AT commands interface

This document is the property of WAVECOM, and is transferred to _____ under the conditions of the active Non-Disclosure Agreement dated _____. Use of this document is subject to the terms of this NDA. This document will be returned to WAVECOM under request.

Version : 8.4
ATI Version : 56
Date : March 16th,2000
Reference : WCOM/GSM/SW/SII015

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

DOCUMENT AMENDMENTS

Ssssss	Date	STATUS	AUTHOR	COMMENTS
1.0	29-02-1996	P	N. Higelin	Creation
2.0	18-03-1996	P	R. Madec	Add of new commands
3.0	10-06-1996	P	R. Madec	Add of new commands
4.0	08-07-1996	P	R. Madec	Add of new commands
5.0	29-07-1996	P	R. Madec	Add of new commands
5.1	25-09-1996	P	R. Madec	Modification of commands
5.2	03-10-1996	P	R. Madec	Add of new commands
5.3	21-10-1996	P	R. Madec	Add of V25 ter commands
6.0	16-01-1997	P	R. Madec	Add of new commands
6.1	10-02-1997	P	R. Madec	Modifications of +CBST, +CRLP, +SIDET
7.0	29-05-1997	P	R. Madec	Add of new commands
7.1	24-07-1997	P	R. Madec	Modifications for error codes
7.2	16-10-1997	P	F. Desnoues	Network & SIM lock (+CLCK, +CPWD)
7.3	21-12-1997	P	F. Desnoues	SIM Phonebook management (+CPBS, +CPBR, +CPBF, +CPBW) FAX management document
7.4	10-02-1998	P	F. Desnoues	Advice Of Charge management (+CAOC, +CACM, +CAMM, +CPUC)
7.5	31-03-1998	P	F. Desnoues	ATV and ATQ commands
7.6	30-04-1998	P	F. Desnoues	Cell Broadcast Msg management (+CSCB, +WCBM) and Incoming bearer (+CICB)
7.7	30-06-1998	P	O.Capron	New commands +CPINC,+CCID,+CNUM, +WAIP , +CPBP, +CPBN (phonebook)
7.8	29-10-1998	P	O.Capron F.Desnoues R.Dorey	SMS commands (+CMGW, +CMSS) New formats of Suppl Serv commands (+CLCK,+CCWA,+CCFC) Add comments pertaining to +IPR,+CBST,+ICF and fax setup.
7.9	10-02-1999	P	O.Capron F.Desnoues	New +CPIN2, +CIMI, +WIND, +CPOL, +WOPN (Operator Name), +WLPR, +WLPW, +WIOR, +WIOW (GPIO), AT&T Extension: +CCED (RxLev auto), +CPBS (Own Nb), +CLCK (FDN), ATD (Temporary CLIR)

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

8.0	15-04-1999	P	F.Desnoues	New: +CHLD, +CLCC, +CSSN, +CUSD, +WMGO, +WMSC Extension: ATD, ATH, ATA, +CCWA, +CLIP, +COLP, +WIND, +COPS Modification: +VGR levels
	04-05-1999	P	C.Amiens	New format of +ECHO?.command.
8.1	16-06-1999	P	C.Foratier	New: +CCUG, AT&V, ATI, +DOPT Extension: ATD (Temporary CUG) Modification:+CRLP, +ILRR, +FCLASS, add fax class 1 commands,
	21-06-1999	P	C. Amiens	New: %D, +VIP, +WAC.
8.3	27-09-1999	P	C.Foratier	New: +WTONE,+WDTMF,+CKPD Extension: “EN” phonebook Extension: ATD (GSM sequences)

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

8.4	18-11-1999	P	C. Amiens	Extension: +ECHO (Add Switch Attenuation algo) compatible WISMO2C. Extension +WIND (Add indications for network service). Extension AT&Vx and AT&F (Add Switch Attenuation values).(WISMO2C only) Add +WDWL command (Compatible WISM02C only) Add +WVR command (Compatible WISM02C only) Add +WDR command (Compatible WISM02C only) Add Data 14.4 commands (Compatible WISM02C only) Add Fax class 2 commands (Compatible WISM02C only) Add default values WISMO2C Add SIM ToolKit commands.
	17-02-2000	P	J. Berdin	New: +WHWV, +WDOP, +CNMA. Modification: +CSMS.
	07-03-2000	P	C. AMIENS	New: +WVGS Modification +VGT
	29-03-2000	P	JP. BIOU	New: +WSTR
	30-03-2000	P	J. Berdin	New: +WSCAN Modification : +CNMA
	11-04-2000	P	J. Berdin	Add +CMS ERROR: 340 Add +CME ERROR: 500
	13-04-2000	P	J. Berdin	Modification : +CNMA

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

CONTENTS

1 INTRODUCTION 10

1.1 SCOPE OF THIS DOCUMENT 10
1.2 RELATED DOCUMENTS 10
1.3 ETSI SECRETARIAT 11
1.4 DEFINITIONS 11

2 AT COMMANDS FEATURES 12

2.1 WAVECOM LINE SETTINGS 12
2.2 COMMAND LINE 12
2.3 INFORMATION RESPONSES AND RESULT CODES 12

3 GENERAL BEHAVIORS 13

3.1 SIM INSERTION, SIM REMOVAL 13
3.2 BACKGROUNG INITIALISATION 13

4 GENERAL COMMANDS 15

4.1 MANUFACTURER IDENTIFICATION +CGMI 15
4.2 REQUEST MODEL IDENTIFICATION +CGMM 15
4.3 REQUEST REVISION IDENTIFICATION +CGMR 16
4.4 PRODUCT SERIAL NUMBER +CGSN 16
4.5 SELECT TE CHARACTER SET +CSCS 17
4.6 REQUEST IMSI +CIMI 17
4.7 CARD IDENTIFICATION +CCID 18
4.8 CAPABILITIES LIST +GCAP 18
4.9 REPEAT LAST COMMAND A/ 19
4.10 POWER OFF +CPOF 19
4.11 SET PHONE FUNCTIONALITY +CFUN 19
4.12 PHONE ACTIVITY STATUS +CPAS 20
4.13 REPORT MOBILE EQUIPEMENT ERRORS +CMEE 21
4.14 KEYPAD CONTROL +CKPD 21

5 CALL CONTROL COMMANDS 23

5.1 DIAL COMMAND D 23
5.2 HANG-UP COMMAND H 25
5.3 ANSWER A CALL A 25
5.4 REMOTE DISCONNECTION 26
5.5 EXTENDED ERROR REPORT +CEER 26
5.6 DTMF SIGNALS +VTD, +VTS 26
5.7 REDIAL LAST TELEPHONE NUMBER ATDL 27
5.8 AUTOMATIC DIALING WITH DTR AT%DN 28

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

5.9 AUTOMATIC ANSWER ATS0 29
5.10 INCOMING CALL BEARER +CICB 29
5.11 GAIN CONTROL +VGR, +VGT 30
5.12 MICROPHONE MUTE CONTROL +CMUT 31
5.13 SPEAKER & MICROPHONE SELECTION +SPEAKER 32
5.14 ECHO CANCELATION +ECHO 32
5.15 SIDETONE MODIFICATION +SIDET 36
5.16 INITIALIZE VOICE PARAMETERS +VIP 36

6 NETWORK SERVICE COMMANDS 38

6.1 SIGNAL QUALITY +CSQ 38
6.2 OPERATOR SELECTION +COPS 38
6.3 NETWORK REGISTRATION +CREG 45
6.4 READ OPERATOR NAME +WOPN 46
6.5 PREFERRED OPERATOR LIST +CPOL 47

7 SECURITY COMMANDS 49

7.1 ENTER PIN +CPIN 49
7.2 ENTER PIN2 +CPIN2 51
7.3 PIN REMAINING ATTEMPT NUMBER +CPINC 53
7.4 FACILITY LOCK +CLCK 53
7.5 CHANGE PASSWORD +CPWD 55

8 PHONEBOOK COMMANDS 56

8.1 SELECT PHONEBOOK MEMORY STORAGE +CPBS 56
8.2 READ PHONEBOOK ENTRIES +CPBR 56
8.3 FIND PHONEBOOK ENTRIES +CPBF 57
8.4 WRITE PHONEBOOK ENTRY +CPBW 58
8.5 PHONEBOOK PHONE SEARCH +CPBP 59
8.6 MOVE ACTION IN PHONEBOOK +CPBN 59
8.7 SUBSCRIBER NUMBER +CNUM 61
8.8 AVOID PHONEBOOK INIT +WAIP 62

9 SHORT MESSAGES COMMANDS 63

9.1 PARAMETERS DEFINITION 63
9.2 SELECT MESSAGE SERVICE +CSMS 64
9.3 NEW MESSAGE ACKNOWLEDGEMENT +CNMA 65
9.4 PREFERRED MESSAGE STORAGE +CPMS 66
9.5 PREFERRED MESSAGE FORMAT +CMGF 67
9.6 SAVE SETTINGS +CSAS 68
9.7 RESTORE SETTINGS +CRES 69
9.8 SHOW TEXT MODE PARAMETERS +CSDH 69
9.9 NEW MESSAGE INDICATION +CNMI 69

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

9.10 READ MESSAGE +CMGR 72
9.11 LIST MESSAGE +CMGL 73
9.12 SEND MESSAGE +CMGS 74
9.13 WRITE MESSAGE TO MEMORY +CMGW 75
9.14 SEND MESSAGE FROM STORAGE +CMSS 76
9.15 SET TEXT MODE PARAMETERS +CSMP 76
9.16 DELETE MESSAGE +CMGD 78
9.17 SERVICE CENTER ADDRESS +CSCA 78
9.18 SELECT CELL BROADCAST MESSAGE TYPES +CSCB 79
9.19 CELL BROADCAST MESSAGE IDENTIFIERS +WCBM 79
9.20 MESSAGE STATUS MODIFICATION +WMSC 80
9.21 MESSAGE OVERWRITING +WMGO 80

10 SUPPLEMENTARY SERVICES COMMANDS 82

10.1 CALL FORWARDING +CCFC 82
10.2 CALL BARRING +CLCK 83
10.3 MODIFY SS PASSWORD +CPWD 84
10.4 CALL WAITING +CCWA 84
10.5 CALLING LINE IDENTIFICATION RESTRICTION +CLIR 85
10.6 CALLING LINE IDENTIFICATION PRESENTATION +CLIP 86
10.7 CONNECTED LINE IDENTIFICATION PRESENTATION +COLP 87
10.8 ADVICE OF CHARGE +CAOC 88
10.9 ACCUMULATED CALL METER +CACM 89
10.10 ACCUMULATED CALL METER MAXIMUM +CAMM 90
10.11 PRICE PER UNIT AND CURRENCY TABLE +CPUC 90
10.12 CALL RELATED SUPPLEMENTARY SERVICES +CHLD 91
10.13 LIST CURRENT CALLS +CLCC 91
10.14 SUPPLEMENTARY SERVICE NOTIFICATIONS +CSSN 92
10.15 UNSTRUCTURED SUPPLEMENTARY SERVICE DATA +CUSD 93
10.16 CLOSED USER GROUP +CCUG 94

11 . DATA COMMANDS 96

11.1 BEARER TYPE SELECTION +CBST 96
11.2 SELECT MODE +FCLASS 97
11.3 SERVICE REPORTING CONTROL +CR 98
11.4 CELLULAR RESULT CODES +CRC 99
11.5 DTE-DCE LOCAL RATE REPORTING +ILRR 99
11.6 RADIO LINK PROTOCOL PARAMETERS +CRLP 100
11.7 OTHERS RADIO LINK PARAMETERS +DOPT 100
11.8 SELECT DATA COMPRESSION %C 101
11.9 V42 BIS DATA COMPRESSION +DS 102
11.10 V42 BIS DATA COMPRESSION REPORT +DR 103
11.11 SELECT DATA ERROR CORRECTING MODE \N 104

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

12 FAX COMMANDS 105

12.1 TRANSMIT SPEED +FTM 105
12.2 RECEIVE SPEED +FRM 106
12.3 HDLC TRANSMIT SPEED +FTH 106
12.4 HDLC RECEIVE SPEED +FRH 107
12.5 STOP TRANSMISSION AND WAIT +FTS 107
12.6 RECEIVE SILENCE +FRS 107
12.7 SETTING UP THE PC FAX APPLICATION: 108

13 FAX CLASS 2 COMMANDS 109

13.1 TRANSMIT DATA +FDT 109
13.2 RECEIVE DATA +FDR 109
13.3 TRANSMIT PAGE PUNCTUATION +FET 109
13.4 PAGE TRANSFER STATUS PARAMETERS +FPTS 110
13.5 TERMINATE SESSION +FK 110
13.6 PAGE TRANSFER BIT ORDER +FBOR 111
13.7 BUFFER SIZE REPORT +FBUF 111
13.8 COPY QUALITY CHECKING +FCQ 112
13.9 CAPABILITY TO RECEIVE +FCR 112
13.10 CURRENT SESSIONS PARAMETERS +FDIS 112
13.11 DCE CAPABILITIES PARAMETERS +FDCC 114
13.12 LOCAL ID STRING +FLID 115
13.13 PAGE TRANSFER TIMEOUT PARAMETER +FPHCTO 116
13.14 FAX CLASS 2 INDICATION MESSAGES 116

14 V24-V25 COMMANDS 118

14.1 FIXED DTE RATE +IPR 118
14.2 DTE-DCE CHARACTER FRAMING +ICF 119
14.3 DTE-DCE LOCAL FLOW CONTROL +IFC 120
14.4 SET DCD SIGNAL &C 121
14.5 SET DTR SIGNAL &D 121
14.6 SET DSR SIGNAL &S 122
14.7 BACK TO ONLINE MODE O 122
14.8 RESULT CODE SUPPRESSION Q 122
14.9 DCE RESPONSE FORMAT V 123
14.10 DEFAULT CONFIGURATION Z 123
14.11 SAVE CONFIGURATION &W 124
14.12 AUTO-TESTS &T 124
14.13 ECHO E 124
14.14 RESTORE FACTORY SETTINGS &F 125
14.15 DISPLAY CONFIGURATION &V 125
14.16 REQUEST IDENTIFICATION INFORMATION I 126

15 SPECIFIC AT COMMANDS 128

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

15.1 CELL ENVIRONMENT DESCRIPTION +CCED 128
15.2 AUTOMATIC RXLEV INDICATION +CCED 129
15.3 GENERAL INDICATIONS +WIND 130
15.4 ANALOG DIGITAL CONVERTERS MEASUREMENTS +ADC 131
15.5 READ LANGUAGE PREFERENCE +WLPR 132
15.6 WRITE LANGUAGE PREFERENCE +WLPW 132
15.7 READ GPIO VALUE +WIOR 133
15.8 WRITE GPIO VALUE +WIOW 133
15.9 ABORT COMMAND +WAC 133
15.10 PLAY TONE +WTONE 134
15.11 PLAY DTMF TONE +WDTMF 136
15.12 WAVECOM DOWNLOADING +WDWL 137
15.13 WAVECOM VOICE RATE +WVR 137
15.14 DATA RATE +WDR 138
15.15 HARDWARE VERSION +WHWV 140
15.16 DATE OF PRODUCTION +WDOP 140
15.17 WAVECOM SELECT VOICE GAIN +WSVG 141
15.18 WAVECOM STATUS REQUEST +WSTR 142
15.19 WAVECOM SCAN +WSCAN 142

16 SIM TOOLKIT 144

16.1 OVERVIEW OF SIM APPLICATION TOOLKIT 144
16.2 EXCHANGED MESSAGES DURING A SIM TOOLKIT OPERATION. 147
16.3 SIM TOOLKIT COMMANDS 148

17 OTHER AT COMMANDS 166

17.1 V.25 TER RECOMMANDATION 166
17.2 GSM 07.05 RECOMMANDATION 166
17.3 GSM 07.07 RECOMMANDATION 166

18 APPENDICES 167

18.1 ME ERROR RESULT CODE : +CME ERROR: <ERROR> 167
18.2 MESSAGE SERVICE FAILURE RESULT CODE: +CMS ERROR : <ER> 167
18.3 SPECIFIC ERROR RESULT CODES 168
18.4 FAILURE CAUSE FROM GSM 04.08 RECOMMANDATION (+CEER) 169
18.5 SPECIFIC FAILURE CAUSE FOR +CEER 170
18.6 GSM 04.11 ANNEX E-2: MOBILE ORIGINATING SM-TRANSFER 170
18.7 UNSOLICITED RESULT CODES 172
18.8 FINAL RESULT CODES 172
18.9 INTERMEDIATE RESULT CODES 173
18.10 PARAMETERS STORAGE 173
18.11 GSM SEQUENCES LIST 175
18.12 OPERATOR NAMES 178

19 **APPENDIX A (INFORMATIVE)** **186**

19.1 **INFORMATIVE EXAMPLE ABOUT THE PIN REQUIRED** **186**
19.2 **INFORMATIVE EXAMPLE ABOUT PHONEBOOKS** **192**
19.3 **INFORMATIVE EXAMPLE ABOUT SHORT MESSAGES** **195**
19.4 **INFORMATIVE EXAMPLE ABOUT FAX CLASS 2** **195**

20 **APPENDIX B: SUPPORT OF SIM TOOLKIT BY THE M.E.** **198**

21 **APPENDIX C: STRUCTURE OF TERMINAL PROFILE** **200**

22 **APPENDIX D: COMMAND TYPE AND NEXT ACTION INDICATOR** **203**

1 Introduction

1.1 Scope of this document

This document describes the messages exchanged between an external application module and the WAVECOM GSM mobile station, based on AT commands in order to control incoming and outgoing calls.
This document presents the AT-commands implemented for the voice call teleservice, the data teleservice and the short message teleservice.

1.2 Related documents

This interface specification is based on the following recommandations :

[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 Recommandation V.25 ter : Serial asynchronous automatic dialling and control

[4] ETSI GSM 03.40 : Digital cellular telecommunications system (phase 2) ; *Technical realization 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 services specification, Formats and coding

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

1.3 ETSI secretariat

The following addresses can be useful to get the latest GSM recommendations.
Postal address : F-06921 Sophia Antipolis CEDEX - FRANCE
Office address : 650 Route des Lucioles - Sophia Antipolis –
Valbonne - FRANCE
Internet : secretariat@etsi.fr
Tel : +33 4 92 94 42 00
Fax : +33 4 93 65 47 16

1.4 Definitions

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

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

2 AT commands features

2.1 Wavecom line settings

A serial link handler is set with these default values (factory settings) :
- autobaud, 8 bits data, 1 bit stop, no parity, RTS/CTS flow control.

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

2.2 Command line

The commands always start with AT (means ATtention !) and finish with a <CR> character.

2.3 Information responses and result codes

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

- If the syntax of the command is wrong, the string **ERROR** is sent.
- If the syntax command is correct but with some incorrect parameters, the strings **+CME ERROR :** <Err> or **+CMS ERROR :** <SmsErr> are sent with different error codes.
- If the command line has been performed successfully, the string **OK** is sent.

In some cases like "AT+CPIN?", "AT+EXPKEY?", or incoming events (unsolicited) the module does not send back the string **OK** as a response.

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

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

3 General behaviors

3.1 SIM Insertion, SIM Removal

The SIM card Insertion and Removal procedures are supported. There are software functions based on the reading of the hardware SIM presence pin. This pin state (open / closed) is continuously watched.
When the SIM presence pin indicates a presence of a card in the SIM connector, the module tries to set a logical SIM session. Depending on the fact that the detected card is a SIM Card or not, the logical SIM session will be set or not. The AT+CPIN? delivers the following answers :

- If SIM presence pin indicates “nothing”, the answer to AT+CPIN? is “+CME
- If SIM presence pin indicates “something”, and the inserted Card is a SIM Card, the answer to AT+CPIN? is “+CPIN: xxx” depending on the SIM PIN state.
- If SIM presence pin indicates “something”, and the inserted Card is not a SIM Card, the answer to AT+CPIN? is CME ERROR 10
- These last two status are not immediately available due to the background initialisation. Between the hardware SIM presence pin indication of “something” and the previous results the AT+CPIN? sends “+CME ERROR: 515” (Please wait, init in progress)

When the SIM presence pin indicates an absence, and if a SIM Card was previously inserted, an IMSI detach procedure is done, and all the user data are removed from the module (Phonebooks, SMS etc.). The module is then in **emergency mode**.

3.2 Backgroung initialisation

After the PIN entry, some SIM user data files are loaded in the module (Phonebooks, SMS status …), but it can take a long time for huge phonebooks reading. The AT+CPIN? command answers just after verification of the PIN. User Datas are loaded after the answer in background.
This means, that some datas may not be available just after the OK from the PIN Entry. The reading of phonebooks will then be refused by the following “+CME ERROR: 515” or “+CMS ERROR: 515” meaning “please wait, service is not available, init in progress”.
That kind of answer may be sent by the module at several steps :

- When trying to execute another AT command before the end (response) of the previous one.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

- when swapping from (or to) ADN to (or from) FDN and trying to read immediately the concerned phonebook ;
- when asking for +CPIN? Status just after a SIM insertion when the module has not determined if the inserted card is a valid SIM Card.

4 General commands

4.1 Manufacturer identification +CGMI

4.1.1 Description :

This command gives the manufacturer identification.

4.1.2 Syntax :

Command syntax : AT+CGMI

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

4.2 Request model identification +CGMM

4.2.1 Description :

This command is used to get the supported bands (GSM 900, DCS 1800 or PCS 1900). The answer could be a combination of different bands when multiband modules.

4.2.2 Syntax :

Command syntax : AT+CGMM

Command	Possible responses
AT+CGMM *Note : Get hardware version*	900P OK *Note : GSM 900 MHz primary band, or "900E" (extended band), "1800" (DCS), "1900" (PCS) or "MULTIBAND"*

4.3 Request revision identification +CGMR

4.3.1 Description :

This command is used to get the revised software version.

4.3.2 Syntax :

Command syntax : AT+CGMR

Command	Possible responses
AT+CGMR *Note : Get software version*	310_G250.51 806216 032199 17:04 OK *Note : Software release 3.10, revision 51 generated on the 21st March 1999*

4.4 Product Serial Number +CGSN

4.4.1 Description :

This command allows the user application to know the IMEI (International Mobile Equipment Identity) of the GSM module.

4.4.2 Syntax :

Command syntax : AT+CGSN

Command	Possible responses
AT+CGSN *Note : Request IMEI*	135790248939 OK *Note : IMEI present in EEPROM*
AT+CGSN *Note : Request IMEI*	+CME ERROR: 22 *Note : IMEI not found in EEPROM*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

4.5 Select TE character set +CSCS

4.5.1 Description :

This command informs the ME on which character set is used by the TE. ME is then able to convert each character of entered or displayed string. This is used to send, read or write short messages.

4.5.2 Syntax :

Command syntax : AT+CSCS

Command	Possible responses
AT+CSCS="GSM" *Note : GSM default alphabet*	OK *Note : Command valid*
AT+CSCS="PCCP437" *Note : PC character set code page 437*	OK *Note : Command valid*

4.6 Request IMSI +CIMI

4.6.1 Description :

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

4.6.2 Syntax

Command syntax : AT+CIMI

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

See appendice 18.12 for MCC / MNC description.

4.7 Card Identification +CCID

4.7.1 Description :

This command orders the module to read the EF-CCID file on the SIM card.

4.7.2 Syntax :

Command syntax : AT+CCID

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

In case of absent EF-CCID file on the SIM, the +CCID will not be sent. But the OK will be present.

4.8 Capabilities list +GCAP

4.8.1 Description :

This command gives the complete capabilities list.

4.8.2 Syntax :

Command syntax : AT+GCAP

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

4.9 Repeat last command A/

4.9.1 Description :

Only A/ command can not be repeated. This command repeats the previous executed command.

4.9.2 Syntax :

Command syntax : A/

Command	Possible responses
A/ *Note : Repeat last command*	

4.10 Power off +CPOF

4.10.1 Description :

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

4.10.2 Syntax :

Command syntax : AT+CPOF

Command	Possible responses
AT+CPOF *Note : Stop GSM stack*	OK *Note : Command valid*

4.11 Set phone functionality +CFUN

4.11.1 Description :

This command selects the level of functionality in the mobile station.

- When the application wants to stop the module to power off, or if the application wants to force the module to execute a IMSI DETACH procedure, then it has to send :

AT+CFUN=0 (same as AT+CPOF)

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

This command executes a IMSI DETACH and makes a backup of some internal parameters in the SIM and the EEPROM. Then no access to the SIM card is possible.
If the mobile is not powered off after this command, it shall receive another command to re-start the whole GSM process.
If the mobile is turned off after this command, then the power on will automatically execute the start of the whole GSM process.
When the application wants to re-start the module (after having done a AT+CFUN=0 command, and without having cut the power supply), it has to send :

AT+CFUN=1

This command starts again all the GSM stack and GSM functionality, a complete software reset is done. All parameters are reset to their previous E2P value if AT&W was not used.
If you write entries in phonebook (+CPBW) and then reset the module directly (AT+CFUN=1, without any AT+CFUN=0 before), some entries may not be written (SIM task does not have the time to write entries in SIM card)
Also, the OK response will be sent at the last defined baud rate defined by +IPR command. With autobauding the response can be at a different baud rate, so it is better to save the defined baud rate with AT&W before directly send the AT+CFUN=1 command.

4.11.2 Syntax :

Command syntax : AT+CFUN

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

4.12 Phone activity status +CPAS

4.12.1 Description :

This command returns the activity status of the mobile equipment.

4.12.2 Syntax :

Command syntax : AT+CPAS

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

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

4.12.3 Defined values :

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

4.13 Report Mobile Equipement errors +CMEE

4.13.1 Description :

This command disables or enables the use of result code "+CME ERROR : <xxx>" or "+CMS ERROR :<xxx>" instead of simply "ERROR". See appendice 18.1 for +CME ERROR result codes description and appendice 18.2 for +CMS ERROR result codes.

4.13.2 Syntax :

Command syntax : AT+CMEE

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

4.14 Keypad control +CKPD

4.14.1 Description :

Execution command emulates ME keypad by giving each keystroke as a character in a string <keys>.
The supported GSM sequences are listed in appendice 18.11.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

If emulating fails in an ME error, +CME ERROR: <err> is returned.
If emulating succeeds, the result depends on the GSM sequence.

<keys>: string of following characters (0-9,*,#)

4.14.2 Syntax :

Command syntax : AT+CKPD

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

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

5 Call Control commands

5.1 Dial command D

5.1.1 Description :

The ATD command is used to **set a speech, data or fax call**. According to GSM 02.30, dial command also controls supplementary services.

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

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

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

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

Please, notice that in case of **international number**, the local international prefix has not to be set (usually 00) but need to be replaced by the **'+'** character.

Example : to establish a voice call to Wavecom from another country, the AT command shall be :

ATD+33146290800;

Notice that some country may have specific numbering rules for their GSM handset numbering.

The answer to the ATD command can be one of the following:

Verbose result code	Numeric (V0 set)	Description
OK	0	if the call succeeds, for voice call only
CONNECT <speed>	10,11,12,13,14,15	if the call succeeds, for data calls only, <speed> takes the value negotiated by the GSM module.
BUSY	7	If the called party is already in communication
NO ANSWER	8	If no hang up is detected after a fixed network time-out
NO CARRIER	3	Call setup failed or remote user release. Use the AT+CEER command to know the **failure cause**

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

See paragraph 18.8 for the description of all **numeric result codes** (ATV0)
Direct dialling from a phonebook location (stored in SIM card) can be done with the following command :
ATD> <index>; for calling <index> from the selected phonebook (by +CPBS command)
ATD> "BILL"; for calling "BILL" from the the selected phonebook
ATD> mem <index> (mem is **"SM"**, **"FD"** or **"ON"**, see +CPBS command) is a way to dial directly from a phonebook number.

5.1.2 Syntax :

Command syntax : AT+CPBS

Command	Possible responses
AT+CPBS? *Note : Which phonebook is selected ?*	+CPBS:"FD",5,10 *Note : FDN phonebook is selected, 5 locations are used and 10 locations are available*
ATD>SM6; *Note : Call index 6 from ADN phonebook*	OK *Note : Call succeeds*

When **FDN phonebook** has been **locked** only the numbers beginning with the digits of FDN phonebook entries can be called.
For example, if "014629" is written in the FDN phonebook all the phone numbers beginning with these 6 digits can be called.
It is allowed to override the **CLIR supplementary service** subscription for **this call only**.
"I" means **"invocation"** (restrict CLI presentation)
"i" means **"suppression"** (allow CLI presentation).
It's allowed to control the **CUG supplementary service** information by **"G"** or **"g"** for **this call only**. The index and info values set with command +CCUG are used.

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

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

According to GSM 02.30, **GSM sequences** may be controlled using dial command. These sequences can contain **"*", "#"**. But **";"** is forbidden.

If the sequence is not supported or fails, +CME ERROR: <err> is returned.

See paragraph 18.11 to have the list of supported sequences.

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

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

5.2 Hang-Up command H

5.2.1 Description :

The command ATH (or ATH0) is used by the application to disconnect the remote user. In case of multiple calls, every calls are released (active, held and waiting calls).
The specific Wavecom command ATH1 has been appended to disconnect only the outgoing call. It can be useful in case of multi communication.

5.2.2 Syntax :

Command syntax : ATH

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

5.3 Answer a call A

5.3.1 Description :

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

5.3.2 Syntax :

Command syntax : ATA

Command	Possible responses
	RING *Note : Incoming call*
ATA *Note : Answer to this incoming call*	OK *Note : Call accepted*
ATH *Note : Disconnect call*	NO CARRIER *Note : Call disconnected*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

5.4 Remote disconnection

This message is used by the GSM module to indicate to the application that an active call has been released by the remote user.
The GSM module sends "**NO CARRIER**" to the application, and set the DCD signal.
Also, in AOC case, the module can stop the communication if the credit is over (release cause 68 with +CEER command)

5.5 Extended error report +CEER

5.5.1 Description :

This command gives the reason of the call release when the last call setup (originating or answering) failed.

5.5.2 Syntax :

Command syntax : AT+CEER

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

The cause information element from GSM 04.08 is given below in chapter 18.4, or in chapter 18.5 for specific failure causes.
The "NO CARRIER" indicates that the AT+CEER information is available for a failure diagnostic.

5.6 DTMF signals +VTD, +VTS

5.6.1 +VTD Description :

The GSM module offers the user application to send DTMF tones on the GSM network. This command is used to define the length of the tones (default value is 300 ms).
To define this length, the application uses :

AT+VTD=<n> where <n>*100 gives the duration in ms.

If n < 4 the tone duration is 300 ms.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

5.6.2 +VTD Syntax :

Command syntax : AT+VTD

Command	Possible responses
AT+VTD=6 *Note : To define 600 ms tone length*	OK *Note : Command valid*
AT+VTD=0 *Note : To set the manufacturer default value*	OK

5.6.3 +VTS Description :

The GSM module offers the user application to send DTMF tones on the GSM network. This command allows the transmission of the tones.
To transmit DTMF tones (only when an active call exists), the application uses :

AT+VTS=<Tone> where <Tone> is in {0-9,*,#,A,B,C,D}

5.6.4 +VTS Syntax :

Command syntax : AT+VTS

Command	Possible responses
AT+VTS=A	OK *Note : Command valid*
AT+VTS=11 *Note : To set the manufacturer default value*	+CME ERROR: 4 *Note : If the <Tone> is wrong*
AT+VTS=4	+CME ERROR: 3 *Note : If there is no communication*

5.6.5 Informative example :

To send the Tone sequence 13#, the application shall send :

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

5.7 Redial last telephone number ATDL

5.7.1 Description :

This command is used by the application to redial the last number used in the ATD command. The last dialled number is displayed followed by ";" for speech calls only

5.7.2 Syntax :

Command syntax : ATDL

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

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

5.8 Automatic dialing with DTR AT%Dn

5.8.1 Description :

This command allows to activate and deactivate the automatic dialing of the phone number stored in the first location of ADN phonebook. The number is dialed on DTR OFF to ON transition.

5.8.2 Syntax :

Command syntax : AT%Dn[;]

Command	Possible responses
AT%D1; *Note : Activates DTR dialing*	OK *Note : Command has been executed*
DTR is OFF DTR switches ON *Note : The number in the first location of the .AND is dialed automatically* DTR switches OFF *Note : The module goes on-hook*	

5.8.3 Defined values :

<n> (0-1) : for activate or deactivate the automatic dialing.

; : Informs the module that the number is a voice rather than a fax or data number.

AT%D0 Deactivates automatic DTR dialing

AT%D1; Activates automatic DTR dialing if DTR switches from OFF to ON; Dials the phone number in the first location of ADN phonebook. **Speech call.**

AT%D1 Activates automatic DTR dialing if DTR switches from OFF to ON; Dials the phone number in the first location of ADN phonebook. **Data or Fax call.**

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

5.9 Automatic answer ATS0

5.9.1 Description :

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

5.9.2 Syntax :

Command syntax : ATS0

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

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

5.10 Incoming Call Bearer +CICB

5.10.1 Description :

This **specific** command is used for incoming call type when no incoming bearer is given (single numbering scheme, see +CSNS).

5.10.2 Syntax :

Command syntax : AT+CICB

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

5.10.3 Defined values :

<mode> 0 : Data
1 : Fax
2 : Speech

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

5.11 Gain control +VGR, +VGT

5.11.1 Description :

This command shall be used by the application to tune the receive gain of the speaker and transmit gain of the microphone. The application shall send:

AT+VGR=<val>	for the receive gain	AT+VGT=<val> **Controler 1**	for the transmit gain **controler 1**	AT+VGT=<val> **Controler 2**	for the transmit gain **controler 2**
0 to 15	+6 db	0 to 31	+30 db	0	0 db
16 to 31	+4 db	32 to 63	+33 db	1	0,5 db
32 to 47	+2 db	64 to 95	+36 db	2	1 db
48 to 63	+0 db	96 to 127	+39 db	3	1,5 db
64 to 79	-2 db	128 to 159	+42 db	…	
80 to 95	-4 db	160 to 191	+45 db	19	9,5 db
96 to 111	-6 db	192 to 223	+48 db	20	10 db
112 to 127	-8 db	224 to 255	+51 db	21 to 60	30 db
128 to 143	-10 db			61	30,5 db
144 to 159	-12 db			62	31 db
160 to 175	-14 db			…	…
176 to 191	-16 db			101	50,5 db
192 to 207	-18 db			102 to 127	51 db
208 to 223	-20 db			128 to 243	-6,5 db
224 to 239	-22 db			244	-6 db
240 to 255	-24 db			245	-5,5 db
				246	-5 db
				…	…
				255	-0,5 db

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

5.11.2 Syntax :

Command syntax : AT+VGR
AT+VGT

Command	Possible responses
AT+VGR=25	OK *Note : Command valid*
AT+VGT=45	OK *Note : Command valid*
AT+VGR? *Note : Interrogate value*	+VGR: 64 *Note : Default receive gain*
AT+VGR=? *Note : Test command*	+VGR: (0-255) *Note : Possibles values*
AT+VGT? *Note : Interrogate value*	+VGT: 64 *Note : Default transmit gain.l*
AT+VGT=? *Note : Test command*	+VGT: (0-255) *Note : Possibles values*

5.12 Microphone Mute Control +CMUT

5.12.1 Description :

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

5.12.2 Syntax :

Command syntax : AT+CMUT

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

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

5.12.3 Defined values :

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

5.13 Speaker & Microphone selection +SPEAKER

5.13.1 Description

This **specific** command is used to choose the speaker and the microphone.

5.13.2 Syntax :

Command syntax : AT+SPEAKER=<ActiveSpkMic>

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

5.13.3 Defined values :

<mode> 0 : SPEAKER ONE, MICRO ONE
1: SPEAKER TWO, MICRO TWO

5.14 Echo Cancelation +ECHO

5.14.1 Description :

This **specific** command is used to activate, deactivate or configure the Echo Cancelation and Switch Attenuation functions (for voice calls, in small rooms, cars…)

5.14.2 Syntax :

Command syntax : AT+ECHO

Command	Possible responses
AT+SPEAKER?	+ SPEAKER:0 OK

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

	Note : Speaker ONE and Micro ONE are active
AT+ECHO=1 *Note : Active Echocancelation for Mic/Speak one.*	OK
AT+ECHO? *Note : Read current settings*	+ECHO: 1,255,12,10,1000,63 +ECHO: 0,0,3,10,7,0 OK
AT+ECHO=2 *Note : Configure the Echo cancelation*	+CME ERROR: 3 *Note : The parameters are missing*
AT+ECHO=2,0,12,5,512,10 *Note : Configure the Echo cancelation*	+CME ERROR: 3 *Note : The* <Taps> *parameter is wrong. Values from 1 to 192*
AT+ECHO=2,0,12,5,512,10 *Note : Configure the Echo cancelation*	OK
AT+ECHO? *Note : Read current settings*	+ECHO: 1,10,12,5,512,10 +ECHO: 0,0,3,10,7,0 OK
AT+ECHO=0 *Note : Deactivate the Echo cancelation*	
AT+ECHO=4 *Note : Activate Switch Attenuation for Mic/Speak one. (wismo 2C only)*	OK
AT+ECHO? *Note : Read current settings*	+ECHO: 0,10,12,5,512,10 +ECHO: 1,0,3,10,7,0 OK
AT+ECHO=5,1,4,15,20,5 *Note : Configure the Switch Attenuation (wismo 2C only)*	OK
AT+ECHO? *Note : Read current settings*	+ECHO: 0,10,12,5,512,10 +ECHO: 1,1,4,15,20,5 OK

5.14.3 Defined values:

AT+ECHO= <mode>, [[<Taps>,<ConvTh>,<DbtS>, <FarS>, <EcDelay>]
[<Volout>,<Step>,<PcmThrel>,<PcmThmax>,<EcGain>]]

<mode> 0: Deactivate Echo
1: Activate Echo
2: Configure echo cancelation (automatically stored in E2P)
3: Deactivate switch attenuation
4: Activate switch attenuation
5: Configure switch attenuation (automatically stored in E2P)

The Switch Attenuation is compatible with WISMO2C only.
The modes (3, 4, 5) are not supported by the WISMO 1B, +CME ERROR: 4 is returned.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Switched Attenuation Parameters :

<**Volout**> : This parameter specifies the maximum attenuation of the switch

<**Volout**>	0: 31 db
	1: 29 db
	2: 27 db
	3: 25 db
	..: … …
	14: 3 db
	15: 1 db

<Step> : This parameter specifies the attenuation step between attenuation and no attenuation .

<Step>	0: 1 db
	1: 2 db
	2: 3 db
	3: 4 db

<PcmThRel> : This parameter specifies the relative threshold between max and min energy information.

The allowed range is [0 ; 31].

<PcmThMax >: This parameter specifies threshold of max energy information.

The allowed range is [0 ; 31].

<EcGain> : This parameter specifies the attenuation for switch when echo algorithm has converged. This parameter is used by echo algorithm when echo and switched are activated together.

<EcGain>	0: 14 db
	1: 12 db
	2: 10 db
	3: 8 db
	4: 6 db
	5: 4 db
	6: 2 db
	7: 1 db

Echo Cancellation Parameters :

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

<Taps> : This parameter specifies the number of taps of the adaptive filter used for echo cancellation.

The allowed range is [2 ; 255].

<ConvTh> : This parameter specifies the level of needed convergence. A low value provides a high convergence and a high value a high stability.

The allowed range is [0 ;4095].

< DbtTalk >: A negative value provides a high sensivity and a positive value a low one.

The allowed range is [0;10]

<FarS>: If Far-end speaker detection = 0, the algorithm will always adjust the filter. For other values, adaptation runs only if far end speaker energy is greater than Far end speaker detection value.

The allowed range is [0 ;1000]

<**EcDelay**>**:** Number of samples used to compute energy for algorithm convergence evaluation.

The allowed range is [0 ;63].

Read Command: **AT+ECHO?**

This command returns the current settings of the Echo cancelation.

Returns:+ECHO:<Status>,<Taps>,<ConvTh>,<DbtS>,<FarS>, <EcDelay>
+ECHO:<Status>,<Volout>,<Step>,<PcmThrel>,<PcmThmax>,<EcGain>

<**Status**> **0** Echo Deactivated.
1 Echo Activated for Mic/Speak one.
2 Echo Activated for Mic/Speak two.

For The WISMO 1B the current values about the switch attenuation are not returned.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

5.15 SideTone modification +SIDET

5.15.1 Description :

This **specific** command is used to get an echo of the voice in the speaker (to have a microphone feedback in the speaker)

5.15.2 Syntax :

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

Command	Possible responses
AT+SIDET=1,0	OK *Note : Command valid*
AT+SIDET? *Note : Current value*	+SIDET: 1,0 OK *Note : Command valid*

5.15.3 Defined values :

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

<val2> 0: 0 db
1: - 6 db
2: - 12 db
3: - 18 db

5.16 Initialize Voice Parameters +VIP

5.16.1 Description :

This command allows to restore the factory settings about the voice parameters from EEPROM.

These voice parameters include :

- Gain control,
- Microphone mute control,
- Speaker & Microphone selection,
- Echo cancelation,
- Side tone modification.

5.16.2 Syntax :

Command syntax : AT+VIP=<n>

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Command Syntax	Return
AT+VIP=<n>	
AT+VIP=?	+VIP: 1
AT+VIP?	+VIP: (1)

<n> 1 Restore all voice parameters.

Command	Possible responses
AT+VIP?	+VIP: 1 OK
AT+VIP=2 *Note : Syntax error*	+CME ERROR: 3
AT+VIP=1 *Note : Restore the factory settings in EEPROM*	OK *Note : The command has been executed*
AT+VIP=? *Note : List of supported <n>s*	+VIP: (1) OK

6 Network service commands

6.1 Signal Quality +CSQ

6.1.1 Description :

This command is used to know the *received signal strength indication* (<rssi>) and the *channel bit error rate* (<ber>) with or without any SIM card inserted.

6.1.2 Syntax :

Command syntax : AT+CSQ

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

6.1.3 Defined values :

<rssi> :
0 : -113 dBm or less
1 : -111 dBm
2...30 : -109 to -53 dBm
31 : -51dBm or greater
99 : not known or not detectable

<ber> :
0...7 : as RXQUAL values in the table GSM 05.08
99 : not known or not detectable

6.2 Operator selection +COPS

6.2.1 Description :

To select the operator, three possibilities exist :

1- The mobile enters the ***manual*** *mode*, and then tries to find an operator which is indicated by the application. If it finds and registers correctly, then the mobile stays in idle mode.

2- The mobile enters the ***automatic*** *mode*, and then tries to find the home operator. If it finds and registers correctly, then the mobile stays in idle mode ; if not, the mobile searches automatically another network.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

3- The mobile enters the ***manual/automatic*** *mode,* and then tries to find an operator which is indicated by the application (like in manual mode) . If this attempt fails the ***automatic*** *mode is entered.*

Read command returns the current mode and the currently selected operator. Just notice that in manual mode, this PLMN could not be the one the mobile has to register (searching phase).

6.2.2 Syntax :

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

Possible responses for AT+COPS=<mode>:

OK (Network is selected in full service)
+CME ERROR: 30 (No network service),
+CME ERROR: 32 (Network not allowed – emergency calls only)
+CME ERROR: 3 (During a call not allowed)
+CME ERROR: 4 (Wrong parameters)

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

Response syntax for AT+COPS=?: +COPS: [list of supported (<stat>, long alphanumeric <oper>, short alphanumeric <oper>s, numeric <oper>) s]

Command	Possible responses
AT+COPS? *Note : Ask for current PLMN*	+COPS: 0,2,20801 OK *Note : Home PLMN is France Telecom Itinéris*
AT+COPS=? *Note : Ask for PLMN list*	+COPS: (2,"F Itinéris","Itline","20801"), (3,"F SFR","SFR","20810") OK *Note : Home PLMN is France Telecom SFR network has been detected*
AT+COPS=1,2,20810 *Note : Ask for registration on SFR network*	+CME ERROR: 32 *Note : Network not allowed – emergency calls only*
AT+COPS=1,1,20810 *Note : Ask for registration on SFR network*	+CME ERROR: 3 *Note : Operation not allowed*
AT+COPS=0,2 *Note : Ask for registration on home network*	OK *Note : Succeeded*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

AT+COPS? *Note : Ask for current PLMN*	+COPS: 0,0"F Itinéris" OK *Note : Home PLMN is France Telecom Itinéris!* *So the attempt to register on SFR Network has failed but the automatic selection on Home PLMN has succedeed*

6.2.3 Defined values :

The parameters values are the following ones:

<mode> 0: automatic (**default** value)
1: manual
3: set only <format> (for read command AT+COPS?)

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

4: manual / automatic (<oper> shall be present), if manual selection fails, automatic mode is entered.

<format>: format of <oper> field

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

<stat>: status of <oper>

<stat> 0: unknown
1: available
2: current
3: forbidden

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

Long alphanumeric format can be up to 16 characters long (see appendice 18.12 for operator names description, field is "Name")

Short alphanumeric format can be up to 8 characters long.

6.3 Network registration +CREG

6.3.1 Description

This command is used by the application to know the registration status of the mobile.

6.3.2 Syntax :

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

for AT+CREG? command only

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

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

6.3.3 Defined values :

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

<stat> 0 : not registered, ME is not currently searching a new operator
1 : registered, home network
2 : not registered, ME currently searching a new operator to register to
3 : registration denied
4 : unknown
5 : registered, roaming

<lac>: string type; two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)

<ci>: string type; two byte cell ID in hexadecimal format

6.4 Read operator name +WOPN

6.4.1 Description :

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

6.4.2 Syntax :

Command syntax: AT+WOPN=<format>,<NumOper>
Response syntax: +WOPN: <format>,<AlphaOper>

Command	Possible responses
AT+WOPN=? *Note : Test command*	OK
AT+WOPN=0,20801 *Note : Give an operator in numeric format*	+WOPN: 0,"F Itinéris" OK *Note : Alphanumeric answer*
AT+WOPN=0,99999 *Note : Give a wrong operator*	+CME ERROR: 22 *Note : Not found*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

6.4.3 Defined values :

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

<**NumOper**> is the operator in numeric format.
<**AlphaOper**> is the operator in long or short alphanumeric format (see appendice 18.12 for operator names description)

6.5 Preferred operator list +CPOL

6.5.1 Description :

This command is used to edit the SIM preferred list of networks.

6.5.2 Syntax :

Command syntax: AT+CPOL= [<index>][, <format> [, <oper>]]

The different possibilities are:

- AT+CPOL = <index> to delete an entry.
- AT+CPOL = , <format> to set the format used by the read command (AT+CPOL?).
- AT+CPOL = , <format>, <oper> to put <oper> in the next free location.
- AT+CPOL = <index> , <format> , <oper> to write <oper> in the <format> at the <index> .

The supported format are those of the +COPS command.

The length of this list is limited to 8 entries .

Command	Possible responses
AT+CPOL? *Note : Ask for preferred list of networks*	+CPOL:1,2,26201 +CPOL: 6,2,20810 OK *Note : Preferred list of networks in numeric format*
AT+CPOL=,0 *Note : Select long alphanumeric format*	OK
AT+CPOL? *Note : Give a wrong operator*	+CPOL: 1,0,"D1-TELEKOM" +CPOL: 6,0,"F SFR" OK *Note : Preferred list of networks in long alphanumeric format*
AT+CPOL=7,2,20801 *Note : Add a network to the list*	OK
AT+CPOL?	+CPOL: 1,0,"D1-TELEKOM"

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Note : Give a wrong operator	+CPOL: 6,0,"F SFR" +CPOL: 7,0,"F Itinéris" OK *Note : Preferred list of networks in long alphanumeric format*
AT+CPOL=7 *Note : Delete 7th location*	OK
AT+CPOL? *Note : Ask for preferred list of networks*	+CPOL: 1,0,"D1-TELEKOM" +CPOL: 6,0,"F SFR" OK *Note : Preferred list of networks in long alphanumeric format*
AT+CPOL=8,2,77777 *Note : Add an inexistent network to the list*	OK
AT+CPOL? *Note : Ask for preferred list of networks*	+CPOL: 1,0,"D1-TELEKOM" +CPOL: 6,0,"F SFR" +CPOL: 8,2,77777" OK *Note : Preferred list of networks in long alphanumeric format but 8th entry is unknown so the module edits it in the numeric format*
AT+CPOL=9,0,"F Itinéris" *Note : Add an inexistent network to the list format text*	
AT+CPOL? *Note : Ask for preferred list of networks*	+CPOL: 1,0,"D1-TELEKOM" +CPOL: 6,0,"F SFR" +CPOL: 8,2,77777" +CPOL: 9,0,"F Itinértis" OK *Note : Preferred list of networks in long alphanumeric format*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

7 Security commands

7.1 Enter PIN +CPIN

7.1.1 Description :

This command is used to enter ME passwords (CHV1 / CHV2 / PUK1 / PUK2…) which are needed before the use of any other ME functionality. The **CHV1/CHV2 length** is between **4** and **8** digits, the **PUK1/PUK2** length is **8 digits only**.
If the user application tries to set an outgoing call before having validated the SIM PIN code (CHV1), then the GSM module will refuse the "ATD" command with a "+CME ERROR: 11" (SIM PIN required).
It's up to the application to validate the PIN after each reset or power on if the PIN was enabled

7.1.2 Syntax :

Command syntax : AT+CPIN=<pin>

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

After 3 unsuccessful codes, the PUK will then be required. The PUK validation forces the user to enter as a second parameter a new PIN code which will be the new PIN code if the PUK validation succeeds. The CHV1 is then **enabled** if the PUK1 is correct. The application shall therefore use the command :

AT+CPIN=<Puk>,<NewPin>

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

To know which code has to be entered (or not), the following interrogation command can be used :

AT+CPIN?

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

The possible responses are :

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

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

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

example : 3 failed PIN validations + 1 successful PUK validation

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

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

If the user tries to do something which requires PIN2 (CHV2) the GSM module will refuse his action with a "+CME ERROR: 17" (SIM PIN2 required). Then the GSM module is waiting SIM PIN2 to be given.
Of course if SIM PIN2 is blocked , SIM PUK2 is required instead of SIM PIN2.
For instance, the GSM module needs PIN2 to write in the fixed dialling phonebook (FDN) , so if SIM PIN2 authentification has not been done during the current cession the SIM PIN2 is required:

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

Please note that the GSM module only ask once PIN2 or PUK2, so if they aren't entered correctly, the next +CPIN? command will return "+CPIN:

Remark
In the way Application to GSM, an "h" character shall be added before the PIN value if cyphering mode (with D.E.S algorithm) is on. See +EXPKEY command.
Same remark for +CLCK and +CPWD commands.

7.2 Enter PIN2 +CPIN2

7.2.1 Description :

This **specific** command is used to validate the PIN2 code (CHV2), or to validate the PUK2 code (UNBLOCK CHV2) and to define a new PIN2 code.
Of course +CPIN command allows to validate PIN2 or PUK2 codes but **only** when the **last executed command resulted in PIN2 authentification failure.**

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

7.2.2 Syntax :

Command syntax : AT+CPIN2=<pin2>

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

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

After 3 unsuccessful codes, the PUK2 will then be required. The PUK2 validation forces the user to enter as a second parameter a new PIN2 code which will be the new PIN2 code if the PUK1 validation succeeds. The application shall therefore use the command :

AT+CPIN2=<puk2>,<NewPin2>

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

To know which code has to be entered (or not), the following interrogation command can be used :

AT+CPIN2?
The possible responses are :

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

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

7.3 PIN remaining attempt number +CPINC

7.3.1 Description :

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

7.3.2 Syntax :

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

Command	Possible responses
AT+CPINC *Note : Ask remaining tries*	+CPINC : 2,3,10,10 *Note : First CHV1 attempt was a failure*
AT+CPINC? *Note : Ask current values*	+CPINC : 2,3,10,10 *Note : First attempt was a failure*
AT+CPINC=? *Note : Ask possible values*	OK

7.3.3 Defined values

<n1>, <n2> are the remaining tries of PIN1, PIN2 (0 = blocked, 3 max)
<k1>, <k2> are the remaining tries of PUK1, PUK2 (0 = blocked, 10 max)
To make it run, the card should be present at the initialisation time, in the opposite case, an error will be sent (+CME ERROR : 10).

7.4 Facility lock +CLCK

7.4.1 Description :

This command shall be used by the application to lock, unlock or interrogate a ME or network facility <fac>.

7.4.2 Syntax :

Command syntax: AT+CLCK= <fac>,<mode>[,<passwd>[,<class>]]
Response syntax: +CLCK: <status> [,<class1>]
<CR><LF>+CLCK: <status>,<class2>
[…]]

Command	Possible responses
AT+CLCK="SC",1,1234	OK

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Note : Enable PIN	*Note : PIN was right*
AT+CLCK? *Note : Read PIN status*	+CLCK: (“PS”, 0), (“PN,0),(“FD”,0) OK *Note : PIN is enables, no SIM lock, no network lock, no informati n on Call barring* ***(no longer supported** in GSM 07.07)*
AT+CLCK=”SC”,0,5555 *Note : Disable PIN*	+CME ERROR: 16 *Note: PIN was wrong*
AT+CPIN=1234 *Note : Enter PIN*	OK *Note : PIN was good*
AT+CLCK=? *Note : Request supported facilities*	+CLCK:(“PS”,”SC”,”AO”,”OI”,”OX”,”AI”,”IR”,”AB”, OK *Note : Supported facilities*
AT+CLCK=”PN”,1,12345678 *Note : Activate network lock*	OK *Network lock activated*
AR+CLCK=”AO”,1,1234,2 *Note : Activate all outgoing calls barring for data calls*	OK *Note : Call barring is activate*
AT+CLCK=”AO”,2 *Note : Query BAOC status*	<CR><LF> +CLCK : 1,2 OK *Note : BAOC activate for data calls only*

7.4.3 Defined values :

The following **<fac>** values are supported:

"PS" : SIM lock facility with a 8 digits password.

"SC" : PIN enable (<mode> = 1) / disable (<mode> = 0)

"AO" : BAOC (Barr All Outgoing Calls)

"OI" : BOIC (Barr Outgoing International Calls)

"OX" : BOIC-exHC (Barr Outg. Internat Calls except to Home Country)

"AI" : BAIC (Barr All Incoming Calls)

"IR" : BIC-Roam (Barr Inc. when Roaming outside Home Country)

"AB" : All Barring services

"AG" : All outGoing barring services

"AC" : All inComing barring services

"PN" : Network lock with a 8 digits password (NCK).

“FD”: SIM Fixed Dialling Numbers (FDN) memory feature (PIN2 is required as <password>)

<mode>
0 : unlock the facility
1 : lock the facility
2 : query status

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

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

<class> 1 : Voice (telephony)
2 : Data (refer to all bearer services)
4 : Fax (facsimile services)
8 : Short Message service
7 : equal to all classes (Default value)

Any attempt to combine different classes will result in activation / desactivation / interrogation of all classes.
The password maximum length is given with the AT+CPWD=? command.

7.5 Change password +CPWD

7.5.1 Description

This command shall be used by the application to change a password (PIN, call barring, NCK...). The facility values (<fac>) are the same as for +CLCK command, with a “P2” facility to manage SIM PIN2.
For the network lock ("PN"), the unlock is forbidden after 10 failed attempts to disable (unlock) the network lock with an incorrect password.

7.5.2 Syntax :

Command syntax : AT+CPWD= <fac>, <oldpwd>, <newpwd>

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

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

8 Phonebook commands

8.1 Select phonebook memory storage +CPBS

8.1.1 Description :

This command selects phonebook memory storage. The available phonebooks are the ADN (SIM), FDN (SIM fixdialling, restricted phonebook), MSISDN (SIM own numbers) and EN (SIM emergency number) phonebooks.

8.1.2 Syntax :

Command syntax : AT+CPBS

Command	Possible responses
AT+CPBS=”SM” *Note : Select ADN phonebook*	OK *Note : ADN phonebook is selected*
AT+CPBS=? *Note : Possible values*	+CPBS: (“SM”,”FD”,”ON”,”EN”) OK *Note : ADN, FDN, MSISDN phonebooks supported*
AT+CPBS? *Note : Status*	+CPBS :”SM”,10,20 OK *Note: ADN phonebook selected, 10 used locations, 20 locations available*

The ADN phonebook could not be selected is FDN is active.

8.2 Read phonebook entries +CPBR

8.2.1 Description :

This command returns phonebook entries for a location range from the current phonebook memory storage selected with +CPBS.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

8.2.2 Syntax :

Command syntax : AT+CPBR

Command	Possible responses
AT+CPBR=? *Note : Test command*	+CPBR: (1-50),20,10 OK *Note : 50 locations (from 1 to 50), max length of 20 for phone, 10 charcters max for the associated text*
AT+CPBR=12,14 *Note : Read entries from 12 to 14*	+CPBR : 12,"112",129,"Emergency" +CPBR : 13,"+331290909",145,"Fred" +CPBR : 14,"0146290808",129,"Zazi" OK *Note : Display locations 12,13,14 with location, number, type (TON/NPI), Text*
AT+CPBR=10 *Note : Read entry 10*	+CPBR :10,"0146290921",129,"Rob" OK *Note: Display location 10*
AT+CPBR=52 *Note : Read entry 52 (wrong)*	+CME ERROR: 21 *Note : Invalid index*

8.3 Find phonebook entries +CPBF

8.3.1 Description :

This command returns phonebook entries which alphanumeric field starts with a given string. The AT+CPBF= "" command can be used to display all phonebook entries sorted in alphabetical order.
This command is not allowed for "EN" phonebook, which does not contain alphanumeric field.

8.3.2 Syntax :

Command syntax : AT+CPBF

Command	Possible responses
AT+CPBF=? *Note : Test command*	+CPBF: 20,10 OK *Note : Max length of 20 for phone, 10 characters for the text*
AT+CPBF= "E" *Note : Read entries with "E"*	+CPBF : 12,"112",129,"Emergency" +CPBF : 15,"+331290101",145,"Eric" OK *Note : Display locations with text field starting with "E"*
Note : Read entries with "H"	+CME ERROR: 22 *Note: Entry not found*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

8.4 Write phonebook entry +CPBW

8.4.1 Description :

This command writes phonebook entry in location number <*index*> in the current phonebook memory storage. This command is not allowed for "EN" phonebook, which is not writable.

8.4.2 Syntax :

Command syntax : AT+CPBW

Command	Possible responses
AT+CPBW=? *Note : Test command*	+CPBW: (1-50),20,(129,145),10 OK *Note : 50 locations, phone length = 20, TON/NPI of 129 or 145, text length = 10*
AT+CPBW= 3 *Note : Erase location 3*	OK *Note : Location 3 erased*
AT+CPBW=5,"112",129,"SOS" *Note : Write at location 5*	OK *Note: Location 5 written*
AT+CPBW=5,"01290917",129,"Jacky" *Note : Overwrite location 5*	OK *Note : Location 5 overwritten*
AT+CPBW=,"+33145221100",145,"SOS" *Note : Write at the first free location*	OK *Note : Free location is written*
AT+CPBW=,"0345221100",129,"SOS" *Note : Write at the first free location*	+CME ERROR: 20 *Note : Phonebook full*
AT+CPBW=57,"112",129,"WM" *Note : Write at location 57 (wrong)*	+CME ERROR: 21 *Note : Invalid index*
AT+CPBW=7,"012345678901234567890",129,"WAVE" *Note : Write at location 7 a long phone numbe (21 digits)*	+CME ERROR: 26 *Note : Phone too long*
AT+CPBW=7,"0122334455",129,"WAVECOM TEL" *Note : Write at location 7 along text (11 characters)*	+CME ERROR: 24 *Note : Text too long*

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

But if PIN2 authentification has been done during the current cession , +CPBW command with FDN is allowed .

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

AT+CPIN=5678 *Note : Enter SIM PIN2*	OK
AT+CPBW=5,"01290917",129,"Jacky" *Note : Write in FDN at location 5*	OK *Note : Now writing in FDN is allowed*

8.5 Phonebook phone search +CPBP

8.5.1 Description :

This **specific** command orders the module to look in the phonebook for an item having the same phone number that defined in parameter.

8.5.2 Syntax :

Command syntax : AT+CPBP=<PhoneNumber>
<PhoneNumber> is coded like all phone numbers in GSM 07.07 or GSM 07.05 .

Command	Possible responses
AT+CPBP="+331290101" *Note : Read entries with this phone number*	+CPBP : 15,"+331290101",145,"Eric" OK *Note : Display location with this phone number*
AT+CPBP="+331290101" *Note : Read entries with this phone number*	+CPBP : 15,"+331290101",145,"Eric" OK *Note : Display location with this phone number*
AT+CPBP="+331290101" *Note : Read entries with this phone number*	+CPBP : 15,"+331290101",145,"Eric" OK *Note : Display location with this phone number*
AT+CPBP="+331290101" *Note : Read entries with this phone number*	+CPBP : 15,"+331290101",145,"Eric" OK *Note : Display location with this phone number*
AT+CPBP="0129" *Note : Read entries with this phone number*	+CME ERROR: 22 *Note : Entry not found*

8.6 Move action in phonebook +CPBN

8.6.1 Description

This specific command instructs the module to make a forward or a backward move in the phonebook (in alphabetical order).
This command is not allowed for "EN" phonebook, which does not contain alphanumeric field.

8.6.2 Syntax :

Command syntax: AT+CPBN = <mode>

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Command	Possible responses
AT+CPBN=? *Note : Test command*	+CPBN=<0-3> *Note : Possible modes*
AT+CPBN=0 *Note : Read the first location*	+CPBN : 15,"+331290101",145,"Eric" OK *Note : Display the first location*
AT+CPBN=2 *Note : Read the next location*	+CPBN : 5,"+33147658987",145,"Frank" OK *Note : Display the second location*
AT+CPBN=2 *Note : Read the next location*	+CPBN : 6,"+331290302",145,"Marc" OK *Note : Display the third location*
AT+CPBN=3 *Note : Read the previous location*	+CPBN : 5,"+33147658987",145,"Frank" OK *Note : Display the second location*
AT+CPBN=1 *Note : Read the last location*	+CPBN : 6,"+331290302",145,"Marc" OK *Note : Display the last location*
AT+CPBN=2 *Note : Read the next location*	+CPBP : 15,"+331290101",145,"Eric" OK *Note : Display the first location*

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

Command	Possible responses
AT+CPBF="Er" *Note : Find "Er" in phonebook*	+CPBF : 15,"+331290101",145,"Eric" OK *Note : Display this location*
AT+CPBN=2 *Note : Read the next location*	+CPBN : 5,"+33147658987",145,"Frank" OK *Note : Display the following location*
AT+CPBF="Er" *Note : Find"Er" in phonebook*	+CPBF : 15,"+331290101",145,"Eric" OK *Note : Display this location*
AT+CPBN=4 *Note : Read the last read location*	+CPBF : 15,"+331290101",145,"Eric" OK *Note : Display the last read location*
AT+CPBN=,"0146290800",129,"WM" *Note : Write an item at the first free location*	OK *Note : No information about this location*
AT+CPBN=4 *Note : Read the last read location*	+CPBF : 15,"+331290101",145,"Eric" OK

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

	Note : Display the last read location
	AT+CPBN=38,"0146290800,129,"WM" *Note : Display the last written item with its location*
AT+CPBN=4 *Note : Read the last read item*	AT+CPBN=38,"0146290800,129,"WM" *Note : Now the last read item is the last writen item too*

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

8.6.3 Defined values :

<mode> 0 : First item
1 : Last item
2 : Next valid item in alphabetical order
3 : Previous valid item in alphabetical order
4 : Last read item
5 : Last written item

8.7 Subscriber number +CNUM

8.7.1 Description :

This command returns the MSISDN(s) related to the subscriber.
If the subscriber has different MSISDNs for different services, each MSISDN is returned in a separate line.

8.7.2 Syntax :

Command syntax : AT+CNUM
Response syntax : +CNUM : <alpha1>, <number1>, <type1>
<CR><LF> +CNUM : <alpha2>, <number2>, <type2> ....

Command	Possible responses
AT+CNUM *Note : Get MSISDN(s)*	+CNUM :"Phone", "0612345678",129 +CNUM :"Fax", "0687654321",129 *Note : MSISDNs*
AT+CNUM=?	OK

8.7.3 Defined values :

<alphax> optional alphanumeric string associated with <numberx>
<numberx> string type phone number of format specified by <typex>
<typex> type of adress octet in integer format

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

8.8 Avoid phonebook init +WAIP

8.8.1 Description :

This specific command allows to inhibit the initialization of SIM phonebooks (loading of the ADNs and FDNs only) during the next boots.

8.8.2 Syntax :

Command syntax : AT+WAIP=<mode>

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

Be careful: The given value should be stored in EEPROM, so the command AT&W must be used to save the new <mode> value.

8.8.3 Defined values :

<mode> 0 : Normal initialization (with phonebooks)
1 : No phonebook initialization for ADN and FDN

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

9 Short Messages commands

9.1 Parameters definition

<da>	Destination Address, coded like GSM 03.40 TP-DA
<dcs>	Data Coding Scheme, coded like in document [5].
<dt>	Discharge Time in string format : "yy/MM/dd,hh :mm :ss±zz"
	(Year [00-99], Month [01-12], Day [01-31], Hour, Minute, Second and Time Zone [quarters of an hour])
<fo>	First Octet, coded like SMS-SUBMIT first octet in document [4], default value is 17 for SMS-SUBMIT
<index>	Place of storage in memory.
<length>	Text mode (+CMGF=1): number of characters
	PDU mode (+CMGF=0): length of the TP data unit in octets
<mem1>	Memory used to list, read and delete messages (+CMGL, +CMGR and +CMGD).
<mem2>	Memory used to write and send messages (+CMGW, +CMSS).
<mid>	CBM Message Identifier.
<mr>	Message Reference.
<oa>	Originator Address.
<pid>	Protocol Identifier.
<pdu>	For **SMS** : GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format, coded as specified in doc [4]
	For **CBS** : GSM 03.41 TPDU in hexadecimal format
<ra>	Recipient Address.
<sca>	Service Center Address
<scts>	Service Center Time Stamp in string format :

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

	"yy/MM/dd,hh :mm :ss±zz" (Year/Month/Day,Hour:Min:Seconds±TimeZone)
<sn>	CBM Serial Number
<st>	Status of a SMS-STATUS-REPORT
<stat>	status of message in memory.
<tooa>	Type-of-Address of <oa>.
<tora>	Type-of-Address of <ra>.
<tosca>	Type-of-Address of <sca>.
<total1>	Number of message locations in <mem1>.
<total2>	Number of messages locations in <mem2.
<used1>	Total number of messages locations in <mem1>.
<used2>	Total number of messages locations in <mem2.
<vp>	Validity Period of the short message, default value is 167

9.2 Select message service +CSMS

9.2.1 Description :

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

9.2.2 Syntax :

Command syntax : AT+CSMS=<service>

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

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

9.2.3 Defined values :

<service> 0 : SMS AT commands are compatible with GSM 07.05 Phase 2 version 4.7.0.

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

9.3 New Message Acknowledgement +CNMA

9.3.1 Description :

This command allows to acknowledge the reception of a new message routed directly to the TE.
In TEXT mode, only positive acknowledgement to the network (RP-ACK) is possible.
In PDU mode, either positive (RP-ACK) or negative (RP-ERROR) acknowledgement to the network is possible.
Acknowledge with +CNMA is possible only if +CSMS parameter is set to 1 (+CSMS=1) when a +CMT or +CDS indication is shown (see +CNMI command).
If no acknowledgement is given within the network-timeout, RP-ERROR is send to the network, then <mt> and <ds> parameters of +CNMI command are reset to zero (don't show new message indication).

9.3.2 Syntax :

Command syntax in text mode *:*

AT+CNMA

Command syntax in PDU mode *:*

AT+CNMA [= <n> [, <length> [<CR>
PDU is entered <ctrl-Z / ESC>]]]

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

Example to acknowledge a new message in TEXT mode

Command	Possible responses
AT+CMGF=1 *Note : TEXT message format*	OK *Note : TEXT mode valid*
AT+CNMI=2,2,0,0,0 *Note : <mt>=2*	OK
	+CMT : "123456","98/10/01,12 :30 00+00",129,4 ,32,240, "15379",129,5<CR><LF> Received message *Note : message received*
AT+CNMA *Note : acknowledge the message received*	OK *Note : send positive acknowledgement to the network*
AT+CNMA *Note : try to acknowledge again*	+CMS ERROR : 340 *Note : no +CNMA acknowledgment expected*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Example to acknowledge a new message in PDU mode

Command	Possible responses
AT+CMGF=0 *Note : PDU message format*	OK *Note : PDU mode valid*
	+CMT: ,29 07913366003000F1240B913366920547F3000000300341 9404800B506215D42ECFE7E17319 *Note : message received*
AT+CNMA=2,<length> <CR> *… Pdu message …* <Ctrl-Z/ESC> *Note : negative acknowledgement for the message.*	OK *Note : send a negative acknowledgement to the network (RP-ERROR) with PDU message (<ackpdu> format).*

9.3.3 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

9.4 Preferred Message Storage +CPMS

9.4.1 Description :

This command allows to define the message storage area to be used for reading, writing…

9.4.2 Syntax :

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

Command	Possible responses
AT+CPMS=? *Note : Possible message storages*	+CPMS: (("SM","BM"),("SM")) OK *Note : Read, list, delete: SMS or CBM* *Write, send: SMS*
AT+CPMS? *Note : Read it*	+CPMS: "SM",3, 10,"SM",3,10 OK *Note : Read, write…SMS from/to SIM 3 SMS are stored in SIM. 10 is the total available SIM memory*
AT+CPMS="AM" *Note : Select false message storage*	+CMS ERROR: 302
AT+CPMS="BM" *Note : Select CBM message storage*	+CPMS: 2,20,3,10 OK *Note : Read, list, delete CBM from RAM 2 CBM are stored*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

	in RAM
AT+CPMS? *Note : Read it*	+CPMS: "BM",2,20,"SM",3,10 OK *Note : Read list, delete CBM from RAM* *Write SMS to SIM*

9.4.3 Defined values :

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

- **"SM"** : SMS message storage (in SIM) (default)
- **"BM"**: CBM message storage (in volatile memory).

<mem2>: Memory used to write and send messages

- **"SM"** : SMS message storage (in SIM) (default).

If the command is correct, the following indication message 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.

9.5 Preferred Message Format +CMGF

9.5.1 Description :

The formats implemented are the *text mode* and the *PDU mode*.
In PDU mode, a complete SMS Message including all header information is passed as a binary string (in hexadecimal format, so only this 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 (ex : '41' is converted to the ASCII character 'A', whoes ASCII code is 0x41 or 65).
In Text mode, every commands and responses are in ASCII characters.
The chosen format is stored in EEPROM by the command +CSAS.

9.5.2 Syntax :

Command syntax : AT+CMGF

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

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Example to send a SMS Message in PDU mode

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

9.5.3 Defined values :

The message <pdu> is composed of the SC address (« 00 means no SC address given, use default SC address read with +CSCA command) and the TPDU message.
The length of **octets** of the TPDU buffer is 14, coded as GSM 03.40
In this case the TPDU is : 0x01 0x03 0x06 0x91 0x21 0x43 0x65 0x00 0x00 0x04 0xC9 0xE9 0x34 0x0B, which means regarding GSM 03.40 :

<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 mobile as two characters '2' (ASCII 50) and 'A' (ASCII 65).

9.6 Save Settings +CSAS

9.6.1 Description :

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

9.6.2 Syntax :

Command syntax : AT+CSAS

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

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

9.7 Restore settings +CRES

9.7.1 Description :

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

9.7.2 Syntax :

Command syntax : AT+CRES

Command	Possible responses
AT+CRES *Note : Restore +CSAS and +CSMP parameters*	OK *Note : Parameters are restored*

9.8 Show text mode parameters +CSDH

9.8.1 Description :

This commands gives more informations in text mode result codes. These informations are in brackets in commands +CMTI, +CMT, +CDS, +CMGR, +CMGL.

9.8.2 Syntax :

Command syntax : AT+CSDH

Command	Possible responses
AT+CSDH? *Note : Current value*	+CSDH: 0 OK *Note : Do not show header values*

9.9 New message indication +CNMI

9.9.1 Description :

This command selects the procedure on how to receive the message from the network. The application must send the following command :

9.9.2 Syntax :

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

Command	Possible responses
AT+CNMI=2,1,0,0,0 *Note : <mt>=1*	OK
	AT+CMTI : "SM",1 *Note : message received*
AT+CNMI=2,2,0,0,0 *Note : <mt>=2*	OK
	+CMT : "123456","98/10/01,12 :30 00+00",129,4 ,32,240, "15379",129,5<CR><LF> Received message *Note : message received*
AT+CNMI=2,0,0,1,0 *Note : <ds>=1*	OK
AT+CMGS="+33146290800"<CR> Message to send <ctrl-Z> *Note : Send a message in text mode*	+CMGS : 7 OK *Note : Successful transmission*
	+CDS : 2, 116, "+33146290800", 145, "98/10/01,12 :30 :07+04", "98/10/01 12 :30 :08+04", 0 *Note : message was correctly delivered*

9.9.3 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 unsollicited result codes will be the same than for <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

<mt> : sets the result code indication routing for SMS-DELIVERs. Default is 0.

<mt>
- 0 : No SMS-DELIVER indications are routed.
- 1 : SMS-DELIVERs are routed using unsolicited code :

  +CMTI : « SM », <index>

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

2 : SMS-DELIVERs (except class 2 messages) are routed using unsollicited code :
+CMT : [<alpha>,] <length> <CR> <LF> <pdu> (PDU mode)
or
+CMT : <oa>,[<alpha>,] <scts> [,<tooa>, <fo>, <pid>, <dcs>, <sca>, <tosca>, <length>] <CR><LF><data> (text mode)
3 : Class 3 SMS-DELIVERS are routed directly using code in <mt>=2 ;
Message of other classes result in indication <mt>=1

<**bm**> : set the rules for storing received CBMs (Cell Broadcast Message) types depend on its coding scheme, the setting of Select CBM Types (+CSCB command) and <bm>. Default is 0.

<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: “BM”, <index>
2 : New CBMs are routed directly to the TE using unsolicited result code.
+CBM : <length><CR><LF><pdu> (PDU mode)
or
+CBM :<sn>,<mid>,<dcs>,<page>,<pages>(Text mode)
<CR><LF> <data>
3 : Class 3 CBMs : as <bm>=2.
Other classes CBMs : as <bm>=1.

<ds> for SMS-STATUS-REPORTs. Default is 0.

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

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

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

<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.

9.10 Read message +CMGR

9.10.1 Description :

This command allows the application to read stored messages.

9.10.2 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>,] [,<toda>,<fo>,<pid>,<dcs>, [<vp>], <sca>, <tosca>,<length>]<CR><LF> <data>
(for **SMS-SUBMIT** 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" because it has been read.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Example :

Command	Possible responses
	AT+CMTI: “SM”,1 *Note : New message received*
AT+CMGR=1 *Note : Read the message*	+CMGR: “REC UNREAD”,”0146290800”, ”98/10/01,18 :22 :11+00”,<CR><LF> ABCdefGHI OK
AT+CMGR=1 *Note : Read again the message*	+CMGR: “REC UNREAD”,”0146290800”, ”98/10/01,18 :22 :11+00”,<CR><LF> ABCdefGHI OK *Note : Message is read now*
AT+CMGR=2 *Note : Read a bad index*	+CMS ERROR: 321 *Note : Error : invalid index*
AT+CMGF=0 ;+CMGR=1 *Note : In PDU mode*	+CMGR: 2,,<length> <CR><LF><pdu> OK *Note : Message is stored bunt unsent, no <alpha>field*

9.11 List message +CMGL

9.11.1 Description :

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

9.11.2 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>…)

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

Command	Possible responses
AT+CMGL= “REC UNREAD” *Note : List unread messages in text mode*	+CMGL: 1,”REC UNREAD”,”0146290800”, <CR><LF> Unread message ! +CMGL: 3,”REC UNREAD”, “46290800”, <CR><LF> Another unread message !

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

	OK *Note : 2 messages are unread, these messages will then have their status changed to "REC READ" (+CSDH:0)*
AT+CMGL="REC READ" *Note : List read messages in text mode*	+CMGL: 2,"REC READ","0146290800", <CR><LF> Keep cool OK
AT+CMGL="STO SENT" *Note : Read , stored and sent messages*	OK *Note : No message found*

9.11.3 Defined values

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

<stat> 0 : "REC UNREAD" (received unread message)
1 : "REC READ" (received read message)
2 : "STO UNSENT" (stored unsent message)
3 : "STO SENT" (stored sent message)
4 : "ALL" (all messages)

9.12 Send message +CMGS

9.12.1 Description :

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

9.12.2 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="+33146290800"<CR> Please call me soon, Fred. <ctr-Z> *Note : Send a message in text mode*	+CMGS: <mr> OK *Note : Successful transmission*
AT+CMGS=<length><CR><pdu><ctrl-Z> *Note : Send a message in PDU mode*	+CMGS: <mr> OK *Note : Successful transmission*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

The message reference <mr> which is returned back to the application is allocated by the GSM module. This number begins with 0 and is incremented by one for each outgoing message (successful and failure case) ; it is cyclic on one byte (0 follows 255).
Note : this number is not a storage number - outgoing messages are not stored.

9.13 Write Message to Memory +CMGW

9.13.1 Description :

This command stores a message to memory storage (either SMS-SUBMIT or SMS-DELIVERS). The memory location <index> is returned (no choice possible as with phonebooks +CPBW).
The entering of text or PDU is done similarly as specified in command Send Message +CMGS *(see 9.12).*

9.13.2 Syntax :

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

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

enter text <ctrl-Z / ESC>

Command syntax in PDU mode *:*

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

give PDU <ctrl-Z / ESC>

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

Command	Possible responses
AT+CMGW="+33146290800"<CR> Hello haw are you ?<ctrl-Z> *Note : Write a message in text mode*	+CMGW: 4 OK *Note : Message stored in index 4*
AT+CMGW=<length><CR><pdu><ctrl-Z> *Note : Write a message in PDU mode*	+CMGW: <index> OK *Note : Message stored in <index>*

9.13.3 Defined values :

Parameter Definition :

<oa/da> : Originating or Destination Adress Value in string format.
<tooa/toda> : Type of Originating / Destination Adress.

<stat> : Integer type in PDU mode *(default 2 for +CMGW)*, or string type in text mode *(default "STO UNSENT" for +CMGW)*. It indicates the status of message in memory. If <stat> is omitted , the stored message is considered like a message to be send.

<stat> 0 : "REC UNREAD"
1 : "REC READ"
2 : "STO UNSENT"

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

3 : "STO SENT"

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

9.14 Send Message From Storage +CMSS

9.14.1 Description :

This command sends message with location value <index> from storage to the network.

9.14.2 Syntax :

Command syntax: AT+CMSS=<index>[,<da> [,<toda>]]
Response syntax: +CMSS : <mr>
or +CMS ERROR: <err> if sending fails

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

Command	Possible responses
AT+CMGW=0660123456<CR> Today is my birthday *Note :*	+CMGW : 5 OK *Note :Message stored in index 5*
AT+CMSS=5, 0680654321 *Note : Send the message 5 to a different GSM*	AT+CMSS :<mr> OK *Note : Successful transmission*
AT+CMSS=5, 0680654321 *Note : Send the message 5 to a different GSM*	+CMSS :<mr> OK *Note : Successful transmission*

9.15 Set Text Mode Parameters +CSMP

9.15.1 Description :

This command shall be used to select value for the <vp>, <pid>, the <dcs>.

9.15.2 Syntax ;

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

Command	Possible responses
AT+CSMP? *Note : current values*	+CSMP: 0,0,0,0 OK *Note : No validity period* *<dcs>= PCCP437 alphabet (8 bits → 7 bits)*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

AT+CMPS=17,23,64,244 *Note :<vp> = 23 (2 hours, relative format)* *<dcs> = GSM 8 bits alphabet*	OK *Note : Command correct*

9.15.3 Defined values :

<fo> byte is composed of 6 differents fields :

b7	b6	B5	b4	b3	b2	b1	b0
RP	*UDHI*	*SRR*	*VPF*		*RD*	*MTI*	

RP : Reply Path, not used in text mode.

UDHI : User Data Header Information, b6=1 if the beginning of the User Data field contains a Header in addition to the short message. This option is not supported in +CSMP command, but can be used in PDU mode (+CMGS).

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

VPF : Validity Period Format

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

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

Others formats (absolute & enhanced) are not supported.

RD : Reject Duplicates, b2=1 to instruct the SC to reject an SMS-SUBMIT for an SM still held in the SC which has the same <mr> and the same <da> as the previously submitted SM from the same <oa>.

MTI : Message Type Indicator

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

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

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

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

<pid> is used to indicate the higher layer protocol being used or indicates interworking with a certain type of telematic device. For example, 0x22 is for group 3 telefax, 0x24 is for voice telephone, 0x25 is for ERMES.
<dcs> is used to determine the way the information is encoded. UCS2 alphabet and compressed text are not supported. Only GSM default alphabet and 8 bit data are supported.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

9.16 Delete message +CMGD

9.16.1 Description :

This command shall be used after a read-command in order to delete the any stored message.

9.16.2 Syntax :

Command syntax : AT+CMGD

Command	Possible responses
	+CMTI:"SM",3 *Note : New message received*
AT+CMGR=3 *Note : Read it*	+CMGR: "REC UNREAD","0146290800",, "98/10/01,18 :19 :20+00" <CR><LF> Received Message ! *Note : Unread message received from 0146290800 on the 01/10/1998 at 18H19m 20s*
AT+CMGD=3 *Note : Delete it*	OK *Note : Message deleted*

9.17 Service center address +CSCA

9.17.1 Description

This command shall be used to indicate to which service center the message has to be sent.
The GSM module has no default value for this address. If the application tries to send a message without having indicated the service center address, an error will be generated.
So, the application has to indicate this address when initializing. This address is then valid all the time. The application may change it if needed.

9.17.2 Syntax :

Command syntax : AT+CSCA

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

9.18 Select Cell Broadcast Message Types +CSCB

9.18.1 Description :

Set command selects which types of CBMs are to be received by the ME, This command is allowed in both PDU and text modes.

9.18.2 Syntax :

Command syntax : AT+CSCB= <mode>, [<mids>, [<dcss>]]
The <bm> parameter of +CNMI command controls the message indication.
Test read command (AT+CSCB ?) is not supported.
The activation of CBM reception (<mode>=0) can select only specific Message Identifiers (list in <mids>) for specific Languages (list in <dcss>), but the deactivation stops any reception of CBMs (only AT+CSCB=1 is allowed)
Message Identifiers (<mids> parameter) indicates which type of message identifiers the ME should listen to.
Supported languages (<dcss> parameter) are : 0 for German, 1 for English, 2 for Italian, 3 for French, 4 for Spanish, 5 for Dutch, 6 for Swedish, 7 for Danish, 8 for Portugese, 9 for Finnish, 10 for Norwegian, 11 for Greek, 12 for Turkish, 13 for Hungarian, 14 for Polish and 32 for Czech.

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

9.19 Cell Broadcast Message Identifiers +WCBM

9.19.1 Description :

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

9.19.2 Syntax :

Command syntax : AT+WCBM= <mids>

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

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

9.20 Message status modification +WMSC

9.20.1 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

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

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

Note 1 : The accepted status changes are from READ to NOT READ and vice versa, and from SENT to NOT SENT and vice versa.
If all the parameters are correct, the module overwrites the whole SMS in the SIM. Only the first byte (Status byte) is changed.

9.21 Message overwriting +WMGO

9.21.1 Description :

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

9.21.2 Syntax :

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

Possible responses:
OK if <loc> is a valid SMS location, for AT+WMGO=? and for AT+WMGO?

+CMS ERROR: 321 if <loc> is out of the SIM capacity range.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

+WMGO: <loc> for AT+WMGO?

Then on the next AT+CMGW command, the record number used will be the one specifed by AT+WMGO command. The location is then forgotten, and in order to make a second overwrting, the +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 module may store the incoming message in a free location, which could be unfortunately the one specified by +WMGO (the module does not prevent this case). Then if the user issues a AT+CMGW command, without changing the AT+WMGO location, the new message will be overwritten !
Be aware that this location number is not kept over a software reset.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

10 Supplementary Services commands

10.1 Call forwarding +CCFC

10.1.1 Description :

This commands allows the control of the call forwarding supplementary service.

10.1.2 Syntax :

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

Response syntax:
+CCFC: <status>, <class1> [, <number>, <type> [,<subaddr>, <satype> [,<time>]]]
[<CR><LF>+CCFC: <status>, <class2> [, <number>, <type> [,<subaddr>, <satype> [,<time>]]]
[…]]

Command	Possible responses
AT+CCFC=0,3,"0146290800" *Note : Register call forwarding unconditional*	OK *Note : Command valid*
AT+CCFC=0,2 *Note : Interrogate call forwarding unconditional*	+CCFC:1,1,"0146290800",129 *Note : Call forwarding active for voice* <CR><LF>+CCFC:1,2,"0146290802",129 *Note : Call forwarding active for data* <CR><LF>+CCFC:1,4,"0146290804",129 OK *Note : Call forwarding active for fax*
AT+CCFC=0,4 *Note : Erase call forwarding unconditional*	OK *Note : Command valid*

The +CCFC responses are not sorted depending of the <class> parameter, it only depends of the order of the network response.

10.1.3 Defined values

<reason>
0 : Unconditional
1 : Mobile busy
2 : No reply
3 : Not reachable
4 : All call forwarding
5 : All conditional call forwarding

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

<mode> 0 :Disable
1 : Enable
2 : Interrogate
3 : Registration
4 : Erasure

<class> 1 :Voice
2 : Data
4 : Fax
8 : Short Messages
7 : All classes

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

<subaddr>, <satype> : not managed

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

10.2 Call barring +CLCK

10.2.1 Description :

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

10.2.2 Syntax :

Command Syntax : AT+CLCK= <fac>, <mode> [, <password> [, <class>]]
Response Syntax: (for <mode>=2 and command successful)
+CLCK: <status> [, <class1>
[<CR><LF>+CLCK: <status>, <class2>
[…]]

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

<fac> "AO", "OI", "OX" : for outgoing calls barring
"AI", "IR" : for incoming calls barring
"AI", "IR" : for incoming calls barring
"AG", "AC","AB" : for all calls barring (<mode>=0 only)

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

<mode> 0 : Unlocks the facility
1 : Locks the facility
2 Query status

<class> : see description for +CLCK command (Facility lock) or +CCFC(Call forwarding).

The combination of different classes in not supported, it will only result in the activation / deactivation / status request of all classes (7).
Password code must be on 4 digits maximum.

10.3 Modify SS password +CPWD

10.3.1 Description :

This command shall be used by the application to change the supplementary service password.

10.3.2 Syntax :

Command Syntax: AT+CPWD=<fac>,<OldPassword>, <NewPassword>
for <fac> see +CLCK command with only "P2" facility added (SIM PIN2).

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

ever the facility, the change of password is performed for all calls barring.

10.4 Call waiting +CCWA

10.4.1 Description :

This command allows the control of the call waiting supplementary service.
The module will send an unsolicited result code +CCWA when call waiting service is enabled.

10.4.2 Syntax :

Command Syntax: AT+CCWA=<n>, [<mode> [, <class>]]
Response Syntax: (for <mode>=2 and command successful)
+CCWA: <status> [, <class1>
[<CR><LF>+CCWA: <status>, <class2>

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

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

Command	Possible responses
AT+CCWA=1,1,1 *Note : Enable call waiting for speech*	OK *Note : Command valid*
AT+CCWA=1,2 *Note : Interrogate call waiting*	+CCWA:1,1 OK *Note : Call waiting active for speech calls*
+CCWA:"0146290800",145,1,"FREDDY" *Note : Number and name of the waiting voice call*	*Note :*
AT+CCWA=1,0,7 *Note : Erase call waiting*	OK *Note : Command valid*
+CCWA:,,1 *Note : Waiting voice call without number*	

10.4.3 Defined values :

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

<n> 0 : Disable
1 : Enable

<**mode**> 0 : Disable
1 : Enable
2 : Query status

<**class**> 1 : Voice
2 : Data
4 : Fax
8 : Short Messages
7 : All classes

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

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

10.5 Calling line identification restriction +CLIR

10.5.1 Description :

This command allows control of the calling line identification restriction supplementary service.

10.5.2 Syntax :

Command syntax: AT+CLIR=<n>

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

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

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

10.5.3 Defined values :

<n> : parameter sets the adjustment for outgoing calls

<n> 0 : Presentation indicator is used according to the subscription of the CLIR service
1 : CLIR invocation
2 : CLIR suppression

<m> : parameter shows the subscriber CLIR status in the network

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

10.6 Calling line identification presentation +CLIP

10.6.1 Description :

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

10.6.2 Syntax :

Command syntax : AT+CLIP=<n>
Response syntax : +CLIP: <n>,<m> for AT+CLIP?
+CLIP: <number>, <type>[,<subaddr>, <satype>, <alpha>]
for an incoming call, after each RING or +CRING indication

Command	Possible responses
AT+CLIP=1	OK

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

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

10.6.3 Defined values :

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

<n> 0 : Disable
1 : Enable

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

<m> 0 : CLIP not provisioned
1 : CLIP provisioned
2 : Unknown (no network…)

10.7 Connected line identification presentation +COLP

10.7.1 Description :

This command allows control of the connected line identification presentation supplementary service, useful in case of call forwarding of the connected line.

10.7.2 Syntax :

Command syntax : AT+COLP=<n>
Response syntax: +COLP: <n>,<m> for AT+COLP?
+COLP: <number>,<type> [,<subaddr>, <satype>, <alpha>]
after ATD command, before OK or CONNECT <speed>

Command	Possible responses
AT+COLP=1 *Note : Activate COLP*	OK *Note : Command valid*
AT+COLP? *Note : Ask for current functionality*	+COLP:1,1 OK *Note : COLP is enabled and provisioned*
ATD146290928; *Note : Outgoing call*	+COLP:"0146290928",129,,,"JOE" OK *Note : Connected outgoing line number and name presentation*
AT+COLP=0	OK

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Note : Desactivate COLP	*Note : Command valid*

10.7.3 Defined values

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

<n> 0 : Disable
1 : Enable

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

<m> 0 : COLP not provisioned
1 : COLP provisioned
2 : Unknown (no network)

10.8 Advice of charge +CAOC

10.8.1 Description :

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

If AOC is supported, the command also includes the possibility to enable an unsolicited event reporting of the CCM information.

The unsolicited result code +CCCM: <ccm> is sent when the CCM value changes. Deactivation of the unsolicited event reporting is made with the same command.
If AOC is supported, the Read command indicates whether the unsolicited reporting is activated or not.

10.8.2 Syntax :

Command syntax: AT+CAOC= <mode>

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

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

10.8.3 Defined values :

<mode> 0 : query CCM value
1 : deactivate the unsolicited reporting of CCM value
2 : activate the unsolicited reporting of CCM value

<ccm> string type; three bytes of the current call meter value in hexadecimal format
(e.g. "00001E" indicates decimal value 30); value is in home units and bytes are similarly coded as ACMmax value in the SIM

10.9 Accumulated call meter +CACM

10.9.1 Description :

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

Read command returns the current value of ACM.

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

10.9.2 Syntax :

Command syntax : AT+CACM

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

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

10.10 Accumulated call meter maximum +CAMM

10.10.1 Description :

Set command sets the Advice of Charge related accumulated call meter maximum value in SIM file EF_{ACMmax}. ACMmax contains the maximum number of home units the subscriber is allowed to consume. When ACM (refer +CACM) reaches ACMmax, then calls are prohibited. SIM PIN2 is required to set the value. If setting fails in an ME error, +CME ERROR: <err> is returned.
Read command returns the current value of ACMmax.
Then ACMmax value (entered or displayed) is in hexadecimal format with 6 digits.

10.10.2 Syntax :

Command syntax : AT+CAMM

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

10.11 Price per unit and currency table +CPUC

10.11.1 Description :

Set command sets the parameters of Advice of Charge related price per unit and currency table in SIM file EF_{PUCT}. PUCT information can be used to convert the home units (as used in +CAOC, +CACM and +CAMM) into currency units. SIM PIN2 is required to set the parameters. If setting fails in an ME error, +CME ERROR: <err> is returned.

10.11.2 Syntax :

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

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

	Price per unit= "0.82"

10.12 Call related supplementary services +CHLD

10.12.1 Description :

This command is used to manage call hold and multiparty conversation (conference call).
Calls can be put on hold, recovered, released or added to conversation.

10.12.2 Syntax :

Command syntax: AT+CHLD= < n >
Response syntax: +CHLD: (0-3, 11-17, 21-27) for AT+CHLD=?

10.12.3 Defined values

<n>
0 : Release all held calls or set User Determined User Busy (UDUB) for a waiting call.
1 : Release all active calls (if any exist) and accepts the other (held or waiting) call.
1X : Release a specific call X (active, held or waiting)
2 : Place all active calls (if any exist) on hold and accepts the other (held or waiting) call.
2X : Place all active calls on hold except call X with which communication is supported.
3 Adds a held call to the conversation

10.13 List current calls +CLCC

10.13.1 Description :

This command is used to return the list of current calls.

10.13.2 Syntax :

Command syntax : AT+CLCC
Response syntax: OK if no calls are available
+CLCC: <id1>, <dir>, <stat>, <mode>, <mpty>
[,<number>, <type> [<alpha>]]
[<CR><LF> +CLCC: <id2>, <dir>, <stat>, <mode>, <mpty>
[,<number>, <type> [<alpha>]]
[. . .]]]

10.13.3 Defined values :

<idx> integer type, call identification as described in GSM 02.30
<dir> 0 : mobile originated (MO) call

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

1 : mobile terminated (MT) call

<stat> (state of the call):

<**stat**> 0 : active
1 : held
2 : dialing (MO call)
3 : alerting (MO call)
4 : incoming (MT call)
5 : waiting (MT call)

<mode> (teleservice):

<**mode**> 0 : voice
1 : data
2 : fax
9 : unknown

<mpty> 0 : call is not one of multiparty (conference) call parties
1 : call is one of multiparty (conference) call parties

<**number**> string type phone number in format specified by <type>
<**type**> type of address octet in integer format
<**alpha**> optional string type alphanumeric representation of <number> corresponding to the entry found in phonebook.

10.14 Supplementary service notifications +CSSN

10.14.1 Description :

This command refers to supplementary service related network initiated notifications.
When <n>=1 and a supplementary service notification is received after a mobile originated call setup, intermediate result code **+CSSI:<code1>** is sent before any other MO call setup result codes.
When <m>=1 and a supplementary service notification is received during a call, unsolicited result code **+CSSU:<code2>** is sent.

10.14.2 Syntax :

Command syntax: AT+CSSN= <n>, <m>
Response syntax: +CSSN: <n>, <m> for AT+CSSN?
+CSSN: (0-1), (0-1) for AT+CSSN=?

10.14.3 Defined values

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

<**n**> 0 : disable
1 : enable

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

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

<**m**>	0 : disable 1 : enable
<code1>	5 : outgoing calls are barred 6 : incoming calls are barred 7 : CLIR suppresssion rejected
<**code2**>	2 : call has been put on hold (during a voice call) 3 : call has been retrieved (during a voice call) 4 : multiparty call entered (during a voice call) 5 : call on hold has been released (during a voice call)

10.15 Unstructured supplementary service data +CUSD

10.15.1 Description :

The USSD supplementary service is described by the GSM 02.90.

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

This command is used to :

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

For the first behavior, the syntax is :

10.15.2 Syntax :

Command syntax : AT+CUSD = <n> [,<str> [<dcs>]]

10.15.3 Defined values :

<n>	0 : Disable the result code presentation 1 : Enable the result code presentation 2 : Cancel session (not applicable to read command response)

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

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

<m>	0 : no further user action required (network initiated USSD-Notify, or no further information needed after

mobile initiated operation)
1 : further user action required (network initiated USSD-Request, or further information needed after mobile initiated operation)
2 : USSD terminated by network
4 : Operation not supported

<str> is network string, converted in the selected character set (HEX mode is not supported).

<dcs> is the data coding sheme received (GSM TS 03.38).

10.15.4 Syntax To send and receive USSD :

Command syntax: AT+CUSD= <n> [,<str> [,<dcs>]]
Note : Please, be aware that the send command asks the user to re-enter the enable/disable (<n>) parameter !

10.15.5 Defined values To send and receive USSD :

<str> is the USSD string to be sent.

<dcs> only the default alphabet value is supported (which is the default value when the parameter is absent).

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

10.16 Closed user group +CCUG

10.16.1 Description :

The Closed User Group Supplementary Service enables subscribers to form closed user groups to and from which access is restricted.
The CUG supplementary service is described by the GSM 02.85. This service shall be provided after prior arrangement with the service provider. At provision subscription options should be selected.
+CCUG command is used to :

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

10.16.2 Syntax :

Command syntax: AT+CCUG = <n> [,<index> [<info>]]

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

10.16.3 Defined values :

<n>	0 : Disable CUG mode (default) 1 : Enable CUG mode
<index>	0-9 : CUG index (0 default), 10 : Preferred CUG
<info>	0 : No information (default) 1 : Suppress OA 2 : Suppress preferential CUG 3 : Suppress OA and preferential CUG

To activate the control of the CUG information by call, add [G] or [g] to the ATD command. Index and info values will be used.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

11. Data commands

11.1 Bearer type selection +CBST

11.1.1 Description :

This command applies to both **outgoing** and **incoming data calls** but in a different way. For outgoing call the two parameters (e.g. <speed> and <ce>) apply, whereas for incoming call only the <ce> parameter applies.
Note 1) as far as incoming calls are concerned, if <ce> is set to T only and the network proposes NT only or vice versa, then the call is released.
Note 2) former values 100 and 101 for <ce> are retained for compatibility purpose but shall not be used anymore, values 2 and 3 shall be used instead.

11.1.2 Syntax :

Command syntax: AT+CBST= <speed>, <name>, <ce>

Command	Possible responses
AT+CBST=? *Note : Test command*	+CBST: (0-8,65,66,68,70,71),(0),(0-3) OK *Note : Data 14,4 kbps not supported*
AT+CBST=? *Note : Test command*	+CBST: (0-8,12,14,65,66,68,70,71,75),(0),(0-3) OK *Note : Data 14,4 kbps not supported*
AT+CBST=7,0,1 *Note : Ask for a bearer*	OK *Note : Bearer supported*
AT+CBST? *Note : Current values*	+CBST:7,0,1 OK *Note : Command valid*
AT+CBST=81,0,0 *Note : Ask for a bearer*	+CME ERROR : 4 *Note : Bearer not supported*

11.1.3 Defined values :

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

<speed> 0(default) : Autobauding (Modem type : none)
1 : 300 bps (Modem type : V.21)

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

2 :	1200 bps	(Modem type V.22)
3:	1200/75 bps	(Modem type : V.23)
4 :	2400 bps	(Modem type : V.22bis)
5 :	2400 bps	(Modem type : V.26ter)
6 :	4800 bps	(Modem type : V.32)
7 :	9600 bps	(Modem type : V.32)
8 :	Specific	
12(*) :	9600 bps	(Modem type : V.34)
14(**) :	14400 bps	(Modem type : V.34)
65 :	300 bps	(Modem type : V.110)
66 :	1200 bps	(Modem type : V.110)
68 :	2400 bps	(Modem type : V.110)
70 :	4800 bps	(Modem type : V.110)
71 :	9600 bps	(Modem type : V.110)
75(*) :	14400 bps	(Modem type V.110)

(*) Available for WISMO2C only

(**) Available for WISMO2C only. This speed configure the data and fax 14.4 kbps bearers.

<ce> : Connection element

<ce>	0 : Transparent only
	1(default) : Non transparent only
	2 : Transparent preferred
	3 : Non transparent preferred

11.2 Select mode +FCLASS

11.2.1 Description

This command puts the module into a particular mode of operation (data or fax).

11.2.2 Syntax :

Command syntax: AT+FCLASS= <n>

Command	Possible responses
AT+FCLASS=? *Note : Test command*	+FCLASS: (0,1) OK *Note : Fax class 2 not supported*
AT+FCLASS=? *Note : Test command*	+FCLASS: (0,1,2) OK *Note : Fax class 2 supported*

AT+FCLASS=0 *Note : Data mode asked*	OK *Note : Command valid*
AT+FCLASS=1 *Note : Fax class 1 mode asked*	OK *Note : Command valid*
AT+FCLASS? *Note : Current value*	+FCLASS: 1 OK *Note : Command valid*

11.2.3 Defined values :

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

(*) Available for WISMO2C only

11.3 Service reporting control +CR

11.3.1 Description :

This command enables a more detailed service reporting, in case of data **incoming or outgoing call**. Before sending the CONNECT response to the application, the GSM module will precise the type of data connection that have been established.
These report types are :

+CR: ASYNC	For asynchronous transparent
+CR: REL ASYNC	For asynchronous non-transparent

11.3.2 Syntax :

Command syntax : AT+CR

Command	Possible responses
AT+CR=0 *Note : Extended reports disabled*	OK *Note : Command valid*
AT+CR=1 *Note : Extended reports enabled*	OK *Note : Command valid*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

11.4 Cellular result codes +CRC

11.4.1 Description :

This command enables a more detailed ring indication, in case of **incoming call** (voice or data). Instead of the string "RING", an extended string is used to indicate which type of call is ringing (e.g. +CRING: VOICE). These extended indications are :

+CRING: ASYNC	for asynchronous transparent
+CRING: REL ASYNC	for asynchronous non-transparent
+CRING: VOICE	for normal speech.
+CRING : FAX	for fax calls

11.4.2 Syntax :

Command syntax : AT+CRC

Command	Possible responses
AT+CRC=0 *Note : Extended reports disabled*	OK *Note : Command valid*
AT+CRC=1 *Note : Extended reports enabled*	OK *Note : Command valid*

11.5 DTE-DCE local rate reporting +ILRR

11.5.1 Description :

This parameter controls whether or not the extended-format "+ILRR:<rate>" information text is transmitted from the DCE to the DTE. The <rate> reported shall represent the current (negotiated or renegotiated) DTE-DCE rate. If enabled, the intermediate result code is transmitted in a data **incoming or outgoing call,** after any data compression report, and before any final result code (CONNECT).
<rate> can take the following values: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200.

11.5.2 Syntax :

Command syntax : AT+ILRR

Command	Possible responses
AT+ILRR=0 *Note : Local port rate report disabled*	OK *Note : Command valid*
AT+ILRR=1 *Note : Local port rate report enabled*	OK *Note : Command valid*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

11.6 Radio link protocol parameters +CRLP

11.6.1 Description :

This command allows to change the radio link protocol parameters used for **non transparent data transmission**.

11.6.2 Syntax :

Command syntax: AT+CRLP=<iws>,<mws>,<T1>,<N2>, <ver>

Command	Possible responses
AT+CRLP=? *Note : Test command*	+CRLP: (0-61),(0-61),(40-255),(1,255),(0) OK *Note : V42bis not supported*
AT+CRLP=? *Note : Test command*	+CRLP: (0-61),(0-61),(40-255),(1,255),(0,1) OK *Note : V42bis supported*
AT+CRLP=61,61,48,6,0 *Note : Set new parameters*	OK *Note : Command valid*
AT+CRLP? *Note : Current values*	AT+CRLP: 61,61,48,6,0 *Note : Command valid*

11.6.3 Defined values :

This command accepts 5 parameters.

<iws> 0-61 : Down window size, (default is 61),

<mws> 0-61 : Up window size, (default is 61),

<T1> 40-255 : Acknowledgement timer in units of 10ms, (default is 48),

<N2> 1-255 : Retransmission attempts, (default is 6),

<ver> 0-1 : Version number.
If the V42bis is supported (Wismo2C) the version is 1
If the V42bis is not supported the version is 0

11.7 Others radio link parameters +DOPT

11.7.1 Description :

This Wavecom specific command allows to change some supplementary radio link protocol parameters.

11.7.2 Syntax :

Command syntax: AT+DOPT=<reset_allowed>,<dtx_allowed>

Command	Possible responses

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

AT+DOPT=? *Note : Test command*	(0,1),(0) OK *Note : DTX not supported (WISMO1B)*
AT+DOPT=1,1 *Note : Set new parameters*	+CME ERROR : 3 *Note : Command not valid*
AT+DOPT=1 *Note : Set new parameters*	OK *Note : Command valid*
AT+DOPT+? *Note : Test command*	(0,1),(0,1) OK *Note : DTX is supported (WISMO2C)*
AT+DOPT=1,1 *Note : Set new parameters*	OK *Note : Command valid*
AT+DOPT? *Note : Current values*	1,1 OK *Note : Command valid*

11.7.3 Defined values :

<reset_allowed> 0 : Data communication is hung up in case of bad radio link.

1(default) : Data communication goes on in case of bad radio link (**possible loose of data)**

The <dtx_allowed> parameter is used for WISMO2C only.

< dtx_allowed > 0 : Normal mode

1(default) : Economic battery mode (not supported by all networks)

11.8 Select data compression %C

11.8.1 Description :

This command enables or disables data compression negotiation if this feature is provided by the module. **This command is available for WISMO2C only.**

11.8.2 Syntax :

Command syntax: AT%C<n>

Command	Possible responses
AT%C0 *Note : Command*	OK *Note : Feature supported*
AT%C2	OK

Note : Command	*Note : V42bis supported*
AT%C? *Note : Current value*	2 OK *Note : Command valid*

11.8.3 Defined values :

<n> 0(default) : no compression
2 : V42bis compression if supported

11.9 V42 bis data compression +DS

11.9.1 Description :

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

11.9.2 Syntax :

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

Command	Possible responses
AT+DS=? *Note : Test command*	+DS: (0-3),(0,1),(512-4096),(6-250) OK *Note :*
AT+DS=3,0,4096,250 *Note : Set new parameters*	OK *Note : Command valid*
AT+DS? *Note : Current values*	+DS: 3,0,4096,250 OK *Note : Command valid*

11.9.3 Defined values :

It accepts four numeric subparameters:
< 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),

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

< **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 : which specifies the maximum number of dictionary entries which should be negotiated, (default is 4096),
< **P2** >	6-250 : which specifies the maximum string length to be negotiated, (default is 250),

11.10 V42 bis data compression report +DR

11.10.1 Description :

If this feature is provided by the module, this command determines whether or not the use of V42bis is informed in a data **incoming or outgoing call,**
The intermediate result code shall represent the current DCE-DCE data compression type. The format of this result code is the following:

+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.

11.10.2 Syntax :

Command syntax : AT+DR

Command	Possible responses
AT+DR=? *Note : Test command*	+DR: (0-1) OK *Note :*
AT+DR=1 *Note : Reporting enabled*	OK *Note : Command valid*
AT+DR? *Note : Current value*	+DR: 1 OK *Note : Command valid*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

11.11 Select data error correcting mode \N

11.11.1 Description :

If this feature is provided by the module, this command controls the preferred error correcting mode in a data connection. It can only be used for **transparent data transmission**.
This command is available for WISMO2C only.
If V42 feature is provided, the module authorizes the LAPM error correction mode.
If MNP2 feature is provided, the module authorizes the MNP error correction mode.

11.11.2 Syntax :

Command syntax: AT\N<n>

Command	Possible responses
AT\N0 *Note : Command*	OK *Note :*
AT\N? *Note : Current value*	0 OK *Note : Command valid*

11.11.3 Defined values :

<n> 0(default) : Disables error correction mode
2 : Selects an auto reliable mode(LAPM connection,then MNP connection)
4 : Selects LAPM error correction mode
5 : Selects MNP error correction mode

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

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

12 Fax commands

The fax service provided by the module is class 1 compatible. However only the core commands defined by ITU T.31 are supported. It means that commands like AT+FAR, +FCC,... are not supported.

Autobauding has to be enabled to set up the module for fax.

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

12.1 Transmit speed +FTM

12.1.1 Description :

This command sets the fax transmit speed.

12.1.2 Syntax :

Command syntax: AT+FTM=<speed>

Command	Possible responses
AT+FTM=? *Note : Test command*	(24,48,72,96) OK *Note : Fax 14.4 kbps not supported (WISMO1B)*
AT+FTM=? *Note : Test command*	(24,48,72,73,74,96,97,98,121,122,145,146) OK *Note : Fax 14.4 kbps supported (WISMO2C)*

12.1.3 Defined values :

<speed>	24	: 2400 bps	(Modem type : V.27ter)
	48	: 4800 bps	(Modem type : V.27ter)
	72	: 7200 bps	(Modem type : V.29)
	73(*)	: 7200 bps (long)	(Modem type : V.17)
	74(*)	: 7200 bps (short)	(Modem type : V.17)
	96	: 9600 bps	(Modem type : V.29)
	97(*)	: 9600 bps (long)	(Modem type : V.17)
	98(*)	: 9600 bps (short)	(Modem type : V.17)
	121(*)	: 12000 bps (long)	(Modem type : V.17)
	122(*)	: 12000 bps (short)	(Modem type : V.17)

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

145(*) : 14400 bps (long) (Modem type : V.17)
146(*) : 14400 bps (short) (Modem type : V.17)

(*) Available for WISMO 2C only

12.2 Receive speed +FRM

12.2.1 Description :

This command sets the fax receive speed.

12.2.2 Syntax :

Command syntax: AT+FRM=<speed>

Command	Possible responses
AT+FRM=? *Note : Test command*	(24,48,72,96) OK *Note : Fax 14.4 kbps not supported (WISMO1B)*
AT+FRM=? *Note : Test command*	(24,48,72,73,74,96,97,98,121,122,145,146) OK *Note : Fax 14.4 kbps supported (WISMO2C)*

12.2.3 Defined values :

The speed values are the same than these of +FTM command *(see 12.1.3 Defined values).*

12.3 HDLC transmit speed +FTH

12.3.1 Description :

This command sets the fax transmit speed, using the HDLC protocol.

12.3.2 : Syntax

Command syntax: AT+FTH=<speed>

Command	Possible responses
AT+FTH=? *Note : Test command*	(3) OK *Note :*

12.3.3 Defined values :

<speed> can only take the value 3, which corresponds to V.21 channels 300 bps.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

12.4 HDLC receive speed +FRH

12.4.1 Description :

This command sets the fax receive speed, using the HDLC protocol.

12.4.2 : Syntax :

Command syntax: AT+FRH=<speed>

Command	Possible responses
AT+FRH=? *Note : Test command*	(3) OK *Note :*

12.4.3 : Defined values :

<speed> can only take the value 3, which corresponds to V.21 channels 300 bps.

12.5 Stop transmission and wait +FTS

12.5.1 Description :

This command stops the transmission for the specified period.

12.5.2 Syntax :

Command syntax: AT+FTS=<n>

Command	Possible responses
AT+FTS=? *Note : Test command*	(0-255) OK *Note :*
AT+FTS=50 *Note : Stops transmission and waits 0.5 s*	OK *Note : Command valid*

12.5.3 Defined values :

<n> : silence period (units of 10 ms).

12.6 Receive silence +FRS

12.6.1 Description :

This command causes the modem to stop listening from the network and report back to the DTE after the specified period.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

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

12.6.2 Syntax :

Command syntax: AT+FRS=<n>

Command	Possible responses
AT+FRS=? *Note : Test command*	(0-255) OK *Note :*
AT+FRS=50 *Note : Stops transmission and waits 0.5 s*	OK *Note : Command valid*

12.6.3 Defined values :

<n> is in units of 10 ms.

12.7 Setting up the PC fax application:

The recommended fax application is ***Delrina WinFax v8.0***.
It should be configured as follows (menu Setup/Fax Modem Setup) :

- Port: any com
- Model: Generic Class 1 (hardware flow control). A generic class 1 with software flow control can also be selected.
- Init: default string is suitable for the module
- Reset: default string is suitable for the module
- Maximum Transmit Rate: 9600 baud (if higher then rate will be automatically cut back to 9600 baud).

Others settings are of no relevance for the GSM unit: they can be modified.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

13 Fax class 2 commands

All commands below are available for WISMO2C only.
If the feature is present, the commands +FDT, +FDR, +FET, +FPTS and +FK have to be used in communication only.
The other commands +FBOR, +FBUF, +FCQ, +FCR, +FDCC, +FDIS, +FLID and +FPHCTO can not be used in communication.

13.1 Transmit Data +FDT

13.1.1 Description :

This command prefixes data transmission.

13.1.2 Syntax :

Command syntax: AT+FDT

13.2 Receive Data +FDR

13.2.1 Description :

This command initiates data reception.

13.2.2 Syntax :

Command syntax: AT+FDR

13.3 Transmit page punctuation +FET

13.3.1 Description :

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

13.3.2 Syntax :

Command syntax: AT+FET=<ppm>

13.3.3 Defined values :

<ppm>
0 : Another page next, same document
1 : Another document next
2 : No more pages or documents
3 : Another partial page next
4 : Another page, procedure interrupt
5 : Another document, procedure interrrupt
6 : All done, procedure interrupt

The remote station should respond with +FPTS:<ppr>

13.4 Page transfer status parameters +FPTS

13.4.1 Description :

This command sets post page transfer response.

13.4.2 Syntax :

Command syntax: AT+FPTS=<ppr>

13.4.3 Defined values :

<ppm>
1 : Page good
2 : Page bad ; retrain requested
3 : page good ; retrain requested
4 : Page bad ; interrupt requested
5 : Page good ; interrupt requested

13.5 Terminate Session +FK

13.5.1 Description :

This command causes the module to terminate the session.

13.5.2 : Syntax :

Command syntax: AT+FK

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

13.6 Page transfer bit order +FBOR

13.6.1 Description :

This command sets the bit order for negociation and fax page transfer. The order is related to the bit order or radio link.

13.6.2 Syntax :

Command syntax: AT+FBOR=<n>

Command	Possible responses
AT+FBOR=? *Note : Test command*	(0-3) OK *Note :*

13.6.3 Defined values :

<n>	Bit order for negociation	Bit order for page transfer
0(default)	Same	Same
1	Same	Reverse
2	Reverse	Same
3	Reverse	Reverse

13.7 Buffer size report +FBUF

13.7.1 Description :

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

13.7.2 Syntax :

Command syntax : At+FBUF

Command	Possible responses
AT+FBUF? *Note : Current value*	1024 OK *Note : Command valid*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

13.8 Copy quality checking +FCQ

13.8.1 Description :

This command controls the Copy Quality checking for receiving faxs.

13.8.2 Syntax :

Command syntax: AT+FCQ=<n>

Command	Possible responses
AT+FCQ=? *Note : Test command*	(0) OK *Note :*

13.9 Capability to receive +FCR

13.9.1 Description :

This commands controls the capability of the modem to accept incoming faxs.

13.9.2 Syntax :

Command syntax: AT+FCR=<n>

Command	Possible responses
AT+FCR=? *Note : Test command*	(0,1) OK *Note :*

13.9.3 Defined values :

<n> 0 : The modem will not accept incoming faxs.

1(default) : The modem will accept incoming faxs.

13.10 Current sessions parameters +FDIS

13.10.1 Description :

This command allows the DTE to parameter the capabilities used for the current session.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

13.10.2 Syntax :

Command syntax: AT+FDIS=<vr>,
,<wd>,<ln>,<df>,<ec>,<bf>,<st>

Command	Possible responses
AT+FDIS=? *Note : Test command*	(0,1),(0-5),(0-2),(0-2),(0,3),(0-2),(0),(0-7) OK *Note : Fax ECM supported* *Fax 14,4 kbps supported*
AT+FDIS=? *Note :*	(0,1),(0-5),(0-2),(0-2),(0,3),(0),(0),(0-7) OK *Note : Fax ECM not supported* *Fax 14,4 kbps supported*
AT+FDIS=? *Note :*	(0,1),(0-3),(0-2),(0-2),(0,3),(0-2),(0),(0-7) OK *Note : Fax ECM supported* *Fax 14,4 kbps not supported*
	(0,1),(0-3),(0-2),(0-2),(0,3),(0),(0),(0-7) OK *Note : Fax ECM not supported* *Fax 14,4 kbps not supported*

13.10.3 Defined values :

This command accepts eight numeric parameters (of the T30 standard):

<**vr**> : Vertical Resolution,

< **vr** >	0(default) : Normal: 98 lpi	
	1 : Fine: 196 lpi	

<**br**> : Bit Rate,

< **br** >	0 : 2400 bps	(Modem type : V.27 ter)
	1 : 4800 bps	(Modem type : V.27 ter)
	2 : 7200 bps	(Modem type : V.29)
	3 : 9600 bps	(Modem type : V.29, V.17)
	4(*) : 12000 bps	(Modem type : V.33, V.17)
	5(*) : 14400 bps	(Modem type : V.33, V.17)

(*) Only when module supports 14,4 kbps data feature

If this feature is supported, default is 5, else default is 3.

<**wd**> : Page Width,

< **wd** >	0(default) : 1728 pixels in 215 mm

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

1 : 2048 pixels in 255 mm
2 : 2432 pixels in 303 mm

<ln> : Page Length,

< **in** > 0 : A4, 297 mm
1 : B4, 364 mm
2(default) : Unlimited

<df> : Data Compression Format,

< **df** > 0(default) : 1-D modified huffman
1 : 2-D modified read
2 : 2-D uncompressed mode
3 : 2-D modified modified read

<ec> : Error Correction,

< **ec** > 0 : Disable Fax ECM
1(*) : Enable Fax ECM, 64 bytes/frame
2(*) : Enable Fax ECM, 256 bytes/frame

(*) Only when module supports fax Error Correction Mode feature
If this feature is supported, default is 2, else default is 0.
<bf> : Binary File Transfer,

Only <bf> set to 0 is supported.
<st> : Scan Time per line,

<st>	Description <vr>=0	Description <vr>=1
0(default)	0 ms	0 ms
1	5 ms	5 ms
2	10 ms	5 ms
3	10 ms	10 ms
4	20 ms	10 ms
5	20 ms	20 ms
6	40 ms	20 ms
7	40 ms	40 ms

13.11 DCE capabilities parameters +FDCC

13.11.1 Description :

This command allows the DTE to parameter the capabilities used for anyl sessions.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

13.11.2 Syntax :

Command syntax: AT+FDCC=<vr>,
,<wd>,<ln>,<df>,<ec>,<bf>,<st>

Command	Possible responses
AT+ FDCC=? *Note : Test command*	(0,1),(0-5),(0-2),(0-2),(0,3),(0-2),(0),(0-7) OK *Note : Fax ECM supported* *Fax 14,4 kbps supported*
	(0,1),(0-5),(0-2),(0-2),(0,3),(0),(0),(0-7) OK *Note : Fax ECM not supported* *Fax 14,4 kbps supported*
	(0,1),(0-3),(0-2),(0-2),(0,3),(0-2),(0),(0-7) OK *Note : Fax ECM supported* *Fax 14,4 kbps not supported*
	(0,1),(0-3),(0-2),(0-2),(0,3),(0),(0),(0-7) OK *Note : Fax ECM not supported* *Fax 14,4 kbps not supported*

13.11.3 Defined values :

The parameters and default values are the same as these of +FDIS command *(see 13.10.3 Defined values).*

13.12 Local ID string +FLID

13.12.1 Description :

This command allows to define the local ID string.

13.12.2 Syntax :

Command syntax: AT+FLID="<string>"

The string has a limited size, and accepts any characters between 32 and 127.

Command	Possible responses
AT+FLID=? *Note : Test command*	(20),(32-127) OK

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

13.13 Page transfer timeout parameter +FPHCTO

13.13.1 Description :

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

13.13.2 Syntax :

Command syntax: AT+FPHCT0=<n> (default is 30)

Command	Possible responses
AT+FPHCTO=? *Note : Test command*	(0-255) OK

13.14 Fax Class 2 indication messages

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

+FCON:
This response indicates connexion with a fax machine.

**+FDCS <vr>,
,<wd>,<ln>,<df>,<ec>,<bf>,<st>**:
This response reports current session capabilities. The parameters are the same than those of AT+FDIS command *(see 13.10).*

**+FDIS <vr>,
,<wd>,<ln>,<df>,<ec>,<bf>,<st>**:
This response reports remote capabilities. The parameters are the same than those of AT+FDIS command *(see 13.10).*

+FCFR:
This response indicates confirmation to receive.

+FTSI "<string>":
This response reports the received transmit station ID string.

+FCSI "<string>":
This response reports the received called station ID string.

+FPTS <ppr>:
This response reports received page transfer status. The parameter is the same than the one of AT+FPTS command *(see 13.4).*

+FET <ppm>:
This response reports post page message response. The parameter is the same than the one of AT+FET command *(see 13.3).*

+FHNG <cause>:
This response reports the hangup cause. It indicates that the call has been terminated.

<cause>
0 : Normal end of connection.
10 : Unspecified transmit phase A error.
20 : Unspecified transmit phase B error.
40 : Unspecified transmit phase C error.
50 : Unspecified transmit phase D error.
70 : Unspecified receive phase B error.
90 : Unspecified receive phase C error.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

100 : Unspecified receive phase D error.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

14 V24-V25 commands

14.1 Fixed DTE rate +IPR

14.1.1 Description :

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

14.1.2 Syntax :

Command syntax : AT+IPR

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

Note (*) : first set of values indicates the range of autodetectable speeds. The second set of values indicates all the possible speeds which can be used by DCE.

An autobauding is provided which operates from 2400 to 19200 baud. However some constraints have to be dealt with :

- any AT command issued by DTE must start with a capital 'A' and 'T' (or '\'). If not, DCE may send back some garbage characters and get de-synchronized. Shoud it happen, DTE shall just issue once or twice 'AT\r' (at 2400 or 4800 baud) or just 'AT' (at 9600 baud) to get the modem re-synchronized.
- the DTE shall wait for 1ms after receiving the last character of the AT response (which is always '\n' or 0x0A) to send a new AT command at either the same rate or a new rate. Shoud this delay ignored, DCE can get de-synchronised. Once again, sending once or twice 'AT\r' or just 'AT' causes the DCE to recover.

Be careful : when starting up if autobauding is enabled and no AT command has been received yet, the module sends all unsolicited responses (like RING) at 9600 baud.

14.2 DTE-DCE character framing +ICF

14.2.1 Description :

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

14.2.2 Syntax :

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

Command	Possible responses
AT+ICF? *Note :*	+ICF: 3,4 OK *Note : Current values*
AT+ICF=? *Note :*	+ICF: (1-6),(0-4) OK *Note : Possible values*
AT+IPR=38400 *Note :*	OK *Note : Disable autobauding and set rate to 38400 bps*
AT+ICF=0,0 *Note :*	OK *Note : New values*

14.2.3 Defined values :

<format>	0 : Autodetect	(not supported)
	1 : 8 Data 2 Stop	(supported)
	2 : 8 Data 1 Parity 1 Stop	(supported)
	3 : 8 Data 1 Stop	(supported)
	4 : 7 Data 2 Stop	(supported)
	5 : 7 Data 1 Parity 1 Stop	(supported)
	6 : 7 Data 1 Stop	(supported)
<parity>	0 : Odd	(supported)
	1 : Even	(supported)
	2 : Mark	(supported)
	3 : Space	(supported)
	4 : None	(supported)

Note 1) setting a character framing different from 8N1 will disable autobauding (in the case it was activated). However setting it back to 8N1 will not re-enable autobaud.
Note 2) setting the framing to 8N1 will let the autobauding enabled, if it was already enabled (implying framing was already 8N1).

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

14.3 DTE-DCE local flow control +IFC

14.3.1 Description :

This command is used to control the operation of local flow control between the DTE and DCE.

14.3.2 Syntax :

Command syntax :
AT+IFC=<DCE_by_DTE>,<DTE_by_DCE>

Command	Possible responses
AT+IFC? *Note :*	+IFC: 2,2 OK *Note : Current values*
AT+IFC=? *Note :*	+ICF: (0,2),(0,2) OK *Note : Possible values*
AT+ICF=0,0 *Note :*	OK *Note : New values*

14.3.3 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)

Important note : when this parameter is set to 2 (DTE invokes flow control through RTS) the behavior of the DCE is the following :
If the DCE has never detected RTS in high (or ON) condition since startup then it ignores RTS, assuming this signal is not connected.
As soon as DCE detects RTS high, then this signal acts upon it. Therefore subsequent RTS transition to OFF will prevent DCE from sending any further data in online and in offline as well.
This behavior allows the user to use the default settings (hardware flow control) and let RTS disconnected. In the case RTS is connected and is high at least once then it acts upon DCE.

< DTE_by_DCE > 0 : none (Supported)
1 : Xon/Xoff circuit 104 (not supported)
2 : CTS (Supported)

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

When this parameter is set to 0 (none) then CTS is kept high all the time.

14.4 Set DCD signal &C

14.4.1 Description :

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

14.4.2 Syntax :

Command syntax : AT&C

Command	Possible responses
AT&C0 *Note : DCD always on*	OK *Note : Command valid*
AT&C1 *Note : DCD matches state of the remote modem's data carrier*	OK *Note : Command valid*

14.5 Set DTR signal &D

14.5.1 Description :

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

14.5.2 Syntax :

Command syntax : AT&D

Command	Possible responses
AT&D0 *Note : The DTR signal is ignored*	OK *Note : Command valid*
AT&D1 *Note : Modem switches from data to command mode when DTR switches from ON to OFF*	OK *Note : Command valid*
AT&D2 *Note : Upon DTR switch from ON to OFF, the call is cleardown*	OK *Note : Command valid*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

14.6 Set DSR signal &S

14.6.1 Description :

This commands controls the Data Set Ready (DSR) signal.

14.6.2 Syntax :

Command syntax : AT&S

Command	Possible responses
AT&S0 *Note : DSR always on*	OK *Note : Command valid*
AT&S1 *Note : DSR off in command mode, DSR on in data mode*	OK *Note : Command valid*

14.7 Back to online mode O

14.7.1 Description :

If you have established a connection and the mobile is in online command mode, this command allows to return to online data mode.

14.7.2 Syntax :

Command syntax : ATO

Command	Possible responses
ATO *Note :*	OK *Note : Command valid*

14.8 Result code suppression Q

14.8.1 Description :

This command determines whether the mobile sends result codes or not

14.8.2 Syntax :

Command syntax : ATQ

Command	Possible responses
ATQ0 *Note : DCE transmits result codes*	OK *Note : Command valid*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

ATQ1 *Note : Result codes are suppressed and not transmitted*	(none) *Note : No response*

14.9 DCE response format V

14.9.1 Description :

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

	V0	V1
Information responses	<text><CR><LF>	*<CR><LF>* *<text><CR><LF>*
Result codes	<numeric code><CR>	*<CR><LF>* *<verbose code><CR><LF>*

14.9.2 Syntax :

Command syntax : ATV

Command	Possible responses
ATV0 *Note : DCE transmits limited headers and trailers and numueric result codes*	0 *Note : Command is valid (0 means OK)*
ATV1 *Note : DCE transmits full headers and trailers and verbose response text*	OK *Note : Command valid*

14.10 Default configuration Z

14.10.1 Description :

This command restores the configuration profile. Any call is released.

14.10.2 Syntax :

Command syntax : ATZ

Command	Possible responses
ATZ *Note :*	Ok *Note : Command valid*

14.11 Save configuration &W

14.11.1 Description :

This commands writes the active configuration to a non-volatile memory (EEPROM). Description of the stored parameters is in appendice 18.10

14.11.2 Syntax :

Command syntax : AT&W

Command	Possible responses
AT&W *Note : Writes current configuration to EEPROM*	OK *Note : Command valid*

14.12 Auto-tests &T

14.12.1 Description :

AT&T0 is used to perform auto-tests. The response will be OK if no software problem is detected (EEPROM, RAM and ROM checksums), otherwise a simple ERROR response is sent.
AT&T1 is used to close the audio loop, and **AT&T2** is used to open the audio loop. This is used to validate the audio loop (microphone to speaker).

14.12.2 Syntax :

Command syntax : AT&T

Command	Possible responses
AT&T0 *Note : Perform software auto-tests*	OK *Note : No software problem detected, all checksums are correct*
AT&T1 *Note : Do the audio loop test (close)*	OK *Note : Command valid*
AT&T2 *Note : Stop the audio loop test (open)*	OK *Note : Command valid*

14.13 Echo E

14.13.1 Description :

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

14.13.2 Syntax :

Command syntax : ATE

Command	Possible responses
ATE0 *Note : Characters are not echoed*	OK *Note : Done*
ATE1 *Note : Characters are echoed*	OK *Note : Done*

14.14 Restore factory settings &F

14.14.1 Description :

This command is used to restore the factory settings from EEPROM.
The settings which are restored are listed in appendice 16.10.

14.14.2 Syntax :

Command syntax : AT&F

Command	Possible responses
AT&F *Note : Ask for restoring the factory settings*	OK *Note : Done*
AT&F0 *Note : Ask for retoring the factory settings*	OK *Note : Done*

14.15 Display configuration &V

14.15.1 Description

This command is used to display modem configuration
&V0 : Display the modem configuration in RAM.
&V1 : Display the modem configuration in EEPROM.
&V2 : Display the factory modem configuration.
The parameters which are displayed are the following:
Q, V, S0, S2, S3, S4, S5, +CR, +CRC, +CMEE, +CBST, +SPEAKER,+ECHO

14.15.2 Syntax :

Command syntax : AT&V

Command	Possible responses
AT&V *Note : RAM modem parameters*	Q:0 V:1 S0:000 S2:043 S3:013 S4:010 S5:008 +CR:0 +CRC:0 +CMEE:0 +CBST:0,0,1

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

	+SPEAKER:0 +ECHO:0,0 OK *Note : Done* *For Echo the first value corresponds to Echo cancelation and the second to Switch Attenuation.*

14.16 Request identification information I

14.16.1 Description :

This command causes the GSM module to transmit one or more lines of specific information text.
I0 **:** Display the manufacturer followed by model identifications. This command is equivalent to +CGMI and +CGMM.
I3 **:** Display the revision identification (equivalent to +CGMR).
I4 **:** Display the modem configuration in RAM (equivalent to &V0).
I5 **:** Display the modem configuration in EEPROM (equivalent to &V1).
I6 **:** Display the modem data features. This command enumerates the supported data rates, data modes, and fax classes.
I7 **:** Display the modem voice features.

If the value is different, an “OK” string will be sent back.

14.16.2 Syntax :

Command syntax : ATI

Command	Possible responses
ATI0 *Note : Manufacturer and model identifications*	WAVECOM MODEM 900P OK *Note : GSM 900 MHz primary band*
ATI3 *Note : Revision identification*	310_G250.51 806216 032199 17:04 OK *Note : Software release 3.10 ,révision 51 generated on the 21st of March 1999*
ATI6 *Note : Modem data features*	DATA RATES: AUTOBAUD,300,1200,1200/75,2400,4800,9600 DATA MODES: T/NT,ASYNCHRONOUS FAX CLASS 1,2 OK *Note : Done*
ATI7 *Note : Modem voice features*	SPEECH CODINGS: FR,EFR,HR OK *Note : Done*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

15 Specific AT commands

15.1 Cell environment description +CCED

15.1.1 Description :

This command can be used by the application to retrieve the cell parameters of the main cell and of up to six neighbour cells.
Two ways may exist for the external application to know these cell parameters : on request of the application, or automatically by the module every 5 seconds.
The automatic mode is not supported during communication or registration.

15.1.2 Syntax :

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

15.1.3 Defined values :

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

<requested dump> 1 : Main Cell :
if the Cell Identity is available
MCC, MNC, LAC, CI, BSIC, BCCH Freq (absolute), RxLev, RxLev Full, RxLev Sub, RxQual, RxQual Full, RxQual Sub,Idle TS
if the Cell Identity is not available
MCC, MNC, LAC,, BSIC, BCCH Freq (absolute), RxLev, RxLev Full, RxLev Sub, RxQual, RxQual Full, RxQual Sub,Idle TS
2 : Neighbour1 to Neighbour6 :
if the Cell Identity is available
MCC, MNC, LAC, CI, BSIC, BCCH Freq (absolute), RxLev
if the Cell Identity is not available
MCC, MNC, LAC,, BSIC, BCCH Freq (absolute), RxLev
4 : Timing Advance

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Combination (addition of the values) of the requested dumped are supported.
Notice that in idle mode, only RxLev measures (on the main cell and on the neighbour cells) are done. The value of these RxLev is set in the RxLev Full field for the main cell.
The response will be :

+CCED :<value>, ... , <value>
OK

Where <value> is the ASCII string of the values (in decimal except LAC and CI values are in hexadecimal) of the parameters. If a field can not be measured - or has no sense - the parameter is not filled (two consecutive commas are then found).
If the <requested dump> parameter is absent, this of the last +CCED command (or 15 by default) will be taken.
Values of MCC/MNC are set to 0 in case of "No service"

15.2 Automatic RxLev indication +CCED

15.2.1 Description :

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

15.2.2 Syntax :

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

15.2.3 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 answer and not a +CCED answer. The 07.07 format for the +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 answer, when automatic shots are selected, is sent every time the <rssi> measured by the module changes. This automatic shots are supported in idle mode and during communication.
Combination (addition of the values) of the requested dumped (1,2,4,8) are supported but the activation or deactivation of this flow (8) does not affect the other flows. Both answer +CCED and +CSQ may be then generated.
If the <requested dump> parameter is absent, the last +CCED command parameter (or 15 by default) will be taken.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

15.3 General Indications +WIND

15.3.1 Description :

Wavecom introduced a general mechanism to send unsollicited non standardized indication to the customer application. The yet identified unsollicited non standardized indications are :

- indication of a physical change on the SIM presence pin from connector (meaning SIM inserted, SIM removed)
- indication during a mobile originated call establishement, that the calling party is ringing.
- Indication of the availability of the module, after boot, to receive AT commands

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

15.3.2 Syntax :

Command syntax: AT+WIND= <IndLevel >

15.3.3 Defined values :

<IndLevel>
1 (bit-0) : Hardware SIM Insert / Remove indications (Rack open/close) or SIM presence after software reset
2 (bit-1) : Calling party alert indication
4 (bit-2) : Module is ready to treat AT commands (except phonebooks, AOC, SMS), but still in emergency mode.
8 (bit-3) : Indication that the module is ready to treat all AT commands, at the end of init or after swapping to ADN in case of FDN configuration
16 (bit-4) : Indication that a new call identifier has been created (after an ATD command, +CCWA indication)
32 (bit-5) : Indication that an active, held or waiting call has been released by network or other party
64 (bit-6) : Network service available indication
128 (bit-7) :Network lost indication

If <IndLevel> is equal to 0 (default value), no unsolicited

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

"+WIND: <IndNb>" will occur.

Combination (addition of the values) shall be used to allow more than one indication flow.

0 ≤ IndLevel ≤ 255

The answer is OK if the value are in the previous range.
The unsolicited answer will then be :

+WIND : <event> [,<idx>]

<idx>: Call identifier, defined in +CLCC command.
The supported events are:

<event>
0 : The SIM presence pin has been detected as "SIM removed" (depending from the 0 bit flow)
1 : The SIM presence pin has been detected as "SIM inserted"
2 : Calling party is alerting
3 : Module is ready to treat AT commands (except phonebooks, AOC, SMS), at init or after AT+CFUN=1
4 : Module is ready to treat all AT commands, end of phonebook init or swap (FDN to ADN)
5 : Call <idx> has been created (after ATD or +CCWA…)
6 : Call <idx> has been released, after a NO CARRIER, a +CSSU: 5 indication, or after the release of a call waiting
7 : The network service is available for an emergency call.
8 : The network is lost.

AT+WIND? Command is supported and indicates the <allowed bit flows>. AT+WIND is automatically stored in e2p. This means the &W command has not to be used. And the selected flows are always activated after boot.
Default value is 0 : No flow activated. No indication.
AT+WIND=? Indicates the possibles values. (0-255)

15.4 Analog digital converters measurements +ADC

15.4.1 Description :

This command allows to get the DC level of ADC A and ADC B (those voltages are coded on 8 bits, see hardware specifications). Those values are updated every 10 seconds.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

15.4.2 Syntax :

Command syntax : AT+ADC

Command	Possible responses
AT+ADC? *Note :*	+ADC: 5,4 OK *Note : ADC A, ADC B*

15.5 Read Language Preference +WLPR

15.10.1 Description :

Read a Language Preference value of EF-LP. The first indexes should have the highest priority.

15.10.2 Syntax :

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

Command	Possible responses
AT+WLPR? *Note : Read command*	+WLPR: 4 OK *Note : Four language preferences are available in EF-LP*
AT+WLPR=1 *Note : Read first EF-LP index value*	+WLPR: 5 OK *Note : Language preference is 5*

15.6 Write Language Preference +WLPW

15.11.1 Description :

Write a Language Preference value in EF-LP

15.11.2 Syntax :

Command syntax: AT+WLPW=<index >,<value>
Response syntax: OK or +CME ERROR: <err>

Command	Possible responses
AT+WLPW=1,5 *Note : Write Lang Pref equal to 5 in EF-LP with index 1*	OK *Note : EF-LP correctly updated*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

15.7 Read GPIO value +WIOR

15.12.1 Description :

Set the I/O port as an input and read the I/O pin, 0 if the pin is reset, 1 if the pin is set. Eight I/O ports are available, so the <index> value is between 0 and 7.

15.12.2 Syntax :

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

Command	Possible responses
AT+WIOR=4 *Note : Read I/O (number 4) value*	+WIOR: 0 OK *Note : GPIO number 4 is reset*

15.8 Write GPIO value +WIOW

15.13.1 Description :

Set the I/O port as an output with a I/O pin value, 0 for reset, 1 for set

15.13.2 Syntax :

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

Command	Possible responses
AT+WIOW=4,0 *Note : Reset I/O (number 4)*	OK *Note : GPIO value is written*

15.9 Abort command +WAC

15.14.1 Description :

This **specific** command allows to abort SMS, SS and available PLMN .

15.14.2 Syntax :

Command syntax: AT+WAC

Command Syntax	Return

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

AT+WAC	
AT+WAC=?	OK
AT+WAC?	OK

Example :

Command	Possible responses
AT+COPS=? *Note : Available PLMN*	
AT+WAC *Note : Abort the ask of PLMN list*	OK *Note :*

15.10 Play tone +WTONE

15.15.1 Description :

This **specific** command allows to play a tone on the current speaker or on the buzzer. The frequency, gain and duration can be settled.

15.15.2 Syntax :

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

Command	Possible responses
AT+WTONE=1,1,300,9,50 *Note : Play a tone*	OK *Note : Done*
AT+WTONE=0 *Note : Stop playing*	OK *Note : Done*
AT+WTONE=? *Note : Test command*	OK *Note : Done*
AT+WTONE? *Note : Current value*	ERROR *Note :*

15.15.3 Defined values :

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

<dest> : This parameter settles the destination (mandatory if <mode>=1)

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

<**dest**> 1: Speaker
2: Buzzer

<**freq**> :
This parameter settles the frequency (in Hz) of the tone (mandatory if <mode>=1). If <dest> is the speaker, the range is between 1Hz and 3999Hz. If <dest> is the buzzer, the range is between 1Hz and 50000Hz.

<**gain**> (0-15)
This parameter settles the gain of the tone. By default, the value is 9.

<gain>	Speaker (db)	Buzzer (db)
0	0	-0.25
1	-0.5	-0.5
2	-1	-1
3	-1.5	-1.5
4	-2	-2
5	-3	-3
6	-6	-6
7	-9	-9
8	-12	-12
9	-15	-15
10	-18	-18
11	-24	-24
12	-30	-30
13	-36	-40
14	-42	-infinite
15	-infinite	-infinite

<**duration**> (0-50)
This parameter settles the duration of the tone (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.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

15.11 Play DTMF tone +WDTMF

15.16.1 Description :

This **specific** command allows to play a DTMF tone on the current speaker. The DTMF, gain and duration can be settled.

This command is only used to play a DTMF tone. To send a DTMF on the GSM network, use the command +VTS.

15.16.2 Syntax :

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

Command	Possible responses
AT+WDTMF=1,"*",9,100 *Note : Play a DTMF tone*	OK *Note : Done*
AT+WDTMF=0 *Note : Stop playing*	OK *Note : Done*
AT+WDTMF=? *Note : Test command*	+WDTMF: (0-1),(0-9,*,#,A,B,C,D),(0-15),(0-50) OK *Note : Done*
AT+WDTMF? *Note : Current value*	ERROR *Note :*

15.16.3 Defined values :

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

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

<gain> (0-15)
This parameter settles the gain of the tone. The values are the same as these of +WTONE (speaker) command. By default, the value is 9.

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

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

15.12 Wavecom Downloading +WDWL

15.17.1 Description :

This **specific** command allows to switch the module in downloading mode.

The command is compatible with WISMO2C only.
On WISMO 1B, ERROR is returned.
The doawloding is realized with the XMODEM protocol.

15.17.2 Syntax :

Command syntax: AT+WDWL

Command	Possible responses
AT+WDWL *Note : Switch on downloading mode*	+WDWL: 0 *Note : Start of downloading*
	… *Note : Downloading in progress*
	AT+CFUN=1 *Note : Reset the module at the end*
OK *Note :*	

15.13 Wavecom Voice Rate +WVR

15.18.1 Description :

This **specific** command allows to configure the voice rate for the bearer voice.

(Available for outgoing call only)

15.18.2 Syntax :

Command syntax : AT+WR=<n>

Command Syntax	Return
AT+WVR=<n>	

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

AT+WVR=?	**If Half Rate available.** +WVR: (0,2,3) **If EFR available.** +WVR: (0,1) **If HR and EFR not available** +WVR: (0) **If HR and EFR available** +WVR: (0-5)
AT+WVR?	+WVR: <n>

Command	Possible responses
AT+WVR=1 *Note : Configure voice type FR and EFR*	OK *Note : Bearer is configured*
AT+WVR=6 *Syntax error*	+CME ERROR: 3 *Note :*
AT+WVR? *Note : Ask the current value*	+WVR: 1 OK *Note :*
OK *Note :*	

15.18.3 Defined values :

<n> : Speech type.

<n>
0 : FR
1 : FR and EFR
2 : FR, HR with HR prefered
3 : HR, FR with FR prefered
4 : EFR,HR with HR prefered
5 : HR,EFR with EFR prefered.

15.14 Data Rate +WDR

15.19.1 Description :

This **specific** command allows to configure the data rate for the bearer data.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

(Available for outgoing call only)

15.19.2 Syntax :

Command syntax : AT+WDR=<n>

Command Syntax	Return
AT+WDR=<n>	
AT+WDR=?	**If Half Rate available.** +WDR: (0-2) **Else** +WDR: (0)
AT+WDR?	+WDR: <n>

Command	Possible responses
AT+WDR=1 *Note : Configure voice type FR,HR with HR prefered.*	OK *Note : Bearer is configured*
AT+WDR=3 *Syntax error*	+CME ERROR: 3 *Note :*
AT+WDR? *Note : Ask the current value*	+WDR: 1 OK *Note :*
OK *Note :*	

15.19.3 Defined values :

<n> : Data type.

<n> 0 : FR
1 : FR, HR with HR prefered
2 : HR, FR with FR prefered

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

15.15 Hardware Version +WHWV

15.20.1 Description :

This **specific** command allows to show the hardware version.

15.20.2 Syntax :

Command syntax : AT+WHWV

Command	Possible responses
AT+WHWV *Note : Request Hardware Version*	Hardware Version 4.14 OK *Note : Hardware version present in EEPROM is 4.14*
AT+WHWV *Note : Request Hardware Version*	Hardware Version -.-- OK *Note : No hardware version present in EEPROM*

15.16 Date of Production +WDOP

15.21.1 Description :

This **specific** command allows to show the date of production.
Format of the date is Week / Year.

15.21.2 Syntax :

Command syntax : AT+WDOP

Command	Possible responses
AT+WDOP *Note : Request Date of Production*	Production date (W/Y): 01/2000 OK *Note : Date of production present in EEPROM is WEEK: 01 / YEAR: 2000 (1st week of year 2000)*
AT+WDOP *Note : Request Date of Production*	Production date (W/Y): --/---- OK *Note : No date of production present in EEPROM*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

15.17 Wavecom Select Voice Gain +WSVG

15.22.1 Description :

The module dispose of 2 voice gain controlers, this **specific** command allows to select the microphone gain controler.

15.22.2 Syntax :

Command syntax : AT+WSVG = <n>

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

15.22.3 Defined values

<n> Controler **0** Controler 1 (Default)
1 Controler 2

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

15.18 Wavecom Status Request +WSTR

15.23.1 Description :

This **specific** command returns the state of a specified status. It has been created to check the state of the initialisation sequence; the different return values are Not Started, On Going, Finished.

15.23.2 Syntax :

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

Command	Possible responses
AT+WSTR=<status>	+WSTR :<status>,<value>
AT+WSTR=1 *Note : Select the status 1 (INIT SEQUENCE)*	+WSTR: 1,(0-2) OK *Note : The controler 1 selected*
AT+WSTR=? *Note : Ask the list of possible values*	+WSTR: (1) *Note : possible values : 1*

15.23.3 Defined values

<**status**> **1** Initialisation sequence

<**value**> **0** Not started
1 On going
2 Finished

15.19 Wavecom Scan +WSCAN

15.24.1 Description :

This **specific** command allows to show the received signal strenght indication (<rssi>) of a specified frequency (in absolute format).

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

15.24.2 Syntax :

Command syntax: AT+WSCAN=<absolute frequency>
Response syntax: +WSCAN: <rssi>

Command	Possible responses
AT+WSCAN=50 *Note : Request <rssi> of absolute frequency 50*	+WSCAN: 23 OK *Note : <rssi> is 23.*
AT+WSCAN=1025 *Note : Request power of absolute frequency 1025*	CME ERROR: 3 *Note : 1025 is not a valid absolute frequency*

15.24.3 Defined values

<**absolute frequency**> frenquency in absolute format

<**rssi**>
0 : -113 dBm or less
1 : -111 dBm
2...30 : -109 to -53 dBm
31 : -51dBm or greater
99 : not known or not detectable

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

16 SIM TOOLKIT

16.1 Overview of SIM Application ToolKit

Summary

The SIM ToolKit, also known as 'SIM Application ToolKit' introduces new functionalities, which open the way to a broad range of value added services.
The principle is to allow service providers to develop new applications *(i.e. for banking, travel, ticket booking …)* for subscriber's and to download them into the SIM.
This solution allows future services to be accessible to the user by adding new SIM-based applications without modifying the handset.

Functionality

SIM Toolkit refers to the functionalities described in the GSM Technical specification 11.14.
It introduces about twenty five new commands for the SIM. Three classes of ToolKit functionalities have been defined, with class 1 offering a subset of commands and class 3 offering the full range of commands *(See the table in APPENDIX B).*

The SIM Application Toolkit supports:

- ☞ profile download,
- ☞ proactive SIM,
- ☞ data download into the SIM.
- ☞ menu selection,
- ☞ call control by SIM.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Profile download

The Profile Download instruction is sent by the customer application to the SIM as part of the initialization. It is used to indicate which SIM Application Toolkit features the customer application supports.
The AT command used for this feature is **+STSF** *(SIM ToolKit Set Facilities).*

Proactive SIM

A proactive SIM provides a mechanism whereby the SIM can ask the customer application to perform certain actions.
These actions include:

- display menu,
- display given text,
- get user input,
- send a short message,
- play the requested tone,
- set up a call,
- provide location information.

This mechanism allows SIM applications to generate powerful menu-driven sequences on the customer application and to use services available on the network.
The commands used for this feature are:
+STIN *(SIM Toolkit Indication)***,**
+STGI *(SIM Toolkit Get Information)***,**
+STGR *(SIM Toolkit Give Response)***.**

Data Download to SIM

Data downloading to the SIM allows data *(SMS, phonebook…)* or programs *(Java applets)* received by SMS or by Cell Broadcast to be transferred directly to the SIM Application.
This feature does not need any AT command. It is transparent to the customer application.

Menu Selection

A set of menu items is supplied by the SIM Application ToolKit. The menu selection command can then be used to inform the SIM Application on which menu item is selected.
The commands used for this feature are **+STIN, +STGI and +STGR**.

Call control by SIM

The call control mechanism allows the SIM to check all dialed numbers, supplementary service control strings and USSD strings before connecting to the network. This gives the SIM the ability to allow, bar or modify the string before the operation starts.
The commands used for this feature are :

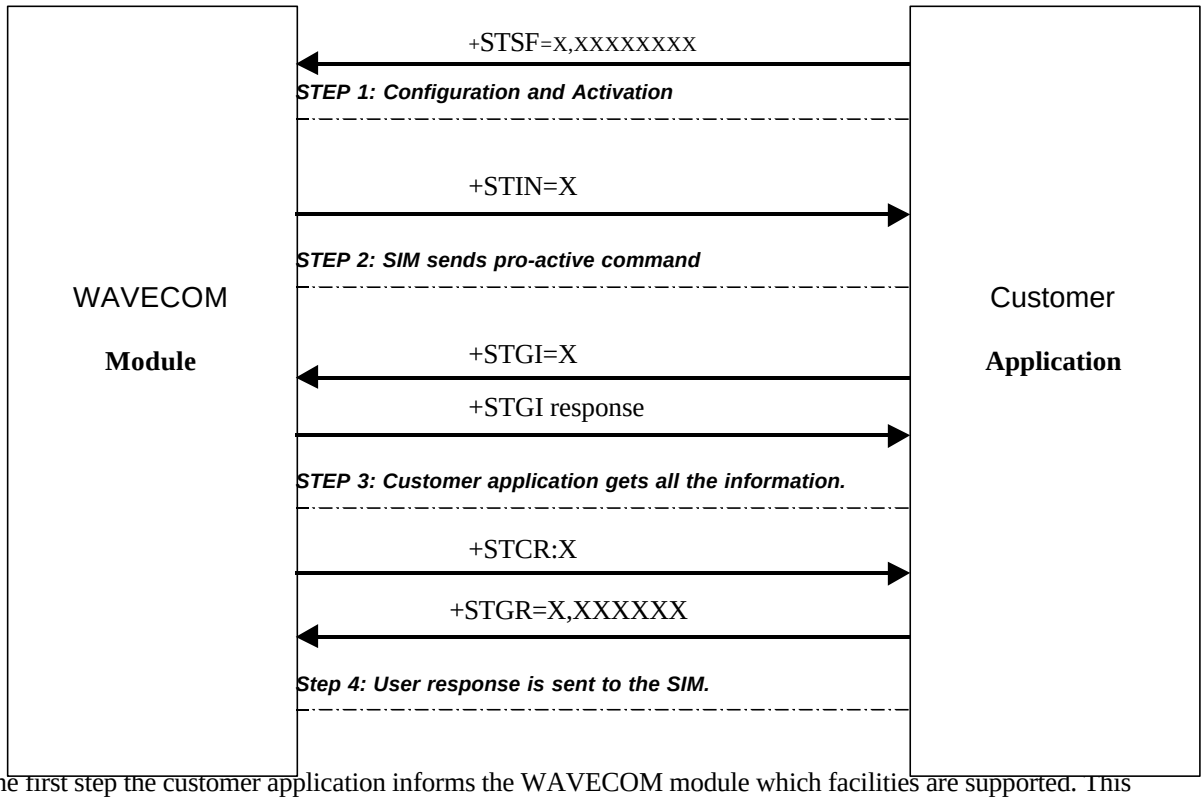
This confidential document is the property of WAVECOM and may not be copied or circulated without permission

+STCR *(SIM Toolkit Control Response)*,
+STGR *(SIM Toolkit Give Response)*.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

16.2 Exchanged messages during a SIM ToolKit operation.

The following scheme shows the SIM Toolkit functionnalities commands and unsolicited results that will be implemented.



On the first step the customer application informs the WAVECOM module which facilities are supported. This operation is performed with the **+STSF** *(SIM ToolKit Set Facilities)* command, which also allows to activate or deactivate the SIM Toolkit functionality.
On the second step an unsolicited result **+STIN** *(SIM ToolKit indication)* is sent by the module, in order to indicate the customer application which command type the SIM Application Toolkit is running on the SIM card.
On the third step the customer application uses the **+STGI** *(SIM ToolKit Get Information)* command to get all the information about the SIM ToolKit command, given by **+STIN**.
On the fourth step the customer application uses the **+STGR** *(SIM Toolkit Give Response)* to send its response *(if any)* to the SIM ToolKit Application.
The **+STCR** *(SIM Toolkit Control response)* indication is an unsolicited result sent by the SIM when Call control functionality is activated and before the customer application has performed any outgoing call,SMS, SS, or USSD.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

16.3 SIM TOOLKIT COMMANDS

SIM ToolKit Set Facilities (+STSF)

16.3.1.1 Description

This command allows to activate, deactivate or configure the SIM ToolKit facilities.

16.3.1.2 Syntax

Command syntax : +STSF=<mode>[,<config>]

Command	Possible responses
+STSF=<Mode>[,<Config>]	OK +CME ERROR: <err>
+STSF?	+STSF: <Mode>, <Config>
+STSF=?	+STSF: (0-2), (160060C0 - 5F9FFFF7) OK

16.3.1.3 Defined values

<mode> **0** Deactivate the SIM Toolkit functionalities.
1 Activate the SIM Toolkit functionalities.
2 Configure the SIM Toolkit functionalities.

<Config> **(160060C0 – 5F9FFFF7)** *(hex format)*

The activation or deactivation of the SIM Toolkit functionalities requires the use of +CFUN *(Set phone functionality)* command **to reboot the module.**

The <Config> parameter contains the coding of TERMINAL PROFILE, precisely the list of SIM Application Toolkit facilities that are supported by customer application.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Note: Some bits concerns the WAVECOM module and not the customer application. The WAVECOM module sets automatically these bits to either 0 or 1 whatever the user enters with +STSF command. Those values are given in Appendix B.

Each facility is coded on 1 bit:

- bit = 1: facility supported by the customer application.
- bit = 0: facility not supported by the customer application.

Only the first four byte of TERMINAL PROFILE (Class 2) can be configured, the other are set to 0. ***(See structure of TERMINAL PROFILE in APPENDIX C)***

16.3.1.4 Error codes

+CME ERROR: 3	**Operation not allowed**. This error is returned when a wrong parameter is entered.

16.3.1.5 Informative example

```
AT+CMEE=1                          Enable the report mobile equipment errors
OK
AT+WIND=15                         Ask of Wavecom indications
OK
AT+CPAS                            Query ME Status
+CPAS: 0                           ME is ready.
OK
AT+STSF=?                          Test command SIM ToolKit Set Facilities
+STSF: (0-2), (160060C0 – 5F9FFFF7)
OK
AT+STSF?
+STSF: 0,”160060C0”                No activation of SIM ToolKit functionality
OK
AT+STSF=2,”5F9FFFF7”          Set all facilities SIM ToolKit (class 2).
OK
AT+STSF=3                          Syntax Error
+CME ERROR: 3
AT+STSF=1                          Activation of SIM ToolKit functionality
OK
AT+CFUN=1                          Reboot Software.
OK


AT+CPIN?                           Is ME asking password?
+CPIN: SIM PIN                     Yes, SIM PIN required
AT+CPIN=0000
OK                                 PIN Ok

…

+WIND: 4                           Init phase is complete
AT+STSF?
+STSF: 1,”5F9FFFF7”                SIM ToolKit functionality activated with all
OK                                 facilities.
```


This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Unsolicited Result : SIM ToolKit Indication (+STIN)

In order to allow the customer application to identify the pro-active command sent by the SIM ToolKit, a mechanism of unsolicited SIM ToolKit indications ***(+STIN)*** will be implemented.

Syntax : **+STIN: <CmdType>**

Option : **<CmdType> 0** Indicates that a **'Setup Menu'** pro-active command has been sent from the SIM.

1 Indicates that a **'Display Text'** pro-active command has been sent from the SIM.

2 Indicates that a **'Get Inkey'** pro-active command has been sent from the SIM.

3 Indicates that a **'Get Input'** pro-active command has been sent from the SIM.

4 Indicates that a **'Setup Call'** pro-active command has been sent from the SIM.

5 Indicates that a **'Play Tone'** pro-active command has been sent from the SIM.

6 Indicates that a **'Sel Item'** pro-active command has been sent from the SIM.

7 Indicates that a **'Refresh'** pro-active command has been sent from the SIM.

8 Indicates that a **'Send SS'** pro-active command has been sent from the SIM.

9 Indicates that a **'Send SMS'** pro-active command has been sent from the SIM.

98 Indicates the timeout when no response from user.

99 Indicates that a **End Session'** has been sent from the SIM.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

SIM ToolKit Get Informations (+STGI)

16.3.1.6 Description

This command allows to get the information *(text to display, Menu information, priorities…)* of a pro-active command sent from the SIM.
The information is returned only after receiving a SIM Toolkit indication ***(+STIN)***.

16.3.1.7 Syntax

Command syntax : +STGI=<CmdType>

Command	**Possible responses**
+STGI=<CmdType>	See Table 1 +CME ERROR: <err>
+STGI=?	+STGI: (0-10) OK

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Table 1

Cmd Type	Description	Possible responses
0	Get information about **'Setup Menu'** pro-active command.	+STGI: <Alpha Identifier menu> +STGI: <Id1>,<NbItems>,<Alpha Id1 Label>,<Help Info>[,<NextActionId>]<CR><LF> +STGI: <Id2>,<NbItems>,<Alpha Id2 Label>,<Help Info>[,<NextActionId>]<CR><LF> […]] **No action expected from SIM.**
1	Get information about **'Display text'** pro-active command.	+STGI: <Prior>,<Text>,<ClearMode> **No action expected from SIM.**
2	Get information about **'Get Inkey'** pro-active command.	+STGI: <Format>,<HelpInfo>[,<TextInfo>] **SIM expects key pressed (+STGR).**
3	Get information about **'Get Input'** pro-active command.	+STGI: <Format>,<EchoMode>,<SizeMin>,<SizeMax>, <HelpInfo>[,<TextInfo>] **SIM expects key input (+STGR).**
4	Get information about **'Setupt call'** pro-active command.	+STGI: <Type>,<CalledNb>,<SubAddress>,<Class> **SIM expects user authorization (+STGR).**
5	Get information about **'Play Tone'** pro-active command.	+STGI: <ToneType>[,<TimeUnit>,<TimeInterval>,<TextInfo>] **No action.**
6	Get information about **'Sel Item'** pro-active command.	+STGI: <DefaultItem>, <Alpha Identifier menu><CR><LF> +STGI: <Id1>,<NbItems>,<Alpha Id1 Label>,<Help Info>[,<NextActionId>]<CR><LF> +STGI: <Id2>,<NbItems>,<Alpha Id2 Label>,<Help Info>[,<NextActionId>]<CR><LF> […]] **SIM expects an item choice (+STGR).**
7	Get information about **'Refresh'** pro-active command.	+STGI: <RefreshType> **No action (Refresh done automatically by module).**
8	Get information about **'Send SS'** pro-active command.	+STGI:<TextInfo> **No action (Send SS done automatically by module).**

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

9	Get information about **'Send SMS'** pro-active command.	+STGI: <TextInfo> **No action (Send SMS done automatically by module).**

16.3.1.8 Defined values

♦ Values when CmdType=0 (**Setup menu**)

<Alpha Idenitifer menu>			Alpha identifier of the main menu.
<Idx>		**(1-255)**	Menu item Identifier.
<NbItems>	**(1-255)**		Number of items in the main menu.
<Alpha Idx Label>			Alpha identifier label of items in ASCII format.
<HelpInfo>	**0**		No help information available.
		1	Help information available.

<NextActionId> Contains a pro-active command identifier.
(see the table in APPENDIX D)

Compared to other commands the customer application can always get information about setup menu after having received the +STIN:0 indication.

♦ Values when CmdType=1 (**Display text**)

<Prior>	**0**	Normal priority of display.
	1	High priority of display.
<Text>		Text to display in ASCII format.
<ClearMode>	**0**	Clear message after a delay *(3 seconds)*
	1	Wait for user to clear message.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

♦ Values when CmdType=2 (**Get Inkey**)

<Format>		**0**	Digit *(0-9, *, #,and +)*
		1	Alphabet set.
		2	SMS alphabet default.
<HelpInfo>	**0**		No help information available.
		1	Help information available.
<TextInfo>			Text information in ASCII format.

♦ Values when CmdType=3 (**Get Input**)

<Format>		**0**	Digit *(0-9, *, #,and +)*
		1	Alphabet set.
		2	SMS alphabet default.
		3	Unpacked format.
		4	Packed format.
<EchoMode>		**0**	Echo off.
		1	Echo on.
<SizeMin>	**(1-255)**		Minimum length of input.
<SizeMax>	**(1-255)**		Maximum length of input.
<HelpInfo>	**0**		No help information available.
		1	Help information available.
<TextInfo>			Text information in ASCII format.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

♦ Values when CmdType=4 (**Setup Call**)

<Type>	**0**	Set up call but only if not currently busy on another call.
	1	Set up call, putting all other calls *(if any)* on hold.
	2	Set up call, disconnecting all other calls *(if any)*.
<CalledNb>		Called party number in ASCII format.
<SubAdress>		Called party sub-address in ASCII format.
<Class>	**0**	Voice call.
	1	Data call.
	2	Fax call

♦ Values when CmdType=5 (**Play tone**)

<ToneType>	**0**	Tone Dial.
	1	Tone Busy.
	2	Tone Congestion.
	3	Tone Radio ack
	4	Tone Dropped.
	5	Tone Error.
	6	Tone Call waiting.
	7	Tone Ringing.
	8	Tone General beep.
	9	Tone Positive beep.
	10	Tone Negative beep.
<TimeUnit>	**0**	Time unit used is minutes.
	1	Time unit used is seconds.
	2	Time unit used is tenths of seconds.
<TimeInterval>	**(1-255)**	Time required expressed in units.
<TextInfo>		Text information in ASCII format.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

- Values when CmdType=6 (**Sel Item**)

<DefaultItem> **(1-255)** Default Item Identifier.
<Alpha Idenitifer menu> Alpha identifier of the main menu.
<Idx> **(1-255)** Identifier items.

<NbItems> **(1-255)** Number of items in the menu.
<Alpha Idx Label> Alpha identifier label of items in ASCII format.
<HelpInfo> **0** No help information available.
1 Help information available.

<NextActionId> Contains a pro-active command identifier.
(see the table in APPENDIX D)

- Values when CmdType=7 (**Refresh**)

<RefreshType> **0** SlM initialization and full file change notification.
1 File change notification.
2 SIM initialization and file change notification.
3 SIM initialization.
4 SIM reset.

- Values when CmdType=8 (**Send SS**)

<TextInfo> Text information in ASCII format.

- Values when CmdType=9 (**Send SMS**)

<TextInfo> Text information in ASCII format.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

16.3.1.9 Error codes

+ CME ERROR: 3	**Operation not allowed**. This error is returned when a wrong parameter is detected.
+CME ERROR: 4	**Operation not supported**. This error is returned when the user wants to get information about a SIM ToolKit pro-active command.(With SIM ToolKit functionality not activated.)
+CME ERROR: 518	**SIM ToolKit indication not received**. This error is returned when the SIM Toolkit indication ***(+STIN)*** has not been received.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

16.3.1.10 Informative example

At the beginning, all facilities are activated, the PIN is not required and SIM toolkit functionality is activated.

AT+CMEE=1	*Enable the report mobile equipment errors*
OK	
AT+WIND=15	*Ask of Wavecom indications*
OK	
AT+STSF?	
+STSF: 1,"5F9FFFF7"	*SIM ToolKit functionality activated with all facilities.*
OK	
+STIN:0	*The main menu has been sent from the SIM.*
AT+STGI=0	*Get information about the main menu*
+STGI: "SIM TOOLKIT MAIN MENU"	*Main menu contains 3 items.*
+STGI: 1,3,"BANK",0	
+STGI: 2,3,"QUIZ",0	
+STGI: 3,3,"WEATHER",0	
OK	

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Unsolicited Result : SIM ToolKit Control Response (+STCR)

when the customer application makes an outgoing call or an outgoing SMS, if the call control facility is activated, CALL CONTROL and SMS CONTROL responses can be identified. It is also applicable to SS calls.
Syntax : **+STCR: <Result>[,<Number>,<MODestAddr>,<TextInfo>]**

Option : **<Result>** **0** Control response not allowed.
1 Control response with modification.

<Number> Called number, Service Center Address or SS String in ASCII format.

<MODestAddr> MO destination address in ASCII format.

<TextInfo> Text information in ASCII format.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

SIM ToolKit Give Response (+STGR)

16.3.1.11 Description

This command allows the application/user to answer the following proactive commands:

- GET_INKEY Key pressed from the user.
- GET_INPUT Message entered by the user.
- SELECT_ITEM Selected item.
- SETUP-CALL User confirmation.
- DISP_TEXT User confirmation to clear the message.
- END_SESSION User abort.

Or to select an item in the main menu.

16.3.1.12 Syntax

Command syntax : +STGR=<CmdType>[,<Result>,<Data>]

Command	Possible responses
+STGR=<CmdType>[,<Result>,<Data>]	OK +CME ERROR: <err>
For GetInput with <Result>=1: +STGR=3,1<CR> <Data><Ctrl Z>	OK +CME ERROR: <err>
+STGR=?	OK

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

16.3.1.13 Defined values

<CmdType>

0 Item selection in the main menu.

1 User confirmation to clear a **'Disp Text'**

2 Response for a **'Get Inkey'**.

3 Response for a **'Get Input'**.

4 Response for a **'Setup call'**.

6 Response for a **'Sel Item'**.

99 User abort.

- Values when CmdType=0 (**Select an item from the main menu**)

<Result>

1 Item selected by the user.

2 Help information required by user.

<Data> Contains the item identifier of the item selected by the user.

- Values when CmdType=1 (**Confirm the display text clearing**)

- Values when CmdType=2 (**Get Inkey**)

<Result>

0 Session ended by user.

1 Response given by the user.

2 Help information required by user.

<Data> Contains the key pressed by the user.

- Values when CmdType=3 (**Get Input**)

<Result>

0 Session ended by user.

1 Given response given by the user.

2 Help information required by user.

<Data> Contains the string of characters entered by the user.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

♦ Values when CmdType=4 (**Setup call)**

<Result>	**0**	User refuse the call.
	1	User accept call.

♦ Values when CmdType=6 (**Sel Item**)

<Result>	**0**	Session terminated by user.
	1	Item selected by the user.
	2	Help information required by user.
	3	Return to the back item.
<Data>		Contains the item identifier of the item selected by the user.

♦ Values when CmdType=99 (**SIM Toolkit Sesssion aborting by the user**)

16.3.1.14 Possible error codes

+ CME ERROR: 3	**Operation not allowed**. his error is returned when a wrong parameter is detected.
+CME ERROR: 4	**Operation not supported**. This error is returned when the user give a response with SIM ToolKit functionality not activated. Or if the SIM Toolkit indication *(+STIN)* has not been received.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

16.3.1.15 Informative example

At the beginning all facilities are activated, the PIN is not required and SIM toolkit functionality is activated.

+STIN: 0	*The main menu has been sent from the SIM.*
AT+STGI=0	*Get information about the main menu*
+STGI: 1,3,"BANK",0	*The main menu contains 3 items.*
+STGI: 2,3,"QUIZ",0	
+STGI: 3,3,"WEATHER",0	
OK	
AT+STGR=0,0,1	*The item 2 of the main menu has been selected.*
OK	
+STIN: 6	*The Sel item menu has been sent from the SIM.*
AT+STGI=6	*Get information about the BANK menu*
+STGI: 1,"BANK"	*The BANK menu contains two items.*
+STGI: 1,2,"PERSONAL ACCOUNT ENQUIRY",1	
+STGI: 2,2,"NEWS",0	
OK	
AT+STGR=6,1,1	*Select Item 1.*
OK	
+STIN: 3	User *request to enter Password sent.*
AT+STGI=3	*Get information about this request.*
+STGI: 0,0,4,4,0,"Enter Account Password:'	
OK	
AT+STGR=3,1<CR>	*The user Enters the Password.*
>0000<Ctrl Z>	
OK	
+STIN:1	*A text info has been sent from the SIM.*
AT+STGI=1	*Get information about this text.*
+STGI: 0,"Password correct, please wait for response",0	
OK	
+STIN: 9	*SIM requests for bank account update from bank via* network *(SEND SMS)*
AT+STGI=9	*Get all information about the SEND SMS*
+STGI: "Send account balance of user, authorization ok"	
OK	
********* After a short period of time. ********	
+STIN: 5	*Transaction is complete: BEEP*
+STGI=5	*Get information about the Tone*
+STGI: 9,1,1	
+STIN: 1	*Display text indication*
AT+STGI=1	
+STGI: 0,"Your account balance is 1000 $",0	
OK	

17 Other AT commands

17.1 V.25 ter recommandation

Other remaining basic commands are not implemented, so an "ERROR" string will be sent back.
All commands about modulation control, error control and data compression are not recognized. An "ERROR" string will be sent back.

17.2 GSM 07.05 recommandation

All the remaining commands are not implemented, so an "ERROR" string will be sent back.

17.3 GSM 07.07 recommandation

All the remaining commands are not implemented, so an "ERROR" string will be sent back.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

18 Appendices

18.1 ME error result code : +CME ERROR: <error>

<error>	Meaning	Resulting from the following commands
3	Operation not allowed	All GSM 07.07 commands (+CME ERROR: 3)
4	Operation not supported	All GSM 07.07 commands (+CME ERROR: 4)
5	PH-SIM PIN required (SIM lock)	All GSM 07.07 commands (+CME ERROR: 5)
10	SIM not inserted	All GSM 07.07 commands (+CME ERROR: 10)
11	SIM PIN required	All GSM 07.07 commands (+CME ERROR: 11)
12	SIM PUK required	All GSM 07.07 commands (+CME ERROR: 12)
13	SIM failure	All GSM 07.07 commands (+CME ERROR: 13)
16	Incorrect password	+CACM, +CAMM, +CPUC, +CLCK, +CPWD, +CPIN, +CPIN2 (+CME ERROR: 16)
17	SIM PIN2 required	+CPBW (FDN), +CLCK (FDN),
18	SIM PUK2 required	+CACM, +CAMM, +CPUC, +CPBW (FDN), +CPIN, +CPIN2, +CLCK (FDN), +CPWD
20	Memory full	+CPBW
21	Invalid index	+CPBR, +CPBW, ATD>index, +WMGO
22	Not found	+CPBF, +CPBP, +CPBN, +CGSN, +WOPN
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
32	Network not allowed – emergency calls only	+COPS
40	Network personalisation PIN required (Network lock)	All GSM 07.07 commands (+CME ERROR: 40)

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

<er> is defined as below :

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

<er>	Meaning	Resulting from the following commands
1 to 127	Error cause values from the GSM recommendation 04.11 Annex E-2	+CMGS, +CMSS
301	SMS service of ME reserved	+CSMS (with +CMS: ERROR 301)
302	Operation not allowed	All SMS commands (+CMSS, +CMGL, +CPMS, +CSMP…
303	Operation not supported	All SMS commands
304	Invalid PDU mode parameter	+CMGS, +CMGW
305	Invalid text mode parameter	+CMGS, +CMGW, +CMSS
310	SIM not inserted	All SMS commands
311	SIM PIN required	All SMS commands
312	PH-SIM PIN required	All SMS commands
313	SIM failure	All SMS commands
316	SIM PUK required	All SMS commands
317	SIM PIN2 required	All SMS commands
318	SIM PUK2 required	All SMS commands
321	Invalid memory index	+CMGR, +CMSS, +CMGD
322	SIM memory full	+CMGW
330	SC address unknown	+CSCA?, +CMSS, +CMGS
340	no +CNMA acknowledgement expected	+CNMA

18.3 Specific error result codes

<error>	Meaning	Resulting from the following commands
500	unknown error	All commands
512	MM establishment failure (for SMS)	+CMGS, +CMSS (+CMS ERROR: 512)
513	Lower layer failure (for SMS)	+CMGS, +CMSS
514	CP error (for SMS)	+CMGS, +CMSS
515	Please wait, init or command processing in progress	All commands (“+CME ERROR: 515” or “+CMS ERROR:

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

18.4 Failure Cause from GSM 04.08 recommandation (+CEER)

Cause value	Diagnostic
1	Unassigned (unallocated) number
3	No route to destination
6	Channel unacceptable
8	Operator determined barring
16	Normal call clearing
17	User busy
18	No user responding
19	User alerting, no answer
21	Call rejected
22	Number changed
26	Non selected user clearing
27	Destination out of order
28	format (incomplete number)
29	l
30	ATUS ENQUIRY
31	ified
34	nel available
38	order
41	ure
42	pment congestion
43	tion discarded
44	uit/channel not available
47	ailable, unspecified
49	ce unavailable
50	lty not subscribed
55	barred with in the CUG
57	y not authorized
58	y not presently available
63	n not available, unspecified
65	not implemented
68	or greater than ACMmax
69	lty not implemented
70	Only restricted digital information bearer capability is available
79	Service or option not implemented, unspecified
81	Invalid transaction identifier value
87	User not member of CUG
88	Incompatible destination
91	Invalid transit network selection
95	Semantically incorrect message
96	Invalid mandatory information

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

97	Message type non-existent or not implemented
98	Message type not compatible with protocol state
99	Information element non-existent or not implemented
100	Conditional IE error
101	Message not compatible with protocol state
102	Recovery on timer expiry
111	Protocol error, unspecified
127	Interworking, unspecified

All other values in the range 0 to 31 shall be treated as cause 31.
All other values in the range 32 to 47 shall be treated as cause 47.
All other values in the range 48 to 63 shall be treated as cause 63.
All other values in the range 64 to 79 shall be treated as cause 79.
All other values in the range 80 to 95 shall be treated as cause 95.
All other values in the range 96 to 111 shall be treated as cause 111.
All other values in the range 112 to 127 shall be treated as cause 127.

18.5 Specific Failure Cause for +CEER

240	FDN is active and number is not in FDN
241	Call operation not allowed
252	Call barring on outgoing calls
253	Call barring on incoming calls
254	Call impossible
255	Lower layer failure

18.6 GSM 04.11 Annex E-2: Mobile originating SM-transfer

These error causes could appear for **SMS commands** (+CMGS, +CMSS, +CMGD…)

Cause no 1: "Unassigned (unallocated) number"
This cause indicates that the destination requested by the Mobile Station cannot be reached because, although the number is in a valid format, it is not currently assigned (allocated).
Cause no 8: "Operator determined barring"
This cause indicates that the MS has tried to send a mobile originating short message when the MS's network operator or service provider has forbidden such transactions.
Cause no 10: "Call barred"
This cause indicates that the outgoing call barred service applies to the short message service for the called destination.
Cause no 21: "Short message transfer rejected"

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

This cause indicates that the equipment sending this cause does not wish to accept this short message, although it could have accepted the short message since the equipment sending this cause is neither busy nor incompatible.

Cause no 27: "Destination out of service"

This cause indicates that the destination indicated by the Mobile Station cannot be reached because the interface to the destination is not functioning correctly. The term "not functioning correctly" indicates that a signalling message was unable to be delivered to the remote user; e.g., a physical layer or data link layer failure at the remote user, user equipment off-line, etc.

Cause no 28: "Unidentified subscriber"

This cause indicates that the subscriber is not registered in the PLMN (i.e. IMSI not known)

Cause no 29: "Facility rejected"

This cause indicates that the facility requested by the Mobile Station is not supported by the PLMN.

Cause no 30: "Unknown subscriber"

This cause indicates that the subscriber is not registered in the HLR (i.e. IMSI or directory number is not allocated to a subscriber).

Cause no 38: "Network out of order"

This cause indicates that the network is not functioning correctly and that the condition is likely to last a relatively long period of time; e.g., immediately reattempting the short message transfer is not likely to be successful.

Cause no 41: "Temporary failure"

This cause indicates that the network is not functioning correctly and that the condition is not likely to last a long period of time; e.g., the Mobile Station may wish to try another short message transfer attempt almost immediately.

Cause no 42: "Congestion"

This cause indicates that the short message service cannot be serviced because of high traffic.

Cause no 47: "Resources unavailable, unspecified"

This cause is used to report a resource unavailable event only when no other cause applies.

Cause no 69: "Requested facility not implemented"

This cause indicates that the network is unable to provide the requested short message service.

Cause no 81: "Invalid short message transfer reference value"

This cause indicates that the equipment sending this cause has received a message with a short message reference which is not currently in use on the MS-network interface.

Cause no 95: "Invalid message, unspecified"

This cause is used to report an invalid message event only when no other cause in the invalid message class applies.

Cause no 96: "Invalid mandatory information"

This cause indicates that the equipment sending this cause has received a message where a mandatory information element is missing and/or has a content error (the two cases are undistinguishable).

Cause no 97: "Message type non-existent or not implemented"

This cause indicates that the equipment sending this cause has received a message with a message type it does not recognize either because this is a message not defined or defined but not implemented by the equipment sending this cause.

Cause no 98: "Message not compatible with short message protocol state"

This cause indicates that the equipment sending this cause has received a message such that the procedures do not indicate that this is a permissible message to receive while in the short message transfer state.

Cause no 99: "Information element non-existent or not implemented"

This cause indicates that the equipment sending this cause has received a message which includes information elements not recognized because the information element identifier is not defined or it is defined but not implemented by the equipment sending the cause.

However, the information element is not required to be present in the message in order for the equipment sending the cause to process the message.
Cause no 111: "Protocol error, unspecified"
This cause is used to report a protocol error event only when no other cause applies.
Cause no 127: "Interworking, unspecified"
This cause indicates that there has been interworking with a network which does not provide causes for actions it takes; thus, the precise cause for a message which is being send cannot be ascertained.
All values other than specified should be treated as error Cause No 41

18.7 Unsolicited result codes

Verbose result code	Numeric (V0 set)	Description
RING	2	Incoming call signal from network
+CMTI: <mem>,<index>	as verbose	Incoming message stored in <mem> ("SM") at location <index>
+CMT: <oa>… (text mode) or +CMT: [<alpha>,]… (PDU)	as verbose	Incoming message directly displayed
+CDS: <fo>, <mr>… (text mode) or +CDS: <length>,… (PDU)	As verbose	SMS status report after sending a SMS
+CCCM : <ccm>	As verbose	Current Call Meter value
+CKEV: <keynb>	As verbose	Key press or release
+CCWA :<number>,<type>, <class> [,<alpha>]	As verbose	Call Waiting number
+CLIP : <number>, <type> [,,,<alpha>]	As verbose	Incoming Call Presentation
+CREG : <stat> [,<lac>,<ci>]	As verbose	Network registration indication
+CRING : <type>	As verbose	Incoming call type (VOICE, FAX ...)
+WIND: <IndicationNb> [,<CallId>]	As verbose (specific)	Specific unsolicited indication (SIM Insert/Remove, End of init, Reset, Alerting, Call creation/release)
+CSQ: <RxLev>,99	As verbose (specific)	Automatic RxLev indication with AT+CCED=1,8 command
+CSSI: <code1>	As verbose (specific)	Supplementary service notification during a call setup

18.8 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

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

OK	0	Acknowledges correct execution of a command line
RING	2	Incoming call signal from network

18.9 Intermediate result codes

Verbose result code	Numeric (V0 set)	Description
+COLP :<number>,<type>	as verbose	Outgoing Call Presentation
+CR : <type>	as verbose	Outgoing Call report control
+ILRR: <rate>	as verbose	Local TA-TE data rate
CONNECT 300	10	Data connection at 300 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
+CSSU: <code2>	as verbose (specific)	Supplementary service notification during a call

18.10 Parameters storage

Command	AT&W (E2P)	AT+CSAS	AT&F (SIM, E2P)	Initial values WISMO1B	Initial values WISMO2C
+CMEE	X		X	0	0
+CSCS	X		X	“PCCP437”	“PCCP437”
ATS0	X		X	0 (no auto-answer)	0 (no auto-answer)
+CICB	X		X	2 (speech)	2 (speech)
+VGR	X		X	64 (all speakers)	64 (all speakers)
+VGT	X		X	64 (all microphones)	64 (all microphones)
+SPEAKER	X		X	0 (Spk 0 & Mic 0)	0 (Spk 0 & Mic 0)
+SIDET	X		X	1,1	1,1
+CREG	X		X	0	0
+WAIP	X		X	0	0
+CMGF	X		X	1 (text)	1 (text)
+CSDH	X		X	0	0
+CNMI		X	X	0,1,0, 0, 0	0,1,0, 0, 0

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

+CSMP		X	X	1, 167, 0, 0	1, 167, 0, 0
+CSCA		X		SIM dependant (phase 2)	SIM dependant (phase 2)
+CCWA	X		X	0	0
+CLIP	X		X	0	0
+COLP	X		X	0	0
+CBST	X		X	0, 0, 1	0, 0, 1
+CRLP	X		X	61, 61, 48, 6, 0	61, 61, 48, 6, 1
+CR	X		X	0	0
+CRC	X		X	0	0
+IPR	X			0 (autobaud)	9600
+IFC	X			2,2	2,2
+ICF	X			3,4	3,4
E	X			1	1
&C	X			1	1
&D	X			1	1
&S	X			1	1
Q	X		X	0	0
V	X		X	1	1
+DOPT	X		X	1,0	1,1
%C	X		X		2
\N	X		X		0
+DS	X		X		3,0,4096,20
+DR	X		X		0
+FDCC,+FIDS	X		X		0,5,0,0,2,0,0,0,0
+FCQ	X		X		0
+FCR	X		X		1
+FPHCTO	X		X		30
+FBOR	X		X		0
+ECHO	Command		X	0,255,1000,5,500,63	0,255,1000,5,500,63 (Echo cancel) 0,0,3,10,7,0 (Switch Attenuation)
+WIND	Comman		X	0	0

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

18.11 GSM sequences list

In accordance with **GSM 02.30**, the module implements the following GSM sequences, which can be acceded by the ATD and the +CKPD commands.

Security

****04*OLDPIN*NEWPIN*NEWPIN#**	Change PIN code
****042*OLDPIN2*NEWPIN2*NEWPIN2#**	Change PIN2 code
****05*PUK*NEWPIN*NEWPIN#**	Unlock PIN code
****052*PUK2*NEWPIN2*NEWPIN2#**	Unlock PIN2 code
***#06#**	Show the IMEI number

Call forwarding

***SC#**	Activate
****SC*PhoneNumber# or** ****SC*PhoneNumber*BS# or** ****SC*PhoneNumber*[BS]*T#**	Register and activate
***#SC# or *#SC**BS#**	Check status
#SC#	Deactivate
##SC# or ##SCBS#**	Unregister and deactivate

The Service codes (SC) are the followings:

002	all call forwarding
004	all conditional call forwarding
21	call forwarding unconditional
61	call forwarding on no answer
62	call forwarding on not reachable
67	call busy

The Network service codes (BS) are the followings:

No code	All tele and bearer services
10	All teleservices
11	Telephony

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

12	All data teleservices
13	Fax services
16	Short Message Services
19	All teleservices except SMS
20	All bearer services
21	All asynchronous services
22	All synchronous services
24	All data circuit synchronous
25	All data circuit asynchronous
26	All dedicated packet access
27	All dedicated PAD access

The no reply condition timer (T), is only used for SC=61.

Call barring

***SC*Password# or *SC*Password*BS#**	Activate
***#SC# or *#SC**BS#**	Check status
#SC*Password# or #SC*Password*BS#	Deactivate
****03*330*OLDPWD*NEWPWD*NEWPWD#**	Change password for call barring
****03**OLDPWD*NEWPWD*NEWPWD#**	
***03*330*OLDPWD*NEWPWD*NEWPWD#**	
***03**OLDPWD*NEWPWD*NEWPWD#**	

The Service codes (SC) are the followings:

33	call barring of outgoing call
330	all barring service
331	call barring of outgoing international call
332	call barring of outgoing international calls except to HPLMN
333	all outgoing barring service
35	call barring of incoming calls
351	call barring of incoming calls if roaming
353	all incoming barring service

The Network service codes (BS) are the same as these of the call forwarding sequences.

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Call waiting

***43#**	Activate
***#43#**	Check status
#43#	Deactivate

Number presentation

***#30#**	CLIP check status
***#31#**	CLIR check status
***31#PhoneNumber**	Invoke CLIR for a voice call
#31#PhoneNumber	Suppress CLIR for a voice call
***#76#**	COLP check status

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

18.12 Operator names

Country Initials	MCC	MNC	Preferred Presentation of Country Initials and Mobile Network Name	Abbreviated Mobile Network Name	Type of network
A	232	01	AUSTRALIA A1.	A1	GSM900
A	232	03	A max.	max.	GSM900
AL	276	01	AMC - AL	A M C	GSM900
ALG	603	01	ALGERIAN MOBILE NETWORK	AMN	GSM900
AND	213	03	STA-MOBILAND	M-AND	GSM900
AUS	505	01	Telstra MobileNet	Telstra	GSM900
AUS	505	02	YES OPTUS AUS	Optus	GSM900
AUS	505	03	VODAFONE AUS	VFONE	GSM900
AZE	400	01	AZE - AZERCELL GSM	ACELL	GSM900
AZE	400	02	BAKCELL GSM 2000	BKCELL	GSM900
B	206	10	B mobistar	mobi*	GSM900
BD	470	03	BD ShebaWorld	SHEBA	GSM900
BEL	206	01	BEL PROXIMUS	PROXI	GSM900
BG	284	01	M-TEL GSM BG	M-TEL	GSM900
BGD	470	01	BGD-GP	GP	GSM900
BHR	426	01	BHR MOBILE PLUS	M.PLUS	GSM900
BIH	218	90	PTT-GSMBIH	BHGSM	GSM900
BRU	528	11	BRU-DSTCom	DSTCom	GSM900
CAN	302	037	CAN-MCELL	MCELL	PCS1900
CH	228	01	SWISS GSM	SWISS	GSM900
CH	228	01	SWISS GSM	SWISS	GSM1800
CH	228	02	diAx Swiss	diAx	GSM900
CH	228	03	orange CH	orange	GSM1800
CHN	460	00	CHINA TELECOM	CT-GSM	GSM900
CHN	460	01	CHN-CUGSM	CU-GSM	GSM900
CI	612	03	CI Ivoiris	Ivoir	GSM900
CI	612	05	TELECEL-CI	TELCEL	GSM900
CL	730	001	CL ENTEL PCS	ENTEL	GSM900
CL	730	010	CL ENTEL PCS	ENTEL	PCS1900
CPV	625	01	CPV MOVEL	CMOVEL	GSM900
CY	280	01	CY CYTAGSM	CY-GSM	GSM900

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

CZ	230	01	PAEGAS- CZ	PAEGAS	GSM900
CZ	230	02	EUROTEL - CZ	ET - CZ	GSM900
D	262	01	D1-TELEKOM	D1	GSM900
D	262	02	D2 PRIVAT	D2	GSM900
D	262	03	E-Plus	E-Plus	GSM1800
D	262	07	D Interkom	Ik	GSM1800
DK	238	01	DK TDK-MOBIL	TD MOB	GSM900
DK	238	02	DK SONOFON	SONO	GSM900
DK	238	20	TELIA DK	TELIA	GSM1800
DK	238	30	DK mobilix	#mbix	GSM1800
E	214	01	E AIRTEL	AIRTL	GSM900
E	214	03	E AMENA	AMENA	GSM1800
E	214	07	MOVISTAR	MSTAR	GSM900
EE	248	01	EE EMT GSM	EMT	GSM900
EE	248	02	EE RLE	RLE	GSM900
EE	248	03	EE Q GSM	Q GSM	GSM900
EGY	602	01	EGY MobiNiL	MobiNiL	GSM900
EGY	602	02	EGY CLICK GSM	CLICK	GSM900
ETH	636	01	ETH-MTN	ET-MTN	GSM900
F	208	01	F Itineris	Itine	GSM900
F	208	10	F SFR	SFR	GSM900
F	208	20	F - BOUYGUES TELECOM	BYTEL	GSM1800
F	340	01	F AMERIS	AMERIS	GSM900
F	547	20	F-VINI	VINI	GSM900
F	647	10	SFR REUNION	SFR RU	GSM900
FI	244	03	FI TELIA	TELIA	GSM1800
FI	244	05	FI RADIOLINJA	RL	GSM900
FI	244	09	FI FINNET	FINNET	GSM1800
FI	244	91	FI SONERA	SONERA	GSM900
FIJ	542	01	VODAFONE FIJ	VODAFJ	GSM900
GEO	282	01	GEO-GEOCELL	GCELL	GSM900
GEO	282	02	MAGTI-GSM-GEO	MAGTI	GSM900
GH	620	01	GH SPACEFON	SPACE	GSM900
GIB	266	01	GIBTEL GSM	GIBTEL	GSM900
GN	611	02	GN LAGUI	LAGUI	GSM900
GR	202	01	GR COSMOTE	C-OTE	GSM1800
GR	202	05	GR PANAFON	PAN	GSM900
GR	202	10	GR TELESTET	TLSTET	GSM900
H	216	01	H PANNON GSM	PANNON	GSM900
H	216	30	H-WESTEL 900	W-900	GSM900

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

HK	454	00	HK TELECOM	TELCO	GSM900
HK	454	04	HK HTCLGSM	HTCL	GSM900
HK	454	06	HK SMARTONE	HKSMC	GSM900
HK	454	10	HK NEW WORLD	NWPCS	GSM1800
HK	454	12	HK PEOPLES	PTC	GSM1800
HK	454	16	HK SUNDAY	SUNDAY	GSM1800
HR	219	01	HR - CRONET	CRON	GSM900
HR	219	10	HR-VIPNET	VIP	GSM900
I	222	01	I TELECOM	TIM	GSM900
I	222	10	I -OMNITEL	OMNI	GSM900
I	222	88	I WIND	I WIND	GSM900
I	222	88	I WIND	I WIND	GSM1800
IL	425	01	IL ORANGE	ORANGE	GSM900
INA	404	01	INA ESSAR CELLPHONE	ESSARH	GSM900
INA	404	07	INA - TATA CELLULAR	TATA	GSM900
INA	404	10	INA-AIRTL	AIRTL	GSM900
INA	404	11	INA ESSAR CELLPHONE	ESSAR	GSM900
INA	404	12	INA - ESCOTEL	ESCOTL	GSM900
INA	404	14	MODICOM INA	MODICO	GSM900
INA	404	15	INA ESSAR CELLPHONE	ESSARU	GSM900
INA	404	20	INA MaxTouch	MAXTCH	GSM900
INA	404	21	BPL MOBILE	BPL MOBILE	GSM900
INA	404	27	BPL MOBILE	BPL MOBILE	GSM900
INA	404	30	INA COMMAND	COMMND	GSM900
INA	404	41	INA RPG	RPG	GSM900
INA	404	42	INA AIRCEL	AIRCEL	GSM900
INA	404	43	BPL MOBILE	BPL MOB	GSM900
INA	404	46	BPL MOBILE	BPL MOB	GSM900
INA	404	60	INA ESSAR CELLPHONE	ESSARR	GSM900
IND	510	01	IND SATELINDOCEL	SAT-C	GSM900
IND	510	10	IND TELKOMSEL	T-SEL	GSM900
IND	510	11	IND GSM-XL	EXCEL	GSM900
IRL	272	01	IRL Eircell	Eircell	GSM900
IRL	272	02	IRL DIGIFONE	DIGI	GSM900
IS	274	01	IS SIMINN	SIMINN	GSM900
IS	274	02	IS TAL	TAL	GSM900
JOR	416	01	Fastlink	FSTLNK	GSM900
KGZ	437	01	BITEL KGZ	BITEL	GSM900
KHM	456	01	MOBITEL - KHM	MT-KHM	GSM900
KHM	456	02	KHM-SAMART-GSM	KHM-SM	GSM900

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

KSA	420	01	ALJAWWAL	KSA	GSM900
KSA	420	07	EAE-ALJAWWAL	EAE	GSM900
KT	419	02	KT MTCNet	MTC	GSM900
KZ	401	01	KZ K-MOBILE	K-MOBILE	GSM900
L	270	01	L LUXGSM	LUXGSM	GSM900
L	270	77	L TANGO	TANGO	GSM900
L	270	77	L TANGO	TANGO	GSM1800
LBR	618	01	LBR OMEGA	OMEGA	GSM900
LSO	651	01	VCL COMMS	VCLCOM	GSM900
LT	246	02	LT BITE GSM	BITE	GSM900
LTU	246	01	OMNITEL LT	OMT	GSM900
LV	247	01	LV LMT GSM	LMT	GSM900
LV	247	02	LV BALTCOM	B-COM	GSM900
M	278	01	VODAFONE MLA	VODA M	GSM900
MAC	455	01	MAC-CTMGSM	CTMGSM	GSM900
MD	259	01	MD VOXTEL	VOXTEL	GSM900
MDG	642	02	MDG ANTARIS	ANTARI	GSM900
MKD	294	01	MKD-MOBIMAK	MOBI-M	GSM900
MOR	604	01	MOR IAM	IAM	GSM900
MOZ	643	01	MOZ - mCel	mCel	GSM900
MRU	617	01	CELLPLUS-MRU	CELL +	GSM900
MW	650	01	MW CP 900	CP 900	GSM900
MY	502	12	MY maxis mobile	maxis	GSM900
MY	502	13	MY EMARTEL	MRTEL	GSM1800
MY	502	16	MY DIGI 1800	MT18	GSM1800
MY	502	17	MY - ADAM 017	ADAM	GSM1800
MY	502	19	MY CELCOM GSM	CELCOM	GSM900
N	242	01	N Telenor	TELENOR	GSM900
N	242	02	N NetCom GSM	N COM	GSM900
NCL	546	01	NCL MOBILIS	MOBNCL	GSM900
NL	204	04	NL LIBERTEL	LIBTEL	GSM900
NL	204	08	NL KPN TELECOM	NL KPN	GSM900
NL	204	12	NL TELFORT	TELFORT	GSM1800
NL	204	16	Ben NL	Ben NL	GSM900
NL	204	20	dutchtone	Dtone	GSM900
NZ	530	01	VODAFONE NZ	VODA	GSM900
OMN	422	02	OMAN MOBILE	OMAN	GSM900
P	268	01	P TELECEL	TLCL	GSM900
P	268	03	P OPTIMUS	OPTIM	GSM900
P	268	06	P TMN	TMN	GSM900

PGY	744	01	HOLA PARAGUAY S.A.	HPGYSA	GSM900
PH	515	01	ISLACOM	ISLA	GSM900
PH	515	02	Globe Telecom-PH	GLOBE	GSM900
PH	515	03	PH SMART	SMART	GSM900
PH	515	03	PH SMART	SMART	GSM1800
PL	260	01	PL-PLUS	PLUS	GSM900
PL	260	02	PL-ERA GSM	ERAGSM	GSM900
PL	260	03	PL IDEA	IDEA	GSM1800
QAT	427	01	QAT-QATARNET	Q-NET	GSM900
R	635	10	R-CELL	RCELL	GSM900
RA	283	01	RA-ARMGSM	ARMMO1	GSM900
RL	415	01	RL Cellis	CLLIS	GSM900
RL	415	03	RL LibanCell	LibCL	GSM900
RO	226	01	RO CONNEX	CONNEX	GSM900
RO	226	10	RO dialog	dialog	GSM900
ROC	466	92	ROC LDTA GSM	LDGSM	GSM900
RUS	250	01	MTS-RUS	MTS	GSM900
RUS	250	02	North-West GSM RUS	NWGSM	GSM900
RUS	250	05	SCS RUS	SCS	GSM900
RUS	250	07	RUS BMT	BMT	GSM900
RUS	250	07	RUS SMARTS	SMARTS	GSM900
RUS	250	12	Far East RUS	FEast	GSM900
RUS	250	13	Kuban-GSM RUS	KUGSM	GSM900
RUS	250	28	EXTEL RUS	EXTEL	GSM900
RUS	250	39	Uraltel	UTL	GSM900
RUS	250	44	RUS North Caucasian GSM	NC-GSM	GSM900
S	240	01	TELIA S	TELIA	GSM900
S	240	07	S COMVIQ	IQ	GSM900
S	240	08	S EUROPOLITAN	EURO	GSM900
SA	655	01	VodaCom-SA	VODA	GSM900
SA	655	10	MTN-SA	MTN	GSM900
SDN	634	01	SDN MobiTel	SD-MOB	GSM900
SEZ	633	01	SEZ CELLULAR SERVICES	SEYCEL	GSM900
SEZ	633	10	SEZ AIRTEL	AIRTEL	GSM900
SGP	525	01	ST-GSM-SGP	STGSM	GSM900
SGP	525	02	ST-GSM1800-SGP	GSM1800	GSM1800
SGP	525	03	M1-GSM-SGP	M1-GSM	GSM900
SGP	525	05	STARHUB-SGP	STARHUB	GSM900
SI	293	40	SI.MOBIL	SI.MOBIL	GSM900
SI	293	41	SI MOBITEL GSM	SI-GSM	GSM900

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

SK	231	01	SVK GT	SVK GT	GSM900
SK	231	02	EUROTEL-SK	ET-SK	GSM900
SN	608	01	SN ALIZE	ALIZE	GSM900
SRI	413	02	SRI DIALOG	DALOG	GSM900
SYR	417	09	SYR MOBILE SYR	MOBILE	GSM900
TG	615	01	TG-TOGO CELL	TGCELL	GSM900
TH	520	01	TH AIS GSM	TH AIS	GSM900
TH	520	10	TH WCS	TH WCS	GSM1800
TH	520	23	TH-HELLO	HELLO	GSM1800
TR	286	01	TR PTT/TURKCELL GSM	TCELL	GSM900
TR	286	02	TR TELSIM	TELSIM	GSM900
TWN	466	01	Far EasTone	FET	GSM900
TWN	466	06	TWN Tuntex GSM 1800	TUNTEX	GSM1900
TWN	466	88	KGT-Online	KGT	GSM1900
TWN	466	93	TWN MOBITAI	TW MOB	GSM900
TWN	466	97	TWN GSM 1800	PCC	GSM1900
TZ	640	01	Tritel - TZ	TRITEL	GSM900
UA	255	01	UA UMC	UMC	GSM900
UA	255	03	UA-KYIVSTAR	UA-KS	GSM900
UA	255	05	UA - GOLDEN TELECOM	GT-BCS	GSM1800
UAE	424	02	UAE ETISALAT	ETSLT	GSM900
UG	641	01	UG CelTel	CELTEL	GSM900
UG	641	10	MTN-UGANDA	MTN-UG	GSM900
UK	234	10	UK CELLNET	CLNET	GSM900
UK	234	15	UK VODAFONE	VODA	GSM900
UK	234	30	ONE 2 ONE	ONE2ONE	GSM1800
UK	234	33	ORANGE	ORANGE	GSM1800
UK	234	50	JERSEY TELECOMS GSM UK	JT GSM	GSM900
UK	234	55	GUERNSEY TEL UK	GSY-TEL	GSM900
UK	234	58	MANX TELECOM PRONTO GSM	MANX	GSM900
UKR	255	02	FLASH-UKR	FLASH	GSM900
USA	310	010	USA MCI		PCS1900
USA	310	011	USA WTTCKy		PCS1900
USA	310	012	USA D&E Com		PCS1900
USA	310	013	USA MobileTel		PCS1900
USA	310	020	USA Sprint		PCS1900
USA	310	030	USA PCS PRIME		PCS1900
USA	310	031	USA-AERIAL		PCS1900
USA	310	040	USA PCS PRIME		PCS1900
USA	310	050	USA PCS PRIME		PCS1900

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

USA	310	060	USA PCS PRIME		PCS1900
USA	310	070	USA PCS PRIME		PCS1900
USA	310	080	USA PCS PRIME		PCS1900
USA	310	090	USA PCS PRIME		PCS1900
USA	310	100	USA PCS PRIME		PCS1900
USA	310	110	USA PCS PRIME		PCS1900
USA	310	120	USA PCS PRIME		PCS1900
USA	310	130	USA PCS PRIME		PCS1900
USA	310	140	USA PCS PRIME		PCS1900
USA	310	150	USA BellSouth	BSMDCS	PCS1900
USA	310	160	USA OMNIPOINT		PCS1900
USA	310	170	USA PAC BELL		PCS1900
USA	310	180	USA PAC BELL		PCS1900
USA	310	190	USA COX		PCS1900
USA	310	200	Voice STREAM USA	WWC	PCS1900
USA	310	210	Voice STREAM USA	WWC	PCS1900
USA	310	220	Voice STREAM USA	WWC	PCS1900
USA	310	230	Voice STREAM USA	WWC	PCS1900
USA	310	240	Voice STREAM USA	WWC	PCS1900
USA	310	250	Voice STREAM USA	WWC	PCS1900
USA	310	260	Voice STREAM USA	WWC	PCS1900
USA	310	270	USA PowerTel	USA 27	PCS1900
USA	310	280	USA PowerTel		PCS1900
USA	310	290	USA PowerTel		PCS1900
USA	310	300	USA Aerial		PCS1900
USA	310	310	USA-AERIAL	AERIAL	PCS1900
USA	310	320	USA Aerial		PCS1900
USA	310	330	USA Aerial		PCS1900
USA	310	340	USA Aerial		PCS1900
USA	310	350	USA Aerial		PCS1900
USA	310	380	USA Pocket		PCS1900
USA	310	390	USA Pocket		PCS1900
USA	310	400	USA Pocket		PCS1900
USA	310	410	USA Pocket		PCS1900
USA	310	420	USA Pocket		PCS1900
USA	310	430	USA Pocket		PCS1900
USA	310	440	USA Pocket		PCS1900
USA	310	450	USA Pocket		PCS1900
USA	310	460	USA OMNIPOINT		PCS1900
USA	310	470	USA OMNIPOINT		PCS1900

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

USA	310	480	USA OMNIPOINT		PCS1900
USA	310	490	USA OMNIPOINT		PCS1900
USA	310	500	USA OMNIPOINT		PCS1900
USA	310	510	USA OMNIPOINT		PCS1900
USA	310	520	USA OMNIPOINT		PCS1900
USA	310	530	USA OMNIPOINT		PCS1900
USA	310	540	USA OMNIPOINT		PCS1900
USA	310	550	USA OMNIPOINT		PCS1900
USA	310	560	USA OMNIPOINT		PCS1900
USA	310	570	USA OMNIPOINT		PCS1900
USA	310	580	USA OMNIPOINT		PCS1900
USA	310	610	USA OMNIPOINT		PCS1900
USA	310	620	USA OMNIPOINT		PCS1900
USA	310	630	USA OMNIPOINT		PCS1900
USA	310	640	USA Einstein		PCS1900
USA	310	660	USA DiGiPH		PCS1900
USA	310	670	USA WTTCKy		PCS1900
USA	310	680	USA NPI		PCS1900
USA	310	690	USA Conestoga		PCS1900
VZ	734	01	VZ INFO		INFONT
YU	220	01	YU MOBTEL		MOBTEL
ZW	648	01	ZW NET*ONE		NET*1
ZW	648	03	TELECEL ZW		TELECEL

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

19 APPENDIX A (informative)

This chapter illustrates informative examples about the general AT commands used for a communication.

19.1 Informative example about the PIN required

Example 1 : when the ME is powered off.

AT+CMEE=1	*Enable the report mobile equipment errors*
OK	
AT+CREG=1	*Report registration*
OK	
AT+CPAS	*Query ME Status*
+CPAS: 5	*(ME is asleep)*
OK	
AT+CFUN=1	*Set ME to full functionality*
OK	
AT+COPS=0	*Ask for automatic operator selection and registration.*
+CME ERROR: 11	*SIM PIN required.*
AT+CPIN=1234	*User entered a wrong PIN*
+CME ERROR: 16	*Incorrect password.*
AT+CPIN=0000	
OK	*PIN Ok*
AT+COPS=0	*Ask for automatic operator selection and registration.*
OK	
+CREG:1	*Registered in the network*
AT+COPS=3,0	*Select the long name format alphanumeric.*
OK	
AT+COPS?	*Get the operator name*
+COPS: 0,0,"I OMNITEL"	
OK	

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Example 2: When the ME has already been powered on.

AT+CMEE=1	*Enable the report mobile equipment errors*
OK	
AT+CPAS	*Query ME Status*
+CPAS: 0	*ME is already to receive commands*
OK	
AT+CPIN?	*Is ME asking password?*
+CPIN: SIM PIN	*Yes, SIM PIN required*
AT+CPIN=0000	
OK	*PIN Ok*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Informative example where a voice call is originated.

Example 3 : When the ME is powered on and the SIM PIN has been entered.

AT+CMEE=1	*Enable the report mobile equipment errors*
OK	
AT+WIND=63	*Ask to display the general indications.*
OK	
AT+CPIN?	*Is ME asking password?*
+CPIN: READY	*GSM module is ready*
ATD0607103543;	*Originate a voice call*
+WIND: 5,1	*Indication about a call creation.*
+WIND: 2	*Remote party is ringing.*
OK	*Call setup was successful*
Conversation…	
ATH	*Release the call*
OK	

When a voice call is attempted from a phonebook :

ATD>"John Pamborn";	
+CME ERROR: 22	Entry "John Pamborn" is not found.
ATD>"Joel Guerry";	
+WIND: 5,1	*Indication about a of call creation.*
+WIND: 2	*Remote party is ringing.*
OK	*Call setup was successful*
Conversation…	
ATH	*Release the call*
OK	

Informative example about an incoming call.

When the ME is powered on and the SIM PIN has been entered.

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+CRC=1	*Enable extended format of incoming indication.*
OK	
AT+CNUM	*Query own number (voice number) or MSISDN.*
+CNUM: “Speech”,”+33608971019”,145	
OK	
Originate the number on another ME.	
+WIND: 5, 1	*Indication about a call creation. (Ring)*
+CRING: VOICE	*Type of call is VOICE.*
+CLIP: "+33607103543",145,,,"John Panborn"	*Identification about the remote user.*
+CRING: VOICE	
ATA	*Answer the call.*
OK	
…Conversation…	
NO CARRIER	*The call has been released by the remote user.*
+WIND: 6,1	*Indication about call release.*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Informative example about a call forwarding

When the ME is powered on and the SIM PIN has been entered.

AT+CMEE=1	*Enable the report mobile equipment errors*
OK	
AT+CFCC=1,3,"0607492638"	*Registered a call forwarding when mobile is busy.*
OK	
AT+CCFC=2,3,"0149293031",129	*Registered a call forwarding when it does answer.*
+CME ERROR: 30	*No network service*
AT+CCFC=1,2	*Interrogate*
+CCFC: 1,1,"+33607492638",145	*Call forwarding active for a voice call.*
AT+CFCC=1,4	*Delete call forwarding Mobile busy*
OK	

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Informative example about a multiparty

When the ME is powered on and the SIM PIN has been entered.

AT+CMEE=1	*Enable the report mobile equipment errors*
OK	
AT+WIND=63	*Ask to display the general indications.*
OK	
AT+CCWA=1,1	*Enable call waiting.*
OK	
ATD>"John Panborn";	
+WIND: 5,1	*Indication about a of call creation.*
+WIND: 2	*Remote ring.*
OK	*Call setup was successful*
…Conversation…	
+WIND: 5,2	*Indication about another call creation.*
+CCWA: "+33595984834",145,"Dolores Claiborne"	*Another call is waiting.*
AT+CHLD=2	*Put first call on hold and answer the second one.*
OK	
…Conversation…	
AT+CHLD=3	*Every calls are into a multiparty.*
OK	
AT+CHLD=11	*Release the first call (with John Panborn) and recover the second call (with Dolores Claiborne)*
…Conversation …	
ATH	*Release the second call.*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

19.2 Informative example about phonebooks

For each example illustrates in this section: in the start the ME is powered on and the SIM PIN has been entered.

Example 1 : The whole phonebook of the ME is read

AT+CPBS=?	*Query supported phonebook memories*
+CPBS: (“SM”,”FD”,”ON”)	*ADN, FDN, and MSISDN phonebooks supported.*
AT+CPBS=”SM”	*Select ADN phonebook..*
OK	
AT+CPBR=?	*Read index range and element lengths.*
+CPBR: (1-80),20,14	*80 locations (from 1 to 80), max length of 20 for phone 14 characters max for associated text.*
AT+CPBR=1,80	*Read all entries but only the ones set are returned.*
+CPBR: 1,“0346572834”,129,”Dolores Claiborne”	
+CPBR: 2,”1284374523”,129,”Thad Beaumont”	
+CPBR: 3, “1243657845”,129,”John Panborn”	
OK	

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Example 2 : Erase or Write a phonebook entry

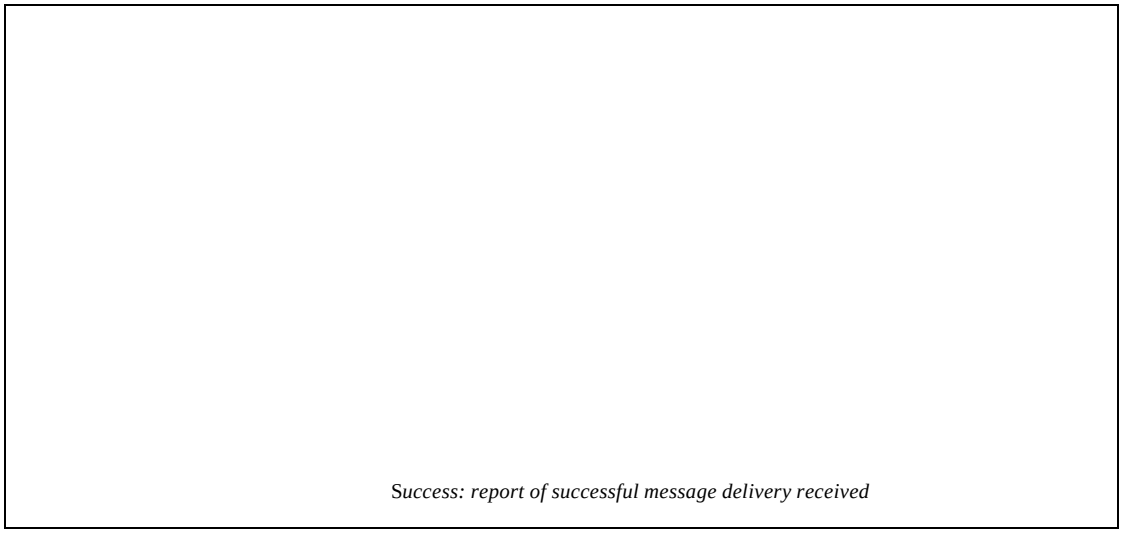
AT+CPBW=? +CPBW: (1-80),20,(129,145),14	*Query version of the write phonebook entry.* *80 locations, max length of 20 for phone,* *TON/NPI of 129 or 145 and 14 characteers max* *For length of text.*
AT+CPBW=3 OK	*Erase location 3*
AT+CPBW=3,"4356729012",129,"Carry" Ok	*Write at location 3.*
AT+CPBR=1,80 +CPBR: 1,"0346572834",129,"Dolores Claiborne" +CPBR: 2,"1284374523",129,"Thad Beaumont" +CPBR: 3,"4356729012",129,"Carry" OK	*Read all entries but only the ones set are returned.*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

Example 3 : Find phonebook entries

AT+CPBF=? +CPBF: 20,14	*Query version of the write phonebook entry.* *Max length of 20 for phone,* *10 characters for the text.*
AT+CPBF="D" +CPBF: 1,"0346572834",129,"Dolores Claiborne" OK	*Read entry with "D".*
AT+CPBF="W" +CME ERROR: 22	*Read entrie with "D".* *Entry not found.*

This confidential document is the property of WAVECOM and may not be copied or circulated without permission



Example 5: Read short messages

```
AT+CMGF=1                       Text mode to read Short Messages

AT+CMGL="ALL"                   List all stored messages
+CMGL: 1,"REC READ","+336290918",,"99/05/01 14:15:10+04"
This is the first message
+CMGL: 2,"REC UNREAD","+336290918",,"99/05/01 14:19:44+04"
This is the second message
OK

AT+CMGR=1                " "    Read the first message
+CMGR: "REC READ","+336290918",,"99/05/01 14:19:44+04"
OK
```

19.4 Informative example about Fax class 2

The normal characters are DTE generated. The bold characters are modem generated.

Example 1 : Send a fax class 2

AT+FCLASS=2	*Select fax class 2*
OK	
AT+FLID="LocalFax"	
OK	
ATD0601234567	*Call establishement*
+FCON	*Connexion OK*
[+FCSI:"RemoteFax"]	
+FDIS:0,3,0,2,0,0,0,0	
OK	
AT+FDT	*Begin of data*
+FDCS:0,3,0,2,0,0,0,0	
CONNECT	
<0x11h>	*Send carrier*
First page data terminated by <0x10h><0x03h>	
OK	*Page transmitted*
AT+FET=0	*Send another page*
+FPTS:1	*First page acquitted*
OK	
AT+FDT	
CONNECT	
<0x11h>	*Send carrier*
Second page data terminated by <0x10h><0x03h>	
OK	*Page transmitted*
AT+FET=2	*No more page*
+FPTS:1	*First page acquitted*
+FHNG:0	*Normal end of connection*
OK	

Example 2: Receive a fax class 2

AT+FCR=1	
OK	
AT+FLID="LocalFax"	
OK	
RING	*Incoming call*
ATA	*Off hook*
+FCON	*Connexion OK*
[+FTSI:"RemoteFax"]	
+FDCS:0,3,0,2,0,0,0,0	
OK	

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

AT+FDR	
+FCFR	
+FDCS:0,3,0,2,0,0,0,0	
CONNECT	
<0x12h>	*Receive page carrier*
First page data terminated by	
<0x10h><0x03h>	
OK	*Page received*
+FPTS:1	*First page acquitted*
+FET:0	*To receive another page*
OK	
AT+FDR	
+FDCS:0,3,0,2,0,0,0,0	
CONNECT	
<0x12h>	*Receive page carrier*
Second page data terminated by	
<0x10h><0x03h>	
OK	*Page received*
+FPTS:1	*First page acquitted*
+FET:2	*No more page to receive*
OK	
AT+FDR	
+FHNG:0	*Normal end of connection*
OK	

This confidential document is the property of WAVECOM and may not be copied or circulated without permission

20 APPENDIX B: Support of SIM ToolKit by The M.E.

This has been extracted from the 11.14.

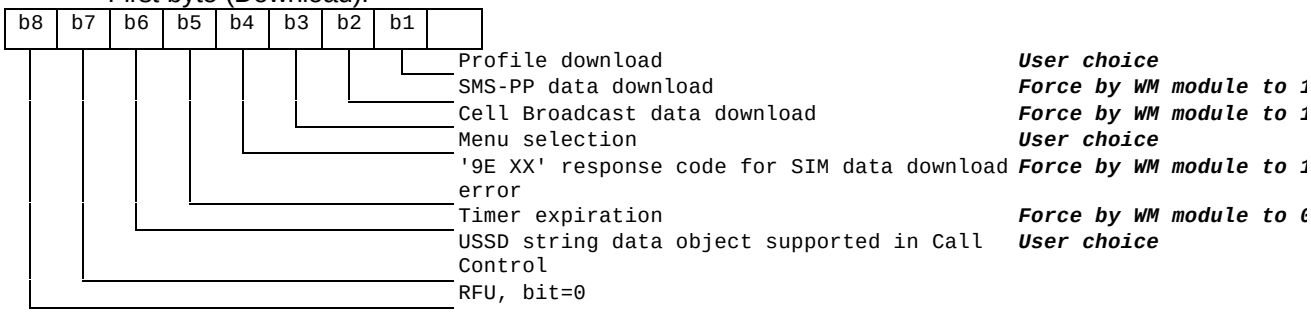
This confidential document is the property of WAVECOM and may not be copied or circulated without permission

		Classes		
Command description		**1**	**2**	**3**
CALL CONTROL			X	X
CELL BROADCAST DOWNLOAD			X	X
DISPLAY TEXT			X	X
EVENT DOWNLOAD				
- MT call				X
- Call connected				X
- Call disconnected				X
- Location status				X
- User activity				X
- Idle screen available				X
GET INKEY			X	X
GET INPUT			X	X
GET READER STATUS	$(MultipleCard)$			Lc
MENU SELECTION			X	X
MO SHORT MESSAGE CONTROL				X
MORE TIME			X	X
PERFORM CARD APDU	$(MultipleCard)$			Lc
PLAY TONE			X	X
POLLING OFF			X	X
POLL INTERVAL			X	X
POWER ON CARD	$(MultipleCard)$			Lc
POWER OFF CARD	$(MultipleCard)$			Lc
PROVIDE LOCAL INFORMATION			X	X
REFRESH		X	X	X
RUN AT COMMAND	$(AT$)			Lc
SELECT ITEM			X	X
SEND SHORT MESSAGE			X	X
SEND SS			X	X
SEND USSD				X
SET UP CALL			X	X
SET UP EVENT LIST				X
SET UP IDLE MODE TEXT	$(IdleModeText)$			X
SET UP MENU			X	X
SMS-PP DOWNLOAD		X	X	X
TIMER MANAGEMENT	$(Timer)$			Lc
TIMER EXPIRATION	$(Timer)$			Lc

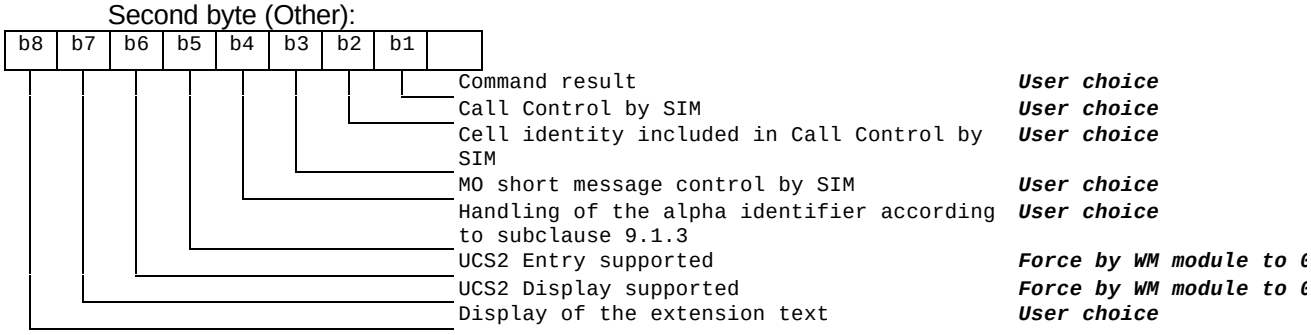
This confidential document is the property of WAVECOM and may not be copied or circulated without permission

21 APPENDIX C: Structure of TERMINAL PROFILE

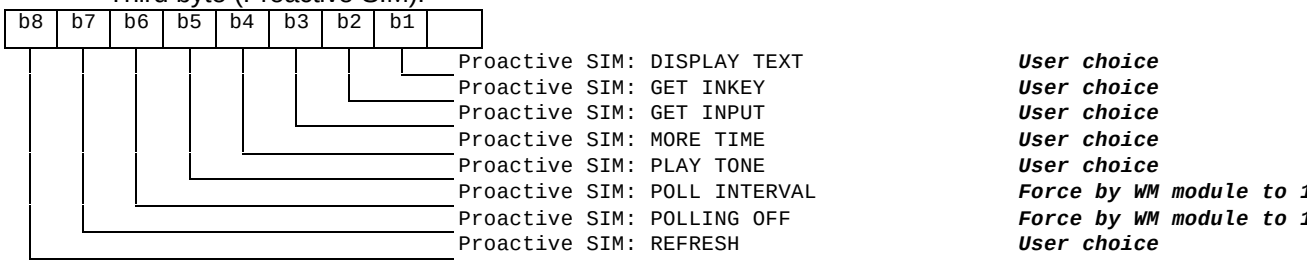
First byte (Download):



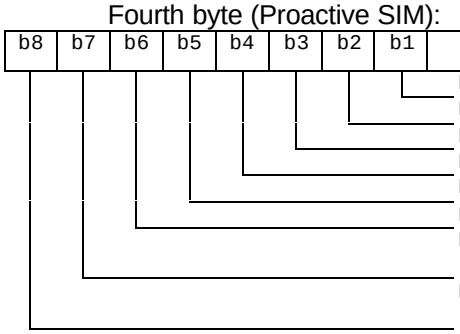
Second byte (Other):



Third byte (Proactive SIM):

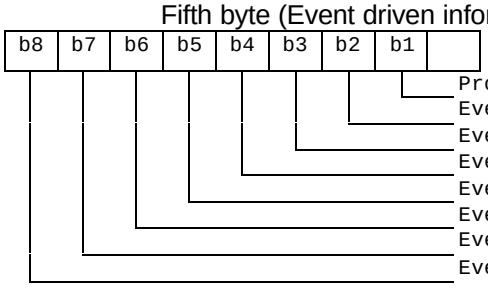


Fourth byte (Proactive SIM):



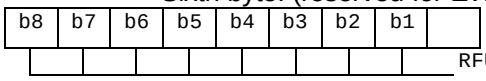
Proactive SIM: SELECT ITEM	***User choice***
Proactive SIM: SEND SHORT MESSAGE	***User choice***
Proactive SIM: SEND SS	***User choice***
Proactive SIM: SEND USSD	***Force by WM module to 0***
Proactive SIM: SET UP CALL	***User choice***
Proactive SIM: SET UP MENU	***User choice***
Proactive SIM: PROVIDE LOCAL INFORMATION (MCC, MNC, LAC, Cell ID & IMEI)	***Force by WM module to 1***
Proactive SIM: PROVIDE LOCAL INFORMATION (NMR)	***Force by WM module to 1***

Fifth byte (Event driven information):



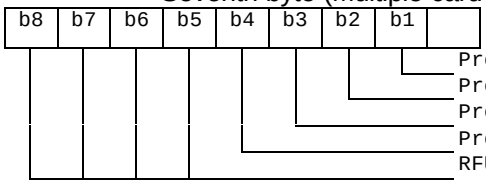
Proactive SIM: SET UP EVENT LIST	***Force by WM module to 0***
Event: MT call	***Force by WM module to 0***
Event: Call connected	***Force by WM module to 0***
Event: Call disconnected	***Force by WM module to 0***
Event: Location status	***Force by WM module to 0***
Event: User activity	***Force by WM module to 0***
Event: Idle screen available	***Force by WM module to 0***
Event: Card reader status	***Force by WM module to 0***

Sixth byte: (reserved for Event driven information extensions)



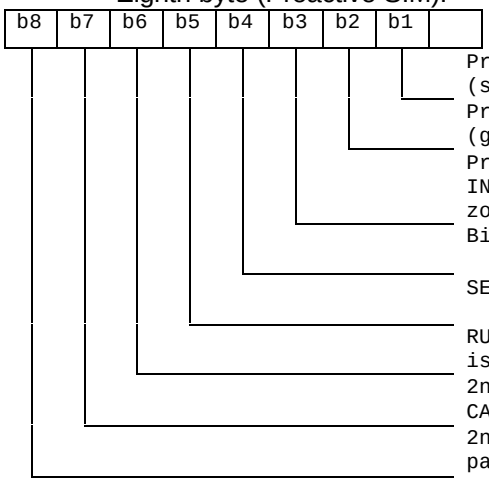
RFU, bit = 0

Seventh byte (Multiple card proactive commands) for class "a"



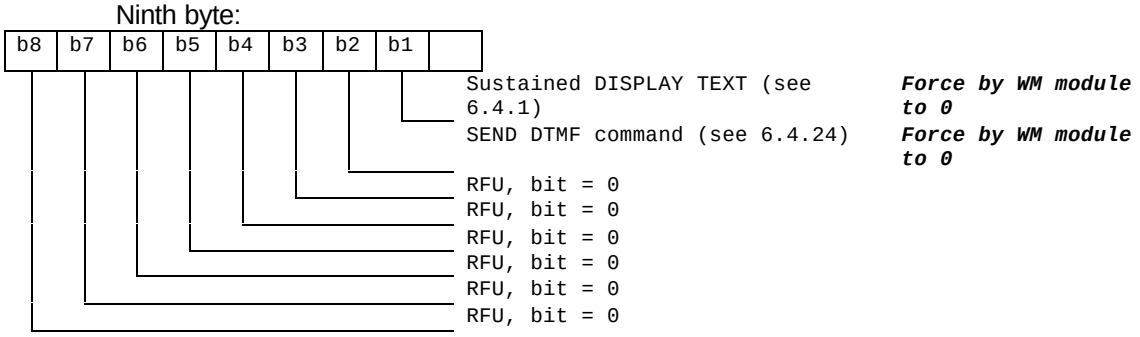
Proactive SIM: POWER ON CARD	***Force by WM module to 0***
Proactive SIM: POWER OFF CARD	***Force by WM module to 0***
Proactive SIM: PERFORM CARD APDU	***Force by WM module to 0***
Proactive SIM: GET READER STATUS	***Force by WM module to 0***
RFU, bit = 0	***Force by WM module to 0***

Eighth byte (Proactive SIM):

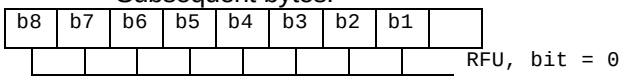


Proactive SIM: TIMER MANAGEMENT (start, stop)	***Force by WM module to 0***
Proactive SIM: TIMER MANAGEMENT (get current value)	***Force by WM module to 0***
Proactive SIM: PROVIDE LOCAL INFORMATION (date, time and time zone)	***Force by WM module to 0***
Binary choice in GET INKEY	***Force by WM module to 0***
SET UP IDLE MODE TEXT	***Force by WM module to 0***
RUN AT COMMAND (i.e. class "b" is supported)	***Force by WM module to 0***
2nd alpha identifier in SET UP CALL	***Force by WM module to 0***
2nd capability configuration parameter (see 9.1.6)	***Force by WM module to 0***

Ninth byte:



Subsequent bytes:



This confidential document is the property of WAVECOM and may not be copied or circulated without permission

22 APPENDIX D: Command Type and Next Action Indicator.

This has been extracted from the 11.14.

Value	Name		used for Type of Command coding	used for Next Action Indicator coding
'00'			-	-
'01'	REFRESH		X	
'02'	MORE TIME		X	
'03'	POLL INTERVAL		X	
'04'	POLLING OFF		X	
'05'	SET UP EVENT LIST		X	
'10'	SET UP CALL		X	X
'11'	SEND SS		X	X
'12'	SEND USSD		X	X
'13'	SEND SHORT MESSAGE		X	X
'14'	SEND DTMF		X	
'20'	PLAY TONE		X	X
'21'	DISPLAY TEXT		X	X
'22'	GET INKEY		X	X
'23'	GET INPUT		X	X
'24'	SELECT ITEM		X	X
'25'	SET UP MENU		X	X
'26'	PROVIDE LOCAL INFORMATION		X	
'27'	TIMER MANAGEMENT		X	
'28'	SET UP IDLE MODEL TEXT		X	X
'30'	PERFORM CARD APDU	class "a" only	X	X
'31'	POWER ON CARD	class "a" only	X	X
'32'	POWER OFF CARD	class "a" only	X	X
'33'	GET READER STATUS	class "a" only	X	X
'34'	RUN AT COMMAND	class "b" only	X	
'81'	End of the proactive session		not applicable	X

This confidential document is the property of WAVECOM and may not be copied or circulated without permission