| Command | Possible responses |
|---|---|
| AT+CRMP=0,2,0,2<br>*Note : Play voice call melody index 2 with volume level 2.* | OK<br>*Note : Melody Playback.* |


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| | |
|---|---|
| AT+CRMP=0,,,0<br>*Note : Stop the melody.* | OK<br>*Note : The melody is stopped.* |
| AT+CRMP=?<br>*Note : supported parameters* | +CRMP: (0-3),(0-3),(0-0),(0-10)<br>OK |

### 3.15.3 Defined values :

**<call type>**
**0** Incoming voice call
**1** Incoming data call
**2** Incoming fax call
**3** Incoming short message (SMS)
**<volume>**
**0** Min volume
…
**1** Default volume
**3** 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)

## 3.16 Ringer Sound Level +CRSL

### 3.16.1 Description :

This command is used to set/get the sound level of the ringer on incoming calls. The set command changes the default <volume> value of the +CRMP command.

### 3.16.2 Syntax :

Command syntax : AT+CRSL=<sound level>

| Command | Possible responses |
|---|---|
| AT+CRSL=0<br>*Note : Set volume to Min.* | OK<br>*Note : Current ring playing with Min. volume.* |
| AT+CRSL=3<br>*Note : Set volume to Max.* | OK<br>*Note : Current ring playing with Max. volume.* |
| AT+CRSL?<br><br>*Note : get current ringer sound level* | +CRSL: 3<br>OK<br>*Note : Current level is 3 (max.)* |
| AT+CRSL=?<br>*Note : supported parameters* | +CRSL: (0-3)<br>OK |

### 3.16.3 Defined values :

**<sound level>**
**0** Min volume
**1** Default volume (default)
**3** Max volume


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## 3.17 Subscriber Number +CNUM

### 3.17.1 Description :

This command is used to return the subscriber MSISDN. If the subscriber has different MSISDNs for different services, each MSISDN is returned in a separate line.

### 3.17.2 Syntax :

Command syntax : AT+CNUM

| Command | Possible responses |
|---|---|
| AT+CNUM<br>*Note : Get MSISDN* | +CNUM :"Phone","8585551212",129<br>*Note : MSISDNs* |
| AT+CNUM=? | +CNUM:<br><br>OK |

### 3.17.3 Defined values :

**<alphax>** optional alphanumeric string associated with <numberx>
**<numberx>** string type phone number with format as specified by <typex>
**<typex>** type of address byte in integer format – only supports 129

## 3.18 Select Type of Address +CSTA

### 3.18.1 Description :

This command is used to select the type of phone address to use.

### 3.18.2 Syntax :

Command syntax : AT+CSTA=<typex>

| Command | Possible responses |
|---|---|
| AT+CSTA?<br>*Note : Get type of address* | +CSTA: 129<br>*Note: Local Number format* |
| AT+CSTA=?<br><br>*Note : Get supported addres types* | +CSTA: (129-129)<br><br>OK |

### 3.18.3 Defined values :

**<typex>** type of address byte in integer format – only supports 129


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## 3.19 View Module Timers +WTMR

### 3.19.1 Description :

This command is used to read the module's accumulated internal timers. These timers include UpTime, Call Time, and Call Count. UpTime is the number of seconds the module has been running since boot-up. Call Time is the total number of seconds the module has been in a call since manufacture (Voice, Data, Fax, OTASP, and CDMA Test Calls; but SMS is not included). Call count is the total number of calls made since manufacture. The range of all the returned items is 0 to 4294967295 (136 years).

### 3.19.2 Syntax :

Command syntax: AT+WTMR
Response syntax:
+WTMR: <Uptime>,<Call Time>, <Call Count>

| Command | Possible responses |
|---|---|
| AT+WTMR<br>*Note : See Module Timers* | +WTMR: 1029, 45670,289<br>OK<br>*Note: Uptime = 1029 seconds*<br>*Call Time = 45670 seconds*<br>*Call Count = 289 calls* |


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# 4 Call Control commands

## 4.1 Dial command D

### 4.1.1 Description :

The ATD command is used to originate **a voice, data or fax call**. The dial command also controls supplementary services.
For a **data** or a **fax call**, the application sends the following ASCII string to the product (the bearer must be previously selected with the +CBST command):
**ATD<nb>** where <nb> is the destination phone number.
Note: **ATD<nb>** is followed by PPP negotiation.

For a **voice call**, the application sends the following ASCII string to the product:
**ATD<nb>;** where <nb> is the dialing string or destination phone number, followed a semicolon "**;**". The dialing string may only contain characters "0-9","#","*" only. Note that some countries may have specific numbering rules for their CDMA handset numbering.

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

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

### 4.1.2 Syntax :

Command syntax : ATD<nb>[;]

| Command | Possible responses |
|---|---|
| ATD18005551212;<br>*Note: Attempt a voice call.* | OK<br>*Note: Command executed*<br><br>+WORG:18005551212<br>*Note: Voice call origination sent to Base Station with dial string "18005551212".*<br><br>*+WCNT: 9*<br>*Note: Call Connected, CDMA traffic channel established with service option 9. You can now hear* |


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| | |
|---|---|
| | *audio of the calling party's phone ringing. However, this event does not means the other calling party has answered. See section 14.7 Unsolicited commands.* |
| ATD5551212;<br>*Note : Example of a failed voice call attempt.* | OK<br>*Note: Command executed*<br><br>+WORG:5551212<br>*Note: Voice call origination sent to Base Station with dialing string "5551212".*<br><br>+WEND: 3<br>*Note: Call Attempt failed/ended. Reason 3, signal faded. See section 14.7 Unsolicited commands.* |

## 4.2 Hang-Up command H

### 4.2.1 Description :

The ATH (or ATH0) command is used by the application to disconnect the remote user. In the case of multiple calls, all calls are released (active, on-hold and waiting calls).
The specific Wavecom ATH1 command has been appended to disconnect the current outgoing call, only in dialing or alerting state (ie. ATH1 can be used only after the ATD command, and before its terminal response (OK, NO CARRIER, ...). It can be useful in the case of multiple calls.

### 4.2.2 Syntax :

Command syntax : ATH

| Command | Possible responses |
|---|---|
| ATH<br>*Note : Ask for disconnection* | OK<br>*Note : Every call, if any, are released* |
| ATH1<br>*Note : Ask for outgoing call disconnection* | OK<br>*Note : Outgoing call, if any, is released* |

## 4.3 Answer a call A

### 4.3.1 Description :

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

### 4.3.2 Syntax :

Command syntax : ATA

| Command | Possible responses |
|---|---|
| | RING |


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| | |
|---|---|
| | *Note : Incoming call* |
| ATA<br>*Note : Answer to this incoming call* | +WANS<br>+WCNT: 10<br>*Note : Call accepted* |
| ATH<br>*Note : Disconnect call* | OK<br>+WEND: 10<br>*Note : Call disconnected* |

## 4.4 Remote disconnection

This message is used by the product to inform the application that an active call has been released by the remote user.
The product sends +WEND:<result code> to the application. The DCD signal may be set based upon the AT&C2 setting for packet calls.

## 4.5 Extended error report +CEER

### 4.5.1 Description :

This command gives the cause of any general call processing error or misfunction. See section 14.4.

Syntax :
Command syntax : AT+CEER

| Command | Possible responses |
|---|---|
| ATD18005551212;<br><br><br>ATD1234567;<br>*Note : Outgoing voice call while already in a call*<br><br>*AT+CEER* | OK<br>+WORG:18005551212<br>+WCNT:3<br><br>ERROR<br>*Note : Call setup failure*<br><br>*+CEER: Error 2*<br>*OK*<br>*Note: Operation not allowed when call in progress* |
| AT+CEER<br><br>*Note : Ask for reason of release* | +CEER : Error <x><br>OK<br>*Note : <x>is the cause information element values* |

## 4.6 DTMF signals +VTD, +VTS

### 4.6.1 +VTD Description :

The product enables the user application to send DTMF tones over the CDMA network. This command is used to define tone duration (the default value is 150,255ms).
To define this duration, the application uses:


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AT+VTD=<n1>,<n2> where <n1>gives the on duration in ms and <n2>gives the off duration.

### 4.6.2 +VTD Syntax :

Command syntax : AT+VTD=<n>,<n>

| Command | Possible responses |
|---|---|
| AT+VTD=150,255<br>*Note : To define 150 ms off tone duration and 255 ms on tone duration.* | OK<br>*Note : Command valid* |
| AT+VTD=? | VTD: (60,200), (95-350)<br>OK |

### 4.6.3 +VTS Description :

The product enables the user application to send DTMF tones over the CDMA network. This command enables tones to be transmitted.
To transmit DTMF tones (only when there is an active call), the application uses:
AT+VTS=<Tone> where <Tone> is in {0-9,*,#,A,B,C,D}

### 4.6.4 +VTS Syntax :

Command syntax : AT+VTS=<Tone>

| Command | Possible responses |
|---|---|
| AT+VTS=A | OK<br>*Note : Command valid* |
| AT+VTS=11 | OK |
| AT+VTS=4 | OK |

### 4.6.5 Informative example :

To send tone sequence 13#, the application sends :
AT+VTS=13#

## 4.7 Redial last telephone number ATDL

### 4.7.1 Description :

This command is used by the application to redial the last number used in the ATD command. The last number dialed is displayed.

### 4.7.2 Syntax :

Command syntax : ATDL

| Command | Possible responses |
|---|---|
| ATDL<br>*Note : Redial last number* | +WORG: 8585551212<br>OK<br>*Note : Last call was a voice call. Command valid* |


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## 4.8 Automatic dialing with DTR AT%Dn

### 4.8.1 Description :

This command enables and disables:

- automatic sending of the short message (SMS) stored in the first location.

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

Syntax :
Command syntax : AT%D<n>

| Command | Possible responses |
|---|---|
| AT%D2<br>*Note : Activates DTR short message sending* | OK<br>*Note : Command has been executed* |
| | |

### 4.8.2 Defined values :

**<n>** (0-2)
to enable or disable automatic message transmission or number dialling.
Informs the product that the number is a voice rather than a fax or data number.
**AT%D0**
Disables automatic DTR number dialling / message transmission.
**AT%D1**
Currently not implemented.
**AT%D2**
Activates automatic DTR message transmission if DTR switches from OFF to ON.

## 4.9 Automatic answer ATS0

### 4.9.1 Description :

This S0(zero) parameter determines and controls the product automatic answering mode.

### 4.9.2 Syntax :

Command syntax : ATS0=<value>

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

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


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## 4.10 Incoming Call Bearer +CICB

### 4.10.1 Description :

This **specific** command is used to set the type of incoming calls when no incoming bearer is given (see +CSNS).
Note:
*setting the +CICB command affects the current value of +CSNS.*

### 4.10.2 Syntax :

Command syntax : AT+CICB=<mode>

| Command | Possible responses |
|---|---|
| AT+CICB=1<br>*Note : If no incoming bearer, force a fax call* | OK<br>*Note : Command accepted* |
| AT+CICB=2<br>*Note : If no incoming bearer, force a voice call* | OK<br>*Note : Command accepted* |
| AT+CICB?<br>*Note : Interrogate value* | +CICB: 2<br>*Note : Default incoming bearer: voice call* |
| AT+CICB=?<br>*Note : Test command* | +CICB: (0-4)<br>*Note : Speech, data or fax default incoming bearer* |

### 4.10.3 Defined values :

**<mode>**
**0** : Data
**1** : Fax
**2** : Speech
**3**: Data once (10 minute timeout)
**4**: Fax once (10 minute timeout)


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## 4.11 Single Numbering Scheme +CSNS

### 4.11.1 Description :

This command selects the bearer to be used when an MT single numbering scheme call is set up (see +CICB, these commands are the same).
Note:
*setting the +CSNS command affects the current value of +CICB.*

### 4.11.2 Syntax :

Command syntax : AT+CSNS

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

### 4.11.3 Defined values :

**<mode>**
**0** : Voice
**2** : Fax
**4** : Data

## 4.12 Volume Gain control +VGR

### 4.12.1 Description :

This command is used by the application to tune the receive gain of the speaker.

### 4.12.2 Syntax :

Command syntax : AT+VGR=<Rgain>

| Command | Possible responses |
|---|---|
| AT+VGR=2 | OK<br>*Note : Command valid* |
| AT+VGR?<br>*Note : Interrogate value* | +VGR: 64<br>*Note : Default receive gain* |
| AT+VGR=?<br>*Note : Test command* | +VGR : (0-10)<br>*Note : Possible values* |


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## 4.13 Microphone Mute Control +CMUT

### 4.13.1 Description :

This command is used to mute the microphone input on the product (for the active microphone set with the +SPEAKER command). This command is only allowed during a call.

### 4.13.2 Syntax :

Command syntax : AT+CMUT=<mode>

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

### 4.13.3 Defined values :

**<mode>**
**0** : microphone mute off (default value).
**1** : microphone mute on.

## 4.14 Speaker & Microphone selection +SPEAKER

### 4.14.1 Description

This command is used to select the speaker and the microphone set.

### 4.14.2 Syntax :

Command syntax : AT+SPEAKER=<ActiveSpkMic>

| Command | Possible responses |
|---|---|
| AT+SPEAKER=0<br>*Note : Speaker ONE and Micro ONE* | OK<br>*Note : Command valid* |
| AT+SPEAKER? | +SPEAKER: 0<br>OK<br>*Note : Speaker ONE and Micro ONE are active* |


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#### 4.14.3 Defined values :

**<mode>**
**0** : HANDSET
**1** : HEADSET

## 4.15 Echo Cancellation +ECHO

#### 4.15.1 Description :

This command is used to enable, disable or configure the Echo Cancellation functions for voice calls (in rooms, in cars, etc.). The +SPEAKER function automaticly sets echo cancellation based upon handset or headset choice and this command allows non-standard operation.

#### 4.15.2 Syntax :

Command syntax :
AT+ECHO= <mode>

| Command | Possible responses |
|---|---|
| AT+CMEE=1<br>*Note: Enables the use of result code* | OK |
| AT+SPEAKER? | + SPEAKER: 0<br>OK<br>*Note : Handset path is active* |
| AT+SIDET=0<br>*Note: Deactivate the Sidetone* | OK |
| AT+SIDET? | +SIDET: 0,0 |
| AT+ECHO?<br>*Note : Read current settings* | +ECHO: 0<br>OK |

#### 4.15.3 Defined values:

**<mode>**
**0** :Vocoder Echo Cancellation Off
**1** : Ear Seal Echo Cancellation
**2** : Head Set Echo Cancellation
**3** : AEC
**4** : Speaker Echo Cancellation for car kit operation
**5** : Default Echo Cancellation for current path settings

## 4.16 SideTone modification +SIDET

#### 4.16.1 Description :

This **specific** command is used to set the level of audio feedback in the speaker (microphone feedback in the speaker).


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### 4.16.2 Syntax :

Command syntax : AT+SIDET=<val1>,<val2>

| Command | Possible responses |
|---|---|
| AT+SIDET=1,0 | OK<br>*Note : Command valid* |
| AT+SIDET?<br>*Note : Current value* | +SIDET: 1,0<br>OK<br>*Note : Command valid* |

### 4.16.3 Defined values :

**<val1>**
**0**: SideTone is disabled
**1**: SideTone is enabled

**<val2>**
**0**: No side tone
**1**: Handset Sidetone levels
**2**: Headset Sidetone levels
**3**: Max Sidetone level


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# 5 Network service commands

## 5.1 Signal Quality +CSQ

### 5.1.1 Description :

This command is used to ascertain the *received signal strength indication* (<rssi>) and the *channel frame error rate* (<fer>).

### 5.1.2 Syntax :

Command syntax : AT+CSQ

| Command | Possible responses |
|---|---|
| AT+CSQ | +CSQ: <rssi>,<fer><br>OK<br>*Note : <rssi> and <ber> as defined below* |

### 5.1.3 Defined values :

<rssi> : 0-31 valid value ranges. Exact meaning of the SQM(RSSI) shall be manufacturer defined. The lowest defined value is 0 and the highest is 31.

<fer> :
99: not known or not detectable Currently always returns 99.

## 5.2 Mode Perference +COPS

### 5.2.1 Description :

The Mode Preference of a CDMA module governs the basic system acquisition behavior of the MS in conjunction with the PRL (Preferring Roaming List). It's important to note that the PRL takes precedence over mode preference when guiding the phone to a band or system. The PRL must allow a particular band first, before the mode preference can take effect. In other words, a mode preference change is simple a request, the PRL decides whether or not to allow it. After execution of the +COPS command, an unsolicited +COPS:<mode> will follow soon. See section 15.6 Unsolicited result codes.

### 5.2.2 Syntax :

The application must send the following command:
Command syntax: AT+COPS=<mode>

| Command | Possible responses |
|---|---|
| AT+COPS?<br>*Note : Ask for current Mode Preference* | +COPS: 0<br>OK |


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| | |
|---|---|
| | *Note : Automatic mode, use PRL order* |
| AT+COPS=? | +COPS: (0-2)<br>OK<br>*Note: Automatic, PCS, Cellular* |
| AT+COPS=0<br>*Note : Ask for Automatic mode* | OK<br>+COPS:0<br>*Note: Unsolicited +COPS result confirms Automatic mode is requested* |
| AT+COPS=1<br>*Note : Ask for PCS mode* | OK<br>+COPS:1<br>*Note: Unsolicited +COPS result confirms PCS mode is requested* |
| AT+COPS=2<br>*Note : Ask for Cellular mode* | OK<br>+COPS:2<br>*Note : Unsolicited +COPS result confirms Cellular mode is requested* |

### 5.2.3 Defined values :

The parameters values are the following ones:
**<mode>**
**0**: Automatic, follow PRL (**default** value)
**1**: Automatic in PCS frequencies (1900Mhz only)
**2**: Automatic in Cellular frequencies (800Mhz only)

## 5.3 Roam Perference +WRMP

### 5.3.1 Description :

The Roam Preference of a CDMA module informs the MS whether it is allowed to roam on foreign CDMA networks or only allow operation on home networks. The determination of what is a foreign or home network is programmed into the PRL (Preferring Roaming List). This command simply enables or disables the capability of the MS to roam, based on the PRL configuration.
After execution of the +WRMP command, the MS may change roaming states. The unsolicited result +WROM:<mode> will indicate the new state. See section 15.6 Unsolicited result codes.

### 5.3.2 Syntax :

The application must send the following command:
Command syntax: AT+WRMP=<mode>

| Command | Possible responses |
|---|---|
| AT+WRMP?<br>*Note : Ask for current Mode Preference* | +WRMP: 0<br>OK<br>*Note : Home only* |
| AT+WRMP=? | +WRMP: (0-2)<br>OK<br>*Note: Home, Affiliated, Any* |
| AT+WRMP=0<br>*Note : Allow Home only networks* | OK<br>.<br>. |


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| | |
|---|---|
| | .<br>+WROM:0<br>*Note: Unsolicited +WROM may or may not appear based on current circumstances* |
| AT+WRMP=1<br>*Note : Allow Roaming Affiliated Networks* | OK<br>.<br>.<br>.<br>+WROM:1<br>*Note: Unsolicited +WROM may or may not appear based on current circumstances* |
| AT+WRMP=2<br>*Note : Allow Roaming on Any Network* | OK<br>.<br>.<br>.<br>+WRMP:2<br>*Note: Unsolicited +WROM may or may not appear based on current circumstances* |

### 5.3.3 Defined values :

The parameters values are the following ones:
**<mode>**
**0**: Home Networks only, as defined in the PRL (**default** value)
**1**: Roaming on Affiliated networks, as defined in the PRL
**2**: Roaming on Any Network, as defined in the PRL.

## 5.4 Network registration & roaming +CREG

### 5.4.1 Description

This command is used by the application to ascertain the registration and roaming status of the product. Note: Also see +WROM unsolicited command for CDMA roaming status.

### 5.4.2 Syntax :

Command syntax : AT+CREG= <mode>
Response syntax : +CREG : <mode>, <stat>

| Command | Possible responses |
|---|---|
| AT+CREG=0<br>*Note : Disable network registration unsolicited result code* | +CREG: 0,1<br>OK<br>*Note : Command valid* |
| AT+CREG=1<br>*Note : Enable network registration unsolicited result code* | +CREG:1,1<br>OK<br>*Note : Command valid* |
| AT+CREG? | +CREG: 1,5<br>OK<br>*Note : Unsolicited enabled, MS currently roaming.* |
| AT+CREG=? | +CREG: (0-1)<br>*Note : 0,1 <mode> values are supported* |


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| | |
|---|---|
| Example of the unsolicited result code. MS is searching for a base station | +CREG:2 |

### 5.4.3 Defined values :

**<mode>**
**0**: Disable network registration unsolicited result code (**default**)
**1**: Enable network registration unsolicited code result code +CREG : <stat>

**<stat>**
**0**: not registered, MS is not currently searching for a new operator.
**1**: registered, home network.
**2**: not registered, MS currently searching for a base station.
**4**: unknown.
**5**: registered, roaming

## 5.5 Change NAM Selection +WNAM

### 5.5.1 Description :

This command is used to request a change in the NAM (Number Assignment Module) selection. The module supports up to 4 NAMs. However, if a NAM is not full programmed, the module will not switch to the requested NAM. The default NAM for the module is 1. The response to this command is only OK, and this is no guarantee that the NAM will change. If the NAM selection request is accepted, the unsolicited command +WNAM: <nam> will be returned. If or when the actual NAM changes, the unsolicited command +WCNM: <nam> will be returned. See section 13, unsolicited result codes.

### 5.5.2 Syntax :

Command syntax: AT+WNAM=<nam>
Response syntax: OK

| Command | Possible responses |
|---|---|
| AT+WNAM=2<br>*Note : Use NAM 2, if programmed* | OK<br>+WNAM: 2<br>+WCNM: 2 |
| AT+WNAM=3<br>*Note :* | OK<br>*Note : No unsolicited response indicates that NAM 3 is not valid, thus no change in NAM.* |
| AT+WNAM=5<br>*Note : Try Auto NAM* | OK<br>+WNAM: 5<br>+WCNM: 1<br>*Note : Auto NAM is selected, NAM 1 choosen.* |

### 5.5.3 Defined values :

**<nam>**
**1**: NAM 1
**2**: NAM 2
**3**: NAM 3


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**4**: NAM 4
**5**: Auto NAM

## 5.6 Read Current NAM +WCNM

### 5.6.1 Description :

This command is used to read the current NAM (Number Assignment Module). The module supports up to 4 NAMs. Also, note that there exist an unsolicited command +WCNM: <nam> that is returned any time the NAM changes. See section 13, unsolicited result codes.

### 5.6.2 Syntax :

Command syntax : AT+WCNM

| Command | Possible responses |
|---|---|
| AT+WCNM<br><br>*Note : Ask for the current NAM* | +WCNM: 1<br>OK<br>*Note : NAM 1 in use* |


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# 6 Short Messages commands

## 6.1 Parameters definition

**<da>** Destination Address
**<dcs>** Data Coding Scheme, coded like in document [5].
**<dt>** Discharge Time in string format :
"yy/MM/dd,hh :mm :ss"(Year [00-99], Month [01-12],
Day [01-31], Hour, Minute, Second
**<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** : address followed by TPDU in hexadecimal format, coded as specified in doc [4] 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" (Year/Month/Day,Hour:Min:Seconds)
**<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

## 6.2 Select message service +CSMS

### 6.2.1 Description :

The supported services are originated (SMS-MO) and terminated short message (SMS-MT) + Cell Broadcast Message (SMS-CB) services.

### 6.2.2 Syntax :

Command syntax : AT+CSMS?


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| Command | Possible responses |
|---|---|
| AT+CSMS?<br><br>*Note : Current values ?* | +CSMS: <MO>,<MT>,<CB><br>OK<br>*Note : SMS-MO, SMS-MT and SMS-CB support* |

### 6.2.3 Defined values :

<MO>
**0**: Mobile Originated SMS not supported.
**1**: Mobile Originated SMS supported.
<MT>
**0**: Mobile Terminated SMS not supported.
**1**: Mobile Terminated SMS supported.
<CB>
**0**: Broadcast SMS not supported.
**1**: Broadcast SMS supported.

## 6.3 New Message Acknowledgement +CNMA

### 6.3.1 Description :

This command allows reception of a new message routed directly to the TE to be acknowledged.
In TEXT mode, only positive acknowledgement to the network (RP-ACK) is possible.
In PDU mode, either positive (RP-ACK) or negative (RP-ERROR) acknowledgement to the network is possible.
Acknowledge with +CNMA is possible only when a +CMT or +CDS indication is shown (see +CNMI command).

### 6.3.2 Syntax :

Command syntax in text mode *:*
AT+CNMA
Command syntax in PDU mode *:*
AT+CNMA [ = <n> [ , <length> [ <CR>
*PDU is entered* <ctrl-Z / ESC> ] ] ]

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

Example of acknowledgement of a new message in TEXT mode

| Command | Possible responses |
|---|---|
| AT+CMGF=1<br>*Note : Set TEXT mode* | OK<br>*Note : TEXT mode valid* |
| AT+CNMI=2,2,0,0,0<br>*Note : <mt>=2* | OK |
| | +CMT:"8587351530","02/04/03,11 :06 :38",129,7<CR><LF><br>Testing<br>*Note : message received* |
| AT+CNMA<br>*Note : acknowledge the message received* | OK<br>*Note : send positive acknowledgement to the network* |


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| | |
|---|---|
| AT+CNMA<br>*Note : try to acknowledge again* | +CMS ERROR : 340<br>*Note : no +CNMA acknowledgment expected* |

Example of acknowledgement of a new message in PDU mode:

| **Command** | **Possible responses** |
|---|---|
| AT+CMGF=0<br>*Note : Set PDU mode* | OK<br>*Note : PDU mode valid* |
| | +CMT: ,29<br>07913366003000F1240B913366920547F300000030<br>03419404800B506215D42ECFE7E17319<br>*Note : message received* |
| AT+CNMA=2,<length> <CR><br>*… Pdu message …* <Ctrl-Z/ESC><br>*Note : negative acknowledgement for the message.* | OK<br>*Note : send a negative acknowledgement to the network (RP-ERROR) with PDU message (<ackpdu> format).* |

### 6.3.3 Defined values :

**<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

## 6.4 Preferred Message Storage +CPMS

### 6.4.1 Description :

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

### 6.4.2 Syntax :

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

| **Command** | **Possible responses** |
|---|---|
| AT+CPMS=?<br><br>*Note : Possible message storages* | +CPMS: (“MT”,”BC”,”SR”),(“MO”)<br><br>OK<br>*Note :*<br>*Read, list, delete: SMS, CBM or SMS Status Report*<br>*Write, send: SMS* |
| AT+CPMS?<br><br>*Note : Read* | +CPMS: “MT”,3, 10,”MO”,3,10<br><br>OK |
| AT+CPMS=”AM”<br>*Note : Select false message storage* | +CMS ERROR: 302 |
| AT+CPMS=”BC”<br><br>*Note : Select CBM message storage* | OK<br>+CPMS:2,10,3,10<br>*Note : Read, list, delete CBM from NV RAM* |


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### 6.4.3 Defined values :

**<mem1>:** Memory used to list, read and delete messages. It can be:
-**"MT"**: SMS Moble Terminated message storage in NV (default)
-**"BC"**: CBM message storage in NV.
-**"SR"** : Status Report message storage in NV.

**<mem2>**: Memory used to write and send messages
- **"MO"** : Mobile Originated SMS message storage.
If the command is correct, the following message indication is sent:
+CPMS: <used1>,<total1>,<used2>,<total2>
When <mem1> is selected, all following +CMGL, +CMGR and +CMGD commands are related to the type of SMS stored in this memory.

## 6.5 Preferred Message Format +CMGF

### 6.5.1 Description :

The message formats supported are *text mode* and *PDU mode*.
In PDU mode, a complete SMS Message including all header information is given as a binary string (in hexadecimal format). Therefore, only the following set of characters is allowed: {'0','1','2','3','4','5','6','7','8','9', 'A', 'B','C','D','E','F'}. Each pair 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.

### 6.5.2 Syntax :

Command syntax : AT+CMGF

| Command | Possible responses |
|---|---|
| AT+CMGF ?<br><br>*Note : Current message format* | +CMGF: 1<br>OK<br>*Note : Text mode* |
| AT+CMGF=?<br><br>*Note : Possible message format* | +CMGF: (0-1)<br>OK<br>*Note : Text or PDU modes are available* |

Example, sending an SMS Message in PDU mode

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


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### 6.5.3 Defined values :

The <pdu> message is composed of the SC address (« 00 means no SC address given) and the TPDU message.

NOTE: CDMA does not support changing of the Service Center Address. Only 0x00 is allowed for the SC byte. CDMA status reports do not generate a message field. So, <length> of status reports will always be zero and <pdu> will be empty.

In this example, the length of **octets** of the TPDU buffer is 14.
In this case the TPDU is : 0x01 0x03 0x06 0x91 0x21 0x43 0x65 0x00 0x00 0x04 0xC9 0xE9 0x34 0x0B:

**<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)

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

## 6.6 Show text mode parameters +CSDH

### 6.6.1 Description :

This command gives additional information on text mode result codes. This information is given in brackets in the +CMTI, +CMT, +CDS, +CMGR, +CMGL commands.

### 6.6.2 Syntax :

Command syntax : AT+CSDH

| Command | Possible responses |
|---|---|
| AT+CSDH?<br>*Note : Current value* | +CSDH: 0<br>OK<br>*Note : Do not show header values* |

## 6.7 New message indication +CNMI

### 6.7.1 Description :

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


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### 6.7.2 Syntax :

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

| Command | Possible responses |
|---|---|
| AT+CNMI=2,1,0,0,0<br>*Note : <mt>=1* | OK |
| | AT+CMTI : “MT”,1<br>*Note : message received* |
| AT+CNMI=2,2,0,0,0<br>*Note : <mt>=2* | OK |
| | +CMT : “8585551212”,”98/10/01,12 :30 00”,129,5<CR><LF><br>Hello<br>*Note : message received* |
| AT+CNMI=2,0,0,1,0<br>*Note : <ds>=1* | OK |
| AT+CMGS=”8585551212”<CR><br>Message to send <ctrl-Z><br>*Note : Send a message in text mode* | OK<br>+CMGS : 7<br>*Note : Successful transmission* |
| | +CDS : 2, 116, ”8585551212”, 129, “98/10/01,12 :30 :07”, “98/10/01 12 :30 :08”, 0<br>*Note : message was correctly delivered* |

### 6.7.3 Defined values :

<mode> : controls the processing of unsolicited result codes
**Only <mode>=2 is supported.**
Any other value for <mode> (0,1 or 3) is accepted (return code will be *OK*), but the processing of unsolicited result codes will be the same as with<mode>=2.
**<mode>**
**0**: Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications
**1**: Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved. Otherwise forward them directly to the TE
**2**: Buffer unsolicited result codes in the TA when TA-TE link is reserved and flush them to the TE after reservation. Otherwise forward them directly to the TE
**3**: Forward unsolicited result codes directly to the TE. TA-TE link specific inband used to embed result codes and data when TA is in on-line data mode


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**<mt>** : sets the result code indication routing for SMS-DELIVERs. Default is 2.
**<mt>**
**0**: No SMS-DELIVER indications are routed.
**1**: SMS-DELIVERs are routed using unsolicited code : +CMTI: “MT”,<index>
**2**: SMS-DELIVERs (except class 2 messages) are routed using unsolicited code : +CMT : [<alpha>,] <length> <CR> <LF> <pdu> (PDU mode) or +CMT : <oa>,[<alpha>,] <scts> [,<tooa>, <length>] <CR><LF><data> (text mode)

**<bm>** : sets the the result code indication routing for received CBMs (Cell Broadcast Message) Default is 2.
**<bm>**
**0**: No CBM indications are routed to the TE. The CBMs are stored.
**1**: The CBM is stored and an indication of the memory location is routed to the customer application using unsolicited result code: +CBMI: “BC”, <index>
**2**: New CBMs are routed directly to the TE using unsolicited result code (format matches that of +CMT since CDMA treats them very much the same way). +CBM : [<alpha>,] <length> <CR> <LF> <pdu> (PDU mode) or +CBM : <oa>,[<alpha>,] <scts> [,<tooa>, <length>] <CR><LF><data> (text mode)

**<ds>** for SMS-STATUS-REPORTs. Default is 1.
**<ds>**
**0**: No SMS-STATUS-REPORTs are routed.
**1**: SMS-STATUS-REPORTs are routed using unsolicited code : +CDS : <length> <CR> <LF> <pdu> (PDU mode) or +CDS : <fo>,<mr>, [<ra>] , [<tora>], <scts>,<dt>,<st> (Text mode)
**2**: SMS-STATUS-REPORTs are stored and routed using the unsolicited result code : +CDSI: “SR”,<index>

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

## 6.8 Read message +CMGR

### 6.8.1 Description :

This command allows the application to read stored messages. The messages are read from the memory selected by **+CPMS** command.


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### 6.8.2 Syntax :

Command syntax : AT+CMGR=<index>
Response syntax for text mode:
+CMGR :<stat>,<oa>,[<alpha>,] <scts> [,<tooa>,<fo>,
<pid>,<dcs>,<sca>,<tosca>,<length>] <CR><LF> <data> (for **SMS-DELIVER** only)
+CMGR : <stat>,<da>,[<alpha>,]<dt>[,<toda>,<fo>,<pid>,<dcs>, [<vp>], <sca>,
<tosca>,<length>]<CR><LF> <data> (for **SMS-SUBMIT** only)
+CMGR : <stat>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> (for **SMS-STATUS-REPORT** only)
Response syntax for PDU mode :
+CMGR: <stat>, [<alpha>] ,<length> <CR><LF> <pdu>

A message read with status “REC UNREAD” will be updated in memory with the status “REC READ”.
Note :
*the <stat> parameter for SMS Status Reports is always “READ”.*

Example :

| **Command** | **Possible responses** |
|---|---|
| | AT+CMTI: “MT”,1<br>*Note : New message received* |
| AT+CMGR=1<br>*Note : Read the message* | OK<br>+CMGR: “REC UNREAD”,”8585551212”,<br>”98/10/01,18 :22 :11+00”,<CR><LF><br>ABCdefGHI |
| AT+CMGR=1<br>*Note : Read the message again* | OK<br>+CMGR: “REC READ”,”8585551212”,<br>”98/10/01,18 :22 :11”,<CR><LF><br>ABCdefGHI<br>*Note : Message is read now* |
| AT+CMGR=2<br>*Note : Read at a wrong index* | +CMS ERROR: 321<br>*Note : Error : invalid index* |
| AT+CMGF=0 ;+CMGR=1<br><br>*Note : In PDU mode* | OK<br>+CMGR: 2,,<length> <CR><LF><pdu><br>*Note : Message is stored but unsent, no <alpha>field* |
| AT+CMGF=1;+CPMS=”SR”;+CNMI=,,,2<br>*Reset to text mode, set read memory to “SR”, and allow storage of further SMS Status Report into “SR” memory* | OK |
| AT+CMSS=3<br>*Send an SMS previously stored* | OK<br>+CMSS: 160 |
| | +CDSI: “SR”,1<br>*New SMS Status Report stored in “SR” memory at index 1* |
| AT+CMGR=1<br>*Read the SMS Status Report* | OK<br>+CMGR: “READ”,160,<br>“8585551212”,129,”01/05/31,15:15:09”,<br>“01/05/31,15:15:09”,0 |


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## 6.9 List message +CMGL

### 6.9.1 Description :

This command allows the application to read stored messages, by indicating the type of the message to read. The messages are read from the memory selected by the **+CPMS** command.

### 6.9.2 Syntax :

Command syntax *:* AT+CMGL=<stat>
Response syntax for text mode:
+CMGL : <index>,<stat>,<da/oa>[,<alpha>], [<scts>, <tooa/toda>, <length>] <CR><LF><data> (for **SMS-DELIVER and SMS-SUBMIT**, may be followed by other <CR><LF>+CMGL:<index>…)
+CMGL : <index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> (for **SMS-STATUS-REPORT** only, may be followed by other <CR><LF>+CMGL:<index>…)

Response syntax for PDU mode :
+CMGL : <index>,<stat>, [<alpha>], <length> <CR><LF> <pdu> (for **SMS-DELIVER**, **SMS-SUBMIT** and **SMS-STATUS-REPORT**, may be followed by other <CR><LF>+CMGL:<index>…)

| **Command** | **Possible responses** |
|---|---|
| AT+CMGL="UREAD"<br>*Note : List unread messages in text mode* | OK<br>+CMGL: 1,"REC UNREAD","8585551212",<br><CR><LF> Unread message !<br>+CMGL: 3,"REC UNREAD", "8585551212",<br><CR><LF><br>*Another message unread!*<br>*Note : 2 messages are unread, these messages will then have their status changed to "REC READ" (+CSDH:0)* |
| AT+CMGL="READ"<br>*Note : List read messages in text mode* | OK<br>+CMGL: 2,"REC READ","8585551212",<br><CR><LF><br>Keep cool |
| AT+CMGL="SENT"<br>*Note : List stored and sent messages in text mode* | OK<br>*Note : No message found* |
| AT+CMGL=1<br>*Note : List read messages in PDU mode* | OK<br>+CMGL: 1,1,,26<CR><LF><br>07913366003000F3040B913366920547F400130011<br>90412530400741AA8E5A9C5201 |


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### 6.9.3 Defined values

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

| Text mode possible values | PDU mode possible values | Status of messages in memory |
|---|---|---|
| **"UREAD"** | 0 | received unread messages |
| **"READ"** | 1 | received read messages |
| **"USENT"** | 2 | stored unsent messages |
| **"SENT"** | 3 | stored sent messages |
| **"ALL"** | 4 | all messages |

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

## 6.10 Send message +CMGS

### 6.10.1 Description :

The <address> field is the address of the terminal to which the message is sent. To send the message, simply type, <ctrl-Z> character (ASCII 26). The text can contain all existing characters except <ctrl-Z> and <ESC> (ASCII 27).
This command can be aborted using the <ESC> character when entering text.
In PDU mode, only hexadecimal characters are used ('0'…'9','A'…'F').

### 6.10.2 Syntax :

Command syntax in text mode *:*
AT+CMGS= <da> [ ,<toda> ] <CR>
*text is entered* <ctrl-Z / ESC >
Command syntax in PDU mode *:*
AT+CMGS= <length> <CR>
*PDU is entered* <ctrl-Z / ESC >

| Command | Possible responses |
|---|---|
| AT+CMGS="8585551212"<CR><br>Please call me soon, Fred. <ctrl-Z><br>*Note : Send a message in text mode* | OK<br>+CMGS:<mr> |
| AT+CMGS=<length><CR><pdu><ctrl-Z><br>*Note : Send a message in PDU mode* | OK<br>+CMGS:<mr> |


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## 6.11 Write Message to Memory +CMGW

### 6.11.1 Description :

This command stores a message in memory (either SMS-SUBMIT or SMS-DELIVERS). The memory location <index> is returned (no choice possible as with phonebooks +CPBW).
Text or PDU is entered as described for the Send Message +CMGS command.

### 6.11.2 Syntax :

Command syntax in text mode *:*(<index> is returned in both cases)
AT+CMGW= <oa/da> [,<tooa/toda> ] <CR>
*enter text* <ctrl-Z / ESC>
Command syntax in PDU mode *:*
AT+CMGW= <length> <CR>
*give PDU* <ctrl-Z / ESC>

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

| Command | Possible responses |
|---|---|
| AT+CMGW="8585551212"<CR><br>Hello how are you ?<ctrl-Z><br>*Note : Write a message in text mode* | OK<br>+CMGW: 4<br>*Note : Message stored in index 4* |
| AT+CMGW=<length><CR><pdu><ctrl-Z><br>*Note : Write a message in PDU mode* | OK<br>+CMGW: <index><br>*Note : Message stored in <index>* |

### 6.11.3 Defined values :

Parameter Definition :
**<oa/da>** : Originating or Destination Address Value in string format.
**<tooa/toda>** : Type of Originating / Destination Address.
**<length>** : Length of the actual data unit in octets

## 6.12 Send Message From Storage +CMSS

### 6.12.1 Description :

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

### 6.12.2 Syntax :

Command syntax: AT+CMSS=<index>[,<da> [,<toda>] ]
Response syntax:
+CMSS : <mr> or +CMS ERROR: <err> if sending fails
If a new recipient address <da> is given, it will be used instead of the one stored with the message

| Command | Possible responses |
|---|---|
| AT+CMGW="8585551212"<CR><br>Today is my birthday | OK<br>+CMGW : 5 |


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| | |
|---|---|
| *Note :* | *Note :Message stored with index 5* |
| AT+CMSS=5,8582221212<br><br>*Note : Send the message 5 to a different destination number* | OK<br>AT+CMSS :<mr><br>*Note : Successful transmission* |
| AT+CMSS=5,8583331212<br><br>*Note : Send the message 5 to a different destination number* | OK<br>+CMSS :<mr><br>*Note : Successful transmission* |

## 6.13 Delete message +CMGD

### 6.13.1 Description :

This command is used to delete one or several messages from preferred message storage.

### 6.13.2 Syntax :

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

| Command | Possible responses |
|---|---|
| | +CMTI:"MT",3<br>Note : New message received |
| AT+CMGR=3<br>Note : Read it | OK<br>+CMGR: "REC UNREAD","8585551212",<br>"98/10/01,18 :19 :20" <CR><LF><br>Message received!<br>*Note : Unread message received from 8585551212 on the 01/10/1998 at 18H19m 20s* |
| AT+CMGD=3<br>*Note : Delete it* | OK<br>*Note : Message deleted* |
| AT+CMGD=1,0 | OK<br>*Note : The message from the preferred message storage at the location 1 is deleted* |
| AT+CMGD=1,1 | OK<br>*Note : All READ messages from the preferred message storage are deleted* |
| AT+CMGD=1,2 | OK<br>+CMS ERROR:341<br>*Note : NV Error deleting READ messages and SENT* |
| AT+CMGD=1,3 | OK<br>*Note : All READ, SENT and UNSENT messages are deleted* |
| AT+CMGD=1,4 | OK<br>*Note : All messages are deleted* |

### 6.13.3 Defines values

**<index>**
0-9
When the preferred message storage is "BC". Integer type values in the range of location numbers of Message memory when the preferred message storage is "MT" or "SR".


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**<DelFlag>**

| | |
|---|---|
| 0 | Delete message at location <index> |
| 1 | Delete All READ messages |
| 2 | Delete All READ and SENT messages |
| 3 | Delete All READ, SENT and UNSENT messages |
| 4 | Delete All messages. |

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

## 6.14 Message status modification +WMSC

### 6.14.1 Syntax :

Command syntax : AT+WMSC= <loc>, <status>
<loc> location number of the stored message (integer)
<status> new status to be stored, as for +CMGL command :

| PDU Mode | Text Mode |
|---|---|
| 0 | "UREAD" |
| 1 | "READ" |
| 2 | "USENT" |
| 3 | "SENT" |

Possible responses:

| | |
|---|---|
| OK | location is valid and has been changed |
| +CMS ERROR: 341 | Non-volatile memory error |
| +CMS ERROR: 321 | Invalid index (out of range or no SMS stored) |
| +CMS ERROR: 302 | if attempting to change Status Report SMS or if syntax is incorrect |

Note:
*Status of SENT or USENT indicate changing MO memory SMS. Status of READ or UREAD imply using preferred memory. Changes are not accepted when preferred memory is set to Status Report (all status reports are always assumed to be READ and cannot be changed).*

| **Command** | **Possible responses** |
|---|---|
| AT+WMSC=4,"UREAD" | OK<br>*Note : Message stored in preferred memory index 4 status changed to NOT READ* |
| AT+WMSC=8,"USENT" | OK<br><br>+CMS ERROR: 321<br>*Note : Invalid index, no message at location 8 of MO memory* |
| AT+CPMS="SR"<br><br>*Note: Change preferred memory to Status Report* | OK<br><br>+CPMS:1,10,4,10 |
| AT+WMSC=0,"UREAD" | OK<br><br>+CMS ERROR: 302<br>*Note : Cannot change Status Report messages* |


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## 6.15 Message overwriting +WMGO

### 6.15.1 Description :

The +CMGW command writes an SMS to the first location available. To write an SMS to a specified location, the +WMGO **specific** command forces the product to write an SMS (with the +CMGW command) to the location specified with +WMGO, but for just one +CMGW command.

### 6.15.2 Syntax :

Command syntax : AT+WMGO= <loc>
<loc> location number of the record to write or overwrite

| Command | Possible responses |
|---|---|
| AT+WMGO=0 | OK<br>*Note : Next MSG write will be to index 0* |
| AT+WMGO=15 | OK<br><br>+CMS ERROR: 321<br>*Note : Invalid index (out of range)* |

On the next AT+CMGW command, the record number used will be the one specified by the AT+WMGO command. The location is forgotten and, in order to perform a second overwrite, +WMGO has to be used again.
If the external application specifies a free location, and if an incoming message is received before the AT+CMGW command, the product may store the incoming message at a location available. This could be the one specified by +WMGO (the product does not prevent from this). If the user then issues an AT+CMGW command without changing the AT+WMGO location, the new message will be overwritten!
Note that this location number is not kept over a software reset.

## 6.16 Unchange SMS Status +WUSS

### 6.16.1 Description :

The +WUSS command allows to keep the SMS Status to UNREAD after +CMGR or +CMGL.

### 6.16.2 Syntax :

Command syntax : AT+WUSS = <mode>
<mode> : 1 The SMS Status will not change.
<mode> : 0 The SMS Status will change.

| Command | Possible responses |
|---|---|
| AT+WUSS=1 | OK |
| AT+WUSS=0 | OK |


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| | |
|---|---|
| | +CMS ERROR: 341<br>*Note : Write error* |


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# 7 Supplementary Services commands

Supplementary Service commands are specialized call processing commands used to control carrier features on the module such as caller ID, call forwarding, call waiting, 3-way calls, and specialized CDMA test calls.

## 7.1 Call forwarding +CCFC

### 7.1.1 Description :

This commands allows control of the call forwarding supplementary service, if supported by the carrier. All calls will be forwarded unconditionally to the phone number specified. The module will actually make a brief call to the CDMA network to set up the call forwarding or cancel it. An audio tone will be produced in the audio path to confirm the change of call forwarding. Please note that that cancelling call forward on some CDMA networks has failed during field testing.

### 7.1.2 Syntax :

Command syntax :
AT+CCFC= <number>

Response syntax:
OK

| Command | Possible responses |
|---|---|
| AT+CCFC=8585551212<br>*Note : Register to an unconditional call forwarding* | OK<br>*Note : Command valid*<br>*Note : Call forwarding active for all incoming calls to phone number 858-555-1212* |
| AT+CCFC=0<br>*Note : Cancel unconditional call forwarding* | OK<br>*Note : Call forwarding cancelled.* |

### 7.1.3 Defined values

**<number>**
<number> The phone number to forward all calls to.

## 7.2 Call barring +CLCK

### 7.2.1 Description :

This command allows control of the call barring supplementary service. Barring Calls or querying the status of call barring is possible for Data and Voice Calls, except Emergency Voice Calls.


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### 7.2.2 Syntax :

Command Syntax : AT+CLCK= <mode>
Response Syntax: +CLCK: <mode>

| Command | Possible responses |
|---|---|
| AT+CLCK=1<br>*Note : Bar Outgoing Calls only* | OK<br>*Note : Command valid* |
| AT+CLCK?<br>*Note : Bar Incoming Calls Only* | +CLCK: 2<br>OK<br>*Note : Incoming Calls are Barred* |
| AT+CLCK=0<br>*Note : No Call Barring (Default)* | OK<br>*Note : Command valid* |

**<mode>**
**0**: No Call Barring
**1**: Bar Outgoing Calls only
**2**: Bar Incoming Calls only
**3**: Bar Outgoing and Incoming Calls

## 7.3 Calling line identification restriction +CLIR

### 7.3.1 Description :

This command allows control of the outgoing caller ID restriction supplementary service.

### 7.3.2 Syntax :

Command syntax : AT+CLIR=<mode>
Response syntax : +CLIR :<mode> (for AT+CLIR ?)

| Command | Possible responses |
|---|---|
| AT+CLIR=1<br>*Note :* | OK<br>*Note : Command valid* |
| AT+CLIR ?<br>*Note : Ask for current functionality* | +CLIR :<mode><br>OK<br>*Note : <mode> as defined below* |

### 7.3.3 Defined values :

**<mode>**: sets the caller ID restriction for outgoing calls
**<mode>**
**0**: Outgoing Caller ID works normally, according to the subscription of the Caller ID service.
**1** : Outgoing Caller ID is restricted. The called party will see 'Restricted' on their Caller ID display.

Please note that this command works by automatically prepending a *67 to the outgoing dialing string. Thus, this command will only work on CDMA networks that recognizes a *67 to suppress outgoing caller ID. Also, the original dialing string cannot be longer than 29 characters in length.


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## 7.4 Calling line identification presentation +CLIP

### 7.4.1 Description :

This command allows control of the incoming caller ID presentation supplementary service. When presentation of the CLI (Calling Line Identification) is enabled (and the carrier allows), +CLIP response is returned after the RING unsolicited result code. By default, +CLIP is enabled.

### 7.4.2 Syntax :

Command syntax : AT+CLIP=<mode>
Response syntax : +CLIP: <mode> for AT+CLIP?
+CLIP: <number>, <type> for an incoming call, after a RING indication

| Command | Possible responses |
|---|---|
| AT+CLIP=1<br>*Note : Enable CLIP* | OK<br>*Note : CLIP is enabled* |
| AT+CLIP?<br>*Note : Ask for current functionality* | +CLIP:<mode><br>OK<br>*Note : <mode> defined as below* |
| | RING<br>*Note : Incoming call*<br>+CLIP: "8585551212",129<br>*Note : Incoming call with number presentation* |
| AT+CLIP=0<br>*Note : Disable CLIP presentation* | OK<br>*Note : Command valid* |

### 7.4.3 Defined values :

**<mode>**: parameter enable or disables the caller ID unsolicited command
**<mode>**
**0**: Disable
**1**: Enable

## 7.5 Send Flash to Base Station +WFSH

### 7.5.1 Description :

This command sends a flash or flash with information to the base station. The flash command is used to manage call waiting and 3-way calls. For call waiting situations when the 3rd party call is received, send a flash (AT+WFSH) to toggle between the two different call parties. The +WFSH unsolicited AT command will return if a flash was sent to the base station over the air. Please note that on CDMA networks, this does not guarantee that an actual switch between calls took place, because there is no acknowledgement to the module. For 3-way calls, initiate the first call to party # 1 (see ATD). Then send a flash with information (AT+WFSH=18005551212) to initiate a call to party # 2, party # 1 will automatically be placed on hold. The "information" is the phone number of party # 2. Once a conversation with party # 2 is established, send a regular flash (AT+WFSH) to connect all 3 parties. Send another flash (AT+WFSH) to disconnect party # 2, or End call (see ATH) to end the call with all parties.


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### 7.5.2 Syntax :

Command syntax: AT+WFSH
OK
Command syntax: AT+WFSH= < phone_number > (for a flash with information)
OK

Unsolicited result syntax: +WFSH (confirms a flash was sent to the base station) See section 13.

| Command | Possible responses |
|---|---|
| ATD8585551212;<br>*Note: Make a voice call* | OK<br>+WORG:8585551212<br>+WCNT:3 *Note: Conversation…*<br><br>+CCWA:"8582701234",129<br>*Note: Indication of another incoming call* |
| AT+WFSH<br>*Note: Send a flash to the Base Station (toggle to the second call).*<br><br>*Note: Conversation with second call.* | OK<br>+WFSH<br>*Note: Flash sent to the Base Station. Call switches to the second call. However, this is not 100% guaranteed because the there is not confirmation from the Base Station.* |
| AT+WFSH Send a flash to the Base<br>*Note: Send a flash to the Base Station (toggle to the first call).* | OK<br>+WFSH<br>*Note: Flash sent to the Base Station. Call switches to the first call. However, this is not 100% guaranteed because the there is not confirmation from the Base Station.* |
| ATH<br>*Note: Release the all calls.* | OK<br>+WEND:10<br>*Note: All Calls End* |
| ATD8585551212;<br>*Note: Make a voice call* | OK<br>+WORG:8585551212<br>+WCNT:3<br>*Note: Conversation…* |
| AT+WFSH=6195552121<br>*Note: Place first call on hold, connect to second party.* | *OK*<br>*+WFSH*<br>*Note: Module now places first call on hold, and attempts connection to second call.* |
| AT+WFSH<br>*Note:Connect all 3 parties.* | OK<br>+WFSH<br>*Note: All 3 parties now connected.* |
| AT+WFSH | OK<br>+WFSH<br>*Note: Disconnect second party, connected to first party only.* |
| ATH | OK<br>+WEND:10 |


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## 7.6 List current call state +CLCC

### 7.6.1 Description :

This command is used to return the current call state of the module.

### 7.6.2 Syntax :

Command syntax : AT+CLCC
+CLCC : <state>, <mode>, <termination>
OK

| Command | Possible responses |
|---|---|
| AT+CLCC<br>*Note: Seek current phone state* | +CLCC: 0,9,0<br>OK<br>*Note : Command valid* |

### 7.6.3 Defined values :

**<state>** (state of the call):
**0**: no call
**1**: traffic
**2**: dialing (MO call)
**3**: incoming (MT call)

**<mode>** (teleservice) :
**0**: voice
**1**: data
**2**: fax
**3**: sms
**4**: otasp
**5**: markov or loopback
**9**: unknown or not applicable

**<termination>**
**0**: unknown or not applicable
**1**: mobile terminated (MT) call
**2**: mobile originated (MO) call


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# 8 Data commands

## 8.1 Using AT Commands during a data connection

To use AT Commands during a data connection (e.g. while the product is in online mode), it is necessary either to switch to offline mode, or to use the **specific +WMUX** command to enable Commands / Data multiplexing.

### 8.1.1 Switch from online to offline mode

To switch from online mode to offline mode, the "+++" sequence must be sent. Following this, the product gets back to offline mode with an "OK" response, and an AT command can be sent.
Note :
the "+++" sequence only works with the **+ICF** command using the following settings:

- 8 data bits, with no parity
- 7 data bits, with even parity

### 8.1.2 Switch from offline to online mode

See the **ATO** command description.

## 8.2 Select mode +FCLASS

### 8.2.1 Description

This command puts the product into a particular operating mode for fax.

### 8.2.2 Syntax :

Command syntax: AT+FCLASS= <n>

| Command | Possible responses |
|---|---|
| AT+FCLASS=?<br>*Note : Test command* | +FCLASS: (0,2)<br>OK<br>*Note : Fax class 1 not supported* |
| AT+FCLASS=?<br>*Note : Test command* | +FCLASS: (0,1,2)<br>OK<br>*Note : Fax class 2 supported* |
| AT+FCLASS=0<br>*Note : Data mode requested* | OK<br>*Note : Command valid* |
| AT+FCLASS=2<br>*Note : Fax class 2 mode requested* | OK<br>*Note : Command valid* |
| AT+FCLASS?<br><br>*Note : Current value* | +FCLASS: 2<br>OK<br>*Note : Command valid* |


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### 8.2.3 Defined values :

**<n>**
**0**: Data
**1**: Fax class 1
**2**: Fax class 2

## 8.3 Cellular result codes +CRC

### 8.3.1 Description :

This command gives more detailed ring information for an **incoming call**. 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:VOICE | for normal voice calls |
| +CRING:DATA | for all types of data calls |
| +CRING:FAX | for all types of fax calls |
| +CRING:OTAPA | for OTAPA calls |
| +CRING:TEST | for markov, loopback, and test calls |
| +CRING:UNKNOWN | for unknown/undefined calls types |

### 8.3.2 Syntax :

Command syntax : AT+CRC

| Command | Possible responses |
|---|---|
| AT+CRC=0<br>*Note : Extended reports disabled* | OK<br>*Note : Command valid* |
| AT+CRC=1<br>*Note : Extended reports enabled* | OK<br>*Note : Command valid* |

## 8.4 DTE-DCE local rate reporting +ILRR

### 8.4.1 Description :

This parameter controls whether or not the extended-format "+ILRR:<rate>" information text is transmitted from the DCE to the DTE. Currently the product only supports 0 = OFF.


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### 8.4.2 Syntax :

Command syntax : AT+ILRR

| Command | Possible responses |
|---|---|
| AT+ILRR=0<br>*Note : Local port rate report disabled* | OK<br>*Note : Command valid* |

## 8.5 V42 bis data compression +DS

### 8.5.1 Description :

This command enables or disables V.42bis data compression if this feature is provided on the PSTN in the IWF.

### 8.5.2 Syntax :

Command syntax : AT+DS=<dir>,<neg>,<P1>,<P2>

| Command | Possible responses |
|---|---|
| AT+DS=3,0,4096,250<br>*Note : Set new parameters* | OK<br>*Note : Command valid* |
| AT+DS?<br>*Note : Current values* | +DS: 3,0,4096,20<br>OK<br>*Note : Command valid* |

### 8.5.3 Defined values :

Four numeric sub-parameters are accepted:
< dir >: specifies the desired direction(s) of operation of the data compression function; from the DTE point of view, **(default is 3)**,
**<dir>**
**0**: Negotiated … no compression
**1**: Transmit only
**2**: Receive only
**3**: Both directions, accept any direction
< **neg** >: specifies whether or not the DCE should continue to operate if the desired result is not obtained, **(default is 0)**,
**< neg >**
**0**: Do not disconnect if V.42 bis is not negotiated by the remote DCE as specified in <dir>
**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 that should be negotiated, **(default is 4096)**,
**< P2 >**
**6-250**: specifies the maximum string length to be negotiated, **(default is 250)**.


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## 8.6 V42 bis data compression report +DR

### 8.6.1 Description :

If this feature is provided by the product this command determines whether or not the use of V42bis is given in an **incoming or outgoing data call**.
The intermediate result code represents current DCE-DCE data compression type. The format of this result code is as follows:

| | |
|---|---|
| +DR: NONE | Data compression is not in use |
| +DR: V42B | Rec. V.42 bis is in use in both directions |
| +DR: V42B RD | Rec. V.42 bis is in use in receive direction only |
| +DR: V42B TD | Rec. V.42 bis is in use in transmit direction only |

The +DR intermediate result code, if enabled, is issued before the final result code, before the +ILRR intermediate report and after the service report control +CR.

### 8.6.2 Syntax :

Command syntax : AT+DR

| Command | Possible responses |
|---|---|
| AT+DR=1<br>*Note : Reporting enabled* | OK<br>*Note : Command valid* |
| AT+DR?<br>*Note : Current value* | +DR: 1<br>OK<br>*Note : Command valid* |


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# 9 V24-V25 commands

## 9.1 Fixed DTE rate +IPR

### 9.1.1 Description :

This commands specifies the data rate at which the DCE will accept commands.

### 9.1.2 Syntax :

Command syntax : AT+IPR

| Command | Possible responses |
|---|---|
| AT+IPR?<br>*Note :* | +IPR: 9600<br>OK<br>*Note : Current rate is 9600 bps* |
| AT+IPR=?<br>*Note :* | +IPR: (0,2400,4800,9600,19200),<br>(300,600,1200,38400,57600,115200)<br>OK<br>*Note : Possible value (*)* |
| AT+IPR=38400<br>*Note :* | OK<br>*Note : Disable autobauding and set rate to 38400 bps* |
| AT+IPR=0<br>*Note :* | OK<br>*Note : Enable autobauding* |


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## 9.2 DTE-DCE character framing +ICF

### 9.2.1 Description :

This command is used to determine the local serial port start-stop (asynchronous) character framing that the DCE uses.

### 9.2.2 Syntax :

Command syntax: AT+ICF= <format>, <parity>

| Command | Possible responses |
|---|---|
| AT+ICF=3,3<br>*Note :* | OK<br>*Note : New values* |
| AT+ICF?<br>*Note :* | +ICF: 3,3<br>OK<br>*Note : Current values* |
| AT+ICF=?<br>*Note :* | +ICF: (3-3),(0-3)<br>OK<br>*Note : Possible values* |

### 9.2.3 Defined values :

**<format>**
**0**: Autodetect
**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**: None

Note 1) Rm interface is supported at 8 data bits, No Parity, 1 stop bit. ERROR returned for other formats.


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## 9.3 DTE-DCE local flow control +IFC

### 9.3.1 Description :

This command is used to control the operation of local flow control between the TE2 and the MT2

### 9.3.2 Syntax :

Command syntax : AT+IFC=<n1>,<n2>

| Command | Possible responses |
|---|---|
| AT+IFC?<br>*Note :* | +IFC: 2,2<br>OK<br>*Note : Current values* |
| AT+IFC=?<br>*Note :* | +ICF: (0,3),(0,2)<br>OK<br>*Note : Possible values* |
| AT+ICF=0,0<br>*Note :* | OK<br>*Note : New values* |

### 9.3.3 Defined values :

**< DCE_by_DTE >**

| | |
|---|---|
| **0**: none | (supported) |
| **1**: Xon/Xoff local circuit 103 | (not supported) |
| **2**: RTS | (supported) |
| **3**: Xon/Xoff global on circuit 103 | (not supported) |


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## 9.4 Set DCD signal &C

### 9.4.1 Description :

This commands controls the Data Carrier Detect (DCD) signal.

### 9.4.2 Syntax :

Command syntax : AT&C

| Command | Possible responses |
|---|---|
| AT&C0<br>*Note : DCD always on* | OK<br>*Note : Command valid* |
| AT&C1<br>*Note : DCD matches state in accordance with the specified service* | OK<br>*Note : Command valid* |
| AT&C2<br>*Note : Always on wink on channel disconnect* | OK<br>*Note : Command valid* |

## 9.5 Set DTR signal &D

### 9.5.1 Description :

This commands controls the Data Terminal Ready (DTR) signal.

### 9.5.2 Syntax :

Command syntax : AT&D

| Command | Possible responses |
|---|---|
| AT&D0<br>*Note : The DTR signal is ignored* | OK<br>*Note : Command valid* |
| AT&D1<br>*Note : Enter **online** command state following ON-to-OFF transition of circuit 108/2* | OK<br>*Note : Command valid* |
| AT&D2<br>*Note : Enter command state following ON-to-OFF transition of circuit 108/2.* | OK<br>*Note : Command valid* |

## 9.6 Back to online mode O

### 9.6.1 Description

If a connection has been established and the MS is in command mode, this command allows you to return to online data mode.


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### 9.6.2 Syntax

Command syntax : ATO

| Command | Possible responses |
|---|---|
| ATO<br>Return from online mode to offline mode | OK |

## 9.7 Result code suppression Q

### 9.7.1 Description :

This command determines whether the mobile equipment sends result codes or not

### 9.7.2 Syntax :

Command syntax : ATQ

| Command | Possible responses |
|---|---|
| ATQ0<br>*Note : Return result codes* | OK<br>*Note : Command valid* |
| ATQ1<br>*Note : Result codes are suppressed and not transmitted* | (none)<br>*Note : No response* |

## 9.8 DCE response format V

### 9.8.1 Description :

This command determines the DCE response format, with or without header characters <CR><LF>, and with the use of numeric result codes.

### 9.8.2 Syntax :

Command syntax : ATV

| Command | Possible responses |
|---|---|
| ATV0<br>*Note : Display result codes as numbers* | 0<br>*Note : Command is valid (0 means OK)* |
| ATV1<br>*Note : Display result codes as words* | OK<br>*Note : Command valid* |

## 9.9 Auto-tests &T

### 9.9.1 Description:

AT&T1 is used to perform audio loop back in the current audio path. This command can be used to validat the audio loop.

Command syntax : AT&T<num>


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| Command | Possible responses |
|---|---|
| AT&T1 | OK<br>*Note : Audio loopback is on.* |
| AT&T2 | OK<br>*Note : Aduio loopback is off.* |

### 9.9.2 Defined Values:

<num>
0 – not defined returns OK
1 – Audio loopback on for current path
2 – Audio loopback is off.

## 9.10 Echo E

### 9.10.1 Description :

This command is used to determine whether or not the modem echoes characters received by an external application (DTE).

### 9.10.2 Syntax :

Command syntax : ATE

| Command | Possible responses |
|---|---|
| ATE0<br>*Note : Characters are not echoed* | OK<br>*Note : Done* |
| ATE1<br>*Note : Characters are echoed* | OK<br>*Note : Done* |

## 9.11 Display configuration &V

### 9.11.1 Description

This command is used to display the modem configuration.
**&V**
**&V0 :** Display the modem configuration in RAM.
**&V1 :** Display the modem configuration in NV-RAM.
**&V2 :** Display the modem factory configuration.

The parameters displayed are the following :
&C: 2; &D: 2; &F: 0; E: 1; L: 0; M: 0; Q: 0; V: 1; X: 4; Z: 0; %D: 0 %C: 0; S0: 0; S10: 14; S11: 95; S3: 13; S4: 10; S5: 8; S6: 2; S7: 50 S8: 2; S9: 6; +FCLASS: 0; +CFG: ""; +FCC: 0,1,0,0,0,0,0,0 +FIS: 0,1,0,0,0,0,0,0; +CDR: 0; +CDS: 0,1,2048,6; +CFC: 0; +CQD: 10 +CRC: 0; +CRM: 0; +CTA: 0; +CXT: 0; +DR: 0; +DS: 3,0,2048,6; +EB: 1,0,30 +EFCS: 1; +ER: 0; +ES: 3,0,2; +ESR: 1; +ETBM: 1,1,20; +FAA: 0 +FAP: 0,0,0; +FBO: 0; +FBU: 0; +FCQ: 1,0; +FCR: 0; +FCT: 1E; +FEA: 0 +FFC: 0,0,0,0; +FHS: 0; +FIE: 0; +FIP: 0; +FLI: ""; +FLO: 1; +FLP: 0 +FMS: 0; +FNR: 0,0,0,0; +FNS: ""; +FPA: ""; +FPI: ""; +FPP: 0; +FPR: 8 +FPS: 1; +FPW: ""; +FRQ: 0,0; +FRY: 0; +FSA: ""; +FSP: 0; +ICF: 3,3 +IFC: 2,2; +ILRR: 0; +IPR: 115200; +MA: ; +MR: 0; +MS: ; +MV18R: 0 +MV18S: 0,0,0;


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+CMUX: C,2; +ADC: 0; +CALA: ""; +CBST: 75,3; +CCED: 0,15 +CCFC: ; +CCLK: ""; +CFUN: 1;
+CICB: 2; +CKPD: ""; +CLCK: 0; +CLIP: 1 +CLIR: 0; +CMEE: 0; +CMER: 0; +CMGD: 0,0; +CMGF:
1; +CMGL: "UREAD" +CMGR: 0; +CMGS: ""; +CMGW: ""; +CMSS: ; +CMUT: 0; +CNMA: 0,0
+CNMI: 2,0,0,0,0; +COPS: 0; +CPHS: 1,1; +CPMS: "MT","MO"; +CR: 0 +CREG: 0; +CRMP: 0,1,0,1;
+CRSL: 1; +CSCS: "PC437"; +CSNS: 2; +CSTA: 129 +ECHO: 5; +SPEAKER: 0; +SIDET: 0,3;
+VGR: 8; +VTD: 150,255; +VTS: +W32K: 0; +WCCS: 0,0,0,0; +WCDM: 0,0; +WDTMF: ; +WFSH: ;
+WIND: 8 +WIOR: 0; +WIOW: 0,0; +WMGO: 0; +WMSC: ; +WNAM: 1; +WOSO: 2; +WPRV: 0
+WRIM: 0; +WRMP: 0; +WRST: ; +WSDT: ; +WSST: 0; +WSTR: 1; +WSVG: 0
+WTONE: 0,1,1,1,0; +WUSS: 0

### 9.11.2 Syntax :

Command syntax : AT&V

| Command | Possible responses |
|---|---|
| AT&V<br>*Note : Display active parameters in RAM* | See above<br>OK<br>*Note : Done* |

## 9.12 Request Indentification Information I

### 9.12.1 Description :

This command causes the product to tranmit one or more lines of information test from the MT2.

Command syntax : ATI<num>

| Command | Possible responses |
|---|---|
| ATI0 | WAVECOM MODEM<br>800 1900<br>OK<br>*Note : Done* |
| ATI3 | S/W VER: WISMOQ WQ1.6A May 17 2002 17:30:00<br><br>OK |
| ATI6 | +CGSM, +CIS707, +MS, +ES, +DS, +FCLASS<br><br>OK |

### 9.12.2 Defined values

Valid range <num> is 0 – 7
For ATI6 the IS-707 command, +GCAP, is more applicable for the MT2.


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# 10 Specific AT commands

## 10.1 Cell environment description +CCED

### 10.1.1 Description :

This command can be used by the application to retrieve the parameters of the main cell and of up to six neighbouring cells.
There are two possible methods for the external application to ascertain these cell parameters: on request by the application or automatically by the product every 5 seconds.
Automatic mode is not supported during communication or registration.

### 10.1.2 Syntax :

Command syntax: AT+CCED=<mode>[, <requested dump>]

### 10.1.3 Defined values :

**<mode>**
**0**: One shot requested
**1**: Automatic shots requested
**2**: Stop automatic shots

Automatic shots will not return a terminating “OK”.

**<requested dump>**
**1**: Main Cell : band class, Channel #, SID, NID, Base Station P Rev, Pilot PN offset, Base Station ID, Slot cycle index, Raw Ec/Io, Rx power, Tx power, Tx Adj
**2**: Neighbor1 to Neighbor20 (max) : First parameter is the number of neighbors. Following parameters: Neighbor1 band class, Neighbor1 Pilot PN, Neighbor1 frequency assignment, Neighbor2 Pilot PN, Neighbor2 band class, Neighbor2 frequency assignment, …
**4**: Timing Advance: Always zero for CDMA

Combination (addition of the values) of the requested dump is supported.

Where <value> is the ASCII string of the values (in decimal form except the LAC and CI values which are in hexadecimal form) of the parameters. If a field cannot be measured – or has no sense – the parameter is not filled in (two consecutive commas are then found).
If the <requested dump> parameter is absent, that of the last +CCED command (or 15 by default) will be used.

## 10.2 Automatic RxLev indication +CCED

### 10.2.1 Description :

The CCED command has been extended to indicate the *received signal strength indication* (rssi) of the main cell. The command principle has not changed.


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### 10.2.2 Syntax :

Command Syntax: AT+CCED=<mode>[, <requested dump>]

### 10.2.3 Defined values :

**<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

The response will be a +CSQ response and not a +CCED response. The 07.07 format for +CSQ is respected. The <ber> is not evaluated by this command, so the <ber> value will always be 99.
+CSQ :<rssi>, 99
OK
This +CSQ response, when automatic shots are selected, is sent every time the <rssi> measured by the product 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 +CCED and +CSQ responses may then be generated.
If the <requested dump> parameter is absent, the last +CCED command parameter (or 15 by default) will be used.

| Command | Possible responses |
|---|---|
| AT+CCED=0,15<br>*Note: one shot, dump all* | +CSQ:29, 99<br>+CCED:0,2,0,300,384,0,160,384,0,384,4,8, 6,296, 6033,1,16,-69,-67,-63<br><br>OK<br>*Note: +CCED has the format: +CCED: <timing advance>,<neighbor parameters>,<main cell parameters>.* |

## 10.3 General Indications +WIND

### 10.3.1 Description :

Wavecom has introduced a general mechanism to send unsolicited non-standardized indications to the application. The identified unsolicited non-standardized indications are:

- indication during mobile originated call setup that the calling party is ringing.
- Indication of the availability of the product to receive AT commands after boot.

For each of these indications, a “bit flow” has to be indicated.

### 10.3.2 Syntax :

Command syntax: AT+WIND= <IndLevel >


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### 10.3.3 Defined values :

**<IndLevel>**
**1** (bit-0): Reserved
**2** (bit-1): Reserved
**4** (bit-2) : Reserved
**8** (bit-3): Indication that the product is ready to process all AT commands
**16** (bit-4): Reserved
**32** (bit-5): Reserved
**64** (bit-6): Network service available indication
**128** (bit-7): Network lost indication
**256** (bit-8): Reserved
512 (bit-9): Reserved

If <IndLevel> is equal to 0 (default value), no unsolicited "+WIND: <IndNb>" will occur.

**Combination (addition of the values) is used to allow more than one indication flow.**
**0 ≥ IndLevel ≤ 1023**

The response is OK if the values are in the previous range.
The unsolicited response will then be:
+WIND : <event> [ ,<idx> ]
<idx>: Call identifier, defined in +CLCC command.

The supported events are:
**<event>**
**0**: Reserved
**1**: Reserved
**2**: Reserved
4: Reserved
8: Product is ready to process all AT commands
16: Reserved
**32** Reserved
64 : The network service is available for an emergency call.
**128**: The network is lost.
**256**: Reserved
**512**: Reserved

The AT+WIND=? Command is supported and indicates the <allowed bit flows>.
Default value is 8: AT command processing ready indication.
AT+WIND=? Gives the possible value range (0-1023)

| Command | Possible responses |
|---|---|
| AT+WIND=128<br>*Note: Turn on Network lost indication only* | OK |


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## 10.4 Analog digital converters measurements +ADC

### 10.4.1 Description :

This command gets the raw value of the ADC conversion. Three ADC read values are specified: VBATT, THERM, HDET.

### 10.4.2 Syntax :

Command syntax: AT+ADC=<item>

| Command | Possible responses |
|---|---|
| AT+ADC=0<br><br>*Note : Select VBATT* | +ADC: 185<br><br>OK<br>*Note : raw value for VBATT* |
| AT+ADC=1<br><br>*Note : Select THERM* | +ADC: 238<br><br>OK |
| AT+ADC=?<br><br>*Note : Ask for the list of possible values* | +ADC: (0-2)<br><br>*Note : possible values 0 –2* |
| AT+ADC?<br><br>*Note : Ask for the current item selected* | +ADC: 1<br><br>OK<br>*Note : THERM selected* |

### 10.4.3 Defined values :

The supported items are:
**<item>**
**0**: VBATT
**1**: THERM
**2**: HDET

## 10.5 Mobile Equipment event reporting +CMER

### 10.5.1 Description :

This command enables or disables sending of unsolicited result codes in the case of a key press.

### 10.5.2 Syntax :

Command Syntax: AT+CMER=<keyp>

### 10.5.3 Defined values :

**<keyp>** (keypad) :


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**0**: No keypad event reporting.
**1**: Keypad event reporting are routed using unsolicited code : +CKEV : <key>, <press>

**<press>**
**1**: key press
**0**: key release

**<key>** : Keyboard map according to Qualcomm HS definitions

## 10.6 Read GPIO value +WIOR

### 10.6.1 Description

Set the I/O port as an input and read the I/O pin value.

### 10.6.2 Syntax

Command syntax: AT+WIOR=<index>
Response syntax: +WIOR: <value>

| Command | Possible responses |
|---|---|
| AT+WIOR=32<br>*Read GPIO 32 value* | +WIOR: 0<br>OK<br>*GPIO 32 value is 0* |

### 10.6.3 Defined values

**<index>**
The GPIO to read. (0-47)
**<value>**
Value of the GPIO pin.

## 10.7 Write GPIO value +WIOW

### 10.7.1 Description

Set the I/O port as an output and set the requested I/O pin value.

### 10.7.2 Syntax

Command syntax: AT+WIOW=<index>,<value>

| Command | Possible responses |
|---|---|
| AT+WIOW=47,1<br>*Set GPIO 47 to 1* | OK<br>*GPIO value is written* |


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### 10.7.3 Defined values

**<index>**
The GPIO to write. (0-47)
**<value>**
**0**: I/O bit is set to 0.
**1**: I/O bit is set to 1.

## 10.8 Play tone +WTONE

### 10.8.1 Description :

This **specific** command allows a tone to be played on the current speaker or on the buzzer. Frequency, volume and duration can be set.

### 10.8.2 Syntax :

Command syntax : AT+WTONE=<mode>[,<dest>,<freq>,<volume>,<duration>]
Response syntax: OK or ERROR

| Command | Possible responses |
|---|---|
| AT+WTONE=1,1,300,2,50<br>*Note : Play a tone* | OK<br>*Note : Done* |
| AT+WTONE?<br>*Note : Current value* | +WTONE: 1,1,300,2,50<br>OK |
| AT+WTONE=0<br>*Note : Stop playing* | OK<br>*Note : Done* |
| AT+WTONE=?<br>*Note : Test command* | +WTONE: (0-1),(1-2),(1-4000),(0-3),(0-50)<br>OK<br>*Note : Done* |

### 10.8.3 Defined values :

**<mode>**
**0**: Stop playing.
**1**: Play a tone
**<dest>**: This parameter sets the destination (mandatory if <mode>=1)
**<dest>**
**1**: Speaker
**2**: Buzzer
**<freq>**: This parameter sets tone frequency (in Hz) (mandatory if <mode>=1). The range is between 1 and 4000Hz.

**<volume> (0-3):** This parameter sets the tone volume. The default value is 1. Values are the same as +CRSL.

**<duration> (0-50):** This parameter sets tone duration (unit of 100 ms). When this parameter is equal to 0 (default value), the duration is infinite, and the tone can be stopped by AT+WTONE=0.


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## 10.9 Play DTMF tone +WDTMF

### 10.9.1 Description :

This **specific** command allows a DTMF tone to be played on the current speaker. DTMF, volume and duration can be set.
This command is only used to play a DTMF tone. To send a DTMF over the CDMA network, use the +VTS command.

### 10.9.2 Syntax :

Command syntax : AT+WDTMF=<mode>[,<dtmf>,<volume>,<duration>]
Response syntax: OK or ERROR

| Command | Possible responses |
|---|---|
| AT+WDTMF=1,"*",2,10<br>*Note : Play a DTMF tone* | OK<br>*Note : Done* |
| AT+WDTMF?<br>*Note : Current value* | +WDTMF: 1,"*",2,10<br>*Note :* |
| AT+WDTMF=0<br>*Note : Stop playing* | OK<br>*Note : Done* |
| AT+WDTMF=?<br>*Note : Test command* | ERROR<br>*Note : Done* |

### 10.9.3 Defined values :

**<mode>**
**0**: Stop playing.
**1**: Play a DTMF tone

**<dtmf>:** This parameter sets the DTMF to play in {0-9,*,#,A,B,C,D} (mandatory if <mode>=1)

**<volume> (0-3):** This parameter sets tone gain. The values are identical to those of the +WTONE (speaker) command (mandatory if <mode>=1).

**<duration> (0-50):** This parameter sets the tone duration (unit of 100 ms). When this parameter is 0 (default value), the duration is infinite, and the DTMF tone can be stopped by AT+WDTMF=0.

## 10.10 Hardware Version +WHWV

### 10.10.1 Description :

This **specific** command gets the hardware version.


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### 10.10.2 Syntax :

Command syntax : AT+WHWV

| Command | Possible responses |
|---|---|
| AT+WHWV<br><br>*Note : Request Hardware Version* | Hardware Version 4.14<br>OK<br>*Note : Hardware version is 4.14* |
| AT+WHWV<br><br>*Note : Request Hardware Version* | Hardware Version -.—<br>OK<br>*Note : No hardware version available* |

## 10.11 Wavecom Select Voice Gain +WSVG

### 10.11.1 Description :

The product has 2 voice gain paths, this **specific** command allows the path to be selected.

### 10.11.2 Syntax :

Command syntax : AT+WSVG = <n>

| Command | Possible responses |
|---|---|
| AT+WSVG=<n> | |
| AT+WSVG=0<br><br>*Note : Select Path 1 (Default)* | OK<br><br>*Note : Path 1 selected* |
| AT+WSVG=1<br><br>*Note : Select Path 2* | OK<br><br>*Note : Path 2 selected* |
| AT+WSVG=?<br><br>*Note : Get the list of possible values* | +WSVG: (0-1)<br><br>*Note : possible values 0 or 1* |
| AT+WSVG?<br><br>*Note : Get the current value* | +WSVG: 1<br><br>*Note : Path 1 is selected* |

### 10.11.3 Defined values

**<n>** Path
**0:** HANDSET (Default)
**1:** HEADSET


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## 10.12 Wavecom Status Request +WSTR

### 10.12.1 Description :

This **specific** command returns some operation status. It can be used for ex. To check the state of the initialization sequence; the different values returned are Not started, Ongoing, Finished.

### 10.12.2 Syntax :

Command syntax: AT+WSTR=<status>
Response syntax: +WSTR: <status>,<value>

| Command | Possible responses |
|---|---|
| AT+WSTR=<status> | +WSTR :<status>,<value> |
| AT+WSTR=1<br><br>*Note : Select the status 1 (INIT SEQUENCE)* | +WSTR: 1,2<br>OK<br>*Note : Init finished* |
| AT+WSTR=2<br><br>*Note : Select the status 2 (NETWORK STATUS)* | +WSTR: 2,1<br>OK<br>*Note : The network is available* |
| AT+WSTR=?<br><br>*Note : Ask the list of possible values* | +WSTR: (1-2)<br><br>*Note : possible values : 1, 2* |

### 10.12.3 Defined values

<**status**> **1** Initialisation sequence
<**value**>
**0:** Not started
**1:** On going
**2:** Finished

<**status**> **2** Network status
<**value**>
**0:** No network
**1:** Network available

## 10.13 Wavecom Ring Indicator Mode +WRIM

### 10.13.1 Description :

This **specific** command sets or returns the state of the Ring Indicator Mode.
In pulse RI mode, an electrical pulse lasting approximately 10µs is sent on the Ring Indicator signal just before sending any unsolicited AT response in order not to lose AT responses when client tasks are in sleep state. Still in RI mode, when receiving incoming calls, electrical pulses are sent on the RI signal.
In up-down RI mode, no pulses are sent before unsolicited AT response, and up-down signals are sent when receiving an incoming call.


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### 10.13.2 Syntax :

Command syntax: AT+WRIM=<n>

| Command | Possible responses |
|---|---|
| AT+WRIM=<n> | |
| AT+WRIM=0<br><br>*Note : Select up-down RI mode* | OK<br><br>*Note : up-down RI mode selected* |
| AT+WRIM=1<br><br>*Note : Select pulse RI mode* | OK<br><br>*Note : pulse RI mode selected* |
| AT+WRIM=?<br><br>*Note : Ask the list of possible values* | +WRIM: (0-1)<br><br>*Note : possible values 0 or 1* |
| AT+WRIM?<br><br>*Note : Ask the current value* | +WRIM: 1<br><br>*Note : current RI mode is pulse RI.* |

### 10.13.3 Defined values

**<n>**
**0:** up-down RI mode
**1:** pulse RI mode

## 10.14 Wavecom 32kHz Sleep Mode +W32K

### 10.14.1 Description :

This **specific** command allows the 32kHz sleep mode to be enabled or disabled.
When sleep mode is entered, the product uses a 32kHz internal clock during inactivity stages.
When enabled, sleep mode is active after 1 to 15 minutes.

### 10.14.2 Syntax :

Command syntax : AT+W32K=<mode>

| Command | Possible responses |
|---|---|
| AT+W32K=1<br>*Note : Enable 32kHz* sleep *mode* | OK<br>*Note : 32kHz* sleep *mode is enabled* |
| AT+W32K=0<br>*Note : Disable 32kHz* sleep *mode* | OK<br>*Note : 32kHz* sleep *mode is disabled* |


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### 10.14.3 Defined values

<mode>
**0:** Disable 32kHz powerdown mode
**1:** Enable 32kHz powerdown mode

## 10.15 Wavecom Change Default Melody +WCDM

### 10.15.1 Description :

This **specific** command allows a manufacturer specific melody to be selected. This default melody will be played for any new incoming voice call, either on the buzzer or on the speaker. If melody 0 is selected, no melody will be played.

Note :
Selection of the player will have effect on the setting of the WCDP command.

### 10.15.2 Syntax :

Command syntax : AT+WCDM=<melody>,<player>

| Command | Possible responses |
|---|---|
| AT+WCDM=0<br>*Note : Select no melody* | OK |
| AT+WCDM=5<br>*Note : Select melody n°5* | OK |
| AT+WCDM?<br>*Note : Indicate the current melody* | +WCDM: 5,0<br>OK<br>*Note : Melody n°5 is currently selected, and the buzzer is selected to play it.* |
| | RING<br>*Note : An incoming call occurs, and the melody n°5 is played on the buzzer.* |
| AT+WCDM=,1<br>*Note : Select the speaker to play the melody on.* | OK |
| AT+WCDM? | +WCDM: 5,1<br>OK<br>*Note : Now the speaker is selected to play the melody if an incoming call occurs.* |

### 10.15.3 Defined values

<melody>
**0:** No melody (**default**)
**1…10:** Melody 1 to 10

<player>
**0:** Melody n°<melody> will be played on the buzzer for any new incoming voice call. (**default**)
**1:** Melody n°<melody> will be played on the speaker for any new incoming voice call.


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## 10.16 Wavecom Software version +WSSW

### 10.16.1 Description :

This **specific** command displays some internal software reference.

### 10.16.2 Syntax :

Command syntax : AT+WSSW

| Command | Possible responses |
|---|---|
| AT+WSSW<br>*Note : Get Software version* | +WSSW: WQ1.6<br>OK<br>*Note : internal software information* |

## 10.17 Wavecom Custom Character Set +WCCS

### 10.17.1 Description :

This **specific** command allows to edit and display the custom character set tables. The "CUSTOM" mode of +CSCS command use this character set. In this mode, when the user enters a string, this string is converted into CDMA alphabet using the Custom To CDMA table. In a similar way, when the user requests a string display, the string is converted from CDMA alphabet using the CDMA 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, otherwise the command will terminate with a "+CME ERROR: 3" result.

### 10.17.2 Syntax :

Command syntax : AT+WCCS=<mode>,<table>,<char 1>[,<char 2>]

| Command | Possible responses |
|---|---|
| AT+WCCS=0,0,20,30<br>*Note : Display from character 120 to character 130 of the Custom To CDMA conversion table* | +WCCS: 11,<br>78797A2020202020097E05<br>OK<br>*Note : 11 characters displayed* |
| AT+WCCS=1,0,115<CR><br>20<ctrl-Z><br>*Note : Edit character 115 of the Custom To CDMA conversion table* | OK<br>*Note : Edition successful* |
| AT+WCCS=1,1,0,4<CR><br>40A324A5E8<ctrl-Z><br>*Note : Edit the 5 first characters of the CDMA To Custom conversion table* | OK<br>*Note : Edition successful* |
| AT+WCCS=1,1,200<br>*Note : Edit character 200 of CDMA To Custom* | +CME ERROR: 3<br>*Note : Index out of range* |


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| | |
|---|---|
| *conversion table* | |

### 10.17.3 Defined values

<mode>
**0:** Display the table
**1:** Edit the table

<table>
**0:** Custom To CDMA conversion table
**1:** CDMA 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 CDMA To Custom conversion table
**0…255:** for Custom To CDMA conversion table

## 10.18 CPHS command +CPHS

### 10.18.1 Description :

This **specific** command is used to activate, deactivate or interrogate a CPHS feature (e.g. Voice Mail Indicator). Upon performing interrogation (mode = 2), the selected FctId CPHS feature is automatically enabled (status = 1).
Note :
This command may answer +CME ERROR: 3 if the CPHS feature is disabled.

### 10.18.2 Syntax

Command syntax : AT+CPHS=<Mode>,<FctId>

| Command | Possible responses |
|---|---|
| AT+CPHS=<Mode>,<FctId> | OK<br>+CME ERROR: 3 |
| AT+CPHS? | +CPHS: <Status>,<FctId1><CR<LF><br>OK |
| AT+CPHS=? | +CPHS: (0-2),(1-1)<br><br>OK |

### 10.18.3 Defined values:

**<Mode>**
**0**: Deactivate a CPHS feature
**1**: Activate a CPHS feature
**2**: Interrogate a CPHS status

**<FctId>**
**1**: Voice Mail Indicator


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**<Status>**
**0**: CPHS feature disabled
**1**: CPHS feature enabled

## 10.19 Unsolicited result : Wavecom Voice Mail Indicator +WVMI

### 10.19.1 Description :

This unsolicited indication gives the status of the Voicemail Inbox.

Syntax : +WVMI: <LineId>,<Num>
Option :
**<LineId>**
**1:** Line 1

**<Num>**
The number of messages waiting in the inbox.
**0:** No message waiting.
**1:** One message is waiting
**3**: Three messages are waiting

| Command | Possible responses |
|---|---|
| | +WVMI: 1,2<br>OK<br>Note: 2 messages are in your voicemail box. |

### 10.19.2 Example

```
AT+CPHS?                                    Interrogate the status of CPHS functionality
+CPHS: 1,0                                  The voice mail indicator functionality is deactivated
OK

AT+CPHS=3,1                                 Syntax error
+CME ERROR: 3

AT+CPHS=1,1                                 Activate the voice mail indicator functionality
OK

AT+CPHS?                                    Interrogate the status of CPHS functionality
+CPHS: 1,1                                  The voice mail indicator functionality is activated
OK

**** the message box contains 1 message *****
+WVMI: 1,1                                  A message is waiting on Line 1

AT+CPHS=2,1                                 Interrogate the status of voice mail indicator functionality
OK

+WVMI: 1,1                                  a message is waiting on LINE 1

AT+CPHS?                                    Interrogate the status of CPHS functionality
+CPHS: 1,1                                  The voice mail indicator functionality is activated
OK
```


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## 10.20 Wavecom Change Default Player +WCDP

### 10.20.1 Description

This **specific** command allows the default melody player to be selected.

Note :
Selection of the player will have effect on the setting of the WCDM command.

### 10.20.2 Syntax

Command syntax AT+WCDP = <player>

| Command | Possible responses |
|---|---|
| AT+WCDP=? | +WCDP : (0-1)<br>OK |
| AT+WCDP=0<br>*Select the speaker.* | OK |
| AT+WCDP? | +WCDP: 0<br><br>OK |

### 10.20.3 Defined values :

**<player>**
**0**: Speaker
**1**: Buzzer

## 10.21 Wavecom Reset +WRST

### 10.21.1 Description

This **specific** command allows to reset the module after the time specified by the second parameter.

### 10.21.2 Syntax

Command syntax : AT+WRST =<Mode>,<Delay>

Response syntax : +WRST: <Mode>,<Delay>,<RemainTime>

| Command | Possible responses |
|---|---|
| AT+WRST=? | ERROR |
| AT+WRST=0<br>*Disable timer* | OK |
| AT+WRST=1,"001:03" | OK |


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| | |
|---|---|
| *Enable timer and put delay at 1 hour 3 minutes* | |
| AT+WRST? | +WRST: 1,"001:03","001:01"<br><br>OK<br><br>*Note: Timer activated to reset after 1 hour and 3 minutes. Actually 1 hour and 1 minute remaining before next reset.* |

#### 10.21.3 Defined values :

**<val1>** **0**: timer reset is disabled
**1**: timer reset is enabled

**<Delay>** specify the time for reset
**"000:00"- "199:59"**

**<RemainTime>** time before next reset
**"000:00"- "199:59"**

## 10.22 Set Standard Tone +WSST

#### 10.22.1 Description :

This command allows to set/get the sound level.of the Standard Tones.

#### 10.22.2 Syntax :

Command syntax : AT+WSST=<sound level>

| Command | Possible responses |
|---|---|
| AT+WSST=0<br>*Note : Set volume to Max.* | OK |
| AT+WSST=3<br>*Note : Set volume to Min.* | OK |
| AT+WSST?<br>*Note : get current standard tones sound level* | +WSST: 3<br><br>OK<br>*Note : Current level is 3 (min.)* |
| AT+WSST=? | +WSST: (0-3) |

#### 10.22.3 Defined values :

**<sound level>**

- 1 Max volume (default)
- 1 Min volume


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## 10.23 Set voice privacy level +WPRV

### 10.23.1 Description :

This command sets the CDMA voice privacy level. This command can only be called during a voice call. X = 0 is normal; x = 1 is secure. Example: AT+WPRV=1 for a secure voice call.

### 10.23.2 Syntax :

Command syntax : AT+WPRV=<x>

| Command | Possible responses |
|---|---|
| AT+WPRV=0<br>*Note : Set to normal voice call* | OK |
| AT+WPRV=1<br>*Note : Set to secure voice call* | OK |


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# 11 Extended AT commands in IS707.3

WISMOQ CDMA module also implements the CDMA AT commands as specified in the TIA/EIA/IS-707.3 (please refer to another document in the appendix for the detail) with the exception listed in the following tables:

**AT Commands Not Supported Per TIA/EIA/IS707.3**

| Commands | Description | Status | Explanation |
|---|---|---|---|
| L0 | Low speaker volume. | Command accepted, no action taken. | Mobile audio stream not used for Async Data or G3 Fax |
| L1 | Low speaker volume. | Command accepted, no action taken. | Mobile audio stream not used for Async Data or G3 Fax |
| L2 | Med speaker volume. | Command accepted, no action taken. | Mobile audio stream not used for Async Data or G3 Fax |
| L3 | High speaker volume. | Command accepted, no action taken. | Mobile audio stream not used for Async Data or G3 Fax |
| M0 | Speaker off | Command accepted, no action taken. | Mobile audio stream not used for Async Data or G3 Fax |
| M1 | Speaker on until carrier reported | Command accepted, no action taken. | Mobile audio stream not used for Async Data or G3 Fax |
| +IBC | In-Band Control Compound Parameter. The AT+IBC compound parameter provides for the enabling, disabling and configuration of In-Band Control Service. See Section 8 of ANSI/TIA/EIA-617 for a complete description of this command. | Not implemented | Optional. |
| +CSO | Change Service Option to Service Option <n>. | Not implemented | Optional |
| +CAU | Audio passthrough between DTE and MT2<br>1. Audio Pass Through Disabled<br>2. Audio Pass Through Enable | Not implemented | N/A |
| +CPS | Select the service option to be used for packet data service.<br>Values shall be as specified in TSB58 | Not implemented | |
| +CPSR | Enables/disables packet call state reporting.<br>0 - Disables call state reporting<br>1 - Enables call state reporting | Not implemented | |


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**AT Commands Not Supported Per TIA/EIA/IS707.3**

| Commands | Description | Status | Explanation |
|---|---|---|---|
| +CPTC | Controls Traffic Channel state without affecting the IWF Link Layer connection.<br>**0** Release Traffic Channel<br>1 Originate Traffic Channel | Not implemneted | |
| +CPER | Enables/disables packet call event reporting.<br>**0** Disables call event reporting<br>1 Enables call event reporting | Not implemented | |

**Cellular Result Codes Not Supported Per TIA/EIA/IS707.3**

| Commands | Description | Status | Explanation |
|---|---|---|---|
| +CERROR: BAD REQUEST | Intercept received after call origination. | Not implemneted | |
| +CERROR: LINK FAIL | Mobile station has declared a loss of the Traffic Channel. | Not implemneted | |
| +CERROR: NO SERVICE | Origination was attempted while the mobile station was not able to monitor a CDMA Paging Channel. | Not implemneted | |
| +CERROR: NO <service option> SERVICE | The indicated service option was rejected. The <service option> shall be “ASYNC” or “FAX.” | Not implemneted | |
| +CERROR: PAGE FAIL | Mobile station received a page but not an alert. | Not implemneted | |
| +CERROR: PAGED | Mobile station attempted to originate after receiving a page. | Not implemneted | |
| +CERROR: RELEASE | Indicates call release | Not implemneted | |
| +CERROR: RETRY | Reorder received after call origination. | Not implemneted | |
| +CPACKET | May be returned after AT+CRM=1 or 2 or 3. Indicates packet data service is in the *Active State*. | | |


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**Cellular Result Codes Not Supported Per TIA/EIA/IS707.3**

| Commands | Description | Status | Explanation |
|---|---|---|---|
| +CPSR | Packet call state. Sent autonomously when +CPSR=1. | Not implemneted | |
| +CPER | Packet call event. Sent autonomously when +CPER=1. | Not implemneted | |
| +CERROR: LINK FAIL | Mobile station has declared a loss of the Traffic Channel | Not implemneted | |
| +CERROR: NO SERVICE | Mobile station is not able to monitor a Paging Channel | Not implemneted | |
| +CERROR: RETRY | Reorder received during a reconnect attempt | Not implemneted | |


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# 12 Qualcomm Defined AT commands for CDMA operation

## Table 12-1 Qualcomm Defined AT Commands

| Command | Description | Operation |
|---|---|---|
| $QCQNC | Enable/Disable Quick Net Connect (QNC) | 0 := Disable QNC capability. This means that packet Originations will use the Packet Data Service Option number.<br>1 := Enable QNC capability. This means that Packet Originations will use the Async Data Service Option number. |
| $QCMTOM | Originate Mobile-to-Mobile Packet Data call using QUALCOMM proprietary Service Option number | Complete command is AT$QCMTOM =<number>, where <number> is the phone number to dial. This command will originate a Mobile-to-Mobile Packet data call using the QUALCOMM-proprietary Service Option number 0x8003. This is a Rate Set 1 call. |
| $QCRLPD | Dump RLP protocol statistics | This command will dump the RLP statistics in ASCII format to the TE2. This does not apply to RLP 3 statistics (see $QCRL3D). |
| $QCRLPR | Reset RLP protocol statistics | This command will zero all the RLP statistics counters. This does not apply to RLP 3 statistics (see $QCRL3R). |
| $QCPPPD | Dump PPP protocol statistics | This command will dump the PPP statistics in ASCII format to the TE2. |
| $QCPPPR | Reset PPP protocol Statistics | This command will zero all of the PPP statistics counters. |
| $QCIPD | Dump IP protocol statistics | This command will dump the IP statistics in ASCII format to the TE2. |
| $QCIPR | Reset IP protocol statistics | This command will zero all of the IP statistics counters. |
| $QCUDPD | Dump UDP protocol statistics | This command will dump the UDP statistics in ASCII format to the TE2. |
| $QCUDPR | $QCUDPR Reset UDP protocol statistics | This command will zero all the UDP statistics counters. |
| $QCTCPD | Dump TCP protocol statistics | This command will dump the TCP statistics in ASCII format to the TE2. |
| $QCTCPR | Reset TCP protocol statistics | This command will zero all the TCP statistics counters. |
| &V | Dump configuration parameters | This command will dump the status of all AT parameters. This includes the single-letter parameters not otherwise readable, but does not include the +QC parameters. |


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| Command | Description | Operation |
|---|---|---|
| &C2 | Carrier Detect pin behavior | This command setting will 'wink' (briefly transition off, then back on) the Rm port Carrier Detect pin when Packet Data calls end. |
| $QCSO= | Set Data Service Option number set; saves to non-volatile memory | • 0 := pre-707 SO numbers (RS 1: Async 4, G3 Fax 5, packet 7; RS 2: Async 12, G3 Fax 13, packet 15)<br>• 1 := proprietary SO numbers (RS 1: Async 4, G3 Fax 5, packet 7; RS 2: Async 0x8021, G3 Fax 0x8022, packet 0x8020)<br>• 2 := IS-707 SO numbers (RS 1: Async 0x1004, G3 Fax 0x1005, packet 0x1007; RS 2: Async 12, G3 Fax 13, packet 15) |
| $QCCLR | Clear mobile error log | This command will clear the mobile error log. |
| $QCCAV | Answer incoming voice call | This command provides a means to answer an incoming voice call via an AT command. |
| $QCPKND | Enable/Disable Automatic Packet Detection after a Dial command | • 0 := Disable Packet No Dial. If a PPP packet is received by the mobile without a just prior dial command (that is, AtdX #), then the mobile will originate a Packet (or QNC) data call.<br>• 1 := Enable Packet No Dial. Reception of a PPP packet without a just prior dial command will NOT Originate a PPP packet (or QNC) call. |
| $QCVAD= | Prearrangement setting; respond to Page message that has a Voice service option with a Page response that has a Data service option | • 0 := Off<br>• 1 := Fax for next call<br>• 2 := Fax for all calls<br>• 3:= Async for next call<br>• 4:= Async for all calls |
| $QCDMR | Set DM baud rat | 19200, 38400, 57600, 115200 |
| $QCMDR= | Set Medium Data Rate (MDR) (also known as HSPD) setting | Valid values are 0 to 3:<br>• 0 := MDR Service Only. The mobile will originate with SOS 22 or SO 25. The mobile will not negotiate to any other service option if SO 22 and SO 25 are unavailable.<br>• 1:= MDR Service, if available. The mobile will originate with SO 22 or SO 25, but will negotiate to a Low-Speed Packet service option if MDR is not available. The mobile will not negotiate to SO 33.<br>• 2 := LSPD only. The mobile will originate a Low-Speed Packet call only. The mobile will not negotiate to SO 22, SO 25, or SO 33.<br>• 3:= SO 33, if available. The mobile will negotiate to MDR or Low-Speed Packet service options if SO 33 is not available. |
| QCRL3D | Dump RLP 3 protocol statistics | This command will dump the RLP 3 statistics in ASCII format to the TE2. This does not apply to other versions of RLP (see $QCRLPD). |


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| Commands | Description | Operation |
|---|---|---|
| $QCRL3R | Reset RLP 3 protocol statistics | This command will zero all of the RLP 3 statistics counters. This does not apply to other versions of RLP (see $QCRLPR). |
| $QCSCRM | Enable/disable mobile from SCRM'ing. | • 0 := Mobile never SCRMs.<br>• 1 := Mobile can SCRM as needed.<br>Command only applies to SO 33 calls. This value is stored in NV. The default is 1. |
| $QCTRTL | Enable/disable R-SCH throttling. | • 0 := Mobile never throttles R-SCH<br>• 1 := Mobile can throttle R-SCH as needed.<br>Command only applies to SO 33 calls. This value is stored in NV. The default is 1.<br>*For MSM500, MSM5105, and MSM5100 ASICs only. |
| $QCMIP | Enable/Disable Mobile IP □¡ | 0 := Mobile IP disabled, Simple IP only.<br>1 := Mobile IP preferred.<br>In the initial MIP registration, if the network does not support Mobile IP, then the mobile automatically reverts to Simple IP (force a PPP renegotiation by sending a LCP C-Req). However, if a Mobile IP session is registered, and then the mobile enters a network that does not support Mobile IP, the mobile will drop the session and inform the upper layers of the failure (for example, by dropping DCD to a laptop).<br>2 := Mobile IP only.<br>The mobile will make data calls only when Mobile IP is supported in the network. During a MIP session, if the mobile hands off to a network that does not support MIP, then the mobile will drop the session and inform the upper layers of the failure (for example, by dropping DCD to a laptop). This value is stored in NV. The default value is 0.<br>**Note:** When the AT$QCMIP value is changed to 1 or 2, this modifies the value of AT+CRM to 2. AT+CRM with a value of 2 enables network model operation. Changing the value to 0 will reset the AT+CRM to its original value. **Note:** This change is *not* supported by DMSS 5105 Release 1.0 Commercial.<br>**Note:** When the AT$QCMIP value is changed to 1 or 2, this modifies the value of AT$QCMDR to 3. AT$QCMDR=3 means that the mobile tries Service Option 33 when it is in a cdma2000 network that advertises P_REV 6 or higher. When AT$QCMIP >0 and an attempt is made to set AT$QCMDR to less than 3, the mobile will return ERROR.<br>**Note:** When the AT$QCMIP value is set to 1 or 2, this changes the value of AT$QCPKND to 0. This means that the mobile must see a dial string (such as ATDT#777) on the serial interface before it will originate packet data calls. When AT$QCMIP >0 and an attempt is made to set AT$QCPKND to 1, the mobile returns ERROR.<br>**Note:** This AT command is for test purposes only and should not be changed by the mobile phone user. |


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| Commands | Description | Operation |
|---|---|---|
| $QCMIPP | Select MIP user profile to be active | Takes a profile number between 0 and 5. This value is stored in NV. This AT command is expected to be used by users to configure Dial-Up Networking |
| $QCMIPT | Enables/Disables the use of rfc2002bis authentication | • 0:= Use of rfc2002bis authentication is disabled. Rfc2002 style authentication is used instead.<br>• 1:= Use of rfc2002bis authentication is enabled.<br>**Note:** This AT command is for test purposes only and should not be changed by the mobile phone user. |


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# 13 Unsolicited AT Result Codes

## 13.1 Cell Broadcast Message Directly Displayed +CBM

### 13.1.1 Description :

This command indicates a Cell Broadcast message has been received and, according to message storage preferences (+CNMI), is to be directly displayed.

### 13.1.2 Syntax :

Response syntax : +CBM: [<alpha>,] <length> <CR> <LF> <pdu> (PDU mode)
+CBM: <oa>,[<alpha>,] <scts> [,<tooa>, <length>] <CR><LF><data> (text mode)

| Example Result |
|---|
| +CBM: “123456”,”98/10/01,12 :3000+00”,129,5<CR><LF><br>Hello<br>*Note : Cell broadcast message received* |

## 13.2 Cell Broadcast Message Stored in Memory +CBMI

### 13.2.1 Description :

This command indicates a Cell Broadcast message has been received and, according to message storage preferences (+CNMI), is to be stored in memory.

### 13.2.2 Syntax :

Response syntax : +CBMI: “BC”,<index>

| Example Result |
|---|
| +CBMI: “BC”,5<br>*Note : Cell broadcast message received and stored in “BC” memory at index 5* |


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## 13.3 Cell Environment Description Indication +CCED

### 13.3.1 Description :

This command indicates cell environment description. It is returned when the +CCED AT command is set to return automatic shots of the cell environment. For more information, see the +CCED AT command.

### 13.3.2 Syntax :

Response syntax : +CCED: <dump>

| Example Result |
|---|
| +CCED:0,2,0,300,384,0,160,384,0,384,4,8, 6,296, 6033,1,16,-69,-67,-63<br>*Note : Cell environment description indication in response to AT+CCED=1,7* |

## 13.4 Call Waiting Indication +CCWA

### 13.4.1 Description :

This unsolicited command indicates another incoming call is occurring during an existing call. See +WFSH, section 7.5 for information about handling call waiting situations.

### 13.4.2 Syntax :

Response syntax : +CCWA: <caller_id>, <type>

| Example Result |
|---|
| +CCWA: 18005551212,129<br>*Note : Incoming call from 1-800-555-1212, type always equals 129.* |

## 13.5 SMS Status Report Indication Directly Displayed +CDS

### 13.5.1 Description :

This command indicates an SMS status report has been received and, according to message storage preferences (+CNMI), is to be directly displayed.

### 13.5.2 Syntax :

Response syntax : +CDS : <length> <CR> <LF> <pdu> (PDU mode)
+CDS : <fo>,<mr>, [<ra>] , [<tora>], <scts>,<dt>,<st> (Text mode)

| Example Result |
|---|
| +CDS : 2, 116, ”3146290800”, 129, “98/10/01,12 :30 :07+04”, “98/10/01 12 :30 :08+04”, 0 |


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*Note : SMS status report received*

## 13.6 SMS Status Report Indication Stored in Memory +CDSI

### 13.6.1 Description :

This command indicates an SMS status report has been received and, according to message storage preferences (+CNMI), is to be stored in memory.

### 13.6.2 Syntax :

Response syntax : +CDSI: “SR”,<index>

| Example Result |
|---|
| +CDSI: “SR”,5<br>*Note : SMS status report received and stored in “SR” memory at index 5* |

## 13.7 Key Press or Release +CKEV

### 13.7.1 Description :

This command a key has been pressed or released.

### 13.7.2 Syntax :

Response syntax : +CKEV: <key>,<press>

| Example Result |
|---|
| +CKEV: 9,0<br>*Note : Indicates key 9 has been released* |

### 13.7.3 Defined values :

**<key>** Keyboard map according to Qualcomm HS definitions
**<press>**
**1**: key press
**0**: key release

## 13.8 Caller ID Presentation +CLIP

### 13.8.1 Description :

This unsolicited command indicates caller ID information is available for the current incoming call. See +CLIP, section 7.4, for enable and disabling this result.


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Syntax :
Response syntax : +CLIP: <caller_id>, <type>

| Example Result |
|---|
| +CLIP: 18005551212,129<br>*Note : Incoming call from 1-800-555-1212, type always equals 129.* |

## 13.9 Incoming Message Directly Displayed +CMT

### 13.9.1 Description :

This command indicates an incoming message has been received and, according to message storage preferences (+CNMI), is to be directly displayed.

### 13.9.2 Syntax :

Response syntax : +CMT: [<alpha>,] <length> <CR> <LF> <pdu> (PDU mode)
+CMT: <oa>,[<alpha>,] <scts> [,<tooa>, <length>] <CR><LF><data> (text mode)

| Example Result |
|---|
| +CMT: “123456”,”98/10/01,12 :3000+00”,129,5<CR><LF><br>Hello<br>*Note : Incoming message received* |

## 13.10 Incoming Message Stored in Memory +CMTI

### 13.10.1 Description :

This command indicates an incoming message has been received and, according to message storage preferences (+CNMI), is to be stored in memory.

### 13.10.2 Syntax :

Response syntax : +CMTI: “MT”,<index>

| Example Result |
|---|
| +CMTI: “MT”,5<br>*Note : Incoming message received and stored in “MT” memory at index 5* |


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## 13.11 Mode Preference +COPS

### 13.11.1 Description :

This unsolicited command indicates a change in mode preference has taken place. See +COPS, section 5.2 for information about Changing Mode Preference.

### 13.11.2 Syntax :

Response syntax : +COPS: <mode>

| | |
|---|---|
| AT+COPS=0<br>*Note : Ask for Automatic mode* | OK<br>+COPS:0<br>*Note: Unsolicited +COPS result confirms Automatic mode is requested* |
| AT+COPS=1<br>*Note : Ask for PCS mode* | OK<br>+COPS:1<br>*Note: Unsolicited +COPS result confirms PCS mode is requested* |
| AT+COPS=2<br>*Note : Ask for Cellular mode* | OK<br>+COPS:2<br>*Note : Unsolicited +COPS result confirms Cellular mode is requested* |

## 13.12 Registration & Roaming +CREG

### 13.12.1 Description :

This unsolicited command indicates the current state of roaming . See +COPS, section 5.2 for information about Changing Mode Preference.

### 13.12.2 Syntax :

Response syntax : +CREG: <stat>

| Example Result |
|---|
| +CREG: 2<br>*Note : Module has found the home network and is registered.* |

**<stat>**
**0**: not registered, MS is not currently searching for a new operator.
**1**: registered, home network.
**2**: not registered, MS currently searching for a base station.
**4**: unknown.
**5**: registered, roaming


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## 13.13 Incoming Call +CRING

### 13.13.1 Description :

This unsolicited command indicates an incoming call. See +CRC, section 8.3 for information about enabling this result.

### 13.13.2 Syntax :

Response syntax : +CRING: <Type>

| | |
|---|---|
| +CRING:VOICE | for normal voice calls |
| +CRING:DATA | for all types of data calls |
| +CRING:FAX | for all types of fax calls |
| +CRING:OTAPA | for OTAPA calls |
| +CRING:TEST | for markov, loopback, and test calls |
| +CRING:UNKNOWN | for unknown/undefined calls types |

## 13.14 Automatic RxLev Indication +CSQ

### 13.14.1 Description :

This command indicates RSSI automatic shots when AT+CCED=1,8 is processed.

### 13.14.2 Syntax :

Response syntax : +CSQ: <rssi>,99

| Example Result |
|---|
| +CSQ:29, 99<br><br>*Note : RSSI notification* |

## 13.15 Incoming Call +RING

### 13.15.1 Description :

This unsolicited command indicates an incoming call.

### 13.15.2 Syntax :

Response syntax : +RING


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| Example Result |
|---|
| +RING<br>+RING<br>*Note : Incoming Call* |

## 13.16 Call Answered +WANS

### 13.16.1 Description :

This unsolicited command indicates that an incoming voice call has been answered.

### 13.16.2 Syntax :

Response syntax : +WANS

| Command | Possible responses |
|---|---|
| ATA | +RING<br>OK<br>+WANS<br>*Note: Call answered*<br>+WCNT:3 |

## 13.17 Call Connected +WCNT

### 13.17.1 Description :

This unsolicited command indicates that an incoming or outgoing voice call has been connected into a traffic channel state.

### 13.17.2 Syntax :

Response syntax : +WCNT: <so>

| Command | Possible responses |
|---|---|
| ATD18005551212; | OK<br>+WORG:18005551212<br>+WCNT:3<br>*Note: Call Connected with service option 3* |


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## 13.18 Call Ended +WEND

### 13.18.1 Description :

This unsolicited command indicates that a voice call or attempt to establish a voice call has ended.

### 13.18.2 Syntax :

Response syntax : +WEND: <reason>

| Command | Possible responses |
|---|---|
| ATD18005551212;<br><br><br>ATH | OK<br>+WORG:18005551212<br>+WCNT:3<br>OK<br>+WEND:10<br>*Note: Call Ended with a normal release* |
| ATD18005551212; | OK<br>+WORG:18005551212<br>+WEND:3<br>Note: Call failed because the signal faded. |

<**reason**>
**0**: Phone is offline
**1**: Phone is CDMA locked
**2**: Phone has no service
**3**: Call Faded/Dropped
**4**: Received Intercept from Base Station
**5**: Received Reorder from Base Station
**6**: Received a Release from Base Station (This is a normal call termination).
**7**: Service Option rejected by Base Station
**8**: Received Incoming Call
**9**: Received an alert stop from Base Station
**10**: Software ended the call (Normal release).
**11**: Received End Activation – OTASP calls only.
**12**: Internal Software aborted the origination/call.
**13**: NDSS failure (Network Directed System Selection, this is an IS-95B service)
**14**: Maximum Acces probes exhausted (The module failed to contact the Base Station)
**16**: RUIM not present
**17**: Origination already in progress
**18**: General Access Failure
**19**: Received retry order (IS-2000 only).


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## 13.19 Feature Notification Message +WFNM

### 13.19.1 Description :

This unsolicited command displays a broadcast message that the carrier may send to all mobiles in an emergency. This event is required for CDMA specifications.

### 13.19.2 Syntax :

Response syntax : +WFNM="<message>"

| Command | Possible responses |
|---|---|
| | +WFNM="Help, I have falling and I can't get up!" |

## 13.20 Flash indication +WFSH

### 13.20.1 Description :

This unsolicited command confirms that a flash has been sent to the base station. See +WFSH command, section 7.5, for more information on using flash commands.

### 13.20.2 Syntax :

Response syntax : +WFSH

| Command | Possible responses |
|---|---|
| AT+WFSH | OK<br>+WFSH |

## 13.21 Wavecom General Indicator +WIND

### 13.21.1 Description :

This unsolicited result gives general status indications.

### 13.21.2 Syntax :

Response syntax : +WIND: <event>

| Example Result |
|---|
| +WIND:8<br><br>*Note : General indication that AT commands are ready to be accepted* |


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#### 13.21.3 Defined values :

**<event>**
**0**: Reserved
**1**: Reserved
**2**: Reserved
4: Reserved
8: Product is ready to process all AT commands
16: Reserved
**32** Reserved
64 : The network service is available for an emergency call.
**128**: The network is lost.
**256**: Reserved
**512**: Reserved

## 13.22 Call Originated +WORG

#### 13.22.1 Description :

This unsolicited command indicates that an attempt to establish a voice call has occurred.

#### 13.22.2 Syntax :

Response syntax : +WORG:<number>

| Command | Possible responses |
|---|---|
| ATD18005551212; | OK<br>+WORG:18005551212<br>+WCNT:3<br>OK |

Note: <number> is the dialing string sent to the base station. You may see extra numbers before the intended dialing string, this is a result of prepended numbers or other call options such as +CLIR.

## 13.23 Call Privacy indication +WPRV

#### 13.23.1 Description :

This unsolicited command confirms that the call privacy level has changed during a call.

Syntax :
Response syntax : +WPRV: <prv>


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| Command | Possible responses |
|---|---|
| AT+WPRV=1 | OK<br>+WPRV: 1 |

<prv>
**0**: Indicates normal privacy
**1**: Indicates enhanced privacy

## 13.24 Roaming indication +WROM

### 13.24.1 Description :

This unsolicited command indicated roaming status has changed.

Syntax :
Response syntax : +WROM: <roam>

| Command | Possible responses |
|---|---|
| | +WROM:1 |

<roam>
**0**: Home.
**1**: Roam Icon ON (affiliated network)
**2**: Roam Icon Blink (foreign network)

## 13.25 Current NAM Change +WNAM

### 13.25.1 Description :

This unsolicited command indicated the current NAM has changed.

Syntax :
Response syntax : +WNAM: <nam>

| Command | Possible responses |
|---|---|
| | +WNAM:2 |

<nam>
**1**: NAM 1
**2**: NAM 2
**3**: NAM 3
**4**: NAM 4


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## 13.26 Wavecom Voice Mail Indicator +WVMI

### 13.26.1 Description :

This unsolicited indication gives the status of the Voicemail Inbox.

### 13.26.2 Syntax :

Response syntax : +WVMI: <LineId>,<Num>

| Example Result |
|---|
| +WVMI:1,1<br><br>*Note : 1 Message waiting on Line 1* |

### 13.26.3 Defined values :

**<LineId>**
**1:** Line 1
**<Num>**
The number of messages waiting in the inbox.
**0:** No message waiting.
**1:** One message is waiting
3: Three messages are waiting


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# 14 Appendices

## 14.1 MS 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) |
| 10-23 | Reserved | |
| 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 | Reserved | |
| | | |
| 40 | Network personalization PIN required (Network lock) | All GSM 07.07 commands (+CME ERROR: 40) |
| 41 | Software resource not available | +WPRV, +CICB, +WFSH, +CCFC, +WNAM, +COPS, +WRMP |
| 42 | Invalid parameter | All commands |
| 43 | Non-Volatile Memory failure | All commands |


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## 14.2 Message service failure result code: +CMS ERROR : <er>

<er> is defined as below :

| <er> | Meaning | Resulting from the following commands |
|---|---|---|
| 1 to 127 | Reserved | |
| 301 | Reserved | |
| 302 | Operation not allowed | All SMS commands (+CMSS, +CMGL, +CPMS… |
| 303 | Reserved | |
| 304 | Invalid PDU mode parameter | +CMGS, +CMGW |
| 305 | Invalid text mode parameter | +CMGS, +CMGW, +CMSS |
| 310-318 | Reserved | |
| 321 | Invalid memory index | +CMGR, +CMSS, +CMGD |
| 322 | Reserved | |
| 330 | Reserved | |
| 341 | Non Volatile Memory failure | All SMS commands |

## 14.3 Specific error result codes

| <error> | Meaning | Resulting from the following commands |
|---|---|---|
| 500 | unknown error. | All commands |
| 512 | Reserved | |
| 513 | Lower layer failure (for SMS) | +CMGS, +CMSS (+CMS ERROR: 513) |
| 514-518 | Reserved | |
| 519 | Reset the product to activate or change a new echo cancellation algo. | +ECHO, +VIP |

## 14.4 Extended Error Report (+CEER) Call Processing codes

| Cause value | Diagnostic |
|---|---|
| 0 | No error detected in call processing |
| 1 | No CDMA service detected |
| 2 | Module is in a call, operation not allowed |
| 3 | Module is not in a call, operation not allowed |
| 4 | Module is in an unknown call state |
| 5 | Call Barring is ON |
| 6 | Invalid or Not allowed CDMA Service Option |
| 7 | Invalid Parameter |
| 8 | Operation only allowed during an incoming call |
| 9 | Invalid Mode Selection |
| 10 | Invalid Roam Selection |
| 11 | Invalid Band Selection |


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## 14.5 Final result codes

| Verbose result code | Numeric (V0 set) | Description |
|---|---|---|
| +CME ERROR: <err> | As verbose | 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 |


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## 14.6 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 bauds |
| CONNECT 1200 | 11 | Data connection at 1200 bauds |
| CONNECT 1200/75 | 12 | Data connection at 1200/75 bauds |
| CONNECT 2400 | 13 | Data connection at 2400 bauds |
| CONNECT 4800 | 14 | Data connection at 4800 bauds |
| CONNECT 9600 | 15 | Data connection at 9600 bauds |
| CONNECT 14400 | 16 | Data connection at 14400 bauds |
| +CSSI: <code1>[,<index>] | As verbose | Supplementary service notification during a call setup |


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# 15 APPENDIX A (informative)

This chapter gives illustrative examples of the general AT commands used for a communication.

## 15.1 Example 1: When the MS has already been powered on.

AT+CMEE=1 Enable the report mobile equipment errors
OK
AT+CPAS Get the MS Status
+CPAS: 0 MS is ready to receive commands
OK

### 15.1.1 Examples where a voice call is originated.

**Example 3 : When the MS is powered on.**
AT+CMEE=1 Enable the reporting of mobile equipment errors
OK
ATD18001234567; Make a voice call
OK ATD Command is being processed
+WORG:18001234567 Indication of call origination sent to the Base Station with dialing string 18001234567
+WCNT:3 Call Connected with CDMA Service Option 3, Traffic channel established.

Conversation…
ATH Release the call
OK ATH command is being processed
+WEND:10 Call Ended, end reason 10 (Normal Release).

### 15.1.2 Example with incoming calls

**When the MS is powered on.**
AT+CMEE=1 Enable the report mobile equipment errors
OK
AT+WIND=63 Ask to display the general indications.
OK
AT+CLIP=1 Enable the calling line identification presentation.
OK
AT+CNUM Query own number.
+CNUM: “Phone”,”8585551212”,129
OK

**Call the number from another MS.**
+RING Incoming Call.
+CLIP: "8585551212",129 Identification of the remote party.
ATA Answer the call.
OK ATA command is being processed.
+WANS Call has been answered.
+WCNT:3 Call Connected with CDMA Service Option 3, Traffic channel established.
…Conversation…
+WEND:6 Call Ended, end reason 6 (Normal Release), the call has been released by the remote party.


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### 15.1.3 Example of a call waiting situation

**When the MS is powered on.**

| | |
|---|---|
| AT+CMEE=1 | Enable the report mobile equipment errors |
| OK | |
| ATD8585551212; | Make a voice call |
| OK | ATD Command is being processed |
| +WORG:8585551212 | Indication of call origination sent to the Base Station with dialing string 18001234567 |
| +WCNT:3 | Call Connected with CDMA Service Option 3, Traffic channel established. |
| Conversation… | Conversation with first call. |
| +CCWA:"8582701234",129 | Indication of another incoming call. You will also hear a beep sound in the ear piece. |
| AT+WFSH | Send a flash to the Base Station (toggle to the second call). |
| OK | AT command is being executed. |
| +WFSH | Flash sent to the Base Station. Call switches to the second call. However, this is not 100% guaranteed because the there is not confirmation from the Base Station. |
| Conversation… | Conversation with second call. |
| AT+WFSH | Send a flash to the Base Station (toggle to the second call). |
| OK | AT command is being executed. |
| +WFSH | Flash sent to the Base Station. Call switches to the first call. However, this is not 100% guaranteed because the there is not confirmation from the Base Station. |
| Conversation… | Conversation with first call. |
| . | |
| . | |
| repeat as necessary | |
| . | |
| . | |
| ATH | Release the all calls. |
| OK | ATH command is being executed. |
| +WEND:10 | Calls End |

## 15.2 Examples about short messages

### 15.2.1 Example 1: Receive a short message

| | |
|---|---|
| AT+CNMI=2,1,1,1,0 | SMS-DELIVERs are stored in NV, SMS-STATUS-REPORTs are routed to TE |
| OK | |
| AT+CMGF=1 | Set text mode to send a Short Message |
| OK | |
| +CMTI:"MT",0 | New message received. Message store in "MT" memory at index 0. |
| AT+CNMI=2,2,1,1,0 | SMS-DELIVERs are routed to TE |
| +CMT:"8585551212","02/05/17,10 :43 :07",129,17 | |
| Test SMS Message | Received message. |
| AT+CNMA | Acknowledge the received message to the network. |
| OK | |

### 15.2.2 Example 2: Send a short message

| | |
|---|---|
| AT+CNMI=2,1,1,1,0 | SMS-DELIVERs are stored in NV, SMS-STATUS-REPORTs are routed to TE |
| OK | |
| AT+CMGF=1 | Set text mode to send a Short Message |


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OK

AT+CMGS=”8585551212” Send a SMS-SUBMIT to mobile phone
Product sends a 4 characters sequence: 0x0D 0x0A 0x3E 0x20
This is the first text line Edit first line and press carriage return (<CR>, 0x0D)
This is the last text line Edit last line and send message by pressing <ctrl-Z> (0x1A)

+CMGS: 1 Success: message reference 1 is returned from the SMS Service Center

+CDS:2,1,"8582431439",129,"02/05/17,10 :14 :17","02/05/17,10 :14 :27",32768
Success: report of successful message delivery received. Time of sending of the message and receiving of the acknowledgment from the SMS Service Center is reported, along with the status code.

### 15.2.3 Example 3: Read short messages

AT+CMGF=1 Set text mode to read Short Messages
OK
AT+CPMS=”MT” Set Mobile Terminated as preferred memory storage
OK
+CPMS:2,10,1,10 Currently there are 2 MT messages and 1 MO messages stored.

AT+CMGL=”ALL” List all stored messages
OK
+CMGL:0,"REC READ","8585551111",
Test message #1

+CMGL:1,"REC UNREAD","8585552222",
Test message #2

+CMGL:0,"STO UNSENT","8585551212",
Test message to be sent.

AT+CMGR=1 Read the first message in currently selected memory
OK storage (previously set by AT+CPMS).

+CMGR:"REC UNREAD","8585552222","02/05/15,15 :54 :04",
Test message #2


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# 16 APPENDIX (standard): TIA/EIA/IS-707.3

This appendix describes the AT commands specified in the TIA/EIA/IS-707.3 and implemented in WISMOQ CDMA module. Please refer to the attached document for the detail.

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