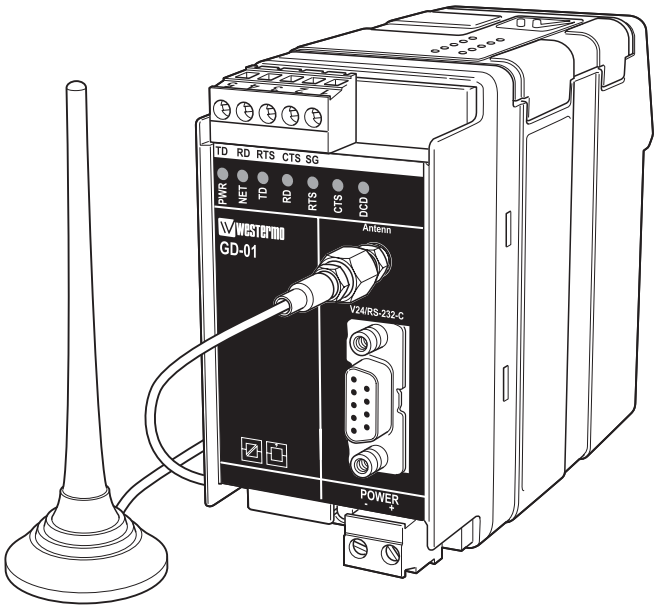
AT-Commands
Interface Guide

GD-01

GD-01 TCP/GD-01 US

6196-2220



GSM
Modem

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Short form list of AT commands

	S-registers	Description	Direct Save	+CSAS	&W	&F	Default value
	S0	Ring signals before auto answer	-	-	x	x	0

General commands

Page	Command	Description	Direct Save	+CSAS	&W	&F	Default value
26	+CGMI	Manufacturer identification	–	–	–	–	–
26	+CGMM	Request model identification	–	–	–	–	–
26	+CGMR	Request revision identification	–	–	–	–	–
27	+CGSN	Product Serial Number	–	–	–	–	–
27	+CSCS	Select TE character set	–	–	x	x	"PPCP437"
28	+WPCS	Phonebook Character Set	–	–	x	x	"TRANSPARENT"
28	+CIMI	Request IMSI	–	–	–	–	–
29	+CCID	Card Identification	–	–	–	–	–
29	+GCAP	Capabilities list	–	–	–	–	–
29	+CPOF	Power off	–	–	–	–	–
30	+CFUN	Set phone functionality	–	–	–	–	–
31	+CPAS	Phone activity status	–	–	–	–	–
31	+CMEE	Report Mobile Equipment errors	–	–	x	x	0
32	+CKPD	Keypad control	–	–	–	–	–
32	+CCLK	Clock Management	–	–	–	–	–
33	+CALA	Alarm Management	–	–	–	–	–

Call control commands

Page	Command	Description	Direct Save	+CSAS	&W	&F	Default value
34	D	Dial command	-	–	–	–	–
36	H	Hang–Up command	–	–	–	–	–
37	A	Answer a call	–	–	–	–	–
37	+CEER	Extended error report	–	–	–	–	–
38	+VTD	DTMF signals tone duration	–	–	–	–	–
38	+VTS	Send DTMF signals	–	–	–	–	–
39	%Dn	Automatic dialing with DTR	–	–	x	x	0
40	+CICB	Incoming Call Bearer	–	–	x	x	2
41	+CSNS	Single Numbering Scheme	–	–	x	x	0

Network service commands

Page	Command	Description	Direct Save	+CSAS	&W	&F	Default value
42	+CSQ	Signal Quality	–	–	–	–	–
43	+COPS	Operator selection	x	–	x	x	0,2
46	+CREG	Network registration	–	–	x	x	0
47	+WOPN	Read operator name	–	–	–	–	–
48	+CPOL	Preferred operator list	–	–	–	–	–

Security commands

Page	Command	Description	Direct Save	+CSAS	&W	&F	Default value
50	+CPIN	Enter PIN	–	–	–	–	–
52	+CPIN2	Enter PIN2	–	–	–	–	–
53	+CPINC	PIN remaining attempt number	–	–	–	–	–
54	+CLCK	Facility lock	–	–	–	–	–
56	+CPWD	Change password	–	–	–	–	–

Phonebook commands

Page	Command	Description	Direct Save	+CSAS	&W	&F	Default value
57	+CPBS	Select phonebook memory storage	-	-	-	-	-
58	+CPBR	Read phonebook entries	-	-	-	-	-
59	+CPBF	Find phonebook entries	-	-	-	-	-
60	+CPBW	Write phonebook entry	-	-	-	-	-
62	+CPBP	Phonebook phone search	-	-	-	-	-
63	+CPBN	Move action in phonebook	-	-	-	-	-
65	+CNUM	Subscriber number	-	-	-	-	-
66	+WAIP	Avoid phonebook init	-	-	x	x	0
67	+WDCP	Delete Calls Phonebook	-	-	-	-	-
68	+CSVM	Set Voice Mail Number	x	-	-	x	0

Short Messages commands

Page	Command	Description	Direct Save	+CSAS	&W	&F	Default value
70	+CSMS	Select message service	x	–	–	–	0
71	+CNMA	New Message Acknowledgement	–	–	–	–	–
73	+CPMS	Preferred Message Storage	–	–	–	–	–
74	+CMGF	Preferred Message Format	–	–	x	x	1
75	+CSAS	Save Settings	–	–	–	–	–
75	+CRES	Restore settings	–	–	–	–	–
75	+CSDH	Show text mode parameters	–	–	x	x	0
76	+CNMI	New message indication	–	x	–	x	0,1,0,0,0
78	+CMGR	Read message	–	–	–	–	–
80	+CMGL	List message	–	–	–	–	–
81	+CMGS	Send message	–	–	–	–	–
82	+CMGW	Write Message to Memory	–	–	–	–	–
83	+CMSS	Send Message From Storage +CMSS	–	–	–	–	–
84	+CSMP	Set Text Mode Parameters	–	x	–	x	1,167,0,0
86	+CMGD	Delete message	–	–	–	–	–
87	+CSCA	Service center address	–	x	–	–	SIM dependant
88	+CSCB	Select Cell Broadcast Message Types	–	–	–	–	–
89	+WCBM	Cell Broadcast Message Identifiers	–	–	–	–	–
89	+WMSC	Message status modification	–	–	–	–	–
90	+WMGO	Message overwriting	–	–	–	–	–
90	+WUSS	Unchange SMS Status	–	x	–	x	0

Supplementary Services commands

Page	Command	Description	Direct Save	+CSAS	&W	&F	Default value
91	+CCFC	Call forwarding	–	–	–	–	–
92	+CLCK	Call barring	–	–	–	–	–
94	+CPWD	Modify SS password	–	–	–	–	–
94	+CCWA	Call waiting	–	–	x	x	0
96	+CLIR	Calling line identification restriction	–	–	–	–	–
97	+CLIP	Calling line identification presentation	–	–	x	x	0
98	+COLP	Connected line identification presentation	–	–	x	x	0
99	+CAOC	Advice of charge	–	–	–	–	–
100	+CACM	Accumulated call meter	–	–	–	–	–
101	+CAMM	Accumulated call meter maximum	–	–	–	–	–
102	+CPUC	Price per unit and currency table	–	–	–	–	–
103	+CHLD	Call related supplementary services	–	–	–	–	–
104	+CLCC	List current calls	–	–	–	–	–
105	+CSSN	Supplementary service notifications	–	–	x	x	0,0
107	+CUSD	Unstructured supplementary service data	x	–	–	x	0
108	+CCUG	Closed user group	x	–	–	–	0,0,0

Data commands

Page	Command	Description	Direct Save	+CSAS	&W	&F	Default value
109	+CBST	Bearer type selection	–	–	x	x	0,0,1
111	+FCLASS	Select mode	–	–	–	–	–
112	+CR	Service reporting control	–	–	x	x	0
113	+CRC	Cellular result codes	–	–	x	x	0
113	+ILRR	DTE–DCE local rate reporting	–	–	x	x	0
114	+CRLP	Radio link protocol parameters	–	–	x	x	61,61,48,6,1
115	+DOPT	Others radio link parameters	–	–	x	x	1,1
116	%C	Select data compression	–	–	x	x	2
117	+DS	V42 bis data compression	–	–	x	x	3,0,4096,20
118	+DR	V42 bis data compression report	–	–	x	x	0
119	\N	Select data error correcting mode	–	–	x	x	0

Fax class 1 commands

Page	Command	Description	Direct Save	+CSAS	&W	&F	Default value
120	+FTM	Transmit speed	–	–	–	–	–
121	+FRM	Receive speed	–	–	–	–	–
121	+FTH	HDLC transmit speed	–	–	–	–	–
122	+FRH	HDLC receive speed	–	–	–	–	–
122	+FTS	Stop transmission and wait	–	–	–	–	–
123	+FRS	Receive silence	–	–	–	–	–

Fax class 2 commands

Page	Command	Description	Direct Save	+CSAS	&W	&F	Default value
125	+FDT	Transmit Data	–	–	–	–	–
125	+FDR	Receive Data	–	–	–	–	–
125	+FET	Transmit page punctuation	–	–	–	–	–
126	+FPTS	Page transfer status parameters	–	–	–	–	–
126	+FK	Terminate Session	–	–	–	–	–
126	+FBOR	Page transfer bit order	–	–	x	x	0
127	+FBUF	Buffer size report	–	–	–	–	–
127	+FCQ	Copy quality checking	–	–	x	x	0
127	+FCR	Capability to receive	–	–	x	x	1
128	+FDIS	Current sessions parameters	–	–	x	x	0,5,0,0,2,0,0,0,0
130	+FDCC	DCE capabilities parameters	–	–	x	x	0,5,0,0,2,0,0,0,0
130	+FLID	Local ID string	–	–	–	–	–
130	+FPHCTO	Page transfer timeout parameter	–	–	x	x	30

V24-V25 commands

Page	Command	Description	Direct Save	+CSAS	&W	&F	Default value
131	+IPR	Fixed DTE rate	–	–	x	–	9600
132	+ICF	DTE–DCE character framing	–	–	x	–	3,4
133	+IFC	DTE–DCE local flow control	–	–	x	–	2,2
134	&C	Set DCD signal	–	–	x	–	1
134	&D	Set DTR signal	–	–	x	–	1
135	&S	Set DSR signal	–	–	x	–	1
135	O	Back to online mode	–	–	–	–	–
135	Q	Result code suppression	–	–	x	x	0
136	V	DCE response format	–	–	x	x	1
136	Z	Default configuration	–	–	–	–	–
137	&W	Save configuration	–	–	–	–	–
137	&T	Auto–tests	–	–	–	–	–
138	E	Echo	–	–	x	–	1
138	&F	Restore factory settings	–	–	–	–	–
139	&V	Display configuration	–	–	–	–	–
140	I	Request identification information	–	–	–	–	–
141	+WMUX	Data / Commands Multiplexing	–	–	x	x	0

Specific AT commands

Page	Command	Description	Direct Save	+CSAS	&W	&F	Default value
142	+CCED	Cell environment description	–	–	–	–	–
143	+CCED	Automatic RxLev indication	–	–	–	–	–
144	+WIND	General Indications	x	–	–	x	0
146	+WLPR	Read Language Preference	–	–	–	–	–
147	+WLPW	Write Language Preference	–	–	–	–	–
147	+WAC	Abort command	–	–	–	–	–
148	+WDWL	Downloading	–	–	–	–	–
148	+WDR	Data Rate	x	–	–	–	2
149	+WHWV	Hardware Version	–	–	–	–	–
149	+WDOP	Date of Production	–	–	–	–	–
150	+WSTR	Status Request	–	–	–	–	–
151	+WSCAN	Scan	–	–	–	–	–
152	+WRIM	Ring Indicator Mode	–	–	–	–	–
153	+W32K	32kHz Power down Mode	–	–	–	–	–
153	+WSSW	Internal Software version	–	–	–	–	–
154	+WCCS	Custom Character Set	–	–	–	–	–
156	+WLCK	Lock	–	–	–	–	–
158	+CPHS	CPHS command	x	–	–	x	0
159	+WMIR	Customer storage mirror	–	–	–	–	–
159	+WMBN	CPHS Mail Box Number	–	–	–	–	–
161	+WRST	Reset	–	–	–	–	–
162	+WATH	Hang–up	–	–	–	–	–

AT commands for GPRS

Page	Command	Description	Direct Save	+CSAS	&W	&F	Default value
164	+CGDCONT	Define PDP Context	–	–	–	–	–
166	+CGQREQ	Requested Quality of Service Profile	–	–	–	–	–
170	+CGQMIN	(Minimum acceptable) Quality of Service Profile	–	–	–	–	–
172	+CGATT	GPRS attach or detach	–	–	–	–	–
173	+CGACT	PDP context activate or deactivate	–	–	–	–	–
174	+CGDATA	Enter data state	–	–	–	–	–
175	+CGCLASS	GPRS mobile station class	–	–	–	–	–
177	+CGSMS	Select service for MO SMS messages	–	–	–	–	–
178	+CGEREP	GPRS event reporting	–	–	–	–	–
180	+CGREG	GPRS network registration status	–	–	–	–	–
181	D	Request GPRS IP service	–	–	–	–	–
183	+CGAUTO	Automatic response to a network request for PDP context activation	–	–	–	–	–
184	+CGANS	Manual response to a network request for PDP context activation	–	–	–	–	–
186	+CGPADDR	Show PDP address	–	–	–	–	–
187	+CGCOUNTERS	PDP Counters Infos	–	–	–	–	–
188	+WGPRS	GPRS PARAMETERS CUSTOM:	–	–	–	–	–
190	+WGAUTH	Set authentication parameters	–	–	–	–	–
191	+WGIPCPINF	Get IPCP informations	–	–	–	–	–

List of AT-commands

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

Information responses and result codes

Responses normally start and end with <CR><LF>, except when the modem is set to "short result code format" with the command ATV0, or when the ATQ1 (no result codes) command is used.

If command syntax is incorrect, an **ERROR** string is returned. If extended error result codes are configured (+CMEE) and if command syntax is correct but with some incorrect parameters, the **+CME ERROR:** <Err> or **+CMS ERROR:** <SmsErr> strings are returned with different error codes. If the command line has been performed successfully, an **OK** string is returned. In some cases, such as "AT+CPIN?" or (unsolicited) incoming events, the product does not return the **OK** string as a response.

In the AT-command list below, <CR> and <CR><LF> are intentionally omitted.

Special AT-commands

In addition to the commands listed below there are two special commands that do not start with AT. The first command is "A/" without any <CR>. This command makes the modem repeat the last entered command. The second special command is the "+++" (also without <CR>). This command is called "escape sequence" and is used when the modem is in dedicated mode (online mode). When entering "+++" in dedicated mode, the modem will switch from "online mode" to "online command mode". This means that it is possible to send commands to the local modem. The escape sequence is useful when disconnecting the active call. The disconnection is made with the ATH command (see the list of AT-commands below). The ATO command can also be used when in "online command mode".

General commands

+CGMI – Manufacturer identification

Description:

This command gives the GSM engine manufacturer identification.

Syntax:

AT+CGMI

Command example	Possible responses	Note
AT+CGMI	WAVECOM MODEM OK	Module manufacturer

+CGMM – Request model identification

Description:

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

Syntax:

AT+CGMM

Command example	Possible responses	Note
AT+CGMM	MULTIBAND 900E 1800 OK	Support of 900 and 1800 MHz

+CGMR – Request revision identification

Description:

This command is used to get the GSM engine software version.

Syntax:

AT+CGMR

Command example	Possible responses	Note
AT+CGMR	430a09gm.2D ...	Software release 4.30
	OK	

+CGSN – Product Serial Number

Description:

This command allows the user application to get the IMEI (International Mobile Equipment Identifier) of the product.

Syntax:

AT+CGSN

Command example	Possible responses	Note
AT+CGSN	135790248939 OK	IMEI read from EEPROM
AT+CGSN	+CME ERROR: 22	IMEI not found in EEPROM

+CSCS – Select TE character set

Description:

This command informs the ME which character set is used by the TE. The ME can convert each character of entered or displayed strings. This is used to send, read or write short messages. See also +WPCS for the phonebooks' character sets.

Syntax:

AT+CSCS=<Character Set>

<Character Set> may be one of the following parameters	
"GSM"	GSM default alphabet.
"PCCP437"	PC character set code page 437.
"CUSTOM"	User defined character set (see also. +WCCS command).
"HEX"	Hexadecimal mode. No character set used; the user can read or write hexadecimal values.

Command example	Possible responses	Note
AT+CSCS="GSM"	OK	Command valid
AT+CSCS="PCCP437"	OK	Command valid
AT+CSCS=?	+CSCS: ("GSM"... OK	Possible values

+WPCS – Phonebook Character Set

Description:

This specific command informs the ME which character set is used by the TE for the phonebooks. The ME can convert each character of entered or displayed strings. This is used to read or write phonebook entries. See also +CSCS for the short messages character sets.

Syntax:

AT+WPCS=<Character Set>

<Character Set> may be one of the following parameters	
"TRANSPARENT"	Transparent mode. The strings are displayed and entered as they are stored in SIM or in ME.
"CUSTOM"	User defined character set (see also. +WCCS command).
"HEX"	Hexadecimal mode. No character set used ; the user can read or write hexadecimal values.

Command example	Possible responses	Note
AT+WPCS="TRANSPARENT"	OK	Command valid
AT+WPCS="CUSTOM"	OK	Command valid
AT+WPCS=?	+WPCS: ("TRANSP... OK	Possible values

+CIMI – Request IMSI

Description:

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

Syntax:

AT+CIMI

Command example	Possible responses	Note
AT+CIMI	208200120320598	IMSI value (15 digits)

+CCID – Card Identification

Description:

This command orders the product to read the EF-CCID file on the SIM card. If there is no EF-CCID file present on the SIM, the +CCID answer will not be sent, but the OK message will be returned.

Syntax:

AT+CCID

Command example	Possible responses	Note
AT+CCID	+CCID: "123456789...	EF-CCID is present, hexadecimal format
AT+CCID?	+CCID: "123456789...	Same result as +CCID
AT+CCID=?	OK	No parameter but this command is valid

+GCAP – Capabilities list

Description:

This command gets the complete list of capabilities.

Syntax:

AT+GCAP

Command example	Possible responses	Note
AT+GCAP	+GCAP: +CGSM +FCLASS OK	Supports GSM and FAX commands

+CPOF – Power down modem software

Description:

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

Syntax:

AT+CPOF

Command example	Possible responses	Note
AT+CPOF	OK	Command valid

+CFUN – Set phone functionality

Description:

This command selects the mobile station's level of functionality. When the application wants to stop the product with a power off, or if the application wants to force the product to execute an IMSI DETACH procedure, then it must send:

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

This command executes an IMSI DETACH and makes a backup copy of some internal parameters in SIM and in EEPROM. The SIM card cannot then be accessed. If the mobile equipment is not powered off by the application after this command has been sent, a re-start command

AT+CFUN=1

...will have to be issued to restart the whole GSM registration process. If the mobile equipment is turned off after this command, then a power on will automatically restart the whole GSM process. The AT+CFUN=1 command restarts the entire GSM stack and GSM functionality: a complete software reset is performed. All parameters are reset to their previous values if AT&W was not used.

If you write entries in the phonebook (+CPBW) and then reset the product directly (AT+CFUN=1, with no previous AT+CFUN=0 command), some entries may not be written (the SIM task does not have enough time to write entries in the SIM card).
In addition, the OK response will be sent at the last baud rate defined by the +IPR command. With the autobauding mode the response can be at a different baud rate, it is therefore preferable to save the defined baud rate with AT&W before directly sending the AT+CFUN=1 command.

Syntax:

AT+CFUN=<functionality level>

<functionality level> may be one of the following parameters

0 Execute an IMSI detach
1 Restart the whole GSM registration process.

Command example	Possible responses	Note
AT+CFUN?	+CFUN: 1 OK	Full functionality indicated Command valid
AT+CFUN=0	OK	Detach from network.
AT+CFUN=1	OK	Set the full functionality mode with a complete software reset

+CPAS – Phone activity status

Description:

This command returns the activity status of the mobile equipment.

Syntax:

AT+CPAS

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

Defined values:

<pas> may be one of the following parameters

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

+CMEE – Report Mobile Equipment Errors

Description:

This command disables or enables the use of the "+CME ERROR: <xxx>" or "+CMS ERROR:<xxx>" result code instead of simply "ERROR".

See chapter "error codes" for "+CME ERROR" result codes description and "+CMS ERROR" result codes.

Syntax:

AT+CMEE=<error reporting flag>

<error reporting flag> may be one of the following parameters

0	Disable ME error reports, use only "ERROR"
1	Enable long error reports, "+CME ERROR xxx" or "+CMS ERROR xxx"

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

+CKPD – Keypad control

Description:

This command emulates the ME keypad by sending each keystroke as a character in a <keys> string. The supported GSM sequences are listed below in this manual. If emulation fails, a +CME ERROR: <err> is returned. If emulation succeeds, the result depends on the GSM sequence activated.

NOTE: In the case where the FDN phonebook is activated, the sequences concerning "call forwarding" are allowed only if the entire sequence is written in the FDN.

Syntax:

AT+CKPD=<keys>

<keys> may be a string of the following characters

0-9,*,# characters allowed in the keypad control string

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

+CCLK – Clock Management

Description:

This command is used to set or get the current date and time of the ME real-time clock. Default date/time is "98/01/01,00:00:00" (January 1st, 1998 / midnight).

Syntax:

AT+CCLK=<date and time string>

<date and time string> is a string with the following format:

"yy/MM/dd,hh:mm:ss" Valid years are 98 (for 1998) to 97 (for 2097). The seconds field is not mandatory.

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

+CALA – Alarm Management

Description:

This command is used to set alarms date/time in the ME.
The maximum number of alarms is 16. Seconds are not taken into account.

Syntax:

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

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

<date and time string> is a string with the following format:

"yy/MM/dd,hh:mm:ss" Valid years are 98 (for 1998) to 97 (for 2097). The seconds field is not mandatory.

<index> is a number from 0 to 15.

Command example	Possible responses	Note
AT+CALA= "00/06/09,07:30"	OK	Set an alarm for June 9th, 2000 at 7:30 am, alarm stored
AT+CALA= "99/03/05,13:00:00"	+CME ERROR 3	Invalid alarm (date/time expired)
AT+CALA?	+CALA: "00/06/08,15:25:00",0 +CALA: "00/06/09,07:30:00",1 +CALA: "00/06/10,23:59:00",2	list all alarms Note: three alarms are set (index 0, 1, 2)
	+CALA: "00/06/08,15:25:00",0	An alarm occurs (index 0)
AT+CALA="",2	OK	Delete alarm index 2 **Note:** Alarm index 2 deleted
AT+CALA?	+CALA: "00/06/09,07:30:00",1	List all alarms, only one alarm (index 1)

Call Control commands

D and DL – Dial command

The ATD command is used to data or fax call. As per GSM 02.30, the dial command also controls supplementary services.

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

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

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

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

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

Example: to set up a data call to the Westermo Sweden office from another country, the AT command is: "**ATD+4616428000**"

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

The ATDL command dials the last valid dialled number.

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

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

Direct dialling from a phonebook (stored in the SIM card)

Direct dialling can be performed with the following command:

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

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

ATD> mem <index> (mem is "SM", "LD", "MC", "ME", "RC", "MT" or "SN", see +CPBS command) allows direct dialling from a phonebook number. Does not function with "ON" mem..15

Syntax:

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

<nb> is the number to dial.

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

Command specific information

When the **FDN phonebook** has **been locked**, only numbers beginning with the digits of FDN phonebook entries can be called. For example, if "014629" is entered in the FDN phonebook all the phone numbers beginning with these 6 digits can be called.

The **CLIR supplementary service** subscription can be overridden for this call only.
"I" means "invocation" (restrict CLI presentation).
"i" means "suppression" (allow CLI presentation).

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

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

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

GSM sequences

As per GSM 02.30, **GSM sequences** may be controlled using dial commands. These sequences can contain "*", "#", but ";" is forbidden. If the sequence is not supported or fails, +CME ERROR: <err> is returned. In the case where the FDN phonebook is activated, the sequences concerning call forwarding are allowed only if there are written in the FDN.

Example of using GSM sequences:

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

See the enf of the manual for the list of supported sequences.

H – Hang-Up command

Description:

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

Syntax:

ATH

Command example	Possible responses	Note
ATH	OK	Ask for disconnection, result: every call, if any, are released
ATH1	OK	Ask for outgoing call disconnection, Result: Outgoing call, if any, is released

A – Answer a call

Description:

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

Syntax:

ATA

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

+CEER – Extended error report

Description:

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

Syntax:

AT+CEER

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

For the cause information element from GSM 04.08 see further in this manual.
"NO CARRIER" indicates that the AT+CEER information is available for failure diagnosis.

+VTD, +VTS – DTMF signals

+VTD Description:

The product enables the user application to send DTMF tones over the GSM network. This command is used to define tone duration (the default value is 300 ms).

+VTD Syntax:

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

If n < 4, tone duration is 300 ms.

Command example	Possible responses	Note
AT+VTD=6	OK	To define 600 ms tone duration, command valid
AT+VTD=0	OK	To set the default value

+VTS Description:

The product enables the user application to send DTMF tones over the GSM network. This command enables tones to be transmitted. DTMF tones can only be transmitted when there is an active call.

+VTS Syntax:

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

Command example	Possible responses	Note
AT+VTS=A	OK	Command valid
AT+VTS=11	+CME ERROR: 4	If the <Tone> is wrong
AT+VTS=4	+CME ERROR: 3	If there is no communication

Informative example:

To send tone sequence 13#, the application sends:
AT+VTS=1;+VTS=3;+VTS=#

AT%Dn – Automatic dialing with DTR

Description:

This command enables and disables

- automatic dialling of the phone number stored in the first location of the ADN phonebook,
- automatic sending of the short message (SMS) stored in the first location of the SIM.

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

Syntax:

AT%D<n>[;] Where <n> is 0, 1 or 2

Command example	Possible responses	Note
AT%D1;	OK	Activates DTR number dialling
DTR is OFF		
DTR switches ON		The number in the first location of the ADN is dialled automatically
DTR switches OFF		The product goes off-hook
AT%D2	OK	Activates DTR short message sending

Defined values:

<n>

AT%D0	Disables automatic DTR number dialling / message transmission.
AT%D1	Activates automatic DTR dialling if DTR switches from OFF to ON; Dials the phone number in the first location of the ADN phonebook. Data or Fax call.
AT%D2	Activates automatic DTR short message transmission if DTR switches from OFF to ON.

+CICB – Incoming Call Bearer

Description:

This specific command is used to set the type of incoming calls when no incoming bearer is given (see +CSNS).

NOTE: setting the +CICB command affects the current value of +CSNS.

Syntax:

AT+CICB=<mode>

Command example	Possible responses	Note
AT+CICB=1	OK	If no incoming bearer, force a fax call
AT+CICB=2	OK	If no incoming bearer, force a voice call
AT+CICB?	+CICB: 2	Interrogate value, incoming bearer: voice call
AT+CICB=?	+CICB: (0-2)	Test command, speech, data or fax may be reported

Defined values:

<mode>

0: Data
1: Fax
2: Speech

+CSNS – Single Numbering Scheme

Description:

This command selects the bearer to be used when an MT single numbering scheme call is set up (see +CICB). NOTE: setting the +CSNS command affects the current value of +CICB.

Syntax:

AT+CSNS

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

Defined values:

<mode>

0: Voice
2: Fax
4: Data

Network service commands

+CSQ – Signal Quality

Description:

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

Syntax:

AT+CSQ

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

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

+COPS – Operator selection

Description:

There are three possible ways of selecting an operator (PLMN):

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

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

Syntax:

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

Possible responses: AT+COPS=<mode>:

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

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]

If an incoming call occurs during a PLMN list request, the operation is aborted (+CME ERROR: 520) and the unsolicited RING appears

Command example	Possible responses	Note
AT+COPS?	+COPS: 0,2,20801 OK	Ask for current PLMN, reported PLMN is France Telecom Orange
AT+COPS=?	+COPS: (2,"F Itinéris","Itline","20801"), OK	Ask for PLMN list, home PLMN is France (3,"FSFR","SFR","20810") Telecom, SFR network has been detected
AT+COPS=1,2,20810	+CME ERROR: 32	Ask for registration on SFR network, network not allowed – emergency calls only
AT+COPS=1,1,23433	+CME ERROR: 529	Ask for registration on UK Orange network Selection failed – emergency calls only
AT+COPS=0	OK	Register on home network, succeeded
AT+COPS=3,0	OK	Set <format> to long alphanumeric
AT+COPS?	+COPS: 0,0,"Orange F" OK	Ask for current PLMN, home PLMN is France Telecom Orange
AT+COPS=2	OK	Request deregistration from network, OK
AT+COPS?	+COPS: 2	Ask for current PLMN Note: ME is unregistered until <mode>=0 or 1 is selected.31

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>

0: long alphanumeric format <oper>
1: short alphanumeric format <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).
The long alphanumeric format can be up to 16 characters long (see appendix 18.12 for operator names description, field is "Name"). The short alphanumeric format can be up to 8 characters long..32

+CREG – Network registration

Description:

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

Syntax:

AT+CREG= <mode>

Response Syntax

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

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

Defined values:

<mode>

0: Disable network registration unsolicited result code (default)
1: Enable network registration code result code +CREG: <stat>
2: Enable network registration and location information unsolicited result code +CREG:

<stat>

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

<lac>

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

<ci>

string type; two byte cell ID in hexadecimal format.

+WOPN – Read operator name

Description:

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

Syntax:

AT+WOPN=<format>,<NumOper>

Response syntax:

+WOPN: <format>,<AlphaOper>

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

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 operator listing in the end of the manual.

+CPOL – Preferred operator list

Description:

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

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 the same as for the +COPS command.
The length of this list is limited to 8 entries.

Command example	Possible responses	Note
AT+CPOL?	+CPOL:1,2,26201 +CPOL: 6,2,20810 OK	Ask for preferred list of networks, preferred list of networks in numeric format
AT+CPOL=,0	OK	Select long alphanumeric format
AT+CPOL?	+CPOL: 1,0,"D1-TELEKOM" +CPOL: 6,0,"F SFR" OK	Ask for preferred list of network, Preferred list of networks in long alphanumeric format
AT+CPOL=7,2,20801	OK	Add a network to the list
AT+CPOL?	CPOL: 1,0,"D1-TELEKOM" +CPOL: 6,0,"F SFR" +CPOL: 7,0,"Orange F" OK	Ask for preferred list of networks, preferred list of networks in long alphanumeric format
AT+CPOL=7	OK	Delete 7th location
AT+CPOL?	+CPOL: 1,0,"D1-TELEKOM" +CPOL: 6,0,"F SFR" OK	Ask for preferred list of networks, Preferred list of networks in long alphanumeric format
AT+CPOL=8,2,77777	OK	Add a new network to the list
AT+CPOL?	+CPOL: 1,0,"D1-TELEKOM" +CPOL: 6,0,"F SFR" +CPOL: 8,2,77777" OK	Ask for preferred list of networks, preferred list of networks in long alphanumeric format but 8th entry is unknown so the product edits it in the numeric format
AT+CPOL=9,0,"Orange F"		Add a new network to the list (text format)
AT+CPOL?	+CPOL: 1,0,"D1-TELEKOM" +CPOL: 6,0,"F SFR" +CPOL: 8,2,77777" +CPOL: 9,0,"Orange F" OK	Ask for preferred list of networks, preferred list of networks in long alphanumeric format

Security commands

+CPIN – Enter PIN

Description:

This command is used to enter the ME passwords (CHV1 / CHV2 / PUK1 / PUK2, etc.), that are required before any ME functionality can be used. CHV1/CHV2 is between 4 and 8 digits long, PUK1/PUK2 is only 8 digits long. If the user application tries to make an outgoing call before the SIM PIN code (CHV1) has been confirmed, then the product will refuse the "ATD" command with a "+CME ERROR: 11" (SIM PIN required).
The application is responsible for checking the PIN after each reset or power on – if the PIN was enabled.

Syntax:

AT+CPIN=<pin>

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

After 3 unsuccessful attempts to enter the PIN (Personal Identification Number), the PUK (Personal Unblocking Key) will be required. PUK validation forces the user to enter a new PIN code as a second parameter and this will be the new PIN code if PUK validation succeeds. CHV1 is then enabled if PUK1 is correct.

The application therefore uses this command:
AT+CPIN=<Puk>,<NewPin>

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

To ascertain which code must be entered (or not), the following query 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 equipment does not end its response with the OK string. The response +CME ERROR: 13 (SIM failure) is returned after 10 unsuccessful PUK attempts. The SIM card is then out of order and must be replaced by a new one.

Example:

3 failed PIN validations + 1 successful PUK validation

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

If the user tries to do something which requires PIN2 (CHV2), the product will refuse the action with a "+CME ERROR: 17" (SIM PIN2 required). The product then waits for SIM PIN2 to be given. Of course, if SIM PIN2 is blocked, SIM PUK2 is required instead of SIM PIN2. For example, the product needs PIN2 to write in the fixed dialling phonebook (FDN), so if SIM PIN2 authentication has not been performed during the current session, SIM PIN2 is required.

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

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

+CPIN2 – Enter PIN2

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, the +CPIN command allows PIN2 or PUK2 codes to be validated, but only when the last command executed resulted in PIN2 authentication failure. PIN2 length is between 4 and 8 digits, PUK2 length is 8 digits only.

Syntax:

AT+CPIN2=<pin2>

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

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

AT+CPIN2=<puk2>,<NewPin2>

Command example	Possible responses	Note
AT+CPIN2=00000000,1234	+CME ERROR: 16	Enter PUK2 and new PIN2, Incorrect code (PUK2)
AT+CPIN2=12345678,1234	OK	Enter PUK2 and new PIN2, 2nd attempt PUK2 correct, new PIN2 stored To find out which code must be entered (or not), the following query command can be used:
AT+CPIN2?	+CPIN2: READY +CPIN2: SIM PIN2 +CPIN2: SIM PUK2 +CME ERROR: <err>	No PIN2 is needed PIN2 is required PUK2 is required Absent (10) etc...

+CPINC – PIN remaining attempt number

Description:

This specific command is used to get the number of valid attempts for PIN1 (CHV1), PIN2 (CHV2), PUK1 (UNBLOCK CHV1) and PUK2 (UNBLOCK CHV2) identifiers.

Syntax:

AT+CPINC

Response Syntax

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

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

Defined values:

<n1>, <n2>

are the attempts left for PIN1, PIN2 (0 = blocked, 3 max)

<k1>, <k2>

are the attempts left for PUK1, PUK2 (0 = blocked, 10 max)

For this to work, the card should be present at the time of initialization, otherwise an error will be sent (+CME ERROR: 10).

+CLCK – Facility lock

Description:

This command is used by the application to lock, unlock or interrogate an ME or network facility <fac>.

NOTE: Test SIM cards (with MCC=001 & MNC=01) doesn't check "PS", "PN", "PU", "PP" and "PC" locks.

Syntax:

AT+CLCK= <fac>,<mode>[,<passwd>[,<class>]]

Response syntax:

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

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

Defined values:

<fac>

"PS": SIM lock facility with a 8 digits password.
"SC": PIN enabled (<mode> = 1) / disabled (<mode> = 0)
"AO": BAOC (Barr All Outgoing Calls)
"OI": BOIC (Barr Outgoing International Calls)
"OX": BOIC-exHC (Barr Outgoing. International Calls except to Home Country)
"AI": BAIC (Barr All Incoming Calls)
"IR": BIC-Roam (Barr Inc. When Roaming outside Home Country)
"AB": All Barring services
"AG": All outGoing barring services
"AC": All inComing barring services
"PN": Network lock with 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 Dialing Numbers (FDN) memory feature
(PIN2 is required as <password>)

<mode>

0: unlock the facility
1: lock the facility
2: query status

<class>

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

1: Voice (telephony)
2: Data (apply to all bearer services)
4: Fax (facsimile services)
8: Short Message service
7: Equal to all classes (Default value)

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

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

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

+CPWD – Change password

Description:

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

Syntax:

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

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

Phonebook commands

+CPBS – Select phonebook memory storage

Description:

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

"SM": ADN (SIM phonebook)
"FD": FDN (SIM Fix Dialling, restricted phonebook)
"ON": MSISDN (SIM own numbers)
"EN": EN (SIM emergency number)
"LD": LND (combined ME and SIM last dialing 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 dialing phonebook)

Syntax:

AT+CPBS

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

Status, ADN phonebook selected, 10 locations used, 20 locations available.
The ADN phonebook could not be selected as FDN is active.

+CPBR – Read phonebook entries

Description:

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

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

Syntax:

AT+CPBR

Command example	Possible responses	Note
AT+CPBR=?	+CPBR: (1-50),20,10 OK	Test command, 50 locations (from 1 to 50), max length for phone number is 20 digits, 10 characters max for the text
AT+CPBR=12,14	+CPBR: 12,"112",129, "Emergency" +CPBR: 13,"+331290909", 145,"Fred" +CPBR: 14,"0146290808", 129,"Zazi" OK	Read entries from 12 to 14, Display locations 12,13,14 with location, number, type (TON/NPI), text
AT+CPBR=10	+CPBR:10,"0146290921", 129,"Rob" OK	Read entry 10, display location 10
AT+CPBR=11	+CPBR:11,"0146290921", 129, "8000010002FFFF" OK	Read entry 11 (UCS2 format), display location 11
AT+CPBR=52	+CME ERROR: 21	Read entry 52 (wrong), Invalid index

+CPBF – Find phonebook entries

Description:

This command returns phonebook entries with alphanumeric fields starting with a given string. The AT+CPBF= “” command can be used to display all phonebook entries sorted in alphabetical order. This command is not allowed for "LD", "RC", "MC", "SN" phonebooks and for the “EN” phonebook, which does not contain alphanumeric fields.
It is possible to use this command with UCS2 strings. If a wrong UCS2 format is entered, the string is considered as an ASCII string.

Syntax:

AT+CPBF

Command example	Possible responses	Note
AT+CPBF=?	+CPBF: 20,10 OK	Test command, max length for phone number is 20 digits, 10 characters for the text
AT+CPBF=“E”	+CPBF: 12,”112”,129, ”Emergency” +CPBF: 15,”+331290101”, 145,”Eric” OK	Read entries with “E”, display locations with text field starting with “E”
AT+CPBF=”H”	+CME ERROR: 22	Read entries with “H”, entry not found
AT+CPBF=”800001FFFF”	+CPBF: 11, ”0146290921”, 129,”8000010002FFFF” OK	Read entries starting with 0001 UCS2 character, display locations with text field starting with 0001 UCS2 character
AT+CPBF=”8045C”	+CME ERROR: 22	Read entries with “8045C” (ASCII format), entry not found. The string has a wrong UCS2 format, it is therefore considered as an ASCII string.

+CPBW Write phonebook entry

Description:

This command writes a phonebook entry in location number <index> in the current phonebook memory storage. "RC" and "MC" phonebooks could be only erased by +CPBW. Adding field and/or modifying field is not allowed for these phonebooks. This command is not allowed for "EN", "LD", "MC", "RC", "MT", "SN" phonebooks, which can not be written.

Syntax:

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

Command example	Possible responses	Note
AT+CPBW=?	+CPBW: (1-50),20, (129,145),10 OK	Test command, 50 locations, phone number = 20 digits max, TON/NPI of 129 or 145, text length = 10
AT+CPBW= 3	OK	Erase location 3, location 3 erased
AT+CPBW=5,"112",129, "SOS"	OK	Write at location 5, location 5 written
AT+CPBW=5,"01290917", 129,"Jacky"	OK	Overwrite location 5, location 5 overwritten
AT+CPBW=6,"01292349", 129,"8000410042"	OK	Write location 6 (UCS2 format for the <text> field), location 6 is written
AT+CPBW=,"+3314522 1100",145,"SOS"	OK	Write at the first location available, first location available is written
AT+CPBW=,"0345221100", 129,"SOS"	+CME ERROR: 20	Write at the first location available, phonebook full
AT+CPBW=57,"112",129, "WM"	+CME ERROR: 21	Write at location 57 (wrong), invalid index
AT+CPBW=7,"0123456789 01234567890",129, "WAVE"	+CME ERROR: 26	Write at location 7 a phone number exceeding the limit (21 digits), phone number too long
AT+CPBW=7,"012233 4455",129,"WESTERMO TEL"	+CME ERROR: 24	Write at location 7 along text (11 characters), Text too long

AT+CPBW=8,"01292349", 129,"80xyz"	OK	Write location, location 8 is written. The string has a wrong UCS2 format, it is therefore considered as an ASCII string

When the fixed dialling phonebook (FDN) is locked, this command is not allowed. Moreover, when the FDN is unlocked, PIN2 is required to write in the FDN phonebook. But if PIN2 authentication has been performed during the current session, the +CPBW command with FDN is allowed.

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

Defines values:

<index> integer type value depending on the capacity of the phonebook memory.
<number> phone number in ASCII format.
<type> TON/NPI (Type of address octet in integer format).

NOTE: for the <type> parameter, all values are allowed from 0 to 255, but the MSB will be set to 1 in all cases (example: a <type> value of 17 will be written as 145).

<text> string type.

NOTE 1: For the <text> parameter all strings starting with "80" , "81" or "81" are considered in UCS2 format. See the APPENDIX E (Coding of Alpha fields in the SIM for UCS2).

NOTE 2: The +CSCS (Select Character set) command does not affect the format for phonebook entries.

+CPBP – Phonebook phone search

Description:

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

Syntax:

AT+CPBP=<PhoneNumber>
<PhoneNumber> is coded like any GSM 07.07 or GSM 07.05 phone number.

Command example	Possible responses	Note
AT+CPBP="+331290101"	+CPBP: 15,"+331290101", 145,"Eric" OK	Search entries corresponding to this phone number, display the entry corresponding to the specified phone number
AT+CPBP="+331290101"	+CPBP: 15,"01290101", 129,"Eric" OK	Search entries corresponding to this phone number, display the entry corresponding to the specified phone number
AT+CPBP="01290202"	+CPBP: 15,"+331290202", 145,"David" OK	Search entries corresponding to this phone number, display the entry corresponding to the specified phone number
AT+CPBP="+331288575"	+CPBP: 15,"+331290101", 145, "8045682344FFFF" OK	(UCS2 format) Search entries corresponding to this phone number, display the entry corresponding to the specified phone number
AT+CPBP="0129"	+CME ERROR: 22	Search entries corresponding to this phone number, entry not found.

+CPBN – Move action in phonebook

Description

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

Syntax:

AT+CPBN=<mode>

Command example	Possible responses	Note
AT+CPBN=?	+CPBN: (0–5) OK	Test command, possible modes
AT+CPBN=0	+CPBN: 15,"+331290101", 145,"Eric" OK	Read the first location, display the first location
AT+CPBN=2	+CPBN: 5,"+33147658987", 145,"Frank" OK	Read the next location, display the second location
AT+CPBN=2	+CPBN: 6,"+331290302", 145,"Marc" OK	Read the next location, display the third location
AT+CPBN=3	+CPBN: 5,"+33147658987", 145, "Frank" OK	Read the previous location, display the second location
AT+CPBN=1	+CPBN: 6,"+331290302", 145,"Marc" OK	Read the last location, display the last location
AT+CPBN=2	+CPBP: 15,"+331290101", 145, "Eric" OK	Read the next location, display the first location

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

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

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

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

+CNUM – Subscriber number

Description:

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

Syntax:

AT+CNUM

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

Command example	Possible responses	Note
AT+CNUM	+CNUM:"Phone", "0612345678",129 +CNUM:"Fax", "0687654321",129 +CNUM:"80001002FFFF", "+0183773", 145 (UCS2 format)	Get MSISDN(s)
AT+CNUM=?	OK	

Defined values:

<alphax>	optional alphanumeric string associated with <numberx>
<numberx>	string type phone number with format as specified by <typex>
<typex>	type of address byte in integer format.51

+WAIP – Avoid phonebook init

Description:

This specific command allows the initialization of all phonebooks to be inhibited during subsequent boots.

Syntax:

AT+WAIP=<mode>

Command example	Possible responses	Note
AT+WAIP?	+WAIP:0 OK	Current values?
AT+WAIP=?	+WAIP: (0,1) OK	Possible values?
AT+WAIP =1	OK	Inhibit initialization of phonebooks (next boot)
AT&W		Save modifications in EEPROM

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

NOTE: No phonebook commands are allowed if +WAIP=1 (after boot). If a phonebook command is entered, a "+CME ERROR: 3" is returned.

Defined values:

<mode>

0: Normal initialization (with phonebooks)

1: No phonebook initialization.52

+WDCP – Delete Calls Phonebook

Description:

This specific command allows to delete the calls listed in some phonebooks.

Syntax:

AT+WDCP=<calls phonebook>

Command example	Possible responses	Note
AT+WDCP?	OK	
AT+WDCP=?	+WDCP: ("LD","MC","RC") OK	Possible values? The result is the identifiers of the a list of calls
AT+WDCP=”LD”	OK	Delete all the content of Last Dialing phonebook.

Defined values:

<calls phonebook>

“LD”: SIM (ME extended) Last dialing phonebook
“MC”: ME missed calls list phonebook
“RC”: ME received calls list phonebook

+CSVM Set Voice Mail Number

Description:

This commands allows to set/get and enable/disable the voice mail number in memory.

Syntax:

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

Command example	Possible responses	Note
AT+CSVM?	+CSVM: 1,"660",129 OK	Get mail number, result: voice mail number "660" is activated
AT+CSVM=?	+CSVM: (0-1),(129,145) OK	Possible values?
AT+CSVM=0,"888",129	OK	Disable Voice Mail number and change value to "888".

Defined values:

<mode>

0: Disable the voice mail number
1: Enable the voice mail number

<number>

Phone number in ASCII format.

<type>

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

NOTE: For the <type> parameter, all values are allowed from 0 to 255, but the MSB will be set to 1 in all cases (ex: a <type> value of 17 will be written as 145).

Short Messages commands

Parameters definition

The parameters below are used in the short message commands.

<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 GSM 03.40, 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 GSM 03.40 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

+CSMS Select message service

Description:

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

Syntax:

AT+CSMS=<service>

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

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.

+CNMA New Message Acknowledgement

Description:

This command allows reception of a new message routed directly to the TE to be acknowledged. In TEXT mode, only positive acknowledgement to the network (RP-ACK) is possible. In PDU mode, either positive (RP-ACK) or negative (RP-ERROR) acknowledgement to the network is possible. Acknowledge with +CNMA is possible only if the +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, an RP-ERROR is sent to the network, the <mt> and <ds> parameters of the +CNMI command are then reset to zero (do not show new message indication).

Syntax in text mode:

AT+CNMA

Syntax in PDU mode:

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

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

Example of acknowledgement of a new message in TEXT mode:

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

Example of acknowledgement of a new message in PDU mode:

Command example	Possible responses	Note
AT+CMGF=0	OK	Set PDU mode
	+CMT: ,2907913366003000F 1240B913366920547F3000 00030034194048 00B50621 5D42ECFE7E17319	Message received
AT+CNMA=2,<length><CR> ...Pdu message...<Ctrl-Z/ESC>	OK	Negative acknowledgement for the message. Send a negative acknowledgement to the network (RP-ERROR) with PDU message (<ackpdu> format).

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

+CPMS Preferred Message Storage

Description:

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

Syntax:

AT+CPMS=<mem1>,[<mem2>]

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

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).
“SR”: Status Report message storage (in SIM if the EF-SMR file exists, otherwise in the ME non volatile memory)

NOTE: “SR” ME non volatile memory is cleared when another SIM card is inserted. It is kept, even after a reset, while the same SIM card is used.

<mem2>: Memory used to write and send messages
“SM”: SMS message storage in SIM (default).

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

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

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

+CMGF – Preferred Message Format

Description:

The message formats supported are text mode and PDU mode. In PDU mode, a complete SMS Message including all header information is given as a binary string (in hexadecimal format). Therefore, only the following set of characters is allowed: {'0','1','2','3','4','5','6','7','8','9', 'A', 'B','C','D','E','F'}. Each pair or characters is converted to a byte (e.g.: '41' is converted to the ASCII character 'A', whose ASCII code is 0x41 or 65).
In Text mode, all commands and responses are in ASCII characters.
The format selected is stored in EEPROM by the +CSAS command.

Syntax:

AT+CMGF

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

Example, sending an SMS Message in PDU mode

Command example	Possible responses	Note
AT+CMGF=0	OK	Set PDU mode
AT+CMGS=14<CR> 000103069121436500 0004C9E9340B	+CMGS: 4 OK	Send complete MSG in PDU mode, no SC address

Defined values:

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

<fo>	0x01 (SMS-SUBMIT, no validity period)
<mr> (TP-MR)	0x03 (Message Reference)
<da> (TP-DA)	0x06 0x91 0x21 0x43 0x65 (destination address +123456)
<pid> (TP-PID)	0x00 (Protocol Identifier)
<dcs> (TP-DCS)	0x00 (Data Coding Scheme: 7 bits alphabet)
<length> (TP-UDL)	0x04 (User Data Length, 4 characters of text)
TP-UD	0xC9 0xE9 0x34 0x0B (User Data: ISSY)

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

+CSAS – Save Settings

Description:

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

Syntax:

AT+CSAS

Command example	Possible responses	Note
AT+CSAS	OK	Store +CSAS and +CSMP parameters

+CRES – Restore settings

Description:

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

Syntax:

AT+CRES

Command example	Possible responses	Note
AT+CRES	OK	Restore +CSAS and +CSMP parameters

+CSDH – Show text mode parameters

Description:

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

Syntax:

Command Syntax:

AT+CSDH

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

+CNMI – New message indication

Description:

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

Syntax:

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

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

Defined values:

<mode>

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

Possible values:

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.

Possible values:

0: No SMS-DELIVER indications are routed.

1: SMS-DELIVERs are routed using unsolicited code: +CMTI: "SM",<index>

2: SMS-DELIVERs (except class 2 messages) are routed using unsolicited code: +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.

Possible values:

0: No CBM indications are routed to the TE. The CBMs are stored.

1: The CBM is stored and an indication of the memory location is routed to the customer application using unsolicited result code: +CBMI: "BM", <index>

2: New CBMs are routed directly to the TE using unsolicited result code. +CBM: <length><CR><LF><pdu> (PDU mode) or +CBM:<sn>,<mid>,<dcs>,<page>,<pages>(Text mode) <CR><LF> <data>

3: Class 3 CBMs: as <bm>=2. Other classes CBMs: as <bm>=1..63

<ds>

for SMS-STATUS-REPORTs. Default is 0.

Possible values:

0: No SMS-STATUS-REPORTs are routed.

1: SMS-STATUS-REPORTs are routed using unsolicited code: +CDS: <length> <CR> <LF> <pdu> (PDU mode) or +CDS: <fo>,<mr>, [<ra>] , [<tora>], <scts>,<dt>,<st> (Text mode)

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

<bfr>

Default is 0.

Possible values:

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.

+CMGR – Read message

Description:

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

Syntax:

AT+CMGR=<index>

Response syntax for text mode:

+CMGR:<stat>,<oa>,[<alpha>,] <scts> [,<tooa>,<fo>, <pid>,<dcs>,<sca>, <tosca>,<length>]
<CR><LF> <data> (for SMS-DELIVER only)

+CMGR: <stat>,<da>,[<alpha>,] [,<toda>,<fo>,<pid>,<dcs>, [<vp>], <sca>, <tosca>,<length>]<CR><LF> <data> (for SMS-SUBMIT only)

+CMGR: <stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>
(for SMS-STATUS-REPORT only)

Response syntax for PDU mode:

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

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

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

Example:

Command example	Possible responses	Note
	AT+CMTI: “SM”,1	New message received
AT+CMGR=1	+CMGR: “REC UNREAD”, ”0146290800”, ”98/10/01,18:22:11+00”, <CR><LF> ABCdefGHI OK	Read the message
AT+CMGR=1	+CMGR: “REC UNREAD”, ”0146290800”, ”98/10/01,18:22:11+00”, <CR><LF> ABCdefGHI OK	Read the message again, note that the message is read now
AT+CMGR=2	+CMS ERROR: 321	Read at a wrong index
AT+CMGF=0;AT+CMGR=1	+CMGR: 2,,<length> <CR><LF><pdu> OK	In PDU mode Note: Message is stored but unsent, no <alpha>field
AT+CMGF=1;+CPMS=”SR”; +CNMI=,,,2	OK	Reset to text mode, set read memory to “SR”, and allow storage of further SMS Status Report into “SR” memory
AT+CMSS=3 +CMSS: 160	OK +CDSI: “SR”,1	Send an SMS previously stored New SMS Status Report stored in “SR” memory at index 1
AT+CMGR=1	+CMGR: "READ",6,160, "+33612345678", 129,"01/05/31, 15:15:09+00", "01/05/31,15:15:09+00",0 OK	Read the SMS Status Report

+CMGL – List message

Description:

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

Syntax:

AT+CMGL=<stat>

Response syntax for text mode:

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

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

Response syntax for PDU mode:

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

Command example	Possible responses	Note
AT+CMGL="REC UNREAD"	+CMGL: 1,"REC UNREAD", "0146290800", <CR><LF> Unread message! +CMGL: 3, "REC UNREAD", "46290800", <CR><LF> OK	List unread messages in text mode, 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> OK	List read messages in text mode
AT+CMGL="STO SENT"	OK	List stored and sent messages in text mode, result: no message found
AT+CMGL=1	+CMGL: 1,1,,26 <CR><LF> 07913366003000F3040 B913366920547F4 B913366920547F4 001300119041253040074 1AA8E5A9C5201 OK	List read messages in PDU mode

BACK

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

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

+CMGS – Send message

Description:

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

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 example	Possible responses	Note
AT+CMGS=" +33146290800"<CR> <ctrl-Z>	 +CMGS: <mr> OK	Send a message in text mode ,result: Please call me soon, Fred. successful transmission
AT+CMGS= <length><CR><pdu> <ctrl-Z>	 +CMGS: <mr> OK	Send a message in PDU mode, result: successful transmission

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

NOTE: this number is not a storage number – outgoing messages are not stored.

+CMGW – Write Message to Memory

Description:

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

Command syntax in text mode:

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

Defined values:

Parameter Definition:

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

<tooa/toda>: Type of Originating / Destination Address.

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

<stat>

0: "REC UNREAD"

1: "REC READ"

2: "STO UNSENT"

3: "STO SENT"

<length> Length of the actual data unit in octets.

+CMSS – Send Message From Storage

Description:

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

Command syntax:

AT+CMSS=<index>[,<da> [,<toda>]]

Response syntax:

+CMSS: <mr> or +CMS ERROR: <err> if sending fails
If a new recipient address <da> is given, it will be used instead of the one stored with the message

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

+CSMP – Set Text Mode Parameters

Description:

This command is used to select a value for <vp>, <pid>, and <dcs>.

Syntax:

AT+CSMP=<fo>, <vp>, <pid>,<dcs>

Command example	Possible responses	Note
AT+CSMP?	+CSMP: 0,0,0,0 OK	Current values, result no validity period <dcs>= PCCP437 alphabet (8 bits ‡ 7 bits)
AT+CMPS=17,23,64,244	OK	<vp> = 23 (2 hours, relative format), <dcs> = GSM 8 bits alphabet.

Defined values:

The **<fo>** byte comprises 6 different fields :

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

RP: Reply Path, not used in text mode.

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

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

VPF: Validity Period Format
b4=0 & b3=0 -> <vp> field is not present
b4=1 & b3=0 -> <vp> field is present in relative format
Others formats (absolute & enhanced) are not supported.

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

MTI: Message Type Indicator
b1=0 & b0=0 -> SMS-DELIVER
(in the direction SC to MS)
b1=0 & b0=1 -> SMS-SUBMIT
(in the direction MS to SC)

In text mode **<vp>** is only coded in "relative" format. The default value is 167 (24 hours).

This means that one octet can describe different values:

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

<pid>

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

+CMGD – Delete message

Description:

This command is used to delete one or several messages from preferred message storage ("BM" SMS CB 'RAM storage', "SM" SMSPP storage 'SIM storage' or "SR" SMS Status-Report storage).

Syntax:

AT+CMGD=<Index> [,<DelFalg>]

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

Defined 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" or "SR".

<DelFlag>

0: Delete message at location <index>.

1: Delete All READ messages

2: Delete All READ and SENT messages

3: Delete All READ, SENT and UNSENT messages

4: Delete All messages.

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

+CSCA – Service center address

Description:

This command is used to indicate which service center the message must be sent to. The product has no default value for this address. If the application tries to send a message without having indicated the service center address, an error will be generated. Therefore, the application must indicate the SC address when initialising the SMS. This address is then permanently valid. The application may change it if necessary.

Syntax:

AT+CSCA

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

+CSCB – Select Cell Broadcast Message Types

Description:

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

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 Portuguese,
9	for Finnish,
10	for Norwegian,
11	for Greek,
12	for Turkish,
13	for Hungarian,
14	for Polish and
32	for Czech.

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

BACK

+WCBM – Cell Broadcast Message Identifiers

Description:

This command is used to read the EF-CBMI SIM file. Remark: The EF-CBMI file is not used with the +CSCB command. The application should read this file (using AT+WCBM?) and combine the Message Identifiers with those required by the application.

Syntax:

AT+WCBM= <mids>

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

+WMSC – Message status modification

Syntax:

AT+WMSC= <loc>, <status>

Defined values:

<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 product overwrites the whole SMS in SIM. Only the first byte (Status byte) is changed..

+WMGO – Message overwriting

Description:

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

Syntax:

AT+WMGO= <loc>

Defined values:

<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?

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

NOTE: that this location number is not kept over a software reset.

+WUSS – Unchange SMS Status

Description:

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

Syntax:

AT+WUSS = <mode>

Defined values:

<mode>

0: The SMS Status will not change.

1: The SMS Status will change.

Possible responses:

OK

Supplementary Services commands

+CCFC – Call forwarding

Description:

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

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

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

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
3: Fax
4: Short Messages
5: All classes

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

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

<subaddr> not managed

<satype> not managed

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

+CLCK – Call barring

Description:

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

Syntax:

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

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

Defined values:

<fac>

Barring for outgoing calls

"AO"	BAOC (Barr All Outgoing Calls)
"OI"	BOIC (Barr Outgoing International Calls)
"OX"	BOIC-exHC (Barr Outgoing International Calls except to Home Country)

Barring for incoming calls

"AI"	BAIC (Barr All Incoming Calls)
"IR"	BIC-Roam (Barr Incoming Calls when Roaming outside the home country)

For all calls barring (<mode>=0 only)

"AG"	All outGoing barring services
"AC"	All inComing barring services
"AB"	All Barring services

<mode>

0:	Unlocks the facility
1:	Locks the facility
2:	Query status

<class>

See description for +CCFC (Call forwarding). A combination of different classes is not supported. It will only result in the activation / deactivation / status request for all classes.

The password code is over 4 digits maximum.

+CPWD – Modify SS password

Description:

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

Syntax:

AT+CPWD=<fac>,<OldPassword>, <NewPassword>

for **<fac>** see +CLCK command with only "P2" facility added (SIM PIN2).

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

Whatever the facility, the change of password applies to all call barring.

+CCWA – Call waiting

Description:

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

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 example	Possible responses	Note
AT+CCWA=1,1,1	OK	Enable call waiting for voice calls
AT+CCWA=1,2	+CCWA:1,1 OK	Interrogate call waiting, result: Call waiting active for voice calls.
	+CCWA:"0146290800", 145,1, "FREDDY" or	Number and name of the waiting voice call
	+CCWA:"0146290800", 145,1, "8023459678FFFF"	(UCS2 format),
AT+CCWA=1,0,7	OK	Erase call waiting voice call waiting (no number)
	+CCWA:,,1	

Defined values:

<n> Result code presentation status in the TA

0: Disable

1: Enable

<mode>

0: Disable

1: Enable

2: Query status.

<class>

1: Voice

2: Data

3: Fax Short

4: Messages

5: All classes

A combination of different classes is not supported. It will only result in the activation / deactivation / status request for all classes.

<alpha>

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

+CLIR – Calling line identification restriction

Description:

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

Syntax:

AT+CLIR=<n>

Response Syntax:

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

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

Defined values:

<n>

Sets the line ID restriction for outgoing calls

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

<m>

Shows the subscriber CLIR status in the network

0: CLIR not provisioned
1: CLIR provisioned in permanent mode
2: Unknown (no network...)
3: CLIR temporary mode presentation restricted
4: CLIR temporary mode presentation allowed.80

+CLIP – Calling line identification presentation

Description:

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

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

Defined values:

<n>

parameter sets/shows the result code presentation in the TA

0: Disable
1: Enable

<m>

Parameter shows the subscriber CLIP service status in the network

0: CLIP not provisioned
1: CLIP provisioned
2: Unknown (no network...)

+COLP – Connected line identification presentation

Description:

This command allows control of the connected line identification presentation supplementary service – useful for call forwarding of the connected line.

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

Defined values:

<n>

Parameter sets/shows the result code presentation status in the TA

0: Disable

1: Enable

<m>

Parameter shows the subscriber COLP service status in the network

0: COLP not provisioned

1: COLP provisioned

2: Unknown (no network).

+CAOC – Advice of charge

Description:

This refers to the Advice of Charge supplementary service (GSM 02.24 and GSM 02.86) which enables the subscriber to obtain information on call cost. With <mode>=0, the command returns the current call meter value (CCM) from the ME. If AOC is supported, the command can also enable unsolicited event reporting on CCM information.
The unsolicited result code +CCCM: <ccm> is sent when the CCM value changes. Deactivation of unsolicited event reporting is performed with the same command.
If AOC is supported, the Read command indicates whether unsolicited reporting is activated or not.

Syntax:

AT+CAOC= <mode>

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

Defined values:

<mode>

0: query CCM value

1: deactivate the unsolicited reporting of CCM value

2: activate the unsolicited reporting of CCM value

<ccm>

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

+CACM – Accumulated call meter

Description:

This command resets the Advice of Charge for accumulated call meter value in SIM file EFACM. The ACM contains the total number of home units for both the current and preceding calls. SIM PIN2 is required to reset the value. If setting fails in an ME error, +CME ERROR: <err> is returned. The Read command returns the current value of the ACM. The ACM value (entered or displayed) is in hexadecimal format with 6 digits.

Syntax:

AT+CACM

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

+CAMM – Accumulated call meter maximum

Description:

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

Syntax:

AT+CAMM

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

+CPUC – Price per unit and currency table

Description:

The set command sets the parameters for Advice of Charge related to price per unit and the currency table in SIM file EFPUCT. 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.

Syntax:

AT+CPUC

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

+CHLD – Call related supplementary services

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 a conversation.

Syntax:

AT+CHLD= < n >

Response syntax:

+CHLD: (0-4, 11-17, 21-27) for AT+CHLD=?

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).

+CLCC – List current calls

Description:

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

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>]] [. . .]]]

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):

0: active
1: held
2: dialling (MO call)
3: alerting (MO call)
4: incoming (MT call)
5: waiting (MT call)

<mode>(teleservice):

0: voice
1: data
2: fax
9: unknown

<mpty>

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

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

<type>: type of address octet in integer format

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

+CSSN – Supplementary service notifications

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.

Syntax:

AT+CSSN= <n>, <m>

Response syntax:

+CSSN: <n>, <m> for AT+CSSN?

+CSSN: (0-1), (0-1) for AT+CSSN=?

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 suppression 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 Transfer operation (during a voice call)
8:	call has been connected with the other remote party in Explicit Call Transfer operation (during a voice call,
<number>	& <type> fields may be present)
<index>	Closed User Group index
<number>	String type phone number
<type>	Type of address

+CUSD – Unstructured supplementary service data

Description:

The USSD supplementary service is described in GSM 02.90. It is based on sequences of digits which may be entered by a mobile user with a handset. A sequence entered is sent to the network which replies with an alphanumerical string, for display only, or for display plus request for the next sequence.

This command is used to:

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

Syntax:

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

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 scheme received (GSM TS 03.38).

Syntax to send and receive USSD:

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

NOTE: Please, be aware that the send USSD command needs the user to re-enter the <n> parameter !

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 product sends a USSD, an OK response is first returned, the intermediate +CUSD indication comes subsequently. In case of error, a +CUSD: 4 indication is returned.

+CCUG – Closed user group

Description:

The Closed User Group Supplementary Service enables subscribers to form closed user groups with restricted access (both access to and from). The CUG supplementary service is described in GSM 02.85. This service is provided on prior arrangement with the service provider. Subscription options should be selected at implementation.

The +CCUG command is used to:

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

Syntax:

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

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.

Data commands

+CBST – Bearer type selection

Description:

This command applies to both outgoing and incoming data calls, but in a different way. For an outgoing call, the two parameters (e.g. <speed> and <ce>) apply, whereas for an incoming call, only the <ce> parameter applies.

NOTE 1: For incoming calls, if <ce> is set to T only and the network offers NT only or vice versa, then the call is released.

NOTE 2: The former values of 100 and 101 for <ce> are retained for compatibility purposes but should no longer be used, values 2 and 3 should be used instead.

Syntax:

AT+CBST= <speed>, <name>, <ce>

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

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:	1 200 bps (modem type: V.22)
3:	1 200/75 bps (modem type: V.23)
4:	2 400 bps (modem type: V.22bis)
5:	2 400 bps (modem type: V.26ter)
6:	4 800 bps (modem type: V.32)
7:	9 600 bps (modem type: V.32)
8:	Specific
12:	9 600 bps (modem type: V.34)
14*:	14 400 bps (modem type: V.34)
65:	300 bps (modem type: V.110)
66:	1 200 bps (modem type: V.110)
68:	2 400 bps (modem type: V.110)
70:	4 800 bps (modem type: V.110)
71:	9 600 bps (modem type: V.110)
75*:	14 400 bps (modem type: V.110)

(*)This speed configures data and fax 14.4 kbps bearers.

<ce>

Connection element

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

+FCLASS – Select mode

Description:

This command puts the product into a particular operating mode (data or fax).

Syntax:

AT+FCLASS= <n>

Command example	Possible responses	Note
AT+FCLASS=?	+FCLASS: (0,1) OK	Test command, result: Fax class 2 not supported
AT+FCLASS=?	+FCLASS: (0,1,2) OK	Test command, result: Fax class 2 supported
AT+FCLASS=0	OK	Data mode requested
AT+FCLASS=1	OK	Fax class 1 mode requested
AT+FCLASS?	+FCLASS: 1 OK	Current value

Defined values:

<n>

0: Data
1: Fax class 1
2: Fax class 2

+CR – Service reporting control

Description:

This command enables a more detailed type of service reporting in the case of incoming or outgoing data calls. Before sending the CONNECT response to the application, the product will specify the type of data connection that has been set up.

These report types are:

+CR: ASYNC	For asynchronous transparent
+CR: REL ASYNC	For asynchronous non-transparent
+CR: GPRS	For GPRS (only when GPRS option)

Syntax:

AT+CR

Command example	Possible responses	Note
AT+CR=0	OK	Extended reports disabled
AT+CR=1	OK	Extended reports enabled

+CRC – Cellular result codes

Description:

This command gives more detailed ring information for an incoming call (voice or data). Instead of the string "RING", an extended string is used to indicate which type of call is ringing (e.g. +CRING:VOICE).

These extended indications are:

+CRING:ASYNC	for asynchronous transparent
+CRING: REL ASYNC	for asynchronous non-transparent
+CRING:VOICE	for normal speech.
+CRING: FAX	for fax calls
+CRING: GPRS	GPRS network request for PDP context activation, (only in GPRS option)

Syntax:

AT+CRC

Command example	Possible responses	Note
AT+CRC=0	OK	Extended reports disabled
AT+CRC=1	OK	Extended reports enabled

+ILRR – DTE-DCE local rate reporting

Description:

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

Syntax:

AT+ILRR

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

+CRLP – Radio link protocol parameters

Description:

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

Syntax:

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

Command example	Possible responses	Note
AT+CRLP=?	+CRLP: (0-61),(0-61), (40-255),(1,255),(0,1) OK	Test command
AT+CRLP=61,61,48,6,0	OK	Set new parameters
AT+CRLP?	AT+CRLP: 61,61,48,6,0	Current values

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 V42bis is supported the version is 1, If V42bis is not supported the version is 0

+DOPT – Others radio link parameters

Description:

This command allows some supplementary radio link protocol parameters to be changed.

Syntax:

AT+DOPT=<reset_allowed>,<dtx_allowed>

Command example	Possible responses	Note
AT+DOPT=1	OK	Set new parameters
AT+DOPT=?	(0,1),(0,1) OK	Test command, result: DTX is supported
AT+DOPT=1,1	OK	Set new parameters
AT+DOPT?	1,1 OK	Current values

Defined values:

<reset_allowed>

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

1: (default) Data communication continues in case of bad radio link (possible loss of data)

< dtx_allowed >

0: Normal mode

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

%C – Select data compression

Description:

This command enables or disables data compression negotiation if this feature is supported on the product.

Syntax:

AT%C<n>

Command example	Possible responses	Note
AT%C0	OK	Feature supported
AT%C2	OK	V.42bis supported
AT%C?	2 OK	Current value

Defined values:

<n>

0: (default) no compression

2: V.42bis compression if supported.

+DS – V.42 bis data compression

Description:

This command enables or disables V.42bis data compression if this feature is supported on the product.

Syntax:

AT+DS=<dir>,<neg>,<P1>,<P2>

Command example	Possible responses	Note
AT+DS=?	+DS: (0-3),(0,1), (512-4096),(6-250) OK	Test command
AT+DS=3,0,4096,250	OK	Set new parameters
AT+DS?	+DS: 3,0,4096,20 OK	Current values

Defined values:

Four numeric sub-parameters are accepted:

<dir>

specifies the desired direction(s) of operation of the data compression function; from the DTE point of view, (default is 3).

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),

0: Do not disconnect if V.42 bis is not negotiated by the remote DCE as specified in <dir>

1: Disconnect if V.42 bis is not negotiated by the remote DCE as specified in <dir>

<P1>

512-4096: specifies the maximum number of dictionary entries that should be negotiated, (default is 4096).

<P2>

6-250: specifies the maximum string length to be negotiated, (default is 250).

+DR – V42 bis data compression report

Description:

If this feature is provided by the product this command determines whether or not the use of V.42bis is given in an incoming or outgoing data call. The intermediate result code represents current DCE-DCE data compression type.

The format of this result code is as follows:

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

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

Syntax:

AT+DR

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

\N – Select data error correcting mode

Description:

If this feature is provided by the product, this command controls the preferred error correcting mode for a data connection. It can only be used for transparent data transmission. If the MNP2 feature is provided, the product authorizes MNP error correction mode.

Syntax:

AT\N<n>

Command example	Possible responses	Note
AT\N0	OK	no error correction
AT\N?	0 OK	Current value
AT\N4 +CME ERROR: 3		LAPM error correction selection, result: V42 feature is not provided

Defined values:

<n>

0: (default) Disables error correction mode

5: Selects MNP error correction mode

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

Fax commands

The fax service provided by the product is class 1 compatible. However, only the core commands defined by ITU T.31 are supported. This means that commands such as AT+FAR, +FCC, etc. are not supported. Autobauding must be enabled to set up the product for fax.

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

+FTM – Transmit speed

Description:

This command sets the fax transmit speed.

Syntax:

AT+FTM=<speed>

Command example	Possible responses	Note
AT+FTM=?	(24,48,72,73,74,96,97,98, 121,122,145,146) OK	Test command, Note: Fax 14.4 kbps supported

Defined values:

<speed>

24:	2 400 bps (modem type: V.27ter)
48:	4 800 bps (modem type: V.27ter)
72:	7 200 bps (modem type: V.29)
73:	7 200 bps (long) (modem type: V.17)
74:	7 200 bps (short) (modem type: V.17)
96:	9 600 bps (modem type: V.29)
97:	9 600 bps (long) (modem type: V.17)
98:	9 600 bps (short) (modem type: V.17)
121:	12 000 bps (long) (modem type: V.17)
122:	12 000 bps (short) (modem type: V.17)
145:	14 400 bps (long) (modem type: V.17)
146:	14 400 bps (short) (modem type: V.17)

+FRM – Receive speed

Description:

This command sets the fax receive speed.

Syntax:

AT+FRM=<speed>

Command example	Possible responses	Note
AT+FRM=?	(24,48,72,73,74,96,97,98, 121,122,145,146) OK	Test command Note: Fax 14.4 kbps supported

Defined values:

The speed values are identical to those of the +FTM command (see above).

+FTH – HDLC transmit speed

Description:

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

Syntax:

AT+FTH=<speed>

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

Defined values:

<speed>

Can only take the value 3, which corresponds to V.21 channels 300 bps.

+FRH – HDLC receive speed

Description:

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

Syntax:

AT+FRH=<speed>

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

Defined values:

<speed>

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

+FTS – Stop transmission and wait

Description:

This command stops transmission for the period specified.

Syntax:

AT+FTS=<n>

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

Defined values:

<n>

Silence period (units of 10 ms).

+FRS – Receive silence

Description:

This command causes the modem to stop listening to the network and report back to the DTE after the specified period.
It is aborted if any character is received from the application.

Syntax:

AT+FRS=<n>

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

Defined values:

<n>

Is in units of 10 ms.

Fax class 2 commands and indication messages

If the feature is supported, the commands +FDT, +FDR, +FET, +FPTS and +FK must be used during communication only.

The other commands, +FBOR, +FBUF, +FCQ, +FCR, +FDCC, +FDIS, +FLID and +FPHC-TO, cannot be used during communication.

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

+FCON:

This response indicates connection 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

**+FDIS <vr>,
,<wd>,<ln>,<df>,<ec>,<bf>,<st>:**

This response reports remote capabilities. The parameters are the same than those of AT+FDIS command

+FCFR:

This response indicates confirmation to receive.

+FTSI "<string>":

This response reports the received transmit station ID string.

+FCSI "<string>":

This response reports the received called station ID string.

+FPTS <ppr>:

This response reports received page transfer status. The parameter is the same than the one of AT+FPTS command

+FET <ppm>:

This response reports post page message response. The parameter is the same than the one of AT+FET command

+FHNG <cause>:

This response reports the hang-up 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.

+FDT – Transmit Data

Description:

This command prefixes data transmission.

Syntax:

AT+FDT

+FDR – Receive Data

Description:

This command initiates data reception.

Syntax:

AT+FDR

+FET – Transmit page punctuation

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.

Syntax:

Command syntax: AT+FET=<ppm>

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 interrupt
6:	All done, procedure interrupt

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

+FPTS – Page transfer status parameters

Description:

This command sets post page transfer response.

Syntax:

AT+FPTS=<ppr>

Defined values:

<ppm>

1: Page good
2: Page bad; retrain requested
3: page good; retrain requested
4: Page bad; interrupt requested
5: age good; interrupt requested

+FK – Terminate Session

Description:

This command causes the product to terminate the session.

Syntax:

AT+FK

+FBOR – Page transfer bit order

Description:

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

Syntax:

AT+FBOR=<n>

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

Defined values:

<n>

Bit order for negotiation Bit order for page transfer

0 (default) Same Same
1 Same Reverse
2 Reverse Same
3 Reverse Reverse.107

+FBUF – Buffer size report

Description:

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

Syntax:

AT+FBUF

Command example	Possible responses	Note
AT+FBUF?	1024 OK	Current value

+FCQ – Copy quality checking

Description:

This command controls Copy Quality checking for receiving faxes.

Syntax:

AT+FCQ=<n>

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

+FCR – Capability to receive

Description:

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

Syntax:

AT+FCR=<n>

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

Defined values:

<n>

0: The modem will not accept incoming faxes.
1: (default) The modem will accept incoming faxes.

+FDIS – Current sessions parameters

Description:

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

Syntax:

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

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

Defined values:

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

<vr>

Vertical Resolution,

0: (default) Normal: 98 lpi
1: Fine: 196 lpi

**
**

Bit Rate,

0: 2 400 bps (modem type: V.27 ter)
1: 4 800 bps (modem type: V.27 ter)
2: 7 200 bps (modem type: V.29)
3: 9 600 bps (modem type: V.29, V.17)
4*: 12 000 bps (modem type: V.33, V.17)
5*: 14 400 bps (modem type: V.33, V.17)

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

<wd>

Page Width,

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

<in>

Page Length,

0: A4, 297 mm
1: B4, 364 mm
2: (default) Unlimited

<df>

Data Compression Format,

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,

0: Disable Fax ECM
1*: Enable Fax ECM, 64 bytes/frame
2*: Enable Fax ECM, 256 bytes/frame

(*) Only when product supports fax Error Correction Mode feature. If this feature is supported default is 2, else default is 0.

<bf>

Binary File Transfer, Only <bf> set to 0 is supported.

<st>

Scan Time per line,

<st>	**Description <vr>=0**	**Description <vr>=1**
0(default)	0 ms	0 ms
1	5 ms	5 ms
2	10 ms	5ms
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

+FDCC – DCE capabilities parameters

Description:

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

Syntax:

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

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

Defined values:

The parameters and default values are the same as for the +FDIS command

+FLID – Local ID string

Description:

This command allows the local ID string to be defined.

Syntax:

AT+FLID="<string>"

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

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

+FPHCTO – Page transfer timeout parameter

Description:

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

Syntax:

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

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

+IPR – Fixed DTE rate

Description:

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

Syntax:

AT+IPR

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

(*) the first set of values indicates the range of auto-detectable speeds.

The second set of values indicates all possible speeds that can be used by the DCE. Autobauding is supported (operating from 1200 to 38400 baud). However some constraints have to be taken into account: any AT command issued by the DTE must start with a capital 'A' and 'T' (or '\'), otherwise the DCE may return some garbage characters and become desynchronized. Should this happen, the DTE simply issues 'AT\r' (at 2400 or 4800 bauds) once or twice or just 'AT' (at 9600 bauds) to re-synchronize the modem. The DTE waits for 1ms after receiving the last character of the AT response (which is always '\n' or 0x0A) to send a new AT command at either the same rate or a new rate. Should this delay be ignored, the DCE can become de-synchronised. Once again, sending 'AT\r' once or twice or just 'AT' causes the DCE to recover.

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

+ICF – DTE-DCE character framing

Description:

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

Syntax:

AT+ICF= <format>, <parity>

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

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).

+IFC – DTE-DCE local flow control

Description:

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

Syntax:

AT+IFC=<DCE_by_DTE>,<DTE_by_DCE>

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

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 throught RTS) DCE behaviour is as follows:

If the DCE has never detected RTS in the high (or ON) condition since startup then it ignores RTS as it assumes that this signal is not connected. As soon as the DCE detects RTS high the signal acts on it. Therefore subsequent RTS transition to OFF will prevent the DCE from sending any further data in both online and offline modes. This behaviour allows the user to use the default settings (hardware flow control) and leave RTS disconnected. In the case where RTS is connected and is high at least once, it acts on the DCE.

< DTE_by_DCE >

0: none (supported)
1: Xon/Xoff circuit 104 (not supported)
2: CTS (supported)

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

&C – Set DCD signal

Description:

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

Syntax:

AT&C

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

&D – Set DTR signal

Description:

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

Syntax:

AT&D

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

&S – Set DSR signal

Description:

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

Syntax:

AT&S

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

O – Back to online mode

Description:

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

Syntax:

ATO

Command example	Possible responses	Note
ATO	OK	Return from offline mode to online mode

Q – Result code suppression

Description:

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

Syntax:

ATQ

Command example	Possible responses	Note
ATQ0	OK	DCE transmits result codes
ATQ1	(none)	Result codes are suppressed and not transmitted

V – DCE response format

Description:

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

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

Syntax:

ATV

Command example	**Possible responses**	**Note**
ATV0	0	DCE transmits limited headers and trailers and numeric result codes
ATV1	OK	DCE transmits full headers and trailers and verbose response text

Z – Default configuration

Description:

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

Syntax:

ATZ

Command example	**Possible responses**	**Note**
ATZ	OK	–

&W – Save configuration

Description:

This commands writes the active configuration to a non-volatile memory (EEPROM). Description of the stored parameters is given in the short form AT-command using.

Syntax:

AT&W

Command example	Possible responses	Note
AT&W	OK	Writes current configuration to EEPROM

&T – Auto-tests

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.

Syntax:

AT&T

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

E – Echo

Description:

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

Syntax:

ATE

Command example	Possible responses	Note
ATE0	OK	Characters are not echoed
ATE1	OK	Characters are echoed

&F – Restore factory settings

Description:

This command is used to restore the factory settings from EEPROM.
The settings which are restored are listed in the end of the manual

Syntax:

AT&F

Command example	Possible responses	Note
AT&F	OK	Ask for restoring the factory settings
AT&F0	OK	Ask for restoring the factory settings

&V – Display configuration

Description:

This command is used to display the modem configuration.

&V

or

&V0: Display the modem configuration in RAM.
&V1: Display the modem configuration in EEPROM.
&V2: Display the modem factory configuration.

The parameters displayed are the following:

Q, V, S0, S2, S3, S4, S5,
+CR, +CRC, +CMEE, +CBST,
+SPEAKER, +ECHO, &C, &D, %C
+IPR, +ICF, +IFC.

Syntax:

AT&V

Command example	Possible responses	Note
AT&V	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	Display active parameters in RAM For Echo the first value corresponds to Echo cancellation 1.

I – Request identification information

Description:

This command causes the product to transmit one or more lines of specific information text.

I0: Display GSM engine manufacturer followed by model identification.
This command is equivalent to +CGMI and +CGMM.

I3: Display revision identification (equivalent to +CGMR).

I4: Display modem configuration in RAM (equivalent to &V0).

I5: Display modem configuration in EEPROM (equivalent to &V1).

I6: Display modem data features.
This command lists the supported data rates, data modes, and fax classes.

I7: Display modem voice features.

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

Syntax:

ATI

Command example	Possible responses	Note
ATI0	WAVECOM MODEM MULTIBAND 900E 1800E OK	Module manufacturer and model identifications
ATI3	432_09GM.2D 1264052 050702 15:17 OK	Revision identification, Note: Software release 4.32, generated on the 5ft of July 2002
ATI6	DATA RATES: AUTOBAUD,300,1200, 1200/75,2400,4800,9600, 14400	Modem data features
	DATA MODES: T/NT,ASYNCHRONOUS FAX CLASS 1,2 OK	
ATI7	SPEECH CODINGS: FR,EFR,HR OK	Modem voice features

+WMUX – Data / Commands Multiplexing

Description:

This command allows to manage the data / AT commands multiplexing mode. See in the end of the manual for the Data / Commands multiplexing protocol description.

Syntax:

AT+WMUX=<mode>

Command example	Possible responses	Note
AT+WMUX=?	+WMUX: (0-1) OK	Possible values
AT+WMUX?	+WMUX: 0 OK	Data / Commands multiplexing disabled.
AT+WMUX=1	OK	Enable Data / Commands multiplexing

Defined values:

<mode>

0: Multiplexing disabled. When the product is online (data communication in progress), no AT command can be used (default).

1: Multiplexing enabled. Data flows and AT commands are multiplexed while in online mode (data communication in progress).

Specific AT commands

+CCED – Cell environment description

Description:

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

Syntax:

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

Defined values:

<mode>

0: One shot requested
1: Automatic shots requested
2: Stop automatic shots

<requested dump>

1: Main Cell: **if the Cell Identity is available**: MCC, MNC, LAC, CI, BSIC, BCCH Freq (absolute), RxLev, RxLev Full, RxLev Sub, RxQual, RxQual Full, RxQual Sub,Idle TS **if the Cell Identity is not available**: MCC, MNC, LAC, BSIC, BCCH Freq (absolute), RxLev, RxLev Full, RxLev Sub, RxQual, RxQual Full, RxQual Sub,Idle TS

2: Neighbour1 to Neighbour6:
If the Cell Identity is available: MCC, MNC, LAC, CI, BSIC, BCCH Freq (absolute), RxLev **if the Cell Identity is not available**: MCC, MNC, LAC,, BSIC, BCCH Freq (absolute), RxLev

4: Timing Advance
Combination (addition of the values) of the requested dump is supported. Note that in idle mode, only RxLev measurements (on the main cell and on the neighbouring cells) are made. 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 form except the LAC and CI values which are in hexadecimal form) of the parameters. If a field cannot be measured, or has no sense, the parameter is not filled in (two consecutive commas are then found). If the <requested dump> parameter is absent, that of the last +CCED command (or 15 by default) will be used.

Values of MCC/MNC are set to 0 in the case of "No service".

+CCED – Automatic RxLev indication

Description:

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

Syntax:

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

Defined values:

<mode>

0: One shot requested
1: Automatic shots requested
2: Stop automatic shots

<requested dump>

8: Main cell RSSI indications (RxLev) from 0 to 31

The response will be a +CSQ response and not a +CCED response.
The 07.07 format for +CSQ is respected. The <ber> is not evaluated by this command, so the <ber> value will always be 99.

+CSQ :<rssi>, 99

OK

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

+WIND – General Indications

Description:

This command is a general mechanism to send unsolicited non-standardized indications to the application. The identified unsolicited non-standardized indications are:

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

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

Syntax:

AT+WIND= **<IndLevel >**

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):	Product is ready to process AT commands (except phonebooks, AOC, SMS), but still in emergency mode.
8	(bit-3):	Indication that the product is ready to process all AT commands, at the end of init or after swapping to ADN in case of FDN configuration
16	(bit-4):	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
512	(bit-9):	SIM Phonebooks reload status
1024	(bit-10):	Sim phonebooks checksum indication
2048	(bit-11):	Interruption indication (only if FTR_INT is activated)

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

Combination (addition of the values) is used to allow more than one indication flow. 0 ≤ IndLevel ≤ 4095

The response is OK if the values are in the previous range.

The supported events are:

<event>

0: The SIM presence pin has been detected as "SIM removed" (depending on 0 bit flow)

1: The SIM presence pin has been detected as "SIM inserted"

2: Calling party is alerting

3: Product is ready to process AT commands (except phonebooks, AOC, SMS), at init or after AT+CFUN=1

4: Product is ready to process all AT commands, end of phonebook init or swap (FDN to ADN)

5: Call <idx> has been created (after ATD or +CCWA...)

6: Call <idx> has been released, after a NO CARRIER, a +CSSU: 5 indication, or after the release of a call waiting

7: The network service is available for an emergency call.

8: The network is lost.

9: Audio ON.

10: Show reload status of each SIM phonebook after init phase (after Power-ON or SIM insertion).

11: Show the checksum of Sim phonebooks after loading them

12: An interruption has occurred

The AT+WIND? command is supported and indicates the <allowed bit flows>. AT+WIND settings are automatically stored in non volatile memory (EEPROM). This means the &W command does not need to be used and the selected flows are always activated after boot. Default value is 0: no flow activated, no indication. AT+WIND=? gives the possible value range (0-1023)

The unsolicited response will then be:

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

<idx>

Call identifier, defined in +CLCC command.

Or for event 10:

+WIND: <event>,<phonebook>,<status>,...,<phonebook>,<status>

<phonebook>

SIM phonebook ("SM", "FD", "ON", "SN", "EN")

<status>

0: Not Reloaded from SIM (no change since last init or SIM remove)

1: Reloaded from SIM to internal memory (at least one entry has changed)

Or for event 11:

+WIND: <event>,["<checksum of SM>"],["<checksum of FD>"],["<checksum of ON>"],["<checksum of SN>"] ,["<checksum of EN>"],["<checksum of LD>"]

<checksum>

128-bit "fingerprint" of the phonebook.

NOTE: If the service of the phonebook is not loaded or not present, the checksum is not displayed and two commas without checksum are displayed („).

+WLPR – Read Language Preference

Description:

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

Syntax:

AT+WLPR= <index >

Response syntax:

+WLPR: <value>

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

+WLPW – Write Language Preference

Description:

Write a Language Preference value in EF-LP

Syntax:

AT+WLPW=<index >,<value>

Response syntax:

OK or +CME ERROR: <err>

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

+WAC – Abort command

Description:

This command allows SMS, SS and PLMN selection related commands to be aborted.

Syntax:

AT+WAC

Command example	Possible responses	Note
AT+WAC		–
AT+WAC=?	OK	–
AT+WAC?	OK	–

Command example	Possible responses	Note
AT+COPS=?		Request available PLMN
AT+WAC	OK	Abort the request of PLMN list

+WDWL – Downloading

Description:

This command switches the product to download mode. Downloading is performed using the 1K-XMODEM protocol.

Syntax:

AT+WDWL

Command example	Possible responses	Note
AT+WDWL	+WDWL: 0	Switch on downloading mode, start the downloading
		...Downloading in progress
AT+CFUN=1	OK	Reset the product at the end

+WDR – Data Rate

Description:

This command allows the data rate for bearer data to be configured (available for outgoing calls only).

Syntax:

AT+WDR=<n>

Command example	Possible responses	Note
AT+WDR=<n>		
AT+WDR=?	+WDR: (0-2)	Possible values, Half Rate available.
AT+WDR?	+WDR: <n>	Request current value
AT+WDR=1	OK	Configure voice type FR,HR with HR prefered. Bearer is configured
AT+WDR=3	+CME ERROR: 3	Syntax error
AT+WDR?	+WDR: 1 OK	Ask the current value

Defined values:

<n>

Data coding type.

0:	FR
1:	FR, HR with HR preferred
2:	HR, FR with FR preferred.

+WHWV – Hardware Version

Description:

This command gets the hardware version.

Syntax:

AT+WHWV

Command example	Possible responses	Note
AT+WHWV	Hardware Version 3.00 OK	Request Hardware Version, result: Hardware version is 3.30

+WDOP – Date of Production

Description:

This command gets the date of production. Format of the date is Week/Year.

Syntax:

AT+WDOP

Command example	Possible responses	Note
AT+WDOP	Production date (W/Y): 24/2002 OK	Request Date of Production, result: Date of production is WEEK: 24 / YEAR: 2002)

+WSTR – Status Request

Description:

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

Syntax:

AT+WSTR=<status>

Response syntax:

+WSTR: <status>,<value>

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

Defined values:

<status>

1: Initialisation sequence

<value>

0: Not started
1: On going
2: Finished

<status>

2: Network status

<value>

(result)

0: No network
1: Network available

+WSCAN – Scan

Description:

This command displays the received signal strength indication (<rssi>) for a specified frequency (in absolute format). This command is not allowed during communication.

Syntax:

AT+WSCAN=<absolute frequency>

Response syntax:

+WSCAN: <rssi>

Command example	Possible responses	Note
AT+WSCAN=50	+WSCAN: 23 OK	Request <rssi> of absolute frequency 50, result: <rssi> is 23.
AT+WSCAN=1025	CME ERROR: 3	Request power of absolute frequency 1025, result: 1025 is not a valid absolute frequency

Defined values:

<absolute frequency>

frequency 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

+WRIM – Ring Indicator Mode

Description:

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

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

Syntax:

AT+WRIM=<n>

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

Defined values:

<n>

0: up-down RI mode
1: pulse RI mode

+W32K – 32kHz Power down Mode

Description:

This command allows the 32kHz power down mode to be enabled or disabled. When power down mode is entered, the product uses a 32kHz internal clock during inactivity stages. When enabled, power down mode is active after 1 to 15 minutes. For additional information on power down mode, see the end of this manual

Syntax:

AT+W32K=<mode>

Command example	Possible responses	Note
AT+W32K=1	OK	Enable 32kHz power down mode, 32kHz power down mode is enabled
AT+W32K=0	OK	Disable 32kHz power down mode, result: 32kHz power down mode is disabled

Defined values:

<mode>

0: Disable 32kHz powerdown mode
1: Enable 32kHz powerdown mode

+WSSW – Software version

Description:

This command displays some internal software reference.

Syntax:

AT+WSSW

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

+WCCS – Custom Character Set

Description:

This command allows to edit and display the custom character set tables.
The "CUSTOM" mode of +CSCS and the +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. In a similar way, when the user requests a string display, the string is converted from GSM alphabet using the GSM To Custom table.
In edition mode, the edition session is terminated by <ctrl-Z>, or aborted by <ESC>.
Only hexadecimal characters ('0'...'9', 'A'...'F') can be used. The number of characters entered must equal the edition range requested, otherwise the command will terminate with a "+CME ERROR: 3" result.

Syntax:

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

Command example	Possible responses	Note
AT+WCCS=0,0,120,130	+WCCS: 11,78797A202 0202020097E05 OK	Display from character 120 to character 130 of the Custom To GSM conversion table. Note: 11 characters displayed
AT+WCCS=1,0,115<CR> 20<ctrl-Z>	OK	Edit character 115 of the Custom To Custom conversion table,GSM conversion table, result: edition successful
AT+WCCS=1,1,0,4<CR> 40A324A5E8<ctrl-Z>	OK	Edit the 5 first characters of the GSM To result: edition successful
AT+WCCS=1,1,200	+CME ERROR: 3	Edit character 200 of GSM To Custom conversion table, result: index out of range

Defined values

<mode>

0: Display the table
1: Edit the table

<table>

0: Custom To GSM conversion table
1: GSM To Custom conversion table

<char 1>, <char 2>

Character range to display/edit. If only <char 1> is present, only this char is displayed/edited.

0–127: for GSM To Custom conversion table
0–255: for Custom To GSM conversion table

See end of the manual for informative examples on phonebooks.

+WLCK – LoCK

Description:

This command allows the ME to be locked on a specific network operator.
NOTE: Test SIM cards (with MCC=001 & MNC=01) doesn't check these locks.

Syntax:

AT+WLCK=<fac>,<passwd>,<NetId>[,<GID1>[,GID2]] [,<CnlType>[,<CnlData>]]

Response syntax:

+WLCK: <status>

Command example	Possible responses	Note
AT+WLCK="PN", 12345678,20810	OK	Activate network lock on SFR (208,10),
AT+WLCK="PS", 12345678, 208105923568974	OK	Activate SIM lock
AT+WLCK="PU", 12345678,2081035	OK	Activate Network Subset lock on SFR (208, 10, 35).
AT+WLCK="PU", 12345678,20810	+CME ERROR: 3	Need 7 digits of IMSI to perform a service provider lock
AT+WLCK="PP", 12345678,20810,"E5"	OK	Activate Service Provider lock on, SFR (208, 10) and GID1 (0xE5)
AT+WLCK="PC", 12345678,20810,"E5","10"	OK	Activate Corporate lock on SFR (208, 10), GID1 (0xE5) and GID2 (0x10).
AT+WLCK="PN", 12345678,20810,0	OK	Activate Network lock on SFR (208, 10), result: Network lock activated on SFR and co-operative using co-operative network list from SIM file EFCNL network list present in SIM (must be present in SIM)

Command example	Possible responses	Note
AT+WLCK=”PN”, 12345678,20801,1,	”02F802FFFFFF02F801FFFFFF” OK	Activate Network lock on F ORANGE (208, 01), result: network lock activated on F ORANGE with manual co-operative network list including (primary network), SFR and Bouygues Telecom SFR (208, 10) and Bouygues Telecom (208, 20) (co-operative networks)

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).

<CnlType>

Type of lock for co-operative network list (CNL)

0: Automatic (co-operative network list retrieved from EFCNL SIM file).
1: Manual (co-operative network list is given in the <CnlData> parameter)

NOTE: EFCNL file must be present in SIM to use automatic mode.

<CnlData>

Co-operative network list (hexa string type) using same format as in EFCNL SIM file (ETSI GSM 11.11 or 3GPP 04.08).

NOTE: Only if <CnlType> = 1

+CPHS – CPHS command

Description:

This command is used to activate, deactivate or interrogate a CPHS feature (e.g. Voice Mail Indicator, Mail Box Number...)

NOTE: This command may answer +CME ERROR: 3 if the CPHS feature is disabled or if the SIM card does not support this CPHS feature.

Syntax

AT+CPHS=<Mode>,<FctId>

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

Defined values:

<Mode>

0: Deactivate a CPHS feature
1: Activate a CPHS feature
2: Interrogate a CPHS status

<FctId>

1: Voice Mail Indicator
2: Mail Box Number

<Status>

0: CPHS feature disabled
1: CPHS feature enabled

+WMIR – Customer storage mirror

Description:

This command allows to make a mirror copy of the current configuration parameters. In case of memory problem for the storage, if a customer mirror already exists, this one will be restored. Otherwise, the default mirrored parameters are restored.

Syntax:

AT+WMIR

Command example	Possible responses	Note
AT+WMIR=?	OK	–
AT+WMIR	OK	Build the Customer Mirror

+WMBN – CPHS Mail Box Number

Description:

This command allows to set the different mailbox numbers in SIM. The +CPHS command can be used to know which mailbox numbers can be updated.

Syntax:

AT+WMBN = <LineId>,<number>,<type>

Response syntax:

(AT+CPHS=2,2)

+WMBN = <LineId>,<number>,<type>,<status>

Command example	Possible responses	Note
AT+WMBN=?	OK	
AT+WMBN?	OK	
AT+CPHS=2,2	+WMBN: 1,"0123456789", 129,1 +WMBN: 2,"9876543210", 129,1 +WMBN: 3,,,0 +WMBN: 4,,,0 OK	Get the current Mail Box Numbers in SIM
AT+WMBN=1, "+33122334455",145	OK	Set mailbox number for line1
AT+WMBN=2, "0166778899",129	OK	Set mailbox number for line2

Command example	Possible responses	Note
AT+WMBN=3, ”0102030405”,129	+CME ERROR: 21	Set mailbox number for FAX Line. Invalid index: Fax Line mailbox number can not be updated with this SIM card.
AT+CPHS=2,2	+WMBN: 1, "+ 33122334455",145,1 +WMBN: 2,”0166778899”, 129,1 +WMBN: 3,,,0 +WMBN: 4,,,0 OK	Get the current Mail Box Numbers again

Defined values:

<LineId>

1: Line 1
2: Line 2
3: FAX
4: DATA

<number>

Phone number in ASCII format.

<type>

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

<status>

When checked with “AT+CPHS=2,2”, it indicates if the number can be updated or not:

0: Update is not possible
1: Update is possible

+WRST – Reset

Description:

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

Syntax:

AT+WRST =<Mode>,<Delay>

Response Syntax:

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

Command example	Possible responses	Note
AT+WRST=?	OK	
AT+WRST=0	OK	Disable timer
AT+WRST=1,"001:03"	OK	Enable timer and put delay at 1 hour 3 minutes
AT+WRST?	+WRST: 1,"001:03", "001:01" OK	Timer activated to reset after 1 hour and 3 minutes. Actually 1 hour and 1 minute remaining before next reset.

Defined values:

<val1>

0: timer reset is disabled
1: timer reset is enabled

<Delay>

"000:00"- "168:59": specify the time for reset

<RemainTime>

"000:00"- "168:59": time before next reset

+WATH – Special Hang-up

Description

This specific command is used by the application to disconnect the remote user, specifying a release cause and the location. In the case of multiple calls, all calls are released (active, on-hold and waiting calls).

Syntax

AT+WATH=<RelCause>,<location>

Command example	Possible responses	Note
AT+WATH=31	OK	Ask for disconnection with release Note: Every call, if any, are released, cause=normal and location=USER
AT+WATH=?	+WATH: (1-127),(0-5,7,10)	
AT+WATH=17,2	OK	Ask for disconnection with release cause=user, busy and location= public network serving the local user, every call, if any, are released

Defined values

<RelCause>

decimal value from 1 to 127, see the table in the end of the manual "Failure Cause from GSM 04.08 recommendation"

<location>

optional parameter (default value =0), values as defined in 04.08

0:	user
1:	private network serving the local user
2:	public network serving the local user
3:	transit network
4:	public network serving the remote user
5:	private network serving the remote user
7:	international network
10:	network beyond interworking point

NOTE: "AT+WATH=0" is the same as "ath"

+CGDCONT – Define PDP Context, (GPRS command)

Description

This command specifies PDP context parameter values for a PDP context identified by the local context identification parameter, <cid>. Eleven PDP contexts can be defined through software. A special form of the set command, +CGDCONT= <cid> causes the values for context number <cid> to become undefined. The test command returns values supported as a compound value. If the MT supports several PDP types, <PDP_type>, the parameter value ranges for each <PDP_type> are returned on a separate line. The read command returns the current settings for each defined context. The test command returns values supported as a compound value. If the MT supports several PDP types, <PDP_type), the parameter value ranges for each <PDP_type> are returned on a separate line.

Syntax:

+CGDCONT=[<cid> [,<PDP_type> [,<APN> [,<PDP_addr> [,<d_comp> [,<h_comp>]]]]]]

+CGDCONT?

+CGDCONT=?

Response Syntax:

OK

ERROR

Response on "+CGDCONT?":

+CGDCONT: <cid>, <PDP_type>, <APN>,<PDP_addr>, <data_comp>, <head_comp>

[<CR><LF>+CGDCONT: <cid>, <PDP_type>, <APN>,<PDP_addr>, <data_comp>, <head_comp> [...]]

Response on "+CGDCONT=?":

+CGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s), (list of supported <h_comp>s)

[<CR><LF>+CGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s),(list of supported <h_comp>s) [...]]

Defined values:

<cid>:

(PDP Context Identifier) a numeric parameter (1-32) which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands.

<PDP_type>:

(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol

IP: Internet Protocol
PPP: Point to Point Protocol

<APN>:

(Access Point Name) a string parameter, which is a logical name that is used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested.

<PDP_address>:

A string parameter that identifies the MT in the address space applicable to the PDP. If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, failing that, a dynamic address will be requested.

The read form of the command will continue to return the null string even if an address has been allocated during the PDP startup procedure. The allocated address may be read using the +CGPADDR command.

<d_comp>:

A numeric parameter that controls PDP data compression

0: off (default if value is omitted)
1: on

Other values are reserved.

<h_comp>:

A numeric parameter that controls PDP header compression

0: off (default if value is omitted)
1: on

Other values are reserved.

NOTE 1: At present only one data compression algorithm (V.42bis) is provided in SNDCP. If and when other algorithms become available, a command will be provided to select one or more of these.

NOTE 2: 32 cids are available to specify 32 PDP contexts but only 11 NSAPI are available for PDP activation. In this product, 32 PDP contexts can be specified with only one activated at the same time.

Command example	Possible responses	Note
AT +CGDCONT=1, "IP", "internet"	OK	Set context 1
AT +GCDCONT=2, "IP", "abc.com"	OK	Set context 2
AT+CGDCONT=?	+CGDCONT=(1-32), "IP",,,(0-1),(0-1) +CGDCONT=(1-32), "PPP",,,0,0 OK	Possible values
AT+CGDCONT?	+CGDCONT=1, "IP", "internet",,0,0 +CGDCONT=2, "IP", "abc.com",,0,0 OK	Request current contexts

+CGQREQ – Quality of Service Profile (Requested), (GPRS command)

Description

This command allows the TE to specify a Quality of Service Profile that is used when the MT sends an Activate PDP Context Request message to the network. The set command specifies a profile for the context identified by the local context identification parameter, <cid>. Since this is the same parameter that is used in the +CGDCONT command, the +CGQREQ command is effectively an extension to the +CGDCONT command.
The QoS profile consists of a number of parameters, each of which may be set to a separate value. A special form of the set command, +CGQREQ= <cid> causes the requested profile for context number <cid> to become undefined. The read command returns the current settings for each defined context. The test command returns values supported as a compound value. If the MT supports several PDP types, the parameter value ranges for each PDP type are returned on a separate line.

Syntax:

+CGQREQ=[<cid> [,<precedence > [,<delay> [,<reliability.> [,<peak> [,<mean>]]]]]]

+CGQREQ?

+CGQREQ=?

Response Syntax:

OK

ERROR

Response on "+CGQREQ?":

+CGQREQ: <cid>, <precedence >, <delay>, <reliability>, <peak>, <mean>

[<CR><LF>+CGQREQ: <cid>, <precedence >, <delay>, <reliability.>, <peak>, <mean> [...]]

Response on "+CGQREQ=?":

+CGQREQ: <PDP_type>, (list of supported <precedence>s),
(list of supported <delay>s), (list of supported <reliability>s),
(list of supported <peak>s), (list of supported <mean>s)
[<CR><LF>+CGQREQ: <PDP_type>, (list of supported <precedence>s),
(list of supported <delay>s), (list of supported <reliability>s),
(list of supported <peak>s), (list of supported <mean>s) [...]]

Defined values:

<cid>:

A numeric parameter which specifies a particular PDP context definition.

<precedence>:

A numeric parameter which specifies the precedence class

Precedence	Precedence Name	Interpretation
0	Subscribed	Subscribed by the Nwk / default if value is omitted
1	High priority	Service commitments shall be maintained ahead of precedence classes 2 and 3.
2	Normal priority	Service commitments shall be maintained ahead of precedence class 3.
3	Low priority	Service commitments shall be maintained after precedence classes 1 and 2.

<delay>:

A numeric parameter which specifies the delay class

	Delay (maximum values)			
	SDU size: 128 octets		SDU size: 1024 octets	
Delay Class	Mean Transfer Delay (sec)	95 percentile Delay (sec)	Mean Transfer Delay (sec)	95 percentile Delay (sec)
0	Subscribed	Subscribed by the Nwk / default if value is omitted		
1. (Predictive)	< 0.5	< 1.5	< 2	< 7
2. (Predictive)	< 5	< 25	< 15	< 75
3. (Predictive)	< 50	< 250	< 75	< 375
4. (Best Effort)	Unspecified			

<reliability>:

A numeric parameter which specifies the reliability class

Reliability Class	GTP Mode	LLC Frame Mode	LLC Data Protection	RLC Block Mode	Traffic Type
0	Subscribed	Subscribed by the Nwk / default if value is omitted			
1	Acknow-ledged	Acknow-ledged	Protected	Acknow-ledged	Non real-time traffic, error-sensitive application that cannot cope with data loss.
2	Unacknow-ledged	Acknow-ledged	Protected	Acknow-ledged	Non real-time traffic, error-sensitive application that can cope with infrequent data loss.
3	Unacknow-ledged	Unacknow-ledged	Protected	Acknow-ledged	Non real-time traffic, error-sensitive application that can cope with data loss, GMM/SM, and SMS.
4	Unacknow-ledged	Unacknow-ledged	Protected	Unacknow-ledged	Real-time traffic, error-sensitive application that can cope with data loss.
5	Unacknow-ledged	Unacknow-ledged	Unpro-tected	Unacknow-ledged	Real-time traffic, error non-sensitive application that can cope with data loss.
NOTE: For real-time traffic, the QoS profile also requires appropriate settings for delay and throughput.					

<peak>:

A numeric parameter which specifies the peak throughput class

Peak Throughput Class	Peak Throughput in octets per second
0	Subscribed by the Nwk / default if value is omitted
1	Up to 1 000 (8 kbit/s).
2	Up to 2 000 (16 kbit/s).
3	Up to 4 000 (32 kbit/s).
4	Up to 8 000 (64 kbit/s).
5	Up to 16 000 (128 kbit/s).
6	Up to 32 000 (256 kbit/s).
7	Up to 64 000 (512 kbit/s).
8	Up to 128 000 (1 024 kbit/s).
9	Up to 256 000 (2 048 kbit/s).

<mean>:

A numeric parameter which specifies the mean throughput class.
If a value is omitted for a particular class then the value is considered to be unspecified.

Mean Throughput Class	Mean Throughput in octets per hour
0	Subscribed by the Nwk / default if value is omitted
1	100 (~0.22 bit/s).
2	200 (~0.44 bit/s).
3	500 (~1.11 bit/s).
4	1 000 (~2.2 bit/s).
5	2 000 (~4.4 bit/s).
6	5 000 (~11.1 bit/s).
7	10 000 (~22 bit/s).
8	20 000 (~44 bit/s).
9	50 000 (~111 bit/s).
10	100 000 (~0.22 kbit/s).
11	200 000 (~0.44 kbit/s).
12	500 000 (~1.11 kbit/s).
13	1 000 000 (~2.2 kbit/s).
14	2 000 000 (~4.4 kbit/s).
15	5 000 000 (~11.1 kbit/s).
16	10 000 000 (~22 kbit/s).
17	20 000 000 (~44 kbit/s).
18	50 000 000 (~111 kbit/s).
31	Best effort.

Command example	Possible responses	Note
AT +CGQREQ=1,1,4,5,2,14	OK	
AT+CGQREQ=?	+CGQREG: "IP", (1-3), (1-4), (1-5), (1-9), (1-31)	
	+CGQREQ: "PPP", (1-3), (1-4), (1-5), (1-9), (1-31)	
	OK	
AT+CGQREQ?	+CGQREQ: 1,1,4,5,2,14	
	OK	

+CGQMIN – Quality of Service Profile (Minimum acceptable), (GPRS command)

Description

This command allows the TE to specify a minimum acceptable profile which is checked by the MT against the negotiated profile returned in the Activate PDP Context Accept message.

The set command specifies a profile for the context identified by the local context identification parameter, <cid>. Since this is the same parameter that is used in the +CGDCONT command, the +CGQMIN command is effectively an extension to the +CGDCONT command. The QoS profile consists of a number of parameters, each of which may be set to a separate value.

A special form of the set command, +CGQMIN= <cid> causes the minimum acceptable profile for context number <cid> to become undefined. In this case no check is made against the negotiated profile.

The read command returns the current settings for each defined context.

The test command returns values supported as a compound value. If the MT supports several PDP types, the parameter value ranges for each PDP type are returned on a separate line.

Syntax:

+CGQMIN=[<cid> [,<precedence > [,<delay> [,<reliability.> [,<peak> [,<mean>]]]]]]

+CGQMIN?

+CGQMIN=?

Response Syntax:

OK

ERROR

Response on "+CGQMIN?":

+CGQMIN: <cid>, <precedence >, <delay>, <reliability>, <peak>, <mean>

[<CR><LF>+CGQMIN: <cid>, <precedence >, <delay>, <reliability.>, <peak>, <mean> [...]]

Response on "+CGQMIN=?":

+CGQMIN: <PDP_type>, (list of supported <precedence>s),
(list of supported <delay>s), (list of supported <reliability>s),
(list of supported <peak>s), (list of supported <mean>s) [<CR><LF>+CGQMIN:
<PDP_type>, (list of supported <precedence>s), (list of supported <delay>s),
(list of supported <reliability>s) , (list of supported <peak>s),
(list of supported <mean>s) [...]]

Defined values:

<cid>:

A numeric parameter which specifies a particular PDP context .

<precedence>:

A numeric parameter which specifies the precedence class.

<delay>:

A numeric parameter which specifies the delay class.

<reliability>:

A numeric parameter which specifies the reliability class.

<peak>:

A numeric parameter which specifies the peak throughput class.

<mean>:

A numeric parameter which specifies the mean throughput class.
If a value is omitted for a particular class then this class is not checked.

Command example	Possible responses
AT +CGQMIN=1,1,4,5,2,31	OK
AT+CGQMIN=?	+CGQMIN: "IP", (1-3), (1-4), (1-5), (1-9), (1-31)
	+CGQMIN: "PPP", (1-3), (1-4), (1-5), (1-9), (1-31)
	OK
AT+CGQMIN?	+CGQMIN: 1,1,4,5,2,14
	OK

+CGATT – GPRS attach or detach, (GPRS command)

Description

The execution command is used to attach the MT to, or detach the MT from, the GPRS service. After the command has completed, the MT remains in V.25ter command state. If the MT is already in the requested state, the command is ignored and the OK response is returned. If the requested state cannot be achieved, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command.

Any active PDP contexts will be automatically deactivated when the attachment state changes to detached.

The read command returns the current GPRS service state.

The test command is used for requesting information on the supported GPRS service states.

Syntax:

+CGATT= [<state>]

+CGATT?

Response Syntax:

OK

ERROR

Response on "+CGATT?":

+CGATT: <state>

Response on "+CGATT=?":

+CGATT: (list of supported <state>s)

Defined Values:

<state>

indicates the state of GPRS attachment

0: detached

1 : attached

Other values are reserved and will result in an ERROR response to the execution command.

Command example	Possible responses	Note
AT +CGATT=1	OK	–

BACK

+CGACT – PDP context activate or deactivate, (GPRS command)

Description

The execution command is used to activate or deactivate the specified PDP context (s). After the command has completed, the MT remains in V.25ter command state. If any PDP context is already in the requested state, the state for that context remains unchanged.

If the requested state for any specified context cannot be achieved, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command.

If the MT is not GPRS attached when the activation form of the command is executed, the MT first performs a GPRS attach and them attempts to activate the specified contexts. If the attach fails then the MT responds with ERROR or, if extended error responses are enabled, with the appropriate failure-to-attach error message.

If no <cid>s are specified the activation form of the command activates all defined contexts.

If no <cid>s are specified the deactivation form of the command deactivates all active contexts.

Two PDP contexts can be activated through the software.

The read command returns the current activation states for all the defined PDP contexts.

The test command is used for requesting information on the supported PDP context activation states.

Syntax:

+CGACT=[<state> [,<cid>[,<cid>[,...]]]]

+CGACT?

+CGACT=?

Response Syntax:

OK

ERROR

Response on "+CGACT?"

+CGACT: <cid>, <state>

Response on "+CGACT=?"

+CGACT: (list of supported <state>s)

Defined Values:

<state>

Indicates the state of PDP context activation

0: deactivated

1: activated

Other values are reserved and will result in an ERROR response to the execution command.

<cid>: a numeric parameter which specifies a particular PDP context.

Command example	Possible responses	Note
AT +CGACT=1,1	OK	–
AT+CGACT?	+CGACT: 1, 1 OK	–
AT+CGACT=?	+CGACT: (0-1) OK	–

NOTE Before a context can be activated, the MT must be attached to the GPRS network by performing an automatic GPRS attach.

+CGDATA – Enter data state, (GPRS command)

Description

The execution command causes the MT to perform whatever actions are necessary to establish communication between the TE and the network. This may include performing a GPRS attach and one PDP context activations.

If the cid value is not defined to the MT, the MT will return an ERROR or +CME ERROR response. Otherwise, the MT issues the intermediate result code CONNECT and enters V.25ter online data state.

GPRS attachment and PDP context activation procedures may take place prior to or during the PDP startup if they have not already been performed using the +CGATT and +CGACT commands.

If no <cid> is given, the MT is attempt to activate the context with whatever information is available to the MT. The other context parameters is set to their default values (No APN, default QOS parameters, dynamic IP address requested).

If the activation is successful, data transfer may proceed.

After data transfer is complete, and the layer 2 protocol termination procedure has completed successfully, the V.25ter command state is re-entered and the MT returns the final result code OK.

In the event of an erroneous termination or a failure to start up, the V.25ter command state is re-entered and the MT returns the final result code NO CARRIER or, if enabled, +CME ERROR. Attach, activate and other errors may be reported.

This command may be used in both normal and modem compatibility modes.

Remark: the goal of this command is the same than ATD*99*** so, the best will be to use only ATD*99***

Syntax:

+CGDATA=[<cid>]

+CGDATA=?

Response Syntax:

CONNECT

ERROR

Response on "+CGDATA=?"

+CGDATA:

Defined Values:

<cid> a numeric parameter which specifies a particular PDP context definition.

Command example	Possible responses	Note
AT+CGDATA=?	+CGDATA: OK	–
AT +CGDATA=1	CONNECT	–

+CGCLASS – GPRS mobile station class, (GPRS command)

Description

The set command is used to set the MT to operate according to the specified GPRS mobile class. If the requested class is not supported, an ERROR or +CME ERROR response is returned.

The read command returns the current GPRS mobile class.

The test command is used for requesting information on the supported GPRS mobile classes.

Syntax:

+CGCLASS= [<class>]

+CGCLASS?

+CGCLASS=?

Response Syntax:

OK

ERROR

Response on "+CGCLASS?"

+CGCLASS: <class>

Response on "+CGCLASS=?"

+CGCLASS: (list of supported <class>s)

Defined Values:

<class> a string parameter which indicates the GPRS mobile class (in descending order of functionality)

A: class A (highest)
B: class B
CG: class C in GPRS only mode
CC: class C in circuit switched only mode (lowest)

Other values are reserved and will result in an ERROR response to the set command.

If the MT is GPRS attached when the set command is issued with a <class> = CC specified, a GPRS detach request is sent to the network.

If the MT is GSM attached when the set command is issued with a <class> = CG specified, a GSM detach request is sent to the network.

Class A is not supported by the current GPRS software.

Remark: During switch-On in CG class, the MS always performs an automatic GPRS attach (the ATTACH-STATUS parameter of +WGPRS is ignored). But if the MS is not already GPRS attached when switching from B/CC class to CG class then no automatic GPRS attach is performed.

Command example	Possible responses	Note
AT +CGCLASS="CG"	OK	To go in GPRS class C mode
AT +CGCLASS="CC"	OK	To go in GSM mode
AT +CGCLASS="A"	+CME ERROR: 150	Class chosen not supported.
AT+CGCLASS=?	+CGCLASS: ("CG","CC") OK	
AT+CGCLASS?	+CGCLASS: "CC" OK	
AT+CGCLASS?	+CGCLASS: "B" OK	About the remark above:
AT+CGATT?	+CGATT: 0 OK	Not attached
AT+CGCLASS="CG"	OK	Set to CG class
AT+CGATT?	+CGATT: 0 OK	Still not attached
AT+CGATT=1	OK	
AT+CPOF	OK	Turn OFF the unit
AT+CFUN=1	OK	Turn ON
AT+CGCLASS?	+CGCLASS: "CG" OK	Check what class, result: CG
AT+CGATT?	+CGATT: 1 OK	Check if attached, result yes we are (directly after power on)

+CGSMS – Select service for MO SMS messages, (GPRS command)

Description

The set command is used to specify the service or service preference that the MT will use to send MO SMS messages.

The read command returns the currently selected service or service preference.

The test command is used for requesting information on the currently available services and service preferences.

Syntax:

+CGSMS= [<service>]

+CGSMS?

+CGSMS=?

Response Syntax:

OK

ERROR

Response on "+CGSMS?"

+CGSMS: <service>

Response on "+CGSMS=?"

+CGSMS: (list of currently available <service>s)

Defined Values:

<service>

a numeric parameter which indicates the service or service preference to be used

0: GPRS
1: Circuit switched
2: GPRS preferred (use circuit switched if GPRS is not available)
3: Circuit switched preferred (use GPRS if circuit switched not available)

Other values are reserved and will result in an ERROR response to the set command.

Command example	Possible responses	Note
AT +CGSMS=0	OK	–
AT+CGSMS=?	+CGSMS=(0-3) OK	–

+CGEREP – GPRS event reporting, (GPRS command)

Description

Set command enables or disables sending of unsolicited result codes, +CGEV: XXX from MT to TE in the case of certain events occurring in the GPRS MT or the network.

<mode> controls the processing of unsolicited result codes specified within this command.

Read command returns the current mode and buffer settings

Test command returns the modes and buffer settings supported by the MT as compound values.

Syntax:

+CGEREP=[<mode>]

+CGEREP?

+CGEREP=?

Response Syntax:

OK

ERROR

Response on "+CGEREP?

+CGEREP: <mode>

Response on "+CGEREP=?

+CGEREP: (list of supported <mode>s)

Defined values:

<mode>

0: buffer unsolicited result codes in the MT; if MT result code buffer is full, the oldest ones can be discarded. No codes are forwarded to the TE.

2: buffer unsolicited result codes in the MT when MT-TE link is reserved (e.g. in on-line data mode) and flush them to the TE when MT-TE link becomes available; otherwise forward them directly to the TE

With the current software, a combination of all modes is implemented. When serial link is available, indications are forwarded directly to the TE. If serial link is reserved (e.g. in on-line data mode), if MT result code buffer is full, the oldest ones can be discarded.

Defined events

The following unsolicited result codes and the corresponding events are defined:

A network request for PDP context activation occurred when the MT was unable to report it to the TE with a +CRING unsolicited result code and was automatically rejected.

+CGEV: REJECT <PDP_type>, <PDP_addr>

The network has requested a context reactivation. The <cid> that was used to reactivate the context is provided if known to the MT.

+CGEV: NW REACT <PDP_type>, <PDP_addr>, [<cid>]

The network has forced a context deactivation. The <cid> that was used to activate the context is provided if known to the MT.

+CGEV: NW DEACT <PDP_type>, <PDP_addr>, [<cid>]

The mobile equipment has forced a context deactivation. The <cid> that was used to activate the context is provided if known to the MT.

+CGEV: ME DEACT <PDP_type>, <PDP_addr>, [<cid>]

The network has forced a GPRS detach. This implies that all active contexts have been deactivated. These are not reported separately.

+CGEV: NW DETACH

The mobile equipment has forced a GPRS detach. This implies that all active contexts have been deactivated. These are not reported separately.

+CGEV: ME DETACH

The network has forced a change of MS class. The highest available class is reported.

+CGEV: NW CLASS <class>

The mobile equipment has forced a change of MS class. The highest available class is reported.

+CGEV: ME CLASS <class>

+CGREG – GPRS network registration status

Description

The set command controls the presentation of an unsolicited result code +CGREG: <stat> when <n>=1 and there is a change in the MT's GPRS network registration status, or code +CGREG: <stat>[,<lac>,<ci>] when <n>=2 and there is a change of the network cell.

The read command returns the status of result code presentation and an integer <stat> which shows whether the network has currently indicated the registration of the MT. Location information elements <lac> and <ci> are returned only when <n>=2 and MT is registered in the network.

Syntax:

+CGREG=[<n>]

+CGREG?

+CGREG=?

Response Syntax:

OK

ERROR

Response on "+CGREG?"

+CGREG: <n>,<stat>[,<lac>,<ci>]

+CME ERROR: <err>

Response on "+CGREG=?"

+CGREG: (list of supported <n>s)

Defined values:

<n>

0: disable network registration unsolicited result code
1: enable network registration unsolicited result code +CGREG: <stat>
2: enable network registration and location information unsolicited result code +CGREG: <stat>[,<lac>,<ci>]

<stat>:

0: not registered, ME is not currently searching a new operator to register to
1: registered, home network
2: not registered, but ME is 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.

<ci>:

string type; two byte cell ID in hexadecimal format

'D' – Request GPRS IP service

Description

This command causes the MT to perform whatever actions are necessary to establish communication between the TE and the external PDN.

The V.25ter 'D' (Dial) command causes the MT to enter the V.25ter online data state and, with the TE, to start the specified layer 2 protocol. The MT return CONNECT to confirm acceptance of the command prior to entering the V.25ter online data state. No further commands may follow on the AT command line.

The detailed behaviour after the online data state has been entered is described briefly in clause 9, for IP, of GSM 07.60. GPRS attachment and PDP context activation procedures may take place prior to or during the PDP startup if they have not already been performed using the +CGATT and +CGACT commands.

If <cid> is supported, its usage is the same as in the +CGDATA command. The +CGDCONT, +CGQREQ, etc. commands may then be used in the modem initialisation AT command string to set values for for PDP type, APN, QoS etc...

If <cid> is not supported or is supported but omitted, the MT attempt to activate the context using:

(a) any information provided by the TE during the PDP startup procedure, e.g. the TE may provide a PDP type and/or PDP address to the MT,

or, (b) a priori knowledge, e.g. the MT may implement only one PDP type,

or, (c) using the 'Empty PDP type' (GSM 04.08). (No PDP address or APN is sent in this case and only one PDP context subscription record is present in the HLR for this subscriber.)

Syntax:

D*<GPRS_SC_IP>[***<cid>]#

Response Syntax:

CONNECT

ERROR

Defined Values:

<GPRS_SC_IP>

(GPRS Service Code for IP) a digit string (value 99), which identifies a request to use the GPRS with IP (PDP types IP and PPP)

<cid>:

A digit string which specifies a particular PDP context definition.

Command example	Possible responses	Note
ATD*99***1#	CONNECT	Successful “connection”
ATD*99***2#	ERROR	

Network requested PDP context activation in GPRS mode

In this mode of operation, the MT behaves like an answering modem and accepts the normal V.25ter commands associated with answering a call. If GPRS-specific configuration commands are required, they may be sent to the MT as part of the modem initialisation commands.

The +CGAUTO command is used to select modem compatibility mode.

'S0' – Automatic response to a network request for PDP context activation

The V.25ter 'S0=n' (Automatic answer) command may be used to turn off (n=0) and on (n>0) the automatic response to a network request for a PDP context activation.

When the 'S0=n' (n>0) command is received, the MT attempt to perform a GPRS attach if it is not already attached. Failure will result in ERROR being returned to the TE. Subsequently, the MT will announce a network request for PDP context activation by issuing the unsolicited result code RING to the TE, followed by the intermediate result code CONNECT. The MT then enters V.25ter online data state and follows the same procedure as it would after having received a +CGANS=1 with no <L2P> or <cid> values specified.

NOTE. The 'S0=n' (n=0) command does not perform an automatic GPRS detach.

'A' – Manual acceptance of a network request for PDP context activation

The V.25ter 'A' (Answer) command may be used to accept a network request for a PDP context activation announced by the unsolicited result code RING. The MT responds with CONNECT, enters V.25ter online data state and follows the same procedure as it would after having received a +CGANS=1 with no <L2P> or <cid> values specified. It is an error to issue the 'A' command when there is no outstanding network request.

'H' – Manual rejection of a network request for PDP context activation

The V.25ter 'H' or 'H0' (On-hook) command may be used to reject a network request for PDP context activation announced by the unsolicited result code RING. The MT responds with OK. It is an error to issue the 'H' command when there is no outstanding network request.

NOTE: This is an extension to the usage of the 'H' command that is described in ITU-T V.25ter.

+CGAUTO – Automatic response to a network request for PDP context activation, (GPRS command)

Description

The set command disables or enables an automatic positive response (auto-answer) to the receipt of a Request PDP Context Activation message from the network. It also provides control over the use of the V.25ter basic commands 'S0', 'A and 'H' for handling network requests for PDP context activation. The setting does not affect the issuing of the unsolicited result code RING or +CRING.

The test command returns values of <n> supported by the MT as a compound value.

When the +CGAUTO=0 command is received, the MT will not perform a GPRS detach if it is attached. Subsequently, when the MT announces a network request for PDP context activation by issuing the unsolicited result code RING or +CRING, the TE may manually accept or reject the request by issuing the +CGANS command or may simply ignore the network request.

When the +CGAUTO=1 command is received, the MT will attempt to perform a GPRS attach if it is not already attached. Failure will result in ERROR or, if enabled, +CME ERROR being returned to the TE. Subsequently, when the MT announces a network request for PDP context activation by issuing the unsolicited result code RING or +CRING to the TE, this is followed by the intermediate result code CONNECT. The MT then enters V.25ter online data state and follows the same procedure as it would after having received a +CGANS=1 with no <L2P> or <cid> values specified.

Syntax:

+CGAUTO=[<n>]

+CGAUTO?

+CGAUTO=?

Response Syntax:

OK

ERROR

Response on "+CGAUTO?"

+CGAUTO: <n>

Response on "+CGAUTO=?"

+CGAUTO: (list of supported <n>s)

Defined values:

<n>

0: turn off automatic response for GPRS only
1: turn on automatic response for GPRS only
2: modem compatibility mode, GPRS only
3: modem compatibility mode, GPRS and circuit switched calls (default)

For <n> = 0 GPRS network requests are manually accepted or rejected by the +CGANS command.

For <n> = 1 GPRS network requests are automatically accepted according to the description above.

For <n> = 2, automatic acceptance of GPRS network requests is controlled by the 'S0' command. Manual control uses the 'A' and 'H' commands, respectively, to accept and reject GPRS requests. (+CGANS may also be used.) Incoming circuit switched calls can be neither manually nor automatically answered.

For <n> = 3, automatic acceptance of both GPRS network requests and incoming circuit switched calls is controlled by the 'S0' command. Manual control uses the 'A' and 'H' commands, respectively, to accept and reject GPRS requests. (+CGANS may also be used.) Circuit switched calls are handled as described elsewhere in this specification.

NOTE: In class C GPRS the modem can't receive GPRS and GSM incoming calls simultaneously.

Command example	Possible responses	Note
AT+CGAUTO=?	+CGAUTO: (0-2) OK	Possible values
AT+CGAUTO?	+CGAUTO: 2 OK	Check current value
AT+CGAUTO=0	OK	Turn off automatic response

+CGANS – Manual response to a network request for PDP context activation, (GPRS command)

Description

The execution command requests the MT to respond to a network request for GPRS PDP context activation which has been signalled to the TE by the RING or +CRING: unsolicited result code. The <response> parameter allows the TE to accept or reject the request.

If <response> is 0, the request is rejected and the MT returns OK to the TE.
If <response> is 1, the following procedure is followed by the MT.

PDP context activation procedures take place prior to or during the PDP startup.
One or more <cid>s may be specified in order to provide the values needed for the context activation request.

During the PDP startup procedure the MT has the PDP type and the PDP address provided by the network in the Request PDP Context Activation message.

The MT may also have some or all of the following information:

- The MT may have a priori knowledge, for example, it may implement only one PDP type.
- The command may have provided an <L2P> parameter value.
- The TE may provide one or both of PDP type and PDP address to the MT in the PDP startup.

If any of this information is in conflict, the command will fail.

If one or more <cid> is given then an attempt is made to identify an appropriate context definition by matching the PDP type and PDP address in the network request with the PDP type and PDP address in each of the specified context definitions (in the order in which their <cid>s appear in the command) as follows:

- The PDP type must match exactly.
- The PDP addresses are considered to match if they are identical or if the address in the context definition is unspecified.

The context is activated using the values for PDP type and PDP address provided by the network, together with the other information found in the PDP context definition. An APN may or may not re required, depending on the application.

If no <cid> is given or if there is no matching context definition, the MT will attempt to activate the context using the values for PDP type and PDP address provided by the network, together with any other relevant information known to the MT. The other context parameters will be set to their default values.

If the activation is successful, data transfer may proceed.

After data transfer is complete, and the layer 2 protocol termination procedure has completed successfully, the V.25ter command state is re-entered and the MT returns the final result code OK

In the event of an erroneous termination or a failure to startup, the V.25ter command state is re-entered and the MT returns the final result code NO CARRIER or, if enabled, +CME ERROR. Attach, activate and other errors may be reported. It is also an error to issue the +CGANS command when there is no outstanding network request.

This command may be used in both normal and modem compatibility modes.

Syntax:

+CGANS=[<response>, [<cid>]]

Response Syntax:

OK

ERROR

Response on "+CGANS=?"

+CGANS: (list of supported <response>s), (list of supported <L2P>s)

Defined values:

<response>

is a numeric parameter which specifies how the request should be responded to.

0: reject the request

1: accept and request that the PDP context be activated

If <response> is omitted it is assumed to be 0.

Other values are reserved and will result in the ERROR response.

<cid>:

a numeric parameter which specifies a particular PDP context definition.

Command example	Possible responses	Note
	+CRING: GPRS "IP", "122.41.74.238"	Incoming Ring
AT+CGANS=1	CONNECT	Coneection established
AT+CGANS=?	+CGANS= (0-1) OK	

+CGPADDR – Show PDP address, (GPRS command)

Description

The execution command returns a list of PDP addresses for the specified context identifiers.

The test command returns a list of defined <cid>s

Syntax:

+CGPADDR=[<cid> [,<cid> [,...]]]

+CGPADDR=?

Response Syntax:

+CGPADDR: <cid>,<PDP_addr>

[<CR><LF>+CGPADDR: <cid>,<PDP_addr>

[...]]

Response on "+CGPADDR=?"

+CGPADDR: (list of defined <cid>s)

Defined values:

<cid>:

A numeric parameter which specifies a particular PDP context definition. If no <cid> is specified, the addresses for all defined contexts are returned.

<PDP_address>:

A string that identifies the MT in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the +CGDCONT command when the context was defined. For a dynamic address it will be the one

assigned during the last PDP context activation that used the context definition referred to by <cid>. <PDP_address> is omitted if none is available.

Command example	Possible responses
AT+CGPADDR=1	+CGPADDR=1,"107.210.5.4" OK
AT+CGPADDR=?	+CGAPDDR= (1-32) OK
AT+CGPADDR	+CGPADDR: 1,
	+CGPADDR: 2,"10.3.73.151"
	+CGPADDR: 3,
	+CGPADDR: 4,

+CGCOUNTERS – PDP Counters Infos, (GPRS command)

Description

This command enable or disable the spontaneous sending of the last PDP deactivated counters. Theses counters are related to connection time of a PDP context or data volumes sent and received during a PDP context life (ie between is activation and deactivation). NOT IMPLEMENTED IN CURRENT VERSION

Syntax

AT+CGCOUNTERS

AT+CGCOUNTERS=?

AT+CGCOUNTERS?

Response on "AT+CGCOUNTERS=?":

+CGCOUNTERS: (0-1)

Response on "AT+CGCOUNTERS?"

+CGCOUNTERS: <cid>, <PDP Context Time>, <Data IN>, <Data OUT>

(The last PDP counters infos in memory)

Command example	Possible responses	Note
AT+CGCOUNTERS=0	OK	PDP Counters infos disabled
AT+CGCOUNTERS=1	OK	PDP Counters Infos enabled
AT+CGCOUNTERS?	+CGCOUNTERS: <1>, <55>, <1520 >, <122>	

Defined Values:

<PDP Context Time>

Duration between the activation and deactivation of the PDP context in secondes

<Data IN>:

data volume received by the MS in Kb

<Data OUT>:

data volume sent by the MS in Kb

+WGPRS – GPRS PARAMETERS CUSTOM, (GPRS command)

Description

This command modify some GPRS parameters as the ATTACH-STATUS (the ME don't make automatically a GPRS attachment after init: yes/no), the PDP-INIT-STATUS (activate automatically some define PDP Contexts after init: yes/no) and the use (yes/no) of NAT (IP address translation on PPP).

In addition this command permit to set "ACTIVABLE" automatically after init some define PDP contexts.

NOTE: The unit must be reboot to activate the new setup.

Syntax

AT+WGPRS=<mode>,<parameter>,[<cid>]

AT+WGPRS=?

AT+WGPRS?

Response Syntax:

OK

ERROR

Response on "AT+WGPRS=?":

+WGPRS: <mode>, <parameter1>,[<cid>]

[<CR><LF>+WGPRS: <mode>,

<parameter>,[<cid>]

[...]]

Response on " AT+WGPRS?"

+WGPRS:<mode>(list of supported <parameter>),[(list of supported <cid>)]
[<CR><LF>+WGPRS:<mode>(list of supported <parameter>),
[(list of supported <cid>)] [...]]

Defined Values:

<mode>

a numeric parameter which specifies a GPRS parameter :

0: ATTACH-STATUS (the ME don't make automatically a GPRS attachment after init)

1: PDP-INIT-STATUS (activate automatically some define PDP Contexts after init)

2: Set ACTIVABLE automatically after init a define PDP context

3: NAT

<parameter>:

A numeric parameter that control the <mode>

0: Off

1: On

<cid>:

(PDP Context Identifier) a numeric parameter (1-32) which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands.

Command example	Possible responses	Note
AT+WGPRS=2,1,3	OK	–
AT+WGPRS=?	+WGPRS: (0-3),(0-1),(0-4) OK	–
AT+WGPRS?	+WGPRS: 0,0 +WGPRS: 1,0 +WGPRS: 2,1,1 +WGPRS: 2,0,2 +WGPRS: 2,0,3 +WGPRS: 2,0,4 +WGPRS: 3,1 OK	–

AT+WGAUTH – Set authentication parameters, (GPRS command)

Description

This command set the authentication parameters login/password to use with a particular cid during a PDP activation.

If a PPP negotiation occurred with this cid, the PAP or CHAP authentication parameters are used instead of them.

NOTE: These parameters are not saved in persistent memory.

If the cid is not defined then ERROR is returned.

Syntax

AT+WGAUTH=<cid>,<login>,<password>

AT+WGAUTH?

AT+WGAUTH=?

Response Syntax:

OK

ERROR

Response on " AT+WGAUTH?":

+WGAUTH: <cid>,<login>,<password>

[<CR><LF>+ +WGAUTH: <cid>,<login>,<password>

[...]]

OK

[...]]

Response on " AT+WGAUTH=?"

+WGAUTH: (list of supported <cid>s)

OK

Defined Values:

<cid>

(PDP Context Identifier) a numeric parameter (1-32) which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands.

<login> and <password>: string parameters used to authenticate the user during a PDP activation.

NOTE: These parameters are optional and depend of your subscription setup.

Command example	Possible responses	Note
AT+WGAUTH=1, "westermo","kru98"	OK	–

AT+WGIPCPINF – Get IPCP informations, (GPRS command)

Description

This command get the current IPCP informations to use with a particular cid after a PDP activation.

These parameters are not saved in persistent memory and are only available during the life of the PDP context.

If the cid is not defined then ERROR is returned.

Syntax

AT+WGIPCPINF=[<cid> [,<cid [,...]]]

AT+WGIPCPINF=?

Response Syntax:

+WGIPCPINF: <cid>,<@DNS1>,<@DNS2>,<@gateway>

[<CR><LF> +WGIPCPINF: <cid>,<@DNS1>,<@DNS2>,<@gateway>[...]]

OK

ERROR

Response on " AT+WGIPCPINF=?":

+WGIPCPINF: (list of supported <cid>s)

OK

Defined Values:

<cid>

(PDP Context Identifier) a numeric parameter (1-32) which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands.

<@DNS1> and <@DNS2>:

String parameters which are IPV4 DNS address.

<@gateway>:

String parameter which is IPV4 address

NOTE: These parameters are optional and depend of the operator setup.

Command example	Possible responses
AT+WGIPCPINF	+WGIPCPINF:1,62.201.129.99,62.201.159.99,13.9..130 +WGIPCPINF:2 +WGIPCPINF:3 OK

Data / Commands multiplexing protocol

Introduction

The multiplexing protocol operates between a DCE (Data Communication Equipment: the product) and a DTE (Data Terminal Equipment). It allows a double session over a serial link interface: one for AT commands and one for DATA communications.

AT+WMUX=1 activates the Multiplexing Mode. With this mode, AT commands and DATA are encapsulated into packets. The header of these packets allows to recognize whether it is a DATA packet or an AT command packet. AT+WMUX=0 deactivates the Multiplexing Mode and gets the product back to the default mode. This chapter presents how the multiplexing mode handles the DATA and the AT commands flow. It also describes the format of DATA packets and AT command packets.

AT command packets

An AT command is encapsulated into a packet with a header which allows to separate it from DATA packets. This packet is formed by a header (3 bytes), the AT command itself and a checksum (1 byte):

Start pattern 0xAA ..... Bit 0-7

AT command length LSB ..... Bit 0-7

AT command length MSB / AT command pattern, 0x1D ..... Bit 0-2/ Bit 3-7

AT command ..... Bit 0-7

Checksum ..... Bit 0-7

The 3 bytes of the header are:

- the first byte (0xAA) is used to identify the packet,
- the second byte represents the 8 LSB (Low Significant Bits) bits of the length of the AT command,
- the third byte is made of 2 parts :
- the 3 LSB bits are the 3 MSB (Most Significant Bits) bits of the length of the AT command,
- the 5 MSB bits (0x1D which equals to 0xE8 with the 3 bits offset) are used to identify an AT command.

The maximum length of an AT command could be 2047 bytes which is greater than all the existing AT commands.

The checksum is the addition (modulo 256) of all the transmitted bytes (header bytes and AT command bytes).

Data packets

Like for AT commands, DATA are encapsulated into packets.
These packets are composed of a header (3 bytes),
the data bytes and the checksum (1 byte):

Start pattern 0xDD ..... Bit 0-7

Data packet length LSB ..... Bit 0-7

Data packet length MSB / Data packet type ..... Bit 0-2/ Bit 3-7

Data Bytes ..... Bit 0-7

Checksum ..... Bit 0-7

The 3 bytes of the header are:

- the first byte (0xDD) used to identify the packet,
- the second byte represents the 8 LSB bits of the length of the data field,
- the last byte is made of 2 parts :
- the 3 LSB bits represent the 3 MSB bits of the length of the data field,
- the 5 MSB bits represent the packet type.

Data packets can have different values according to the type of packet:

- 0 – DATA packet: the packet contains the data to transmit on the radio link or received from the radio link,
- 1 – STATUS packet: the packet contains the status of SA (DTR), SB (RTS), X bits( ) and the break condition coding as follow :

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
SA	SB	X	BRK	RI	Spare	Spare	Spare

- the length of data for the status packet is always equal to 1,
- whenever a status changes (except break), all the status bits are included,
- these bits are off by default (and therefore the bits DTR and RTS), so it is necessary to send a status packet to the target at the beginning of the multiplexing to start the transmission,
- 2 – READY packet: the packet indicates that the target is ready to receive data:
  – no data are transmitted in this packet (so the length is null),
- 3 – BUSY packet: the packet indicates that the target is busy and can not receive data:
  – like the ready packet, no data are transmitted,
- other values currently, these values are not used (reserved for future enhancement).

The checksum is calculated like the AT command packet checksum (addition of all the transmitted bytes including the header bytes).

Examples

AT command and its answer

When there is no encapsulation the AT command transmitted on the serial link is like this (in ASCII and hexadecimal):

Command/Response	Hex	Note
AT\r\n	0x41 0x54 0x0D 0x0A	The command
\r\nOK\r\n	0x0D 0x0A 0x4F 0x4B 0x0D 0x0A	and the answer

With the encapsulation in the serial link, the packet transmitted is (in hexadecimal):

0xAA 0x04 0xE8 0x41 0x54 0x0D 0x0A 0x42

and the answer is like this:

0xAA 0x06 0xE8 0x0D 0x0A 0x4F 0x4B 0x0D 0x0A 0x60

Initialisation and Data packet

When the Multiplexing Mode is activated (+WMUX=1), the product sends 2 Data packets after the establishment of a DATA call (after the CONNECT xxxx message): 1 READY Packet and 1 STATUS Packet. To set the different signals to the right value, it is necessary to send a STATUS packet to the product.

Here are some examples of STATUS packets:

Command/response	Hex	Note
–	0xDD 0x01 0x08 0x40 0x26	bit RTS is on to start a data call, all the bits should be on:
–	0xDD 0x01 0x08 0xC0 0xA6	bits DTR and RTS are on

Restriction

The autobauding mode is not available when the Multiplexing Mode is activated: the serial link speed must be set to a fixed rate.

Error codes from modem

ME error result code: +CME ERROR: <error>

<error>	Meaning	Error resulting from the following commands
3	Operation not allowed	All GSM 07.07 commands
4	Operation not supported	All GSM 07.07 commands
5	PH-SIM PIN required (SIM lock)	All GSM 07.07 commands
10	SIM not inserted	All GSM 07.07 commands
11	SIM PIN required	All GSM 07.07 commands
12	SIM PUK required	All GSM 07.07 commands
13	SIM failure	All GSM 07.07 commands
16	Incorrect password	+CACM, +CAMM, +CPUC, +CLCK, +CPWD, +CPIN, +CPIN2
17	SIM PIN2 required	+CPBW (FDN), +CLCK (FDN)
18	SIM PUK2 required	+CACM, +CAMM, +CPUC, +CPBW (FDN)
20	Memory full	+CPBW
21	Invalid index	+CPBR, +CPBW, ATD>[mem]index, +WMGO
22	Not found	+CPBF, +CPBP, +CPBN, +CGSN, +WOPN, ATD>[mem]"name"
24	Text string too long	+CPBW, +CPIN, +CPIN2, +CLCK, +CPWD
26	Dial string too long	+CPBW, ATD, +CCFC
30	No network service	+VTS, +COPS=?, +CLCK, +CCFC, +CCWA, +CUSD
32	Network not allowed, emergency calls only	+COPS
40	Network personalization, PIN required (Network lock)	All GSM 07.07 commands

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

<er>	Meaning	Message 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
302	Operation not allowed	All SMS commands
303	Operation not supported	All SMS commands
304	Invalid PDU mode parameter	+CMGS, +CMGW
305	Invalid text mode parameter	+CMGS, +CMGW, +CMSS
310	SIM not inserted	All SMS commands
311	SIM PIN required	All SMS commands
312	PH-SIM PIN required	All SMS commands
313	SIM failure	All SMS commands
316	SIM PUK required	All SMS commands
317	SIM PIN2 required	All SMS commands
318	SIM PUK2 required	All SMS commands
321	Invalid memory index	+CMGR, +CMSS, +CMGD
322	SIM memory full	+CMGW
330	SC address unknown	+CSCA?, +CMSS, +CMGS
340	no +CNMA acknowledgement expected	+CNMA

Specific error result codes +CMS ERROR: <error> or +CME ERROR: <error>

<error>	Meaning	Error 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 (+CMS ERROR: 513)
514	CP error (for SMS)	+CMGS, +CMSS (+CMS ERROR: 514)
515	Please wait, init or command processing in progress	All commands ("+CME ERROR: 515" or. "+CMS ERROR: 515")
517	SIM Toolkit facility not supported	+STGI
518	SIM Toolkit indication not received	+STGI
519	Reset the product to activate or change a new echo cancellation algo	+ECHO, +VIP
520	Automatic abort about get plmn list for an incoming call	+COPS=?
526	PIN deactivation forbidden with this SIM card	+CLCK
527	Please wait, RR or MM is busy Retry your selection later	+COPS
528	Location update failure Emergency calls only	+COPS
529	PLMN selection failure Emergency calls only	+COPS
531	SMS not sent: the <da> is not in FDN phonebook, and FDN lock is enabled. (for SMS)	+CMGS, +CMSS (+CMS ERROR: 531)
532	The embedded application is actived so the objects flash are not erased	+WOPEN

Failure Cause from GSM 04.08 recommendation (+CEER)

Cause value	Diagnostic
1	Unassigned (unallocated) number
3	No route to destination
6	Channel unacceptable
8	Operator determined barring
16	Normal call clearing
17	User busy
18	No user responding
19	User alerting, no answer
21	Call rejected
22	Number changed
26	Non selected user clearing
27	Destination out of order
28	Invalid number format (incomplete number)
29	Facility rejected
30	Response to STATUS ENQUIRY
31	Normal, unspecified
34	No circuit/channel available
38	Network out of order
41	Temporary failure
42	Switching equipment congestion
43	Access information discarded
44	Requested circuit/channel not available
47	Resources unavailable, unspecified
49	Quality of service unavailable
50	Requested facility not subscribed
55	Incoming calls barred with in the CUG
57	Bearer capability not authorized
58	Bearer capability not presently available
63	Service or option not available, unspecified
65	Bearer service not implemented
68	ACM equal to or greater than ACMmax
69	Requested facility not implemented
70	Only restricted digital information bearer capability is available
79	Service or option not implemented, unspecified
81	Invalid transaction identifier value
87	User not member of CUG
88	Incompatible destination
91	Invalid transit network selection
95	Semantically incorrect message
96	Invalid mandatory information

Cause value	Diagnostic
97	Message type non-existent or not implemented
98	Message type not compatible with protocol state
99	Information element non-existent or not implemented
100	Conditional IE error
101	Message not compatible with protocol state
102	Recovery on timer expiry
111	Protocol error, unspecified
127	Interworking, unspecified

NOTE! 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.

Specific Failure Cause for +CEER

Cause value	Diagnostic
240	FDN is active and number is not in FDN
241	Call operation not allowed
252	Call barring on outgoing calls
253	Call barring on incoming calls
254	Call impossible
255	Lower layer failure

Specific GPRS Failure Cause for +CEER

Cause value	Diagnostic
224	MS requested detach
225	NWK requested Detach
226	Unsuccessful attach cause NO SERVICE
227	Unsuccessful attach cause NO ACCESS
228	Unsuccessful attach cause GPRS SERVICE REFUSED
229	PDP deactivation requested by Nwk
230	PDP deactivation cause LLC link activation failed
231	PDP deactivation cause NWK reactivation with same TI
232	PDP deactivation cause GMM abort
233	PDP deactivation cause LLC or SNDCP failure
234	PDP unsuccessful activation cause GMM error
235	PDP unsuccessful activation cause NWK reject
236	PDP unsuccessful activation cause NO NSAPI available
237	PDP unsuccessful activation cause SM refuse
238	PDP unsuccessful activation cause MMI ignore

GSM 04.11 Annex E-2: Mobile originating SM-transfer

These error causes could appear for SMS commands (+CMGS, +CMSS, +CMGD...)

CAUSE NO	DESCRIPTION
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).
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.
10:	"Call barred" This cause indicates that the outgoing call barred service applies to the short message service for the called destination.
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.
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 signaling message was unable to be delivered to the remote user; e.g., a physical layer or data link layer failure at the remote user, user equipment off-line, etc.
28:	"Unidentified subscriber" This cause indicates that the subscriber is not registered in the PLMN (e.g.. IMSI not known)
29:	"Facility rejected" This cause indicates that the facility requested by the Mobile Station is not supported by the PLMN.
30:	"Unknown subscriber" This cause indicates that the subscriber is not registered in the HLR (e.g.. IMSI or directory number is not allocated to a subscriber).

CAUSE NO	DESCRIPTION
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..
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.
42:	"Congestion" This cause indicates that the short message service cannot be serviced because of high traffic.
47:	"Resources unavailable, unspecified" This cause is used to report a resource unavailable event only when no other cause applies.
69:	"Requested facility not implemented" This cause indicates that the network is unable to provide the requested short message service.
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.
95:	"Invalid message, unspecified" This cause is used to report an invalid message event only when no other cause in the invalid message class applies.
96:	"Invalid mandatory 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).
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	DESCRIPTION
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.
99:	"Information element non-existent or not implemented" This cause indicates that the equipment sending this cause has received a message which includes unrecognized information elements 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 so that the equipment sends the cause to process the message.
111:	"Protocol error, unspecified" This cause is used to report a protocol error event only when no other cause applies.
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 sent cannot be ascertained. All values other than specified should be treated as error Cause No 41

Fax Class 2 indication messages

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

+FCON:

This response indicates connection 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

+FDIS <vr>,
,<wd>,<ln>,<df>,<ec>,<bf>,<st>:

This response reports remote capabilities. The parameters are the same than those of AT+FDIS command.

+FCFR:

This response indicates confirmation to receive.

+FTSI "<string>":

This response reports the received transmit station ID string.

+FCSI "<string>":

This response reports the received called station ID string.

+FPTS <ppr>:

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

+FET <ppm>:

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

+FHNG <cause>:

This response reports the hang-up 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.

Power down mode via RS-232

NOTE! Plese also refer to the AT+W32K command.

This appendix aims at describing how the power down mode of the product can be activated and deactivated via the RS-232 serial link. In text below, the term "DTE" refers to the customer device driving the product, which is referred to as the "DCE".

The terms referring to the RS-232 signals and levels are used according to recommendations V.24 and V.28. However they are worth at 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 positive electrical level according to RS-232/V.24, whereas the level "LOW or OFF" corresponds to a negative electrical level according to RS-232/V24

Basically the activation and deactivation 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, e.g.. when no connection to the network is in progress.

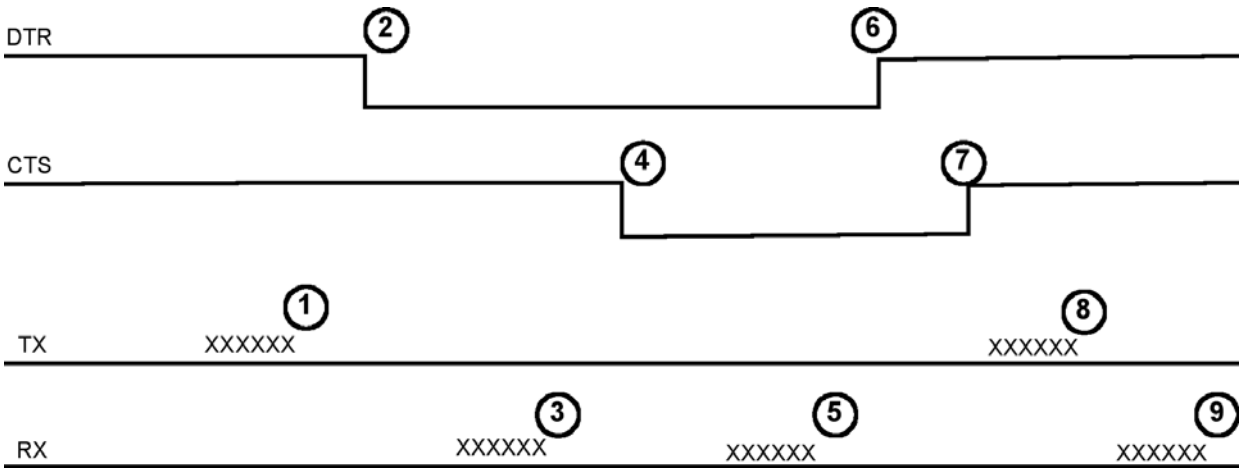
Whenever the DTE requests the DCE to enter the power down mode, the DTE drops (ON-to-OFF transition) DTR. From this time on, the DTE must not send any more characters on the TX line e.g.. even the TX FIFO must be empty.

The DCE acknowledges 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 sending 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.

Here below 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 enter 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 down 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 150 µs 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 150 µs wait should get around the race condition between DTR raise and CTS drop.

GSM sequences list

In accordance with GSM 02.30, the product supports the following GSM sequences, which can be used through the ATD and the +CKPD commands.

Security

**04*OLDPIN*NEWPIN*NEWPIN# Change PIN code
**042*OLDPIN2*NEWPIN2*NEWPIN2# Change PIN2 code
**05*PUK*NEWPIN*NEWPIN# Unlock PIN code
**052*PUK2*NEWPIN2*NEWPIN2# Unlock PIN2 code
*#06# Show the IMEI number

Call forwarding

Activate :	*SC#
Register and activate	**SC*PhoneNumber# or **SC*PhoneNumber*BS# or **SC*PhoneNumber*[BS]*T#
Check status	*#SC# or *#SC**BS#
Deactivate	#SC#
Unregistered and deactivate	##SC# or ##SC**BS#

The Service codes (SC) are:

002	all call forwarding
004	all conditional call forwarding
21	call forwarding unconditional
61	call forwarding on no answer
62	call forwarding on not reachable
67	call busy

The Network service codes (BS) are:

No code	All tele and bearer services
10	All teleservices
11	Telephony
12	All data teleservices
13	Fax services
16	Short Message Services
19	All teleservices except SMS.200
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 = 002, 004 or 61.

Call barring

Activate	*SC*Password# or *SC*Password*BS#
Check status	*#SC# or *#SC**BS#
Deactivate	#SC*Password# or #SC*Password*BS#
Change password for call barring	**03*330*OLDPWD*NEWPWD*NEWPWD#

03OLDPWD*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
353	all incoming barring service (only for deactivation)

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

Call waiting

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

Number presentation

check status	*#30# CLIP
check status	*#31# CLIR
Invoke CLIR for a voice call	*31#PhoneNumber
Suppress CLIR for a voice call	#31#PhoneNumber
COLP check status	*#76#

Application example

These tests have been made with PC to modem cables, fully wired. The modems/ adapters have been factory default before any commands have been sent.

Make sure the SIM card supports data transmission in both directions.

The AT-commands can be sent from a terminal or a PC with a terminal program like Microsoft Windows Hyperterminal or something similar program.

Make sure that the serial speed and data format is the same in both the modem and the terminal.

Factory default in GD-01/GD-02 is 8,N,1 and 9 600 bit/s on the DTE side.

Hints!

Always check the Signal Quality with AT+CSQ before dialling.

If current configuration is needed next time the unit is powered up, save with AT&W.

To establish a connection, use the ATD command

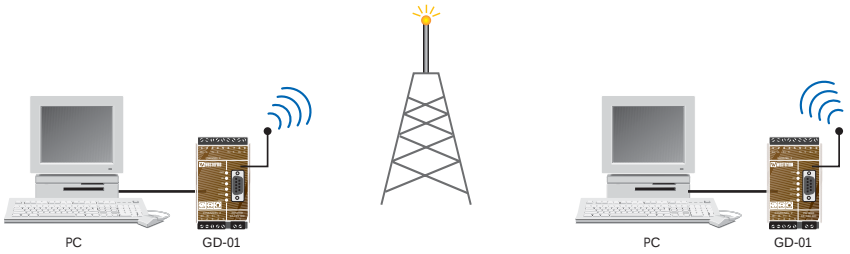
To enter online command mode when a connection is established, type +++ (No CR/Enter) and wait until an "OK" result code will appear on the screen.

To hangup a connection when in online command mode, type ATH.

The connection can be shut down from both sides.

GD-xx to GD-xx

The simplest configuration for data transmission between two GD-xx modems.



GSM in the dialling end

AT+CPIN=_____	Insert PIN number if required
AT&F	To set the unit to factory default settings
ATDxxxxxxxxxx	Dial the number

GSM in the receiving end

AT+CPIN=_____	Insert PIN number if required before expected call
AT&F	To set the unit to factory default settings

In order to answer the incoming call the user can either set the modem to automatically answer after 1 incoming ring signal

ATS0=1	Automatic answering after 1 ring signal

The user can also manually answer the incoming call with the following command:

ATA	Answer a call

If the settings described above is needed after power off its important to save the settings with the following command.

AT&W	Store active configuration

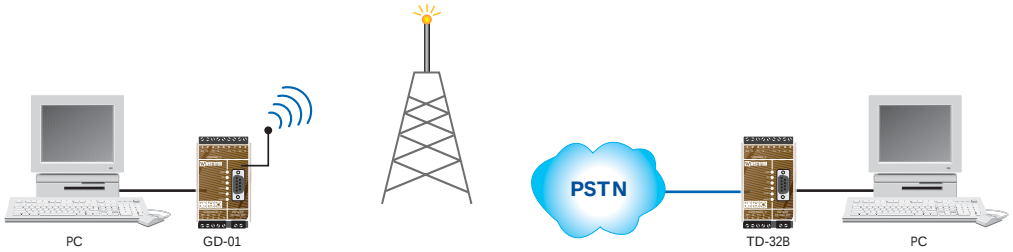
GD-xx to GD-xx with V.110 protocol for faster connection.

Same as above except that the command +CBST must be used in both GD-xx.
The V110 protocol establish a connection in less than half the time needed for the analogue protocols.

AT+CBST=71,0,1	Bearer type selection. Choose data rate and protocol. (9 600,V.110)
AT&W	Store active configuration

GD-xx to TD-32B (Analogue)

Data connection between GD-xx and an analogue modem such as the TD-32B. In this example its necessary to configure the GSM unit with an analogue protocol. An digital protocol like V.110 will not work when establishing a connection to an analogue modem.



GSM in the dialling end

AT+CPIN=_____	Insert PIN number if required
AT&F	To set the unit to factory default settings
AT+CBST=7,0,1	Bearer type selection. Choose data rate and protocol. (9 600, V.32)

TD-32B in the receiving end.

Factory default settings except for SW4, which should be set to 9600,8,N,1 i.e. 2,3,5 and 6 ON.

The GD-xx has automatic line detection default (+CBST=0,0,1) but it is good to fix the line data rate especially in PSTN modems which has V.34 protocol. The line negotiation in the V.34 protocol starts at 33.6 kbit/s which can be a problem in some applications.

If the settings described above is needed after power off its important to save the settings with the following command:

AT&W	Store active configuration

GD-xx to ISDN (ID-90)

The necessary settings for data transmission between GD-xx and ID-90 (ISDN terminal adapter).

GSM in the dialling end

AT+CPIN=_____	Insert PIN number if required
AT&F	To set the unit to factory default settings
AT+CBST=71,0,1	Bearer type selection. Choose data rate and protocol. (9 600, V.110)

ID-90 in the receiving end

AT&F	To set the unit to factory default settings
ATB0	Sets the B channel protocol to V.110 asynchronous
ATN4	Sets line baudrate for B channel protocol V.110 to 9 600 bit/s
AT**V110LLC=1	Sets low layer compatibility to pass detailed information about the V.110 protocol to the called party.
AT%B4	Sets local baudrate to 9 600 bit/s

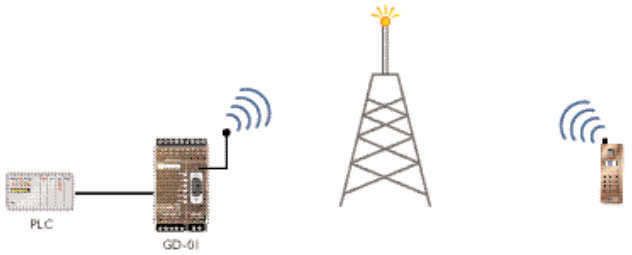
If the settings described above is needed after power off its important to save the settings with the following command.

AT&W	Store active configuration

Note: When using an ISDN adapter it's somethings needed to set up the MSN (mutiple subscriber number) in the ISDN unit.
The command AT**MSN=nn is used when an S0 line is shared by several adapters. (nn is the MSN of the ISDN adapter.
Example: If the number 999090 is called from the same area, no area code needs to be stored with **MSN=999090. If the call is coming from an other country then the country code + area code must be stored together with the number i.e. **MSN=+4616999090. Please refer to the installation manual of the ID-90 for further information.

GD-xx sending text message with SMS by activating DTR

The following settings can be used to send a preconfigured SMS message when the RS-232 signal DTR is activated.



AT+CPIN=_____	Insert PIN number if required
AT&F	To set the unit to factory default settings
AT+CMGW="070428000"<CR>	Storing the message and the destination phone number
Hello, how are you doing?<ctrl Z>	

The modem will response with:

CMGW: 1	Response from GD-xx. Memory location index is returned.

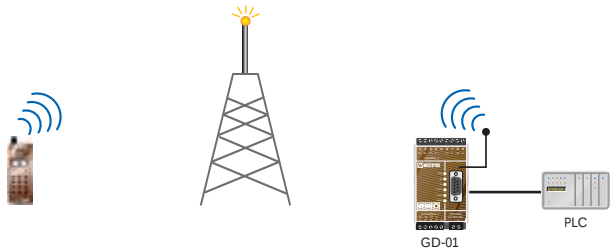
It is important that location 1 is used. The modem can only use a message that is stored on position 1 when sending a DTR triggered SMS message.

AT&S0	DSR always high
AT%D2	The text message is sent when DTR switches from OFF to ON

Note: If DTR signal is taken from DSR place a jumper between RTS and DSR, otherwise the GD-xx enters sleep mode. See also <Power down control> section in this manual.
With AT+CMGL="ALL" the stored messages can be read.
With AT+CMGD=1,0 message nr.1 is erased.
If the settings described above is needed after power off its important to save the settings with the following command.

AT&W	Store active configuration

GD-xx manually sending text message with SMS to GD-xx



GSM in the sending end

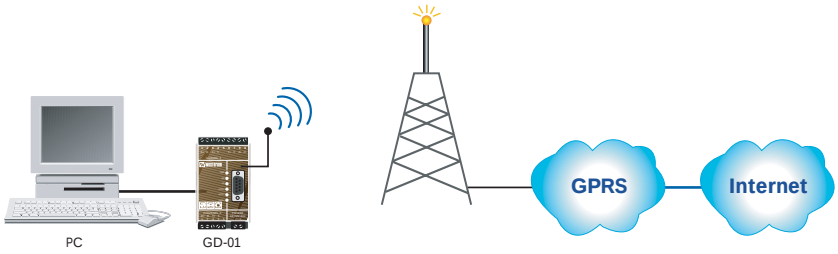
AT+CPIN=_____	Insert PIN number if required
AT&F	To set the unit to factory default settings
AT+CMGS="070428020"<CR>	Sending text message to given number
I am fine thanks<ctrl Z>	
+CMGS: <mr>	Response from GD-xx where <mr> shows number of outgoing messages (which are not stored)
OK	Successful transmission.

GSM in the receiving end

+CMTI: "SM",n	Message from GD-xx to terminal. Message have been Received and can be read at location n.
AT+CMGR=n	To read the message stored at location n.
+CMGR: "REC UNREAD", "+46708888888",,"02/04/15, 08:38:35-04"	Message from GD-xx.
I am fine thanks	Message from sender.

Note: The incoming SMS message can be also be transmitted directly to the terminal as soon as the modem receives the message. Please refer to the AT-command section of this manual.

GPRS Commands / application example



Activation of an IP PDP context

AT +CGDCONT=1, "IP", "internet"
AT +GCDCONT=2, "IP", "abc.com" Define 2 PDP contexts
OK

ATD*99***1#	Request GPRS IP service in context #1
CONNECT	Connection established

Other example:

AT +CGCLASS="CG"	Set GPRS mobile station class to: class C
OK	ME in GPRS only mode
+CGREG: 1	ME registered, home network
AT +CGDCONT=1, "IP", "internet"	Define PDP context
OK	
AT +CGQREQ=1,1,4,5,2,14	Define requested Quality of Service profile
OK	
AT +CGQMIN=1,1,4,5,2,14	Define minimum acceptable Quality of Service profile
OK	
AT +CGATT=1	Attach the ME to the GPRS service
OK	
AT +CGACT=1,1	Activate PDP context
OK	

//Remark about +CGDATA: the goal of this command is the same as ATD*99*** so, the best will be to use only ATD*99***//

AT +CGDATA=1	Request GPRS data state
CONNECT	connection established
.....	
Data transfer	transfer data...
.....	
+CGEV: NW DETACH	All active conexts have been deactivated

Network requested GPRS connection

AT+CGAUTO=0	turn off automatic response for GPRS only
OK	
+CRING: GPRS "IP", "211.45.89.152"	Network request
AT+CGANS=1	Manual response to network request
CONNECT	Connection established
.....	
Data transfer	transfer data...
.....	

GSM network operators, subscriptions and services

The Westermo GD-series of modems support several services in the GSM network. In order to get the modems to work properly its important that the GSM service used in a specific application also is enabled on the subscription (the SIM card).

When ordering a SIM card from a network operator its necessary to confirm that the specific service needed for the application is enabled before trying to set up the communication link.

The implementations of the networks may also differ slightly from network to network.

Hints:

Some information of possible mistakes are listed below:

- When using a GSM modem in a fixed installation its in most cases a good idea to disable the PIN code on the SIM card. In some GSM operators' subscriptions its not possible to disable the PIN code. This means that every time the unit is restarted, the SIM card wants to have the PIN code before it can register to the GSM network and work properly. However, most of the GSM network operators allow the user to disable the PIN code and the SIM card security is in most cases sufficient when the unit is installed in a restricted and locked area.
- When using the CSD service its important to confirm with the operator that the service is enabled and also the maximum speed supported by the network. Some networks do not support all the data rates supported by the modem.
- When using the GSM modem in another GSM operators network its important to check the roaming agreements between the "home" network operator (the operator that provided the SIM card) and the other network operator.
- The coverage area of a specific network may not be sufficient for a reliable connection on a specific place of installation. Several network operators may cover the same area and it could be a good idea to contact other operators to see which network operator that provide the best GSM signal strength.
- When using a GSM modem in a fixed location, the network could be equipped with a functionality that de-registers mobile stations that do not originate or receives any connections. When a modem not is registered its not possible to make any outgoing or incoming connections. Some networks de-registers a fixed "idle" user after 2–3 weeks and some other network operators does not have this functionality at all. However, this problem can be solved with a AT-command <AT+WRST> which allows the user to configure a timeout period after which the modem will make a reset and re-register to the network. Please refer to the AT-command listing in this manual. The network operator should also be able to provide information whether this function is enabled or not.

Antenna installation information

If another antenna than the one supplied with the modem is used its important to use an antenna connection that do not attenuate the signal strength too much. Parameters such as cable impedance, cable length and cable quality must be taken into consideration.

The received signal strength can be controlled with the command AT+CSQ.

Glossary

ADN	SIM phonebook
BCCH	Broadcast Control Channel
BSIC	Base Station Identity Code
CI	Cell Identity
CI	Cell Identity
cid	context identifier
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
CPHS	Common PCN Handset specification
CUG	Closed User Group
EF-CBMI	Elemtary File on SIM card, containing Cell broadcast message identifier
EF-CCID	Elemtary File on SIM card, containing ICC identification
FDN	Fixed dialling phonebook
GGSN	Gateway GPRS Support Node
GPRS	General Packet Data Service
GSM	Global System for Mobile communications
ICC	Intergrated Circuit(s) Card
IMSI	International Mobile Subscriber Identity
IPCP	Internet Protocol Control Packet
LAC	Location Area Code
MCC	Mobile Country Code
ME	Mobile Equipment
MNC	Mobile Network Code
MO	Mobile Originated
MOC	Mobile Originated Call (a call made from a MS to the PSTN, an outgoing call)
MS	Mobile Station (mobile terminal supporting GSM services)
MT	Mobile Terminated
MTC	Mobile Terminated Call (a call from a fixed network to a MS)
NSAPI	Network layer Service Access Point Identifier
NWK	Network
PCN	Personal Communications Networks
PDU	Protocol Data Unit
PLMN	Public Land Mobile Network
RSSI	Received Signal Strength Indication
RxLev	Received signal level , the same as RSSI (refer to AT+CSQ)
SIM	Subscriber Identity Module
SMS	Short Message Service
SNDCP	Sub Network Dependant Convergence Protocol
TE	Terminal Equipment

Trouble shooting/FAQ

GD-01 Frequently Asked Questions

1. How do I disable/enable the PIN code?

Start with inserting your PIN code with AT+CPIN=xxxx
Use the command <AT+CLCK="SC",0,xxxx>. xxxx is the PIN code on your SIM card.
To enable the PIN code again, replace the 0 with 1.

2. How do I send a text message with SMS by activating DTR?

Please refer to application example section

3. It does not work to establish a connection from my PSTN modem to GD-01

Probably the subscription doesn't support data connection in both directions.
Check with the GSM network operator that the appropriate services are enabled on the specific subscription (SIM card)

4. How can I see the bearer of the incoming call.

Set the command AT+CRC=1 in the GD-xx. It will show the type of incoming call:
+CRING: ASYNC
+CRING: REL ASYNC
+CRING: VOICE

Call to the GD-xx. If the incoming call is VOICE you will know that it is not possible to establish a data connection. Call your SIM card provider/operator and ask them to change the subscription so that it will support data in both directions.

5. The modem does not answer through the serial link

The list below shows the most frequent possible couses for such behaviour

- Is the modem correctly powered on?
  (see table under section "Connections")
- Is the serial cable suitable and adjusted in both ends
  (see table under section "Connections ")
- Check that the communication program is properly configured.
- Does any other application interfere with your communication program
  (conflict on communication port access)

6 The modem always return "Error" when trying to issue a communication

Issue AT+CMEE=1 to have extended error cause retry
Refer to the +CMEE command AT-command list in this manual to see the possible errors reported

Related documents

This installation manual is in related parts based on the following recommendations:

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

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