AT commands interface

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DOCUMENT AMENDMENTS

Version	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
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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
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6.1	10-02-1997	P	R. Madec	Modifications of +CBST, +CRLP, +SIDET
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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	SMS commands (+CMGW, +CMSS)
			F.Desnoues	New formats of Suppl Serv commands (+CLCK,+CCWA,+CCFC)
			R.Dorey	Add comments pertaining to +IPR,+CBST,+ICF and fax setup.

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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)
8.0	15-04-1999 04-05-1999	P P	F.Desnoues C.Amiens	New: +CHLD, +CLCC, +CSSN, +CUSD, +WMGO, +WMSC Extension: ATD, ATH, ATA, +CCWA, +CLIP, +COLP, +WIND, +COPS Modification: +VGR levels 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)
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.
8.5	17-02-2000	P	J. Berdin	New: +WHWV, +WDOP, +CNMA. Modification: +CSMS.

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	07-03-2000	P	C. Amiens	New : +WSVG 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
	04-05-2000	P	JP. Biou	New : +WRIM
	10-05-2000	P	JP. Biou	Modification : +ADC
	05-06-2000	P	C. Amiens	Modifications : <u>SIM TOOLKIT</u> +STSF (for Timeout) +STGI (for GetInput) UCS2 format supported <u>SMS</u> +CMGD : multiple deletion <u>UCS2 for phonebooks</u> +CPBW: Store a record with a UCS2 name format +CPBR: Read a record with a UCS2 name format +CPBF: Find records in UCS2 format. +CPBP : Search +CPBN : Move to a record in UCS2 format

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				UCS2 for call management +CLCC, +CCWA,+COLP,+CLIP
	09-06-2000	P	JP. Biou	Modification : +CHLD (Added Explicit Call Transfer)
	13-06-2000	P	J. Berdin	New : +CCLK, +CALA, +CSNS, %D2, +CRMP, +CRSL. New Phone-Books (LD,MC,RC,ME,MT,SN) Modifications : +CSMP, +CPBS, +CPBW
	14-06-2000	P	J. Berdin	Modifications : +CRMP, +CRSL, +COPS.
	19-06-2000	P	J. Berdin	Modification : +CPBF.
	28-06-2000	P	J. Berdin	Modifications : +CRMP, +CRSL, +WAIP.
	06-07-2000	P	C. Amiens	Modifications : +ECHO
	13-07-2000	P	J. Berdin	New : +W32K
8.6	04-10-2000	P	D. Pochet	Modifications : +COPS, +WSTR
	05-10-2000	P	C. Amiens	Add execution conditions and SIM dependence of AT commands.
	12-10-2000	P	Y. Siraï	Add new command : +WUSS
	12-10-2000	P	J. Berdin	New indication : “+WIND: 9” (Audio ON)
	13-10-2000	P	D. Pochet	Modifications : +CPBF, +CPBW
	18-10-2000	P	D. Pochet	Modification of the PLMN list, with TSE13-318-20.doc updates.
	16-11-2000	P	D. Pochet	Modifications : +WIOR, +WIOW, +CRMP, +CMGL
	28-11-2000	P	D. Pochet	Modifications : +DS, \N, GSM sequences list

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8.7	19-09-2000	P	D. Pochet	New : +WCDM
	20-10-2000	P	D. Pochet	Modifications : +STSF, +STIN
	10-11-2000	P	D. Pochet	Modifications : Sim Toolkit new features
	15-12-2000	P	D. Pochet	Add +CME ERROR: 526 Modifications : Sim Toolkit, +CLCK
	27-12-2000	P	D. Pochet	New : +WSSW, +WPCS, +WCCS Modification : +CSCS
	05-01-2001	P	D. Pochet	Modifications : D, +CSNS
	10-01-2001	P	Y. Siraï	New : +WLCK
	12-01-2001	P	D. Pochet	Modification : +COPS Add +CME ERROR: 527, 528, 529
	12-01-2001	P	J. Berdin	Correction : Reply after ATH is OK (not NO CARRIER)
	16-01-2001	P	D. Pochet	New : +CPHS Modification : +WCCS informative example
	19-01-2001	P	D. Pochet	Modification : AT&V
	26-01-2001	P	D. Pochet	Modification : parameters storage
	09-02-2001	P	D. Pochet	Modification : +CSSN
	20-02-2001	P	D. Pochet	Modification : +STGR
	27-02-2001	P	J. Berdin	Correction : §9.5.3, length 14 is an example
	28-02-2001	P	D. Pochet	Modification : +CSSN (ECT notifications)
	08-03-2001	P	D. Pochet	Modification : parameters storage, +VIP
	15-03-2001	P	J. Berdin	Modification : AT+CALA. Add delete-alarm functionality.

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	19-03-2001	P	D. Pochet	Modification : +WCDM (new parameter)
	03-04-2001	P	D. Pochet	Modification : +ECHO

CONTENTS

1 INTRODUCTION 14
1.1 SCOPE OF THIS DOCUMENT 14
1.2 RELATED DOCUMENTS 14
1.3 ETSI SECRETARIAT 15
1.4 DEFINITIONS 15

2 AT COMMANDS FEATURES 16
2.1 WAVECOM LINE SETTINGS 16
2.2 COMMAND LINE 16
2.3 INFORMATION RESPONSES AND RESULT CODES 16

3 GENERAL BEHAVIORS 17
3.1 SIM INSERTION, SIM REMOVAL 17
3.2 BACKGROUNG INITIALISATION 18

4 GENERAL COMMANDS 19
4.1 MANUFACTURER IDENTIFICATION +CGMI 19
4.2 REQUEST MODEL IDENTIFICATION +CGMM 19
4.3 REQUEST REVISION IDENTIFICATION +CGMR 20
4.4 PRODUCT SERIAL NUMBER +CGSN 20
4.5 SELECT TE CHARACTER SET +CSCS 21
4.6 WAVECOM SET PHONEBOOK CHARACTER SET +WPCS 22
4.7 REQUEST IMSI +CIMI 23
4.8 CARD IDENTIFICATION +CCID 23
4.9 CAPABILITIES LIST +GCAP 24
4.10 REPEAT LAST COMMAND A/ 25
4.11 POWER OFF +CPOF 25
4.12 SET PHONE FUNCTIONALITY +CFUN 26
4.13 PHONE ACTIVITY STATUS +CPAS 27
4.14 REPORT MOBILE EQUIPEMENT ERRORS +CMEE 28
4.15 KEYPAD CONTROL +CKPD 29
4.16 CLOCK MANAGEMENT +CCLK 29
4.17 ALARM MANAGEMENT +CALA 30
4.18 RING MELODY PLAYBACK +CRMP 31
4.19 RINGER SOUND LEVEL +CRSL 33

5 CALL CONTROL COMMANDS 34
5.1 DIAL COMMAND D 34
5.2 HANG-UP COMMAND H 37

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5.3 ANSWER A CALL ATA 38
5.4 REMOTE DISCONNECTION 38
5.5 EXTENDED ERROR REPORT +CEER 39
5.6 DTMF SIGNALS +VTD, +VTS 40
5.7 REDIAL LAST TELEPHONE NUMBER ATDL 42
5.8 AUTOMATIC DIALING WITH DTR AT%DN 42
5.9 AUTOMATIC ANSWER ATS0 44
5.10 INCOMING CALL BEARER +CICB 44
5.11 SINGLE NUMBERING SCHEME +CSNS 46
5.12 GAIN CONTROL +VGR, +VGT 47
5.13 MICROPHONE MUTE CONTROL +CMUT 49
5.14 SPEAKER & MICROPHONE SELECTION +SPEAKER 50
5.15 ECHO CANCELLATION +ECHO 51
5.16 SIDETONE MODIFICATION +SIDET 54
5.17 INITIALIZE VOICE PARAMETERS +VIP 56

6 NETWORK SERVICE COMMANDS 57

6.1 SIGNAL QUALITY +CSQ 57
6.2 OPERATOR SELECTION +COPS 57
6.3 NETWORK REGISTRATION+CREG 61
6.4 READ OPERATOR NAME +WOPN 63
6.5 PREFERRED OPERATOR LIST +CPOL 64

7 SECURITY COMMANDS 67

7.1 ENTER PIN +CPIN 67
7.2 ENTER PIN2 +CPIN2 70
7.3 PIN REMAINING ATTEMPT NUMBER +CPINC 72
7.4 FACILITY LOCK +CLCK 73
7.5 CHANGE PASSWORD +CPWD 75

8 PHONEBOOK COMMANDS 77

8.1 SELECT PHONEBOOK MEMORY STORAGE +CPBS 77
8.2 READ PHONEBOOK ENTRIES +CPBR 78
8.3 FIND PHONEBOOK ENTRIES +CPBF 79
8.4 WRITE PHONEBOOK ENTRY +CPBW 80
8.5 PHONEBOOK PHONE SEARCH +CPBP 83
8.6 MOVE ACTION IN PHONEBOOK +CPBN 84
8.7 SUBSCRIBER NUMBER +CNUM 87
8.8 AVOID PHONEBOOK INIT +WAIP 88

9 SHORT MESSAGES COMMANDS 89

9.1 PARAMETERS DEFINITION 89
9.2 SELECT MESSAGE SERVICE +CSMS 90

9.3 NEW MESSAGE ACKNOWLEDGEMENT +CNMA 91
9.4 PREFERRED MESSAGE STORAGE +CPMS 94
9.5 PREFERRED MESSAGE FORMAT +CMGF 96
9.6 SAVE SETTINGS +CSAS 98
9.7 RESTORE SETTINGS +CRES 98
9.8 SHOW TEXT MODE PARAMETERS +CSDH 99
9.9 NEW MESSAGE INDICATION +CNMI 99
9.10 READ MESSAGE +CMGR 102
9.11 LIST MESSAGE +CMGL 104
9.12 SEND MESSAGE +CMGS 105
9.13 WRITE MESSAGE TO MEMORY +CMGW 106
9.14 SEND MESSAGE FROM STORAGE +CMSS 108
9.15 SET TEXT MODE PARAMETERS +CSMP 109
9.16 DELETE MESSAGE +CMGD 110
9.17 SERVICE CENTER ADDRESS +CSCA 112
9.18 SELECT CELL BROADCAST MESSAGE TYPES +CSCB 113
9.19 CELL BROADCAST MESSAGE IDENTIFIERS +WCBM 114
9.20 MESSAGE STATUS MODIFICATION +WMSC 115
9.21 MESSAGE OVERWRITING +WMGO 115
9.22 UNCHANGE SMS STATUS +WUSS 116

10 SUPPLEMENTARY SERVICES COMMANDS 117

10.1 CALL FORWARDING +CCFC 117
10.2 CALL BARRING +CLCK 118
10.3 MODIFY SS PASSWORD +CPWD 120
10.4 CALL WAITING +CCWA 120
10.5 CALLING LINE IDENTIFICATION RESTRICTION +CLIR 122
10.6 CALLING LINE IDENTIFICATION PRESENTATION +CLIP 123
10.7 CONNECTED LINE IDENTIFICATION PRESENTATION +COLP 125
10.8 ADVICE OF CHARGE +CAOC 126
10.9 ACCUMULATED CALL METER +CACM 127
10.10 ACCUMULATED CALL METER MAXIMUM +CAMM 128
10.11 PRICE PER UNIT AND CURRENCY TABLE +CPUC 129
10.12 CALL RELATED SUPPLEMENTARY SERVICES +CHLD 130
10.13 LIST CURRENT CALLS +CLCC 131
10.14 SUPPLEMENTARY SERVICE NOTIFICATIONS +CSSN 132
10.15 UNSTRUCTURED SUPPLEMENTARY SERVICE DATA +CUSD 133
10.16 CLOSED USER GROUP +CCUG 136

11 DATA COMMANDS 137

11.1 BEARER TYPE SELECTION +CBST 137
11.2 SELECT MODE +FCLASS 139
11.3 SERVICE REPORTING CONTROL +CR 140
11.4 CELLULAR RESULT CODES +CRC 140

11.5 DTE-DCE LOCAL RATE REPORTING +ILRR 141
11.6 RADIO LINK PROTOCOL PARAMETERS +CRLP 142
11.7 OTHERS RADIO LINK PARAMETERS +DOPT 143
11.8 SELECT DATA COMPRESSION %C 144
11.9 V42 BIS DATA COMPRESSION +DS 145
11.10 V42 BIS DATA COMPRESSION REPORT +DR 147
11.11 SELECT DATA ERROR CORRECTING MODE \N 148

12 FAX COMMANDS 150

12.1 TRANSMIT SPEED +FTM 150
12.2 RECEIVE SPEED +FRM 151
12.3 HDLC TRANSMIT SPEED +FTH 152
12.4 HDLC RECEIVE SPEED +FRH 152
12.5 STOP TRANSMISSION AND WAIT +FTS 153
12.6 RECEIVE SILENCE +FRS 154
12.7 SETTING UP THE PC FAX APPLICATION: 155

13 FAX CLASS 2 COMMANDS 156

13.1 TRANSMIT DATA +FDT 156
13.2 RECEIVE DATA +FDR 156
13.3 TRANSMIT PAGE PUNCTUATION +FET 157
13.4 PAGE TRANSFER STATUS PARAMETERS +FPTS 157
13.5 TERMINATE SESSION +FK 158
13.6 PAGE TRANSFER BIT ORDER +FBOR 158
13.7 BUFFER SIZE REPORT +FBUF 159
13.8 COPY QUALITY CHECKING +FCQ 159
13.9 CAPABILITY TO RECEIVE +FCR 160
13.10 CURRENT SESSIONS PARAMETERS +FDIS 160
13.11 DCE CAPABILITIES PARAMETERS +FDCC 163
13.12 LOCAL ID STRING +FLID 164
13.13 PAGE TRANSFER TIMEOUT PARAMETER +FPHCTO 165
13.14 FAX CLASS 2 INDICATION MESSAGES 165

14 V24-V25 COMMANDS 167

14.1 FIXED DTE RATE +IPR 167
14.2 DTE-DCE CHARACTER FRAMING +ICF 168
14.3 DTE-DCE LOCAL FLOW CONTROL +IFC 169
14.4 SET DCD SIGNAL &C 171
14.5 SET DTR SIGNAL &D 171
14.6 SET DSR SIGNAL &S 172
14.7 BACK TO ONLINE MODE O 172
14.8 RESULT CODE SUPPRESSION Q 173
14.9 DCE RESPONSE FORMAT V 173
14.10 DEFAULT CONFIGURATION Z 174

14.11 SAVE CONFIGURATION &W 174
14.12 AUTO-TESTS &T 175
14.13 ECHO E 176
14.14 RESTORE FACTORY SETTINGS &F 176
14.15 DISPLAY CONFIGURATION &V 177
14.16 REQUEST IDENTIFICATION INFORMATION I 177

15 SPECIFIC AT COMMANDS 180

15.1 CELL ENVIRONMENT DESCRIPTION +CCED 180
15.2 AUTOMATIC RXLEV INDICATION +CCED 181
15.3 GENERAL INDICATIONS +WIND 182
15.4 DATA CIPHERING MODE BETWEEN ME AND MSC +ALEA 184
15.5 DATA CIPHERING MODE +CRYPT 185
15.6 KEY MANAGEMENT +EXPKEY 186
15.7 INFORMATIONS ON PLMN +CPLMN 186
15.8 ANALOG DIGITAL CONVERTERS MEASUREMENTS +ADC 187
15.9 MOBILE EQUIPMENT EVENT REPORTING +CMER 188
15.10 READ LANGUAGE PREFERENCE +WLPR 189
15.11 WRITE LANGUAGE PREFERENCE +WLPW 190
15.12 READ GPIO VALUE +WIOR 190
15.13 WRITE GPIO VALUE +WIOW 191
15.14 ABORT COMMAND +WAC 191
15.15 PLAY TONE +WTONE 192
15.16 PLAY DTMF TONE +WDTMF 194
15.17 WAVECOM DOWNLOADING +WDWL 196
15.18 WAVECOM VOICE RATE +WVR 196
15.19 DATA RATE +WDR 198
15.20 HARDWARE VERSION +WHWV 199
15.21 DATE OF PRODUCTION +WDOP 200
15.22 WAVECOM SELECT VOICE GAIN +WSVG 201
15.23 WAVECOM STATUS REQUEST +WSTR 202
15.24 WAVECOM SCAN +WSCAN 203
15.25 WAVECOM RING INDICATOR MODE +WRIM 204
15.26 WAVECOM 32KHZ POWERDOWN MODE +W32K 206
15.27 WAVECOM CHANGE DEFAULT MELODY +WCDM 207
15.28 WAVECOM SOFTWARE VERSION +WSSW 208
15.29 WAVECOM CUSTOM CHARACTER SET +WCCS 208
15.30 WAVECOM LOCK +WLCK 211
15.31 CPHS COMMAND +CPHS 212

16 SIM TOOLKIT 215

16.1 OVERVIEW OF SIM APPLICATION TOOLKIT 215
16.2 EXCHANGED MESSAGES DURING A SIM TOOLKIT OPERATION 218
16.3 SIM TOOLKIT COMMANDS 219

17 OTHER AT COMMANDS 239
17.1 V.25 TER RECOMMANDATION 239
17.2 GSM 07.05 RECOMMANDATION 239
17.3 GSM 07.07 RECOMMANDATION 239

18 APPENDICES 240
18.1 ME ERROR RESULT CODE : +CME ERROR: <ERROR> 240
18.2 MESSAGE SERVICE FAILURE RESULT CODE: +CMS ERROR : <ER> 241
18.3 SPECIFIC ERROR RESULT CODES 242
18.4 FAILURE CAUSE FROM GSM 04.08 RECOMMANDATION (+CEER) 243
18.5 SPECIFIC FAILURE CAUSE FOR +CEER 244
18.6 GSM 04.11 ANNEX E-2: MOBILE ORIGINATING SM-TRANSFER 245
18.7 UNSOLICITED RESULT CODES 248
18.8 FINAL RESULT CODES 249
18.9 INTERMEDIATE RESULT CODES 250
18.10 PARAMETERS STORAGE 251
18.11 GSM SEQUENCES LIST 254
18.12 OPERATOR NAMES 257

19 APPENDIX A (INFORMATIVE) 265
19.1 INFORMATIVE EXAMPLE ABOUT THE PIN REQUIRED 265
19.2 INFORMATIVE EXAMPLE ABOUT PHONEBOOKS 271
19.3 INFORMATIVE EXAMPLE ABOUT SHORT MESSAGES 275
19.4 INFORMATIVE EXAMPLE ABOUT FAX CLASS 2 276

20 APPENDIX B: SUPPORT OF SIM TOOLKIT BY THE M.E. 280

21 APPENDIX C: STRUCTURE OF TERMINAL PROFILE 282

22 APPENDIX D: COMMAND TYPE AND NEXT ACTION INDICATOR. 285

23 APPENDIX E: CODING OF ALPHA FIELDS IN THE SIM FOR UCS2 286

24 APPENDIX F: SPECIFICATION OF POWER DOWN CONTROL VIA RS232 289

25 APPENDIX G: EXECUTION CONDITIONS AND SIM DEPENDENCE OF AT COMMANDS 291
25.1 GENERAL COMMANDS 291
25.2 CALL CONTROL COMMANDS 291
25.3 NETWORK SERVICE COMMANDS 292
25.4 SECURITY COMMANDS 292

25.5 PHONEBOOK COMMANDS 293
25.6 SHORT MESSAGES COMMANDS 293
25.7 SUPPLEMENTARY SERVICES COMMANDS 294
25.8 DATA COMMANDS 294
25.9 FAX COMMANDS 295
25.10 FAX CLASS 2 COMMANDS 295
25.11 V24-V25 COMMANDS 295
25.12 SPECIFIC AT COMMANDS 296
25.13 SIM TOOLKIT COMMANDS 297

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

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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”.

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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.

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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 ERROR 10” (SIM not inserted)
- 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**.

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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.
- 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.

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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	WAVECOM MODEM OK
Note : Get manufacturer identification	*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.

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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 "900^{E}" (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*

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. See also +WPCS for the phonebooks' character sets.

4.5.2 Syntax :

Command syntax : AT+CSCS=<Character Set>

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*
AT+CSCS=? *Note : Get possible values*	+CSCS: ("GSM","PCCP437","CUSTOM","HEX") OK *Note : possible values*

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4.5.3 Defined values :

<Character Set>	**"GSM"**	GSM default alphabet.
	"PCCP437"	PC character set code page 437.
	"CUSTOM"	User defined character set (cf. +WCCS command).
	"HEX"	Hexadecimal mode. No character set used ; the user read or write directly hexadecimal values.

4.6 Wavecom set Phonebook Character Set +WPCS

4.6.1 Description :

This **specific** command informs the ME on which character set is used for the phonebooks by the TE. ME is then able to convert each character of entered or displayed string. This is used to read or write phonebooks' entries. See also +CSCS for the short messages character sets.

4.6.2 Syntax :

Command syntax : AT+WPCS=<Character Set>

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

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4.6.3 Defined values :

<Character Set>	**"TRANSPARENT"**	Transparent mode. The strings are displayed and entered as they are stored in SIM or in ME.
	"CUSTOM"	User defined character set (cf. +WCCS command).
	"HEX"	Hexadecimal mode. No character set used ; the user read or write directly hexadecimal values.

4.7 Request IMSI +CIMI

4.7.1 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.

4.7.2 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.

4.8 Card Identification +CCID

4.8.1 Description :

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

4.8.2 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.

4.9 Capabilities list +GCAP

4.9.1 Description :

This command gives the complete capabilities list.

4.9.2 Syntax :

Command syntax : AT+GCAP

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

4.10 Repeat last command A/

4.10.1 Description :

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

4.10.2 Syntax :

Command syntax : *A/*

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

4.11 Power off +CPOF

4.11.1 Description :

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

4.11.2 Syntax :

Command syntax : AT+CPOF

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

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4.12 Set phone functionality +CFUN

4.12.1 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 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.

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4.12.2 Syntax :

Command syntax : AT+CFUN=<functionality level>

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*

4.13 Phone activity status +CPAS

4.13.1 Description :

This command returns the activity status of the mobile equipment.

4.13.2 Syntax :

Command syntax : AT+CPAS

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

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4.13.3 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)

4.14 Report Mobile Equipement errors +CMEE

4.14.1 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.

4.14.2 Syntax :

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

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

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4.15 Keypad control +CKPD

4.15.1 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.

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,*,#).

4.15.2 Syntax :

Command syntax : AT+CKPD=<keys>

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

4.16 Clock Management +CCLK

4.16.1 Description :

This command is used to set or get the current date and time of the ME real-time clock.

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

Valid years are 98 (for 1998) to 97 (for 2097). Seconds field is not mandatory.

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

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4.16.2 Syntax :

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

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

4.17 Alarm Management +CALA

4.17.1 Description :

This command is used to set alarms date/time in the ME.

String format of alarm : "yy/MM/dd,hh:mm:ss" (refer +CCLK).

Maximum number of alarms is 16. Seconds are not taken into account.

4.17.2 Syntax :

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

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

Command	Possible responses
AT+CALA="00/06/09,07:30" *Note : set an alarm for June 9th, 2000 at 7:30 am*	OK *Note : Alarm stored*
AT+CALA="99/03/05,13:00:00"	+CME ERROR 3

Note : set an alarm for March 5th, 1999 at 1:00 pm	Note : Invalid alarm (date/time expired)
AT+CALA? *Note : list all alarms*	+CALA: "00/06/08,15:25:00",0 +CALA: "00/06/09,07:30:00",1 +CALA: "00/06/10,23:59:00",2 *Note : three alarms are set (index 0, 1, 2)*
	+CALA: "00/06/08,15:25:00",0 *Note : an alarm occurs (index 0)*
AT+CALA="",2 *Note : delete alarm index 2*	OK *Note : Alarm index 2 deleted*
AT+CALA? *Note : list all alarms again*	+CALA: "00/06/09,07:30:00",1 *Note : Only one alarm (index 1)*

4.18 Ring Melody Playback +CRMP

4.18.1 Description :

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

For incoming voice, data or fax call melodies, 10 manufacturer-defined ones can be playback (in loop).

For incoming short message sounds, 2 manufacturer-defined ones can be playback (one time). Melody #1 : short beep / Melody #2 : long beep.

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

4.18.2 Syntax :

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

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Command	Possible responses
AT+CRMP=0,7,0,2 *Note : Play voice call melody index 2 with volume level 7.*	OK *Note : Melody Playback.*
AT+CRMP=0,,,0 *Note : Stop the melody.*	OK Note : The melody is stopped.
AT+CRMP=? *Note : supported parameters*	+CRMP: (0-3),(0-15),0,(0-10) OK

4.18.3 Defined values :

<call type>	**0**	Incoming voice call
	1	Incoming data call
	2	Incoming fax call
	3	Incoming short message (SMS)
<volume>	**0**	Min volume
	…	
	6	Default volume
	…	
	15	Max volume
<type>	**0**	Manufacturer Defined (default)
<index>	**0**	Stop Melody Playback
	1-10	Melody ID for voice/data/fax call type (default : 1)
	1-2	Melody ID for short message (default : 1)

4.19 Ringer Sound Level +CRSL

4.19.1 Description :

This command allows to set/get the sound level.of the incoming call ringer.

Set command change <volume> default value of +CRMP command.

4.19.2 Syntax :

Command syntax : AT+CRSL=<sound level>

Command	Possible responses
AT+CRSL=0 *Note : Set volume to Min.*	OK *Note : Current ring playing with Min. volume.*
AT+CRSL=15 *Note : Set volume to Max.*	OK Note : Current ring playing with Max. volume.
AT+CRSL? *Note : get current ringer sound level*	+CRSL: 15 OK Note : Current level is 15 (max.)
AT+CRSL=? *Note : supported parameters*	+CRSL: (0-15) OK

4.19.3 Defined values :

<sound level> **0** Min volume

6 Default volume (default)

15 Max volume

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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.

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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**

See paragraph 0 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 commands :

ATD><index>; for calling <index> from the selected phonebook (by +CPBS command).

ATD>"BILL"; for calling "BILL" from the selected phonebook. Not allowed with **"RC"**, **"MC"**, **"LD"**, **"EN"** and **"SN"** phonebooks.

ATD>mem<index>; (mem represents a phonebook, see +CPBS command) is a way to dial directly from a phonebook number. Not allowed with **"ON"** phonebook.

ATD>mem"BILL"; for calling "BILL" from the "mem" phonebook. Not allowed with **"RC"**, **"MC"**, **"LD"**, **"EN"** and **"SN"** phonebooks.

5.1.2 Syntax :

Command syntax : ATD<nb>[<I>][;]
ATD>[<mem>]<index>[<I>][;]
ATD>[<mem>]<name>[<I>][;]

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Command	Possible responses
AT+CPBS? *Note : Which phonebook is selected ?*	+CPBS:"SM",8,10 *Note : ADN phonebook is selected, 8 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, it is considered as a phone number, and a new communication is started.

See paragraph 18.11 to have the list of supported sequences.

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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

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*

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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*	OK *Note : Call disconnected*

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.

5.6.2 +VTD Syntax :

Command syntax : AT+VTD=<n>

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}

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5.6.4 +VTS Syntax :

Command syntax : AT+VTS=<Tone>

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

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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

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

The number is dialed on DTR OFF to ON transition.

The short message is sent on DTR OFF to ON transition.

5.8.2 Syntax :

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

Command	Possible responses
AT%D1; *Note : Activates DTR number dialing*	OK *Note : Command has been executed*
DTR is OFF DTR switches ON *Note : The number in the first location of the ADN is dialed automatically* DTR switches OFF *Note : The module goes on-hook*	
AT%D2 *Note : Activates DTR sort message sending*	OK *Note : Command has been executed*

5.8.3 Defined values :

<n> (0-2) : for activate or deactivate the automatic message sending or number dialing.
Informs the module that the number is a voice rather than a fax or data number.

AT%D0 Deactivates automatic DTR number dialing / message sending

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.**

AT%D2	Activates automatic DTR message sending if DTR switches from OFF to ON

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=<value>

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).

Note: set command +CICB affects +CSNS current value.

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5.10.2 Syntax :

Command syntax : AT+CICB=<mode>

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

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5.11 Single Numbering Scheme +CSNS

5.11.1 Description :

This command selects the bearer to be used when MT single numbering scheme call is established (Incoming Call Bearer, see +CICB).

Note: set command +CSNS affects +CICB current value.

5.11.2 Syntax :

Command syntax : AT+CSNS

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

5.11.3 Defined values :

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

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5.12 Gain control +VGR, +VGT

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

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5.12.2 Syntax :

Command syntax : AT+VGR=<Rgain>
AT+VGT=<Tgain>

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.I*
AT+VGT=? *Note : Test command*	+VGT : (0-255) *Note : Possibles values*

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5.13 Microphone Mute Control +CMUT

5.13.1 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.

5.13.2 Syntax :

Command syntax : AT+CMUT=<mode>

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*

5.13.3 Defined values :

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

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1 : microphone mute on.

5.14 Speaker & Microphone selection +SPEAKER

5.14.1 Description

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

5.14.2 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*

5.14.3 Defined values :

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

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5.15 Echo Cancellation +ECHO

5.15.1 Description :

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

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

5.15.2 Syntax :

Command syntax : AT+ECHO= <mode> [,<AlgoId>, <Param1>,<Param2>, <Param3>,<Param4>,<Param5>,<Param6>]

Command	Possible responses
AT+CMEE=1 *Note: Enables the use of result code*	OK
AT+SPEAKER?	+ SPEAKER: 0 OK *Note : Speaker ONE and Micro ONE are active*
AT+SIDET=0 *Note: Deactivate the Sidetone*	OK
AT+SIDET?	+SIDET: 0,0
AT+ECHO? *Note : Read current settings*	+ECHO: 0,1,0,3,10,7 OK
AT+ECHO=1,1,0,3,10,7 *Note : Active Echo cancellation 1 for Mic/Speak one.*	OK

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AT+ECHO? *Note : Read current settings*	+ECHO: 1,1,0,3,10,7 OK
AT+ECHO=1,3,30,8000,256 *Note : Activate the Echo cancellation 3*	+CME ERROR: 519 *Note : The new algo will be activated after a reset the module*
AT+ECHO? *Note : Read the Echo cancellation settings*	+ECHO: 3,3,30,8000,256 OK
AT+CFUN=1 Note: Reset the module	OK
AT+ECHO? *Note : Read current settings*	+ECHO: 1,3,30,8000,256 OK
AT+ECHO=0 Note: Deactivate the Echo Cancellation	OK

5.15.3 Defined values:

<mode> **0** : Deactivate Echo

1 : Activate Echo

<AlgoId> **1** : Echo cancellation 1

3 : Echo cancellation 3 (optional)

Echo cancellation 1 (4 parameters) :

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

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

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

<Step> **0**: 1 db
1: 2 db
2: 3 db
3: 4 db (default)

The parameter **<PcmThRel>** specifies the relative threshold between max and min energy information.

The allowed range is **[0 ; 31]**. (**10** default)

The parameter **<PcmThMax >** specifies threshold of max energy information.

The allowed range is **[0 ; 31]**. (**7** default)

Echo Cancellation 3 (3 parameters) :

<AlgoParam> high value leads to high echo attenuation but the full-duplex quality will be less efficient.
The allowed range is [0 ; 63]. (**30** default)

<NoiseThres> indicate the noise threshold. Low value leads to high noise attenuation. The threshold 32767 indicates no noise attenuation
The allowed range is [0 ;32767]. (**8000** default)

<NmbTaps> indicate the Number of Taps of the Adaptive Filter
The allowed range is [64 ;256]. (**256** default)

-64 taps is for short Echo
-256 taps is for long Echo.

Read Command: **AT+ECHO?**

This command returns the current settings of the Echo cancellation.

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Returns:+ECHO: <Status>,<AlgoId>, <Param1>,<Param2>, <Param3>,
<Param4>, <Param5>,<Param6>

The number of parameters displayed depend on algo used. For Echo cancellation 1 4 parameters are displayed, 3 parameters are displayed for Echo cancellation 3.

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

PS: You can activate/ deactivate the echo cancellation during a call without resetting the module if you don't change the AlgoId.

5.16 SideTone modification +SIDET

5.16.1 Description :

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

5.16.2 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*

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5.16.3 Defined values :

<val1>	**0**: SideTone is disabled **1**: SideTone is enabled
<val2>	**0**: 0 db **1**: - 6 db **2**: - 12 db **3**: - 18 db

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5.17 Initialize Voice Parameters +VIP

5.17.1 Description :

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

These voice parameters include :

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

5.17.2 Syntax :

Command syntax : AT+VIP=<n>

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=1 *Note : Restore the factory settings in EEPROM with the current Echo cancellation algo different of the default algo.*	CME ERROR: 519 *Note : Reset the module to accept the new algo.*
AT+VIP=? *Note : List of supported <n>s*	+VIP: (1) OK

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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 :

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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.

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. If this attempt is successful, the operator indicated by the application is selected and registered, then the mobile enters the ***automatic** mode*.

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>[,<format>][,<oper>] :

OK	(Network is selected in full service)
+CME ERROR: 30	(No network service),
+CME ERROR: 32	(Network not allowed – emergency calls only)
+CME ERROR: 3	
+CME ERROR: 4	(Wrong parameters)
+CME ERROR: 527	(Please wait, and retry your selection later)
+CME ERROR: 528	(Location update failure – emergency calls only)
+CME ERROR: 529	(Selection failure – emergency calls only)

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]

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If an incomming call occur during an ask plmn list, the operation is aborted **(+CME ERROR: 520**) and the unsolicited RING appears.

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=1,1,23433 *Note : Ask for registration on UK Orange network*	+CME ERROR: 529 *Note : Selection failed – emergency calls only*
AT+COPS=0 *Note : Ask for registration on home network*	OK *Note : Succeeded*
AT+COPS=3,0 *Note : Set <format> to long alphanumeric*	OK
AT+COPS? *Note : Ask for current PLMN*	+COPS: 0,0,"F Itinéris" OK *Note : Home PLMN is France Telecom Itinéris*

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AT+COPS=2 *Note : Ask for deregistration from network*	OK *Note : Succeeded*
AT+COPS? *Note : Ask for current PLMN*	+COPS: 2 *Note : ME is unregistered until <mode>=0 or 1 is selected*

6.2.3 Defined values :

The parameters values are the following ones:

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

<format>: format 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.

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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*

6.3.3 Defined values :

<mode> **0**: Disable network registration unsolicited result code (**default**)

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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

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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*

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 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*

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AT+CPOL=7,2,20801 *Note : Add a network to the list*	OK
AT+CPOL? *Note : Give a wrong operator*	+CPOL: 1,0,"D1-TELEKOM" +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*	

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AT+CPOL?	+CPOL: 1,0,"D1-TELEKOM" +CPOL: 6,0,"F SFR" +CPOL: 8,2,77777" +CPOL: 9,0,"F Itinértis" OK
Note : Ask for preferred list of networks	*Note : Preferred list of networks in long alphanumeric format*

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?

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?	*Read the PIN status*
+CPIN: SIM PIN	*The GSM module requires SIM PIN*
AT+CPIN=1235	*First attempt to enter a SIM PIN*
+CME ERROR: 16	*Bad PIN*

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

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	OK

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Note : Enter SIM PIN2	
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: READY".
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>

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 :

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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…*

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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).

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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 *Note : Enable PIN*	OK *Note : PIN was right*
AT+CLCK? *Note : Read PIN status*	+CLCK:(“PS”,0),(“SC”,0),(“FD”,0),(“PN“,0),(“PU“,0),(“PP“,0),(“PC“,0) OK *Note : PIN is enables, no SIM lock, no network lock, no information 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”,”AC”,”FD”,"PN","PU","PP",”PN”) OK *Note : Supported facilities*

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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*	+CLCK : 1,2 OK *Note : BAOC activate for data calls only*
AT+CLCK=”SC”,0,0000 *Note : Disable PIN*	+CME ERROR: 521 *Note : PIN deactivation is forbidden with this SIM card*

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).

“PU” : Network Subset lock with a 8 digits password (NSCK).

“PP” : Service Provider lock with a 8 digits password (SPCK).

“PC” : Corporate lock with a 8 digits password (CCK).

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

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

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

<class> **1** : Voice (telephony)
2 : Data (refer to all bearer services)
3 : Fax (facsimile services)
4 : Short Message service
5: 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),("PU",8),("PP",8), ("PC",8)

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	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*

8 Phonebook commands

8.1 Select phonebook memory storage +CPBS

8.1.1 Description :

This command selects phonebook memory storage. The available phonebooks are:

“SM” : ADN (SIM phonebook)

“FD” : FDN (SIM fixdialling, restricted phonebook)

“ON” : MSISDN (SIM own numbers)

“EN” : EN (SIM emergency number)

“LD” : LND (combined ME and SIM last dialling phonebook)

“MC” : MSD (ME missed calls list)

“ME” : ME (ME phonebook)

“MT” : MT (combined ME and SIM phonebook)

“RC” : LIC (ME received calls list)

“SN” : SDN (Services dialling phonebook)

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","LD","MC","ON","ME","RC","MT", "SN")

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	OK *Note : only "EN" phonebook is not supported with this SIM card.*
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.

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=11 *Note : Read entry 11 (UCS2 format)*	+CPBR :11,"0146290921",129,"8000010002FFFF" OK *Note: Display location 11*
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 "LD", "RC", "MC", "SN" phonebooks and for "EN" phonebook, which does not contain alphanumeric field.

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

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*

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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"*
AT+CPBF="H" *Note : Read entries with "H"*	+CME ERROR: 22 *Note: Entry not found*
AT+CPBF="800001FFFF" *Note : Read entries starting with 0001 UCS2 character*	+CPBF : 11, "0146290921",129,"8000010002FFFF" OK *Note : Display locations with text field starting with 0001 UCS2 character*
AT+CPBF="8045C" *Note : Read entries with "8045C" (ASCII format)*	+CME ERROR: 22 *Note: Entry not found. The string has a bad UCS2 format, so it was considered as an ASCII string*

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", "LD", "MC", "RC", "MT", "SN" phonebooks, which are not writable.

8.4.2 Syntax :

Command syntax : AT+CPBW=<index>[,<number>[,<type>[,<text>]]]

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*

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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=6,"01292349",129,"8000410042" *Note : write location 6 (UCS2 format for the <text> field)*	OK *Note : Location 6 is written*
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*
AT+CPBW=8,"01292349",129,"80xyz" *Note : write location*	OK *Note : Location 8 is written. The string has a bad UCS2 format, so it is considered as an ASCII string*

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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*

8.4.3 Defines values :

<index> integer type value depend of capacity of phonebook memory.

<number> Phone number in ASCII format.

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

<text> string type.

REM: For the parameter <text> all string started by "80" , "81" or "81" are considered in UCS2 format. See the APPENDIX E (Coding of Alpha fields in the SIM for UCS2).

The +CSCS (Select Character set) command not affect the format for the phonebook entries.

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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,"01290101",129,"Eric" OK *Note : Display location with this phone number*
AT+CPBP="01290202" *Note : Read entries with this phone number*	+CPBP : 15,"+331290202",145,"David" OK *Note : Display location with this phone number*
AT+CPBP="+331288575" *Note : Read entries with this phone number*	+CPBP : 15,"+331290101",145,"8045682344FFFF" (UCS2 format) 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*

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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>

Command	Possible responses
AT+CPBN=? *Note : Test command*	+CPBN: (0-5) OK *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+CPBW=,"0146290800",129,"WM" *Note : Write an item at the first free location*	OK *Note : No information about this location*
AT+CPBN=4	+CPBF : 15,"+331290101",145,"Eric"

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Note : Read the last read location	OK *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*
AT+CPBF="800041FFFF" *Note : Find"800041" in phonebook*	+CPBF : 15,"+3312345",145,"8000414339FFFF" OK *Note : Display this location*
AT+CPBN=4 *Note : Read the last read location*	+CPBF : 15,"+3312345",145,"8000414339FFFF" OK *Note : Display the last read location*

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 (usable only if a read operation was performed on the current phonebook since the end of initialization (+WIND: 4))
5 : Last written item (usable only if a write operation was performed on the current phonebook since the end of initialization (+WIND: 4))

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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 +CNUM : "80001002FFFF", "+0183773", 145 (UCS2 format) *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

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8.8 Avoid phonebook init +WAIP

8.8.1 Description :

This specific command allows to inhibit the initialization of all phonebooks 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.

Note: All phonebook commands are not allowed when "+WAIP=1" (after boot). If phonebook command is entered, "+CME ERROR: 3" is return.

8.8.3 Defined values :

<mode> **0** : Normal initialization (with phonebooks)
1 : No phonebook initialization

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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 :
"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.

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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

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.

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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).

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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*

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 07913366003000F1240B913366920547F300000030 03419404800B506215D42ECFE7E17319 *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…

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9.4.2 Syntax :

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

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

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.

In this example, the length of **octets** of the TPDU buffer is 14, coded as GSM 03.40

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

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<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

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.

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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>

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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.

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<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>

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>

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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 :
+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)

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+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.

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*

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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 ! OK *Note : 2 messages are unread, these messages will then have their status changed to "REC READ" (+CSDH:0)*
AT+CMGL="REC READ"	+CMGL: 2,"REC READ","0146290800", <CR><LF>

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Note : List read messages in text mode	Keep cool OK
AT+CMGL="STO SENT" *Note : List stored and sent messages in text mode*	OK *Note : No message found*
AT+CMGL=1 *Note : List read messages in PDU mode*	+CMGL: 1,1,,26 <CR><LF> 07913366003000F3040B913366920547F40013 00119041253040074 1AA8E5A9C5201 OK

9.11.3 Defined values

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

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

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').

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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*

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 0).*

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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"
3 : "STO SENT"

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<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*

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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?	+CSMP: 0,0,0,0
	OK
Note : current values	*Note : No validity period*
	<dcs>= PCCP437 alphabet (8 bits → 7 bits)
AT+CMPS=17,23,64,244	OK
Note :<vp> = 23 (2 hours, relative format)	*Note : Command correct*
<dcs> = GSM 8 bits alphabet	

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

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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. Compressed text is not supported. Only GSM default alphabet, 8 bit data and UCS2 alphabet are supported.

9.16 Delete message +CMGD

9.16.1 Description :

This command is used to delete one or several messages from prefered message storage ("BM" SMS CB 'RAM storage' or "SM" SMSPP storage 'SIM storage').

9.16.2 Syntax :

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

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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*
AT+CMGD=1,0	OK *Note : The message from the preferred message storage at the location 1 is deleted*
AT+CMGD=1,1	OK *Note : All READ messages from the preferred message storage are deleted*
AT+CMGD=1,2	OK *Note : All READ messages and SENT mobile originated messages are deleted*
AT+CMGD=1,3	OK *Note : All READ, SENT and UNSENT messages are deleted*
AT+CMGD=1,4	OK *Note : All messages are deleted*

9.16.3 Defines values

<index> **(1-20)** When the preferred message storage is "BM"

Integer type values in the range of location numbers of SIM Message memory when the preferred message storage is “SM”.

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

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>

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*

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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 :

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

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.

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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.
+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.

9.22 Unchange SMS Status +WUSS

9.22.1 Description :

+WUSS allow to keep SMS Status to UNREAD after +CMGR or +CMGL.

9.22.1.1 Syntax :

Command syntax : AT+WUSS = <mode>

<mode> : 1 The SMS Status will not change.

<mode> : 0 The SMS Status will change.

Possible responses:

OK

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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*

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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

<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.

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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)

<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.

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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*

Whatever 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> […]]

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" or +CCWA:"0146290800",145,1,"8023459678FFFF" (UCS2 format) *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

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<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>

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

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<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.

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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 *Note : Enable CLIP*	OK *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” or +CLIP: “0146290800”,129,1,,,”8000204212FFFF” (UCS2 format) *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

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<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" or +COLP:"0146290800",129,1,,,"8000204212FFFF" (UCS2 format) OK *Note : Connected outgoing line number and name presentation*
AT+COLP=0 *Note : Desactivate COLP*	OK *Note : Command valid*

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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	OK

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Note : Deactivate unsolicited report of CCM value	*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*

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. "00001^{E}" 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.

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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)*

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.

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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*	+ CME ERROR : 16

PIN2)	*Note : Incorrect password*
AT+CPUC? *Note : Request Currency and Price*	+CPUC:"FFR","0.82" OK *Note : Currency= "FFR"* *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: (0-4, 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.

4 : Connects the two calls and disconnects the subscriber from both calls (Explicit Call Transfer).

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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
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

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<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. *(for UCS2 format see commands examples +CLIP, +CCWA or +COLP)*

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>[,<index>]** is sent before any other MO call setup result codes.

When <m>=1 and a supplementary service notification is received during a call, unsolicited result code **+CSSU:<code2>[,<index>[,<number>,<type>]]** is sent.

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=?

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10.14.3 Defined values

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

<m> (parameter sets/shows the +CSSU result code presentation status) :
0 : disable
1 : enable

<code1>
4 : Closed User Group call, with CUG <index>
5 : outgoing calls are barred
6 : incoming calls are barred
7 : CLIR suppresssion rejected

<code2>
1 : Closed User Group call, with CUG <index>
2 : call has been put on hold (during a voice call, <number> & <type> fields may be present)
3 : call has been retrieved (during a voice call, <number> & <type> fields may be present)
4 : multiparty call entered (during a voice call, <number> & <type> fields may be present)
5 : call on hold has been released (during a voice call)
7 : call is being connected (alerting) with the remote party in alerting state in Explicit Call Transfert operation (during a voice call)
8 : call has been connected with the other remote party in Explicit Call Transfert operation (during a voice call, <number> & <type> fields may be present)

<index> Closed User Group index

<number> String type phone number

<type> type of address

10.15 Unstructured supplementary service data +CUSD

10.15.1 Description :

The USSD supplementary service is described by the GSM 02.90.

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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>]]

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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

<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> the default alphabet and the UCS2 alphabet are supported.

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>]]

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.

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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?	+CBST:7,0,1 OK

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Note : Current values	*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)
	2 :	1200 bps	(Modem type V.22)
	3:	1200/75 bps	(Modem type : V.23)
	4 :	2400 bps	(Modem type : V.22bis)
	5 :	2400 bps	(Modem type : V.26ter)
	6 :	4800 bps	(Modem type : V.32)
	7 :	9600 bps	(Modem type : V.32)
	8 :	Specific	
	12(*) :	9600 bps	(Modem type : V.34)
	14(**) :	1400 bps	(Modem type : V.34)
	65 :	300 bps	(Modem type : V.110)
	66 :	1200 bps	(Modem type : V.110)
	68 :	2400 bps	(Modem type : V.110)
	70 :	4800 bps	(Modem type : V.110)
	71 :	9600 bps	(Modem type : V.110)
	75(*) :	14400 bps	(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

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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

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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*

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.

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+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.

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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*

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*

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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
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*

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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>

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

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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: 3,0,4096,20 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)**,

< 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>

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< 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 20)**,

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	OK

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Note : Reporting enabled	*Note : Command valid*
AT+DR? *Note : Current value*	+DR: 1 OK *Note : Command valid*

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 : no error correction*	OK
AT\N? *Note : Current value*	0 OK *Note : Command valid*
AT\N4 *Note : LAPM error correction selection*	+CME ERROR: 3 *Note : V42 feature is not provided*

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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.

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)

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72	: 7200 bps	(Modem type : V.29)
73(*)	: 7200 bps (long)	(Modem type : V.17)
74(*)	: 7200 bps (short)	(Modem type : V.17)
96	: 9600 bps	(Modem type : V.29)
97(*)	: 9600 bps (long)	(Modem type : V.17)
98(*)	: 9600 bps (short)	(Modem type : V.17)
121(*)	: 12000 bps (long)	(Modem type : V.17)
122(*)	: 12000 bps (short)	(Modem type : V.17)
145(*)	: 14400 bps (long)	(Modem type : V.17)
146(*)	: 14400 bps (short)	(Modem type : V.17)

(*) Available for WISMO 2C only

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)*.

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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.

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*

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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.

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.

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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.

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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

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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.

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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

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 :*

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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*

13.8 Copy quality checking +FCQ

13.8.1 Description :

This command controls the Copy Quality checking for receiving faxs.

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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.

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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

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**
** : 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
	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.

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<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.

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

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	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

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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:

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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.
100 : Unspecified receive phase D error.

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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 :

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- 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).

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

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	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)

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

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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	OK

Note : Modem switches from data to command mode when DTR switches from ON to OFF	*Note : Command valid*
AT&D2 *Note : Upon DTR switch from ON to OFF, the call is cleardown*	OK *Note : Command valid*

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

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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*
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>*

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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 0

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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*

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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 18.10.

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 restoring the factory settings*	OK *Note : Done*

14.15 Display configuration &V

14.15.1 Description

This command is used to display modem configuration.

&V
&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, &C, &D, %C
+IPR, +ICF, +IFC

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 +SPEAKER:0 +ECHO:0,0 &C:1 &D:2 %C:0 +IPR:9600 +ICF:3,4 +IFC:2,2 OK *Note : Done* *For Echo the first value corresponds to Echo cancelation 1.*

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.

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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 ,14400 DATA MODES : T/NT,ASYNCHRONOUS FAX CLASS 1,2 OK

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	Note : Done
ATI7 *Note : Modem voice features*	SPEECH CODINGS: FR,EFR,HR OK *Note : Done*

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

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MCC, MNC, LAC,, BSIC, BCCH Freq (absolute), RxLev

4 : Timing Advance

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

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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.

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 >

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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

256 (bit-8) : Audio ON indication

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

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

0 □ IndLevel □ 511

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)

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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.

9 : Audio ON.

AT+WIND? Command is supported and indicates the <allowed bit flows>. AT+WIND is automatically stored in e2p. This means the &W command 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. (0-511)

15.4 Data ciphering mode between ME and MSC +ALEA

15.4.1 Description :

This command is used to get a random value from the mobile station and to reenter its codes by the DES algorithm. In the way Application to GSM, a “h” character shall be added before the value.

15.4.2 Syntax :

Command syntax : AT+ALEA

Command	Possible responses

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AT+ALEA? *Note : Get random value*	AT+ALEA=1234567890123456 OK *Note : Command valid*
AT+ALEA =hA125B348ABCDEF9 *Note : Value coded*	+ALEA=9876543210FBCADE0 OK *Note : Value coded valid – New random value sent*
AT+ALEA=h12335678902234AB *Note : New coded value*	NO CARRIER *Note : Coded value false – Communication hang up*
AT *Note :*	OK *Note :*

15.5 Data ciphering mode +CRYPT

15.5.1 Description :

This command enables or disables the data ciphering (D.E.S algorithm) of the PIN and a random value sent periodically in order to insure a more secure communication.

15.5.2 Syntax :

Command syntax : AT+CRYPT

Command	Possible responses
AT+CRYPT=0	OK

Note : Ciphering off	*Note : Command valid*
AT+CRYPT=1 *Note : Ciphering on*	OK *Note : Command valid*

15.6 Key management +EXPKEY

15.6.1 Description :

This command is used to enter the key used in the D.E.S algorithm to cipher the data (PIN). In the way Application to GSM, a “h” character shall be added before the value.

15.6.2 Syntax :

Command syntax : AT+EXPKEY

Command	Possible responses
AT+EXPKEY? *Note : Is a key stored in EEPROM ?*	+EXPKEY: NO KEY *Note : Key is absent*
AT+EXPKEY=h0111011101110111 *Note : New key entered*	OK *Note : Command valid*
AT+EXPKEY? *Note : Is a key stored in EEPROM ?*	+EXPKEY: READY *Note : Key is present*

15.7 Informations on PLMN +CPLMN

15.7.1 Description :

This command returns the status and the number of all PLMNs seen by the mobile. It also indicates the BCCH frequency number (absolute) of the strongest cell and its RxLev

The response will be :

+CPLMN : (<Status>,<PLMN>,<BCCHFreq>,<RxLev>)

(…)
OK

15.7.2 Syntax :

Command syntax : AT+CPLMN

Command	Possible responses
AT+CPLMN=? *Note :*	+CPLMN: (2,20810,122,50),(1,20801,64,53) OK *Note :*

15.7.3 Defined values :

<Status> **1** : available
2 : current.

The values <PLMN>, <BCCHFreq>, <RxLev> are ASCII strings (in decimal).

15.8 Analog digital converters measurements +ADC

15.8.1 Description :

This command allows to get the (DC level * 1024) of ADC A and ADC B (those voltages are coded on 10 bits, see hardware specifications) or the (DC level * 1024) of ADC A, ADC B and ADC C (voltages coded on 10 bits) depending on the ADC mode.
For ADC A, the value returned includes the resistor bridge. Those values are updated every 10 seconds.

This command allows to set ADC mode. Mode 0 displays the values of the 2 first converters on 10 bits, mode 1 displays the values of the 3 converters coded on 10 bits as well.

15.8.2 Syntax :

Command syntax : AT+ADC

Command	Possible responses

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AT+ADC=<n>	
AT+ADC=0 *Note : Select 2 converters (mode 0)*	OK *Note : 2 converters mode selected*
AT+ADC=1 *Note : Select 3 converters (mode 1)*	OK *Note : 3 converters mode selected*
AT+ADC=? *Note : Ask the list of possible values*	+ADC: (0-1) *Note : possible values 0 or 1*
AT+ADC? *Note : Ask the current values of converters in mode 0*	+ADC: 500,412 OK *Note : Adc A, Adc B on 10 bits*
AT+ADC? *Note : Ask the current values of converters in mode 1*	+ADC: 712,698,997 OK *Note: Adc A, Adc B, Adc C on 10 bits*

15.9 Mobile Equipment event reporting +CMER

15.9.1 Description :

This command enabled or disables sending of unsolicited result codes in the case of key pressing.

15.9.2 Syntax :

Command Syntax: AT+CMER=<mode>,<keyp>,<disp>,<ind>,<bfr>

The parameters <mode>, <disp>, <ind> and <bfr> are not handled.

15.9.3 Defined values :

<keyp> (keypad) : **0** : No keypad event reporting.
1 : Keypad event reporting are routed using unsolicited

code : +CKEV : <key>, <press>

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

<key> : Keyboard map is (5,5)

0	1	2	3	4
5	6	7	8	9
10	11	12	13	14
15	16	17	18	19
20	21	22	23	24

15.10 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>

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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*

15.11 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*

15.12 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.

Note : by default (after a reset), each I/O port is set as an output, and each pin is reset to 0.

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15.12.2 Syntax :

Command syntax: AT+WIOR=<index >

Response syntax: +WIOR: <value>

Command	Possible responses
AT+WIOR=2 *Note : Read I/O (number 2) value*	+WIOR: 0 OK *Note : GPIO number 2 is reset*

15.13 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

Note : by default (after a reset), each I/O port is set as an output, and each pin is reset to 0.

15.13.2 Syntax :

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

Response syntax: OK

Command	Possible responses
AT+WIOW=2,0 *Note : Reset I/O (number 2)*	OK *Note : GPIO value is written*

15.14 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
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 :*

15.15 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*

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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)

<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.

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<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.

15.16 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.

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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.

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15.17 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 1K-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 :*	

15.18 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)

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15.18.2 Syntax :

Command syntax : AT+WVR=<n>

Command Syntax	Return
AT+WVR=<n>	
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 :*	

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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.

15.19 Data Rate +WDR

15.19.1 Description :

This **specific** command allows to configure the data rate for the bearer data.
(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*

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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

15.20 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*

15.21 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*

15.22 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*

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15.22.3 Defined values

<n> Controler **0** Controler 1 (Default)
1 Controler 2

15.23 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: 1,2 OK *Note : Init finished*
AT+WSTR=2 *Note : Select the status 2 (NETWORK STATUS)*	+WSTR: 2,1 OK *Note : The network is available*
AT+WSTR=? *Note : Ask the list of possible values*	+WSTR: (1-2) *Note : possible values : 1, 2*

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15.23.3 Defined values

<**status**> **1** Initialisation sequence

<**value**> **0** Not started
1 On going
2 Finished

<**status**> **2** Network status

<**value**> **0** No network
1 Network available

15.24 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).

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*

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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

15.25 Wavecom Ring Indicator Mode +WRIM

15.25.1 Description :

This **specific** command sets or returns the state of RI Mode.
In pulse RI mode, an electrical pulse is sent on the Ring Indicator wire just before sending any unsolicited AT response in order not to loose these AT responses when client tasks are in sleep state. Still in this RI mode, when receiving incoming calls, electrical pulses are sent on the RI wire.

In up-down RI mode, no pulse are sent before unsolicited AT response, and up-down signal are sent when receiving an incoming call.

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15.25.2 Syntax :

Command syntax: AT+WRIM=<n>

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

15.25.3 Defined values

<**n**> **0** up-down RI mode

1 pulse RI mode

15.26 Wavecom 32kHz Powerdown Mode +W32K

15.26.1 Description :

This **specific** command allows to enable or disable the 32kHz powerdown mode.

When powerdown mode is entered, the Wismo module uses 32kHz internal clock during inactivity stages.

For more information about powerdown mode, see Appendix F.

15.26.2 Syntax :

Command syntax : AT+W32K=<mode>

Command	Possible responses
AT+W32K=1 *Note : Enable 32kHz powerdown mode*	OK *Note : 32kHz powerdown mode is enabled*
AT+W32K=0 *Note : Disable 32kHz powerdown mode*	OK *Note : 32kHz powerdown mode is disabled*

15.26.3 Defined values

<mode> **0** Disable 32kHz powerdown mode

1 Enable 32kHz powerdown mode

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15.27 Wavecom Change Default Melody +WCDM

15.27.1 Description :

This **specific** command allows to select a default manufacturer defined melody, which will be played on all further incoming voice calls, on the buzzer or on the speaker, according to the second parameter. If melody 0 is selected, no melody will be heard.

15.27.2 Syntax :

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

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

15.27.3 Defined values

<melody>	**0**	No melody (**default**)
	1…10	Melody 1 to 10
<player>	**0**	Melody n°<melody> will be played on the buzzer on all further incoming voice calls. (**default**)
	1	Melody n°<melody> will be played on the speaker on all further incoming voice calls.

15.28 Wavecom Software version +WSSW

15.28.1 Description :

This **specific** command displays the internal software information.

15.28.2 Syntax :

Command syntax : AT+WSSW

Command	Possible responses
AT+WSSW *Note : Get Software version*	A00_00gm.2c 000000008F5DC6EA OK *Note : internal software information*

15.29 Wavecom Custom Character Set +WCCS

15.29.1 Description :

This **specific** command allows to edit and display the custom character set tables. “CUSTOM” mode of +CSCS and +WPCS commands use this character set. In this mode, when the user enters a string, this string is converted into GSM alphabet using the Custom To GSM table. Similarly, when the user request a string display, the string is converted from GSM alphabet using the GSM To Custom table.

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In edition mode, the edition session is terminated by <ctrl-Z>, or aborded by <ESC>. Only hexadecimal characters ('0'…'9', 'A'…'F') can be used. The number of characters entered must be equal to the edition range requested, or the command will abord with a "+CME ERROR: 3" result.

15.29.2 Syntax :

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

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

15.29.3 Defined values

<mode>	**0**	Display the table
	1	Edit the table
<table>	**0**	Custom To GSM conversion table
	1	GSM To Custom conversion table

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<char 1>, <char 2>	Character range to display/edit. If only <char 1> is present, only this char is displayed/edited.
0…127	for GSM To Custom conversion table
0…255	for Custom To GSM conversion table

See section 19.2 for informative examples on phonebooks.

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15.30 Wavecom LoCK +WLCK

15.30.1 Description :

This **specific** command allows to personalize a ME on a specific operator.

15.30.2 Syntax :

Command syntax: AT+WLCK=<fac>,<passwd>,<NetId>[,<GID1>[,GID2]]

Response syntax: +WLCK: <status>

Command	Possible responses
AT+WLCK="PN",12345678,20810 *Note : Activate network lock on SFR (208,10)*	OK *Note : Network lock activated*
AT+WLCK="PS",12345678,208105923568974 *Note : Activate SIM lock*	OK *Note : SIM lock activated*
AT+WLCK="PU",12345678,2081035 *Note : Activate Network Subset lock on SFR (208, 10, 35).*	OK *Note : Network Subset lock activated*
AT+WLCK="PU",12345678,20810	+CME ERROR: 3 *Note: Need 7 digits of IMSI to perform a service provider lock*
AT+WLCK=”PP”,12345678,20810,”E5” *Note : Activate Service Provider lock on SFR (208, 10) and GID1 (0xE5).*	OK *Note : Service Provider lock activated.*
AT+WLCK=”PC”,12345678,20810,”E5”,”10” *Note : Activate Corporate lock on SFR (208, 10), GID1 (0xE5) and GID2 (0x10).*	OK *Note : Corporate lock activated.*

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

"PS": SIM lock facility with a 8 digits password (PCK).
"PN": Network lock with a 8 digits password (NCK).
"PU": Network subset lock with a 8 digits password (NSCK).
"PP": Service provider lock with a 8 digits password (SPCK).
"PC": Corporate lock with a 8 digits password (CCK).

15.31 CPHS command +CPHS

15.31.1 Description :

This **specific** command is used to activate, deactivate or interrogate a CPHS functionality (ie Voice Mail Indicator…)

15.31.2 Syntax

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

Command	Possible responses
AT+CPHS=<Mode>,<FctId>	OK +CME ERROR: 3
AT+CPHS?	+CPHS: <FctId1>,<Status><CR<LF> +CPHS: <FctId2>,<Status><CR<LF> … +CPHS: <FctIdn>,<Status><CR<LF> OK
AT+CPHS=?	OK

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15.31.3 Defined values:

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

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

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

15.31.4 Unsolicited result : Wavecom Voice Mail Indicator +WVMI

15.31.4.1 Description :

This unsolicited indicates the status of the LINE 1, LINE 2, FAX or DATA.

Syntax : +WVMI: <LineId>,<Status>

Option : **<LineId>** **1** Line 1
2 Line 2
3 FAX
4 DATA

<Status> **0** No message waiting.
1 A message is waiting

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15.31.4.2 Informative example

AT+CPHS?	*Interrogate the status of CPHS functionality*
+CPHS: 1,0	*The voice mail indicator functionality is deactivate*
OK	
AT+CPHS=3,1	*Syntax error*
+CME ERROR: 3	
AT+CPHS=1,1	*Activate the voice mail indicator functionality*
OK	
AT+CPHS?	*Interrogate the status of CPHS functionality*
+CPHS: 1,1	*The voice mail indicator functionality is activate*
OK	
**** the message box contains 1 message *****	
+WVMI: 1,1	*A message is waiting on the line 1*
***** The message box contains a second message ***	
+WVMI: 2,1	*A message is waitting on the line 2*
AT+CPHS=2,1	*Interrogate the status of voice mail indicator functionality*
+WVMI: 1,1	*a message is waiting on LINE 1*
+WVMI: 2,1	*a message is waiting on LINE 2*
+WVMI: 3,0	*no FAX waiting*
+WVMI:4,0	*no datas waiting*

16 SIM TOOLKIT

16.1 Overview of SIM Application ToolKit

16.1.1 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.

16.1.2 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 1 in APPENDIX B)*.

The SIM Application Toolkit supports:

- profile download,
- proactive SIM,
- data download into the SIM.
- menu selection,
- call control by SIM.

16.1.3 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)*.

16.1.4 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)***.**

16.1.5 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.

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16.1.6 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**.

16.1.7 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 :

+STCR *(SIM Toolkit Control Response)*,
+STGR *(SIM Toolkit Give Response)*.

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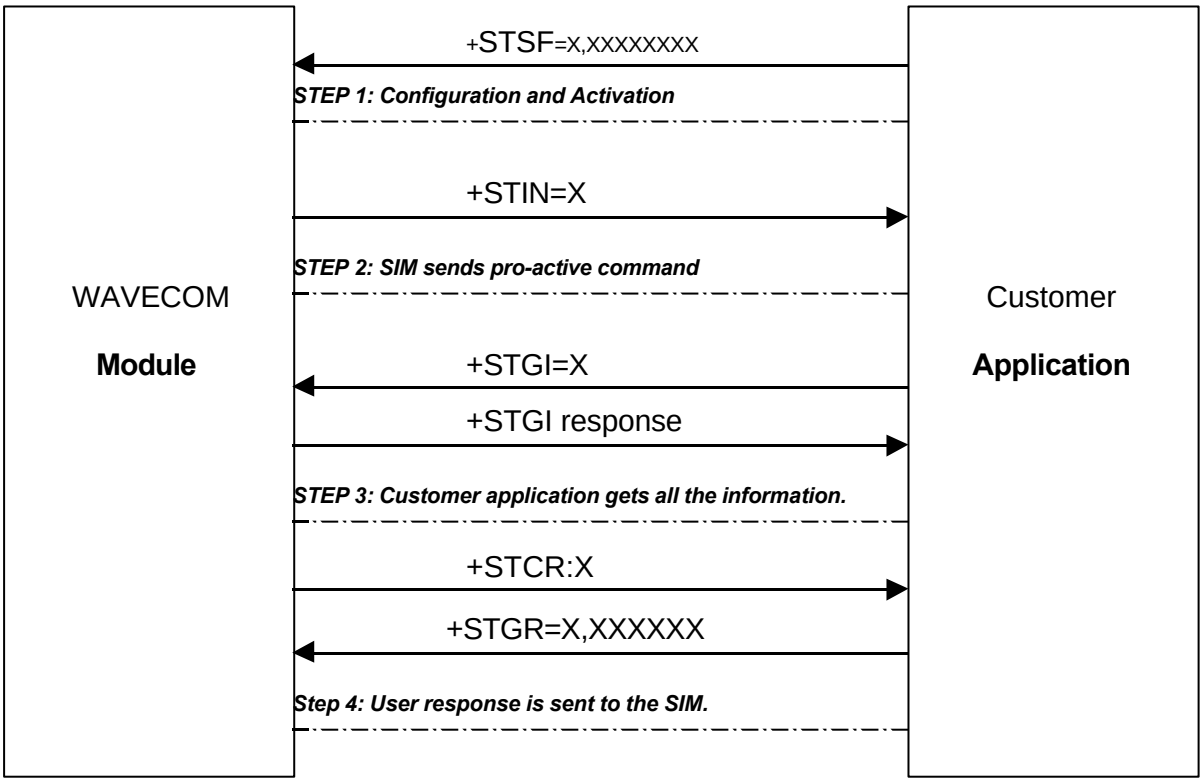
16.2 Exchanged messages during a SIM ToolKit operation.

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. The last SIM Toolkit indication can be requested by the **+STIN?** command.

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.

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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.

16.3 SIM TOOLKIT COMMANDS

16.3.1 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>][,<Timeout>][,<AutoResponse>]

Command	Possible responses
+STSF=<Mode>[,<Config>] [,<Timeout>][,<AutoResponse>]	OK +CME ERROR: <err>
+STSF?	+STSF: <Mode>,<Config>,<Timeout>,<Autoresponse>
+STSF=?	+STSF: (0-2), (160060C01F - 5FFFFFFF7F),(1-255),(0-1) OK

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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> **(160060C01F – 5FFFFFFF7F)** *(hex format)*

<Timeout> **1-255** Timeout for user responses (muiltiple of 10 secondes).

<Autoresponse> **0** Automatic response is not activated

1 Automatic response is activated

The activation or deactivation of the SIM Toolkit functionalities requires the use of +CFUN *(Set phone functionality)* command **to reset the module** (this operation is not necessary if PIN is not yet entered).

The <Config> parameter contains the coding of TERMINAL PROFILE, precisely the list of SIM Application Toolkit facilities that are supported by customer application.

The <Timeout> parameter contains the time (multiple of 10 secondes) dispose the user to answer (for select an item, input a text, etc).

When the <Autoresponse> is activated, the +STIN indication for Play Tone (5), Refresh (7), Send SS (8), Send SMS (9) or Send USSD (10) is automatically followed by the corresponding +STGI response.

Note: 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 C.

Each facility is coded on 1 bit:

- bit = 1: facility supported by the customer application.
- bit = 0: facility not supported by the customer application.

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Only the first five bytes 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), (160060C01F – 5FFFFFFF7F),(1-255)	
OK	
AT+STSF?	
+STSF: 0,”160060C000”,3	*No activation of SIM ToolKit functionality*
OK	
AT+STSF=2,”5FFFFFFF7F”	*Set all facilities SIM ToolKit (class 3).*
OK	
AT+STSF=3	*Syntax Error*
+CME ERROR: 3	
AT+STSF=1	*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*
…	

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+WIND: 4	*Init phase is complete*
AT+STSF?	
+STSF: 1,"5FFFFFFF7F",3	*SIM ToolKit functionality activated with all*
OK	*facilities.*

16.3.2 SIM ToolKit Indication (+STIN)

16.3.2.1 Unsolicited result

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.

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7 Indicates that a **'Refresh'** pro-active command has been sent from the SIM. (*)

8 Indicates that a **'Send SS'** pro-active command has been sent from the SIM. (*)

9 Indicates that a **'Send SMS'** pro-active command has been sent from the SIM. (*)

10 Indicates that a **'Send USSD'** pro-active command has been sent from the SIM. (*)

11 Indicates that a **'SETUP EVENT LIST'** pro-active command has been sent from the SIM.

98 Indicates the timeout when no response from user.

99 Indicates that a **"End Session"** has been sent from the SIM.

(*) if the automatic response parameter is activated, this indication is followed by the corresponding +STGI response.

16.3.2.2 Last SIM toolkit indication

The last SIM toolkit indication sent by the SIM can be requested by the **AT+STIN?** command. This command is only usable between the sent of STIN indication by the SIM (step 2 : see section 16.2) and the response of the user by the +STGI command (step 3).

Command syntax : +STIN?

Command	Possible responses
+STIN? Note : Ask for the last SIM toolkit indication sent by the SIM	+STIN: 0 OK Note : the last SIM toolkit indication was a Setup Menu
+STGI=0	*Note : Display the SIM toolkit application menu*

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+STIN? *Note : Ask for the last SIM toolkit indication sent by the SIM*	+CME ERROR: 4 Note : operation not supported, the +STGI command has been already used

16.3.3 SIM ToolKit Get Informations (+STGI)

16.3.3.1 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)***.

16.3.3.2 Syntax

Command syntax : +STGI=<CmdType>

Command	**Possible responses**
+STGI=<CmdType>	See Table 1 +CME ERROR: <err>
+STGI=?	+STGI: (0-11) OK

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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).**
9	Get information about **'Send SMS'** pro-active command.	+STGI: <TextInfo> **No action (Send SMS done automatically by module).**

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10	Get information about **'Send USSD'** pro-active command.	+STGI: <TextInfo> **No action (Send USSD done automatically by module).**
11	Get information about **'SETUP EVENT LIST'** pro-active command.	+STGI: <Evt>

16.3.3.3 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** **1**	No help information available. 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** **1**	Normal priority of display. High priority of display.
<Text>		Text to display in ASCII format.
<ClearMode>	**0** **1**	Clear message after a delay *(3 seconds)* Wait for user to clear message.

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♦ Values when CmdType=2 (**Get Inkey**)

<Format>	**0**	Digit *(0-9, *, #,and +)*
	1	SMS alphabet default.
	2	UCS2
<HelpInfo>	**0**	No help information available.
	1	Help information available.
<TextInfo>		Text information in ASCII format.

♦ Values when CmdType=3 (**Get Input**)

<Format>	**0**	Digit *(0-9, *, #,and +)*
	1	SMS alphabet default.
	2	UCS2
	3	Unpacked format.
	4	Packed format.
<EchoMode>	**0**	Echo off.
	1	Echo on.
<SizeMin>	**(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.

♦ 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.

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<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.

- 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** **1**	No help information available. Help information available.
<NextActionId>		Contains a pro-active command identifier. *(see the table in APPENDIX D)*

- Values when CmdType=7 (**Refresh**)

<RefreshType>	**0**	SIM initialization and full file change notification.
	1	File change notification.
	2	SIM initialization and file change notification.
	3	SIM initialization.
	4	SIM reset.

- Values when CmdType=8 (**Send SS**)

<TextInfo>	Text information in ASCII format.

- Values when CmdType=9 (**Send SMS**)

<TextInfo>	Text information in ASCII format.

♦ Values when CmdType=10 (**Send USSD**)

<TextInfo> Text information in ASCII format.

♦ Values when CmdType=11 (**Setup Event List**)

<Evt>	**1**	Reporting asked for an **'Idle Screen'** event.
	2	Reporting asked for an **'User Activity'** event.
	3	Reporting asked for **'Idle Screen'** and **'User Activity'** events.
	4	Cancellation of reporting event.

Rem : For UCS2 format the texts are displayed in Hexa Ascii format. Example : When the SIM send a TextString contains 0x00 0x41 the text displayed is "0041".

16.3.3.4 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.

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16.3.3.5 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,"5FFFFFFF7F",3	*SIM ToolKit functionality activated with all facilities.*
OK	
+STIN: 0	*The main menu has been sent from the SIM.*
AT+STIN?	
+STIN: 0	
OK	
AT+STGI=0	*Get information about the main menu*
+STGI: "SIM TOOLKIT MAIN MENU"	*Main menu contains 3 items.*
+STGI: 1,3,"BANK",0	
+STGI: 2,3,"QUIZ",0	
+STGI: 3,3,"WEATHER",0	
OK	
AT+STIN?	
+CME ERROR: 4	

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16.3.4 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.

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16.3.5 SIM ToolKit Give Response (+STGR)

16.3.5.1 Description

This command allows the application/user to select an item in the main menu, or to answer the following proactive commands :

- GET INKEY — Key pressed from the user.
- GET INPUT — Message entered by the user.
- SELECT ITEM — Selected item.
- SETUP CALL — User confirmation.
- DISPLAY TEXT — User confirmation to clear the message.
- SETUP EVENT LIST — Reporting events.

It is also possible to terminate the current proactive command session by sending a Terminal Response to the SIM, with the following parameters :

- BACKWARD MOVE — Process a backward move
- BEYOND CAPABILITIES — Command beyond ME capabilities
- UNABLE TO PROCESS — ME is currently unable to process command
- NO RESPONSE — No response from the user
- END SESSION — User abort.

16.3.5.2 Syntax

Command syntax : +STGR=<CmdType>[,<Result>,<Data>]

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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>
For GetInkey with <Result>=1 +STGR=2,1,"<Data>"	OK +CME ERROR: <err>
+STGR=?	OK

16.3.5.3 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'**.
11	Reponse for a **'Setup event list'**.
95	Backward move
96	Command beyond ME capabilities
97	ME currently unable to process command
98	No response from the user.
99	User abort.

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- Values when CmdType=0 (**Select an item from the main menu**)

<Result>	**1**	Item selected by the user.
	2	Help information required by user.
<Data>		Contains the item identifier of the item selected by the user.

- Values when CmdType=1 (**Confirm the display text clearing**)

No values.

- Values when CmdType=2 (**Get Inkey**)

<Result>	**0**	Session ended by user.
	1	Response given by the user.
	2	Help information required by user.
<Data>		Contains the key pressed by the user.

- Values when CmdType=3 (**Get Input**)

<Result>	**0**	Session ended by user.
	1	Given response given by the user.
	2	Help information required by user.
<Data>		Contains the string of characters entered by the user.

Rem : **For Inputs in UCS2 format. The datas are entered in ASCII format. Example : For "8000410042FFFF" entered, the SIM received 0x80 0x00 0x41 0x00 0x42 0xFF 0xFF. (See the Appendix E about the different UCS2 syntaxes).**

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- Values when CmdType=4 (**Setup call)**

<Result>	**0**	User refuse the call.
	1	User accept call.

- Values when CmdType=6 (**Select Item)**

<Result>	**0**	Session terminated by the user
	1	Item selected by the user
	2	Help information required by the user
	3	Return to the back item
<Data>		Contains the item identifier selected by the user

- Values when CmdType=11 (**Setup Event List**)

<Result>	**1**	Idle screen available.
	2	User activity event.

Sending a Terminal Response to the SIM :

- Values when CmdType=95 (**Backward Move**)
- Values when CmdType=96 (**Command beyond ME capabilities**)
- Values when CmdType=97 (**ME currently unable to process command**)
- Values when CmdType=98 (**No response from the user**)

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- Values when CmdType=99 (**SIM Toolkit Session aborting by the user**)

  No values.

It is possible to send a Terminal Response after the **+STIN** indication (step 2, cf §16.2), or after the **+STGI** command (step 3).

Note : for the SETUP MENU Proactive Command, it is only possible to send a Terminal Response after the **+STIN: 0** indication, not after a **+STGI=0** request.

All of the Terminal Responses are not possible with all of the Proactive Commands. Compatibility between available Terminal Responses and Proactive Commands is given in Appendix B, Table 2. If a Terminal Response is attempted during a incompatible Proactive Command session, a **+CME ERROR: 3** will be returned.

16.3.5.4 Possible error codes

+ CME ERROR: 3	**Operation not allowed**. This error is returned when a wrong parameter is detected.
+CME ERROR: 4	**Operation not supported**. This error is returned when the user give a response with SIM ToolKit functionality not activated. Or if the SIM Toolkit indication *(+STIN)* has not been received.

16.3.5.5 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=0,1,1	*The item 2 of the main menu has been selected.*
OK	
+STIN: 6	*The Sel item menu has been sent from the SIM.*
AT+STGI=6	*Get information about the BANK menu*

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+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.

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>[mem]index, +WMGO
22	Not found	+CPBF, +CPBP, +CPBN, +CGSN, +WOPN, ATD>[mem]”name”
24	Text string too long	+CPBW, +CPIN, +CPIN2, +CLCK, +CPWD
26	Dial string too long	+CPBW, ATD, +CCFC
30	No network service	+VTS, +COPS=?, +CLCK, +CCFC, +CCWA, +CUSD
32	Network not allowed – emergency calls only	+COPS

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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 :

<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

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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: 515”)
517	Facility Sim Toolkit not supported.	+STGI
518	Sim Toolkit indication not received.	+STGI
519	Reset the module to activate or change a new echo cancellation algo.	+ECHO, +VIP
520	Automatic abort about get plmn list for an incomming call.	+COPS=?
526	PIN deactivation forbidden with this SIM card.	+CLCK
527	Please wait, RR or MM is busy. Retry your selection later.	+COPS
528	Location update failure. Emergency calls only.	+COPS
529	PLMN selection failure. Emergency calls only.	+COPS

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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	Invalid number format (incomplete number)
29	Facility rejected
30	Response to STATUS ENQUIRY
31	Normal, unspecified
34	No circuit/channel available
38	Network out of order
41	Temporary failure
42	Switching equipment congestion
43	Access information discarded
44	Requested circuit/channel not available
47	Resources unavailable, unspecified
49	Quality of service unavailable
50	Requested facility not subscribed
55	Incoming calls barred with in the CUG
57	Bearer capability not authorized
58	Bearer capability not presently available
63	Service or option not available, unspecified
65	Bearer service not implemented
68	ACM equal to or greater than ACMmax
69	Requested facility not implemented
70	Only restricted digital information bearer capability is available
79	Service or option not implemented, unspecified
81	Invalid transaction identifier value
87	User not member of CUG
88	Incompatible destination
91	Invalid transit network selection
95	Semantically incorrect message
96	Invalid mandatory information
97	Message type non-existent or not implemented
98	Message type not compatible with protocol state
99	Information element non-existent or not implemented
100	Conditional IE error
101	Message not compatible with protocol state

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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

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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 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"

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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

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18.7 Unsolicited result codes

Verbose result code	Numeric (V0 set)	Description
+CALA: < time string>,<index>	As verbose	Alarm notification
+CBM: <length><pdu> (PDU) or +CBM:<sn>,<mid>,<dcs>,<page>, <pages>… (Text mode)	As verbose	Cell Broadcast Message directly displayed
+CBMI: “BM”,<index>	As verbose	Cell Broadcast Message stored in mem at location <index>
+CCCM : <ccm>	As verbose	Current Call Meter value
+CCED: <values>	As verbose (specific)	Cell Environment Description indication
+CCWA :<number>,<type>, <class> [,<alpha>]	As verbose	Call Waiting number
+CDS: <fo>, <mr>… (text mode) or +CDS: <length>,… (PDU)	As verbose	SMS status report after sending a SMS
+CKEV: <keynb>	As verbose	Key press or release
+CLIP : <number>, <type> [,,,<alpha>]	As verbose	Incoming Call Presentation
+CMT: <oa>… (text mode) or +CMT: [<alpha>,]… (PDU)	as verbose	Incoming message directly displayed
+CMTI: <mem>,<index>	as verbose	Incoming message stored in <mem> (“SM”) at location <index>
+CREG : <stat> [,<lac>,<ci>]	As verbose	Network registration indication
+CRING : <type>	As verbose	Incoming call type (VOICE, FAX ...)
+CSQ: <RxLev>,99	As verbose	Automatic RxLev indication with AT+CCED=1,8 command

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+CSSU: <code2>[<number>,<type>]	As verbose	Supplementary service notification during a call
+STIN: <ind>	As verbose (specific)	SIM Toolkit Indication
+WIND: <IndicationNb> [,<CallId>]	As verbose (specific)	Specific unsolicited indication (SIM Insert/Remove, End of init, Reset, Alerting, Call creation/release)
+WVMI: <LineId>,<Status>	As verbose (specific)	Voice Mail Indicator notification (cf. **+CPHS** command)
RING	2	Incoming call signal from network

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
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
+CSSI: <code1>[,<index>]	As verbose	Supplementary service notification during a call setup

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18.10 Parameters storage

Command	Parameters storage mode: AT&W (E2P)	Command (E2P)	AT+CSAS (SIM, E2P)	AT&F (SIM, E2P)	Initial values WISMO1B	Initial values WISMO2C
General commands						
+CSCS	X			X	“PCCP437”	“PCCP437”
+WPCS	X			X	---	“TRANSPARENT”
+CMEE	X			X	0	0
Call Control commands						
%D		X		X	0	0
ATS0	X			X	0 (no auto-answer)	0 (no auto-answer)
+CICB	X			X	2 (speech)	2 (speech)
+CSNS	X			X	0 (voice)	0 (voice)
+VGR	X			X	64 (speaker 1) 32 (speaker 2)	64 (speaker 1) 32 (speaker 2)
+VGT	X			X	64 (mic 1 & ctrl 1) 0 (others)	64 (mic 1 & ctrl 1) 0 (others)
+SPEAKER	X			X	0 (Spk 1 & Mic 1)	0 (Spk 1 & Mic 1)
+ECHO		X		X	0,255,1000,5,500,63	0,1,0,3,10,7 (Echo cancel) 0,0,3,10,7,0 (Switch Attenuation)
+SIDET	X			X	1,1	1,1
Network Service commands						
+COPS	X	X		X	0,2	0,2
+CREG	X			X	0	0
Phonebook commands						
+WAIP	X			X	0	0

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Command	Parameters storage mode: AT&W (E2P)	Parameters storage mode: Command (E2P)	Parameters storage mode: AT+CSAS (SIM, E2P)	AT&F (SIM, E2P)	Initial values WISMO1B	Initial values WISMO2C
SMS commands						
+CSMS		X			0	0
+CMGF	X			X	1 (text)	1 (text)
+CSDH	X			X	0	0
+CNMI			X	X	0,1,0,0,0	0,1,0,0,0
+CSMP			X	X	1,167,0,0	1,167,0,0
+CSCA			X		SIM dependant (phase 2)	SIM dependant (phase 2)
+WUSS		X		X	0	0
Supplementary Services commands						
+CCWA	X			X	0	0
+CLIP	X			X	0	0
+COLP	X			X	0	0
+CSSN	X			X	0,0	0,0
+CUSD		X		X	0	0
+CCUG		X			0,0,0	0,0,0
Data commands						
+CBST	X			X	0,0,1	0,0,1
+CR	X			X	0	0
+CRC	X			X	0	0
+ILRR	X			X	0	0
+CRLP	X			X	61,61,48,6,0	61,61,48,6,1
+DOPT	X			X	1,0	1,1
%C	X			X		2
+DS	X			X		3,0,4096,20
+DR	X			X		0
\N	X			X		0

Command	Parameters storage mode: AT&W (E2P)	Command (E2P)	AT+CSAS (SIM, E2P)	AT&F (SIM, E2P)	Initial values WISMO1B	Initial values WISMO2C
Fax Class 2 commands						
+FBOR	X			X		0
+FCQ	X			X		0
+FCR	X			X		1
+FDCC,+FDIS	X			X		0,5,0,0,2,0,0,0,0
+FPHCTO	X			X		30
V24 – V25 commands						
+IPR	X				0 (autobaud)	9600
+ICF	X				3,4	3,4
+IFC	X				2,2	2,2
E	X				1	1
&C	X				1	1
&D	X				1	1
&S	X				1	1
Q	X			X	0	0
V	X			X	1	1
E	X				1	1
Specific commands						
+WIND		X		X	0	0
+ADC		X		X	0	0
+CMER	X			X	0	0
+WVR		X			5	5
+WDR		X			2	2
+WSVG		X		X	0	0
+WRIM		X		X	0	0
+WCDM		X		X	---	0,0
+CPHS		X		X	---	0
SIM Toolkit commands						
+STSF		X			---	0,”160060C01F”,3,0

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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.

18.11.1 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

18.11.2 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

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11	Telephony
12	All data teleservices
13	Fax services
16	Short Message Services
19	All teleservices except SMS
20	All bearer services
21	All asynchronous services
22	All synchronous services
24	All data circuit synchronous
25	All data circuit asynchronous
26	All dedicated packet access
27	All dedicated PAD access

The no reply condition timer (T), is only used for SC=61.

18.11.3 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 (only for deactivation)
331	call barring of outgoing international call
332	call barring of outgoing international calls except to HPLMN
333	all outgoing barring service (only for deactivation)
35	call barring of incoming calls
351	call barring of incoming calls if roaming

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353	all incoming barring service (only for deactivation)

The Network service codes (BS) are the same as these of the call forwarding sequences.

18.11.4 Call waiting

***43#**	Activate
***#43#**	Check status
#43#	Deactivate

18.11.5 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

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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	A1	A1	GSM900
A	232	03	A max.	max.	GSM900/1800
A	232	05	A one	one	GSM1800
A	232	07	A tele.ring	telering	GSM1800
AL	276	01	AMC - AL	A M C	GSM900
ALG	603	01	ALGERIAN MOBILE NETWORK	AMN	GSM900
AN	344	30	APUA PCS ANTIGUA	ATUA-PCS	PCS1900
AND	213	03	STA-MOBILAND	M-AND	GSM900
AUS	505	01	Telstra MobileNet	Telstra	GSM900/1800
AUS	505	02	YES OPTUS AUS	Optus	GSM900
AUS	505	03	VODAFONE AUS	VFONE	GSM900
AUS	505	08	One.Tel	One.Tel	GSM1800
AZE	400	01	AZE - AZERCELL GSM	ACELL	GSM900
AZE	400	02	BAKCELL GSM 2000	BKCELL	GSM900
B	206	10	B mobistar	mobi*	GSM900
B	206	20	Orange	Orange	GSM1800
BD	470	03	BD ShebaWorld	SHEBA	GSM900
BEL	206	01	BEL PROXIMUS	PROXI	GSM900
BG	284	01	M-TEL GSM BG	M-TEL	GSM900
BGD	470	01	BGD-GP	GP	GSM900
BGD	470	02	BGD AKTEL	AKTEL	GSM900
BHR	426	01	BHR MOBILE PLUS	M.PLUS	GSM900
BIH	218	03	BIH-ERONET	ERONET	GSM900
BIH	218	05	GSM-MS1	GSM-MS1	GSM900
BIH	218	90	PTT-GSMBIH	BHGSM	GSM900
BRU	528	11	BRU-DSTCom	DSTCom	GSM900
BW	652	01	BW MASCOM	MASCOM	GSM900
BY	257	01	BY VELCOM	VELCOM	GSM900
CAN	302	37	CAN-MCELL	MCELL	PCS1900
CH	228	01	SWISS GSM	SWISS	GSM900/1800
CH	228	02	diAx Swiss	diAx	GSM900/1800
CH	228	03	orange CH	orange	GSM1800
CHN	460	00	CHINA TELECOM	CT-GSM	GSM900
CHN	460	01	CHN-CUGSM	CU-GSM	GSM900
CI	612	03	CI Ivoiris	Ivoir	GSM900
CI	612	05	TELECEL-CI	TELCEL	GSM900

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CL	730	01	CL ENTEL PCS	ENTEL	PCS1900
CL	730	10	CL ENTEL PCS	ENTEL	PCS1900
CMR	624	02	Mobilis	CAM 02	GSM900
CPV	625	01	CPV MOVEL	CMOVEL	GSM900
CY	280	01	CY CYTAGSM	CY-GSM	GSM900
CZ	230	01	PAEGAS- CZ	PAEGAS	GSM900
CZ	230	02	EUROTEL - CZ	ET - CZ	GSM900
D	262	01	T-D1	T-D1	GSM900/1800
D	262	02	D2	D2	GSM900
D	262	03	E-Plus	E-Plus	GSM1800
D	262	07	D Interkom	Ik	GSM1800
DK	238	01	DK TDK-MOBIL	TD MOB	GSM900
DK	238	02	DK SONOFON	SONO	GSM900/1800
DK	238	20	TELIA DK	TELIA	GSM1800
DK	238	30	DK mobilix	#mbix	GSM1800
E	214	01	E AIRTEL	AIRTL	GSM900
E	214	03	E AMENA	AMENA	GSM1800
E	214	07	MOVISTAR	MSTAR	GSM900/1800
EE	248	01	EE EMT GSM	EMT	GSM900/1800
EE	248	02	EE RLE	RLE	GSM900
EE	248	03	EE Q GSM	Q GSM	GSM900
EGY	602	01	EGY MobiNiL	MobiNiL	GSM900
EGY	602	02	EGY CLICK GSM	CLICK	GSM900
ETH	636	01	ETH-MTN	ET-MTN	GSM900
F	208	01	F Itineris	Itine	GSM900/1800
F	208	10	F SFR	SFR	GSM900
F	208	20	F - BOUYGUES TELECOM	BYTEL	GSM1800
F	340	01	F AMERIS	AMERIS	GSM900
F	547	20	F-VINI	VINI	GSM900
F	647	10	SFR REUNION	SFR RU	GSM900
FI	244	03	FI TELIA	TELIA	GSM1800
FI	244	05	FI RADIOLINJA	RL	GSM900
FI	244	09	FI FINNET	FINNET	GSM1800
FI	244	91	FI SONERA	SONERA	GSM900/1800
FIJ	542	01	VODAFONE FIJ	VODAFJ	GSM900
GEO	282	01	GEO-GEOCELL	GCELL	GSM900
GEO	282	02	MAGTI-GSM-GEO	MAGTI	GSM900/1800
GH	620	01	GH SPACEFON	SPACE	GSM900
GH	620	02	GH GTGSM	GTGSM	GSM900
GIB	266	01	GIBTEL GSM	GIBTEL	GSM900
GN	611	02	GN LAGUI	LAGUI	GSM900
GR	202	01	GR COSMOTE	C-OTE	GSM1800
GR	202	05	GR PANAFON	PAN	GSM900

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GR	202	10	GR TELESTET	TLSTET	GSM900
GRL	238	01	TELE Greenland	TELE GRL	GSM900
H	216	01	H PANNON GSM	PANNON	GSM900
H	216	30	H-WESTEL 900	W-900	GSM900
H	216	70	Vodafone	H-70	GSM1800
HK	454	00	CABLE & WIRELESS HKT	C&W HKT	GSM900/1800
HK	454	04	HK ORANGE	ORANGE	GSM900/1800
HK	454	06	HK SMARTONE	HKSMC	GSM900/1800
HK	454	10	HK NEW WORLD	NWPCS	GSM1800
HK	454	12	HK PEOPLES	PEOPLES	GSM1800
HK	454	16	HK SUNDAY	SUNDAY	GSM1800
HR	219	01	HR - CRONET	CRON	GSM900
HR	219	10	HR VIP	VIP	GSM900
I	222	01	I TELECOM	TIM	GSM900/1800
I	222	10	I -OMNITEL	OMNI	GSM900/1800
I	222	88	I WIND	I WIND	GSM900/1800
I	222	98	I BLU	BLU	GSM1800
IL	425	01	IL ORANGE	ORANGE	GSM900
INA	404	01	INA ESSAR CELLPHONE	ESSARH	GSM900
INA	404	07	INA - TATA CELLULAR	TATA	GSM900
INA	404	10	INA-AIRTL	AIRTL	GSM900
INA	404	11	INA ESSAR CELLPHONE	ESSAR	GSM900
INA	404	12	INA - ESCOTEL	ESCOTL	GSM900
INA	404	14	MODICOM INA	MODICO	GSM900
INA	404	15	INA ESSAR CELLPHONE	ESSARU	GSM900
INA	404	20	INA MaxTouch	MAXTCH	GSM900
INA	404	21	BPL MOBILE	BPL MOBILE	GSM900
INA	404	27	BPL MOBILE	BPL MOBILE	GSM900
INA	404	30	INA COMMAND	COMMND	GSM900
INA	404	41	INA RPG	RPG	GSM900
INA	404	42	INA AIRCEL	AIRCEL	GSM900
INA	404	43	BPL MOBILE	BPL MOB	GSM900
INA	404	46	BPL MOBILE	BPL MOB	GSM900
INA	404	60	INA ESSAR CELLPHONE	ESSARR	GSM900
IND	510	01	IND SATELINDOCEL	SAT-C	GSM900
IND	510	10	IND TELKOMSEL	T-SEL	GSM900
IND	510	11	IND GSM-XL	EXCEL	GSM900
IND	404	44	IN-44	SPICE	GSM900
IRL	272	01	IRL Eircell	Eircell	GSM900
IRL	272	02	IRL DIGIFONE	DIGI	GSM900
IS	274	01	IS SIMINN	SIMINN	GSM900
IS	274	02	IS TAL	TAL	GSM900
JOR	416	01	Fastlink	FSTLNK	GSM900

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KGZ	437	01	BITEL KGZ	BITEL	GSM900
KHM	456	01	MOBITEL - KHM	MT-KHM	GSM900
KHM	456	02	KHM-SAMART-GSM	KHM-SM	GSM900
KSA	420	01	ALJAWWAL	KSA	GSM900
KSA	420	07	EAE-ALJAWWAL	EAE	GSM900
KT	419	02	KT MTCNet	MTC	GSM900
KT	419	03	KT WATANIYA	WATANIYA	GSM900/1800
KZ	401	01	KZ K-MOBILE	K-MOBILE	GSM900
KZ	401	02	KZ KCELL	KCELL	GSM900
L	270	01	L LUXGSM	LUXGSM	GSM900/1800
L	270	77	L TANGO	TANGO	GSM900/1800
LAO	457	01	- - -	LAO GSM	GSM900
LBR	618	01	LBR OMEGA	OMEGA	GSM900
LSO	651	01	VCL COMMS	VCLCOM	GSM900
LT	246	02	LT BITE GSM	BITE	GSM900
LTU	246	01	OMNITEL LT	OMT	GSM900
LV	247	01	LV LMT GSM	LMT	GSM900
LV	247	02	LV BALTCOM	B-COM	GSM900
M	278	01	VODAFONE MLA	VODA M	GSM900
MAC	455	01	MAC-CTMGSM	CTMGSM	GSM900
MD	259	01	MD VOXTEL	VOXTEL	GSM900
MDG	642	02	MDG ANTARIS	ANTARI	GSM900
MKD	294	01	MKD-MOBIMAK	MOBI-M	GSM900
MOR	604	00	MOR MEDITEL	MEDITEL	GSM900
MOR	604	01	MOR IAM	IAM	GSM900
MOZ	643	01	MOZ - mCel	mCel	GSM900
MRU	617	01	CELLPLUS-MRU	CELL +	GSM900
MRU	617	10	EMTEL-MRU	EMTEL	GSM900
MV	472	01	MV DHIMOBILE	D-MOBILE	GSM900
MW	650	01	MW CP 900	CP 900	GSM900
MW	650	10	CELTEL MW	CELTEL	GSM900
MY	502	12	MY maxis mobile	maxis	GSM900
MY	502	13	MY TMTOUCH	TMTOUCH	GSM1800
MY	502	16	MY DIGI 1800	MT18	GSM1800
MY	502	17	MY - ADAM 017	ADAM	GSM1800
MY	502	19	MY CELCOM	CELCOM	GSM900
N	242	01	N Telenor	TELENOR	GSM900/1800
N	242	02	N NetCom GSM	N COM	GSM900
NCL	546	01	NCL MOBILIS	MOBNCL	GSM900
NL	204	04	NL LIBERTEL	LIBTEL	GSM900
NL	204	08	NL KPN TELECOM	NL KPN	GSM900
NL	204	12	NL TELFORT	TELFORT	GSM1800
NL	204	16	Ben NL	Ben NL	GSM1800

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NL	204	20	dutchtone	Dtone	GSM1800
NZ	530	01	VODAFONE NZ	VODA	GSM900
OMN	422	02	OMAN MOBILE	OMAN	GSM900
P	268	01	P TELECEL	TLCL	GSM900/1800
P	268	03	P OPTIMUS	OPTIM	GSM900/1800
P	268	06	P TMN	TMN	GSM900/1800
PGY	744	01	HOLA PARAGUAY S.A.	HPGYSA	PCS1900
PH	515	01	ISLACOM	ISLA	GSM900
PH	515	02	Globe Telecom-PH	GLOBE	GSM900
PH	515	03	PH SMART	SMART	GSM900/1800
PL	260	01	PL-PLUS	PLUS	GSM900
PL	260	02	PL-ERA GSM	ERAGSM	GSM900
PL	260	03	PL IDEA	IDEA	GSM1800
PSE	425	05	JAWWAL-PALESTINE	JAWWAL	GSM900
QAT	427	01	QAT-QATARNET	Q-NET	GSM900
R	635	10	R-CELL	RCELL	GSM900
RA	283	01	RA-ARMGSM	ARMMO1	GSM900
RL	415	01	RL Cellis	CLLIS	GSM900
RL	415	03	RL LibanCell	LibCL	GSM900
RO	226	01	RO CONNEX	CONNEX	GSM900
RO	226	10	RO dialog	dialog	GSM900
ROC	466	92	ROC LDTA GSM	LDGSM	GSM900
RUS	250	01	MTS-RUS	MTS	GSM900
RUS	250	02	North-West GSM RUS	NWGSM	GSM900
RUS	250	05	SCS	SCS	GSM900
RUS	250	07	RUS BMT	BMT	GSM900
RUS	250	07	RUS SMARTS	SMARTS	GSM900
RUS	250	12	RUS 12, Far East RUS	FEast	GSM900
RUS	250	13	Kuban-GSM RUS	KUGSM	GSM900
RUS	250	17	RUS 17	ERMAK	GSM900
RUS	250	28	EXTEL RUS	EXTEL	GSM900
RUS	250	39	Uraltel	UTL	GSM900
RUS	250	39	RUS-SUCT	SUCT	GSM900
RUS	250	44	RUS North Caucasian GSM	NC-GSM	GSM900
RUS	250	93	- - -	- - -	GSM1800
RUS	250	99	Bee Line GSM	Bee Line	GSM1800
RUS	250	99	RUS Bee Line	Bee Line	GSM1800
S	240	01	TELIA S	TELIA	GSM900/1800
S	240	07	S COMVIQ	IQ	GSM900
S	240	08	S EUROPOLITAN	EURO	GSM900
SA	655	01	VodaCom-SA	VODA	GSM900
SA	655	10	MTN-SA	MTN	GSM900
SDN	634	01	SDN MobiTel	SD-MOB	GSM900

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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	GSM1800
SI	293	40	SI.MOBIL	SI.MOBIL	GSM900
SI	293	41	SI MOBITEL GSM	SI-GSM	GSM900
SK	231	01	SVK GT	SVK GT	GSM900
SK	231	02	EUROTEL-SK	ET-SK	GSM900/1800
SN	608	01	SN ALIZE	ALIZE	GSM900
SN	608	02	SN-SENTEL SG	SENTEL	GSM900
SRI	413	02	SRI DIALOG	DALOG	GSM900
SRI	413	03	SRI - CELLTEL	CELLTEL	GSM900
SYR	417	09	SYR MOBILE SYR	MOBILE	GSM900
SZ	653	10	Swazi-MTN	SwaziMTN	GSM900
TG	615	01	TG-TOGO CELL	TGCELL	GSM900
TH	520	01	TH AIS GSM	TH AIS	GSM900
TH	520	10	TH WCS	TH WCS	GSM1800
TH	520	23	TH-HELLO	HELLO	GSM1800
TN	605	02	TUNISIE TELECOM	TT	GSM900
TR	286	01	TR PTT/TURKCELL GSM	TCELL	GSM900
TR	286	02	TR TELSIM	TELSIM	GSM900
TWN	466	01	Far EasTone	FET	GSM900/1800
TWN	466	06	TWN Tuntex GSM 1800	TUNTEX	GSM1800
TWN	466	88	KGT-Online	KGT	GSM1800
TWN	466	93	TWN MOBITAI	TW MOB	GSM900
TWN	466	97	TWN GSM 1800	PCC	GSM1800
TZ	640	01	Tritel - TZ	TRITEL	GSM900
TZ	640	03	ZANTEL-TZ	ZANTEL	GSM900/1800
UA	255	01	UA UMC	UMC	GSM900
UA	255	03	UA-KYIVSTAR	UA-KS	GSM900
UA	255	05	UA - GOLDEN TELECOM	UA-GT	GSM1800
UAE	424	02	UAE ETISALAT	ETSLT	GSM900
UG	641	01	UG CelTel	CELTEL	GSM900
UG	641	10	MTN-UGANDA	MTN-UG	GSM900
UK	234	10	BTCELLNET	BTCNET	GSM900/1800
UK	234	15	UK VODAFONE	VODA	GSM900
UK	234	30	ONE 2 ONE	ONE2ONE	GSM1800
UK	234	33	ORANGE	ORANGE	GSM1800
UK	234	50	JERSEY TELECOMS GSM UK	JT GSM	GSM900
UK	234	55	GUERNSEY TEL UK	GSY-TEL	GSM900
UK	234	58	MANX TELECOM PRONTO GSM	MANX	GSM900

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UKR	255	02	FLASH-UKR	FLASH	GSM900
USA	310	010	USA MCI		PCS1900
USA	310	011	USA Wireless 2000 Telepho	WTTCKy	PCS1900
USA	310	012	USA D&E Com		PCS1900
USA	310	013	USA MobileTel		PCS1900
USA	310	020	USA Sprint		PCS1900
USA	310	030	USA PCS PRIME		PCS1900
USA	310	031	USA-AERIAL	AERIAL	PCS1900
USA	310	040	USA PCS PRIME		PCS1900
USA	310	050	USA PCS PRIME		PCS1900
USA	310	060	USA PCS PRIME		PCS1900
USA	310	070	USA PCS PRIME		PCS1900
USA	310	080	USA PCS PRIME		PCS1900
USA	310	090	USA PCS PRIME		PCS1900
USA	310	100	USA PCS PRIME		PCS1900
USA	310	110	USA PCS PRIME		PCS1900
USA	310	120	USA PCS PRIME		PCS1900
USA	310	130	USA PCS PRIME		PCS1900
USA	310	140	USA PCS PRIME		PCS1900
USA	310	150	BellSouth Mobility DCS	BSMDCS	PCS1900
USA	310	160	USA OMNIPOINT		PCS1900
USA	310	170	USA PAC BELL		PCS1900
USA	310	180	USA PAC BELL		PCS1900
USA	310	190	USA COX		PCS1900
USA	310	200	VoiceStream	VStream	PCS1900
USA	310	210	VoiceStream	VStream	PCS1900
USA	310	220	VoiceStream	VStream	PCS1900
USA	310	230	VoiceStream	VStream	PCS1900
USA	310	240	VoiceStream	VStream	PCS1900
USA	310	250	VoiceStream	VStream	PCS1900
USA	310	260	VoiceStream	VStream	PCS1900
USA	310	270	USA PowerTel, Inc.	USA 27	PCS1900
USA	310	280	USA PowerTel		PCS1900
USA	310	290	USA PowerTel		PCS1900
USA	310	300	USA Aerial		PCS1900
USA	310	310	USA-AERIAL	AERIAL	PCS1900
USA	310	320	USA Aerial		PCS1900
USA	310	330	USA Aerial		PCS1900
USA	310	340	USA Aerial		PCS1900
USA	310	350	USA Aerial		PCS1900
USA	310	380	USA Pocket		PCS1900
USA	310	390	USA Pocket		PCS1900
USA	310	400	USA Pocket		PCS1900

USA	310	410	USA Pocket		PCS1900
USA	310	420	USA Pocket		PCS1900
USA	310	430	USA Pocket		PCS1900
USA	310	440	USA Pocket		PCS1900
USA	310	450	USA Pocket		PCS1900
USA	310	460	USA OMNIPOINT		PCS1900
USA	310	470	USA OMNIPOINT		PCS1900
USA	310	480	USA OMNIPOINT		PCS1900
USA	310	490	USA OMNIPOINT		PCS1900
USA	310	500	USA OMNIPOINT		PCS1900
USA	310	510	USA OMNIPOINT		PCS1900
USA	310	520	USA OMNIPOINT		PCS1900
USA	310	530	USA OMNIPOINT		PCS1900
USA	310	540	USA OMNIPOINT		PCS1900
USA	310	550	USA OMNIPOINT		PCS1900
USA	310	560	USA OMNIPOINT		PCS1900
USA	310	570	USA OMNIPOINT		PCS1900
USA	310	580	USA OMNIPOINT		PCS1900
USA	310	610	USA OMNIPOINT		PCS1900
USA	310	620	USA OMNIPOINT		PCS1900
USA	310	630	USA OMNIPOINT		PCS1900
USA	310	640	USA Einstein		PCS1900
USA	310	660	USA DiGiPH		PCS1900
USA	310	670	USA WTTCKy		PCS1900
USA	310	680	USA NPI		PCS1900
USA	310	690	USA Conestoga		PCS1900
USA	310	770	Iowa Wireless USA	IWS	PCS1900
USA	310	790	USA PinPoint Wireless	PnPt	PCS1900
UZB	434	04	UZB DAEWOO-GSM	DW-GSM	GSM900
UZB	434	05	UZB CSOCOM GSM	COSCOM	GSM900
VN	452	01	VN MOBIFONE	VMS	GSM900
VN	452	02	VN VINAFONE	GPC	GSM900
VZ	734	01	VZ INFO	INFONT	GSM900
VZ	734	02	DIGITEL	DIGITEL	GSM900
YU	220	01	YU MOBTEL	MOBTEL	GSM900
ZW	648	01	ZW NET*ONE	NET*1	GSM900
ZW	648	03	TELECEL ZW	TELECEL	GSM900
ZW	648	04	ZW ECONET	ECONET	GSM900

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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*

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+COPS: 0,0,"I OMNITEL"	
OK	

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*

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19.1.1 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	

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19.1.2 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.*

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19.1.3 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	

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19.1.4 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.*

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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.

19.2.1 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	

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19.2.2 Example 2 : Erase or Write a phonebook entry

AT+CPBW=?	*Query version of the write phonebook entry.*
+CPBW: (1-80),20,(129,145),14	*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	*Erase location 3*
OK	
AT+CPBW=3,"4356729012",129,"Carry"	*Write at location 3.*
Ok	
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,"4356729012",129,"Carry"	
OK	

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19.2.3 Example 3 : Find phonebook entries

AT+CPBF=?	*Query version of the write phonebook entry.*
+CPBF: 20,14	M*ax length of 20 for phone,*
	10 characters for the text.
AT+CPBF="D"	*Read entry with "D".*
+CPBF: 1,"0346572834",129,"Dolores Claiborne"	
OK	
AT+CPBF="W"	*Read entrie with "W".*
+CME ERROR: 22	*Entry not found.*

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19.2.4 Example 4 : Phonebook and custom character set

AT+CPBS?	*Query the current phonebook*
+CPBS: 3,80	*ADN selected, 3 entries stored*
OK	
AT+WPCS?	*Query the current phonebook charset*
+WPCS: “TRANSPARENT”	*Transparent mode selected*
OK	
AT+CPBR=1	
+CPBR: 1,”0146290800”,129,”S bastien”	*GSM character “é” is not displayed*
OK	
AT+WCCS=1,0,0,255	
>20202020202020202020200A20200D202020202020205F20202020202020202020202122230225262728292A 2B2C2D2E2F303132333435363738393A3B3C3D3E3F004142434445464748494A4B4C4D4E4F5051525354 55565758595A20202020112061626364656667686 96A6B6C6D6E6F707172737475767778797A2020202020 20202020202020202020202020202020202727202020202020202020202020202020402001240 3205F20202020 202D20202020202027202020202020202020202060414141415B0E1C09451F454549494949445D4F4F4F4F5C 200B5555555E59201E7F6161617B0F1D630405656507696969207D086F6F6F7C200C0675757E792079	
OK	
AT+WCCS=1,1,0,127	
>40A324A5E8E9F9ECF2C70AD8F80DC5E5205F20202020202020202020C6E6DFC920212223A425262728 292A2B2C2D2E2F303132333435363738393A3B3C3D3E3FA14142434445464748494A4B4C4D4E4F505152 535455565758595AC4D6D1DCA7BF6162636465666768696A6B6C6D6E6F707172737475767778797AE4F6 F1FCE0	
OK	*Set the custom character set tables to enable a GSM to default font conversion*
AT+WPCS=”CUSTOM”	*Use the custom character set*
OK	
AT+CPBR=1	
+CPBR: 1,”0146290800”,129,”Sébastien”	*GSM character “é” is correctly displayed*
OK	

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19.3 Informative example about short messages

19.3.1 Example 4 : Send a short message

AT+CNMI=0,1,1,1,0	*SMS-DELIVERs are directly stored, SMS-STATUS-REPORTs are displayed*
OK	
AT+CSMP=17,169,0,0 ”	*SMS-SUBMIT message with a validity period (one day)*
OK	
AT+CMGF=1 ” ”	*Text mode to send a Short Message*
OK	
AT+CSCA=”+33608080706”	*Set Service Center Address to +33608080706*
OK	
AT+CMGS=0601290800	*Send a SMS-SUBMIT to mobile phone*
➢	*Module sends a 4 characters sequence: 0x0D 0x0A 0x3E 0x20*
This is the first text line	*Edit first line and press carriage return (<CR>, 0x0D)*
This is the last text line	*Edit last line and send message by pressing <ctrl-Z> (0x1A)*
+CMGS: 5	*Success: message reference 5 is returned from the SMS Service Center*
+CDS: 2,5,”0601290800”,129,”99/05/01 14:15:10+04	
” ” ” ”	*Success: report of successful message delivery received*

19.3.2 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.

19.4.1 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

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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	

19.4.2 Example 2: Receive a fax class 2

```
AT+FCR=1
OK
AT+FLID="LocalFax"
OK
```


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RING	*Incoming call*
ATA	*Off hook*
+FCON	*Connexion OK*
[+FTSI:"RemoteFax"]	
+FDCS:0,3,0,2,0,0,0,0	
OK	
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	

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+FHNG:0	*Normal end of connection*
OK	

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20 APPENDIX B: Support of SIM ToolKit by The M.E.

TABLE 1 – Support of SIM Toolkit classes

This has been extracted from the 11.14.		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

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TABLE 2 - Compatibility between available Terminal Responses and Proactive Commands

	Proactive commands											
Terminal Reponses	Setup Menu (**0**)	Display Text (**1**)	Get Inkey (**2**)	Get Input (**3**)	Setup Call (**4**)	Play Tone (**5**)	Select Item (**6**)	Refresh (**7**)	Send SS (**8**)	Send SMS (**9**)	Send USSD (**10**)	Setup event list (**11**)
Backward Move (**95**)		●	●	●			●					
Command beyond ME capabilities (**96**)	●	●	●	●	●	●	●	●	●	●	●	●
ME currently unable to process command (**97**)	●	●	●	●	●	●	●	●	●	●	●	●
No response from the user (**98**)		●	●	●			●					
SIM session terminated by the user (**99**)		●	●	●	●	●	●					

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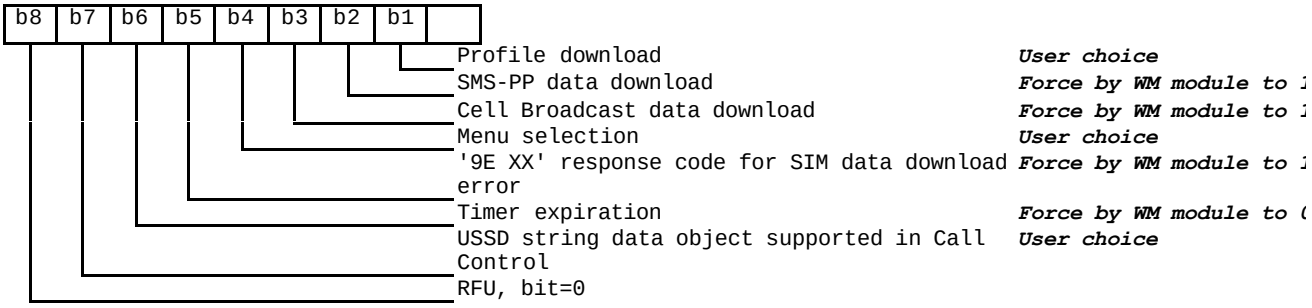
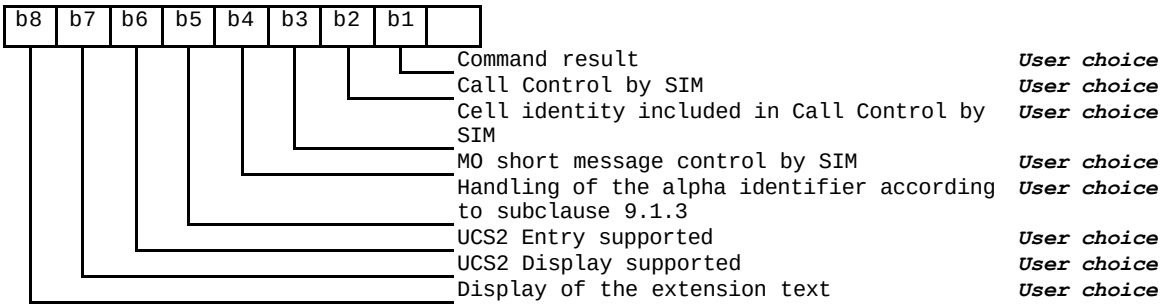
21 APPENDIX C: Structure of TERMINAL PROFILE

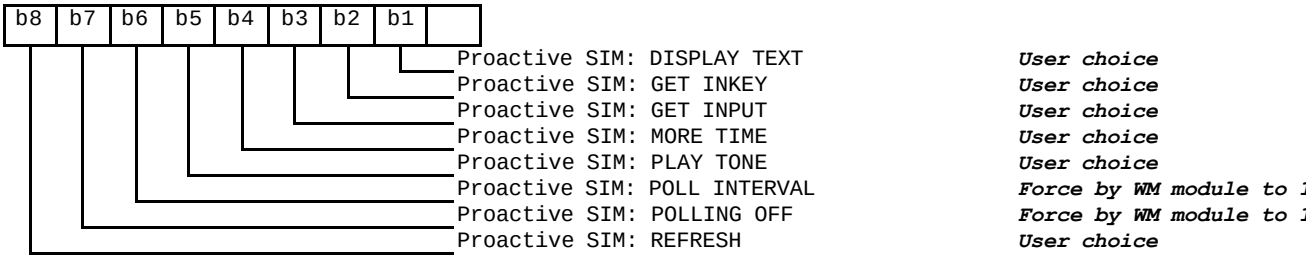
First byte (Download):



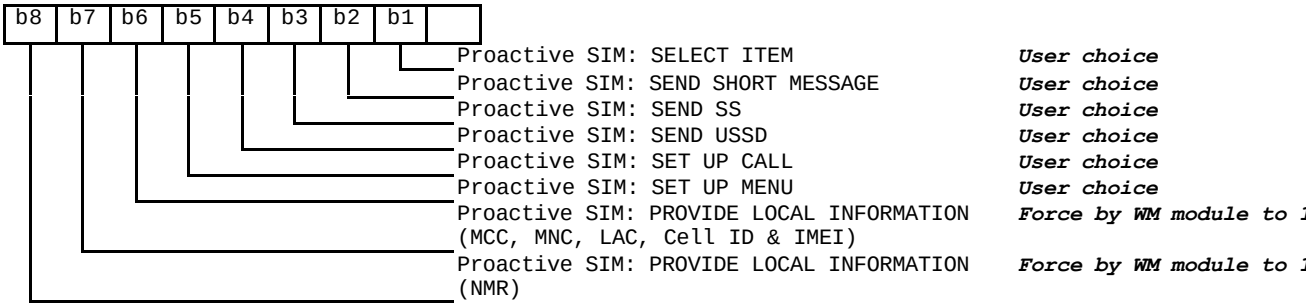
Second byte (Other):



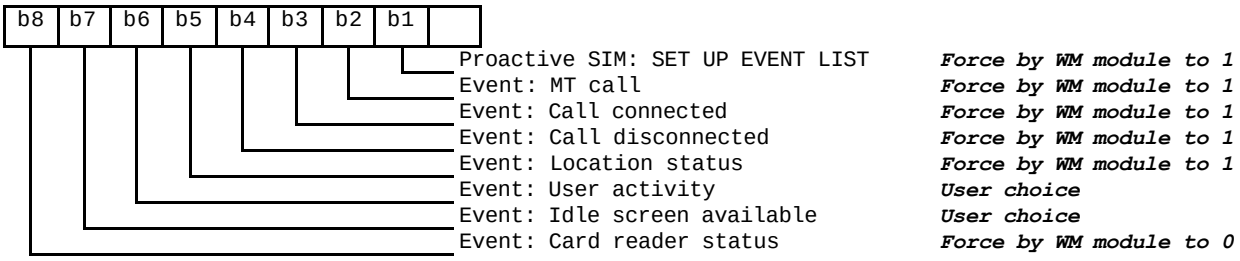
Third byte (Proactive SIM):



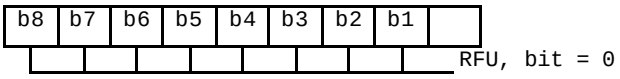
Fourth byte (Proactive SIM):



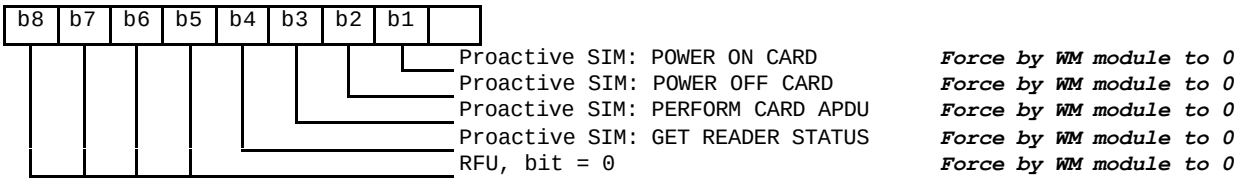
Fifth byte (Event driven information):



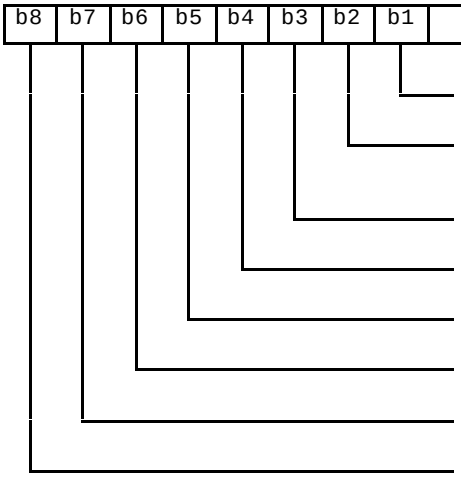
Sixth byte: (reserved for Event driven information extensions)



Seventh byte (Multiple card proactive commands) for class "a"

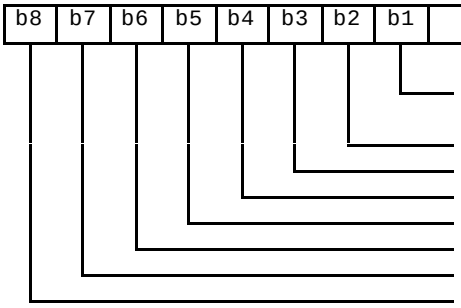


Eighth byte (Proactive SIM):



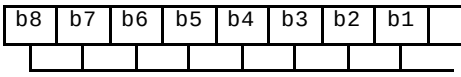
Proactive SIM: TIMER MANAGEMENT (start, stop)	***Force by WM module to 1***
Proactive SIM: TIMER MANAGEMENT (get current value)	***Force by WM module to 1***
Proactive SIM: PROVIDE LOCAL INFORMATION (date, time and time zone)	***Force by WM module to 0***
Binary choice in GET INKEY	***Force by WM module 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:



Sustained DISPLAY TEXT (see 6.4.1)	***Force by WM module to 0***
SEND DTMF command (see 6.4.24)	***Force by WM module to 0***
RFU, bit = 0	
RFU, bit = 0	
RFU, bit = 0	
RFU, bit = 0	
RFU, bit = 0	
RFU, bit = 0	

Subsequent bytes:



RFU, bit = 0

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

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23 APPENDIX E: Coding of Alpha fields in the SIM for UCS2

The coding can take one of three forms. If the ME supports UCS2 coding of alpha fields in the SIM, the ME shall support all three coding schemes for character sets containing 128 characters or less; for character sets containing more than 128 characters, the ME shall at least support the first coding scheme. If the alpha field record contains GSM default alphabet characters only, then none of these schemes shall be used in that record. Within a record, only one coding scheme, either GSM default alphabet, or one of the three described below, shall be used.

1) If the **first octet in the alpha string is '80'**, then the remaining octets are 16 bit UCS2 characters, with the more significant octet (MSO) of the UCS2 character coded in the lower numbered octet of the alpha field, and the less significant octet (LSO) of the UCS2 character is coded in the higher numbered alpha field octet, i.e. octet 2 of the alpha field contains the more significant octet (MSO) of the first UCS2 character, and octet 3 of the alpha field contains the less significant octet (LSO) of the first UCS2 character (as shown below). Unused octets shall be set to 'FF', and if the alpha field is an even number of octets in length, then the last (unusable) octet shall be set to 'FF'.

Example 1

Octet 1	Octet 2	Octet 3	Octet 4	Octet 5	Octet 6	Octet 7	Octet 8	Octet 9
'80'	$Ch1_{MSO}$	$Ch1_{LSO}$	$Ch2_{MSO}$	$Ch2_{LSO}$	$Ch3_{MSO}$	$Ch3_{LSO}$	'FF'	'FF'

2) **If the first octet of the alpha string is set to '81'**, then the second octet contains a value indicating the number of characters in the string, and the third octet contains an 8 bit number which defines bits 15 to 8 of a 16 bit base pointer, where bit 16 is set to zero, and bits 7 to 1 are also set to zero. These sixteen bits constitute a base pointer to a "half-page" in the UCS2 code space, to be used with some or all of the remaining octets in the string. The fourth and subsequent octets in the string contain codings as follows; if bit 8 of the octet is set to zero, the remaining 7 bits of the octet contain a GSM Default Alphabet character, whereas if bit 8 of the octet is set to one, then the remaining seven bits are an offset value added to the 16 bit base pointer defined earlier, and the resultant 16 bit value is a UCS2 code point, and completely defines a UCS2 character.

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Example 2

Octet 1	Octet 2	Octet 3	Octet 4	Octet 5	Octet 6	Octet 7	Octet 8	Octet 9
'81'	'05'	'13'	'53'	'95'	'A6'	'XX'	'FF'	'FF'

In the above example;

- Octet 2 indicates there 5 characters in the string
- Octet 3 indicates bits 15 to 8 of the base pointer, and indicates a bit pattern of 0hhh hhhh h000 0000 as the 16 bit base pointer number. Bengali characters for example start at code position 0980 (0*000 1001 1*000 0000), which is indicated by the coding '13' in octet 3 (shown by the italicised digits).
- Octet 4 indicates GSM Default Alphabet character ‘53’, i.e. "S".
- Octet 5 indicates a UCS2 character offset to the base pointer of '15', expressed in binary as follows 001 0101, which, when added to the base pointer value results in a sixteen bit value of 0000 1001 1001 0101, i.e. '0995', which is the Bengali letter KA.

  Octet 8 contains the value 'FF', but as the string length is 5, this a valid character in the string, where the bit pattern 111 1111 is added to the base pointer, yielding a sixteen bit value of 0000 1001 1111 1111 for the UCS2 character (i.e. '09FF').

3) **If the first octet of the alpha string is set to '82'**, then the second octet contains a value indicating the number of characters in the string, and the third and fourth octets contain a 16 bit number which defines the complete 16 bit base pointer to a "half-page" in the UCS2 code space, for use with some or all of the remaining octets in the string. The fifth and subsequent octets in the string contain codings as follows; if bit 8 of the octet is set to zero, the remaining 7 bits of the octet contain a GSM Default Alphabet character, whereas if bit 8 of the octet is set to one, the remaining seven bits are an offset value added to the base pointer defined in octets three and four, and the resultant 16 bit value is a UCS2 code point, and defines a UCS2 character.

Example 3

Octet 1	Octet 2	Octet 3	Octet 4	Octet 5	Octet 6	Octet 7	Octet 8	Octet 9
'82'	'05'	'05'	'30'	'2D'	'82'	'D3'	'2D'	'31'

In the above example

- Octet 2 indicates there are 5 characters in the string
- Octets 3 and 4 contain a sixteen bit base pointer number of '0530', pointing to the first character of the Armenian character set.

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- Octet 5 contains a GSM Default Alphabet character of '2D', which is a dash "-".
- Octet 6 contains a value '82', which indicates it is an offset of '02' added to the base pointer, resulting in a UCS2 character code of '0532', which represents Armenian character Capital BEN.
- Octet 7 contains a value 'D3', an offset of '53', which when added to the base pointer results in a UCS2 code point of '0583', representing Armenian Character small PIWR.

24 APPENDIX F: Specification of Power Down Control via RS232

This appendix aims at describing how the power down mode of the Wismo can be activated and disactivated via the RS232 serial link.

In this document, the term “DTE” refers to the customer device driving the Wismo, which is referred to as the “DCE”.

The terms referring to the RS232 signals and levels are used according to recommendations V.24 and V.28. However they are worth remembering:

DTR is the circuit 108/2, TX is the circuit 103, RX is the circuit 102 and CTS is the circuit 106.

The logical level “HIGH or ON” corresponds to the electrical level of 12 V, whereas the level “LOW or OFF” corresponds to –12 V.

Basically the activation and disactivation is always initiated from the DTE and is carried out through the handshaking of DTR and CTS.

The power down mode can be entered only when the DCE is idle, i.e. when no connection to the network is in progress.

Into the details :

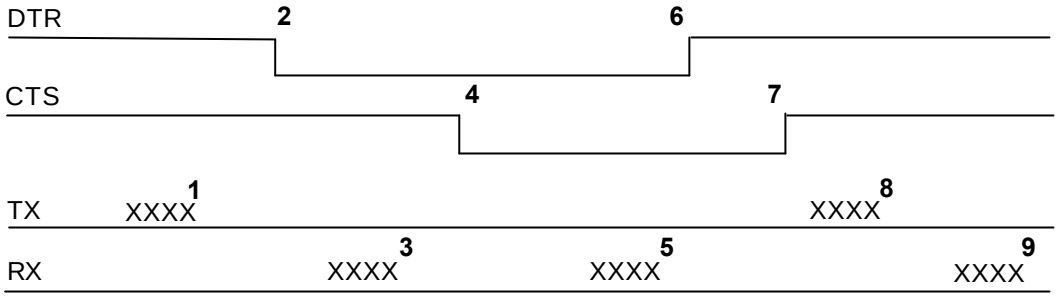
Whenever the DTE requests the DCE to enter the power down mode, the DTE drops (ON-to-OFF transition) DTR. From this time on, the DTE **must not send** any more characters on the TX line i.e. even the TX FIFO must be empty.

The DCE acknowledges entry in the power down mode by dropping CTS, which can occur at maximum 5s after the DTR drop. However during that latency period the DTE is prohibited from sending any more AT commands.

AT responses can be sent back to the DTE even if the DCE is in power down mode (actually the DCE exits the power down mode, sends the AT response and enters back the power down mode). Therefore the DTE can drop DTR just after having sent an AT command and before receiving the AT response.

The DCE is made to exit the power down mode by raising the DTR. DCE is not ready to receive further AT commands until it raises in turn CTS, which can take up to 2s from the DTR raise.

Herebelow is a diagram depicting the handshaking:



Description of the stages:

1: the DTE sends an AT command

2: the DTE drops DTR to make the DCE enter the power down mode. Warning: this mode will not really entered until CTS is dropped (stage 4). The DTE could also have dropped DTR after receiving the AT response (stage 3).

3: the DCE sends back the AT response (if any)

4: the DCE drops CTS and does enter the power down mode.

5: the DCE sends back an unsolicited response (for instance a RING or +SMTI (incoming SMS indication))

6: the DTE wants to reply to that unsolicited response so it causes the DCE to exit the power down mode by raising its DTR.

7: in turn the DCE acknowledges the exit of the power donw mode by raising CTS.

8) & 9) exchange of AT commands/responses.

Note 1): The DTE must not send any AT commands from stage 2 on up to stage 7.

Note 2): During the latency period (between stages 2 and 4) should the DTE want to abort the power down mode, it raises DTR and should wait for 150us before assessing CTS. If CTS is still high than the DCE has aborted the power down mode and is ready to receive AT commands.

The 150us wait should get around the race condition between DTR raise and CTS drop.

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25 APPENDIX G: Execution conditions and Sim dependence of AT commands

25.1 General commands

AT commands	Execution conditions	SIM dependence
AT+CGMI	Without	N
AT+CGMM	Without	N
AT+CGMR	Without	N
AT+CGSN	Without	N
AT+CSCS	+WIND: 4	N
AT+WPCS	+WIND: 4	N
AT+CIMI	+WIND: 4	Y
AT+CCID	+WIND: 1	Y
AT+GCAP	Without	N
A/	Depends of previous command	Depends of prev. command
AT+CPOF	+WIND: 3 without SIM, +WIND: 1 with SIM	N
AT+CFUN	Without	N
AT+CPAS	Without	N
AT+CMEE	Without	N
AT+CKPD	Depends of the sequence used	Y/N
AT+CCLK	+WIND: 4	Y
AT+CALA	Without	N
AT+CRMP	Without	N
AT+CRSL	Without	N

25.2 Call Control commands

AT commands	Execution conditions	SIM dependence
ATD	Depends of sequence used	Y/N
ATH	Without	N
ATA	Without	N
AT+CEER	+WIND: 4	Y

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AT+VTD	Without	N
AT+VTS	Without	N
ATDL	Without	N
AT%D	Without	N
ATS0	Without	N
AT+CICB	Without	N
AT+CSNS	Without	N
AT+VGR	Without	N
AT+VGT	Without	N
AT+CMUT	Without	N
AT+SPEAKER	Without	N
AT+ECHO	Without	N
AT+SIDET	Without	N
AT+VIP	Without	N

25.3 Network service commands

AT commands	Execution conditions	SIM dependence
AT+CSQ	Without	N
AT+COPS	+WIND: 4	Y
AT+CREG	Without	N
AT+WOPN	Without	N
AT+CPOL	+WIND: 7	Y

25.4 Security commands

AT commands	Execution conditions	SIM dependence
AT+CPIN	+WIND: 1	Y
AT+CPIN2	after PIN entered	Y
AT+CPINC	+WIND: 1	Y
AT+CLCK	+WIND: 4	Y
AT+CPWD	+WIND: 4	Y

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25.5 Phonebook commands

AT commands	Execution conditions	SIM dependence
AT+CPBS	+WIND: 4	Y
AT+CPBR	+WIND: 4	Y
AT+CPBF	+WIND: 4	Y
AT+CPBW	+WIND: 4	Y
AT+CPBP	+WIND: 4	Y
AT+CPBN	+WIND: 4	Y
AT+CNUM	+WIND: 4	Y
AT+WAIP	Without	N

25.6 Short Messages commands

AT commands	Execution conditions	SIM dependence
AT+CSMS	+WIND: 4	Y
AT+CNMA	+WIND: 4	Y
AT+CPMS	+WIND: 4	Y
AT+CMGF	+WIND: 4	Y
AT+CSAS	+WIND: 4	Y
AT+CRES	+WIND: 4	Y
AT+CSDH	+WIND: 4	Y
AT+CNMI	+WIND: 4	Y
AT+CMGR	+WIND: 4	Y
AT+CMGL	+WIND: 4	Y
AT+CMGS	+WIND: 4	Y
AT+CMGW	+WIND: 4	Y
AT+CMSS	+WIND: 4	Y
AT+CSMP	+WIND: 4	Y
AT+CMGD	+WIND: 4	Y
AT+CSCA	+WIND: 4	Y
AT+CSCB	+WIND: 4	Y
AT+WCBM	+WIND: 4	Y
AT+WMSC	+WIND: 4	Y
AT+WMGO	+WIND: 4	Y
AT+WUSS	Without	N

25.7 Supplementary Services commands

AT commands	Execution conditions	SIM dependence
AT+CCFC	+WIND: 4	Y
AT+CLCK	+WIND: 4	Y
AT+CPWD	+WIND: 4	Y
AT+CCWA	+WIND: 4	Y
AT+CLIR	+WIND: 4	Y
AT+CLIP	+WIND: 4	Y
AT+COLP	+WIND: 4	Y
AT+CAOC	+WIND: 4	Y
AT+CACM	+WIND: 4	Y
AT+CAMM	+WIND: 4	Y
AT+CPUC	+WIND: 4	Y
AT+CHLD	+WIND: 4	Y
AT+CLCC	Without	N
AT+CSSN	Wtihout	N
AT+CUSD	Without	N
AT+CCUG	+WIND: 4	Y

25.8 Data commands

AT commands	Execution conditions	SIM dependence
AT+CBST	Without	N
AT+FCLASS	Without	N
AT+CR	Without	N
AT+CRC	Without	N
AT+ILRR	+WIND: 4	N
AT+CRLP	Without	N
AT+DOPT	Without	N
AT%C	Without	N
AT+DS	Without	N
AT+DR	Without	N
\N	Without	N

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25.9 Fax commands

AT commands	Execution conditions	SIM dependence
AT+FTM	Without	N
AT+FRM	Without	N
AT+FTH	Without	N
AT+FRH	Without	N
AT+FTS	Without	N
AT+FRS	Without	N

25.10 Fax Class 2 commands

AT commands	Execution conditions	SIM dependence
AT+FDT	Without	N
AT+FDR	Without	N
AT+FET	Without	N
AT+FPTS	Without	N
AT+FK	Without	N
AT+FBOR	Without	N
AT+FBUF	Without	N
AT+FCQ	Without	N
AT+FCR	Without	N
AT+FDIS	Without	N
AT+FDCC	Without	N
AT+FLID	Without	N
AT+FPHCTO	Without	N

25.11 V24-V25 commands

AT commands	Execution conditions	SIM dependence
AT+IPR	Without	N
AT+ICF	Without	N
AT+IFC	Without	N
AT&C	Without	N
AT&D	Without	N
AT&S	Without	N

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ATO	+WIND: 4	N
ATQ	Without	N
ATV	Without	N
ATZ	Without	N
AT&W	Without	N
AT&T	Without	N
ATE	Without	N
AT&F	Without	N
AT&V	Without	N
ATI	Without	N

25.12 Specific AT commands

AT commands	Execution conditions	SIM dependence
AT+CCED	Without	N
AT+WIND	Without	N
AT+ADC	Without	N
AT+CMER	+WIND: 4	N
AT+WLPR	+WIND: 1	N
AT+WLPW	+WIND: 1	N
AT+WIOR	Without	N
AT+WIOW	Without	N
AT+WAC	Without	N
AT+WTONE	Without	N
AT+WDTMF	Without	N
AT+WDWL	Without	N
AT+WVR	Without	N
AT+WDR	Without	N
AT+WHWV	Without	N
AT+WDOP	Without	N
AT+WSVG	Without	N
AT+WSTR	Without	N
AT+WSCAN	Without	N
AT+WRIM	Without	N
AT+W32K	Without	N
AT+WCDM	Without	N
AT+WSSW	Without	N
AT+WCCS	+WIND: 4	N
AT+WLCK	Without	N
AT+CPHS	+WIND: 4	Y

25.13 SIM Toolkit commands

AT commands	Execution conditions	SIM dependence
AT+STSF	Without	N
AT+STIN	+WIND: 4	Y
AT+STGI	+WIND: 4	Y
AT+STGR	+WIND: 4	Y

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