GPRS AT Commands
for
Multi-Tech G2 Cellular Modems

AT Commands

Reference Guide

GPRS AT Commands for Multi-Tech G2 Cellular Modems

Reference Guide

This Command Set Applies to the Following Products:

SocketModem® Cell – MTSMC-G2
SocketModem® iCell – MTSMC-G2 (with IP)
MultiModem® Cell – MTCBA-G2
MultiModem® rCell – MTCBA-G2-EN2
MultiModem® iCell – MTCMR-G2

PN S000463C, Revision C

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Revisions

Revision Level	Date	Description
A	05/18/09	Initial release. Based on Open AT Commands version 7.2.
	07/06/09	Updated for Open AT Commands version 7.3a.
B	01/25/10	Change default of Baud Rate to "0 – Autobaud".
C	07/30/10	Add MultiModem rCell, MultiModem iCell and MultiModem Cell to the list of products this use this command set.

Technical Support

See the product User Guide or Developer Guide for Technical Support information.

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Chapter 1 – Introduction

Scope of This Document

This document describes the AT-command based messages exchanged between an application and the Multi-Tech Systems, Inc. products in order to manage GSM-related events or services.

Related Documents

This interface specification is based on the following recommendations:

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

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

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

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

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

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

[7] 3GPP 05.02: 3rd Generation Partnership Project; Technical Specification Group GSM/EDGE- Radio Access Network;
Multiplexing and multiple access on the radio path – 3GPP TS 05.02 V6.9.2 (2001-04)

[8] 3GPP 24.008: Mobile radio interface Layer 3 specification; Core network protocols; Stage 3

[9] 3GPP TS 11.11 Specification of the Subscriber Identity Module - Mobile Equipment (SIM-ME) Interface

[10] 3GPP TS 05.08 Radio subsystem link control

[11] 3GPP TS 23.040 Technical realization of the Short Message Service (SMS);

[12] 3GPP TS 22.042 Network Identity and Time Zone (NITZ) service description; Stage 1

[13] 3GPP TS 51.011 Specification of the Subscriber Identity Module - Mobile Equipment (SIM-ME) interface

[14] 3GPP TS 27-010 Terminal Equipment to User Equipment (TE-UE) multiplexer protocol

[15] 3GPP 23.014 Support of Dual Tone Multi Frequency (DTMF) signaling

[16] ISO 639 Languages Codes

[17] 3GPP 27 060 Packet domain; Mobile Station (MS) supporting Packet Switched services

[18] 3GPP TS 23.038 Alphabets and language-specific information

[19] 3GPP TS 27.005 Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE-DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)

[20] ETSI GSM 11.14 Digital cellular telecommunications system (Phase 2+); Specification of the SIM Application ToolKit for the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface

[21] 3GPP TS 23.003 Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); Numbering, addressing and identification

[22] ETSI GSM 02.24 Digital cellular telecommunications system (Phase 2+) (GSM); Description of Charge Advice Information (CAI)

[23] ETSI GSM 02.86 Digital cellular telecommunications system (Phase 2+) (GSM); Advice of Charge (AoC) Supplementary Services - Stage 1

[24] ETSI GSM 02.90 Digital cellular telecommunications system (Phase 2+) (GSM); Unstructured Supplementary Service Data (USSD) - Stage 1

[25] ETSI GSM 02.85 Digital cellular telecommunications system (Phase 2+) (GSM); Closed User Group (CUG) Supplementary Services - Stage 1

Abbreviations and Definitions

ACM	Accumulated Call Meter
ADN	Abbreviated Dialing Number (Phonebook)
AMR	Adaptive Multi-Rate
AMR-FR	AMR Full Rate (full rate speech version 3)
AMR-HR	AMR Half Rate (half rate speech version 3)
AOC	Advice Of Charge
APN	Access Point Name
ASCII	American Standard Code for Information Interchange, Standard characters table (1 byte coding)
AT	ATtention (Hayes Standard AT command Set)
BCCH	Broadcast Channel
BER	Bit Err Rate
BM	Broadcast Message Storage
CBM	Cell Broadcast Message
CB	Cell Broadcast
CCK	Corporate Control Key
CCM	Current Call Meter
CHV	Card Holder Verification
CI	Cell Identifier
CLI	Client Line Identification
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
CNL	Cooperative Network List
CODEC	Coder Decoder
COLP	Connected Line Identification Presentation
CPHS	Common PCN Handset Specification
CPU	Central Processing Unit
CSD	Circuit Switched Data
CSP	Customer Service Profile
CTM	Cellular Text telephone Modem
CTS	Clear To Send signal
CUG	Closed User Group
DTR	Data Terminal Ready
DCS	Digital Cellular System
DCE	Data Circuit Equipment
DCD	Data Carrier Detect
DLC	Data Link Connection
DLCI	Data Link Connection Identifier
DM	Device Management
DSR	Data Set Ready
DTE	Date Terminal Equipment
DTMF	Dual Tone Multi-Frequency
DTR	Data Terminal Ready
ECC	Emergency Call Codes
ECM	Error Correction Mode
ECT	Explicit Call Transfer
EDGE	Enhanced Data rates for GSM Evolution
EEPROM	Electrically Erasable Programming Only Memory
EF	Elementary Files
EFR	Enhanced Full Rate (full rate speech version 2)

Abbreviations and Definitions Continued

EGPRS	Enhanced GPRS
ENS	Enhanced Network Selection
E-ONS	Enhanced Operator Name Service
ERMES	European Radio Messaging System
ETSI	European Telecommunications Standards Institute
FDN	Fixed Dialing Number (Phonebook)
FR	Full Rate (full rate speech version 1)
GPIO	General Purpose Input Output
GPRS	General Packet Radio Service
GSM	Global System for Mobile communication
HDLC	High-level Data Link Control
HFR	High Frequency Regeneration
HLR	Home Location Register
HR	Half Rate (half rate speech version 1)
ID	Identifier
IETF	Internet Engineering Task Force
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
IN/OUT/IN_OUT	In, out or In Out. see glossary
I/O	Input/Output
IP	Internet Protocol
LAC	Local Area Code
LED	Light Emitting Diode
LND	Last Number Dialed
LP	Language Preferred
LPI	Lines Per Inch
M	Mandatory
MCC	Mobile Country Code
ME	Mobile Equipment
MMI	Man Machine Interface
MNC	Mobile Network Code
MNP	Microcom Networking Protocol
MO	Mobile Originated
MOC	Mobile Originated Call (outgoing call)
MS	Mobile Station
MSB	Most Significant Bit
MSISDN	Mobile Station International ISDN Number
MT	Mobile Terminal
MTC	Mobile Terminated Call (incoming call)
N.A.	Not applicable
NCK	Network Control Key
NITZ	Network Information and Time Zone
NSCK	Network Subset Control Key
NTC	Negative Temperature Coefficient
N.U.	Not used
O	Optional
OA	Outgoing Access
OPL	Operator PLMN List
OS	Operating System
OTA	Over the Air
PAD	Portable Application Description
PC	Personal Computer
PCCP	PC character set Code Page

Abbreviations and Definitions Continued

PCK	Personalization Control Key
PCM	Protection Circuit Module
PCN	Personal Communication Network
PCS 1900	Personal Communication Service (GSM system offering 148 full duplex voice channels per cell)
PDP	Packet Data Protocol
PDU	Protocol Description Unit
PIN	Personal Identification Number
PLMN	Public Land Mobile Networks
PNN	PLMN Network Name
PPP	Point-to-Point Protocol
PSTN	Public Switched Telephone Network
PTS	Product Technical Specification
PUCT	Price per Unit and Currency Table
PUK	PIN Unlock Key
QOS	Quality of Service
RAM	Random Access Memory
RDMS	Remote Device Management Services
RI	Ring Indicator
RIL	Radio Interface Layer
RLP	Radio Link Protocol
RSSI	Received Signal Strength Indication
RTS	Ready To Send signal
RX	Reception
SC	Service Center
SIM	Subscriber Information Module
SMSR	Short Message Status Report
SMS	Short Message Service
SS	Supplementary Services
SPCK	Service Provider Control Key
SPN	Service Provider Name
STK	SIM ToolKit
SVN	Software Version Number
TA	Terminal Adaptor
TBF	Temporary Block Flow
TE	Terminal Equipment
TTY	Teletype
TON/NPI	Type Of Number/Numbering Plan Identification
TX	Transmission
UART	Universal Asynchronous Receiver Transmitter
UCS2	Universal Character Set 2 Character table (2-byte coding)
UDUB	User Determined User Busy
UIH	Unnumbered Information with Header check
USB	Universal Serial Bus
USSD	Unstructured Supplementary Service Data
WµP	Wireless Microprocessor

Note: The words, **"Mobile Station" (MS)** or **"Mobile Equipment" (ME)** are used for mobile terminals supporting GSM services.

Terminal Equipment (TE) is the Man-Machine Interface of a GSM device (modem or handset). A **TE** can be a handset MMI or the AT Command interface.

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

Chapter 2 – AT Command Features and General Information

Line Settings

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

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

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

Command Line

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

Information Responses and Result Codes

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

- If the command syntax is incorrect, an **ERROR** string is returned.
- If the command syntax is correct but transmitted with the wrong parameters, the **+CME ERROR:** <Err> or **+CMS ERROR:** <SmsErr> strings are returned with adequate error codes if the CMEE was previously set to 1. By default, CMEE us set to 0, and the error message is only "ERROR".
- 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.

SIM Card Insertion and Removal Procedures

SIM card Insertion and Removal procedures are supported. Software functions rely on positive reading of the hardware SIM detect pin. This pin state (open/closed) is permanently monitored.

When the SIM detect pin indicates that a card is present in the SIM connector, the product tries to set up a logical SIM session. The logical SIM session will be set up or not depending on whether the detected card is a SIM Card or not. The AT+CPIN? command delivers the following responses:

- If the SIM detect pin indicates "absent", the response to AT+CPIN? is "+CME ERROR 10" (SIM not inserted).
- If the SIM detect pin indicates "present", and the inserted Card is a SIM Card, the response to AT+CPIN? is "+CPIN: xxx" depending on SIM PIN state.
- If the SIM detect pin indicates "present", and the inserted Card is not a SIM Card, the response to AT+CPIN? is CME ERROR 10.
- These last two states are not given immediately due to background initialization. Between the hardware SIM detect pin indicating "present" and the previous results the AT+CPIN? sends "+CME ERROR: 515" (Please wait, init in progress).

When the SIM-detect pin indicates card absence, and if a SIM Card was previously inserted, an IMSI detach procedure is performed, all user data is removed from the product (Phonebooks, SMS etc.). The product then switches to **emergency mode**.

When the hardware SIM detect pin is not managed, the software cannot know the state of the SIM (SIM inserted or SIM removed) except for the initialization of the modem. In this case, the SIM must be present in the rack before the initialization of the modem can be taken into account.

If the SIM is removed and it had been detected at the time of initialization of the modem, the following message is displayed: +CME ERROR: 13. If the SIM is inserted in the rack and it was not present at the time of the initialization of the modem, the state of the SIM remains unchanged (SIM removed). It will have to initialize the modem again so that it is detected.

Background Initialization

After entering the PIN (Personal Identification Number), some SIM user data files are loaded into the product (Phonebooks, SMS status, etc.). Please be aware that it might take some time to read a large phonebook.

The AT+CPIN? command response comes just after the PIN is checked. After this response user data is loaded (in background). This means that some data may not be available just after PIN entry is confirmed by 'OK'. The reading of phonebooks will then be refused by "+CME ERROR: 515" or "+CMS ERROR: 515" meaning, "Please wait, service is not available, init in progress".

This type of answer may be sent by the product at several points:

- When trying to execute another AT command before the previous one is completed (before response),
- When switching from ADN to FDN (or FDN to ADN) and trying to read the relevant phonebook immediately,
- When asking for +CPIN? status immediately after SIM insertion and before the product has determined if the inserted card is a valid SIM Card.

About the Length of Phone Numbers

Phone numbers can consist of up to 60 digits. The first 20 digits are stored in the SIM in the phonebook file (EF_{ADN}, EF_{FDN} or EF_{LND}) corresponding to the selected phonebook. The next digits are stored in other extension SIM files (EF_{EXT1} or EF_{EXT2}).

Example:

Number of Digits	Nb of Records in EF_{ADN}	Nb of Records in EF_{EXT1}
1 to 20	1	0
21 to 40	1	1
41 to 60	1	2

If there are no more free records in the EF_{EXT1}, the behavior is:

- if the user tries to store an entry that exceeds 20 digits: +CME: 20
- if the user tries to dial an number that exceeds 20 digits: +CME: 20

Since the maximum length for the numbers in the ADN, FDN, and LND phonebooks is 60 digits:

- if the user tries to dial a number that exceeds 60 digits: +CME: 3

Before the user can perform a call, the number of free records in the EF_{EXT1} is checked for availability of free space to store this number.

- If there are free records left, the call is setup.
- Otherwise, +CME: 20 error is returned (Memory Full).

See Recommendation 3GPP 11.11 for more details.

Chapter 3 – Basic Commands

Attention Command AT

Description: The AT commands are used to control the operation of your modem. They are called *AT* commands because the characters **AT** must precede each command to get the *AT*tention of the modem. This command always returns *OK*.

Syntax: AT

Values: None

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Repeat Last Command A/

Description: This command repeats the last command of the open session. Only the A/ command itself cannot be repeated. If this command is the first one of the open session, the response is OK without any treatment.

Syntax: A/ The response depends on the previous command.

Values: None

Examples:

Command	Responses
AT+CGMI	WAVECOM MODEM OK
A/ Note: Repeat last command	WAVECOM MODEM OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Chapter 4 – Identification Commands

Manufacturer Identification +CGMI

Description: Displays the manufacturer identification.

Syntax:

Command	Response
AT+CGMI	WAVECOM MODEM OK

Values: None

Examples:

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

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Request Model Identification +CGMM

Description: Displays the supported frequency bands. With multi-band products the response may be a combination of different bands.

Syntax:

Command	Responses
AT+CGMM	<model> OK

Values:

<model>	Frequency Bands Selected
G850	GSM 850
900E	GSM 900 Extended
1800	DCS 1800
1900	PCS
MULTIBAND 900E 1800	Multi-Band: GSM 900 extended band and DCS 1800
MULTIBAND G850 1900	Multi-Band: GSM 850 and PCS

Examples:

Command	Responses
AT+CGMM Note: Get hardware version	MULTIBAND 900E 1800 OK Note: Multiband: GSM 900 MHz extended band and DCS 1800 (default configuration)
AT+CGMM Note: Get hardware version	900E OK Note: 900 Extended
AT+CGMM Note: Get hardware version	1800 OK Note: DCS
AT+CGMM Note: Get hardware version	1900 OK Note: PCS
AT+CGMM Note: Get hardware version	G850 OK Note: GSM 850
AT+CGMM Note: Get hardware version	MULTIBAND G850 1900 OK Note: Multiband: GSM 850 and PCS

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Product Serial Number +CGSN

Description: Allows the user application to get the IMEI (International Mobile Equipment Identity, 15-digit number) of the product.

Syntax:

Command	Responses
AT+CGSN	<IMEI> OK

Values: **<IMEI>** A 15-digit number serial number

Examples:

Command	Responses
AT+CGSN Note: Get the IMEI	012345678901234 OK Note: IMEI read from EEPROM

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Request Revision Identification +CGMR

Description: Displays the revised software version.

Syntax:

Command	Responses
AT+CGMR	<SW release>.<modem> <size> <date> <time> OK

Values:

<SW release>	software release
<modem>	type of Wireless modem
<size>	software size
<date>	date (mmddyy) of software generation
<time>	hour (hh:mm) of software generation

Examples:

Command	Responses
AT+CGMR Note: Get software version	R70_00gg.WMP100 2009124 012408 21:14 OK Note : Software release v7.0, generated on January 24, 2008.

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Request Identification Information I

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

Syntax:

Command	Responses
ATI<n>	Depending on <n> OK

Values: **<n> Information Display Control Parameter**

0 Displays manufacturer followed by model identification. Equivalent to +CGMI and +CGMM.
3 Displays revision identification. Equivalent to +CGMR.
4 Displays modem configuration in RAM. Equivalent to &V0.
5 Displays modem configuration in EEPROM. Equivalent to &V1.
6 Displays modem data features. Lists the supported data rates and data modes.
7 Displays modem voice features.
Other values: OK string will be sent back.

Examples:

Command	Responses
ATI0 Note: Manufacturer and model identifications	WAVECOM MODEM MULTIBAND 900E 1800 OK Note: Wee +CGMI and +CGMM commands
ATI3 Note: Revision identification	R70_00gg.WMP100 2009124 012408 21:14 OK Note : Software release v7.0, generated on January 24, 2008.
ATI6 Note: Modem data features	DATA RATES: AUTOBAUD,300,1200,1200/75,2400,4800,9600,14400 DATA MODES: T/NT,ASYNCHRONOUS OK
ATI7 Note: Modem voice features	SPEECH CODINGS: FR,EFR,HR,AMR OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Capabilities List +GCAP

Description: Displays the complete list of capabilities.

Syntax:

Command	Responses
AT+GCAP	+GCAP: (list of supported <name>s) OK

Values:

<name>	Supported Capability
+CGSM	CGSM Command Supported

Examples:

Command	Responses
AT+GCAP Note: Get capabilities list	+GCAP: +CGSM OK Note: Supports GSM commands

SIM, PIN, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Chapter 5 – Open AT® Commands

Open AT® Control Command +WOPEN

Description: This command starts, stops, deletes, and gets information about the current Open AT® embedded application. It also allows you to erase the Open AT® flash objects storage place and to configure the Application and Data (A&D) storage place size (including IDS storage place).

Syntax:

If <mode>=0, 1, 3, 4 or 5

Command	Responses
Action Command: AT+WOPEN=<mode>	OK

If <mode>=2

Action Command: AT+WOPEN=<mode>	+WOPEN: <Mode>,<IntVersion>[,<ExtVersion>] OK

If <mode>=6

Action Command: AT+WOPEN=<Mode>[,<A&Dsize>]	+WOPEN: <Mode>,<IntVersion>,<OatSize> OK

If <mode>=7

Action Command: AT+WOPEN=<Mode>	+WOPEN: <Mode>,<OatSize> OK

If <mode>=8

Action Command: AT+WOPEN=<Mode>[,<SafeBootState>[,<Key1>[,<Key2>]]]	+WOPEN: <Mode>[,<SafeBootState>[,<Key1>[,<Key2>]]] OK

Read Command: AT+WOPEN?	+WOPEN: <Mode> OK

Test Command: AT+WOPEN=?	+WOPEN: (list of supported <Mode>s),(list of supported <A&DSize>s),(list of supported <Key1>s),(list of supported <Key2>s) OK

Values:

<Mode> Operating Mode

- **0** Stop the Open AT embedded application. If the application is running, the product resets.
- **1** Start the Open AT embedded application. If the application is stopped, the product resets.
- **2** Get the Open AT library versions.
- **3** Erase the objects flash of Open AT embedded application flash objects.
- **4** Erase the Open AT embedded application.
- **5** Suspend (in Wavecom OS) the Open AT embedded application tasks.
- **6** If the (A&Dsize) parameter is used, configure the Application & Data storage size. Otherwise, if the (A&Dsize) parameter is not used, display the current A&D storage place size and Open AT application space size.
- **7** Open AT application current state.
- **8** Configure the Open AT Safe Boot: refer to the <SafeBootState>, <Key1> and <Key2> parameters description for more information.

<IntVersion> ASCII string giving the internal Open AT library version.

<ExtVersion> **ASCII string giving the external Open AT library version.**

Note: If no embedded application is loaded, the <ExtVersion> parameter is not returned.

<A&DSize> **This parameter includes A&D volume and IDS volume.**

Kbytes size allocated for the Application & Data storage place. Default = 768 Kbytes.

Usable only with <mode>=6.

MinSize is different according to IDS features activation state.

64 for 32Mbits Flash size, 256 for 64Mbits flash size, and 256 for 128Mbits flash size.

MaxSize value differs according to the flash memory size:

1024 for 32Mbits Flash size, 4864 for 64Mbits flash size and 13056 for 128Mbits flash size.

Provided parameter value will be rounded up to the next flash sector sub-division (64 Kbytes). For example, if a 100 Kbytes size is required, a 128 Kbytes size will effectively be set.

<OatSize> **Open AT® application reserved size (in Kbytes)**

Returned with <Mode> = 6

This size is calculated from the <A&Dsize> one, since the whole available size for Open AT, A&D and IDS storage places is fixed according to flash memory size. Please refer to SW Design Guideline document. 1280 Kbytes (<OatSize> + <A&Dsize> = 1280) for 32Mbits Flash size, 5120 Kbytes (<OatSize>+<A&Dsize>=5120) for 64Mbits Flash size and 13312 Kbytes (<OatSize>+<A&Dsize>=13312) for 128Mbits Flash size.

<OatState> **Open AT® application current state**

returned with <Mode> = 7

This state will be greater than 0 only if the current +WOPEN command state is 1 (except when OatState = 13, which can occur even if the application is not started on the target).

- **0** Application is not started (current mode is AT+WOPEN=0)
- **1** No downloaded application in the Wireless modem
- **2** Bad checksum
  The application binary seems to be corrupted.
- **3** Bad header
  The downloaded file seems not to be an Open AT® application.
- **4** Version mismatch
  The application binary was built with an SDK version which is not compatible with the current OS.
- **5** Too many tasks
  The number of declared tasks in the application exceeds the maximum allowed one.
- **6** Bad binary init function
  The application binary seems to be corrupted.
- **7** Bad task entry point
  The application binary seems to be corrupted.
- **8** Link issue
  The application global variables area initialization is impossible.
- **9** Bad memory configuration
  The RAM size required by the application exceeds the maximum allowed one.
- **10** Application is not started; starting was cancelled by the Open AT® Safe Boot. When reset with this command, the safe boot buttons must be held down until the reception of +WIND 3.
- **11** Application is not started; starting was cancelled due to Open AT® OS internal tests (depending on the OS version linked vs. the downloaded application. Please refer to the ADL User guide for more information).
- **12** Application started in target mode
  The application is now running on the target (the application adl_main function or task entry points have been called).
- **13** Application initialization pending in RTE mode;
  The application is going to be started in debug mode.
- **14** Application started in RTE mode;
  The application is now running in debug mode
- **15** Application initialization pending in Target mode;
  system error during flash or RAM initialization.

16 No tasks declared.
The application tasks table is empty, no task is declared
17 Bad priority value;
At least one task priority value is incorrect (not unique or too high value)
18 Reserved
19 Real Time Enhancement feature is not enabled;
The application has declared call stacks for Low Level and High Level Handler interrupt execution contexts, but the Real Time Enhancement feature is not enabled on the Wireless modem.

<SafeBootState> **Usable with <Mode> = 8**
0 Stop the Open AT® Safe Boot.
1 Start the Open AT® Safe Boot. Default value: 1
<Key1> usable with <Mode> = 8
[0 – 24] first key used for Open AT® Safe Boot.
(default value: 19)

<Key2> **Usable with <Mode> = 8**
[0 – 24] Second key used for Open AT® Safe Boot. This key has to be either on the same row or the same column of the keyboard that Key1.
Default value: 24.

Parameter Storage: The <Mode>, <A&Dsize>, <Key1> and <Key2> parameters are stored in EEPROM without using the AT&W command. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+WOPEN=?	+WOPEN: (0-8),(64-1024),(0-24),(0-24) OK
AT+WOPEN?	+WOPEN: 0 OK
AT+WOPEN=2 Note: Get the Open AT library versions	+WOPEN: 2, “AT v3.01”, “AT v2.10” OK Note: Open AT v2.10 application downloaded
AT+WOPEN=7	+WOPEN: 7,0 OK Note: Open AT application not started
AT+WOPEN=1	+CME ERROR: 541 Note: Since main versions do not match, the Open AT Application cannot be started
AT+WOPEN=2 Note: Get the Open AT library versions	+WOPEN: 2, “AT v2.00”,”AT v2.00” OK Note: Open AT v2.00 library version. An embedded application has been downloaded on this product.
AT+WOPEN=3	OK Note: The objects flash are erased
AT+WOPEN=1 Note: Start the embedded application	OK +WIND: 3 Note: Product reset in order to start the embedded application
AT+WOPEN=8	+WOPEN: 8,1,19,24 OK Note: Safe Boot is active and uses the keys 19 and 24
AT+WOPEN=8,1,10,12	OK Note: Safe Boot is active and uses the keys 10 and 12.
AT+WOPEN=8,1,10,10	+CME ERROR: 3 Note: Two different keys have to be supplied
AT+WOPEN=8,1,10,16	+CME ERROR: 3 Note: The two supplied keys have to be on the same row or on the same column
AT+WOPEN=3	+CME ERROR: 532 Note: The embedded application is activated so the objects flash are not erased
AT+WOPEN=4	+CME ERROR: 532 Note: The embedded application is activated so it cannot be erased

Table continued on next page

Command	Responses
AT+WOPEN=0 Note: Stop the embedded application	OK +WIND: 3 Note: Product reset in order to stop the embedded application
AT+WOPEN=3	OK Note: The objects flash are erased.
AT+WOPEN=4	OK Note: The embedded application is erased
AT+WOPEN=6	+WOPEN: 6, 704, 576 OK Note: 704 Kbytes are reserved for A&D storage place, and 576 Kbytes for the Open AT Application
AT+WOPEN=6, 1334	+CME ERROR: 550 Note: The current Open AT Application size is too big to allow this new A&D storage place size
AT+WOPEN=6, 704	+WOPEN: 6, 704, 576 OK Note: No product reset (same size used)
AT+WOPEN=6, 900	+WOPEN: 6, 960, 320 OK +WIND: 3 Note: Size updated according to the nearest flash sector sub-division; product reset in order to set the new A&D storage place size.
AT+WOPEN=6	+WOPEN: 6, 960, 320 OK Note: 960 Kbytes are served for the A&D storage place, and 320 Kbytes for the Open AT application
AT+WOPEN=5 Note: Suspend Open AT tasks	+CME ERROR: 3 Note: The Open AT Application is not running
AT+WOPEN=1 Note: Start the embedded application	OK +WIND: 3 Note: Product reset in order to start the embedded application
+WOPEN=5 Note: Suspend Open AT tasks	OK
AT+WOPEN?	+WOPEN:5 OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Notes:

- For Mode=1: If the main version numbers returned by the AT+WOPEN=2 command do not match, the command will reply +CME ERROR: 541.
- Mode=3 and 4 are only available only if the Open AT embedded application is stopped (AT+WOPEN=0).
- Open AT embedded applications can be resumed with the AT+OPENRES command or INTERRUPT feature (see +WCFM).
- The command returns an error when trying to use a key not available for Open Open AT® Safe Boot.
- The external Open AT® library version is not returned in the "AT+WOPEN=2" response when an Open AT® application is corrupted. This happens when the application download was incomplete, and when the CRC is corrupted, then the application decompression is impossible.

Caution:

With Mode 6, any A&D size change will lead to this area format process (this process will take some seconds on start-up , before the +WIND:3 indication display (up to 1.5 seconds per 64 Kbytes flash sector size can be considered as a maximum; all A&D cells data will be erased).

USB Restrictions:

Starting or stopping an Open AT® application resets the modem. When these AT commands (AT+WOPEN=1 or AT+WOPEN=0) are sent to the modem by using the USB serial port, the user must:

1. Close the USB serial port as soon as the command is sent to the modem. This means that the OK response cannot be received by the user application.
2. Wait sufficient time to allow the modem to reset. Usually, the user must wait 1 second before reopening the USB serial port.

Downloading +WDWL

Description: This command switches the product to download mode.

After downloading, the modem should be reset using AT+CFUN=1

Syntax:

Command	Responses
AT+WDWL	+WDWL: 0 Note: Downloading in process

Values: **<version>** **XModem Downloader Version**
String type

Parameter Storage: None

Examples:

Command	Responses
AT+WDWL? Note: Get downloader version	+WDWL: VO2.12 OK
AT+WDWL Note: Switch on downloading mode	+WDWL: 0 Note: Download mode started. File can be sent using the terminal application
AT+CFUN=1	OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Notes:

- +WDWL command allows to launch the download process only on the UART1 port.
- Downloading is performed using the 1K-XMODEM protocol.
- This command is unsupported when using a serial USB emulated port.
- The flow control of the HyperTerminal has to be set to "Hardware".

Caution:

Software damages may occur if power is lost or if a hardware reset occurs during the downloading phase. This would seriously affect the Wireless modem's behavior.

Chapter 6 – Global Configuration Commands

Report Mobile Equipment Errors +CMEE

Description: This command defines the method for returning error messages. The simple ERROR message can be replaced by the verbose method to include the results codes +CME ERROR: <err>. (See section "ME error result code: +CME ERROR" in the "Appendixes" of the present document for "+CME ERROR" result codes description. See section "Message service failure result code: +CMS ERROR" in the "Appendixes" of the present document for "+CMS ERROR" result codes).

Syntax:

Command	Responses
Action Command: AT+CMEE=<n>	OK
Read Command: AT+CMEE?	+CMEE: <n> OK
Test Command: AT+CMEE=?	+CMEE: (list of supported <n>s) OK

Values: **<n>** **Error Reporting Method**

0 Disable ME error reports; use only "ERROR. **Default**

1 Enable +CME ERROR: <err> or +CMS ERROR: <err>

Parameter Storage: The <n> parameter is stored in EEPROM using AT&W command. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+CMEE=?	+CMEE: (0,1) OK
AT+CMEE=0 Note: Disable ME error reports; use only "ERROR"	OK
AT+CMEE=1 Note: Enable "+CME ERROR: <err>" or "+CMS ERROR: <err>"	OK
AT+CMEE?	+CMEE: 1 OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Slow Idle Mode +W32K

Description: This command allows the slow idle mode to be enabled or disabled. It also sets the modem to either ignore or allow the DTR signal for the slow idle mode. With this command, a specific procedure on RS-232 serial link is requested to activate or deactivate slow idle mode.

Syntax:

Command	Responses
Action Command: AT+W32K=<mode>[,<DTRSignalUsed>]	OK

No Read or Test Commands

Values:

<mode> **Slow Idle Mode**
- **0** Disable
- **1** Enable

<DTRSignalUsed> **Indicate if the DTR signal** is used to enter/leave the slow idle mode.
- **0** The DTR signal is ignored to enter the slow idle mode. When using this setting, the slow idle cannot be left by using the DTR.
- **1** The DTR signal is used to enter or leave the slow idle mode. **Default**

Parameter Storage: None

Examples:

Command	Responses
AT+W32K=1 Note: Enable slow idle mode	OK Note: 32kHz slow idle mode is enabled and the DTR signal is used to enter/leave slow idle mode.
AT+W32K=0 Note: Disable slow idle mode	OK
AT+W32K=1,0 Note: Enable 32kHz slow idle mode without using the DTR signal	OK Note: 32kHz slow idle mode is enabled and the DTR signal is ignored to enter/leave the slow idle mode.
AT+W32K=0 Note: Disable 32kHz slow idle mode	OK Note: 32kHz slow idle mode is disabled

SIM, +WIND Notes:
- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Notes:
- When power down mode is entered, the product uses a 32kHz internal clock during inactivity stages (despite of its nominal internal clock).
- When enabled, power down mode is active after 1 to 15 seconds. The mode is not stored in EEPROM: the command has to be repeated after a reset.
- When enabled with "the DTR signal ignored", DTR signal is not taken into account to enter or leave the slow idle mode. The customer application needs to focus particularly on all sleep and wake-up conditions without using the UART.
- The optional parameter <DTRSignalUsed> applies only to UART 1 (and not UART2, CMUX virtual ports).

Power Off +CPOF

Description: Stops the GSM software stack as well as the hardware layer or modem activity. The AT+CFUN=0 command is equivalent to +CPOF.

Note: In autobaud mode, after an AT+CPOF, unsolicited information that wakes up the modem is sent at 9600 bps until an AT command is sent. When an AT command is sent, the modem will synchronize to the sender's speed. (Caution: See Fixed DTE Rate +IPR in the Serial Ports Command chapter).

Syntax:

Command	Responses
Action Command: AT+CPOF [=<mode>]	OK

No Read or Test Commands

Values:

<mode>	Power Off Mode
1	Power off

Parameter Storage: None

Examples:

Command	Responses
AT+CPOF Note: Stop GSM stack	OK
AT+CPOF=1 Note: Stop the modem	OK Note: Command valid

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Note:

- After AT+CPOF[=1], the modem will not respond to AT commands. To reset it, use the hard reset.

Set Phone Functionality +CFUN

Description: This command selects the functionality level for the mobile station.

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 +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 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 or AT+CFUN=1,1) will have to be issued to restart the GSM registration process.

If the mobile equipment is turned off after this command, then a power on will restart the GSM registration process.

The AT+CFUN=1 (or AT+CFUN=1,1) 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.

The AT+CFUN=1,0 command set the MT full functionality without reset. If the command can be used after a AT+CFUN=0, AT+CPOF or AT+CFUN=4, else a +CME ERROR: 3 is returned. The RF and SIM are accessible.

The AT+CFUN=4 command stops the RF (performs an IMSI DETACH if the modem is registered) and keeps access to the SIM. All AT commands related to SIM access are allowed.

After performing a Power-OFF using +CPOF or AT+CFUN=0 command, the AT+CFUN=4 command returns +CME ERROR: 3.

If entries are written in the phonebook (+CPBW) and if the product is reset directly before +CPBW response (AT+CFUN=1 or AT+CFUN=1,1, with no previous AT+CFUN=0 command), some entries may be lost (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 saved (AT&W) baud rate defined by the +IPR command. With the autobauding mode, the response can be sent at a different baud rate. It is, therefore, preferable to save the defined baud rate with AT&W before sending the AT+CFUN=1 (or AT+CFUN=1,1) command.

Normally, when using UART1 or UART2 to manage the modem, the OK response is sent to the application after the wireless modem reset.

Caution:
When using the emulated serial port, the OK response is not provided. In addition, the modem reset will cause the USB stack to stop. From the host's point of view, it is similar to a USB cable disconnection. As a consequence, the host will uninstall the Wavecom USB driver and the application will reference a non valid driver.

Syntax:

Command	Responses
Action Command: AT+CFUN=<fun> [,<rst>]	OK
Read Command: AT+CFUN?	+CFUN: <fun> OK
Test Command: AT+CFUN=?	+CFUN: (list of supported <fun>s), (list of supported <rst>s)

Values:

<fun> **Functionality Level**

0 Set minimum funtionality; IMSI detach procedure and SIM stop

1 Set the full functionality mode with a complete software reset

4 Stop only the RF (IMSI detach procedure) and keep access to the SIM

<rst> **Reset (only for <fun>=1)**

0 Do not reset the modem before setting it to full functionality power level

1 Reset the modem before setting it to full functionality power level. **Default**

Parameter Storage: None

Examples:

Command	Responses
AT+CFUN=?	+CFUN: (0,1,4) , (0,1) OK
AT+CFUN? Note: Ask for current functionality level	+CFUN: 1 OK Note: Full functionality
AT+CFUN=0 Note: Set minimum functionality, IMSI detach procedure	OK
AT+CFUN=1,0 Note: Set the full functionality mode with a complete software reset	OK
AT+CFUN=1,0	+CME ERROR: 3 Note: No Power Off done before (CFUN=0, CFUN=4 or CPOF)
AT+CFUN=4 Note: Stop the RF and keep SIM access	OK
AT+CFUN=1 Note: Set the full functionality mode with a complete software reset	OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Reset +WRST

Description: This command resets the modem after the time specified by the <delay> parameter. The modem will reset cyclically until this mode is disabled.

Syntax:

Command	Responses
Action Command: AT+WRST =<Mode>,<Delay>	OK
Read Command: AT+WRST?	+WRST: Mode>[,<Delay>,<RemainTime>] OK
Test Command: AT+WRST=?	OK

Values:

<Mode> **Timer Reset Mode**
0 Disabled
1 Enabled

<Delay> **Specify Time for Reset**
Range “000:01” - “168:59” (format hhh:mm)

<RemainTime> **Time before Next Reset**
Range “000:01”- “168:59” (format hhh:mm)

Parameter Storage: The <mode> and <delay> parameters are stored in EEPROM without using AT&W.

Examples:

Command	Responses
AT+WRST=0 Note: Disable timer	OK
AT+WRST=1,”001:03” Note: Enable timer and set delay at 1 hour 3 minutes	OK
AT+WRST?	+WRST: 1,”001:03”,”001:01” OK Note: Timer activated to reset after 1 hour and 3 minutes. The next reset is set for 1 hour and 1 minute.

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Save Configuration &W

Description: This command writes the active configuration to a non-volatile memory (EEPROM) .

Syntax:

Command	Responses
Action Command: AT&W	OK

No Read and Test Commands

Values: None

Parameter Storage: None

Examples:

Command	Responses
AT+IPR=9600 Note: Change data rate in memory only	OK
AT&W	OK
AT+CFUN=1	OK
AT+IPR?	+IPR: 9600 OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Restore Factory Settings &F

Description: This command is used to restore the factory settings from EEPROM.

Syntax:

Command	Responses
Action Command: AT&F<n>	OK

No Read and Test Commands

Values: **<n>** **Setting Restore Parameter**
If <n> is not omitted and with a value different from 0, the response is OK without any treatment.

0 Restore factory settings

Parameter Storage: None

Examples:

Command	Responses
AT&F Note: Ask for restoring the factory settings	OK Note: Done
AT&F0 Note: Ask for restoring the factory settings	OK Note: Done

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Notes:

- For each parameter, the section "Parameter Storage" specifies which default values can be restored using AT&F. The parameters are restored in RAM and in E2P, overwriting the profile set with AT&W.
- This command does not update the +IPR command.

Default Configuration Z

Description: This command restores the configuration profile from non-volatile memory (EEPROM).

Syntax:

Command	Responses
Action Command: ATZ	OK

No Read or Test Commands

Values: None
Storage Parameters: None

Examples:

Command	Responses
AT+IPR?	+IPR: 115200 OK Note: Default value is in EEPROM
AT+IPR=9600 Note: Change data rate in memory only	OK
AT+IPR?	+IPR: 9600 OK
ATZ	OK
AT+IPR?	+IPR: 115200 OK Note: Default value set back from EEPROM

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Display Configuration &V

Description: This command is used to display the modem configuration.

Syntax:

Command	Responses
Action Command: AT&V[<n>]	Q:<val1> V:<val2> S0:<val3> S2:<val4> S3:<val5> S4:<val6> S5:<val7> +CR:<val8> +CRC:<val9> +CMEE:<val10> +CBST:<val11> +SPEAKER:<val12> +ECHO:<val13> &C:<val14> &D:<val15> %C:<val16> [+IPR:<val17>] +ICF:<val18> +IFC:<val19> OK Note: For each <valx> parameter, please refer to the corresponding command.

No Read or Test Commands

Values: **<n>** **Displays Control Parameter**

- **0** Displays the modem configuration in RAM. **Default** value if no parameter provided.
- **1** Displays the modem configuration in EEPROM.
- **2** Displays the modem factory configuration.

Storage Parameters: None

Examples:

Command	Responses
AT&V Note: Display active parameters in RAM	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:1,4 &C:1 &D:2 %C:0 +IPR:9600 +ICF:3,4 +IFC:2,2 OK Note: Done for Echo. The first parameter indicates the echo cancellation activation and the second parameter indicates the chosen algorithm. If no echo cancellation is activated, the response is "+ECHO: 0".

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Notes:

The parameters displayed are the following:

- For <n> = 0 or 1
  Q:val1, V:val2, S0:val3, S2:val4, S3:val5, S4:val6, S5:val7,
  +CR:val8, +CRC:val9, +CMEE:val10, +CBST:val11,
  +SPEAKER:val12, +ECHO:val13, &C:val14, &D:val15, %C:val16
  +IPR:val17, +ICF:val18, +IFC:val19

- For <n> = 2
  Q:val1, V:val2, S0:val3, S2:val4, S3:val5, S4:val6, S5:val7,
  +CR:val8, +CRC:val9, +CMEE:val10, +CBST:val11,
  +SPEAKER:val12, +ECHO:val13, &C:val14, &D:val15, %C:val16
  +ICF:val18, +IFC:val19
  The +IPR value is not returned for <n>=2.

Custom Character Set +WCCS

Description: This command allows you to edit and display the custom character set tables. These tables are used by the "CUSTOM" mode of +CSCS and the +WPCS commands. In this CUSTOM mode, when you enter a string, it is converted into the GSM alphabet using the Custom-to-GSM table. In a similar way, when the user requests a string display, the string is converted from the GSM alphabet using the Custom alphabet and Custom alphabet extension tables.

Syntax:

If <mode>=0

Command	Responses
Action Command: AT+WCCS=<mode>,<table>,<character_range>[,<character_range>]	+WCCS: <character_number>,<characters> OK

If <mode>=1

Action Command: AT+WCCS=<mode>,<table>,<character_range>[,<character_range>] <characters><ctrl-Z>	> OK

No Read or Test Commands

Values:

<mode> **Requested Operation**
- **0** Display the table
- **1** Edit the table

<table> **Character Table Selection**
- **0** Custom to GSM conversion table (default table is PCCP437 to GSM table)
- **1** Custom alphabet table (default table is GSM 7 bit default alphabet)
- **2** Custom alphabet extension table (default table is GSM 7 bit default alphabet extended)

<character_range> **Range of Character Codes in <Table>**
- **0-127** For table index 1 and index 2
- **0-255** For table index

<character_number> **Number of Displayed Characters**
- **0-127** For table index 1 and index 2
- **0-255** For table index 0

<characters> **Sequence of ASCII Characters**
Hexastring type

Parameter Storage: The <characters> parameter is stored in EEPROM without using AT&W.

Examples:

Command	Responses
AT+WCCS=?	+WCCS: (0-1),(0-2),(0-255),(0-255) OK
AT+WCCS=0,0,120,130 Note: Display from character 120 to character 130 of the Custom to GSM conversion table	+WCCS: 11, 78797A2020202020097E05 OK Note: 11 characters displayed
AT+WCCS=1,0,115 20<ctrl-Z> Note: Edit character 115 of the Custom to GSM conversion table	> OK Note: Edition successful
AT+WCCS=1,1,0,4 40A324A5E8<ctrl-Z> Note: Edit the 5 first characters of the GSM to Custom conversion table	> OK Note: Edition successful
AT+WCCS=0,1,1 Note: Display character 1 of the Custom alphabet table	+WCCS: 1,A3 OK

SIM, +WIND Notes:
- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Notes:
- In edition mode, the 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 be equal to the edition range requested, otherwise the command will return "+CME ERROR: 24".
- The default custom alphabet extension table contains the following extended characters:
  | ^ € { } [ ] ~ \

Select TE Character Set +CSCS

Description: Informs the modem which character set is used by the DTE. The modem can convert each character of entered or displayed strings. This is used to send, read or write short messages. See also +WPCS for phonebook character sets.

Syntax:

Command	Responses
Action Command: AT+CSCS=<Character Set>	OK
Read Command: AT+CSCS?	+CSCS: <Character Set> OK
Test Command: AT+CSCS=?	+CSCS: (list of supported <Character Set>s) OK

Values:

<Character Set>	Character Table Set (ASCII String)
GSM	GSM default alphabet
PCCP437	PC character set code page 437. **Default**
CUSTOM	User defined character set
HEX	Hexadecimal mode. No character set used; the user can read or write hexadecimal values.

Parameter Storage: The <character set> parameter is stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+CSCS=? Note: Get possible values	+CSCS: ("GSM","PCCP437","CUSTOM","HEX") OK
AT+CSCS="GSM" Note: GSM default alphabet	OK
AT+CSCS? Note: Get current value	+CSCS: "GSM" OK Note: GSM default alphabet

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 /CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2/CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 4

Phonebook Character Set +WPCS

Description: Informs the modem which character set is used by the DTE for the phonebooks. The modem can convert each character of entered or displayed strings. This is used to read or write phonebook entries (parameters <text>, <address>, <mail>).

Syntax:

Command	Responses
Action Command: AT+WPCS=<Character Set>	OK
Read Command: AT+WPCS?	+WPCS: <Character Set> OK
Test Command: AT+ WPCS=?	+ WPCS: (list of supported <Character Set>s) OK

Values: **<Character Set>** **Character Table Set (ASCII String)**

TRANSPARENT	Transparent mode. The strings are displayed and entered as they are stored in SIM or in ME. **Default**
CUSTOM	User defined character set
HEX	Hexadecimal mode. No character set used; the user can read or write hexadecimal values.

Parameter Storage: The <character set> parameter is stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+WPCS=? Note: Get possible values	+WPCS: ("TRANSPARENT","HEX","CUSTOM") OK Note: Possible values
AT+WPCS="CUSTOM" Note: Custom character set	OK
AT+WPCS? Note: Get current value	+WPCS: "CUSTOM" ok

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 /CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2/CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 4

Select Type of Address +CSTA

Description: This command selects the type of number for further dialing commands (D) according to GSM specifications.

Syntax:

Command		Responses
Action Command:	AT+CSTA=<type>	OK
Read Command:	AT+CSTA?	+CSTA: <type> OK
Test Command:	AT+CSTA=?	+CSTA: (list of supported <types>s) OK

Values:

<type> **Type of Address Octet** (Integer Type)
129 ISDN / telephony plan, national / international unknown
145 ISDN / telephony plan, international number

Parameter Storage: The <type> parameter is stored in EEPROM using the AT&W command. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+CSTA=?	+CSTA: (129, 145) OK
AT+ CSTA =145	OK
ATD33146290800; Note: International access code character "+"will be automatically added to each outgoing call	OK
AT+ CSTA =129	OK
ATD+33146290800; Note: International access code character "+"will be automatically added to each outgoing call	OK
AT+CSTA?	AT+ CSTA: 129 OK

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN **2** / CHV **2** code is not entered.

Chapter 7 – Wireless Modem Status Commands

General Indications +WIND

Description: This command allows controlling a general mechanism to send unsolicited indications to the application.

Syntax:

Command		Responses
Action Command:	AT+WIND=<IndLevel>	OK
Read Command:	AT+WIND?	AT+WIND: <IndLevel> OK
Test Command	AT+ WIND=?	+WIND: (list of supported <IndLevel>s) OK

Unsolicited Responses:

For <event> 0,1,2,3,4,7,8,9,13,14,16: +WIND: <event>

For <event> 5,6: +WIND: <event> , <idx>

For <event> 10: +WIND: <event> , <phonebook> , <status> [,<phonebook>, <status> [,<phonebook>,<status> [,<phonebook> , <status> [,<phonebook> , <status>]]]]

For <event> 11: +WIND: <event> , [<checksum>] , [<checksum>] , [<checksum>] , [<checksum>] , [<checksum>] , [<checksum>]

For <event> 12: +WIND: <event> , <ext_it_name> [,<EdgeState>]

For <event> 15: +WIND: <event> [,1, "<Full name>"] [,2, "<Short name>"] [,3, "<Local time zone>"] [,4, "Universal time and local time zone>"] [,5, "<LSA Identity>"] [,6, "Daylight Saving Time>"]

Values:

<IndLevel> **Indication Levels**

Bit field (default value: 0)

Bit set to 0: Indication deactivated

Bit set to 1: Indication activated

0	No unsolicited “+WIND: <event>” will occur. **Default**.
1 (bit-0)	Activate hardware SIM Insert/Remove indications or SIM presence after software reset.
2 (bit-1)	Activate calling party alert indication.
4 (bit-2)	Activate idle state indication
8 (bit-3)	Activate end of modem initialization (after PIN 1/CHV 1 code entered) indication
16 (bit-4)	Activate new call identifier indication
32 (bit-5)	Active call release indication
64 (bit-6)	Activate network service available indication
128 (bit-7)	Activate network lost indication
256 (bit-8)	Activate audio ON indication
512 (bit-9)	Activate SIM phonebooks reload status
1024 (bit-10)	Activate SIM phonebooks checksum indication
2048 (bit-11)	Activate interruption indication
4096 (bit-12)	Activate hardware Rack Open/Closed indication
8192 (bit-13)	Activate NITZ indication
16384 (bit-14)	Activate SMS service ready indication

<event> **Event Identifier**

0	The SIM presence pin has been detected as “SIM removed”
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	A call <idx> has been created (after ATD or +CCWA…)
6	A 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	The audio channel is opened.
10	Reload status of each SIM phonebook after init phase (after Power-ON or SIM insertion).
11	Checksum of SIM phonebooks after initialization.
12	An interruption has occurred.
13	The rack has been detected as Closed.
14	The rack has been detected as Open.
15	The modem has received a NITZ information message from the network.
16	SMS and SMS CB services are initialized.

<idx> **Call Identifier**
Integer value

<phonebook> **Phonebook Memory Storage**

"SM"	ADN
"FD"	FDN
"ON"	MSISDN
"SN"	Service Number
"EN"	Emergency Number

<status> **Phonebook Status after Initialization**

0	Not reloaded from SIM (no change since last init or SIM removal)
1	Reloaded from SIM to internal memory (at least one entry has changed)

<checksum> **128-bit "Fingerprint" of the Phonebook**
The checksums are presented in the following order: SM, FD, ON, SN, EN, LD. If the phonebook is not present in the SIM, the checksum is empty.

<ext_it_name> **Interruption identifier** (as mentioned in the Wireless Microprocessor® Product Technical Specification and Customer Design Guideline).
String type

<**EdgeState>** **State of the edge** in case of both edge (the interruption happens with a high to low and low to high edge)

0	Interruption happens with high to low edge
2	Interruption happens with low to high edge

<Full name> **Long alphanumerical format** name received from the NITZ message.
String type

<Short name> **Short alphanumerical format** name received from the NITZ message.
String type

<Local time zone> **Difference**, expressed in quarters of an hour, between the local time and GMT.
Signed integer

<Universal time and local time zone> **Indicates date**, time, and time zone expressed in quarters of an hour, in format Year/Month/Day,Hour:Min:Seconds±TimeZone.
String ("yy/MM/dd,hh:mm:ss: ±zz")

<LSA Identity> **Localized Service Area identity** of the current cell in hexa format (3 bytes). Hexa string.

<Daylight Saving Time> When the local time zone is compensated for **DST** (Day Saving time, or summertime), the serving PLMN shall provide a DST parameter to indicate it. The adjustment for DST can be +1h or +2h.
Range: 0-2

Parameter Storage: The <IndLever> parameter is stored in EEPROM without using AT&W command. The default value can be restored using AT&F.

Examples:

Command	Possible Responses
AT+WIND?	+WIND: 0 OK
AT+WIND=255	OK
Note: The SIM has been removed.	+WIND: 0 Note :The SIM presence pin has been detected as “SIM removed”
Note: The SIM has been inserted.	+WIND: 1 Note :The SIM presence pin has been detected as “SIM inserted”
Note: The network service is available for an emergency call	+WIND: 7
Note: The initialization has been completed	+WIND: 4
Note: The modem received a NITZ information message	+WIND: 15,1,"Cingular Extended" ,2, "Cingular" ,3, "+08" , 4, "03/14/27,16:59:48+08",5, "123456" ,6, "2"
AT+WIND=2048	OK Note: Activate the +WIND indications for interruption
	+WIND: 12, "INT0" Note: An interruption occurred on INT0

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Notes:

- The following table indicates the correspondences between <IndLevel> values and "+WIND: <event>[…]" indications that are activated.

<IndLevel> value	Corresponding <event>
1	0 and 1
2	2
4	3
8	4
16	5
32	6
64	7
128	8
256	9
512	10
1024	11
2048	12
4096	13 and 14
8192	15
16384	16

Phone Activity Status +CPAS

Description: Returns the activity status of the mobile equipment.

Syntax:

Command	Responses
Action Command: AT+CPAS	+CPAS: <pas> OK
Read Command: None	
Test Command AT+CPAS=?	+CPAS: (list of supported <pas>s) OK

Values: **<pas> Phone Activity Status**

- **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)

Parameter Storage: None

Examples:

Command	Responses
AT+CPAS Note: Current activity status	+CPAS: 0 OK
AT+ CPAS=?	+CPAS: (0-5) OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

SIM Holder Status +WSHS

Description: Displays the activity status of the SIM Holder (allows you to check at any time).

Syntax: AT+WSHS

Command	Responses
Action Command: AT+WSHS	+WSHS: <status> OK
Read Command: None	
Test Command: AT+ WSHS=?	+WSHS: (list of supported <status>s) OK

Values: **<status> SIM Holder Status**

- **0** Open
- **1** Closed

Parameter Storage: None

Examples:

Command	Responses
AT+WSHS=?	+WSHS: (0,1) OK
AT+WSHS Note: Request the current holder state	+WSHS: 0 OK Note: The SIM holder is open

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Indicator Control +CIND

Description: This command is used to read or set the values of the mobile equipment (ME) indicators. If the ME does not allow setting of indicators or currently cannot be reached, a "+CMEE ERROR: <err>" is returned.

Syntax:

Command	Responses
Action Command: None	
Read Command: AT+CIND?	+CIND: <ind>,<ind>,<ind>,<ind>,<ind>,<ind>,<ind> OK
Test Command: AT+CIND=?	+CIND: <descr>,<list of supported <ind>s)) [, (<descr>, (list of supported <ind>s)) [, …] OK

Values:

<ind> **The Mobile Equipment Indicator State for One <descr> Parameter.**
Integer type value, which shall be in the range corresponding to the <descr> parameter.
- **0** Indicator is OFF or in a state that can be identified as "OFF" state
- **1** Indicator is ON or in a state that is more substantial than "OFF" state
- **2-5** 2 is more substantial than 1, and so on

<descr> **Mobile Equipment Indicator Description**
- **signal** Signal quality (0-5)
- **service** Service availability (0-1)
- **message** Message received (0-1)
- **call** Call in progress (0-1)
- **roam** Roaming indicator (0-1)
- **smsfull** SMS memory storage status in the modem (0-2)
  - **0** Memory locations are available
  - **1** Memory is full
  - **2** One SMS has been received, but the SMS storage where this SMS is to be stored is full.

Parameter Storage: None

Examples:

Command	Responses
AT+CIND?	+CIND: 2,1,1,0,0,0 OK Note: signal: 2, service: 1 – ME registered on the network, message:1 – an SMS has been received, call: 0 – no call is in progress, roam: 0 – not roaming, smsfull:0 SIM – card is not full of SMS
AT+CIND=? Note: Read possible value for ME indicators	+CIND: ("signal", (0-5)), ("service", 0-1)), ("message", 0-1)), ("call", 0-1)), ("roam", 0-1)), ("smsfull", 0-2)), OK

SIM, +WIND Notes:
- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Mobile Equipment Event Reporting +CMER

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

Syntax:

Command	Responses
Action Command: AT+CMER=[<mode>] [,[<keyp>] [,[<disp>] [, [<ind>] [,[<bfr>]]]]]	OK
Read Command: AT+CMER?	+CMER=<mode>,<keyp>,<disp>,<ind>,<bfr> OK
Test Command: None	

Unsolicited Response: +CKEV: <key>, <press> (key press event report)
+CIEV: <indresp>, <value> (indicator event report)

Values:

<mode> Processing of Unsolicited Result Codes

2 Buffer unsolicited result codes in the Terminal Adapter when TA-DTE link is reserved and flush them to the DTE after reservation (after +++ was entered). Otherwise, forward them directly to the DTE. **Default**.

3 Forward unsolicited result codes to the DTE by using a specific in-band technique: while TA-DTE link is reserved (i.e., DTE is in online data mode by CSD or GPRS call), unsolicited result codes are replaced by a break (100ms) and stored in a buffer. The unsolicited result codes buffer is flushed to the DTE after reservation (after +++ was entered). Otherwise, (the DTE is not in online data mode) forward them directly to the DTE.

<keyp> Keypad Event Reporting Mode

0 Keypad event reporting. Default.

1 Keypad event reporting is routed using unsolicited code. Only the key pressings not caused by +CKPD are indicated.

2 Keypad event reporting is routed using unsolicited code. All key pressings are indicated.

<ind> Indicator of Event Reporting Mode

0 Disabled. Default.

1 Indicator event reporting using unsolicited result code. Only the indicator events not caused by +CIND shall be indicated by the Terminal Adapter to the DTE.

2 Indicator event reporting using unsolicited result code. All indicator events shall be directed from Terminal Adapter to DTE.

<key> Keyboard Map is (5,5)

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

<press> Key Operation

1 Key pressed

0 key released

<indresp> Indicator Order Number (as specified for +CIND)

<value> New Value of the Indicator

<bfr> Terminal Adapter (TA) Buffer of Unsolicited Result Codes Mode

0 Terminal Adapter (TA) buffer defined within this command is flushed to the DTE. **Default.**

<disp> Display Event Reporting Mode

0 Disabled. Default.

Parameter Storage: The <keyp> and <ind> parameters are stored in EEPROM using AT&W command. The default values can be restored using AT&F.

Examples:

Command	Responses
AT+CMER=1 Note: Ask for key press event report	OK
	+CKEV:12,1 +CKEV:12,0 Note: Key 12 has been pressed and released
AT+CMER=,,,1 Note: Asks for indicator event report	OK
	+CMTI: "SM" ,10 +CIEV: 7,1 Note: SMS Memory storage is full
AT+CMER?	+CMER: 2,1,0,1,0 OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Note:

- Software does not manage the emulation of key press: values 1 & 2 give the same results.

Mobile Equipment Control Mode +CMEC

Description: This command selects the equipment which operates ME keypad, writes to ME display and sets ME indicators. If operation mode is not allowed by the ME, "+CME ERROR: <err>" is returned.

Syntax:

Command	Responses
Action Command: AT+CMEC=<keyp>[,<disp>[,<ind>]]	OK
Read Command: AT+CMEC?	+CMEC: <keyp>,<disp>,<ind> OK
Test Command: AT+CMEC=?	+CMEC: (list of supported <keyp>s), (list of supported <disp>s), (list of supported <ind>s) OK

Values:

<keyp> **Mobile Equipment Keypad Control Mode**

2 Mobile Equipment can be operated from both Mobile Equipment keypad and DTE

<disp> **Mobile Equipment Display Control Mode**

0 Only the Mobile Equipment can write to its display (+CDIS command can be used only to read the display)

<ind> **Mobile Equipment Indicators Control Mode**

0 Only the Mobile Equipment can set the status of its indicators (+CIND command can be used only to read the indicators)

Parameter Storage: None

Examples:

Command	Responses
AT+CMEC=?	+CMEC: (2),(0),(0) OK
AT+CMEC=2,0,0	OK
AT+CMEC?	+CMEC: 2,0,0 OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Status Request +WSTR

Description: This command returns the status of various operations. It can be used to check the state of the initialization sequence and the network status.

Syntax:

Command	Responses
Action Command: AT+WSTR=<req status>	+WSTR=<req status> ,<value> OK
Read Command: None	
Test Command: AT+WSTR=?	+WSTR: (list of support <req status>s)

Values:

<req status> **Requested Status**

1 Initialization sequence status

2 Network status

<value> **Current Status**

	For <req status>=1	**For <req status>=2**
0	Not started	Not network
1	On going	Network available
2	Finished	--

Parameter Storage: None

Examples:

Command	Responses
AT+WSTR=? Note: Ask the list of possible values	+WSTR: (1-2) Note: possible values: 1, 2
AT+WSTR=1 Note: Select the status 1 (INIT SEQUENCE)	+WSTR: 1,2 OK Note: Initialization finished
AT+WSTR=2 Note: Select the status 2 (NETWORK STATUS)	+WSTR: 2,1 OK Note: The network is available

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Chapter 8 – Serial Port Commands

Echo E

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

Syntax:

Command	Responses
Action Command: ATE<n>	OK

No Read and Test Commands

Values: **<n>** **Echo Activation Parameter**
- **0** Characters are not echoed. **Default** value if <n> is omitted.
- **1** Characters are echoed

Parameter Storage: The <n> parameter is stored in EEPROM using **AT&W**.

Examples:

Command	Responses
ATE0 Note: Characters are not echoed	OK Note: Done
ATE1 Note: Characters are echoed	OK Note: Done

SIM, +WIND Notes:
- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Fixed DTE Rate +IPR

Description: This command specifies the data rate at which the data circuit equipment (DCE) will accept commands.

Notes:

- The serial autobauding feature is supported and covers the following serial speeds only: 1200, 2400, 4800, 9600, 19200, 38400, 57600 115200, 230400, 460800, 921600 bps. Beyond those serial speeds, proper operation of the modem is not guaranteed.
- Any AT command issued by the DTE must start with both capital 'A' and 'T' (or '/') or both lower case '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 resynchronize 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 desynchronized. 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.

Syntax:

Command	Responses
Action Command: AT+IPR=<rate>	OK
Read Command: AT+IPR?	+IPR: <rate> OK
Test Command: AT+IPR=?	+IPR: (list of auto-detectable <rate>s), (list of supported <rate>s) OK

Values:

<rate> Baud Rates That Can Be Used by the Data Circuit Equipment (DCE).

0 Enables autobauding. **Default**
300
600
1200
2400
4800
9600
19200
38400
57600
115200
230400
460800
921600

Parameter Storage: The <rate> parameter is stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+IPR?	+IPR: 9600 OK Note: Current rate is 9600 bps
AT+IPR=?	+IPR: 1200,2400,4800,9600,19200,38400,57600,115200,230400,460800, 921600) , (0,300,600,1200,2400,4800,9600,19200,38400,57600,115200, 230400,460800,921600) OK Note: Possible values, according to V25 ter Recommendation: The first set of values indicates the range of auto-detectable baud rates. The second set of values indicates the baud rates supported by the DCE.
AT+IPR=38400	OK Note: Disable autobauding and set rate to 38400 bps
AT+IPR=0	OK Note: Enable autobauding

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

DTE-DCE Character Framing +ICF

Description: This command determines the local serial port start-stop (asynchronous) character framing used by the DCE.

Syntax:

Command	Responses
Action Command: AT+ICF=<format>[,<parity>]	OK
Read Command: AT+ICF?	AT+ICF: <format>,<parity> OK
Test Command: AT+ICF=?	AT+ICF: (list of supported <format>s), (list of supported <parity>s) OK

Values:

<format> **Character Framing Format**

- **1** 8 Data 2 Stop
  <parity> parameter is ignored
- **2** 8 Data 1 Parity 1 Stop
  If no <parity> provided, 3 is used by default as <parity> value
- **3** 8 Data 1 Stop
  <parity> parameter is ignored. **Default.**
- **4** 7 Data 2 Stop
  <parity> parameter is ignored
- **5** 7 Data 1 Parity 1 Stop
  If no <parity> provided, 3 is used by default as <parity> value
- **6** 7 Data 1 Stop
  <parity> parameter is ignored

<parity> **Character Framing Parity**

- **0** Odd
- **1** Even
- **2** Mark
- **3** Space
- **4** None. **Default.**

Parameter Storage: The <format> and <parity> parameters are stored in EEPROM using AT&W command. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+ICF=?	+ICF: (1-6),(0-4) OK Note: Possible values
AT+ICF=2,0	OK Note: New values
AT+ICF?	+ICF: 2,0 OK Note: Current values

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Notes:

- All framing settings of the serial interface (i.e., 801, 8E1, 8S1, 8N1, 7N1, 7O1, 7E1, 7S1 and 7N2) are supported for autobaud mode.
  If USB port is used:
  - The action command is supported for compatibility reasons (but without effect).
  - The response to the action command and the read command behavior is the same as if sent on UART1 or UART2.

DTE-DCE Local Flow Control +IFC

Description: This command is controls the operation of local flow control between the DTE and DCE.

Syntax:

Command	Responses
Action Command: AT+IFC=<DCE_by_DTE>,<DTE_by_DCE>	OK
Read Command: AT+IFC?	+IFC: <DCE_by_DTE>,<DTE_by_DCE>) OK
Test Command: AT+IFC=?	+IFC: (list of supported <DCE_by_DTE>s), (list of supported <DTE_by_DCE>s) OK

Values:

<DCE_by_DTE> Local Flow Control Parameter

- **0** None
- **2** RTS. **Default**

<DTE_by_DCE> Local Flow Control Parameter

- **0** None
- **2** CTS. **Default**

Parameter Storage: The <DCE_by_DTE> and <DTE_by_DCE> parameters are stored in EEPROM using AT&W.

Examples:

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

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Notes:

If USB port is used:

- The action command is supported for compatibility reasons (but without effect).
- The response to the action command is the same as if sent on UART1 or UART2 and the value of the both parameters is always 2.

When the <DCE_by_DTE> parameter is set to 2 (DTE prompts flow control through RTS), the DCE behavior is as follows:

- If the DCE has never detected RTS in the high (or ON) condition since startup, then it ignores RTS (assuming 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 behavior allows the user to use the default settings (hardware flow control) and leaves RTS disconnected. In the case the RTS is connected and is high at least once, it acts on the DCE.

When the <DTE_by_DCE> parameter is set to 0 (none), the CTS is kept high all the time.

Result Code Suppression Q

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

Syntax:

Command	Responses
Action Command: ATQ[<n>]	[OK]

No Read and Test Commands

Values: **<n>** **Result Code Transmission Parameter**

0 DCE transmits result codes

1 Result codes are suppressed and not transmitted. **Default**.

Parameter Storage: The <n> parameter is stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
ATQ0 Note: DCE transmits result codes	OK Note: Command valid
ATQ1 Note: Result codes are suppressed and not transmitted	Note: No response

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

DCE Response Format V

Description: This command determines whether or not the Data Circuit Equipment (DCE) response format uses header characters <CR><LF> and whether the result codes are provided as numeric or verbose.

Syntax:

Command	Responses
Action Command: ATV<n>	OK

No Read and Test Commands

Values: **<n>** **Format Control Parameter**

	Information Responses	Result Code
0	<text><CR><LF>	<numeric code><CR>
1	<CR><LF> <text><CR><LF>	<CR><LF> **Default** <verbose code><CR><LF>

Parameter Storage: The <n> parameter is stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

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

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Set DCD Signal &C

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

Syntax:

Command	Responses
Action Command: AT&C[<n>]	OK

No Read and Test and Commands

Values: **<n> DCD Signal Control Parameter**

0 DCD always on

1 DCD matches the state of the remote modem's data carrier. **Default.**

Parameter Storage: The <n> parameter is stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

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

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Note:

- Wavecom products slightly differ from V25ter Recommendation. DCD signal ("Circuit 109") is turned ON at the same time the CONNECT message is sent, whereas the specification states that the DCD should be turned ON after the CONNECT message was received.

Set DTR Signal &D

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

Syntax:

Command	Responses
Action Command: AT&D[<n>]	OK

No Read and Test Commands

Values: **<n> DTR Signal Control Parameter**

0 The DTR signal is ignored

1 Modem switches from data to command mode when DTR switches from ON to OFF

2 Upon DTR switch from ON to OFF, the call is released. **Default.**

Parameter Storage: The <n> parameter is stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

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

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Set DSR Signal &S

Description: This command controls the Data Set Ready (DSR) signal.

Syntax:

Command	Responses
Action Command: AT&S[<n>]	OK

No Read and Test Commands

Values: **<n>** **DSR Signal Control Parameter**

0 DSR always ON

1 DSR OFF in command mode. DSR ON in data mode. **Default.**

Parameter Storage: The <n> parameter is stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
AT&S0 Note: DSR always on	OK
AT&S1 Note: DSR off in command mode. DSR on in data mode	OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Ring Indicator Mode +WRIM

Description: This command sets the state of the Ring Indicator Mode.

Syntax:

Command	Responses
Action Command: AT+WRIM=<mode>[,<events_bit_field>[,<pulse_width>]]	OK
Test Command: AT+WRIM=?	+WRIM: <mode>[,<events_bit_field>[,<pulse_width>]] [+WRIM: <mode>[,<events_bit_field>[,<pulse_width>]][…]] OK

No Read Command

Values:

<mode> **Ring Indicator (RI) Mode**

0 In up-down RI mode: no pulses are sent before unsolicited AT response. Up-down signals are sent when receiving an incoming call. Default.

1 In pulse RI mode: an electrical pulse is sent on the Ring Indicator signal ONLY for selected event and/or any unsolicited AT responses as specified in <event_bit_field> in order not to lose AT responses when client tasks are in sleep state.

When receiving incoming calls, electrical pulses are sent on the RI signal.

For an incoming packet event, the electrical pulse is sent just before sending a downloaded data packet (GPRS or CSD) if the remote client tasks has dropped down his RTS signal.

For unsolicited AT responses, the electrical pulse is sent just before sending an unsolicited AT response.

<events_bit_field> **Events for Ring Indication**

Mandatory in pulse RI mode (<mode> = 1)
Bit set to 0: message disabled
Bit set to 1: message enabled

bit 0 incoming IP packet
bit 1 RING, +CRING, +CCWA, +CLIP
bit 2 +CMT, +CMTI, +CDS, +CDSI
bit 3 +CBM, +CBMI
bit 4 +CME ERROR: 13, +CCED
The unsolicited response "+CME ERROR: 13" is sent out only when there is a SIM card problem.
bit 5 +CREG, +CIEV
bit 6 +WBCI, +WDCI
bit 7 +CCCM
bit 8 +CKEV
bit 9 +CSQ
bit 10 NO CARRIER
bit 11 +STCR, +STRIL, +STIN
bit 12 +WIND
bit 13 +CALA
bit 14 +WDIAGI
bit 16 for Open AT applications. If this bit is set, RI pulse will be sent when the unsolicited response initiated by an Open AT application is sent.
bit 17 +CGREG
bit 18 +CGEV
bit 19 +CSSU
bit 20 +CUSD
bit 21 +WBTUM, +WBTSM
bit 22 +CLAV

<pulse_width> **Ring Indicator Pulse Width in ms Units**

Used only in pulse RI mode (<mode>=1)
If <pulse_width> parameter is omitted, the last entered value will be used.

0-18 Pulse duration is some µs and may be increased up to 3 ms due to overhead interrupt processes. **Default is 0.**

19-5000 Pulse duration granularity is 18.46 ms. Then effective pulse duration will be rounded to the lowest multiple of 18.46
Example:
<pulse_width>=19 → pulse duration is 18.46 ms
<pulse_width>=100 → pulse duration is 92.3 ms

Parameter Storage: The parameters are stored in EEPROM without using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+WRIM=? Note: Ask the list of possible values	+WRIM: 0 +WRIM: 1, (0-8388607),(0-5000) OK Note: possible mode values 0, 1
AT+WRIM=0 Note: Select up-down RI mode	OK Note: up-down RI mode selected
AT+WRIM=1,71 Note: bit field (0…0)1000111 (0x47 or decimal 71) to enable IP packets, RING, +CRING, +CCWA, +CLIP, +CMT, +CMTI, +CDS, +CDSI, +WBCI, +WDCI	OK
AT+WRIM? Note: Ask the current value	+WRIM: 1,71,0 OK Note: current mode is pulse RI

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Back to Online Mode O

Description: This command allows you to return to online data mode if a connection has been established and the mobile equipment (ME) is in command mode.

Syntax:

Command	Responses
Action Command: ATO	OK

No Read or Test Commands

Values: None

Parameters Storage: None

Examples: None

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Multiplexing Mode +CMUX

Description: This command is used to manage (enable or disable) the 3GPP TS 27.010 [14] multiplexing protocol control channel.

It allows the multiplexing of 4 logical channels on a single UART. Two UARTs are available on the modem, but multiplexing can only apply to one. The client application may handle, by this means, up to 5 channels (4 logical multiplexed channels on an UART and 1 physical channel on the other UART).

When a CMUX session is enabled, the modem allows the opening of 4 DLCs. These DLCs can be in the range of 1 to 4. This excludes DLC0 which is for the control channel.

Syntax:

Command	Responses
Action Command: AT+CMUX=<mode>[,<subset>[,<port_speed>[,<N1>[,<T1>[,<N2>[,<T2>[, <T3>]]]]]]]	OK
Read Command: AT+CMUX?	+CMUX: <mode>,<subset>,<port_speed>,<N1>,<T1>,<N2>,<T2>,<T3> OK
Test Command: AT+CMUX=?	+CMUX: (list of supported <mode>s),(list of supported <subset>s),(list of supported <port_speed>s),(list of supported <N1>s),(list of supported <T1>s),(list of supported <N2>s),(list of supported <T2>s),(list of supported <T3>s) OK

Values:

<mode> **Multiplexer Transparency Mechanism**
0 Basic option.

<subset> **Multiplexer Control Channel Set Up**
A virtual channel may subsequently be set up differently, but if there is no settings negotiation, the virtual channel will be set up according to the control channel <subset> setting.
0 Unnumbered information with header check (UIH) frames used only.

<port_speed> **Transmission Rate**
1 9600 bit/s
2 19200 bit/s
3 38400 bit/s
4 57600 bit/s
5 115200 bit/s
6 230400 bit/s
7 460800 bit/s
8 921600 bit/s

<N1> **Maximum Frame Size**
1-255 **Default:** 31

<T1> **Acknowledgement Timer in Units of 20 ms.**
1-128 **Default:** 5 (100 ms)

<N2> **Maximum Number of Retransmission**
0-255 **Default:** 3

<T2> **Response Timer for the Multiplexer Control Channel in Units of 20 ms.**
<T2> must be longer than <T1>
1-128 **Default:** 15 (300 ms)

<T3> **Wake Up Response Timer in Units of 2 Seconds**
1-128 **Default:** 5 (10 s)

Parameters Storage: None

Examples:

Command	Responses
AT+CMUX=? Note: Get supported values	+CMUX: (0),(0),(1-5),(1-255),(1-128),(0-255),(1-128),(1-128) OK
AT+CMUX=0,0,5,31,5,3,15,5 Note: Enter multiplex mode	OK
AT+CMUX? Note: Get current values	+CMUX: 0,0,5,31,5,3,15,5 OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Chapter 9 – Security Commands

Enter PIN +CPIN

Description: This command is used to enter the mobile equipment passwords (PIN1/CHV1, PIN2/CHV2, PUK1, PUK2, etc.) that are required before any mobile equipment functionality can be used. PIN1/CHV1 and PIN2/CHV2 are between **4** and **8** digits long; **PUK1** and **PUK2** are only **8** digits long.

After three unsuccessful attempts to enter the PIN, the PUK 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. PIN 1/CHV 1 is then enabled if PUK1 is correct.

The application is responsible for checking the PIN after each reset or power on if the PIN was enabled.

Syntax:

Command	Responses
Action Command: AT+CPIN=<pin> [,<NewPin>]	OK
Read Command: AT+CPIN?	+CPIN: <code> Note: No "OK"

No Test Command

Values:

<NewPin> **Personal Identification Number.**
This parameter is required if the PIN state is SIM PUK.
Four to eight digit numbers.

<pin> **Personal Identification Number.**
Normally PIN1/CHV/
According to AT+CPIN?, the <pin> parameter can be PUK 1, PH-SIM PIN, PH-NET PIN, PH-NETSUB PIN, PH-SERVPROV PIN, PH-CORPORATE PIN
Four to eight digit numbers.

<code> **SIM Code Status**

READY	Mobile equipment (ME) is not writing for any password
SIM PIN	PIN 1/CHV 1 is required
SIM PUK	PUK1 is required
SIM PIN2	PIN 2/CHV 2 is required
SIM PUK2	PUK2 is required
PH-SIM PIN	SIM lock (phone-to-SIM) is required
PH-NET PIN	Network personalization is required
PH-NETSUB PIN	Network subset is required
PH- SERVPROV PIN	Service provider is required
PH- CORPORATE PIN	Corporate is required

Parameter Storage: None

Examples:

Command	Responses
AT+CPIN=1234 Note: Enter PIN	OK Note: PIN code is correct
AT+CPIN=5678 Note: Enter PIN	+CME ERROR: 3 Note: Operation not allowed, PIN previously entered
AT+CPIN=00000000,1234 Note: Enter PUK and new PIN	+CME ERROR: 16 Note: Incorrect PUK
AT+CPIN=12345678,1234 Note: Enter PUK and new PIN, 2nd attempt	OK Note: PUK correct, new PIN stored

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.

If the user tries to do something which requires PIN 2/CHV 2, the product will refuse the action with a "+CME ERROR: 17" (SIM PIN2 required). The product then waits for SIM PIN 2/CHV 2 to be given.

If PIN 2/CHV 2 is blocked, SIM PUK2 is required instead of SIM PIN 2/CHV 2.

For example, the product needs PIN 2/CHV 2 to write in the fixed dialing phonebook (FDN) , so if SIM PIN 2/CHV 2 authentication has not been performed during the current session, SIM PIN 2/CHV 2 is required.

Examples Continued:

Command	Responses
AT+CPBS=”FD” Note: Choose FDN	OK
AT+CPBW=5,”01290917”,129,”Jacky” Note: Write in FDN at location 5	+CME ERROR: 17 Note: SIM PIN2 is required
AT+CPIN?	SIM PIN2 Note: SIM PIN2 is required
AT+CPIN=5678 Note: Enter SIM PIN2	OK
AT+CPBW=2,”01290917”,129,”Jacky” Note: Write in FDN at location 5	OK Note: Writing in FDN is allowed

+CME ERROR: 553 is returned when the PIN 1/CHV 1 code is tried to be changed using burned PUK 1 code.

+CME ERROR: 554 is returned when the PIN 1/CHV 1 and PUK1 codes try to be entered when theses codes are burned.

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Enter PIN2 +CPIN2

Description: This command is used to validate the PIN2/CHV2 code or to validate the PUK2 code (UNBLOCK CHV2) and to define a new PIN2/CHV2 code.

It is used only when the last command executed resulted in PIN2/CHV2 authentication failure.

PIN2/CHV2 length is between 4 and 8 digits; PUK2 length is 8 digits only.

After three unsuccessful attempts, PUK2 will be required. PUK2 validation forces the user to enter a new PIN2/CHV2 code as a second parameter and this will be the new PIN2/CHV2 code if PUK1 validation succeeds.

Syntax:

Command	Responses
Action Command: AT+CPIN2=<pin2> [,<NewPin2>]	OK
Read Command: AT+CPIN2?	+CPIN2: <code> Note: No "OK"

No Test Command

Values:

<pin2> **Personal Identification Number 2**
Four to eight digit number

<puk2> **Personal Unblocking Key 2 Needed to Change PIN 2**

<newpin2> **New Personal Identification Number 2**
Four to eight digit number

<code> **SIM Code Status**
READY No PIN2 is needed
SIM PIN2 PIN2 is required

Parameter Storage: None

Examples:

Command	Responses
AT+CPIN2=1234 Note: Enter PIN2	OK Note: PIN2 code is correct
AT+CPIN2=5678 Note: Enter PIN2	+CME ERROR: 3 Note: Operation not allowed, PIN2 previously entered
AT+CPIN2=00000000,1234 Note: Enter PUK2 and new PIN2	+CME ERROR: 16 Note: Incorrect Password (PUK2)
AT+CPIN2=12345678,1234 Note: Enter PUK2 and new PIN2, 2nd attempt	OK Note: PUK2 correct, new PIN2 stored
AT+CPIN2=1234	OK

SIM, PIN, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The PIN 1 / CHV 1 code must be entered to support this command.
- The +WIND indication from which this command is allowed is +WIND: 3.

PIN Remaining Attempt Number +CPINC

Description: This command is used to get the number of valid attempts for PIN1/CHV1, PIN2/CHV2, PUK1 and PUK2 identifiers.

Syntax:

Command	Responses
Action Command: AT+CPINC	+CPINC: <n1>,<n2>,<k1>,<k2> OK
Read Command: AT+CPINC?	+CPINC: <n1>,<n2>,<k1>,<k2> OK
Test Command: AT+CPINC=?	OK

Values

<n1> **Attempts Left for PIN1/CHV1**
Range: 0-3 (0 = Blocked, 3 = Max)

<n2> **Attempts Left for PIN2/CHV2**
Range: 0-3 (0 = Blocked, 3 = Max)

<k1> **Attempts Left for PUK1**
Range: 0-10 (0 = Blocked, 10 = Max)

<k1> **Attempts Left for PUK2**
Range: 0-10 (0 = Blocked, 10 = Max)

Parameter Storage: None

Examples:

Command	Responses
AT+CPINC Note: Get the number of attempts left	+CPINC: 2,3,10,10 OK Note: First PIN1/CHV1 attempt was a failure
AT+CPINC? Note: Get current values	+CPINC: 2,3,10,10 OK Note: First PIN1/CHV1 attempt was a failure

SIM, +WIND Notes:

- A SIM card must be inserted to support this command.
- The +WIND indication from which this command is allowed is +WIND: 1.

Change Password +CPWD

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/CHV2".

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

Syntax:

Command	Responses
Action Command: AT+CPWD=<fac>,<oldpwd>,<newpwd>	OK
Test Command: AT+CPWD=?	+CPWD: list of supported (<fac>, <pwdlength>s) OK

No Read Command

Values:

<fac> **Facility P2 SIM P2:**

PS	SIM lock facility with an 8-digit password.
SC	Password change (user indicates old and new password)
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 Incoming When Roaming outside Home Country)
AB	All Barring services
AG	All out going barring services
AC	All in coming barring services
P2	PIN code 2/CHV2
FD	SIM Fixed Dialing Numbers (FDN) memory feature (PIN2 is required as <password>)
PN	Network lock with an 8 digit password (NCK)
PU	Network subset lock with an 8 digit password (NSCK)
PP	Service Provider lock with an 8 digit password (SPCK)
PC	Corporate lock with an 8 digit password (CCK)

<oldpwd> 4 or up to 8 or 16 digits according to the facility

<newpwd> New password specified for the facility. String type [….]

<pwdlength> Maximum length of the password for the facility. Range: 4-16

Parameter Storage: None

Examples:

Command	Responses
AT+CPWD=? Note: Possible values	+CPWD: ("PS",8),("SC",8),("AO",4),("OI",4),("OX",4), ("AI",4),("IR,4),("AB",4),("AG",4),("AC",4), ("P2",8),("FD",8),("PN",8),("PU",8),("PP",8), ("PC",8) OK Note: PIN1/CHV1, PIN2/CHV2 must be on 8 digit maximum (4 minimum). For call barring, 4 digits maximum.
AT+CPWD="SC",1234,5555 Note: Change PIN	OK Note: PIN was correct
AT+CPWD="SC",1234,5555 Note: Change PIN	+CME ERROR: 16 Note: PIN was wrong
AT+CPIN=5555 Note: Enter PIN	OK Note: PIN was correct
AT+CPWD="PN",12345678,00000000 Note: Change NCK	OK Note: NCK changed for network lock

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Facility Lock +CLCK

Description: This command is used by the application to lock, unlock or ask for a Mobile Equipment (ME) or network facility.

Syntax:

Command	Responses
Action Command: AT+CLCK= <fac>,<mode>[,<passwd> [,<class>]]	[+CLCK: <status> <class1>[….]] OK
Read Command: AT+CLCK?	+CLCK: (<fac>,<status>),[….]
Test Command: AT+CLCK=?	+CLCK: list of supported (<fac>s) OK

Values:

<fac> **Facility**

PS	SIM lock facility with an 8-digit 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 Incoming When Roaming outside Home Country)
AB	All Barring services
AG	All out Going barring services
AC	All in Coming barring services
FD	SIM Fixed Dialing Numbers (FDN) memory feature (PIN2/CHV2 is required as <password>)
PN	Network lock with an 8 digit password (NCK)
PU	Network subset lock with an 8 digit password (NSCK)
PP	Service Provider lock with an 8 digit password (SPCK)
PC	Corporate lock with an 8 digit password (CCK)

<mode> **Requested Operation**

0	Unlock the facility
1	Lock the facility
1	Query status

<password> **Password Code**

String type. 4 to 8 or 16 digits depending on <fac>

<class> **Call Class.** The combination of different classes is not supported. It will only result in the activation/deactivation/status request of all classes (7).

1	Voice (telephony)
2	Data
7	Voice and data. Default value if omitted.
8	Short Messages

<status> **Facility Lock Status**

0	Not Active
1	Active

Parameter Storage: The <mode> and <password> parameters are stored in EEPROM and SIM (depending on <fac>) without using the AT&W command.

Examples:

Command	Responses
AT+CLCK=?	+CLCK: (“PS”,”SC”,”AO”,”OI”,”OX”,”AI”,”IR”,”AB”,"AG",”AC”, ”FD”,"PN","PU","PP",”PC”) OK
AT+CLCK=”SC”,1,1234 Note: Activate PIN locking, 1234 is PIN1/CHV1	OK
AT+CLCK=”SC”,2	+CLCK: 1 OK
AT+CLCK?	+CLCK:(“PS”,0),(“SC”,1),(“FD”,0),(“PN“,0),(“PU“,0),(“PP“,0),(“PC“,0) OK

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Other Note:

- FDN locking is only available after receiving the +WIND: 4 indication.

Lock +WLCK

Description: This command allows the mobile equipment to be locked on a specific network operator.

Syntax:

Command	Responses
Action Command: AT+WLCK=<fac>,<passwd>,<NetId>[,<GID1>[,GID2]] [,<CnlType>[,<CnlData>]]	OK

No Read and Test Commands

Values:

<fac> Facility to be Locked
- **PS** SIM lock facility with an 8 digit password (PCK).
- **PN** Network lock with an 8 digit password (NCK).
- **PU** Network subset lock with an 8 digit password (NSCK).
- **PP** Service provider lock with an 8 digit password (SPCK).
- **PC** Corporate lock with an 8 digit password (CCK).

<CnlType> Type of Lock for Co-operative Network List (CNL)
- **0** Automatic (co-operative network list retrieved from EF-CNL SIM file)
  Note: *EF-CNL file must be present in SIM to use automatic mode.*
- **1** Manual (co-operative network list is given in the <CnlData> parameter)

<CnlData> Co-operative Network List
Same format as in EF-CNL SIM file
Used only if <CnlType> = 1
Hexa String Type

<psswd> Password Code
String Type, 8 digits

<NetId> IMSI for SIM lock (<fac>)=”PS”)
Operator in numeric format (MCC and MNC) for other locks (other <fac> values).

<GID1> Group Identifier Level 1
Mandatory for service provider lock (<fac>)=”PP”) and for corporate lock (<fac>="PC").

<GID2> Group Identifier Level 2
Mandatory for corporate lock (<fac>="PC").

Parameter Storage: The lock action is stored in EEPROM without using the AT&W command.

Examples:

Command	Responses
AT+WLCK="PN",12345678,20810 Note: Activate network lock on SFR (208,10)	OK Note: Network lock activated
AT+WLCK="PS",12345678,208105923568974 Note: Activate SIM lock	OK Note: SIM lock activated
AT+WLCK="PU",12345678,2081035 Note: Activate Network Subset lock on SFR (208, 10, 35).	OK Note: Network Subset lock activated
AT+WLCK=”PP”,12345678,20810,”E5” Note: Activate Service Provider lock on SFR (208, 10) and GID1 (0xE5).	OK Note: Service Provider lock activated.
AT+WLCK=”PC”,12345678,20810,”E5”,”10” Note: Activate Corporate lock on SFR (208, 10), GID1 (0xE5) and GID2 (0x10).	OK Note: Corporate lock activated.
AT+WLCK=”PN”,12345678,20810,0 Note: Activate Network lock on SFR (208, 10) using co-operative network list from SIM file EF-CNL (must be present in SIM)	OK Note: Network lock activated on SFR and co-operative network list present in SIM
AT+WLCK=”PN”,12345678,20801,1,”02F802 FFFFFF02F801FFFFFF” Note: Activate Network lock on F ORANGE (208, 01) with manual co-operative network list including SFR (208, 10) and Bouygues Telecom (208, 20)	OK Note: Network lock activated on F ORANGE (primary network), SFR and Bouygues Telecom (co-operative networks)

SIM, PIN Notes: **All cases except auto CNL**
- This command is supported even if the SIM card is absent.

For auto CNL
- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Other Note: Test SIM cards (with MCC=001 & MNC=01) do not check these locks.

Chapter 10 – Time Management Commands

Clock Management +CCLK

Description: This command sets or gets the current date and time of the Mobile Equipment real time clock.

Syntax:

Command	Responses
Action Command: AT+CCLK=<date and time string>	OK
Read Command: AT+CCLK?	+CCLK: <date and time string> OK

No Test Command

Values: **<date and time string>** String Format for Date/Time is "yy/MM/dd,hh:mm:ss"
Valid years are 00 (for 2000) to 99 (for 2099). The second field is not mandatory. Default date/time: "00/01/01,00:00:00" (Jan. 1, 2000 / midnight).

Parameter Storage: None

Examples:

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

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Alarm Management +CALA

Description: Sets the alarm date/time in the Mobile Equipment. The maximum number of alarms is 16.
Note: The date/time should be set with the AT+CCLK command prior to using AT+CALA.

Syntax:

Command	Responses
Action Command: AT+CALA=[<date and time string>] [,<index>]	OK
Read Command: AT+CALA?	+CALA: <date and time string>,<index> [+CALA: <date and time string>,<index> […]]

No Test Command

Unsolicited Response: +CALA: <date and time string>,<index>

Values:

<date and time string> **Date/Time** is "yy/MM/dd,hh:mm:ss"
String format
Valid years are 00 (for 2000) to 99 (for 2099). The second field is not mandatory. Default date/time: "00/01/01,00:00:00" (Jan. 1st, 2000 / midnight).

<index> **Offset in the Alarm List**
Range: 1 to 16

Parameter Storage: None

Examples:

Command	Responses
AT+CALA="00/06/08,15:25" Note: set an alarm for June 8, 2000 at 3:25 pm	OK
AT+CALA="00/06/09,07:30" Note: set an alarm for June 9, 2000 at 7:30 am	OK
AT+CALA? Note: list all alarms	+CALA: "00/06/08,15:25:00",1 +CALA: "00/06/09,07:30:00",2 OK Note: Two alarms are set (index 1, 2)
	+CALA: "00/06/08,15:25:00",1 Note: an alarm occurs (index 1)
AT+CALA=" ",2 Note: delete alarm index 2	OK Note: Alarm index 2 deleted
AT+CALA? Note: list all alarms	OK Note: No alarm

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Chapter 11 – GSM Network Commands

Signal Quality +CSQ

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

Syntax:

Command	Responses
Action Command: AT+CSQ	+CSQ: <rssi>,<ber> OK

No Read and Test Commands

Values:

<rssi>: **Received Signal Strength**

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

<ber>: **Channel Bit Error Rate**

0…7	as RXQUAL values (GSM 05.08 [10])
99	not known or not detectable

Parameter Storage: None

Examples:

Command	Responses
AT+CSQ	+CSQ: 17,1 OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Network Registration +CREG

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

Syntax:

Command	Responses
Action Command: AT+CREG=<mode>	OK

For <stat≠3>: Nominal Case

Read Command: AT+CREG?	+CREG: <mode>, <stat> [,<lac>,<ci>] OK

For <stat=3>: Specific Case

Read Command: AT+CREG?	+CREG: <mode>, <stat> [,<rejectCause>] OK

Test Command: AT+CREG=?	+CREG: (list of supported <mode>s) OK

Unsolicited Response for <stat≠3> Nominal Case: +CREG: <stat> [,<lac>,<ci>]
Unsolicited Response for <stat=3> Specific Case: +CREG: <stat> [,<rejectCause>]

Values:

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

<stat> Network Registration State
- **0** Not registered, Mobile Equipment is not currently searching for a new operator.
- **1** Registered, home network.
- **2** Not registered, Mobile Equipment currently searching for a new operator to register to.
- **3** Registration denied.
- **4** Unknown.
- **5** Registered, roaming.

<lac> Location Area Code
String type; two byte location area code in hexadecimal format (e.g., “00C3” equals 195 in decimal).

<ci> Cell ID
String type; two byte cell ID in hexadecimal format.

<rejectCause> Network Registration Denied Cause
- **0** Illegal Mobile Station
- **1** Illegal Mobile Equipment
- **2** IMSI unknown
- **3** Bad network authentication

Parameter Storage: The <mode> parameter is stored in EEPROM using the **AT&W** command. The default value can be restored using **AT&F**.

Examples:

Command	Responses
AT+CREG?	+CREG: <mode>,<stat> OK
AT+CREG=0 Note: Disable network registration unsolicited result code	OK Note: Command valid
AT+CREG=1 Note: Enable network registration	OK Note: Command valid
AT+CREG=2 Note: Enable network registration unsolicited result code registration	OK Note: Command valid
AT+CREG=?	+CREG: (0-2) Note: 0,1,2 <mode> values are supported
AT+CREG? Note: Get the CREG status	+CREG: 2,1,"006","7D9A" OK Note: The modem is registered on the home network with lac=0006 and cell ID = 7D9A

Table continued on next page

+CREG Example Continued

Command	Responses
	+CREG: 3 Note: The network indicates that the registration is denied
AT+CREG? Note: Get the CREG status	+CREG: 2,1,"006","7D9A" OK Note: The modem is registered on the home network with lac=0006 and cell ID = 7D9A
	+CREG: 3,1 Note: The network indicates that the registration is denied for an illegal mobile equipment reason

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Cell Environment Description +CCED

Description: This command retrieves the parameters of the main cell and of up to six neighboring cells.

There are two possible methods to provide these cell parameters:

- On request by the application
- Automatically by the product every 5 seconds.

Automatic mode is not supported during registration.

Syntax:

Command	Responses
Action Command: AT+CCED=<mode>[,<requested dump> [,<CsqStep>]] [,<Extend>]	[+CSQ: <rssi>,<ber>] [+CCED: [<Main Cell dump>][[,]<Neighbor 1 dump> [,<Neighbor 2 dump>[,<Neighbor 3 dump>[,<Neighbor 4 dump> [,<Neighbor 5 dump>[,<Neighbor 6 dump>]]]]]][[,]<Main Cell TA>][[,]<Neighbor 1 TA>] [[,]<Neighbor 2 TA>][[,]<Neighbor 3 TA>][[,]<Neighbor 4 TA>][[,]<Neighbor 5 TA>][[,]<Neighbor 6 TA>]] OK

No Read and Test Commands

Unsolicited Response [+CSQ: <rssi>,<ber>]
[+CCED: [<Main Cell dump>] [[,]<Neighbor 1 dump> [,<Neighbor 2 dump>[,<Neighbor 3 dump>
[,<Neighbor 4 dump>[,<Neighbor 5 dump> [,<Neighbor 6 dump>]]]]] [[,]<Main Cell TA>]]

Values:

<mode>	Requested Operation
0	One shot requested. The requested dump is returned as intermediate response.
1	Automatic shots requested. The requested dump is returned by the modem as an unsolicited response.
2	Stop automatic shots

<requested dump> **Requested Cell Parameter**.
If omitted, the last value used for a CCED request is used, or 15 (if the command has not been used previously)

1	Main Cell only. +CCED: <Main Cell dump>
2	Neighbor1 to 6 +CCED: <Neighbor 1 dump>[,<Neighbor 2 dump>[,<Neighbor 3 dump>[,<Neighbor 4 dump>[,<Neighbor 5 dump>[,<Neighbor 6 dump>]]]]]
3	Main Cell then Neighbors 1 to 6 +CCED: <Main Cell dump>,<Neighbor 1 dump>[,<Neighbor 2 dump>[,<Neighbor 3 dump>[,<Neighbor 4 dump>[,<Neighbor 5 dump>[,<Neighbor 6 dump>]]]]]
4	Main Cell Timing Advance +CCED: <Main Cell TA>
5	Main Cell, then Timing Advance +CCED: <Main Cell dump>[,<Main Cell TA>]
6	Neighbors 1 to 6, then Timing Advance +CCED: <Neighbor 1 dump>[,<Neighbor 2 dump>[,<Neighbor 3 dump>[,<Neighbor 4 dump>[,<Neighbor 5 dump>[,<Neighbor 6 dump>]]]]][,<Main Cell TA>]
7	+CCED response: Main Cell, then Neighbors 1 to 6, then Timing Advance +CCED: [<Main Cell dump>][[,]<Neighbor 1 dump>[,<Neighbor 2 dump>[,<Neighbor 3 dump>[,<Neighbor 4 dump>[,<Neighbor 5 dump>[,<Neighbor 6 dump>]]]]][,<Main Cell TA>]
8	Main cell RSSI indications +CSQ: <rssi>,<ber>
9	Main Cell only +CSQ: <rssi>,<ber> +CCED: <Main Cell dump>
10	Neighbors 1 to 6 +CSQ: <rssi>,<ber> +CCED: <Neighbor 1 dump>[,<Neighbor 2 dump>[,<Neighbor 3 dump>[,<Neighbor 4 dump>[,<Neighbor 5 dump>[,<Neighbor 6 dump>]]]]

11 Main Cell, then Neighbors 1 to 6
+CSQ: <rssi>,<ber>
+CCED: [<Main Cell dump>][[,]<Neighbor 1 dump>[,<Neighbor 2 dump>[,<Neighbor 3 dump>[,<Neighbor 4 dump>[,<Neighbor 5 dump>[,<Neighbor 6 dump>]]]]]]

12 Timing Advance only
+CSQ: <rssi>,<ber>
+CCED: <Main Cell TA>

13 Main Cell, then Timing Advance
+CSQ: <rssi>,<ber>
+CCED: <Main Cell dump>[,<Main Cell TA>]

14 Neighbors 1 to 6, then Timing Advance
+CSQ: <rssi>,<ber>
+CCED: <Neighbor 1 dump>[,<Neighbor 2 dump>[,<Neighbor 3 dump>[,<Neighbor 4 dump>],<Neighbor 5 dump>[,<Neighbor 6 dump>]]]][,<Main Cell TA>]

15 Main Cell, then Neighbors 1 to 6, then Timing Advance
+CSQ: <rssi>,<ber>
+CCED: [<Main Cell dump>][[,]<Neighbor 1 dump>[,<Neighbor 2 dump>[,<Neighbor 3 dump>[,<Neighbor 4 dump>[,<Neighbor 5 dump>[,<Neighbor 6 dump>]]]]][,<Main Cell TA>]

16 <requested dump> 1 + <requested dump> 2 + <requested dump> 4 + Neighbor1 to Neighbor6 Timing Advance (only available for mode= 0)
Neighbor1 to Neighbour6 Timing Advance are only available in IDLE mode.
+CCED: [<Main Cell dump>][[,]<Neighbor 1 dump>[,<Neighbor 2 dump>[,<Neighbor 3 dump>[,<Neighbor 4 dump>[,<Neighbor 5 dump>[,<Neighbor 6 dump>]]]]][[,]<Main Cell TA>][[,]<Neighbor 1 TA>][[,]<Neighbor 2TA>][[,]<Neighbor 3 TA>][[,]<Neighbor 4 TA>][[,]<Neighbor 5 TA>][[,]<Neighbor 6 TA>]

<CsqStep> The step required for RSSI indications between two + CSQ unsolicited responses.
Range: 1-5. Default value: 1.
If this field is not indicated, the previous value is used.

<Extend> Specify (not mandatory) if the requested dump must be extended or not
0 Dump not extended (default value)
1 Dump extended

<Main Cell dump> This parameter gathers the following parameters for the Main Cell parameters.
Not extended dump (<Extend> equals 0):
[<MCC>],[<MNC>],[<LAC>][,<CI>],[<BSIC>],[<BCCH Freq>],[<RxLev>],[<RxLev Full>],[<RxLev Sub>],[<RxQual>],[<RxQual Full>],[<RxQual Sub>],[<Idle TS>]
Extended dump (<Extend> equals 1):
[<MCC>],[<MNC>],[<LAC>][,<CI>],[<BSIC>],[<BCCH Freq>],[<RxLev>],[<RxLev Full>],[<RxLev Sub>],[<RxQual>],[<RxQual Full>],[<RxQual Sub>],[<Idle TS>],[<C1>],[<C2>],[<MsTxPwrMaxCcch>]

<Neighbor x dump> This parameter gathers the following parameters for the Neighbor Cells parameters.
Not extended dump (<Extend> equals 0):
[<MCC>],[<MNC>],[<LAC>][,<CI>],[<BSIC>],[<BCCH Freq>],[<RxLev>]
Extended dump (<Extend> equals 1):
[<MCC>],[<MNC>],[<LAC>][,<CI>],[<BSIC>],[<BCCH Freq>],[<RxLev>],[<C1>],[<C2>],[<MsTxPwrMaxCcch>]
x is between 1 and 6

<Neighbor x TA> **Neighbor Cell Timing Advance**
Neighbors timing Advance are not available in dedicated mode.
x is between 1 and 6

Mobile Country Code
3 digits

<MNC>	**Mobile Network Code** 2 or 3 digits
<LAC>	**Location Area Code** string type; two byte location area code in hexadecimal format (e.g. “00C3“ equals 195 in decimal)
<CI>	**Cell ID** string type; two bytes in hexadecimal format If the Cell Id is not available, this parameter is omitted.
<BSIC>	**Base Station Identity Code**
<BCCH Freq>	**Broadcast Control Channel Freq absolute** The range depends of the selected band: • P900 range: 1-124 • E900 range: 1-124, 975-1023 and 0 for 1024 • 850 range: 128-251 • DCS1800 range: 512-885 • PCS1900 range: 512-810
<RxLev>	**RSSI level on BCCH** channel, in idle mode. This parameter is empty in dedicated mode. **0** -110 dBm or less **1** -110 dBm to -109 dBm **2** -109 dBm to -108 dBm **3-63** -108 dBm to -49 dBm **62** -49 dBm to -48 dBm **63** -48 dBm and greater
<RxLev Full>	RSSI level on all TCH channel in dedicated mode
<RxLev Sub>	RSSI level on a subset of TCH channel in dedicated mode
<RxQual>	Signal quality on BCCH channel in idle mode
<RxQual Full>	Signal quality on all TCH channel in dedicated mode
<RxQual Sub>	Signal quality on a subset of TCH channel in dedicated mode
<Idle TS>	Time Slot
<C1>	Cell selection criteria. Only available in IDLE mode.
<C2>	GSM cell reselection criteria. Only available in IDLE mode.
MsTxPwrMaxCcch	Power control level. The maximum TX power level, an MS may use when accessing on a Control Channel CCH. Range: 0 to 31 Only available in IDLE mode.
<Main Cell TA>	**Main Cell Timing Advance**
<rssi>	**Received Signal Strength** **0** -113 dBm or less **1** -111 dBm **2 to 30** -109 to –53 dBm **31** -51dBm or greater **99** not known or not detectable
<ber>	**Channel Bit Error Rate** This parameter is not evaluated using +CCED command. **99** not known or not detectable

Parameter Storage: None

Examples:

Command	Responses
AT+CCED=0,3 Note: Request main cell and neighbors 1 to 6	+CCED: 208,20,0002,0418,37,706,24,,,0,,,0,208,20,0006,989b,37,835,20,208,,20,0002,02a9,37,831,12,208,20,0101,7966,34,818,508,20,0006,9899,39,713,9,208,20,0002,0a72,33,711,12,208,20,0101,03fb,36,824,10,1 OK
AT+CCED=0 Note: Repeat last request	+CCED: 208,20,0002,0418,37,706,24,,,0,,,0,208,20,0006,989b,37,835,20,208,,20,0002,02a9,37,831,12,208,20,0101,7966,34,818,508,20,0006,9899,39,713,9,208,20,0002,0a72,33,711,12,208,20,0101,03fb,36,824,10,1 OK
AT+CCED=0,1 Note: Only main cell request	+CCED: 208,20,0002,0418,37,706,25,,,0,,,0 OK
AT+CCED=0,1,,1 Note: Only main cell request	+CCED: 208,20,0006,7d9a,51,1011,36,,,255,,,0,29,29 OK
AT+CCED=0,1 Note: Call in progress: RXLev and RXQual are empty, RxLewFull, RxLevSub, RxQualFull and RxQualSub have data.	+CCED: 208,10,189C,,19,85,,31,32,,0,0,OK
AT+CCED=1,8,1 Note: Request +CSQ response when the <rssi> is changed (step = 1)	OK +CSQ: 12,99 +CSQ: 13,99
AT+CCED=0,16 Note: idle mode	+CCED: 208,20,0006,0418,54,789,,,,255,,,0,208,20,0006,,57,1018,20,208,01,7500,6497,17,55,17,208,10,54c4,f0ed,31,700,9,208,20,0006,7d9a,50,1023,8,208,20,0002,9a29,48,1015,7,1,1,1,2,1,2 OK Note: 1,1,1,2,1,2 correspond to the Main Cell Timing Advance and 5 Neighbors Timing Advance
AT+CCED=0,16 Note: dedicated mode	+CCED: 208,20,0006,0418,54,789,,19,19,,0,0,,,,,,41,801,6,,,,,57,1018,20,,,,,48,1015,10,,,,,57,1006,4,,,,,50,1023,7,,,,,57,814,3,1,,,,,, OK Note: Neighbors Timing Advances are not available in dedicated mode

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Notes:

- When automatic shots are selected, +CSQ responses are sent whenever the <rssi> difference measured by the product is equal to or greater than the <CsqStep> value. So, the <rssi> level between successive +CSQ responses is equal to or greater than <CsqStep>.
- Automatic shots are supported in idle mode and during communication.
- Values of MCC/MNC are set to 0 in the case of "No service".

Multi-Band Selection +WMBS

Description: This command selects the GSM bands on which the wireless modem will operator. This command is allowed only if the selected bands are supported.

You can choose whether to make the change immediate or not:

- Either the wireless modem has to be reset to take this change into account (this is the default)
- or the GSM stack restarts immediately on the specified band(s). In this mode, the command +WMBS is forbidden during the initialization phase of the modem and during calls.

Syntax:

Command	Responses
Action Command: AT+WMBS=<Band>[,<param>]	OK
Read Command: AT+WMBS?	+WMBS: <Band>,<ResetFlag> OK
Test Command: AT+WMBS=?	+WMBS: (list of supported <Band>s),(list of supported <param>s) OK

Values:

<Band> Frequency Band Configuration

0 mono-band mode 850 MHz
1 mono-band mode 900 extended MHz (900E)
2 mono-band mode 1800 MHz
3 mono-band mode 1900 MHz
4 dual-band mode 850/1900 MHz
5 dual-band mode 900E (extended) /1800 MHz
6 dual-band mode 900E (extended) /1900 MHz

<Param> Type of Change

0 the wireless modem will have to be reset in order to start on the specified band(s).
<ResetFlag> is set to 1
Default value is 0 if a value is omitted

1 The change is effective immediately. The GSM stack is restarted with the specified band(s).
<ResetFlag> stays at 0.
This mode is forbidden while in communication and during the wireless modem initialization.

<ResetFlag> Reset Flag

0 The feature was not modified since the last boot of the product

1 The feature has been modified since the last boot of the product; it has to be reset in order to take the modification into account.

Parameter Storage: The <Band> parameter is stored without using the AT&W command.

Examples:

Command	Responses
AT+WMBS=?	WMBS: (01,2,3,4,5,6),(0-1) OK Note: All bands are available
AT+WMBS=0	OK
AT+WMBS?	+WMBS: 0,1 OK Note: The wireless modem has to be reset for change to be effective.
AT+WMBS=1,1	OK
AT+WMBS?	WMBS: 1,0 OK Note: The wireless modem does not have to be reset for change to be effective.

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Scan +WSCAN

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

Syntax:

Command	Responses
Action Command: AT+WSCAN=<freq>	+WSCAN: <rssi> OK

No Read and Test Commands

Values: **<freq> Absolute Frequency**

The range depends on the selected band:

- P900 range: 1-124
- E900 range: 1-124, 975-1023 and 0 for 1024
- 850 range: 128-251
- DCS1800 range: 512-885
- PCS1900 range: 512-810

<rssi> Received Signal Strength Indication

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

Parameter Storage: None

Examples:

Command	Responses
AT+WSCAN=50 Note: Request <rssi> of absolute frequency 50	+WSCAN: 23 OK Note: <rssi> is 23.

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Abort Command +WAC

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

Syntax:

Command	Responses
Action Command: AT+WAC	OK
Read Command: AT+WAC?	OK
Test Command: AT+WAC=?	OK

Values: None

Parameter Storage: None

Examples:

Command	Responses
AT+COPS=? Note: Available PLMN	
AT+WAC Note: Abort the request of PLMN list	OK Note: PLMN list request aborted
AT+CCFC=0,2 Note: Query status of Call Forwarding service	
AT+WAC Note: Abort the request of the query of the Call Forwarding service	CME ERROR: 551 Note: Query of Call Forwarding service request abort failed

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Chapter 12 – Call Control Commands

Dial a Specific Number D

Description: The ATD command sets a voice or data call. As per GSM 02.30, the dial command also controls supplementary services.

The Following Emergency Numbers Are Available without a SIM Card

000, 08, 110, 112, 118, 119, 911 and 999.

The Following Emergency Numbers Are Available with a SIM Card:

When the EF_ECC file is missing from SIM: 112 and 911.

When SIM includes an EF_ECC file: 112, 911 and any Emergency Numbers available in the EF_ECC file.

Syntax:

Command	Responses
Action Command: ATD<nb> [<I>] [<G>] [;]	[Depending on GSM sequence] OK / CONNECT <speed> / NO CARRIER / BUSY / NO ANSWER

No Read and Test Commands

Values:

<nb> **Destination Phone Number** (ASCII string) or GSM Sequence
0-9, *, #, +, A, B, C, D, P

<I> **CLIR Supplementary Service Subscription**
If present, the CLIR supplementary service subscription is overridden temporarily for this call only.
I Activate (disable presentation of own phone number to remote)
i Deactivate (enable presentation of own phone number to remote)

<G> **CUG Supplementary Service Information**
If present, the CUG supplementary service information is overridden temporarily for this call only.
G Activate
g Deactivate

; **For Voice Call**
If omitted, the call will be a data call.

<speed> **Data Call Connection Speed in bps**
300
1200
2400
4800
9600
14400

Parameter Storage: None

Examples:

Command	Responses
ATD0123456789; Note: Call the 0123456789 number, voice call	OK Note: Call succeeds
ATD0123456789P123; Note: Call the 0123456789 number, voice call with a pause and DTMF sequence 123	OK
ATD0123456789 Note: Call the 0123456789 number, data call	CONNECT 9600 Note: Call succeeds
ATD*#21# Note: Check any call forwarding status	+CCFC: 0,7 OK Note: No call forwarding

SIM, PIN, +WIND Notes:

For Emergency Calls

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

For Normal Calls

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Other Notes:

- If a GPRS PPP session is already running, the setting of a CSD (GSM data call) is not supported.
- For an international number, the local international prefix does not need to be set (usually 00) but must be replaced by the '+' character.
- Note that some countries may have specific numbering rules for their GSM handset numbering.
- When the FDN phonebook has been activated (see +CLCK command), 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.
- An outgoing call attempt can be refused if the AOC service is active and credit has expired (NO CARRIER).
- As per GSM 02.30, GSM sequences may be controlled using dial commands. These sequences can contain "*", "#", but ";" is forbidden in the sequence. For example, to invoke or suppress CLIR service temporally, ATD*31#<nb>[;] and ATD#31#<nb>[;] can be used (with ';' at the end, a voice call will be launched).
- If the FDN phonebook is activated, the call forwarding sequences are allowed only if they are present in the FDN.

Direct Dial Using a Phonebook Index D

Description: This command allows initiating an outgoing voice or data call directly by indicating the index of a specific or current phonebook entry.

Syntax:

Command	Responses
Action Command: ATD>[<mem>]<index>[<I>] [<G>] [;]	OK / CONNECT <speed> / NO CARRIER / BUSY / NO ANSWER

No Read and Test Commands

Values:

<mem> **Phonebook Memory Storage**
If omitted, the currently selected phonebook is used.
SM ADN Abbreviated Dialing Numbers (SIM phonebook)
FD FDN Fixed Dialing Numbers (SIM restricted phonebook)
ON MSISDN (SIM own numbers)
EN ECC Emergency Call Codes (SIM or Mobile Equipment)
LD LND Last Number Dialed
MC Missed (unanswered received) Calls list
ME Mobile Equipment (flash) phonebook
MT combined Mobile Equipment and SIM phonebook (Mobile Equipment+SM)
RC Received Calls list
SN SDN Service Dialing Numbers (SIM special service numbers)

<index> **Phonebook Entry Index**
Integer type
The range depends on the SIM capability (for ADN phonebook) and is (1-500) for flash phonebook

<I> **CLIR Supplementary Service Subscription**
If present, the CLIR supplementary service subscription is overridden temporarily for this call only
I Activate (disable presentation of own phone number to remote)
i Deactivate (enable presentation of own phone number to remote)

<G> **CUG Supplementary Service Information**
If present, the CUG supplementary service information is overridden temporary for this call only.
G Activate
g Deactivate

; **For Voice Calls**
If omitted, the call will be a data call

<speed> **Data Call Connection Speed in bps**
300
1200
2400
4800
9600
14400

Parameter Storage: None

Examples:

Command	Responses
ATD>1; Note: Call the first entry of current phonebook	OK Note: Call succeeds
ATD>ME1; Note: Call the first entry of the flash phonebook	OK Note: Call succeeds

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 4.

Other Notes:

- When the FDN phonebook has been activated (see +CLCK command), only direct dialing from FDN phonebook entries is available.
- An outgoing call attempt can be refused if the AOC service is active and credit has expired (NO CARRIER).

Direct Dial Using a Phonebook Entry Name D

Description: This command allows initiating an outgoing voice or data call directly by indicating the entry name of a specific phonebook.

Syntax:

Command	Responses
Action Command: ATD>[<mem>]<iname>[<I>][<G>][;]	OK / CONNECT <speed> / NO CARRIER / BUSY / NO ANSWER

No Read and Test Commands

Values:

<mem> **Phonebook Memory Storage**
If omitted, the currently selected phonebook is used.
SM ADN Abbreviated Dialing Numbers (SIM phonebook)
FD FDN Fixed Dialing Numbers (SIM restricted phonebook)
ON MSISDN (SIM own numbers)
EN ECC Emergency Call Codes (SIM or Mobile Equipment)
LD LND Last Number Dialed
MC Missed (unanswered received) Calls list
ME Mobile Equipment (flash) phonebook
MT combined Mobile Equipment and SIM phonebook (Mobile Equipment+SM)
RC Received Calls list
SN SDN Service Dialing Numbers (SIM special service numbers)

<name> **Phonebook Entry Name**
ASCII string (between " ")
The maximum number of characters depends on the SIM capability for all phonebooks except the mobile equipment (up to 30 characters)

<I> **CLIR Supplementary Service Subscription**
If present, the CLIR supplementary service subscription is overridden temporarily for this call only
I Activate (disable presentation of own phone number to remote)
i Deactivate (enable presentation of own phone number to remote)

<G> **CUG Supplementary Service Information**
If present, the CUG supplementary service information is overridden temporary for this call only.
G Activate
g Deactivate

; **For Voice Calls**
If omitted, the call will be a data a data call

<speed> **Data Call Connection Speed in bps**
300
1200
2400
4800
9600
14400

Parameter Storage: None

Examples:

Command	Responses
ATD>"John"; Note: Call the number of current phonebook entry whose name is John	OK Note: Call succeeds
ATD>ME "John"; Note: Call the number of the flash phonebook entry whose name is John	OK Note: Call succeeds

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 4.

Other Notes:

- When the FDN phonebook has been activated, only direct dialing from FDN phonebook entries is available.
- An outgoing call attempt can be refused if the AOC service is active and credit has expired (NO CARRIER).

Redial Last Telephone Number DL

Description: This command redials the last number used in the **"D"** command.

Syntax:

Command	Responses
Action Command: ATDL	<last number> OK

No Read and Test Commands

Values: **<last number>** **Last Number Dialed Followed by ";"**
For voice calls only
String type

Parameter Storage: None

Examples:

Command	Responses
ATDL Note: Redial last number	0146290800; OK Note: Last call was a voice call

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Answer a Call A

Description: When the product receives a call, it sets the Ring Indicator 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:

Command	Responses
Action Command: ATA	OK

No Read and Test Commands

Values: No parameters.

Parameter Storage: None

Examples:

Command	Responses
	RING Note: Incoming call
ATA Note: Answer to this incoming call	OK Note: Call accepted
ATH Note: Disconnect call	OK Note: Call disconnected

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Hang Up Command H

Description: The ATH (or ATH0) command disconnects the remote user. In the case of multiple calls, all calls are released (active, on-hold and waiting calls).

The specific ATH1 command disconnects the current outgoing call, only in dialing or alerting state (i.e., 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:

Command	Responses
Action Command: ATH<n>	OK

No Read and Test Commands

Values: **<n>** **Disconnection Type**

0 Ask for disconnection (default value)

1 Ask for outgoing call disconnection

Parameter Storage: None

Examples:

Command	Responses
ATH Note: Ask for disconnection	OK Note: Every call, if any, is released
ATH1 Note: Ask for outgoing call disconnection	OK Note: Outgoing call, if any, is released

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Hang-up WATH

Description: This command disconnects 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:

Command	Responses
Action Command: AT+WATH=<RelCause>,[<location>]	OK
Test Command: AT+WATH=?	+WATH: (list of supported<RelClause>s),(list of supported <location>s)

No Read Command

Values: **<RelCause>** **Release Cause**

Range 1 to 127

Integer value

See table “Failure Cause from 3GPP TS0 24.008 recommendation” in the Appendix.

<location> **Release Location**

0 user

1 private network serving the local user

2 transit network

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

Parameter Storage: None

Examples:

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

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Remote Disconnection

This message is used by the product to inform the application that an active call has been released by the remote user.

The product sends "**NO CARRIER**" to the application and sets the DCD signal.

In addition, for AOC, the product can release the call if credit has expired (release cause 68 with +CEER command).

Extended Error Report +CEER

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

Syntax:

Command	Responses
Action Command: AT+CEER	+CEER: <report> OK

No Read and Test Commands

Values: **<report>** **Call Release Cause** (see section "Failure Cause from 3GPP TS 24.008 Recommendation" in Appendix.

Parameter Storage: None

Examples:

Command	Responses
ATD123456789; Note: Outgoing voice call	NO CARRIER Note: Call setup failure
AT+CEER Note: Ask release cause	+CEER: Error 41 OK Note: "Temporary failure"

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Automatic Dialing with DTR %D

Description: This command enables and disables:

- Automatic dialing of the phone number stored in the first location of the ADN phonebook, (or FDN phonebook, if it is activated using the +CLCK command).
- Automatic sending of the short message (SMS) stored in the first location of the SIM.

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

Syntax:

Command	Responses
Action Command: AT%D<n>[;]	+CEER: <report> OK

No Read and Test Commands

Values: **<n>** **Automatic Dialing Mode**

0 Disables automatic DTR number dialing / message transmission.

1 Enables automatic DTR dialing if DTR switches from OFF to ON.
Dials the phone number in the first location of the ADN phonebook (or FDN phonebook, if it is activated using the +CLCK command).
Voice call (with semicolon).
Data call (without semicolon).

2 Activates automatic DTR short message transmission if DTR switches from OFF to ON. Sends the short message in the first location of the SIM (even if the current selected SMS memory is not SM in +CPMS command).

<;> **For a Voice Call**
If omitted, the call will be a data one.

Parameter Storage: None

Examples:

Command	Responses
AT%D1; Note: Activates DTR number dialing	OK Note: Command has been executed
DTR is OFF DTR switches ON Note: Number in the ADN's first location is dialed automatically DTR switches OFF Note: The product goes on-hook	OK
AT%D2 Note: Activates DTR short message sending	OK Note: Command has been executed
DTR is OFF DTR switches ON Note: The first short message is sent	+CMSS: 1

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Notes:

If the first location is empty:

- AT%D1 and AT%D2 commands will receive an OK response.
- The DTR ON event will trigger a CME ERROR: 21 or a CMS ERROR: 321

Automatic Answer S0

Description: This command determines and controls the product automatic answering mode.

Syntax:

Command	Responses
Action Command: ATS0=<value>	OK
Read Command: ATS0?	<value> OK

Values: **<value>** **The number of rings before an automatic answer** (3 characters padded with zeros)
Range of values is 0 to 255. Default is 000.

Parameter Storage: The <value> parameter is stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
ATS0=2 Note: Automatic answer after 2 rings	OK
ATS0? Note: Current value	002 OK Note: always 3 characters padded with zeros

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Incoming Call Bearer +CICB

Description: This command sets 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:

Command	Responses
Action Command: AT+CICB=<mode>	OK
Read Command: AT+CICB?	+CICB: <mode> OK
Test Command: AT+CICB=?	+CICB: (list of supported <mode>s) OK

Values: **<mode>** **Default Incoming Call Bearer**
0 Data
2 Speech. **Default.**

Parameter Storage: The <mode> parameter is stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+CICB=2 Note: If no incoming bearer, force a voice call	OK
AT+CICB? Note: Get current value	+CICB: 2 OK Note: Default incoming bearer: voice call
AT+CICB=? Note: Test command	+CICB: (0-2) OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Single Numbering Scheme +CSNS

Description: Selects the bearer to be used when a modem single numbering scheme call is set up (see +CICB).
Note: Setting the +CSNS command affects the current value of +CICB.

Syntax:

Command	Responses
Action Command: AT+CSNS=<mode>	OK
Read Command: AT+CSNS?	+CSNS: <mode> OK
Test Command: AT+CSNS=?	+CSNS: (list of supported <mode>s) OK

Values:

<mode>	Bearer to be used
0	Voice. Default.
4	Data

Parameter Storage: The <mode> parameter is stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+CSNS=0 Note: Force a voice call	OK
AT+CSNS? Note: Get current value	+CSNS: 0 OK Note: Default incoming bearer: voice call
AT+CSNS=? Note: Test command	+CSNS: (0,2,4) OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Service Reporting Control +CR

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.

Syntax:

Command	Responses
Action Command: AT+CR=<mode>	OK
Read Command: AT+CR?	+CR: <mode> OK
Test Command: AT+CR=?	+CR: (list of supported <mode>s) OK

Unsolicited Response: +CR: <type>

Values:

<mode> **Extended Reports Activation**

0	Disable extended reports. **Default**.
1	Enable extended reports

<type> **Type of Call**

ASYNC	Asynchronous transparent
REL ASYNC	Asynchronous non-transparent
GPRS	GPRS

Parameter Storage: The <mode> parameter is stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+CR=?	+CR: (0,1) OK
AT+CR=1 Note: Extended reports enabled	OK Note: Command valid
AT+CR?	+CR: 1 OK
ATD0612345678 Note: CSD data call	+CR: ASYNC CONNECT 9600

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Cellular Result Codes +CRC

Description: This command allows 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.

Syntax:

Command	Responses
Action Command: AT+CRC=<mode>	OK
Read Command: AT+CRC?	+CRC: <mode> OK
Test Command: AT+CRC=?	+CRC: (list of supported <mode>s) OK

Unsolicited Response: +CRING: <type> [,<PDP_type> [,<PDP_addr>]]

Values:

<mode> **Extended Ring Information**
- **0** Disable extended reports. Default.
- **2** Enable extended reports

<type> **Detailed Ring Information**
- **ASYNC** Asynchronous transparent
- **REL ASYNC** Asynchronous non-transparent
- **VOICE** Voice
- **GPRS** GPRS network request for PDP context activation

<PDP_type> **Type of Packet Data Protocol**
- **"IP"** Internet Protocol
- **"PPP"** Point-to-Point Protocol

<PDP_addr> **PPP Address**
Identifies the Modem in the Address Space Applicable to the PDP
String type

Parameter Storage: The <mode> parameter is stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+CRC=?	+CRC: (0,1) OK
AT+CRC=1 Note: Extended reports enabled	OK Note: Command valid
AT+CRC?	+CRC: 1 OK
	+CRING: VOICE Note: Incoming voice call

SIM, +WIND Notes:
- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Chapter 13 – Data Commands

Using AT Commands During a Data Connection

To use AT Commands during a data connection (e.g., while the product is in online mode), it is necessary to switch to offline mode.

Switch from Online to Offline Mode

To switch from online mode to offline mode, the "+++" sequence must be sent. Following this, the product gets back to offline mode with an "OK" response, and an AT command can be sent.

The "+++" sequence must be sent with a guard time of 1s before or after the sequence.

Note: The "+++" sequence will work only with the **+ICF** command using the following settings:

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

Switch from Offline to Online Mode

See the "**O"** command description.

Bearer Type Selection +CBST

Description: This command allows the selection of a bearer type for both outgoing and incoming data calls.

Syntax:

Command	Responses
Action Command: AT+CBST= [<speed>] [,<name>] [,<ce>]]	OK
Read Command: AT+CBST?	+CBST: <speed>,<name>,<ce> OK
Test Command: AT+CBST=?	+CBST: (list of supported <speed>s),(list of supported <name>s),(list of supported <ce>s) OK

Values:

<speed> **Data Call Connection Speed**
Used Only for Outgoing Calls

0 (default)	Autobauding	(modem type: none)
1	300 bps	(modem type: V.21)
2	1200 bps	(modem type: V.22)
3	1200/75 bps	(modem type: V.23)
4	2400 bps	(modem type: V.22bis)
5	2400 bps	(modem type: V.26ter)
6	4800 bps	(modem type: V.32)
7	9600 bps	(modem type: V.32)
8	Specific	
12	9600 bps	(modem type: V.34)
14	14400 bps	(modem type: V.34)
65	300 bps	(modem type: V.110)
66	1200 bps	(modem type: V.110)
68	2400 bps	(modem type: V.110)
70	4800 bps	(modem type: V.110)
71	9600 bps	(modem type: V.110)
75	14400 bps	(modem type: V.110)

<name> **Operating Mode**

0 Default	No data compression is provided and only asynchronous mode is supported.

<ce> **Connection Element**

0	Transparent only
1 Default	Non transparent only
2	Transparent preferred
3	Non transparent preferred

Parameter Storage: All parameters are stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+CBST=?	+CBST: (0-8,12,14,65,66,68,70,71,75),(0),(0-3) OK
AT+CBST=7,0,1 Note: Select a bearer	OK
AT+CBST? Note: Current values	+CBST:7,0,1 OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Notes:

- For incoming calls, if <ce> is set to "Transparent only" and the network offers Non-Transparent or vice versa, then the call is released.
- The <ce> parameter values 2 and 3 are equivalent to the former values of 100 and 101. These values are managed for compatibility purposes, but they should no longer be used in the new code (2 as former 100 and 3 as former 101).

DTE-DCE Local Rate Reporting +ILRR

Description: This command controls whether an +ILRR unsolicited response is sent to the application with the current (negotiated or renegotiated) DTE-DCE speed rate.

If enabled, the unsolicited result code is transmitted in an incoming or outgoing data call after any data compression report and before any connection indication (CONNECT).

Syntax:

Command	Responses
Action Command: AT+ILRR = <value>	OK
Read Command: AT+ILRR?	+ILRR: <value> OK
Test Command: AT+ILRR=?	+ILRR: (list of supported <value>s) OK

Unsolicited Response: +ILRR: <rate>

Values:

<value> **Local Port Rate Report**
- **0** Disable local port rate report. **Default.**
- **1** Enable local port rate report

<rate> **Current (negotiated or renegotiated) DTE-DCE Speed Rate**
Values in bps:
300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800, 921600

Parameter Storage: All <value> parameter is stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+ILRR=?	+ILRR: (0,1) OK
AT+ILRR=0 Note: Local port rate report disabled	OK Note: Command valid
AT+ILRR=1 Note: Local port rate report enabled	OK Note: Command valid
AT+ILRR?	+ILRR: 1 OK
ATD0123456789 Note: CSD call	+ILRR: 9600 CONNECT 9600 Note: Data rate is 9600

SIM, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Radio Link Protocol Parameters +CRLP

Description: This command modifies the radio link protocol parameters used for non transparent data transmission.

Syntax:

Command	Responses
Action Command: AT+CRLP=[<iws>] [,<mws>] [,[<T1>] [,<N2>] [,[<ver>]]]]]	OK
Read Command: AT+CRLP?	+CRLP: <iws>,<mws>,<T1>,<N2>,<ver> OK
Test Command: AT+CRLP=?	+CRLP: (list of supported <iws>s), (list of supported <mws>s), (list of supported <T1>s), (list of supported <N2>s), (list of supported <ver>s) OK

Values:

<iws> **Down Window Size**
Range: 0-61 (default is 61)

<mws> **Up Window Size**
Range: 0-61 (default is 61)

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

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

<ver> **RLP version number**
0 V42bis is not supported
1 V42bis is supported

Parameter Storage: Parameters are stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

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

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Radio Link Parameters +DOPT

Description: This command modifies additional radio link protocol parameters.

Syntax:

Command	Responses
Action Command: AT+DOPT=[<reset_allowed>] [,<dtx_allowed>]	OK
Read Command: AT+DOPT?	+DOPT: <reset_allowed>,<dtx_allowed> OK
Test Command: AT+DOPT=?	+DOPT: (list of supported <reset_allowed>s), (list of supported <dtx_allowed>s) OK

Values:

<reset_allowed> **Behavior in Case of Bad Radio Link**

- **0** Data communication is hung up in case of bad radio link.
- **1** Default. Data communication is held even if the radio link is bad; there is a possibility of losing data.

<dtx_allowed> **Power Mode**

- **0** Normal mode
- **1** Default. Economic battery mode (not supported by all networks)

Parameter Storage: Parameters are stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+DOPT=?	(0,1),(0,1) OK
AT+DOPT=1 Note: Second parameter is omitted	OK
AT+DOPT=1,1 Note: Set new parameters	OK
AT+DOPT?	1,1 OK
AT+DOPT=0 Note: First parameter is omitted	OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Select Mode +FCLASS

Description: This command sets the product to a particular operating mode. Only Data is Available.

Syntax:

Command	Responses
Action Command: AT+FCLASS=<n>	OK
Read Command: AT+FCLASS?	+FCLASS: <n> OK
Test Command: AT+FCLASS =?	+FCLASS: (list of supported <n>s) OK

Values: **<n>** Operating Mode
0 Data. **Default.**

Parameter Storage: None

Examples:

Command	Responses
AT+FCLASS=? Note: Test command	+FCLASS: (0) OK Note: Fax operating mode not supported
AT+FCLASS=0 Note: Data mode requested	OK Note: Command valid
AT+FCLASS? Note: Current value	+FCLASS: 0 OK Note: Command valid

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Select Data Compression %C

Description: This command enables or disables data compression negotiation.

Syntax:

Command	Responses
Action Command: AT%C [<n>]	OK
Read Command: AT%C?	%C: <n> OK

No Test Command

Values: **<n>** **Compression Modem**
0 No compression. **Default**
2 V42bis compression if supported

Parameter Storage: The <n> parameter is stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
AT%C2	OK
AT%C? Note: Current value	2 OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

V42bis Data Compression +DS

Description: This command enables or disables V.42bis data compression if this feature is supported on the product. Note that the product allows only the MNP2 protocol.

Syntax:

Command	Responses
Action Command: AT+DS=[<dir>] [,[<neg>] [,[<P1>] [,[<P2>]]]]	OK
Read Command: AT+DS?	+DS: <dir>,<neg>,<P1>,<P2> OK
Test Command: AT+DS=?	+DS: (list of supported <dir>s), (list of supported <neg>s), (list of supported <P1>s), (list of supported <P2>s) OK

Values:

<dir> The desired direction(s) of operation for the data compression feature from the DTE point of view.

- **0** Negotiated
- **1** Transmit only
- **2** Receive only
- **3** Both directions, accept any direction. **Default.**

<neg> Specifies whether or not the DCE may continue to operate if the desired result is not obtained.

- **0** Do not disconnect if V42bis is not negotiated by the remote DCE as specified in <dir>. **Default.**
- **1** Disconnect if V42bis is not negotiated by the remote DCE as specified in <dir>

<P1> The maximum number of dictionary entries that may be negotiated,
Range: 512 to 2048. **Default is 2048**.

<P2> The maximum string length to be negotiated.
Range: 6 to 250. **Default is 20**.

Parameter Storage: All parameters are stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+DS=?	+DS: (0-3),(0,1),(512-2048),(6-250) OK
AT+DS=3,0,2048,250 Note: Set new parameters	OK
AT+DS?	+DS: 3,0,2048,250 OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

V42bis Data Compression Report +DR

Description: This command enables or disables the +DR intermediate result code that represents the current DCE-DCE data compression type. This intermediate result code, if enabled, is issued before the final result code, after the service report control +CR, and before the +ILRR intermediate report.

Syntax:

Command	Responses
Action Command: AT+DR=<status>	OK
Read Command: AT+DR?	+DR: <status> OK
Test Command: AT+DR=?	+DR: (list of supported <status>s) OK

Intermediate Response: +DR: <direction>

Values:

<status> **Status of the V42bis use**

0	Disabled. Default value.
1	Enabled

<direction> **DCE-DCE Data Compression Type**

None	Data compression is not use
V42B	V42bis is in use in both directions
V42B RD	V42bis is in use in receive direction only
V42B TD	V42bis is in use in transmit direction only

Parameter Storage: <status> is stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+DR=?	+DR: (0-1) OK
AT+DR=1 Note: Reporting enabled	OK
AT+DR?	+DR: 1 OK
ATD01234567879 Note: Outgoing data call	+DR: V42B CONNECT 9600

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Select Data Error Correcting Mode \N

Description: This command controls the preferred error correcting mode for a data connection. It can be used only for transparent data transmission.

Syntax:

Command	Responses
Action Command: AT\N [<n>]	OK
Read Command: AT\N?	\N: <n> OK

Values: **<n>** **Error Correction Mode**

- **0** Disables error correcting mode. Default.
- **5** Selects MNP error correction mode

Parameter Storage: <n> is stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
AT\N0 Note: No error correction	OK
AT\N?	0 OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Note:

- +E prefixed V25ter commands are not used.

Chapter 14 – GPRS Commands

GPRS Mobile Station Class +CGCLASS

Description: The set command is used to set the modem to operate according to the specified GPRS mobile class.

Syntax:

Command	Responses
Action Command: AT+CGCLASS=<class>	OK
Read Command: AT+CGCLASS?	+CGCLASS: <class> OK
Test Command: AT+CGCLASS=?	+CGCLASS: (list of supported <class>s)

Values: **<class>** **GPRS Mobile Class** (in descending order of functionality)

- **B** Class B
- **CG** Class C in GPRS only mode
- **CC** Class C in circuit switched only mode (lowest)

Parameter Storage: <class> is stored in EEPROM without using AT&W.

Examples:

Command	Responses
AT+CGCLASS=?	+CGCLASS: (“CG”,”CC”,"B") OK
AT+CGCLASS=”CC” Note: Enter GMS mode	OK
AT+CGCLASS?	+CGCLASS: (“CC”) OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Notes:

- If the modem is GPRS attached, when the action command is issued with a <class> = CC specified, a GPRS detach request is sent to the network.
- If the modem is GSM attached, when the action command is issued with a <class> = CG specified, a GSM detach request is sent to the network.
- During switch-On in CG class, the mobile station always performs an automatic GPRS attach (the ATTACH-STATUS parameter of +WGPRS is ignored).
- If the mobile station is not already GPRS-attached, when switching from B/CC class to CG class, then no automatic GPRS attach is performed.

GPRS Parameters Customization +WGPRS

Description:

This command modifies some of the GPRS parameters:

- The ATTACH-STATUS (the modem doesn't automatically make a GPRS attachment after initialization)
- The PDP-INIT-STATUS (activate automatically some defined PDP Contexts after initialization) and
- The user-defined multislot class. This parameter represents the GPRS class chosen by the user to perform power saving (by reducing TX/uplink time slots).

In addition, this command allows you to:

- Automatically sets some defined PDP contexts that can be activated (after initialization).
- Sets some parameters for the PALM® OS software: PPP Silent Mode

(PPP waits for PPP Client to start the dialog) and Slow CONNECT due to the delay of the processing of PALM® OS, the CONNECT is sent one second after the dialing command request).

Important Note: The modem must be rebooted to activate the new setup except for <mode> 3, 5, 6 and 7 (refer to the Values section).

The modem must be rebooted to activate the new setup except for <mode> 3, 5, 6 and 7 (please refer to "Defined Values" paragraph).

When the GPRS/EGPRS network technology capability and (modulation &) coding scheme indication is enabled (with + WGPRS AT command), under the following conditions, an unsolicited response +WGPRSIND will be returned by the module.

- Each time GPRS or EGPRS technologies availability is detected on the used network, even if the module is only GPRS capable
- The (modulation &) coding scheme used at the beginning of each transfer
- Each time the (modulation &) coding scheme are modified during the transfer

Syntax:

For <mode>=9, <parameter>=1

Command	Responses
Action Command: AT+WGPRS=<mode>[, [<parameter>] [,<parameter2>]	OK

For <mode>=9, <parameter>=2

Command	Responses
Action Command: AT+WGPRS=<mode> [, [<parameter>] [,<parameter2>]	+WGPRSIND: <techno>[,[<up_cs_ts0>],[<up_cs_ts1>],[<up_cs_ts2>], [<up_cs_ts3>],[<up_cs_ts4>],[<up_cs_ts5>],[<up_cs_ts6>], [<up_cs_ts7>],[<down_cs_ts0>],[<down_cs_ts1>],[<down_cs_ts2>], [<down_cs_ts3>],[<down_cs_ts4>],[<down_cs_ts5>],[<down_cs_ts6>], [<down_cs_ts7>]] OK

For all other cases

Command	Responses
Action Command: AT+WGPRS=<mode> [,[<parameter>] [,[<cid>],[<class>]]]	OK
Read Command: AT+WGPRS?	+WGPRS: <mode> [,response> [,<cid>]] [+WGPRS: <mode> [,response> [,<cid>]] […]] OK
Test Command: AT+WGPRS=?	+WGPRS: (list of supported <mode>s), (list of supported <parameter>s), (list of supported <cid>s), (list of supported <class>s)
Unsolicited Response +WGPRSIND: <techno>[,[<up_cs_ts0>],[<up_cs_ts1>],[<up_cs_ts2>], [<up_cs_ts3>],[<up_cs_ts4>],[<up_cs_ts5>],[<up_cs_ts6>], [<up_cs_ts7>],[<down_cs_ts0>],[<down_cs_ts1>],[<down_cs_ts2>], [<down_cs_ts3>],[<down_cs_ts5>],[<down_cs_ts6>],[<down_cs_ts7>]]	

Values:

<mode>	GPRS Parameter
0	ATTACH-STATUS (the modem performs automatically a GPRS attachment after initialization) Only <parameter> is used.
1	PDP-INIT-STATUS (declares some PDP contexts liable to be activated automatically after initialization by <mode>=2) Only <parameter> is used.
2	Automatically sets some defined PDP contexts that can be activated (after initialization) Only <parameter> and <cid> are used.
3	PPP silent mode (PPP waits for PPP Client to start the dialog) Only <parameter> is used.
4	Definition of the GPRS multislot class. This parameter represents the GPRS or EGPRS class chosen by the user to perform power saving (by reducing TX/uplink time slots). Only <class> is used.
5	Slow CONNECT for PALM® OS (due to the delay of the processing of PALM OS, the CONNECT is sent one second after the dialing command request). Only <parameter> is used.
6	PPP Filtering Only <parameter> is used.
7	Automatic GPRS roaming inter-operator (the mobile equipment automatically reattaches itself to the network and reactivates its PDP context by changing the operator when reaching border areas. Only <class> is used.
8	Definition of EGPRS multislot class (available for EGPRS compatible modems). Only <class> is used.
9	GPRS/EGPRS network technology capability indication or together with (modulation &) coding scheme indication

<parameter>	Requested operation for <mode> (except for <mode>=4 and 8)
0	Disabled
2	Enabled

<parameter2>	Requested kind of information for <mode>=9 and <parameter>=1 or 2
	If omitted, the value will be set to 0
0	Enable only GPRS/EGPRS network capability indication
1	Enable GPRS/EGPRS network capability and (modulation &) coding scheme indication

<cid> **PDP Context Identifier.**
Range: 1 to 4.
Integer type.

<class>	**GPRS or EGPRS multislot class number**. (See the table in Notes for more information).
0	Deactivate EGPRS mode (in order to establish GPRS TBF). Only available for EGPRS enabled Wireless modem and <mode>=8
2	Multislot class 2
8	Multislot class 8
10	Multislot class 10

<techno>	Technologies Available on the Used Network
0	Neither GPRS nor EGPRS features supported
1	Only GPRS feature supported
2	EGPRS feature supported

<up_cs_tsX>	Coding Scheme (CS) or Modulation & Coding Scheme (MCS) Used in Uplink for Each Timeslot
0	CS1 (GPRS)
1	CS2 (GPRS)
2	CS3 (GPRS)
3	CS4 (GPRS)
4	MCS1 (EGPRS)
5	MCS2 (EGPRS)
6	MCS3 (EGPRS)
7	MCS4 (EGPRS)
8	MCS5 (EGPRS)
9	MCS6 (EGPRS)
10	MCS7 (EGPRS)
11	MCS8 (EGPRS)
12	MCS9 (EGPRS)

<down_cs_tsX>	Coding Scheme (CS) or Modulation & Coding Scheme (MCS) Used in Downlink for Each Timeslot
0	CS1 (GPRS)
1	CS2 (GPRS)
2	CS3 (GPRS)
3	CS4 (GPRS)
4	MCS1 (EGPRS)
5	MCS2 (EGPRS)
6	MCS3 (EGPRS)
7	MCS4 (EGPRS)
8	MCS5 (EGPRS)
9	MCS6 (EGPRS)
10	MCS7 (EGPRS)
11	MCS8 (EGPRS)
12	MCS9 (EGPRS)

Parameter Storage: The <cid> and<class> parameters are stored in EEPROM without using AT&W.
The unsolicited network availability and (modulation &) coding scheme indication configuration is not stored in EEPROM, even when using AT&W.

Examples:

Command	Responses
AT+WGPRS=? Note: Request ranges of values for **GPRS** compatible modem	+WGPRS: (0-7),(0-1),(1-4),(2,8,10) OK
AT+WGPRS=? Note: Request ranges of values for **EGPRS** compatible modem	+WGPRS: (0-8),(0-1),(1-4),(0,2,8,10) OK
AT+WGPRS=2,1,3 Note: Set <cid>=3 to be automatically activated after initialization	OK
AT+WGPRS=7,1 Note: Set automatic re-attachment to the network and reactivation of PDP context in case of change of operator for MCC/MNC	OK
AT+WGPRS=4,,,8 Note: Choose **GPRS** multislot class 8	OK
AT+WGPRS=8,,,10 Note: Choose **EGPRS** multislot class 10 for an EGPRS compatible modem	OK
AT+WGPRS=9,2 Note: Read the GPRS/EGPRS network technology capability indication	+WGPRSIND: 0 OK Note: Neither GPRS nor EGPRS features supported
AT+WGPRS=9,1 Note : Activate GPRS/EGPRS network technology capability indication	OK
	+WGPRSIND: 1 Note: Immediate unsolicited response after activation +WGPRSIND: 2 Note: Immediate unsolicited response after the network technology capability changed
AT+WGPRS=9,1,1 Note : Activate GPRS/EGPRS network technology capability and (modulation &) coding schemes indication	OK
Note: EGPRS capabilities detected and changed	+WGPRSIND: 1,,,,,,,,,,,,,,, +WGPRSIND: 2,,,,,,,,,,,,,,, Note: Immediate unsolicited response after the network technology capability changed
AT+CGDCONT=1,"IP","internet" ATD*99***1# Note: Request the GPRS IP service	OK +WGPRSIND: 2,,,,,,,,,,,,,,,7,0 +WGPRSIND: 2,,,,,,,0,,,,,,,7,0 +WGPRSIND: 2,,,,,,,0,,,,,,,4,0 … +WGPRSIND: 2,,,,,,,7,,,,,,9,10,9,0 +WGPRSIND: 2,,,,,,,7,,,,,,0,0,0,10 +WGPRSIND: 2,,,,,,,0,,,,,,0,0,0,10

	+WGPRSIND: 2,,,,,,0,,,,,9,9,9,9 … +WGPRSIND: 2,,,,0,,,,,0,0,4,4,,, +WGPRSIND: 2,,,,,,,,7,,0,0,4,4,,, +WGPRSIND: 2,,,,,,,,0,,0,0,4,4,,, Note: Immediate unsolicited response after each time the modulation &) coding scheme are modified during the transfer
AT+WGPRS=9,2 Note : Read GPRS/EGPRS network capability indication	+WGPRSIND: 2 OK
AT+WGPRS=9,2,1 Note : Read the current GPRS/EGPRS network capability and (modulation &) coding schemes	+WGPRSIND: 2,,,,,,,,0,,0,0,4,4,,, OK
AT+WGPRS? Note: Read Values for **non EGPRS** compatible modems.	+WGPRS: 0,0 +WGPRS: 1,0 +WGPRS: 2,0,1 +WGPRS: 2,1,3 +WGPRS: 3,0 +WGPRS: 4,8 +WGPRS: 5,0 +WGPRS: 6,0 +WGPRS: 7,1 +WGPRS: 9,1,1 OK
AT+WGPRS? Note: Read Values for **EGPRS** compatible modems.	+WGPRS: 0,0 +WGPRS: 1,0 +WGPRS: 2,0,1 +WGPRS: 2,1,3 +WGPRS: 3,0 +WGPRS: 4,8 +WGPRS: 5,0 +WGPRS: 6,0 +WGPRS: 7,1 +WGPRS: 8,10 Note: CPU.EGPRS class is 10. +WGPRS: 9,1,1 Note: GPRS/EGPRS service indication activated. OK

Notes: Additional information for <class>:

Multislot Class	Maximum Number of Slots			Minimum Number of Slots				Type of MS
	Rx	Tx	Sum	T_{ta}	T_{tb}	T_{ra}	T_{rb}	
2	2	1	3	3	2	3	1	1
8	4	1	5	3	1	2	1	1
10	4	2	5	3	1	2	1	1
12	4	4	5	2	1	2	1	1

Type 1 Mobile Station is required to transmit and receive at the same time.

When the modem is set in CG class, the mobile equipment always automatically performs a GPRS attachment after initialization, so AT+WGPRS? always gives +WGPRS: 0,0 for the parameter 0.

Additional information for <mode>= 9:

- When the user enables the GPRS/EGPRS network availability and (modulation &) coding scheme indication, the modem returns OK response, and it sends immediately an unsolicited response.
- The unsolicited responses are sent to all ports.
- When the GPRS/EGPRS network technology capability and (modulation &) coding scheme indication is enabled (with + WGPRS AT command), under the following conditions, an unsolicited response +WGPRSIND will be returned by the modem:
  - ❖ Each time GPRS or EGPRS technologies availability are detected on the used network, even if the modem is only GPRS capable
  - ❖ The (modulation &) coding scheme used at the beginning of each transfer
  - ❖ Each time the (modulation &) coding scheme are modified during the transfer

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Define PDP Context +CGDCONT

Description: This command specifies PDP context parameter values for a PDP context identified by the local context identification parameter, <cid>. Four PDP contexts can be defined through the software.

Syntax:

Command	Responses
Action Command: AT+CGDCONT=<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[,<d_comp> [,<h_comp>]]]]]	OK
Read Command: AT+CGDCONT?	+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>, <d_comp>, <h_comp> [+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp> […]] OK
Test Command: AT+CGDCONT=?	+CGDCONT: (list of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s),(list of supported <h_comp>s) [+CGDCONT: (list of supported <cid>s),<PDP_type>,,,(list of supported <d_comp>s),(list of supported <h_comp>s)[…]] OK

Values:

<cid> **PDP Context Identifier**
Range: 1-4
Integer type

<PDP_type> **Packet Data Protocol Type**
"IP" Internet Protocol
"PPP" Point to Point Protocol

<APN> **Access Point Name**: A logical name that is used to select the GGSN or the external packet data network.
String type
If the value is null or omitted, then the subscription value will be requested.

<PDP_addr> **PDP Address:** Identifies the modem in the address space applicable to the PDP.
If the value is null or omitted, then a value may be provided by the DTE during the PDP startup procedure or 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. String type.

<d_comp> **PDP Data Compression Mode**
0 Off. **Default**
1 On

<h_comp> **PDP Header Compression**
0 Off. **Default**
1 On

Parameter Storage: The parameters are stored in EEPROM without using **AT&W**.

Examples:

Command	Responses
AT+CGDCONT=?	+CGCONT: (1-4), “IP”,,,(0-1),(0-1) +CGCONT: (1-4), “PPP”,,,0,0 OK
AT+CGDCONT: 1, “IP” “internet”	OK
AT+CGCONT?	+CGCONT: 1, “IP”,”internet”,,0,0 OK
AT+CGDCONT=1 Note: Delete <cid>=1	OK
AT+CGDCONT?	OK

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Other Notes:

- The data compression algorithm provided in SNDCP is V.42bis.
- Four PDP contexts can be specified with only one activated at the same time.
- A special form of the set command, +CGDCONT= <cid>, causes the values for context number <cid> to become undefined.

GPRS Attach or Detach +CGATT

Description: This command is used to attach the modem to, or detach the modem from, the GPRS service. After the command has completed, the modem remains in V.25ter command state. If the modem is already in the requested state, the command is ignored and the OK response is returned.

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

Syntax:

Command	Responses
Action Command: AT+CGATT=<state>	OK
Read Command: AT+CGATT?	+CGATT: <state> OK
Test Command: AT+CGATT=?	+CGATT: (list of supported <state>s) OK

Values: **<state>** State of GPRS Attachment
- **0** Detached
- **1** Attached
- **2** Combined detach (GPRS and GSM detach in the same network request)

Parameter Storage: None.

Examples:

Command	Responses
AT+CGATT=1	OK
AT+CGATT?	+CGATT: 1 OK
AT+CGATT=?	+CGATT: (0-2) OK

SIM, PIN Notes:
- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

PDP Context Activate or Deactivate +CGACT

Description: This command activates or deactivates the specified PDP context(s). After the command is completed, the modem remains in V.25ter command state. If any PDP context is already in the requested state, the state for that context remains unchanged.

Syntax:

Command	Responses
Action Command: AT+CGACT=<state>[,<cid>[,<cid>[,…]]]	OK
Read Command: AT+CGACT?	+CGACT: <cid>,<state> [+CGACT: <cid>,<state>[…]] OK
Test Command: AT+CGACT=?	+CGACT: (list of supported <state>s) OK

Values: **<state>** **State of PDP Context Activation**
- **0** Deactivated
- **1** Activated

<cid> **PDP Context Identifier**
Range: 1-4
Integer type

Parameter Storage: None

See next page for Examples and Notes

Examples:

Command	Responses
AT+CGDCONT=1,"IP","APN"	OK
AT+CGACT=1,1	OK
AT+CGACT?	+CGACT: 1,1 OK
AT+CGACT=?	+CGACT: (0-1) OK
AT+CGACT=0 Note: Deactivate all contexts	OK
AT+CGACT=1 Note: Activate first possible context	OK

SIM, PIN, Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Other Notes:

- Before the activation of the context, the modem has to attach itself to the GPRS network, if necessary.
- If a GPRS PPP session is already running, the setting of a CSD (GSM data call) is not supported.
- If the modem is not GPRS attached when the activation form of the command is executed, the modem first performs a GPRS attach and then attempts to activate the specified contexts. If the attach fails, then the modem 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 the first possible within the defined contexts. If no <cid>s are specified, the deactivation form of the command deactivates all active contexts.
- One PDP context can be activated at the same time.
- When "AT+CGACT?" is sent, only the status of defined and valid PDP contexts are listed. The line "+CGACT: 0,0", which appears in the previous software version, is not returned from this software version.

Request GPRS IP Service D

Description: This command causes the modem to perform whatever actions are necessary to establish communication between the DTE and the external PDN.

The V.25ter 'D' (Dial) command causes the modem to enter the V.25ter online data state and, with the DTE, to start the specified layer 2 protocol. The modem returns 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 behavior 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.

Syntax:

Command	Responses
Action Command: ATD*<GPRS_SC_IP>[***<cid>] #	CONNECT

No Read and Test Commands

Values:

<GPRS_SC_IP> **GPRS Service Code for IP**
Digit string (value 99), which identifies a request to use the GPRS with IP (PDP types IP and PPP)

<cid> **PDP Context Identifier**
Range: 1-4
Integer type

Parameter Storage: None

Examples:

Command	Responses
ATD*99***1 #	CONNECT

SIM, PIN Notes: **No Pin or SIM notes.**

Other Notes:

- 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 initialization AT command string to set values for PDP type, APN, QoS, etc.
- If <cid> is not supported or is supported but omitted, the modem attempt to activate the context using the 'Empty PDP type' (3GPP TS 24.008). 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.
- If a GPRS PPP session is already running, the setting of a CSD (GSM data call) is not supported.

Enter Data State +CGDATA

Description: This command causes the modem to perform the necessary actions to set up communication between the DTE and the network. This may include performing a GPRS attach and one PDP context activation.

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 the activation is successful, data transfer may proceed.

After data transfer and layer 2 protocol termination procedure completion, the V.25ter command state is re-entered and the modem returns the final result code OK.

Syntax:

Command	Responses
Action Command: AT+CGDATA [=<cid>]	CONNECT
Test Command: AT+CGDATA=?	+CGDATA: OK

No Read Command

Values: **<cid>** **PDP Context Identifier**
Range: 1-4
Integer type

Parameter Storage: None

Examples:

Command	Responses
AT+CGDATA=?	+CGDATA: "PPP" OK
AT+CGDATA=1	CONNECT

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Other Notes:

- If no <cid> is given, the modem attempts to activate the context with whatever information is available to the modem. The other context parameters is set to their default values (No APN, default QOS parameters, dynamic IP address requested).
- In case of an abnormal termination or start up, the V.25ter command state is re-entered and the modem returns the final result code NO CARRIER or, if enabled, +CME ERROR. Attach, activate and other errors may be reported.
- This command has the same effect as ATD*99***.
- If a GPRS PPP session is already running, the setting of a CSD (GSM data call) is not supported.
- This command may be used in both normal and modem compatibility modes.

Manual Response to a Network Request for PDP Manual Context Activation +CGANS

Description: Requests the modem to respond to a network request for GPRS PDP context activation which has been signaled to the DTE by the RING or +CRING: unsolicited result code.
PDP context activation procedures take place prior to or during the PDP startup.

Syntax:

Command	Responses
Action Command: AT+CGANS[=<response>[,<cid>]]	OK
Test Command: AT+CGANS=?	+CGANS: (list of supported <response>s)

No Read Command

Values:

<response> Response to the Request
Integer type

0 Reject the request. If <response> is omitted, it is assumed to be 0.
1 Accept and request that the PDP context be activated

<cid> PDP Context Identifier
Range: 1-4
Integer type

Parameter Storage: None

Examples:

Command	Responses
	RING
AT+CGANS=1,1	OK
AT+CGANS=?	+CGANS: (0,1) OK

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Other Notes:

- One <cid> may be specified in order to provide the values needed for the context activation request.
- During the PDP startup procedure, the modem has the PDP type and the PDP address provided by the network in the Request PDP Context Activation message.
- If a <cid> is given, its information must match with the PDP type and PDP address in the network request 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.
- If any of this information is in conflict, the command will fail.
- 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.
- 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 modem 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 modem 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.

Automatic Response to a Network Request for PDP Context Activation +CGAUTO

Description: This 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.

Syntax:

Command	Possible Responses
Action Command: AT+CGAUTO=<n>	OK
Read Command: AT+CGAUTO?	+CGAUTO: <n> OK
Test Command: AT+CGAUTO=?	+CGAUTO: (list of supported <n>s) OK

Values: **<n> Automatic Response Mode**

0 Turn off automatic response for GPRS only
GPRS network requests are manually accepted or rejected by the +CGANS command.

1 Turn on automatic response for GPRS only
GPRS network requests are automatically accepted.

2 Modem compatibility mode. GPRS only
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

3 Modem compatibility mode. GPRS and circuit switched calls. Default.
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.

Parameter Storage: The <n> parameter is stored in EEPROM using AT&W. The default can be restored using AT&F.

Examples:

Command	Responses
AT+CGAUTO=?	+CGAUTO: (0-3) OK
AT+CGAUTO=2	OK
AT+CGAUTO?	+CGAUTO: 2 OK

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Other Notes:

- In class C GPRS, the modem cannot receive GPRS and GSM incoming calls simultaneously.
- When the +CGAUTO=0 command is received, the modem will not perform a GPRS detach if it is attached. Subsequently, when the modem announces a network request for PDP context activation by issuing the unsolicited result code RING or +CRING, the DTE 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 modem will attempt to perform a GPRS attach if it is not already attached. Failure will result in ERROR or, if enabled, "+CME ERROR: <err>" being returned to the DTE. Subsequently, when the modem announces a network request for PDP context activation by issuing the unsolicited result code RING or +CRING to the DTE, this is followed by the intermediate result code CONNECT. The modem then enters V.25ter online data state and follows the same procedure as it would after having received a +CGANS=1 with <cid> values specified.

Quality of Service Profile (Minimum Acceptable) +CGQMIN

Description: This command allows the DTE to specify a minimum acceptable profile which is checked by the modem against the negotiated profile returned in the "Activate PDP Context Accept" message.

Syntax:

Command	Responses
Action Command: AT+CGQMIN=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]	OK
Read Command: AT+CGQMIN?	+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean> [+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>, <mean> […]] OK
Test Command: AT+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) [+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)[…]] OK

Values:

<cid> **PDP Context Identifier**
Range: 1-4
Integer type

<precedence> **Precedence Class**
0 Subscribed precedence (subscribed by the Network by 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> **Delay Class (See table below)**
0 Subscribed
1 Delay class 1
2 Delay class 2
3 Delay class 3
4 Delay class 4

<reliability> **Reliability Class (Octet 3) (See table below)**
0 Subscribed reliability class
1 Unused. If received, it shall be interpreted as '010'
2 Unacknowledged GTP; acknowledged LLC and RLC, protected data
3 Unacknowledged GTP and LLC; acknowledged RLC, protected data
4 Unacknowledged GTP, LLC, and RLC, protected data
5 Unacknowledged GTP, LLC, and RLC, unprotected data

<peak> **Peak Throughput Class**
Integer type
0 Subscribed
1 Up to 1 000 (8 Kbits/s)
2 Up to 2 000 (16 Kbits/s)
3 Up to 4 000 (32 Kbits/s)
4 Up to 8 000 (64 Kbits/s)
5 Up to 16 000 (128 Kbits/s)
6 Up to 32 000 (256 Kbits/s)
7 Up to 64 000 (512 Kbits/s)
8 Up to 128 000 (1 024 Kbits/s)
9 Up to 256 000 (2 048 Kbits/s)

<mean> **Mean Throughput Class**
Range: 0-31
Integer type

Parameter Storage: The parameters are stored in EEPROM without using AT&W.

Examples:

Command	Responses
AT+CGQMIN=?	+CGQMIN:"IP",(0-3),(0-4),(0-5),(0-9),(0-31) +CGQMIN:"PPP",(0-3),(0-4),(0-5),(0-9),(0-31) OK
AT+CGDCONT=1,"IP","APN"	OK
AT+CGQMIN=1,1,4,5,2,31	OK
AT+CGQMIN?	+CGQMIN=? 1,1,4,5,2,31 OK

Note:
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.

Detailed Information Regarding the Parameters and Values:

<delay>

Delay Class	Delay (Maximum Values)			
	SDU size: 128 bytes		SDU size: 1024 bytes	
	mean transfer delay (sec)	95 percentile delay	mean transfer delay (sec)	95 percentile delay
0	subscribes	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>

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	Unacknowledged	Acknowledged	Protected	Acknowledged	Non real-time traffic, error-sensitive application that cannot cope with data loss.
2	Unacknowledged	Acknowledged	Protected	Acknowledged	Non real-time traffic, error-sensitive application that can cope with infrequent data loss.
3	Unacknowledged	Unacknowledged	Protected	Acknowledged	Non real-time traffic, error-sensitive application that can cope with data loss, GMM/SM, & SMS.
4	Unacknowledged	Unacknowledged	Protected	Unacknowledged	Real-time traffic, error-sensitive application that can cope with data loss.
5	Unacknowledged	Unacknowledged	Unprotected	Unacknowledged	Real-time traffic, error non-sensitive application that can cope with data loss.
For real-time traffic, the QoS profile also requires appropriate settings for delay and throughput.					

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Quality of Service Profile Requested +CGQREQ

Description: This command allows the DTE to specify a Quality of Service Profile that is used when the modem sends an Activate PDP Context Request message to the network.

Syntax:

Command	Responses
Action Command: AT+CGQREQ=<cid>[,<precedence> [,<delay>[,<reliability>[,<peak>[,<mean>]]]]]	OK
Read Command: AT+CGQREQ?	+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean> [+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>, <mean> […]] OK
Test Command: AT+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) [+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)[…]] OK

Values:

<cid> **PDP Context Identifier**
Range 1- 4
Integer type

<precedence> **Precedence Class**
Integer type

- **0** Subscribed precedence. Subscribed by the Network by default if value is omitted
- **1** High priority. Service commitments shall be maintained ahead of precedence classes 2 & 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> **Delay Class (See table in Notes below)**

- **0** Subscribed
- **1** Delay class 1
- **2** Delay class 2
- **3** Delay class 3
- **4** Delay class 4

<reliability> **Reliability Class** (Octet 3) (See table in Notes below)

- **0** Subscribed reliability class
- **1** Unused. If received, it shall be interpreted as '010'
- **2** Unacknowledged GTP; acknowledged LLC and RLC, protected data
- **3** Unacknowledged GTP and LLC; acknowledged RLC, protected data
- **4** Unacknowledged GTP, LLC, and RLC, protected data
- **5** Unacknowledged GTP, LLC, and RLC, unprotected data

<peak> **Peak Throughput Class**
Integer type

- **0** Subscribed
- **1** Up to 1 000 (8 Kbit/s)
- **2** Up to 2 000 (16 Kbit/s)
- **3** Up to 4 000 (32kbit/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> **Mean Throughput Class**
Integer type
0 Subscribed by the Network / 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

Parameter Storage: None

Examples:

Command	Responses
AT+CGQREQ=?	+CGQREG: “IP”, (0-3), (0-4), (0-5), (0-9), (0-31) +CGQREQ: “PPP”, (0-3), (0-4), (0-5), (0-9), (0-31) OK
AT+CGQREQ=1,"IP","APN"	OK
AT +CGQREQ=1,1,4,5,2,31	OK
AT+CGQREQ?	+CGQREQ: 1,1,4,5,2,31 OK

Note:
A special form of the set command, +CGQREQ= <cid>, causes the requested profile for context number <cid> to become undefined.

Detailed Information Regarding the Parameters:

<delay>

Delay Class	Delay (Maximum Values)			
	SDU size: 128 bytes		SDU size: 1024 bytes	
	mean transfer delay (sec)	95 percentile delay	mean transfer delay (sec)	95 percentile delay
0	subscribes	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>

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	Unacknowledged	Acknowledged	Protected	Acknowledged	Non real-time traffic, error-sensitive application that cannot cope with data loss.
2	Unacknowledged	Acknowledged	Protected	Acknowledged	Non real-time traffic, error-sensitive application that can cope with infrequent data loss.
3	Unacknowledged	Unacknowledged	Protected	Acknowledged	Non real-time traffic, error-sensitive application that can cope with data loss, GMM/SM, & SMS.
4	Unacknowledged	Unacknowledged	Protected	Unacknowledged	Real-time traffic, error-sensitive application that can cope with data loss.
5	Unacknowledged	Unacknowledged	Unprotected	Unacknowledged	Real-time traffic, error non-sensitive application that can cope with data loss.
For real-time traffic, the QoS profile also requires appropriate settings for delay and throughput.					

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

PDP Context Modify +CGCMOD

Description: This command is used to modify the specified PDP context with respect to QoS profiles. After the command has completed, the MT returns to V.25ter online data state.

Syntax:

Command	Responses
Action Command: AT+CGCMOD[=<cid>[,<cid>[,…]]]	OK
Test Command: AT+CGCMOD=?	+CGCMOD: (list of <cid>s associated with active contexts) OK

No Read Command

Values: **<cid>** **PDP Context Identifier**
Range 1- 4
Integer type

Parameter Storage: None

Examples:

Command	Responses
AT+CGDCONT=1,"IP","APN"	OK
AT+CGACT=1,1	OK
AT+CGCMOD=1	OK
AT+CGCMOD=?	+CGCMOD: (1) OK
AT+CGCMOD Notes: Modify all the active contexts	OK

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Other Notes:

- Once the PDP context is activated, this command can only be used to modify the QoS which is set by the command +CGQREQ. It cannot be used to modify the minimum acceptable QoS (set by +CGQMIN).
- If no <cid>s are specified the activation form of the command modifies all active contexts.

GPRS Network Registration Status +CGREG

Description: This command controls the presentation of an unsolicited result code +CGREG when there is a change in the modem's GPRS network registration status or when there is a change of the network cell.

Syntax:

Command	Responses
Action Command: AT+CGREG=<n>	OK
Read Command: AT+CGREG?	+CGREG: <n>,<stat> [,<lac>,<ci>] OK
Test Command: AT+CCGREG=?	+CGREG: (list of supported <n>s OK

Unsolicited Response: +CGREG: <stat>,[<lac>,<ci>]

Values:

<n> **Unsolicited Result Code Activation Mode**

- **0** Disable network registration unsolicited result code. Default.
- **1** Enable network registration unsolicited result code +CGREG: <stat>
- **2** Enable network registration and location information unsolicited result code +CGREG: <stat>,<lac>,<ci>]

<stat> **Network Registration State**

- **0** Not registered; the modem is not currently searching a new operator to which to register
- **1** Registered, home network
- **2** Not registered, but modem is currently searching a new operator to which to register
- **3** Registration denied
- **4** Unknown
- **5** Registered, roaming

<lac> **Location Area Code**
Two byte in hexadecimal format
String type

<ci> **Cell ID**
Two byte in hexadecimal format
String type

Parameter Storage: The <n> parameter is stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+CGREG=?	+CGREG: (0-2) OK
AT+CGREG=2	OK +CGREG: 1, "7500", "877F"
AT+CGREG?	+CGREG: 1, "7500", "877F" OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

GPRS Event Reporting +CGEREP

Description: This command enables or disables the sending of +CGEV unsolicited result codes from the modem to the DTE in the case of certain events occurring in the GPRS modem or the network.

Syntax:

Command	Responses
Action Command: AT+CGEREP=<mode> [,<bfr>]	OK
Read Command: AT+CGEREP?	+CGEREP: <mode>,<bfr> OK
Test Command: AT+CGEREP=?	CGEREP: (list of supported <mode>s), (list of supported <bfr>s) OK

Unsolicited Responses:

- If <event>=ME (MODEM) REJECT
  Unsolicited response: +CGEV: <event> <PDP_type>, <PDP_addr>
- If <event>= NW REACT or NW DEACT or ME (MODEM) DEACT
  Unsolicited response: +CGEV: <event> <PDP_type>, <PDP_addr>[,<cid>]
- If <event>=NW DETACH or ME (MODEM) DETACH
  Unsolicited response: +CGEV: <event>
- If <event>= NW CLASS or ME (MODEM) CLASS
  Unsolicited response: +CGEV: <event> <class>
- If <event>= NW CLASS or ME (MODEM) CLASS
  Unsolicited response: +CGEV: <event> <class>

Values:

<mode> **Buffer Unsolicited Result Mode**

0 Disable buffer unsolicited result codes. **Default**.

2 Enable buffer unsolicited result codes.

<bfr> **Handling Method for Buffered Result Codes**

0 Modem buffer of unsolicited result codes defined within this command is cleared when <mode> = 2 is entered.

<event> **GPRS Event**

ME (MODEM) REJECT
A network request for PDP context activation occurred when the modem was unable to report it to the DTE with a +CRING unsolicited result code and was automatically rejected.

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

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

ME (MOBILE EQUIPMENT) DEACT
The mobile equipment has forced a context deactivation. The <cid> that was used to activate the context is provided if known to the modem.

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

ME (MOBILE EQUIPMENT) DETACH
The mobile equipment has forced a GPRS detach. This implies that all active contexts have been deactivated. These are not reported separately.

NW CLASS
The network has forced a change of MS (MOBILE STATION) class. The highest available class is reported.

ME (MOBILE EQUIPMENT) CLASS
The mobile equipment has forced a change of MS (MOBILE STATION) class. The highest available class is reported.

<PDP_type> **Type of Packet Data Protocol**
"IP" Internet Protocol (IETF STD 5)
"PPP" Point to Point Protocol (IETF STD 51)

<PDP_addr> **PDP Address**
Identifies the modem in the address space applicable to the PDP
String type

<cid> **PDP Context Identifier**
range: 1-4
integer type

Parameter Storage: The <mode> parameter is stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+CGEREP=?	+CGEREP: (0,2),(0) OK
AT+CGEREP=2	OK
AT+CGEREP?	+CGEREP: 2,0 OK
	+CGEREP: ME DETACH "IP", "10.15.139.22",1 Note: PDP context deactivation

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Select Service for Mobile Originated SMS Messages +CGSMS

Description: This command specifies the service or service preference that the modem will use to send MO SMS messages.

Syntax:

Command	Responses
Action Command: AT+CGSMS=<service>	OK
Read Command: AT+CGSMS?	+CGSMS: <service> OK
Test Command: AT+CGSMS=?	CGSMS: (list of supported <services>s) OK

Values: **<service>** **Service or Service Preference to Be Used**
0 GPRS
1 Circuit switched. Default.
2 GPRS preferred (use circuit switched if GPRS is not available)
3 Circuit switched preferred (use GPRS if circuit switched not available)

Parameter Storage: The parameters are stored in EEPROM without using AT&W.

Examples:

Command	Responses
AT+CGSMS=?	+CGSMS: (0-3) OK
AT+CGSMS=0	OK
At+CGSMS?	+CGSMS: 0 OK

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Show PDP Address +CGPADDR

Description: This command returns a list of PDP addresses for the specified context identifiers.

Syntax:

Command	Responses
Action Command: AT+CGPADDR[=<cid>[,<cid>[,…]]]	+CGPADDR: <cid>,<PDP_addr> [+CGPADDR: <cid>,<PDP_addr>[…]] OK
Test Command: AT+CGPADDR=?	+CGPADDR: (list of defined <cid>s) OK

No Read Command

Values:

<PDP_address> **PDP Address**
Identifies the modem in the address space applicable to the PDP.
String type
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.

<cid> **PDP Context Identifier**
Range: 1-4
Integer type
If no <cid> is specified, the addresses for all defined contexts are returned.

Parameter Storage: None

Examples:

Command	Responses
AT+CGPADDR=?	+CGPADDR: (1,2,4) OK
AT+CGPADDR=2	+CGPADDR=2, "10.3.73.151" OK
AT+CGPADDR	+CGPADDR: 1, +CGPADDR: 2, "10.3.73.151" +CGPADDR: 4, OK Note: Context 2 is active

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Chapter 15 – PLMN Commands

Selection of Preferred PLMN List +CPLS

Description: This command is used to select one PLMN (Public Land Mobile Networks) selector with access technology listed in the SIM card that is used by the +CPOL command.

Syntax:

Command	Responses
Action Command: AT+CPLS=<list>	OK
Read Command: AT+CPLS?	+CPLS: <list>
Test Command: AT+CPLS=?	+CPLS: (list of supported <list>s) OK

Values: **<List> Preferred PLMN List**

- **0** User controlled PLMN selector with access technology EF_PLMNwAct
  If this file is not found, EF_PLMNSel will be selected
- **1** Operator controlled PLMN selector with access technology EF_OPLMNwAct
- **2** Home PLMN selector with access technology EF_HPLMNwAct

Parameter Storage: None

Examples:

Command	Responses
AT+CPLS? Note: Ask for selection of the SIM file	+CPLS: 1 OK Note: EF_OPLMNwAct is selected
AT+CPLS=0 Note: selection of EF_PLMNwAct	OK Note: If EF_PLMNwAct is not present, EF_PLMNsel will be selected
AT+CPLS=1 Note: selection of EF_OPLMNwAct	+CME ERROR: 3 Note: EF_OPLMNwAct is not present
AT+CPLS=? Note: Get possible values	+CPLS: (0,1,2) OK Note: The 3 files with Access technology are present and can be selected
AT+CPLS=? Note: Get possible values	+CPLS: (0) OK Note: Only EF_PLMNwAct or EF_PLMNsel can be selected

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Operator Selection +COPS

Description: There are three possible ways of selecting a Public Land Mobile Network (PLMN) operator:

- 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 communication.

Syntax:

Command	Responses
Action Command: AT+COPS=<mode> [,<format> [,<oper>]]	OK
Read Command: AT+COPS?	+COPS: <mode> [,<format>,<oper>] OK
Test Command: AT+COPS=?	+COPS: [list of supported (<stat>,long alphanumeric <oper>,short alphanumeric <oper>,numeric <oper>)s] OK

Values:

<mode> **Network Registration Mode**

- **0** Automatic. **Default**
- **1** Manual
- **2** Deregistration; ME (Mobile Equipment) will be unregistered until <mode>=0 or 1 is selected.
- **3** Set only <format> (for read command AT+COPS?)
- **4** Manual / automatic (<oper> shall be present). If manual selection fails, automatic mode is entered.

<format> **Format of <oper> Field**

- **0** Long alphanumeric format <oper>
- **1** Short alphanumeric format <oper>
- **2** Numeric <oper> **Default**

<stat> **Status of <oper> Field**

- **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 (for operator names description see "Operator Names" section in the Appendix in the field "Name"). The short alphanumeric format can be up to 10 characters long.

Parameter Storage: The <format> and <mode> parameters are stored in EEPROM using **AT&W**. The default value can be restored using **AT&F**.

Examples:

Command	Responses
AT+COPS? Note: Ask for current PLMN	+COPS: 0,2,20801 OK Note: Home PLMN is Orange
AT+COPS=? Note: Ask for PLMN list	+COPS: (2,”F SFR”,”SFR”,”20801”), (3,”F-BOUYGUES TELECOM”,”BYTEL”,”20820”),(3,”Orange F”,”Orange”,”20801”) OK Note: Home PLMN is SFR. BYTEL and Orange networks have been detected
AT+COPS=1,2,20810 Note: Ask for registration on SFR network	+CME ERROR: 32 Note: Network not allowed – emergency calls only
AT+COPS=1,2,23433 Note: Ask for registration on UK Orange network	+CME ERROR: 529 Note: Selection failed – emergency calls only

AT+COPS=0 Note: Ask for registration in automatic mode	OK Note: Successful
AT+COPS=3,0 Note: Set <format> to long alphanumeric	OK Note: Successful
AT+COPS? Note: Ask for current PLMN	+COPS: 0,0,"Orange F" OK Note: Home PLMN is Orange
AT+COPS=2 Note: Ask for deregistration from network	OK Note: Successful
AT+COPS? Note: Ask for current PLMN	+COPS: 2 OK Note: Mobile equipment is unregistered until <mode>=0 or 1 is selected

SIM, PIN, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

OR

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Other Notes:

- If an incoming call occurs during a PLMN list request, the operation is aborted (+CME ERROR: 520) and the unsolicited RING appears.
- If SPN (Service Provider Name) is present in the SIM, it will be returned in both long and short alphanumeric <oper> fields. The string in the "short" field will be the SPN truncated to the appropriate number of characters (10).
- The fact that the network supports emergency call (+CME ERROR: 547) does not imply that emergency call without the SIM is working. The only way to verify this state is to do ATD112.
- If the PLMN is unknown (meaning not present in the ROM table (see +COPN command), not present in FLASH (see +WOLM command), and also not present in SIM (E-ONS, ONS...)), the returned long name is formatted like "MCC XXX MNC YY(Y)" and the returned short name is formatted like "XXX YY(Y)" where XXX is the MCC (3-digits) and YY(Y) is the MNC (2-digits or 3-digits).

Preferred Operator List +CPOL

Description: This command is used to edit (or update) the SIM preferred list of networks. This list is read in the SIM file selected by the +CPLS command.

Syntax:

Command	Responses
Action Command: AT+CPOL= [<index>] [,<format>[,<oper>[,<GSM_AcT>,<GSMcomp_Act>,<Utran_Act>]]]	OK
Read Command: AT+CPOL?	+CPOL: <index>,<format>,<oper>[,<GSM_AcT>,<GSMcomp_Act>,<Utran_Act>] [+CPOL: <index>,<format>,<oper>[,<GSM_AcT>,<GSMcomp_Act>,<Utran_Act>] […]] OK
Test Command: AT+CPOL =?	+CPOL: (list of supported (<index>s), (list of supported <format>s) OK

Values:

<format> **PLMN List**
- **0** Long alphanumeric format for <oper>
- **1** Short alphanumeric format for <oper>
- **2** Numeric format for <oper>

<oper> **Operator Identifier**
Character string or integer (see <format>)

<GSM_AcT> **GSM Access Technology**

<GSMcomp_Act> **GSM Compact Access Technology**

<Utran_Act> **UTRA Access Technology**
- **0** Access technology not selected
- **1** Access technology selected

Parameter Storage: None

Examples:

Command	Responses
AT+CPOL? Note: Ask for preferred list of networks With only EF_PLMNsel present	+CPOL:1,2,26201 +CPOL: 6,2,20810 OK Note: Preferred list of networks in numeric format (read in EF_PLMNsel)
AT+CPOL? Note: Ask for preferred list of networks With EF_PLMNwAct selected and present	+CPOL:1,2,26201,1,0,0 +CPOL: 6,2,20810,1,0,0 OK Note: Preferred list of networks in numeric format (read in EF_PLMNwAct) GSM access technology selected GSM compact access technology not selected Utran access technology not selected
AT+CPOL=,0 Note: Select long alphanumeric format	OK
AT+CPOL? Note: Ask for preferred list of networks With only EF_PLMNsel present	+CPOL: 1,0,"D1-TELEKOM" +CPOL: 6,0,"F SFR" OK Note: Preferred list of networks in long alphanumeric format
AT+CPOL=7,2,20801 Note: Add a network to the list	OK
AT+CPOL? Note: Ask for preferred list of networks With only EF_PLMNsel present	+CPOL: 1,0,"D1-TELEKOM" +CPOL: 6,0,"F SFR" +CPOL: 7,0,"Orange F" OK Note: Preferred list of networks in long alphanumeric format
AT+CPOL=7 Note: Delete 7th location	OK

Continued on next page:

Command	Responses
AT+CPOL? Note: Ask for preferred list of networks With only EF_PLMNsel present	+CPOL: 1,0,"D1-TELEKOM" +CPOL: 6,0,"F SFR" OK Note: Preferred list of networks in long alphanumeric format
AT+CPOL=8,2,77777 Note: Add a new network to the list "i" with only EF_PLMNsel present	OK
AT+CPOL=8,2,77777,0,0,1 Note: Add a new network to the list With EF_PLMNwact present	OK Note: Access technology UTRAN is selected
AT+CPOL=8,2,77777 Note: Add a new network to the list With EF_PLMNwact present	OK Note: Default access technology GSM is selected
AT+CPOL? Note: Ask for preferred list of networks with only EF_PLMNsel present	+CPOL: 1,0,"D1-TELEKOM" +CPOL: 6,0,"F SFR" +CPOL: 8,2,77777 OK Note: Preferred networks list in long alphanumeric format, but 8th entry is unknown so the product returns it in the numeric format
AT+CPOL=9,0,"Orange F" Note: Add a new network to the list (text format)	OK
AT+CPOL? Note: Ask for preferred list of networks With only EF_PLMNsel present	+CPOL: 1,0,"D1-TELEKOM" +CPOL: 6,0,"F SFR" +CPOL: 8,2,77777 +CPOL: 9,0,"Orange F" OK Note: Preferred list of networks in long alphanumeric format
AT+CPOL=?	+CPOL: (1-16),(0-2) OK Note: The EF can accept 16 records. Supported formats are 0, 1, or 2.

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Other Notes:

The different possibilities are:

- AT+CPOL=<index> — To delete an entry
- AT+CPOL=,<format> (AT+CPOL?) — To set the format used by the read command
- 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>
- AT+CPOL=<index>,<format>,<oper>,<GSM_AcT>,<GSMcp_Act>,<Utran_Act> — To write <oper> in the <format> at the <index> giving the access technology (in the case of EF_PLMNwact, EF_HPLMNwact or EF_OPLMNwact is present)

If access technology parameters are not given, the GSM access technology will be chosen.

The supported format are those of the +COPS command. The length of this list is limited to 85 entries for EF_PLMNsel, and 51 for EF_PLMNwAct, EF_OPLMNwAct, EF_HPLMNwAct.

Operator List Management +WOLM

Description: This command allows a new or modified operator to be added to the PLMN list. Up to 10 PLMNs can be created and stored in the flash memory.

Note that if two entries with the same network (MCC+MNC) but having different names are entered, the first entry will be used.

Syntax:

Command	Responses
Action Command: AT+WOLM=<mode>,<loc>,[,<NumOper>,<short name>,<long name>]	OK
Read Command: AT+WOLM?	+WOLM: <loc>,<NumOper>,<short name>,<long name> [+WOLM: <loc>,<NumOper>,<short name>,<long name> […]] OK
Test Command: AT+WOLM=?	OK

Values:

<mode> **Request Operation**
- **0** Delete
- **1** Write
- **2** Read

<loc> **Location**
If this parameter is not filled with <mode>=1, the location will be the first empty one.

<NumOper> Operator in Numeric Format: MCC and MNC

<short name> The Short Name of the PLMN

<long name> The Long Name of the PLMN

Parameter Storage: None

Examples:

Command	Responses
AT+WOLM=1,1,20812,"WM","WM PLMN" Note: Add a new PLMN at location 1	OK
AT+WOLM=2,1 Note: Read the PLMN at location 1	+WOLM: 1,20812,"WM","WM PLMN" OK
AT+WOLM=2,11 Note: Read the PLMN at location 11	+CME ERROR: 21 Note: Invalid index
AT+WOLM=1,1,20812,"WM1","WM1 PLMN" Note: Modify and existing PLMN	OK Note: Done
AT+WOLM=? Note: Test command	OK
AT+WOLM? Note: Display current list	+WOLM: 1,20812,"WM1","WM1 PLMN" OK Note: List the created PLMN in flash
AT+WOLM=1,,20813,"PLMN2",PLMN2 LONG" Note: Add a new PLMN at available location	OK Or +CME ERROR: 20 Note: <Err> returns if no more PLMNs can be added
AT+WOLM=0,1 Note: Delete an entry at location 1	OK
AT+WOLM=0,11 Note: Delete an entry at location 11	+CME ERROR: 21 Note: Invalid index

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Operator Name (Read, Erase, Set PLMN Method) +WOPN

Description: This command performs the following:

- Reads the operator name in alphanumeric format from the numeric format.
- Reads the operator name in short alphanumeric format form the numeric format.
- Erases NITZ PLMN names stored in the flash memory.
- Configures the method used for getting PLMN names.

Syntax:

For <mode>=0 or 1

Command	Responses
Action Command: AT+WOPN=<mode>,<NumOper>[,<lac>]	+WOPN: <mode>,<AlphaOper> OK

For <mode>=3

Action Command: AT+WOPN=<mode>,0	OK

For <mode>=4

Action Command: AT+WOPN=<mode>[,<PlmnMethod>]	[+WOPN: <PlmnMethod>] OK

Test Command: AT+WOPN=?	OK

No Read Command

Values:

<mode> **Requested Operation**

- **0** Print operator name using long alphanumeric format
- **1** Print operator name using short alphanumeric format
- **2** Reserved for future use
- **3** Erase NITZ PLMN list if <NumOper> = 0
- **4** Read or write the method used for getting PLMN names
  Read access if <PlmnMethod> omitted
  Write access if <PlmnMethod> provided.

<NumOper> **Operator Identifier in Numeric Format (MCC/MNC)**
Integer type

<AlphaOper> **Operator Identifier** in long or short alphanumeric format (see Operator Names in the Appendix)

<lac> **Location Area Code**
String type; two byte location area code in hexadecimal format (e.g., "00C3" equals 195 in decimal)
If it is not entered, the current **lac** will be used (0 if limited service)

<PlmnOns> **Method for Getting PLMN Name**
Bit field. Default: 31
Bit set to 0: Method deactivated
Bit set to 1: Method activated

- **Bit 0** E-ONS
- **Bit 1** CPHS
- **Bit 2** SPN
- **Bit 3** NITZ
- **Bit 4** Flash

Parameter Storage: The <PlmnMethod> parameter is stored in EEPROM without using AT&W.

Examples:

Command	Responses
AT+WOPN=0,20801 Note: Give an operator in numeric format	+WOPN: 0,"Orange F" OK Note: Alphanumeric answer
AT+WOPN=3,0 Note: Erase NITZ PLMN names stored in flash memory	OK
AT+WOPN=4 Note: Read from EEPROM which method will be used for PLMN names.	+WOPN:31 OK
AT+WOPN=4,0 Note: Write to EEPROM which method will be used for PLMN names	OK

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Other Notes:

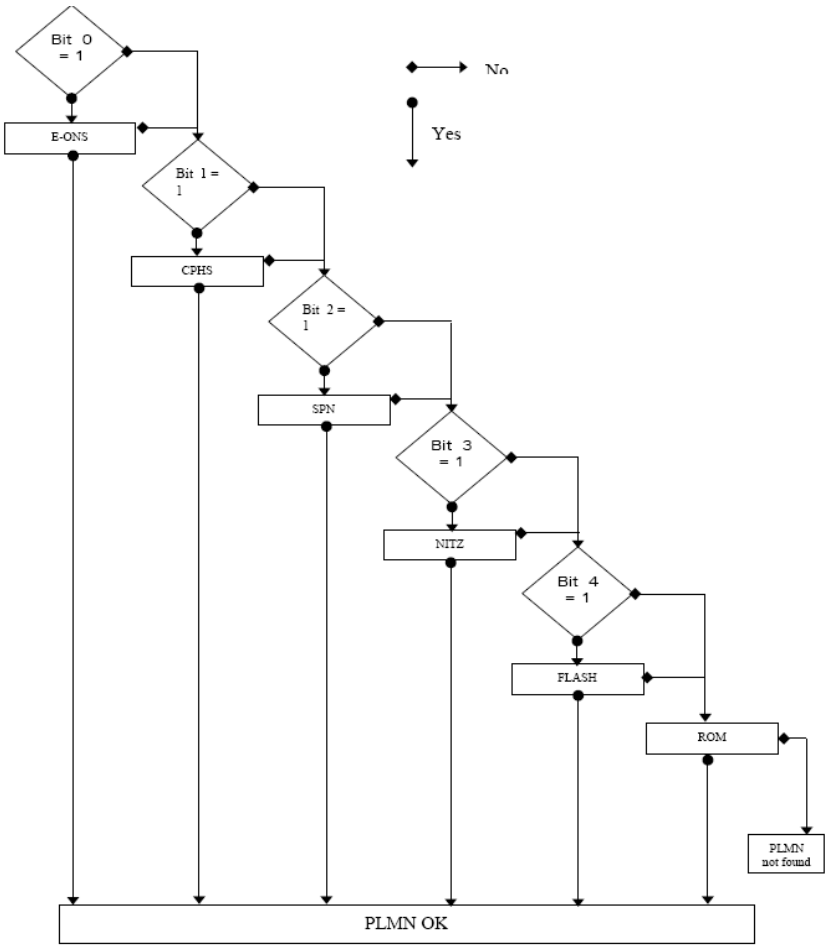
With the E-ONS (Enhanced Operator Name Service) feature, <lac> is an optional parameter to read names from OPL/PNN SIM files.
When the modem receives a NITZ (Network Information and Time Zone) message with Long Name and/or Short Name information, an entry with the registered PLMN and names in the message is created in the flash memory. These names will then be used with +COPS, +COPN, +WOPN and +CPOL with the priority order defined in 3GPP TS 22.101. The modem supports only network names with the default GSM alphabet coding scheme.

The priority order is:

1	**E-ONS**	First entry if on Home PLMN or existing matching entry in OPL/PNN SIM files.
2	**CPHS**	If on Home PLMN, use SIM file CPHS ONS (0x6F14) for Long Name if present and SIM file CPHS SONS (0x6F18) for Short Name if present; if not present, reuse SIM file CPHS ONS.
3	**SPN**	If on Home PLMN, use SIM file SPN (0x6F46) if present.
4	**NITZ**	If there is a matching entry in the list of names received so far, use it.
5	**FLASH**	If there is a matching entry in the flash PLMN list (created by +WOLM), use it.
6	**ROM**	PLMN names in the ROM defined according to MoU SE.13 and NAPRD Operator Names documents.

For details, refer to the following diagram:

Operation Flow for <PlmnMethod>



Once a long name is found following this priority order, it is given as a response to the AT command.

Refer to 3GPP TS 24.008 [8] , 3GPP TS 23.040 [11] , 3GPP TS 22.042 [12] and COMMON PCN HANDSET SPECIFICATION CPHS Phase 2 v4.2 for more information.

Read Operator Name +COPN

Description: This command returns the list of all store operator names (in numeric and alphanumeric format).

Syntax:

Command	Responses
Action Command: AT+COPN	+COPN: <NumOper>,<AlphaOper> [+COPN: <NumOper>,<AlphaOper> […]] OK
Test Command: AT+COPN=?	OK

No Read Command

Values: **<NumOper>** **Operator in Numeric Format**

<AlphaOper> **Operator in long alphanumeric format** (see Operator Names in the Appendix)

Parameter Storage: None

Examples:

Command	Responses
AT+COPN Note: Ask for list of all networks	+COPN: 20201 "GR COSMOTE" +COPN: 20205 "Vodafone GR" +COPN: 20209 "GR Q-TELECOM" +COPN: 20210 "TIM GR" … OK
AT+COPN=?	OK

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Chapter 16 – Phonebook Commands

Select Phonebook Memory Storage +CPBS

Description: Selects phonebook memory storage. See Recommendation 3GPP 11.11 for more details.

Syntax:

Command	Responses
Action Command: AT+CPBS=<storage>[,<pin2>]	OK
Read Command: AT+CPBS?	+CPBS: <storage>,<used>,<total>
Test Command: AT+ CPBS=?	+CPBS: (list of supported <storage>s) OK

Values:

<storage>	**Phonebook Memory Storage**
SM	ADN Abbreviated Dialing Numbers (SIM phonebook)
FD	FDN Fixed Dialing Numbers (SIM restricted phonebook)
ON	MSISDN (SIM own numbers)
EN	ECC Emergency Call Codes (SIM or Mobile Equipment)
LD	LND Last Number Dial
MC	Mobile Equipment missed (unanswered received) calls list
ME	Mobile Equipment phonebook
MT	Combined Mobile Equipment and SIM phonebook (ME + SM)
RC	Mobile Equipment received calls list
SN	SDN Services Dialing Numbers (SIM special service numbers)
<pin2>	**Personal Identification Number 2**
<used>	**Used Locations in Selected Memory** Integer type
<total>	**Total Number of Locations in Selected Memory** Integer type

Parameter Storage: None

Examples:

Command	Responses
AT+CPBS=”SM” Note: Select ADN phonebook	OK Note: ADN phonebook is selected
AT+CPBS=? Note: Possible values	+CPBS: (”SM”,”LD”,”MC”,”ON”,”ME”,”RC”,”MT”,”SN”,”EN”) OK
AT+CPBS? Note: Get current phonebook memory storage	+CPBS:”SM”,10,20 OK Note: ADN phonebook selected, 10 locations used, 20 locations available

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 4.

Other Notes:

- On ADN and FDN activation: When FDN has been activated with the +CLCK command, the selection of ADN phonebook is possible only if ADN status bit3 is set to 1 (EF file “readable and can be updated when invalidated”).
- Selection of the ADN phonebook when FDN is active is SIM dependent.
- Selection of the “FD” phonebook with <pin2> when <pin2> is already verified will give "+CME ERROR: 3".

- The previously selected phonebook remains the same when the modem is switched on or reset, even if the new SIM card is inserted. However, in the case when the replacement SIM card does not contain any selected phonebook, the ADN phonebook is selected.
- The maximum number of entries for the mobile equipment is set to 500.
- When the SIM is not present, the following emergency numbers are available:
  000, 08, 112, 110, 118, 119, 911, 999
- When the SIM is present, the following emergency numbers are available:
  112, 911, emergency number from ECC SIM files (if existing)
- The following emergency numbers are stored in EEPROM:
  112, 911, 999, 08
- "EN" will be available even if ECC SIM file is not present.

Contact Selector +WCOS

Description: This command enables/disables the displaying of extended contact mode.

Syntax:

Command	Responses
Action Command: AT+WCOS=<mode>	OK
Read Command: AT+ WCOS?	+WCOS: <mode> OK
Test Command: AT+ WCOS=?	+ WCOS: (list of supported <mode>s) OK

Values:

<mode>	Extended Contact Mode
0	Select the SIM contacts. **Default.**
1	Select the extended contacts for phonebook entries
2	Reserved. Customer application should not use this value.

Parameter Storage: The <mode> parameter is stored in EEPROM.

Examples:

Command	Responses
AT+WCOS=? Note: List all possible values	+WCOS: (0-2) OK Note: Possible responses
AT+WCOS=1 Note: Extended contact selected	OK
AT+WCOS? Note: Test command	+WCOS: 1 OK Note: Extended contact selected

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Write Phonebook Entry +CPBW

Description: This command writes a phonebook entry in an index location number of the current phonebook memory storage.

Syntax: Depending on the context, there are several possible action commands:

The Entry is Stored in the ADN Phonebook and AT+WCOS=0

Command	Responses
Action Command: AT+CPBW=[<index>] [,<number> [,<type> [,<text>]]]	OK

The Entry is Stored in the ADN Phonebook and AT+WCOS=1

Action Command: AT+CPBW=<index> [,<number> [,<type> [,<text> [,<phb_group>]]]]	OK

The Entry is Stored in the Mobile Equipment Phonebook and AT+WCOS=0

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

The Entry is Stored in the Mobile Equipment Phonebook and AT+WCOS=1

Action Command: AT+CPBW=<index> [,<number> [,<type> [,<text>[,<contact> [,<phb_group>]]]]]	OK

Command	Responses
Test Command: AT+CPBW=?	+CPBW: (list of supported <index>s), [<nlength>], (list of supported <type>s), [<tlength>]

No Read Command

Values:

<index> **Location in Memory Storage**
Range of possible values depending on the capacity of the phonebook memory
Integer type

<number> **Phone Number in ASCII Format**
String type

<type> **TON/NPI Type of Address Octet in Integer Format**
Default is 145 when the dialing string includes international access code character "+"; otherwise, it is **129.**
129 ISDN / telephony numbering plan, national / international unknown
145 ISDN / telephony numbering plan, international number
161 ISDN / telephony numbering plan, national number
128-255 Other values (refer GSM 04.08 section 10.5.4.7)

<text> **Associated Contact Name**
String type (see note below)
SIM dependant for the ADN phonebook (use AT+CPBW=?)

<phb_group> **Phonebook Group Number** in Which the Entry Should Be Saved
Range value (1-10)

<nlength> **Max Length of Field <Number>**
Integer type

<tlength> **Max Length of Field <Text>**
Integer type

<contact> **This parameter gathers the following parameters:**
<num_Mobile>,<num_Work>, <num_Data>, <Email>, <Address>

<num_Mobile> **Phone Number** (dedicated for mobile phone number for example)
Up to 20 digits

<num_Work> **Phone Number** (dedicated for work phone number for example)
Up to 20 digits

<num_Fax> **Phone Number** (dedicated for data phone number for example)
Up to 20 digits

<num_Data> **Phone Number** (dedicated for data phone number for example)
Up to 20 digits

<Email> **E-Mail Address**
String type
Up to 56 characters

<Address> **Mail Address**
String type
Up to 56 characters

Parameter and Values Notes:

- For the <text> parameter all strings starting with "80" , "81" or "81" are considered in UCS2 format.
- The +CSCS (Select Character Set) command does not affect the format for phonebook entries.

Parameter Storage: None

Examples:

Command	Responses
AT+CPBS=”SM” Note: ADN phonebook	OK
AT+CPBS? Note: Get current memory storage	+CPBS: "SM”,1,10 OK Note: ADN phonebook is selected, 1 location is used and 10 locations are available.
AT+WCOS=0 Note: Phonebook not extended	OK
AT+CPBW=? Note: Test command	+CPBW: (1-50),20,(129,145),10 OK Note: 50 locations, phone number = 20 digits max, TON/NPI = 129 or 145, text length = 10 characters max
AT+CPBW=5,”112”,129,”SOS” Note: Write at location 5	OK Note: Location 5 written
AT+CPBR=5 Note: Read the entry at location 5	+CPBR: 5,”112”,129,”SOS” OK
AT+CPBS? Note: Get current memory storage	+CPBS:”SM”,2,10 OK Note: ADN phonebook is selected, 2 locations are used and 10 locations are available.
AT+CPBW=5,”01290917”,129,”Jacky” Note: Overwrite location 5	OK Note: Location 5 overwritten
AT+CPBW=6,”01292349”,129,”8000410042” Note: write location 6 (UCS2 format for the <text> field)	OK Note: Location 6 is written
AT+CPBW=8,”01292349”,129,”80xyz” Note: write location	OK Note: Location 8 is written. The string has a wrong UCS2 format. It is, therefore, considered as an ASCII string.
AT+CPBW=5,”01290917”,129,”Jacky”,1 Note: write an extended entry	+CME ERROR: 3 Note: Error because +WCOS: 0
AT+WCOS=1 Note: Phonebook extended	OK
AT+CPBW=5,”01290917”,129,”Jacky”1 Note: Write an extended entry	OK
AT+WCOS=0 Note: Phonebook not extended	OK
AT+CPBS=”ME” Note: Mobile Equipment Phonebook	OK
AT+CPBS? Note: How many entries are used	+CPBS: “ME”,2,500 Note: in Mobile Equipment phonebook, 2 locations are used and 500 locations are available.
AT+CPBW=1,”0123456798”,129,”first entry” Note: Write an entry not extended	OK
AT+CPBR=1 Note: Read the first entry	+CPBR: 1,”0123456798”,129,”first entry” OK
AT+WCOS=1 Note: Phonebook extended	OK

Examples continues on next page

Command	Responses
AT+CPBW=1,”0123456798”,129,”first entry” Note: Write an entry not extended	OK
AT+CPBW=2,”9876543210”,129,”second entry”,”6543210987”,129 Note: Write an extended entry	OK
AT+CPBR=1,2 Note: Read entry 1 and 2	+CPBR: 1,"0123456798",129,"first entry","",,"",,"",,"",,"",,"",0 +CPBR: 2,"9876543210",129,"second entry","6543210987",129,"",,"",,"",,"",,"",0 OK
AT+CPBW=13,”+331290909”,145,”Fred”, ”0141284549”,129,“0600003210”,129,”0141280000” , 129,“019876543210”,129, fred@mail_address.com, “Becker Street London”,1 Note: Write location with Contact and Phonebook Group n1	OK Note: Location 13 is written
AT+CPBW=,”+33145221100”,145,”SOS” Note: Write at the first location available	OK Note: First location available is written
AT+CPBS=”SM” Note: ADN phonebook	OK
AT+WCOS?	+WCOS: 1 OK Note: Extended phonebook
AT+CPBW=1 Note: Delete entry at first location	OK
AT+CPBW=1,”0123456,,”test”,1 Note: Add an extended entry in SIM with group number (1)	OK
AT+CPBR=1	+CPBR:1,”0123456,”129,”test” OK
AT+CPBW=1," ",,"No number" Note: Write an empty number. The TON/NPI is omitted	OK
AT+CPBW=2,”7654321”,161,”test2”,1	OK
AT+CPBR=2 +CPBR:2,"7654321",161,"test2",1	OK

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 4.

Other Notes:

- This command is not allowed when the fixed dialing phonebook (FDN) is locked. Moreover, when the FDN is unlocked, PIN2 is required to write in the FDN phonebook. If PIN2 authentication has been performed during the current session, the +CPBW command with FDN is allowed.
- "RC" and "MC" phonebooks can only be erased by using +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.
- If the AT+WCOS=1 command was used, the request would include the ‘Contact’ structure.
- When an empty number is written, the <type> parameter should be omitted. When this entry is read, the <type> in the response is equal to 128 (unknown) (see +CPBR command).

Read Phonebook Entries +CPBR

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

Syntax: Depending on the context, several action commands are possible:

The Entry is Stored in the ADN Phonebook and AT+WCOS=0

Command	Responses
Action Command: AT+CPBR=<first_entry> [,<last_entry>]	+CPBR: <loc>,<num>,<type>,<name> [+CPBR: <loc>,<num>,<type>,<name>[…]] OK

The Entry is Stored in the ADN Phonebook and AT+WCOS=1

Action Command: AT+CPBR=<first_entry> [,<last_entry>]	+CPBR: <loc>,<num>,<type>,<name>,<phb_group> [+CPBR: <loc>,<num>,<type>,<name>,<phb_group> […]] OK

The Entry is Stored in the Mobile Equipment Phonebook and AT+WCOS=0

Action Command: AT+CPBR=<first_entry> [,<last_entry>]	+CPBR: <loc>,<num>,<type>,<name>, [+CPBR: <loc>,<num>,<type>,<name> […]] OK

The Entry is Stored in the Mobile Equipment Phonebook and AT+WCOS=1

Action Command: AT+CPBR=<first_entry> [,<last_entry>]	+CPBR: <loc>,<num>,<type>,<name>,<contact>,<phb_group> [+CPBR: <loc>,<num>,<type>,<name>,<contact>, <phb_group> […]] OK

Command	Responses
Test Command: AT+CPBR=?	+CPBR: (list of supported <loc>s), <nlength>,<tlength> OK

No Read Command

Values:

<first_entry> **First Location** (or range of locations)
Where to read phonebook entry

<last_entry> **Last Location** (or range of locations)
Where to read phonebook entry

<type> **TON/NPI Type of Adress Octet** (Integer type)
129 ISDN / telephony numbering plan, national / international unknown
145 ISDN / telephony numbering plan, international number
161 ISDN / telephony numbering plan, national number
128-255 Other values (refer GSM 04.08 section 10.5.4.7)

<nlength> **Max Length of Field <number>**
Integer type

<tlength> **Max Length of Field <name>**
Integer type

<loc> **Phonebook Index**
Integer type

<phb_group> **Phonebook Group**
Range (1-10)

<num> **Phone Number**
String type

<name> **Name Associated with the Phone Number**
Up to 30 ASCII characters or 13 UCS2

<contact> **This parameter gathers the following parameters:**
<num_Mobile>,<num_Work>, <num_Fax>, <num_Data>, <Email>, <Address>

<num_Mobile> **Phone Number** (dedicated for mobile phone number)
Up to 20 digits

<num_Work> **Phone Number** (dedicated for work phone number)
Up to 20 digits

<num_Fax> **Phone Number** (dedicated for data phone number)
Up to 20 digits

<num_Data> **Phone Number** (dedicated for data phone number)
Up to 20 digits

<Email> **E-Mail Address**
String type
Up to 56 characters

<Address> **Mail Address**
String type
Up to 56 characters

Parameter Storage: None

Examples:

Command	Responses
AT+CPBR=? Note: Test command	+CPBR: (1-50),20,10 OK Note: 50 locations (from 1 to 50), max length for phone number is 20 digits, 10 characters max for name
AT+WCOS? Note: Test command	+WCOS: 0 OK Note: Contact not selected
AT+CPBR=12,14 Note: Read entries from 12 to 14	+CPBR: 12,”112”,129,”Emergency” +CPBR: 13,”+331290909”,145,”Fred” +CPBR: 14,”0146290808”,129,”Zazi” OK Note: Display locations 12,13,14 with location, number, type (TON/NPI), name
AT+CPBR=10 Note: Read entry 10	+CPBR:10,”0146290921”,129,”Rob” OK Note: Display location 10
AT+CPBR=11 Note: Read entry 11 (UCS2 format)	+CPBR:11,”0146290921”,129,”8000010002FFFF” OK Note: Display location 11
AT+CPBS="ME" Note: Flash memory	OK
AT+WCOS=1	OK Note: Contact selected
AT+CPBR=13 Note: Read entry	+CPBR: 13,”+331290909”,145,”Fred”, ”0141284549”, 129, “0600003210”, 129, ”0141280000”, 129, “019876543210”, 129, fred@mail_address.com, “Becker Street London”,1 OK Note: Display location 13 with location, number, type (TON/NPI), name and contact and phonebook group n1
AT+CPBS="SM" Note: ADN phonebook	OK
AT+CPBR=1	+CPBR:1,”0123456”,129,”test” OK
AT+WCOS=0	OK
AT+CPBW=1," ",,"No number"	OK
AT+CPBR=1	+CPBR: 1," ",128,"No number" OK

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 4.

Other Notes:

- 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).
- If the AT+WCOS=1 command was used, the response will include <Contact> structure.

Find Phonebook Entries +CPBF

Description: This command returns phonebook entries with alphanumeric fields starting with a given pattern. 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" 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: Depending on the context, several responses to the command are possible:

The Entry is Stored in the ADN Phonebook and AT+WCOS=0

Command	Responses
Action Command: AT+CPBF=<string>	+CPBF: <loc>,<num>,<type>,<name> OK

The Entry is Stored in the ADN Phonebook and AT+WCOS=1

Action Command: AT+CPBF=<string>	+CPBF: <loc>,<num>,<type>,<name>,<phb_group> OK

The Entry is Stored in the Mobile Equipment Phonebook and AT+WCOS=0

Action Command: AT+CPBF=<string>	+CPBF: <loc>,<num>,<type>,<name>, OK

The Entry is Stored in the Mobile Equipment Phonebook and AT+WCOS=1

Action Command: AT+CPBF=<string>	+CPBF: <loc>,<num>,<type>,<name>,<contact>,<phb_group> OK

Command	Responses
Test Command: AT+CPBF=?	+CPBF: <nlength>,<tlength>,<glength>,<slength>,<elength> OK

No Read Command

Values:

<string> **Searched Pattern String** (depends on the format of the data stored in the phonebooks)

<loc> **Location Number** (20 digits maximum)

<num> **Phone number** (20 digits maximum)

<type> **TON/NPI** **Type of Address Octet** (Integer type)
- **129** ISDN / telephony numbering plan, national / international unknown
- **145** ISDN / telephony numbering plan, international number
- **161** ISDN / telephony numbering plan, national number
- **128-255** Other values (refer GSM 04.08 section 10.5.4.7)

<phb_group> **Phonebook Group**
Range (1-10)

<name> **Name Associated with the Phone Number**
Up to 30 ASCII characters or 13 UCS2

<contact> **This parameter gathers the following parameters:**
<num_Mobile>,<num_Work>, <num_Fax>, <num_Data>, <Email>, <Address>

<num_Mobile> **Phone Number** (dedicated for mobile phone number)
Up to 20 digits

<num_Work> **Phone Number** (dedicated for work phone number)
Up to 20 digits

<num_Fax> **Phone Number**
Up to 20 digits

<num_Data> **Phone Number** (dedicated for data phone number)
Up to 20 digits

<Email> **E-Mail Address**
String type
Up to 56 characters

<Address> **Mail Address**
String type
Up to 56 characters

Parameter Storage: None

Examples:

Command	Responses
AT+CPBF=? Note: Test command	+CPBF: 20,14 OK Note: Maximum length for a phone number is 20 digits; 14 characters for the text
AT+CPBF="E" Note: Read entries with "E"	+CPBF: 12,"112",129,"Emergency" +CPBF: 15,"+331290101",145,"Eric" OK Note: Display locations with text field starting with "E"
AT+CPBF="H" Note: Read entries with "H"	+CME ERROR: 22 Note: Entry not found
AT+CPBF="800001" Note: Read entries starting with 0001 UCS2 character	+CPBF: 11, "0146290921",129,"8000010002FFFF" OK Note: Display locations with text field starting with 0001 UCS2 character
AT+CPBF="8045C" Note: Read entries with "8045C" (ASCII format)	+CME ERROR: 22 Note: Entry not found. The string has a wrong UCS2 format; it is therefore considered as an ASCII string
AT+CPBS="SM" Note: ADN phonebook	OK
AT+WCOS=0 Note: Phonebook not extended	OK
AT+CPBF="Test" Note: Read entries with "Test"	+CPBF: 1,"0123456789",129,"Test ADN" Note: Display locations with text field starting with "Test"
AT+WCOS=1 Note: Phonebook extended	OK
AT+CPBF="Test" Note: Read entries with "Test"	+CPBF: 1,"0123456789",129,"Test ADN",0 Note: Display locations with text field starting with "Test", extended entry.
AT+CPBS="ME" Note: Flash phonebook	OK
AT+WCOS=0 Note: Phonebook not extended	OK
AT+CPBF="Test" Note: Read entries "Test"	+CPBF: 1,"0123456789",129,"Test ME" Note: Display locations with text field starting with "Test"
AT+WCOS=1 Note: Phonebook extended	OK
AT+CPBF="Test" Note: Read entries with "Test"	+CPBF: 1,"0123456789",129,"Test ME", "9876543210",129, "",128, "",128," ",128,"e_mail@mail_address.com", "post address",0 Note: Read entries with "Test" Note: Display locations with text field starting with "Test", extended entry
AT+WCOS=0	OK
AT+CPBW=1," ",,"No number"	OK
AT+CPBF="No number"	+CPBF: 1," ",128,"No number" OK

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 4.

Phonebook Phone Search +CPBP

Description: This command orders the product to search the phonebook for an item with the same phone number as provided in the parameter.

If two different entries of the selected phonebook have the same number, the entry returned by the +CPBP is the first one written using the +CPBW command.

Syntax: Depending on the context, several responses to the command are possible:

The Entry is Stored in the ADN Phonebook and AT+WCOS=0

Command	Responses
Action Command: AT+CPBP=<number>	+CPBP: <index>,<number> <type>,<text> OK

The Entry is Stored in the ADN Phonebook and AT+WCOS=1

Action Command: AT+CPBP=<number>	+ CPBP: <index>,<number>,<type>,<text>, <phb_group> OK

The Entry is Stored in the Mobile Equipment Phonebook and AT+WCOS=0

Action Command: AT+CPBP=<number>	CPBP: <index>,<number> <type>,<text> OK

The Entry is Stored in the Mobile Equipment Phonebook and AT+WCOS=1

Action Command: AT+CPBP=<number>	+ CPBP: <index>,<number>,<type>,<text>, <phb_group> OK

Command	Responses
Test Command: AT+CPBP=?	+CPBP: (list of supported <index>s), [<nlength>], <tlength> OK

No Read Command

Values:

<index> **Location in Memory Storage**
Range of possible values depending on the capacity of the phonebook memory
Integer type

<number> **Phone Number in ASCII Format**
String type

<type> **TON/NPI** (Type of Address Octet on Integer Format)
Default is 145 when the dialing string includes international access code character "+"; otherwise it is **129**.
129 ISDN / telephony numbering plan, national / international unknown
145 ISDN / telephony numbering plan, international number
161 ISDN / telephony numbering plan, national number
128-255 Other values (refer GSM 04.08 section 10.5.4.7)

<text> **Associated Contact Name**
String type (see note below)
SIM dependant for the ADN phonebook (use AT+CPBW=?)

<phb_group> **Phonebook Group Number**
Range value (1-10)

<nlength> **Max Length of Field <Number>**
Integer type

<tlength> **Max Length of Field <Text>**
Integer type

<contact> **This parameter gathers the following parameters:**
<num_Mobile>,<num_Work>, <num_Fax>, <num_Data>, <Email>, <Address>

<num_Mobile> **Phone Number** (dedicated for mobile phone number for example)
Up to 20 digits

<num_Work> **Phone Number** (dedicated for work phone number for example)
Up to 20 digits

<num_Fax> **Phone Number**
Up to 20 digits

<num_Data> **Phone Number** (dedicated for data phone number for example)
Up to 20 digits

<Email> **E-Mail Address**
String type
Up to 56 characters

<Address> **Mail Address**
String type
Up to 56 characters

Parameter Storage: None

Examples:

Command	Responses
AT+CPBP=? Note: Test command	+CPBP: (1-50),20,10 OK Note: 50 locations (from 1 to 50), maximum length for phone number is 20 digits, maximum length for the text is 10 characters.
AT+CPBP="+331290101" Note: Search entries corresponding to this phone number	+CPBP: 15,"+331290101",145,"Eric" OK Note: Display the entry corresponding to the specified phone number
AT+CPBP="01290202" Note: Search entries corresponding to this phone number	+CPBP: 15,"+331290202",145,"David" OK Note: Display the entry corresponding to the specified phone number
AT+CPBP="+331288575" Note: Search entries corresponding to this phone number	+CPBP: 15,"+331290101",145,"8045682344FFFF" OK Note: Display entry corresponding to the specified phone number (UCS2 format)
AT+CPBS="SM" Note: ADN phonebook	OK
AT+WCOS=0 Note: Phonebook not extended	OK
AT+CPBP="0123456789" Note: Search entries corresponding to this phone number	+CPBP: 1,"0123456789",129,"Test ADN" OK Note: Display the entry corresponding to the specified phone number
AT+WCOS=1 Note: Phonebook extended	OK
AT+CPBP="0123456789" Note: Search entries corresponding to this phone number	+CPBF: 1,"0123456789",129,"Test ADN" OK
AT+CPBS="ME" Note: ME phonebook	OK
AT+WCOS=0 Note: Phonebook not extended	OK
AT+CPBP="0123456789" Note: Search entries corresponding to this phone number	+CPBF: 1,"0123456789",129,"Test ME" OK
AT+WCOS=1 Note: Phonebook extended	OK
AT+CPBP="0123456789" Note: Search entries corresponding to this phone number	+CPBP: 1,"0123456789",129,"Test ME", "9876543210",129,"",128,"",128,"",128, "e_mail@somewhere.com","postal address",0 OK

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 4.

Move Action in Phonebook +CPBN

Description: This command performs a forward or backward move in the phonebook (in alphabetical order). It is not allowed in the "EN" phonebook since it does not contain alphanumeric fields.

Syntax: Depending on the context, several responses to the command are possible:

The Entry is Stored in the ADN Phonebook and AT+WCOS=0

Command	Responses
Action Command: AT+CPBN=<mode>	+CPBN: <index>,<number>,<type>,<name> OK

The Entry is Stored in the ADN Phonebook and AT+WCOS=1

Action Command: AT+CPBN=<mode>	+ CPBN: <index>,<number>,<type>,<name>,<phb_group> OK

The Entry is Stored in the Mobile Equipment Phonebook and AT+WCOS=0

Action Command: AT+CPBN=<mode>	CPBN: <index>,<number> <type>,<name> OK

The Entry is Stored in the Mobile Equipment Phonebook and AT+WCOS=1

Action Command: AT+CPBN=<mode>	+ CPBN: <index>,<number>,<type>,<name>,<contact>, <phb_group> OK

Command	Responses
Test Command: AT+CPBN=?	+CPBN: (list of supported <mode>s) OK

No Read Command

Values:

<mode> **Request Entry to be Displayed**
- **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
- **5** Last item written (usable only if a write operation has been performed on the current phonebook

<index> **Location in Memory Storage**
Range of possible values depending on the capacity of the phonebook memory
Integer type

<number> **Phone Number in ASCII Format**
String type

<type> **TON/NPI** (Type of Address Octet on Integer Format)
- **145** International number
- **129** National number
- **128** Unknown number

<phb_group> **Phonebook Group Number**
Range value (1-10)

<name> **Name of the Group**
Up to 30 ASCII characters or 13 UCS2

<contact> **This parameter gathers the following parameters:**
<num_Mobile>,<num_Work>, <num_Fax>, <num_Data>, <Email>, <Address>

<num_Mobile> **Phone Number** (dedicated for mobile phone number for example)
Up to 20 digits

<num_Work> **Phone Number** (dedicated for work phone number for example)
Up to 20 digits

<num_Fax> **Phone Number**
Up to 20 digits

<num_Data> **Phone Number** (dedicated for data phone number for example)
Up to 20 digits

<Email> **E-Mail Address**
String type
Up to 56 characters

<Address> **Mail Address**
String type
Up to 56 characters

Parameter Storage: None

Examples:

Command	Responses
AT+CPBN=? Note: Test command	+CPBN: (0-5) OK Note: Possible modes
AT+CPBS=”SM” Note: ADN phonebook	OK
AT+WCOS=0 Note: Phonebook not extended	OK
AT+CPBN=0 Note: Read the first location	+CPBN: 15,”+331290101”,145,”Eric” OK Note: Display the first location
AT+WCOS=1 Note: Phonebook extended	OK
AT+CPBN=2 Note: Read the next location	+CPBN: 5,”+33147658987”,145,”Frank”,0 OK Note: Display the second location, extended entry
AT+CPBN=2 Note: Read the next location	+CPBN: 6,”+331290302”,145,”Marc”,0 OK Note: Display the third location, extended entry
AT+WCOS=0 Note: Phonebook not extended	OK
AT+CPBN=3 Note: Read the previous location	+CPBN: 5,”+33147658987”,145,”Frank” OK Note: Display the second location
AT+CPBN=1 Note: Read the last location	+CPBN: 6,”+331290302”,145,”Marc” OK Note: Display the last location
AT+CPBN=2 Note: Read the next location	+CPBP: 15,”+331290101”,145,”Eric” OK Note: Display the first location
AT+CPBF=”Er” Note: Find ”Er” in phonebook	+CPBF: 15,”+331290101”,145,”Eric” OK Note: Display the location
AT+CPBN=2 Note: Read the next location	+CPBN: 5,”+33147658987”,145,”Frank” OK Note: Display the following location
AT+CPBF=”Er” Note: Find ”Er” in phonebook	+CPBF: 15,”+331290101”,145,”Eric” OK Note: Display the location
AT+CPBN=4 Note: Get the last location read	+CPBF: 15,”+331290101”,145,”Eric” OK Note: Display the last location read
AT+CPBW=,”0146290800”,129,”WM” Note: Write an item at the first location available	OK Note: No information about this location
AT+CPBN=4 Note: Get the last location read	+CPBF: 15,”+331290101”,145,”Eric” OK Note: Display the last location read
AT+CPBN=5 Note: Display the last item written with its location	AT+CPBN=38,”0146290800,129,”WM” Note: Display the last item written with its location
AT+CPBN=4 Note: Get the last item read	AT+CPBN=38,”0146290800,129,”WM” Note: Now the last item read is the last written item too
AT+CPBF=”800041FFFF” Note: Find”800041” in phonebook	+CPBF: 15,”+3312345”,145,”8000414339FFFF” OK Note: Display this location
AT+CPBN=4 Note: Get the last location read	+CPBN: 15,”+3312345”,145,”8000414339FFFF” OK Note: Display the last location read.

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 4.

Other Notes:

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

Create and Delete a Phonebook Group +WPGW

Description: This command creates or deletes a phonebook group.

Syntax:

Command	Responses
Action Command: AT+WPGW=<phb_group> [,<name>]	OK
Test Command: AT+WPGW=?	WPGW: (list of supported <index>s),<tlength> OK

No Read Command

Values:

<phb_group> **Phonebook Group Number**
Range: 1-10

<name> **Name of the group.**
Up to 30 ASCII characters or 13 UCS2

<tlength> **Value indicating the maximum length of a field <name>**
Integer type

Parameter Storage: None

Examples:

Command	Responses
AT+WPGW=? Note: Test command	+WPGW: (1-10),30 OK Note: 10 possible groups, group name can be 30 characters maximum
AT+WPGW=1,"group 1" Note: Create group #1	OK Note: Group 1 created
AT+WPGW=1,"phb group1" Note: Rename group #1	OK Note: Group 1 renamed
AT+WPGW=1	OK Note: Erase Group 1

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 4.

Read a Phonebook Group +WPGR

Description: This commands reads the phonebook group entries, the phonebook group name, or the number or entries used in a group.

Syntax: Depending on the mode, several syntaxes are available for the action command:

• <mode>= 1, 2

Command	Possible responses
Action Command: AT+WPGR=<mode>[,<group index>]	+WPGR: <group index>,<group name> [+WPGR: <group index>,<group name>[…]] OK

• <mode>= 3

Action Command: AT+WPGR=<mode>,<group index>	+WPGR: <loc>,<num>,<type>,<name>[,<contact>][,<phb_group>] [+WPGR: <loc>,<num>,<type>,<name>[,<contact>][,<phb_group>] […]] OK

Note: The response syntax is the same as +CPBR.
<Contact> field is returned only if the entry is stored in Mobile Equipment phone book

• <mode>= 4

Action Command: AT+WPGR=<mode>	+WPGR: <used>/<total> OK

Test Command: AT+WPGR=?	+WPGR: (list of supported <mode>s), (list of supported <group index>s) OK

No Read Command

Values:

<mode> **Phonebook Group Read Mode**
- **1** Read the name of one phonebook group
- **2** Read the names of all phonebook groups
- **3** List all entries of one phonebook group
- **4** Read the number of used entries in a phonebook group

<used> **Number of Used Entries in a Phonebook Group**
Integer type

<total> **Number of Available Entries in a Phonebook Group**
Integer type

<group name> **Phonebook Group Name**
String type

<group index> **Phonebook Group Index**
Integer type
Range: 1-10

<loc> **Phonebook Index**
Integer type

<phb_group> **Phonebook Group Number**
Range (1-10)

<num> **Phone Number**
String type

<name> **Name Associated with the Phone Number**
Up to 30 ASCII characters or 13 UCS2

<type> **TON/NPI** (Type of address octet in integer format)
Default is 145 when the dialing string includes international access code character "+"; otherwise it is **129**.
- **129** ISDN / telephony numbering plan, national / international unknown
- **145** ISDN / telephony numbering plan, international number
- **161** ISDN / telephony numbering plan, national number
- **128-255** Other values (refer GSM 04.08 section 10.5.4.7)

<contact> T**his parameter gathers the following parameters:**
<num_Mobile>,<num_Work>, <num_Fax>, <num_Data>, <Email>, <Address>

<num_Mobile> **Phone Number** (dedicated for mobile phone number)
Up to 20 digits

<num_Work> **Phone Number** (dedicated for work phone number)
Up to 20 digits

<num_Fax> **Phone Number**
Up to 20 digits

<num_Data> **Phone Number** (dedicated for data phone number)
Up to 20 digits

<Email> **E-Mail Address**
String type
Up to 56 characters

<Address> **Mail Address**
String type
Up to 56 characters

Parameter Storage: None

Examples:

Command	Responses
AT+WPGR=? Note: Test command	+WPGR: (1-4),(1-10) OK Note: 10 possible groups
AT+WPGR=1,1 Note: Read the name of phonebook group 1	+WPGR: 1,”group 1” OK
AT+WPGR=2 Note: Read the name of all phonebook groups	+WPGR: 1,”group 1” +WPGR: 2,”group 2” OK
AT+WCOS=0 Note: Phonebook not extended	OK
AT+WPGR=3,1 Note: List all entries of phonebook group 1	+WPGR: 2,”+33567891234”,145,”Elvis” +WPGR: 31,”+331290909”,145,”Fred” +WPGR: 1,”+33123456789”,145,”John” +WPGR: 33,"" ,128,"No number” +WPGR: 32,”+0123456789”,129,”Test” OK Note: SIM entries: index 1 and 2; Flash entries: index 31 and 32 (The SIM supports 30 entries in this example)
AT+WCOS=1 Note: Phonebook extended	OK
AT+WPGR=3,1 Note: Lists all entries of phonebook group 1. The entries list displayed with AT+WPGR=3,1 contains records from both the mobile equipment and the SIM phonebook (modem phonebook)	+WPGR: 2,”+33567891234”,145,”Elvis”,1 +WPGR: 31,”+331290909”,145,”Fred”,”0141284549”, 129,”060003210”,129,”0141280000”,129, ”019876543210”,129,fred@mail_address.com, ”Becker Street London”,1 +WPGR: 1,”+33123456789”,145,”John”, 1 +WPGR: 33,"" ,128,"No number”," ", 128," ",128, " ",128, 128," "," ",1 +WPGR: 32,”+0123456789”,129,”Test”,0141284549”, 129,”0600003210”,129,0141280000”,129, ”6549873210”,129,test@mail_address.com,””,1 OK Note: SIM entries: index 1 and 2; Flash entries: index 31 and 32 (The SIM supports 30 entries in this example)
AT+WPGR=4,1 Note: Read the number of used entries in the phonebook group 1	+WPGR: 5/100 OK Note: 4 entries are used from the 100 possible entries

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 4.

Settings of a Group +WPGS

Description: This commands sets the parameters for a phonebook group.

Syntax: Depending on the mode, several syntaxes are available for the action command:

<mode>= 0

Command	Responses
Action Command: AT+WPGS=<mode>,<group index>	+WPGS: <restrict call> OK

<mode>= 1

Action Command: AT+WPGS=<mode>,<group index>, <restrict call>	OK

Test Command: AT+WPGS=?	+WPGS: (list of supported <mode>s), (list of supported <group index>s), (list of supported <restrict calls>s) OK

No Read Command

Values:

<mode> **Requested Operation**
- **0** Read group settings
- **1** Write group settings

<group index> **Index of the Group**

<restrict call> **Call Restrict Mode**
- **0** All refused. Incoming call is forwarded to the voice mailbox or rejected like busy line (depends on network operator)
- **1** All accepted. Incoming call is received (RING message is displayed)

Parameter Storage: None

Examples:

Command	Possible responses
AT+WPGS=1,1,1 Note: Set restrict call to “All Accepted”	OK
AT+WPGS=0,1 Note: Reads group 1 settings	+WPGS: 1 OK Note: Group1 all accepted
AT+WPGS=? Note: Test command	+WPGS: (0-1),(1-10),(0-1) OK

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 4.

Delete Calls Phonebook +WDCP

Description: This command deletes the calls listed in some phonebooks.

Syntax:

Command	Responses
Action Command: +WDCP=<mem>	OK
Test Command: AT+WDCP=?	+WDCP: (list of supported <mem>s) OK

No Read Command

Values: **<mem>** **Type of Phonebook**

- **"LD"** SIM (ME (Mobile Equipment extended)) last dialing phonebook
- **"MC"** ME missed calls list phonebook
- **"RC"** ME received calls list phonebook

Parameter Storage: None

Examples:

Command	Responses
AT+WDCP=? Note: Possible values?	+WDCP: ("LD","MC","RC") OK Note: Identifiers of the phonebooks supporting a list of calls
AT+WDCP="LD" Note: Delete all the content of Last Dialing phonebook.	OK Note: Last Dialing phonebook is now empty.

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 4.

Subscriber Number +CNUM

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

Syntax:

Command	Responses
Action Command: AT+CNUM	+CNUM :<alpha$_1$>,<number$_2$>, <type$_1$> [+CNUM :<alpha$_1$>,<number$_2$>, <type$_1$> […]] OK
Test Command: AT+ CNUM=?	OK

No Read Command

Values: **<alphax$_1$>** **Optional Alphanumeric String Associated with <number$_1$>**

<number$_1$> **Phone Number in ASCII Format**
String type

<type$_1$> **TON/NPI** (Type of Address Octet in Integer Format)
Default is 145 when the dialing string includes international access code character "+"; otherwise it is **129**.

- **129** ISDN / telephony numbering plan, national / international unknown
- **145** ISDN / telephony numbering plan, international number
- **161** ISDN / telephony numbering plan, national number
- **128-255** Other values (refer GSM 04.08 section 10.5.4.7)

Parameter Storage: None

Examples:

Command	Responses
AT+CNUM Note: Get MSISDN(s)	+CNUM:"Phone", "0612345678",129 +CNUM: "Fax" "0687654321", 129 +CNUM: "80001002FFFF", "+0183773", 145 OK Note: Last number is in UCS2 format

Continued on next page

AT+CNUM=? AT+CPBS=”ON” AT+CPBW=4,”0146278478”,161,”Cell” AT+CNUM	OK OK OK +CNUM: "Phone","0612345678",129 +CNUM: "Fax","0687654321",129 +CNUM: "80001002FFFF","+0183773",145 +CNUM: "Cell","0146278478",161 OK

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 4.

Set Voice Mail Number +CSVM

Description: This command sets/gets and enables/disables the voice mail number in memory.

Syntax:

Command	Responses
Action Command: AT+CSVM=<mode>[,<number>[,<type>]]	OK

Read Command: AT+CSVM?	+CSVM: <mode>,<number>,<type> OK

Test Command: AT+ CSVM=?	+CSVM: (list of supported <mode>s), (list of supported <type>s) OK

Values:

<mode> **Voice Mail Number Mode**
- **0** Disable the voice mail number. Default.
- **1** Enable the voice mail number

<number> Phone Number in ASCII Format
String type

<type> **TON/NPI for <number>**
Default is 145 when the dialing string includes international access code character "+"; otherwise, it is **129**.
- **129** ISDN / telephony numbering plan, national / international unknown
- **145** ISDN / telephony numbering plan, international number
- **161** ISDN / telephony numbering plan, national number
- **128-255** Other values (refer GSM 04.08 section 10.5.4.7)

Parameter Storage: All parameters are stored in EEPROM. The default can be restored using AT&F.

Examples:

Command	Responses
AT+CSVM=? Note: Possible values ?	+CSVM: (0-1),(128-255) OK Note: Activation/deactivation and format 128-255 are supported
AT+CSVM=0,”888”,129 Note: Disable Voice Mail number and change value to “888”.	OK
AT+CSVM? Note: Get mail number	+CSVM: 1,"888",129 OK Note: Voice mail number “888” is activated

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Avoid Phonebook Initialization +WAIP

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

Syntax:

Command	Responses
Action Command: AT+WAIP =<mode>	 OK

Read Command: AT+ WAIP?	+ WAIP: <mode> OK

Test Command: AT+ WAIP=?	+ WAIP: (list of supported <mode>s) OK

Values:

<mode> **Phonebook Initialization Mode**
- **0** Normal initialization. **Default**
- **1** No phonebook initialization

Parameter Storage: The <mode> parameter is stored in EEPROM using AT&W. The default can be restored using AT&F.

Examples:

Command	Responses
AT+WAIP=? Note: Ask for possible values	+WAIP: (0,1) OK Note: Disable / enable
AT+WAIP =1 Note: Inhibit initialization of phonebooks (next boot)	OK Note: no answer
AT+WAIP? Note: Get current values	+WAIP: 1 OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Chapter 17 – Short Messages

Select Message Service +CSMS

Description: This command defines the availability of the SMS services and the SMS AT commands.

The Supported Services include:

SMS-MO	Originated short messages
SMS-MT	Terminated short messages
SMS-CB	Cell Broadcast Message services

Syntax:

Command	Responses
Action Command: AT+CSMS=<service>	+ CSMS: <mt>,<mo>,<bm> OK
Read Command: AT+ CSMS?	+ CSMS: <service>,<mt>,<mo>,<bm> OK
Test Command: AT+ CSMS=?	+ CSMS: (list of supported <service>s) OK

Values:

<service> **Selected Service**
- **0** SMS AT commands are compatible with GSM 07.05 Phase 2 version 4.7.0. Default
- **1** SMS AT commands are compatible with GSM 07.05 Phase 2 +

<mt> **SMS-MT Support**
- **0** SMS-MT not supported
- **1** SMS-MT supported

<mo> **SMS-MO Support**
- **0** SMS-MO not supported
- **1** SMS-MO supported

<bm> **SMS-BM Support**
- **0** SMS-BM not supported
- **1** SMS-BM supported

Parameter Storage: The <service> parameter is stored in EEPROM using AT&W. The default can be restored using AT&F.

Examples:

Command	Responses
AT+CSMS=0 Note: SMS command Phase 2 version 4.7.0	+CSMS: 1,1,1 OK Note: SMS-MO, SMS-MT and SMS-CB supported
AT+CSMS? Note: Get current values	+CSMS: 0,1,1,1 OK
AT+CSMS=? Note: Possible services	+CSMS: (0,1) OK

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 16.

New Message Indication +CNMI

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

Syntax:

Command	Responses
Action Command: AT+CNMI=<mode>,<mt>,<bm>,<ds>,<bfr>	OK

Read Command: AT+ CNMI?	+ CNMI: <mode>,<mt>,<bm>,<ds>,<bfr> OK

Test Command: AT+ CNMI=?	+ CNMI: (list of supported <mode>s), (list of supported <mt>s), list of supported <bm>s), list of supported <bm>s), list of supported <bfr>s) OK

Unsolicited Responses For:	Unsolicited Response
<mt>=1	+ CMTI: <mem), <index>
<mt>=2 and PDU mode	+CMT: [<alpha>],<length> <pdu>
<mt>=2 and text mode	+CMT: <oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>, <tosca>,<length>] <data>
<bm>=1	+CBMI: <mem>,<index>
<bm>=2 and PDU mode	+CBM: <length> <pdu>
<bm>=2 and text mode	+CBM: <sn>,<mid>,<dcs>,<page>,<pages> <data>
<ds>=1 and PDU mode	+CDS: <length> <pdu>
<ds>=1 and text mode	+CDS: <fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>
<ds>=2	+CDSI: <mem>,<index>

Values:

<mode> **Processing of Unsolicited Result Codes**

Important Note: Only <mode>=2 and 3 are supported.

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

0 Same processing as <mode>=2

1 Same processing as <mode>=2

2 Buffer unsolicited result codes in the TA (terminal adapter) when TA-DTE link is reserved and flush them to the DTE after reservation. Otherwise forward them directly to the DTE

3 Forward unsolicited result codes to the DTE by using a specific in-band technique: while TA-DTE(TA is the terminal adapter) link is reserved (i.e., DTE is in online data mode by CSD or GPRS call) unsolicited result codes are replaced by a break (100ms) and stored in a buffer. The unsolicited result codes buffer is flushed to the DTE after reservation (after +++ was entered). Otherwise, (the DTE is not in online data mode) forward them directly to the DTE

<mt> **Result Code Indication Routing for SMS-DELIVER Indications**

0 No SMS-DELIVER indications are routed.

1 SMS-DELIVERs are routed using unsolicited code +CMTI. **Default**

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

3 Class 3 SMS-DELIVERs are routed directly using code in <mt>=2. Other classes messages result in indication <mt>=1

<bm> **Rules for Storing the Received CBMs** (Cell Broadcast Message) types. They depend on the coding scheme (text or PDU) and the setting of Select CBM Types (see the +CSCB command).

- **0** No CBM indications are routed to the TE. The CBMs are stored. **Default.**
- **1** The CBM is stored and an indication of the memory location is routed to the customer application using unsolicited result code: +CBMI.
- **2** New CBMs are routed directly to the DTE using an unsolicited result code.
- **3** Class 3 CBMs: as <bm>=2. Other classes CBMs: as <bm>=1.

<ds> **SMS-STATUS-REPORTs Routing**

- **0** No SMS-STATUS-REPORTs are routed. **Default**
- **1** SMS-STATUS-REPORTs are routed using unsolicited code: +CDS
- **2** SMS-STATUS-REPORTs are stored and routed using the unsolicited result code: +CDSI

<bfr> **TA (Terminal Adapter) Buffer of Unsolicited Result Codes Mode**

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

<mem> **Memory Storage**

- **"SM"** SMS message storage in SIM. **Default**
- **"ME"** SMS message storage in Flash.
- **"SR"** Status report message storage (in SIM if the EF-SMR file exists; otherwise, in the ME (mobile equipment) non-volatile memory))
- **"BM"** CBM message storage in non-volatile memory.

<length> **Text Mode (AT+CMGF=1): Number of Characters**
PDU Mode (AT+CMGF=0): Length of the TP Data Unit in Bytes
Integer type

<alpha> Associated Phonebook Name
String type

<scts> **Service Center Timestamp**
String format: "yy/MM/dd,hh:mm:ss±zz" (year/month/Day,Hour:Min:Sec±TimeZone)

<oa> **Originator Address**
String type

<tooa> **Type of Address of <oa>**
When the first character of <oa> is "+", the **default is 145;** otherwise, the **default is 129**.

- **129** ISDN / telephony numbering plan, national / international unknown
- **145** ISDN / telephony numbering plan, international number
- **161** ISDN / telephony numbering plan, national number
- **128-255** Other values (refer GSM 04.08 section 10.5.4.7)

<fo> **First Byte of SMS-DELIVER or SMS-STATUS-REPORT**
Integer type

<pid> **Protocol Identifier**
Integer type

<dcs> **Data Coding Scheme**
Integer type

<sca> **Service Center Address**
String type

<tosca> **Type of Address of <sca>**
When the first character of <sca> is "+", the **default is 145;** otherwise, the **default is 129**.

- **129** ISDN / telephony numbering plan, national / international unknown
- **145** ISDN / telephony numbering plan, international number
- **161** ISDN / telephony numbering plan, national number
- **128-255** Other values (refer GSM 04.08 section 10.5.4.7)

<data> **SMS User Data in Text Mode**
String type

<pdu> **SMS User Data in PDU Mode**
String type (hexadecimal format)

<index> **Place of Storage in Memory**
Integer type

<sn> **CBM Serial Number**
Integer type

<mid> **CBM Message Identifier**
Integer type

<page> **CBM Page Parameter Bits 4-7**
Integer type

<pages> **CBM Page Parameter Bits 0-3**
Integer type

<mr> **Message Reference**
Integer type

<ra> **Recipient Address**
String type

<tora> **Type of Address of <ra>**
Integer type.
When the first character of <ra> is "+", the **default is 145;** otherwise, the **default is 129**.
129 ISDN / telephony numbering plan, national / international unknown
145 ISDN / telephony numbering plan, international number
161 ISDN / telephony numbering plan, national number
128-255 Other values (refer GSM 04.08 section 10.5.4.7)

<dt> **Discharge Time**
String format: "yy/MM/dd,hh:mm:ss±zz" (year [00-99]/ month [01-12]/Day [01-31], Hour:Min:Second and TimeZone [quarters of an hour])

<st> **Status of SMS-STATUS-REPORT**
Integer type

Parameter Storage: The <mode>, <mt>, <bm>, <ds> and <bfr> parameter are stored in EEPROM using AT+CSAS. The default can be restored using AT&F.

Examples:

Command	Responses
AT+CNMI=2,1,0,0,0 Note: <mt>=1	OK
	AT+CMTI: “SM”,1 Note: message received
AT+CNMI=2,2,0,0,0 Note: <mt>=2	OK
	+CMT: “123456”,”98/10/01,12:30 00+00”,129,4,32,240, “15379”,129,5 Note: message received
AT+CNMI=2,0,0,1,0 Note: <ds>=1	OK
AT+CMGS=”+33146290800” Happy Birthday! <ctrl-Z> Note: Send a message in text mode	+CMGS: 7 OK Note: Successful transmission
	+CDS: 2, 116, ”+33146290800”, 145, “98/10/01,12:30:07+04”, “98/10/01,12:30:08+04”, 0 Note: message was correctly delivered

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 16.

Set Text Mode Parameters +CSMP

Description: This command selects values for <vp>, <pid>, and <dcs> and configures the text mode.

Syntax:

Command	Responses
Action Command: AT+CSMP=<fo>, <vp>, <pid>,<dcs>	OK

Read Command: AT+ SMP?	+CSMP: <fo>, <vp>, <pid>,<dcs> OK

No Test Command

Values: **<fo>** **The <fo> byte comprises 6 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 that 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)

<vp> **Validity Period**
In text mode <vp> is only coded in "*relative"* format.
The default value is 167 (24 hours). This means that one byte 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> **Protocol ID**
String type

<dcs> **Data Encoding Scheme**
Integer type

Parameter Storage: The <vp> parameter is stored in E2P using the AT+CSAS command. The default can be restored using AT&F.

Examples:

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

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 16.

Preferred Message Format +CMGF

Description: This command selects the preferred message format. The message formats supported are:

Text mode
PDU mode

Syntax:

Command	Responses
Action Command: AT+CMGF<mode>	OK

Read Command: AT+CMGF?	+CMGF: <mode> OK

Test Command: AT+CMGF=?	+CMGF: (list of supported <mode>s) OK

Values: **<mode> Text Mode or PDU Mode**

0 PDU mode
1 Text mode. **Default**

Parameter Storage: The <mode> parameter is stored in EEPROM using the AT+CSAS command. The default can be restored using AT&F.

Examples:

Command	Responses
AT+CMGF ? Note: Current message format	+CMGF: 1 OK Note: Text mode
AT+CMGF=? Note: Possible message format	+CMGF: (0,1) OK Note: Text or PDU modes are available
AT+CMGF=0 Note: Set PDU mode	OK Note: PDU mode valid

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Preferred Message Storage +CPMS

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

Syntax:

Command	Responses
Action Command: AT+CPMS=<mem1>,[<mem2>],[<mem3>]	+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3> OK
Read Command: AT+CPMS?	+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3> OK
Test Command: AT+CPMS=?	+CPMS: (list of supported <mem1>s), (list of supported <mem2>s), (list of supported <mem3>s)

Values:

<mem1> **Memory used to list, read and delete messages.**
- **SM** SMS message storage in SIM. **Default**
- **ME** SMS message storage in Flash
- **SR** Status Report message storage (in SIM if the EF-SMR file exists; otherwise, in the mobile equipment's non volatile memory)
- **BM** CBM message storage (in volatile memory).

<mem2> **Memory used to write and send messages**
- **SM** SMS message storage in SIM. **Default**
- **ME** SMS message storage in Flash

<mem3> **Memory to which received SMS are preferred to be stored**
- **SM** SMS message storage in SIM. **Default**
- **ME** SMS message storage in Flash

<used 1> **Used capacity of <mem1>**

<used 2> **Used capacity of <mem2>**

<used 3> **Used capacity of <mem3>**

<total1> **Total capacity of <mem1>**

<total2> **Total capacity of <mem2>**

<total3> **Total capacity of <mem3>**

Parameter Storage: Parameters are stored in EEPROM using AT&W. The default can be restored using AT&F.

Examples:

Command	Responses
AT+CPMS=? Note: Possible message storages	+CPMS: ((“SM”,”ME”,”BM”,”SR”),(“SM”,”ME”),(“SM”,”ME”)) OK Note: Read, list, delete: SMS or SMS Status Report Write, send: SMS
AT+CPMS? Note: Read	+CPMS: “SM”,3, 10,”SM”,3,10,”SM”,3,10 OK Note: Read, write…SMS from/to SIM 3 SMS are stored in SIM. 10 is the total memory available in SIM
AT+CPMS= “SM”,”ME”,“SM” Note: Select SM for reading, ME for writing and SM for storing	+CPMS: 3,10,3,99,3,10 OK
AT+CPMS? Note: Read	+CPMS: “SM”,3,10,”ME”,3,99,“SM”,3,10, OK Note: Read, store...SMS from/to flash, write SMS to flash. 3SMS are stored in flash. 99 is the total memory available in flash
	+CMTI: “SM”,4 Note: Receive an SMS stored in SIM at location 4
AT+CPMS= “ME”,”ME”,“ME” Note: Select ME for reading, ME for writing and ME for storing	+CPMS: 3,99,3,99,3,99 OK
AT+CPMS? Note: Read	+CPMS: “ME”,3,99,”ME”,3,99,”ME”,3,99 OK Note: Read, write, store SMS from/to flash. 3 SMS are stored in flash. 99 is the total memory available in flash

Command	Responses
	+CMTI: “SM”,4 Note: Receive an SMS stored in SIM at location 4
AT+CPMS=”AM” Note: Select wrong message storage	+CMS ERROR: 302
AT+CPMS= “SM” Note: Selecting SM for reading, writing and storing has not changed	+CPMS: “4,10,4,99,4,99 OK
AT+CPMS? Note: Read	+CPMS: “SM”,4,10,”ME”,4,99,”ME”,4,99 OK Note: Read SMS from SIM. Write and store SMS from/to flash

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 16.

Other Notes:

- When <mem1> is selected, all following +CMGL, +CMGR and +CMGD commands are related to the type of SMS stored in this memory.
- The maximum number of SMS is Flash is 99.
- When the modem is switched on, <mem1>,<mem2>, and <mem3> are initialized to SM.

Service Center Address +CSCA

Description: This command indicates the service center to which the message must be sent.

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 initializing the SMS. This address is then permanently valid. The application may change it if necessary.

Syntax:

Command	Responses
Action Command: AT+CSCA=<sca>, [<tosca>]	OK

Read Command: AT+CSCA?	+CSCA: <sca>, [<tosca>] OK

No Test Command

Values:

<sca> **Service Center Address**

<tosca> **Type of Address of <sca>**

When the first character of <sca> is "+", the **default is 145;** otherwise, it is **129**.

129 ISDN / telephony numbering plan, national / international unknown

145 ISDN / telephony numbering plan, international number

161 ISDN / telephony numbering plan, national number

128-255 Other values (refer GSM 04.08 section 10.5.4.7)

Parameter Storage: The parameter <sca> is stored in EEPROM using AT+CSAS.

Examples:

Command	Responses
AT+CSCA=”0696741234” Note: Service center initialization	OK
AT+ CSCA?	+CSCA: ”0696741234” ,129 OK
AT+CSCA="0696745678",161	OK
AT+CSCA?	+CSCA: "0696745678",161 OK

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 16.

Show Text Mode Parameters +CSDH

Description: This command gives additional information about text mode result codes. This information can be found in the description of the +CMT, +CMGR, +CMGL commands and responses.

Syntax:

Command	Responses
Action Command: AT+CSDH=<n>	OK
Read Command: AT+CSDH?	+CSDH: <n> OK
Test Command: AT+CSDH=?	+CSDH: (list of supported <n>s) OK

Values: **<n>** **Show Text Mode**

0 Do not show header values. **Default**

1 Show the values in result codes

Parameter Storage: The parameter <n> is stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+CSDH=0 Note: Set value to “do not show”	OK
AT+CSDH? Note: Current value	+CSDH: 0 OK Note: Do not show header values
AT+CSDH=?	+CSDH: (0,1) OK

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 16.

More Messages to Send +CMMS

Description: This command allows the link to be kept open while sending several short messages within a short delay.

Syntax:

Command	Responses
Action Command: AT+CMMS=<mode>	OK

Read Command: AT+CMMS?	+CMMS: <mode> OK

Test Command: AT+CMMS=?	+CMMS: (list of supported <mode>s) OK

Values: **<mode> Operating Mode**

0 Disable feature

1 Keep link opened while messages are sent.
If the delay between two messages exceeds 5 seconds, the link is closed and the mode is reset to *0: the feature is disabled*.

2 Keep link opened while messages are sent.
If the delay between two messages exceeds 5 seconds, the link is closed but the mode remains set to *2: the feature is still enabled*.

Parameter Storage: None

Examples:

Command	Responses
AT+CMMS=?	+CMMS: (0-2) OK
AT+CMMS=2 Note: Enable feature	OK Note: Feature is enabled; link is open
AT+CMMS?	+CMMS: 2 OK

SIM, PIN, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Notes:

- The delay of 5 seconds complies with Recommendation 3GPP TS 27.005.
- Before sending the **last** SMS in the link, you **must use** the **AT+CMSS=0** command. This command will indicate that the next SMS will be the last one.

Send Message +CMGS

Description: This command allows the user application to send short messages to the network. 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").

Syntax:

In Text Mode:

Command	Responses
Action Command: AT+CMGS=<da>[,<toda>]<CR> > "text to be sent <Ctrl-Z>"	+CMGS: <mr> OK

In PDU Mode:

Action Command: AT+CMGS=<length><CR> > "PDU to be sent <Ctrl-Z>"	+CMGS: <mr> OK

No Read and Test Commands

Values:

<da> **Destination Address**
string type

<toda> **Type of Address of <da>**

<length> **Text Mode** (AT+CMGF=1): number of characters
PDU mode (AT+CMGF=0): length of the TP data unit in bytes
integer type

<mr> **Message Reference**
integer type

Parameter Storage: None

Examples:

Command	Responses
AT+CMGS="+33146290800"<CR> ---------- Please call me soon, Fred. <ctrl-Z> Note: Send a message in text mode ----------	> ---------- ---------- +CMGS: <250> OK Note: Successful transmission
AT+CMGS=<length><CR> Note: Send a message in PDU mode (1/3) ---------- <pdu> Note: Enter message in PDU mode (2/3) ---------- <ctrl-Z> Note: End the message (3/3)	> ---------- ---------- +CMGS: <251> OK Note: Successful transmission

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 16.

Write Message to Memory +CMGW

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.

Syntax: Depending on the mode, two syntax commands are available.

In Text Mode:

Command	Response
Action Command: AT+CMGW= <oa/da> [,<tooa/toda> [,<stat>]] <CR> > Enter text <ctrl-Z / ESC>	OK

In PDU Mode:

Action Command: AT+CMGW= <length> [,<stat>] <CR> > Give PDU: <ctrl-Z / ESC>	OK

No Read and Test Commands

Values:

<oa/da> **Originating or Destination Address Value**
String format

<toda> **Type of Address of <da>**
When the first character of <da> is "+", the **default is 145**; otherwise, it is **129**.
129 ISDN / telephony numbering plan, national / international unknown
145 ISDN / telephony numbering plan, international number
161 ISDN / telephony numbering plan, national number
128-255 Other values (refer GSM 04.08 section 10.5.4.7)

<tooa> **Type of Address of <oa>**
When the first character of <oa> is "+", the **default is 145**; otherwise, it is **129**.
129 ISDN / telephony numbering plan, national / international unknown
145 ISDN / telephony numbering plan, international number
161 ISDN / telephony numbering plan, national number
128-255 Other values (refer GSM 04.08 section 10.5.4.7)

<stat> **Status of Message in Memory (PDU Mode)**
0 Received unread messages
1 Received read messages
2 Stored unsent messages
3 Stored sent messages

<stat> **Status of Message in Memory (Text Mode)**
"REC UNREAD" Received unread messages
"REC READ" Received read messages
"STO UNSENT" Stored unsent messages
"STO SENT" Stored sent messages

<length> **Length of the actual data unit in bytes**
Integer type

Parameter Storage: None

Examples:

Command	Responses
AT+CMGW="+33146290800"<CR> ---------- Hello how are you ? <ctrl-Z> Note: Write a message in text mode ----------	> ---------- ---------- +CMGW: 4 OK Note: Message stored in index 4
AT+CMGW=<length><CR> Note: Write a message in PDU mode (1/3) ---------- <pdu> Note: Enter message in PDU mode (2/3) ---------- <ctrl-Z> Note: End the message (3/3)	> ---------- ---------- +CMGW: <index> OK Note: Message stored in <index>

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 16.

Send Message from Storage +CMSS

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

Syntax:

Command	Responses
Action Command: AT+CMSS=<index>[,<da> [,<toda>]]	+CMSS: <mr> OK

No Read and Test Commands

Values:

<da> **Destination address**
Coded like GSM 03.40 [4]TP-DA

<index> **Place of Storage in Memory**

<toda> **Type of Address of <da>**
When the first character of <da> is "+", the **default is 145**; otherwise, it is **129**.
129 ISDN / telephony numbering plan, national / international unknown
145 ISDN / telephony numbering plan, international number
161 ISDN / telephony numbering plan, national number
128-255 Other values (refer GSM 04.08 section 10.5.4.7)

<tooa> **Type of Address of <oa>**
Default is 145 when the dialing string includes international access code character "+"; otherwise it is **129**.
129 ISDN / telephony numbering plan, national / international unknown
145 ISDN / telephony numbering plan, international number
161 ISDN / telephony numbering plan, national number
128-255 Other values (refer GSM 04.08 section 10.5.4.7)

<mr> **Message Reference**
Integer type

Parameter Storage: None

Examples:

Command	Responses
AT+CMGW=0660123456<CR> ---------- Today is my birthday <ctrl - Z> ----------	---------- ---------- +CMGW: 5 OK Note: Message stored with index 5
AT+CMSS=5, 0680654321 Note: Send the message 5 to a different destination number	+CMSS: <157> OK Note: Successful transmission

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 16.

Read Message +CMGR

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

Syntax: Depending on the mode, several responses are possible:

For SMS-DELIVER and Text Mode:

Command	Responses
Action Command: AT+CMGR=<index>	+CMGR: <stat>,<oa>,[<alpha>,]<scts>[,<tooa>,<fo>,<pid>,<dcs>, <sca>,<tosca>,<length>] <data> OK

For SMS-SUBMIT and Text Mode:

Action Command: AT+CMGR=<index>	+CMGR: <stat>,<da>,[<alpha>,][,<toda>,<fo>,<pid>,<dcs>, [<vp>],<sca>,<tosca>,<length>] <data> OK

For SMS-STATUS-REPORT and text mode:

Action Command: AT+CMGR=<index>	+CMGR: <stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> OK

For PDU Mode:

Action Command: AT+CMGR=<index>	+CMGR: <stat>,[<alpha>],<length> <pdu> OK

No Read and Test Commands

Values:

<da> **Destination Address**
String format

<toda> **Type of Address of <da>**
129 ISDN / telephony numbering plan, national / international unknown
145 ISDN / telephony numbering plan, international number
161 ISDN / telephony numbering plan, national number
128-255 Other values (refer GSM 04.08 section 10.5.4.7)

<dcs> **Data Coding Scheme**
Integer type

<dt> **Discharge Time**
String format: "yy/MM/dd,hh:mm:ss±zz" (year [00-99]/ month [01-12]/Day [01-31], Hour:Min:Second and TimeZone [quarters of an hour])

<oa> **Originator Address**
String type

<tooa> **Type of Address of <oa>**
129 ISDN / telephony numbering plan, national / international unknown
145 ISDN / telephony numbering plan, international number
161 ISDN / telephony numbering plan, national number
128-255 Other values (refer GSM 04.08 section 10.5.4.7)

<scts> **Service Center Time Stamp**
String format: "yy/MM/dd,hh:mm:ss±zz"
(Year/Month/Day,Hour:Min:Seconds±TimeZone)

<fo>: **First Byte of SMS-DELIVER, SMS-SUBMIT or SMS-STATUS-REPORT**
Integer type

<pid> **Protocol Identifier**
Integer type

<index> **Place of Storage in Memory**
Integer type

<length> **Text Mode** (AT+CMGF=1): Number of Characters
PDU Mode (AT+CMGF=0): Length of the TP Data Unit in Bytes
Integer type

<mr> **Message Reference**
Integer type

<pdu> **SMS User Data in PDU Mode**
String type (hexadecimal format)

<ra> **Recipient Address**
String type

<sca> **Service Center Address**
String type

<st> **Status of a SMS-STATUS-REPORT**
Integer type

<stat> **Status of Message in Memory (PDU Mode)**
0 Received unread messages
1 Received read messages
2 Stored unsent messages
3 Stored sent messages

<stat> **Status of Message in Memory (Text Mode)**
"REC UNREAD" Received unread messages
"REC READ" Received read messages
"STO UNSENT" Stored unsent messages
"STO SENT" Stored sent messages

<tora> **Type of Address of <ra>**
129 ISDN / telephony numbering plan, national / international unknown
145 ISDN / telephony numbering plan, international number
161 ISDN / telephony numbering plan, national number
128-255 Other values (refer GSM 04.08 section 10.5.4.7)

<tosca> **Type of Address of <sca>**
129 ISDN / telephony numbering plan, national / international unknown
145 ISDN / telephony numbering plan, international number
161 ISDN / telephony numbering plan, national number
128-255 Other values (refer GSM 04.08 section 10.5.4.7)

<alpha> **Associated Phonebook Name**
String type

<data> **SMS User Data in Text Mode**
String type

<vp> **Validity Period**
In text mode is only coded in "relative" format.
This means that one byte can describe different values.
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

Parameter Storage: None

Examples:

Command	Responses
	AT+CMTI: "SM",1 Note: New message received
AT+CMGR=1 Note: Read the message	+CMGR: "REC UNREAD", "0146290800","98/10/01,18:22:11+00" ABCdefGHI OK
AT+CMGR=1 Note: Read the message again	+CMGR: "REC READ", "0146290800","98/10/01,18:22:11+00" ABCdefGHI OK Note: Message is read now
AT+CMGR=2	OK Note: Location empty

Command	Responses
AT+CMGF=0 ;+CMGR=1 Note: In PDU mode	+CMGR: 2,,26 07913366003000F3040B913366920547F40013001190 412530400741AA8E5A9C5201 OK Note: Message is stored but unsent, no <alpha>field
AT+CMGF=1;+CPMS=”SR”;+CNMI=,,,2 Note: Reset to text mode, set read memory to “SR”, and allow storage of further SMS Status Report into “SR” memory	OK
AT+CMSS=3 Send an SMS previously stored	+CMSS: 160 OK
	+CDSI: “SR”,1 New SMS Status Report stored in “SR” memory at index 1
AT+CMGR=1 Note: Read the SMS Status Report	+CMGR: "REC UNREAD",6,160, "+33612345678",129, "01/05/31,15:15:09+00", "01/05/31,15:15:09+00",0 OK

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 16.

List Message +CMGL

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: Depending on the mode, several responses are possible:

For SMS-DELIVER or SMS-SUBMIT and Text Mode:

Command	Responses
Action Command: AT+CMGL=<stat>	+CMGL: <index>,<stat>,<da/oa>,[<alpha>], [<scts>, <tooa/toda>, <length>] <data> [+CMGL: <index>,<stat>,<da/oa>,[<alpha>],[<scts>,<tooa/toda>,<length>] <data>[…]]

For SMS-STATUS-REPORT and Text Mode:

Action Command: AT+CMGL=<stat>	+CMGL: <index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> [+CMGL: <index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>, <st>[…]] OK

For PDU Mode:

Action Command: AT+CMGL=<stat>	+CMGL: <index>,<stat>, [<alpha>], <length> <pdu> [+CMGL: <index>,<stat>, [<alpha>], <length> <pdu> […]] OK

No Read and Test Commands

Values:

<da> **Destination Address**
String format

<toda> **Type of Address of <da>**
129 ISDN / telephony numbering plan, national / international unknown
145 ISDN / telephony numbering plan, international number
161 ISDN / telephony numbering plan, national number
128-255 Other values (refer GSM 04.08 section 10.5.4.7)

<dt> **Discharge Time**
String format: "yy/MM/dd,hh:mm:ss±zz" (year [00-99]/ month [01-12]/Day [01-31], Hour:Min:Second and TimeZone [quarters of an hour])

<oa> **Originator Address**
String type

<tooa> **Type of Address of <oa>**
129 ISDN / telephony numbering plan, national / international unknown
145 ISDN / telephony numbering plan, international number
161 ISDN / telephony numbering plan, national number
128-255 Other values (refer GSM 04.08 section 10.5.4.7)

<scts> **Service Center Time Stamp**
String format: "yy/MM/dd,hh:mm:ss±zz"
(Year/Month/Day,Hour:Min:Seconds±TimeZone)

<fo> **First Byte of SMS-DELIVER, SMS-SUBMIT or SMS-STATUS-REPORT**
Integer type

<pid> **Protocol Identifier**
Integer type

<index> **Place of Storage in Memory**
Integer type

<length> **Text Mode** (AT+CMGF=1): Number of Characters
PDU Mode (AT+CMGF=0): Length of the TP Data Unit in Bytes
Integer type

<mr> **Message Reference**
Integer type

<ra> **Recipient Address**
String type

<sca> **Service Center Address**
String type

<st> **Status of a SMS-STATUS-REPORT**
Integer type

<stat> **Status of Message in Memory (PDU Mode)**
0 Received unread messages
1 Received read messages
2 Stored unsent messages
3 Stored sent messages

<stat> **Status of Message in Memory (Text Mode)**
"REC UNREAD" Received unread messages
"REC READ" Received read messages
"STO UNSENT" Stored unsent messages
"STO SENT" Stored sent messages

<tora> **Type of Address of <ra>**
129 ISDN / telephony numbering plan, national / international unknown
145 ISDN / telephony numbering plan, international number
161 ISDN / telephony numbering plan, national number
128-255 Other values (refer GSM 04.08 section 10.5.4.7)

<alpha> **Associated Phonebook Name**
String type

Parameter Storage: None

Examples:

Command	Responses
AT+CMGL="REC UNREAD" Note: List unread messages in text mode	+CMGL: 1,"REC UNREAD","0146290800",, I will be late +CMGL: 3,"REC UNREAD", "46290800",, See you tonight! OK Note: 2 messages are unread; these messages will then have their status changed to "REC READ"
AT+CMGL="REC READ" Note: List read messages in text mode	+CMGL: 1,"REC READ","0146290800",, I will be late +CMGL: 2,"REC READ","0146290800",, Keep cool +CMGL: 3,"REC READ", "46290800",, See you tonight! OK
AT+CMGL="STO SENT" Note: List stored and sent messages in text mode	OK Note: No message found
AT+CMGL=1 Note: List read messages in PDU mode	+CMGL: 1,1,,26 07913366003000F3040B913366920547F400130011904125 30400741AA8E5A9C5201 OK

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 16.

Other 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.

Delete Message +CMGD

Description: This command deletes one or several messages from preferred message storage ("BM" SMS-CB "RAM storage", "SM" SMSPP storage, "SIM storage" or “SR” SMS Status-Report storage).

Refer also to the Preferred Message Storage +CPMS command.

Syntax:

Command	Responses
Action Command: AT+CMGD=<Index> [,<DelFalg>]	OK

No Read and Test Commands

Values:

<index> **Index of Messages to be Deleted**

If <DelFlag>=0

1-20 If the preferred message storage is “BM”
If <DelFlag> is > 0, <index> is ignored

SIM Values

If the preferred message storage is "SM" or "SR".

<DelFlag> **Message Deletion Mode**

0 Delete message at location <index>. Default.
If <DelFlag> is omitted, the default value is used.

1 Delete All READ messages

2 Delete All READ and SENT messages

3 Delete All READ, SENT and UNSENT messages

4 Delete All messages.

Parameter Storage: None

Examples:

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

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 16.

New Message Acknowledgement +CNMA

Description: This command enables the acknowledgement of the reception of a new message routed directly to the DTE.

- In TEXT mode, only positive acknowledgement to the network (RP-ACK) is possible.
- In PDU mode, either positive (RP-ACK) or negative (RP-ERR) acknowledgement to the network is possible.

Acknowledgement 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).

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: Depending on the mode, two syntaxes are available:

In Text Mode:

Command	Response
Action Command: AT+CNMA	OK

In PDU Mode:

Action Command: AT+CNMA [= <n> [, <length> [<CR> PDU is entered <ctrl – Z / ESC>]]]	OK
Read Command: AT+CNMA?	OK
Test Command: AT+CNMA=?	OK

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-ERR with optional PDU message

<length> Length of the PDU message

Parameter Storage: None

Examples:

Example of New Message Acknowledgement in TEXT Mode

Command	Responses
AT+CSMS=1 Note: SMS AT Commands compatible with GSM 07.05 Phase 2 + version	OK
AT+CMGF=1 Note: Set TEXT mode	OK Note: TEXT mode valid
AT+CNMI=2,2,0,0,0 Note: <mt>=2	OK
	+CMT: “123456”,”98/10/01,12:30 00+00”,129,4 ,32,240, “15379”,129,5 *Received message* Note: Message received
AT+CNMA Note: acknowledge the message received	OK Note: send positive acknowledgement to the network
AT+CNMA Note: Try to acknowledge again	+CMS ERROR: 340 Note: No +CNMA acknowledgment expected

Example of New Message Acknowledgement in PDU Mode:

Command	Responses
AT+CSMS=1 Note: SMS AT Commands compatible with GSM 07.05 Phase 2 + version	OK
AT+CMGF=0 Note: Set PDU mode	OK Note: PDU mode valid

Example continued on next page

Command	Responses
AT+CNMI=2,2,0,0,0 Note: <mt>=2	OK
	+CMT: ,29 07913366003000F1240B913366920547F3000000300 3419404800B506215D42ECFE7E17319 Note: Message received
AT+CNMA=2,2 <CR>>00D3 <Ctrl-Z> Note: Negative ACK to the SMS. Reason is: memory capacity exceeded	OK

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 16.

Message Status Modification +WMSC

Description: This command allows the manipulation of a message status. The accepted status changes are from READ to NOT READ and vice versa, and also from SENT to NOT SENT and vice versa.

Syntax:

Command	Response
Action Command: AT+WMSC= <loc>, <status>	OK

No Read and Test Commands

Values:

<loc> **Location Number of the Stored Message**
Integer type

<stat> **Status of Message in Memory (PDU Mode)**
0 Received unread messages
1 Received read messages
2 Stored unsent messages
3 Stored sent messages

<stat> **Status of Message in Memory (Text Mode)**
REC UNREAD Received unread messages
REC READ Received read messages
STO UNSENT Stored unsent messages
STO SENT Stored sent messages

Parameter Storage: None

Examples:

Command	Responses
AT+CMGR=2	+CMGR: “REC READ”,”+336290918”,, ”99/05/01 14:19:44+04” Hello All of you! OK
AT+WMSC=2,”REC UNREAD”	OK
AT+CMGR=2	+CMGR: “REC UNREAD”,”+336290918”,,”99/05/01 14:19:44+04” Hello All of you! OK

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 16.

SMS Status Change/Do Not Change +WUSS

Description: The +WUSS command is used to keep the SMS Status at UNREAD after +CMGR or +CMGL.

Syntax:

Command	Response
Action Command: AT+WUSS=<mode>	OK
Read Command: AT+WUSS?	+WUSS: <mode> OK
Test Command: AT+WUSS=?	+WUSS: (list of supported <mode>s) OK

Values: **<mode> SMS Status Change Mode**

0 The SMS status will change. **Default**

1 The SMS status will not change

Parameter Storage: The parameter <mode> is stored in EEPROM. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+WUSS=?	+WUSS: (0-1) OK
AT+WUSS=1	OK
	+CMTI: “SM”,10 Note: SMS has been received in index 10
AT+CMGR=10	+CMGR: “REC UNREAD”,”+33660669023”,,”03/02/13,18:36:35+00” Do you want to change state? OK
AT+CMGR=10	+CMGR: “REC UNREAD”,”+33660669023”,,”03/02/13,18:36:35+00”<CR><LF> Do you want to change state? OK Note: The state hasn’t been updated
AT+WUSS=0	OK
	+CMTI: ”SM”,11 Note: SMS has been received in index 11
AT+CMGR=11	+CMGR: “REC UNREAD”,”+33660669023”,,”03/02/13,18:56:55+00” `It is me again.` OK
AT+CMGR=11	+CMGR: “REC UNREAD”,”+33660669023”,,”03/02/13,18:56:55+00”<CR><LF> `It is me again.` OK Note: The state has been updated.
AT+WUSS?	+WUSS: 0 OK
AT+CMGR=10	+CMGR: “REC READ”,”+33660669023”,,”03/02/13,18:56:55+00” OK
AT+WUSS?	+WUSS: 0 OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Message Overwriting +WMGO

Description: This command specifies a location in the SIM or Flash memory for the next SMS storing and is used in conjunction with the +CMGW command. The defined location is used only once: +WMGO has to used again to perform another overwrite.

Syntax:

Command	Response
Action Command: AT+WMGO= <loc>	OK
Read Command: AT+WMBO?	+WUSS: <LOC> OK
Test Command: AT+WMGO=?	+WMGO: (list of supported <loc>s) OK

Values: **<loc> Location Number of the SMS to Write or Overwrite.**
The number depends on the SIM or Flash memory capacity.

Parameter Storage: None

Examples:

Command	Responses
AT+CPMS? Note: Check the storage area	+CPMS: “SM”,3,10,”SM”,3,10,”SM”,3,10 OK
AT+CMGW=”+33146290800”<CR> Hello how are you?<ctrl-Z> Note: Write a message in text mode	+CMGW: 4 OK Note: Message stored in index 4 in the SIM
AT+WMGO=?	+WMGO: (1-10) OK Note: Possible values for the SIM
AT+WMGW=4	OK
AT+CMGW=”+33146299704”<CR> You are overwritten <ctrl-Z>	+CMGW: 4 OK Note: New Message stored in index 4

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 16.

Other Notes:

- If the external application specifies a free location and an incoming message is received before the AT+CMGW command occurs, the product may store the incoming message at the specified available location. If the user then issues an AT+CMGW command without changing the location with another AT+WMGO, the received message will be overwritten.
- The location number is not kept over a software reset.
- If the storage area is changed with the AT+CPMS command, the value of WMGO will be reset to zero.

Copy Messages +WMCP

Description: This command copies the SMS from the SIM to the Flash or from the Flash to the SIM.

Syntax:

Command	Response
Action Command: AT+WMCP=<mode>[,<loc>]	OK
Read Command: AT+WMCP?	OK
Test Command: AT+WMCP=?	+WMCP: (list of supported <mode>s), (list of supported <loc>s) OK

Values:

<mode> **Copy Mode**
- **0** From SIM to the Flash
- **1** From the Flash to the SIM

<loc> L**ocation of the SMS to Copy** (mandatory for <mode>=1)
If this location is not defined, all the SMS will be copied
The SMS copied will have the first free location

Parameter Storage: None

Examples:

Command	Responses
AT+WMCP=?	+WMCP: 0,(1-12) +WMCP: 1,(1-99) OK Note: The location of the SMS that can be copied from the SIM to the Flash is 1 to 12 (maximum available in the SIM). The location of the SMS that can be copied from the Flash to the SIM is 1 to 99 (the maximum available in the Flash).
AT+CPMS? Note: Read the SMS storage	+CPMS: “SM”,3,10,”ME”,0,99,”SM”,3,10 OK Note: Read, write...SMS from/to SIM. 3 SMS are stored in the SIM. 10 is the total memory available in SIM. No SMS in Flash.
AT+CMGR=1 Note: Read the first SMS from the SIM	+CMGR: “REC UNREAD”,”0146290800”, “98/10/01,18:22:11+00”, <CR><LF> My test message: SMS in the SIM at location 1 OK
AT+WMCP=0,1 Note: Copy the SMS at location 1 in the SIM to the Flash	OK
AT+CPMS? Note: Read the SMS storage	+CPMS: “SM”,3,10,”ME”,0,99,”SM”,3,10 OK Note: Read, write...SMS from/to SIM. 3 SMS are stored in the SIM. 10 is the total memory available in SIM. 1 SMS in Flash.
AT+CPMS=“ME”,”ME”,“ME” Note: Select ME for reading, ME for writing and ME for storing	+CPMS: 1,99,1,99,1,99 OK
AT+CMGR=1 Note: Read the first SMS from the Flash	+CMGR: “REC READ”,”0146290800”, “98/10/01,18:22:11+00”, <CR><LF> My test message: SMS in the SIM at location 1 OK
AT+CMGW=”+33146290800”<CR> Other test message: SMS in the Flash at location 2 <ctrl-Z> Note: Write a message in text mode	+CMGW: 2 OK Note: Message stored in index 2 in the Flash
AT+CPMS? Note: Read the SMS storage	+CPMS: “ME”,2,99,”ME”,2,99,”ME”,2,99 OK Note: Read, write...SMS from/to the Flash. 2 SMS are stored in the Flash.
AT+WMCP=1,2 Note: Copy the SMS at location 2 in the Flash to the SIM	OK
AT+CPMS=“SM”,”ME”,“SM” Note: Select SM for reading, ME for writing and SM for storing	+CPMS: 4,10,2,99,4,10 OK

+WMCP Examples Continued

Command	Responses
AT+CMGR=4 Note: Read the first SMS from the SIM	+CMGR: “REC UNREAD”,”+33146290800”, “98/10/01,8:22:11+00”,<CR><LF> Other test message: SMS in the Flash at location 2 OK
AT+CPMS=”ME” Note: Select ME for reading	+CPMS: 2,99,2,99,4,10 OK
AT+CMGD=0,4 Note: Erase all the SMS stored in the Flash	OK
AT+CPMS? Note: Read the SMS storage	+CPMS: “ME”,0,99,”ME”,0,99,”SM”,4,10 OK Note: No SMS is stored in the Flash
AT+WMCP=0 Note: Copy all the SMS from the SIM to the Flash	OK
AT+CPMS? Note: Read the SMS storage	+CPMS: “ME”,4,99,”ME”,4,99,”SM”,4,10 OK Note: 4 SMS are stored in the Flash

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 16.

Save Settings +CSAS

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:

Command	Response
Action Command: AT+CSAS	OK

No Read and Test Commands

Values: None

Parameter Storage: None

Examples:

Command	Responses
AT+CSAS Note: Store +CSCA and +CSMP parameters	OK Note: Parameters saved

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 3.

Restore Settings +CRES

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:

Command	Response
Action Command: AT+CRES	OK

No Read and Test Commands

Values: None

Parameter Storage: None

Examples:

Command	Responses
AT+CRES Note: Restore +CSCA and +CSMP parameters	OK Note: Parameters restored

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 3.

Select Cell Broadcast Message Types +CSCB

Description: This command selects which types of CBMs are to be received by the mobile equipment. This command is allowed in both PDU and text modes.

Syntax:

Command	Response
Action Command: AT+CSCB= <mode>, [<mids>]	OK

No Read and Test Commands

Values:

<mode> **Type of CBM Reception**
0 Activation of CBM reception

<mids> **Message Identifiers**
Indicates the type of message identifiers for which the mobile equipment should listen.

Note: The **<bm>** parameter of the +CNMI command controls the message indication. The activation of CBM reception (<mode>=0) can select only specific Message Identifiers (list in <mids>), but the deactivation stops any reception of CBMs (only AT+CSCB=1 is allowed).

Parameter Storage: None

Examples:

Command	Responses
AT+CSCB=0,”15-17,50,86”,” ” Note: Accept SMS-CB types, 15,16,17,50 and 86 in any language	OK Note: CBMs can be received
	+CBM: 1000112233445566778899 Note: CBM length of a received Cell Broadcast message (SMS-CB), CBM bytes in PDU mode
AT+CSCB=1 Note: Deactivate the reception of CBMs	OK Note: CBM reception is completely stopped

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 16.

Cell Broadcast Message Identifiers +WCBM

Description: This command is used to read the EF-CBMI SIM file. 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:

Command	Response
Action Command: AT+WCBM=<mids>	OK
Read Command: AT+WCBM?	+WCBM:<mids> OK

No Test Command

Values: **<mids>** **Message Identifiers**
Indicates the type of message identifiers for which the mobile equipment should listen.

Parameter Storage: None

Examples:

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

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 16.

Chapter 18 – SIM Commands

Card Identification +CCID

Description: This command orders the product to read the EF-CCID file on the SIM card.

Syntax:

Command	Responses
Action Command: AT+CCID	+CCID: <CCID> OK
Read Command: AT+CCID?	+CCID: <CCID> OK
Test Command: AT+CCID=?	OK

Values: **<CCID>** **Identification Number for the SIM**
20 digit number

Parameter Storage: None

Examples:

Command	Responses
AT+CCID Note: Get card ID	+CCID: "123456789AB111213141" OK Note: EF-CCID is present; hexadecimal format
AT+CCID? Note: Get current value	+CCID: "123456789AB111213141" Note: Same result as +CCID

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- This command is supported even if the PIN 1 / CHV 1 code is not entered.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Request IMSI +CIMI

Description: This command reads and identifies the IMSI (International Mobile Subscriber Identity) of the SIM card.

Syntax:

Command	Response
Action Command: AT+CIMI	<IMSI> OK

No Read and Test Commands

Values: **<IMSI>** **IMSI of SIM Card**
15 digit number

Parameter Storage: None

Examples:

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

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Chapter 19 – SIM ToolKit Commands

Overview of SIM Application ToolKit

SIM ToolKit, also known as "SIM Application ToolKit," introduces new functionalities which open the way to a broad range of value added services.

The principle is to allow service providers to develop new applications *(e.g., for banking, travel, ticket booking, etc.)* for subscribers and to download them into the SIM.

This solution allows new services to be accessible to the user by adding new SIM-based applications without modifying the modem.

Functionality

The term *SIM ToolKit* refers to the functionalities described in the GSM Technical Specification 11.14.

It introduces about twenty-five commands for the SIM. Three classes of ToolKit functionalities have been defined, with Class 1 offering a subset of commands and Class 3 offering the full range of commands *(*See "*Support of SIM ToolKit by the Mobile Equipment* in APPENDIX B*)*.

The SIM Application ToolKit supports:

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

Profile Download

The Profile Download instruction is sent by the customer application to the SIM as part of the initialization. It is used to indicate which SIM Application ToolKit features the customer application supports.

The AT command used for this operation is **+STSF** *(SIM ToolKit Set Facilities)*.

Proactive SIM

A proactive SIM provides a mechanism whereby the SIM can ask the customer application to perform certain actions. These actions include:

- display menu
- display given text
- get user input
- send a short message
- play the requested tone
- set up a call
- provide location information

This mechanism allows SIM applications to generate powerful menu-driven sequences on the customer application and to use services available in the network.

The commands used for this operation are:

+STIN *(SIM ToolKit Indication)*
+STGI *(SIM ToolKit Get Information)*
+STGR *(SIM ToolKit Give Response*

Data Download to SIM

Data downloading to the SIM allows *(SMS, phonebook…)* data or programs *(Java applets)* received by SMS or by Cell Broadcast to be transferred directly to the SIM Application.

This feature does not need any AT command. It is transparent to the customer application.

Menu Selection

A set of menu items is supplied by the SIM Application ToolKit. The menu selection command can then be used to inform the SIM Application which menu item is selected.

The commands used for this operation are **+STIN, +STGI and +STGR**.

Call Control by SIM

The call control mechanism allows the SIM to check all dialed numbers, supplementary service control strings and USSD strings before connecting to the network. This gives the SIM the ability to allow, bar or modify the string before the operation starts.

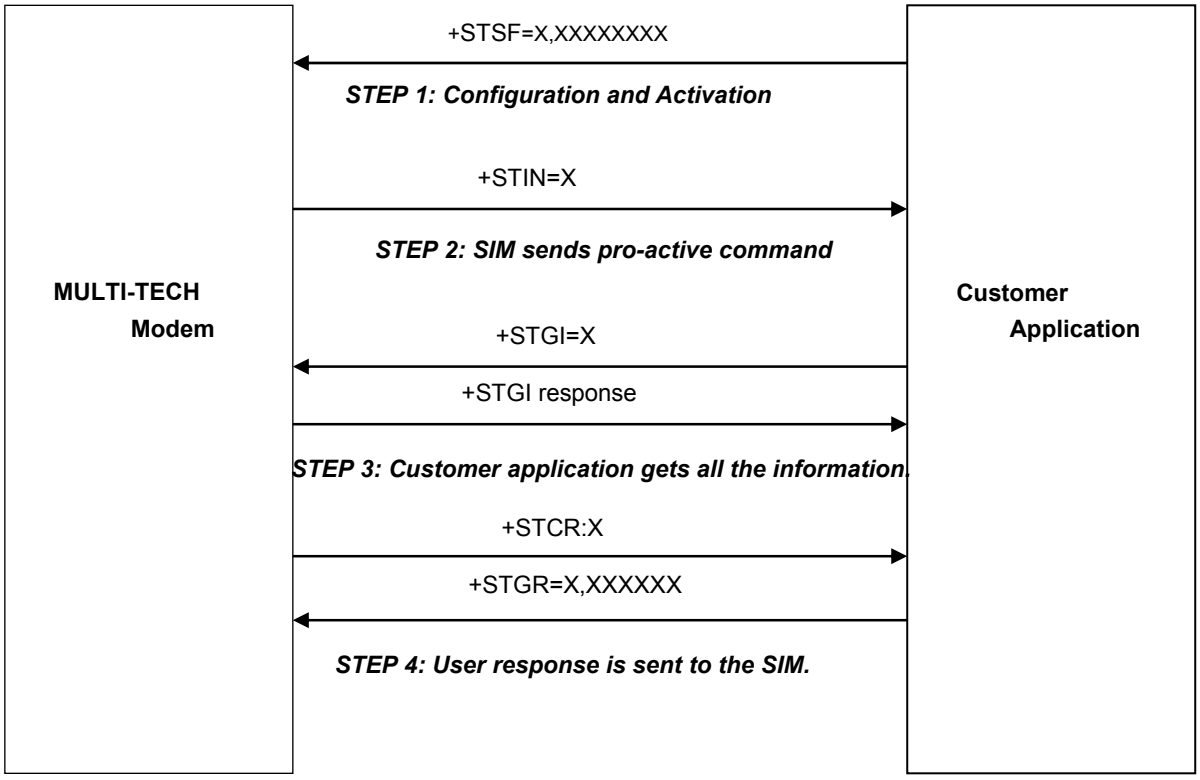
The commands used for this operation are:

+STCR (SIM ToolKit Control Response)

+STGR (SIM ToolKit Give Response)

Messages Exchanged During a SIM ToolKit Operation

The following scheme shows the SIM ToolKit commands and unsolicited results that are exchanged.



Step 1:

The customer application informs the modem which facilities are supported. This operation is performed with the **+STSF** *(SIM ToolKit Set Facilities)* command, which also activates or deactivates the SIM ToolKit functionality.

Step 2:

An unsolicited result **+STIN** *(SIM ToolKit indication)* is sent by the product in order to indicate to the customer application which command type the SIM Application ToolKit is running. The last SIM ToolKit indication can be requested by the **+STIN?** command.

Step 3:

The customer application uses the **+STGI** *(SIM ToolKit Get Information)* command to get all the information about the SIM ToolKit command, given by **+STIN**.

Step 4:

The customer application uses the **+STGR** *(SIM ToolKit Give Response)* to send its response *(if any)* to the SIM ToolKit Application.

The **+STCR** *(SIM ToolKit Control response)* indication is an unsolicited result sent by the SIM when Call control functionality is activated and before the customer application has performed any outgoing call, SMS, SS, or USSD.

SIM ToolKit Commands

SIM ToolKit Set Facilities +STSF

Description: This command allows SIM ToolKit facilities to be activated, deactivated or configured. The activation or deactivation of the SIM ToolKit functionalities requires the use of the +CFUN (Set phone functionality) command to reset the product. This operation is not necessary if PIN is not entered yet.

Syntax:

Command	Response
Action Command: +STSF=<mode>[,<config>] [,<Timeout>] [,<AutoResponse>]]]	OK
Read Command: AT+STSF?	+STSF:<mode>,<config>,<Timeout>,<AutoResponse> OK
Test Command: AT+STSF=?	+STSF: (list of supported <mode>s) , (list of supported <config>s), (list of supported <Timeout>s) , (list of supported <AutoResponse>s) OK

Values:

<mode> **SIM ToolKit Functionalities Activation Mode**

0 Deactivates the SIM ToolKit functionalities.

1 Activates the SIM ToolKit functionalities.

2 Configures the SIM ToolKit functionalities.

<Config> **SIM ToolKit Termination Profile**

This parameter gives the list of the SIM Application ToolKit facilities that are supported by the customer application.

Some bits of the first nine bytes are related to the product only and not to the customer application. The product automatically sets these bits to either 0 or 1 whatever the user enters with the +STSF command.

Each facility is coded on 1 bit:

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

Please refer to section "Structure of Terminal Profile" in the Appendixes for more information.

Range: 320060C01F0100471C-FFFFFFFF7F01005F3E

Default value: 3F6BFFFF1F0100573E

<Timeout> **Timeout for User Responses** (in units of 10 seconds).

This parameter sets the maximum time for the user action (e.g. to select an item or to input a text).

Range: 1-255 **Default:**1

<Autoresponse> **Automatic Response Activation Mode**

When autoresponse is activated, the +STIN indication for "Play Tone", "Refresh", "Send SS", "Send SMS" or "Send USSD" is automatically followed by the corresponding +STGI response.

0 Automatic response is not activated. **Default**

1 Automatic response is activated

Parameter Storage: All parameters are stored in EEPROM without using AT&W.

Examples:

Command	Responses
AT+STSF=? Note: Test command SIM ToolKit Set Facilities	+STSF: (0-2) , (320060C01F0100471C-FFFFFFFF7F01005F3E)) , (1-255) , (0-1) OK
AT+STSF?	+STSF: 0, 1F6BFFFF1F0100573E ",3,0 Note: No activation of SIM ToolKit functionality
AT+STSF=2 "FFFFFFFF7F01005F3E" Note: Set all SIM ToolKit facilities (class 3)	OK
AT+STSF=1 Note: Activation of SIM ToolKit functionality	OK
AT+CFUN=1	OK Note: Reboot modem
AT+STSF?	+STSF: 1, FFFFFFFF7F01005F3E ",3,0 OK Note: SIM ToolKit functionality activated with all facilities

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

SIM ToolKit Indication +STIN

Description: This command allows the customer application to identify the proactive command sent via a mechanism of unsolicited SIM ToolKit indications.

The last SIM ToolKit indication sent by the SIM can be requested by the AT+STIN? command. This command is only usable between the sending of the STIN indication by the SIM and the response of the user with the +STGI command.

Syntax:

Command	Response
Action Command: None	
Read Command: AT+STIN?	+STIN: <CmdType> OK
Test Command: AT+STIN=?	OK

Unsolicited Response: +STIN: <CmdType>

Values:

<CmdType>	Type of Proactive Command or Error Sent by the SIM
0	"Setup Menu"
1	"Display Text"
2	"Get Inkey"
3	"Get Input"
4	"Setup Call"
5	"Play Tone" (*)
6	"Sel Item"
7	"Refresh" (*)
8	"Send SS" (*)
9	"Send SMS" (*)
10	"Send USSD" (*)
11	"SETUP EVENT LIST"
93	"SMS-PP Download" failed due to SIM BUSY
94	"SMS-PP Download" failed due to SIM ERROR
98	Timeout when no response from user
99	"End Session"

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

Parameter Storage: None

Examples:

Command	Responses
	+STIN: 0 Note: "Setup Menu" proactive command has been sent by the SIM
AT+STIN? Note: Ask for the last SIM ToolKit indication sent by the SIM	+STIN: 0 OK Note: the last SIM ToolKit indication was a Setup Menu
AT+STGI=0	+STGI: "ToolKit Menu"+STGI: 1,4,"Item 1",0 +STGI: 2,4,"Item 2",0 OK +STGI: 99 Note: Display the SIM ToolKit application menu
AT+STIN? Note: Ask for the last SIM ToolKit indication sent by the SIM	+CME ERROR: 4 Note: Operation not supported. The +STGI command has been already used

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

SIM ToolKit Get Information +STGI

Description: This command allows information *(text to display, menu information, priorities…)* of a pro-active command sent from the SIM to be accessed.
The information is returned only after receiving a SIM ToolKit indication (+STIN).

Syntax: Depending on the value of the <CMDType>, several response syntaxes are available:

For <CmdType>=0: get information about "Setup Menu" (No action expected from SIM)

Command	Responses
Action Command: AT+STGI=<CmdType>	+STGI: <Alpha Identifier menu> +STGI: <Id>,<NbItems>,<AlphaId Label>,<HelpInfo> [,<NextActionId>] [+STGI: <Id>,<NbItems>,<AlphaId Label>,<HelpInfo> [,<NextActionId>] […]] OK

For <CmdType>=1: get information about "Display Text" (No action expected from SIM)

Action Command: AT+STGI=<CmdType>	+STGI: <Prior>,<Text>,<ClearMode> OK

For <CmdType>=2: get information about "Get Inkey" (SIM expects key pressed sent using +STGR)

Action Command: AT+STGI=<CmdType>	+STGI: <InkeyFormat>,<HelpInfo>[,<TextInfo>] OK

For <CmdType>=3: get information about '"Get Input" (SIM expects key input sent using +STGR)

Action Command: AT+STGI=<CmdType>	+STGI: <InputFormat>,<EchoMode>, <SizeMin>, <SizeMax>,<HelpInfo>[,<TextInfo>,<DefaultText>] OK

For <CmdType>=4: get information about "Setup Call" (If <Class> is omitted, call is processed as a voice call)

Action Command: AT+STGI=<CmdType>	+STGI: <Type>,<CalledNb>, <SubAddress>,<Class>,<AlphaID>,<AlphaID2> OK

For <CmdType>=5: get information about "Play Tone" (No action)

Action Command: AT+STGI=<CmdType>	+STGI: <ToneType>[,<TimeUnit>,<TimeInterval>,<TextInfo>] OK

For <CmdType>=6: get information about "Sel Item" (SIM expects an item choice sent using +STGR)

Action Command: AT+STGI=<CmdType>	+STGI: <PresetStyle>,<PresetChoice>,<DefaultItem>, <Alpha Identifier menu> +STGI: <Id>,<NbItems>,<AlphaId Label>,<HelpInfo>[,<NextActionId>] [+STGI: <Id>,<NbItems>,<AlphaId Label>,<HelpInfo>[,<NextActionId>] […]] OK

For <CmdType>=7: get information about "Refresh" (No action, "Refresh" done automatically by product)

Action Command: AT+STGI=<CmdType>	+STGI: <RefreshType> OK

For <CmdType>=8: get information about "Send SS" (No action, "Send SS" done automatically by product)

Action Command: AT+STGI=<CmdType>	+STGI: <TextInfo> OK

For <CmdType>=9: get information about "Send SMS" (No action, "Send SMS" done automatically by product)

Action Command: AT+STGI=<CmdType>	+STGI: <TextInfo> OK

For <CmdType>=10: get information about "Send USSD" proactive command. (No action, "Send USSD" done automatically by product)

Action Command: AT+STGI=<CmdType>	+STGI: <TextInfo> OK

For <CmdType>=11: get information about "Setup Event List"

Action Command: AT+STGI=<CmdType>	+STGI: <Evt> OK

For <CmdType>=12: get information about "Setup Idle Mode Text"

Action Command: AT+STGI=<CmdType>	+STGI: <Text> OK

For <CmdType>=13: get information about "Send DTMF"

Action Command: AT+STGI=<CmdType>	+STGI: <TextInfo> OK

For <CmdType>=14: get information about "Language Notification"

Action Command: AT+STGI=<CmdType>	+STGI: <Specific> [,<Code>] OK

Test

Test Command: AT+STGI=?	+STGI: (list of supported <CmdType>s) OK

No Read Command

Values:

<Alpha Identifier Menu> **Alpha Identifier of the Main Menu**
String type

<Id> **Menu Item Identifier**
Range: 1-255

<NbItems> **Number of Items in the Main Menu**
Range: 1-255

<AlphaId Label> **Alpha Identifier Label of Items**
String type (ASCII format)

<HelpInfo> **Help Information Availability**
0 Not available
1 Available

<NextActionId> **Next Proactive Command Identifier**
Integer type

<Prior> **Display Priority**
0 Normal
1 High

<Text> **Text to Display**
String type (ASCII format)

<ClearMode> **Message Clearing Mode**
0 Clear message after a delay (3 seconds)
1 Wait for user to clear message

<InkeyFormat> **"Get Inkey" Format**
0 Digit (0-9, *, #,and +)
1 SMS alphabet default
2 UCS2
3 Yes/No (y and n)

<TextInfo> **Text Information**
String type (ASCII format)

<InputFormat> **"Get Input" format**
0 Digit (0-9, *, #,and +)
1 SMS alphabet default
2 UCS2
3 Unpacked format
4 Packed format

<EchoMode> **Echo Mode**
0 Off
1 On

<SizeMin> **Minimum Length of Input**
range: 1-255

<SizeMax> **Maximum Length of Input**
Range: 1-255

<DefaultText> **Default Input Text**
String type (ASCII format)

<Type> **Call Behavior**
0 Set up call but only if not currently busy on another call
1 Set up call, putting all other calls (if any) on hold
2 Set up call, disconnecting all other calls (if any)

<CalledNb> **Called Party Number**
String type (ASCII format)

<SubAdress> **Called Party Sub-Address**
String type (ASCII format)

<Class> **Call Class**
0 Voice call
1 Data call
2 Fax call

<Alpha Id> **Text Information for User Confirmation Phase**
String type (ASCII format)

<Alpha Id2> **Text Information for Call Set-Up Phase and Calling Phase**
String type (ASCII format)

<ToneType> **Tone Type**
0 Dial
1 Busy
2 Congestion
3 Radio ack
4 Dropped
5 Error
6 Call waiting
7 Ringing
8 General beep
9 Positive beep.
10 Negative beep

<TimeUnit> **Time Unit for <TimeInterval>**
0 Minutes
1 Seconds
2 Tenths of seconds

<TimeInterval> **Time Required for Tone Playing Expressed in <TimeUnit>**
Range: 1-255

<PresentStyle> **Presentation Type**
0 Unspecified
1 Specified in <PresentChoice>

<PresentChoice> **Presentation Choice for <PresentStyle>=1**
0 Choice of data values
1 Choice of navigation options

<DefaultItem> **Default Item Identifier**
Range: 1-255

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

<Evt> **Setup Event List**
1 Reporting asked for "Idle Screen"
2 Reporting asked for "User Activity"
3 Reporting asked for "Idle Screen" and "User Activity"
4 Cancellation of reporting event

<Specific> **Language Notification Type**
0 Non specific
1 Specific

<Code> **Two-Character Code for the Language**
The number indicated after the name refers to numeric value for the language in ISO 639.
If non-specific, no <Code> will be defined.
See Notes for UCS2 format texts.

de	German (0)
en	English (1)
it	Italian (2)
fr	French (3)
es	Spanish (4)
nl	Dutch (5)
sv	Swedish (6)
da	Danish (7)
pt	Portuguese (8)
fi	Finnish (9)
no	Norwegian (10)
el	Greek (11)
tr	Turkish (12)
hu	Hungarian (13)
pl	Polish (14)
cs	Czech (32)
he	Hebrew (33)
ar	Arabic (34)
ru	Russian (35)
is	Icelandic (36)

Parameter Storage: None

Examples:

Description	Responses
	+STIN: 0 Note: "Setup Menu" proactive command has been sent by the SIM
AT+STGI=0 Note: Get information about the main menu	+STGI: "SIM TOOLKIT MAIN MENU" +STGI: 1,3 , "BANK",0 +STGI: 2,3 , "QUIZ",0 +STGI: 3,3 , "WEATHER",0 OK Note: Main menu contains 3 items

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Other Note: For the UCS2 format, texts are displayed in Hexa ASCII format. Example: when the SIM sends a text string containing 0x00 0x41, the text displayed is "0041". For details see "Coding of Alpha Fields in the SIM for UCS2" in the Appendix.

SIM ToolKit Give Response +STGR

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

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

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

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

Syntax:

Command	Response
Action Command: +STGR=<CmdType>[,<Result>,<Data>] [> <input text> <ctrl –Z / ESC>]	OK

Command	Response
Test Command: AT+STGR=?	OK

No Read Command

Values:

<CmdType> **Command Type**

0 Item selection in the main menu
1 User confirmation to clear a "DISP TEXT"
2 Response for a "GET INKEY"
3 Response for a "GET INPUT"
4 Response for a "SETUP CALL"
6 Response for a "SEL ITEM"
11 Reponses for a "SETUP EVENT LIST"
12 Response for a "SETUP IDLE MODE TEXT"
95 Send "BACKWARD MOVE" to SIM
96 Send "BEYOND CAPABILITIES" to SIM
97 Send "UNABLE TO PROCESS" to SIM
98 Send "NO RESPONSE" to SIM
99 Send "END SESSION" to SIM

Values When <CmdType>=0 (Select an item from the main menu)

<Result> **User Action**
1 Item selected by the user
2 Help information required by user

<Data> **Item Identifier of the Item Selected by the User**
Integer type

Values When <CmdType>=1 (Confirm the display text clearing)
No values

Values When <CmdType>=2 (Get Inkey)

<Result> **User Action**
0 Session ended by user
1 Response given by the user
2 Help information required by user

<Data> **Key Pressed by the User**
String type

Values When CmdType=3 (Get Input)

<Result> **User Action**
- **0** Session ended by user
- **1** Response given by the user
- **2** Help information required by user

<Input Text> **Text Sent by User**
String type

Values When CmdType=4 (Setup Call)

<Result> **User Action**
- **0** User refuses the call
- **1** User accepts call

Values When CmdType=6 (Select Item)

<Result> **User Action**
- **0** Session terminated by the user
- **1** Item selected by the user
- **2** Help information required by the user
- **3** Return to the back item

<Data> **Item Identifier Selected by the User**

Values When CmdType=11 (Setup Event List)

<Result> **User Action**
- **1** User selects idle screen
- **2** User selects user activity

Values When CmdType=12 (Setup Idle Mode Text)

<Result> **User Action**
- **0** User successfully integrates the idle mode text
- **1** User is not able to successfully integrate the idle mode text

For all other cases, no values are needed

Parameter Storage: None

Examples:

Command	Responses
	+STIN: 0 Note: The main menu has been sent from the SIM
AT+STGI=0 Note: Get information about the main menu	+STGI: 1,3,"BANK",0 +STGI: 2,3,"QUIZ",0 +STGI: 3,3,"WEATHER",0 OK Note: The main menu contains 3 items
AT+STGR=0,1,1	OK +STIN: 6 Note: The item 2 of the main menu has been selected
AT+STGI=6 Note: Get information about the BANK menu	+STGI: 1,"BANK" +STGI: 1,2,"PERSONAL ACCOUNT ENQUIRY",1 +STGI: 2,2,"NEWS",0 OK Note: The BANK menu contains two items
AT+STGR=6,1,1	OK Note: Select Item 1
	+STIN: 99 Note: End of session

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Other Notes:

- For a GET INKEY with format set to "Yes/No", the data shall contain:
  - The value "y" when the answer is "positive",
  - The value "n" when the answer is "negative".
- For inputs in UCS2 format, the data are entered in ASCII format. Example: For "8000410042FFFF" entered, the SIM receives 0x00 0x41 0x00 0x42 with UCS2 DCS. (about the different UCS2 syntaxes, please refer to section "Coding of Alpha fields in the SIM for UCS2" of the Appendixes to AT Commands Interface Guide).
- Comments upon Terminal Responses:
  - For the SETUP MENU Proactive Command, it is only possible to send a Terminal Response after the "+STIN: 0" indication, not after a "AT+STGI=0" request. For the other Proactive Commands, it is possible to send a Terminal Response after the "+STIN" indication or after the "+STGI" command.
  - All of the Terminal Responses are not possible with all of the Proactive Commands. Compatibility between available Terminal Responses and Proactive Commands is given in section "Support of SIM ToolKit by the Mobile Equipment" of the Appendixes to AT Commands Interface Guide. If a Terminal Response is attempted during a incompatible Proactive Command session, a "+CME ERROR: 3" will be returned.

SIM ToolKit Control Response +STCR

Description: This unsolicited response allows the customer application to identify CALL CONTROL and SMS CONTROL responses when an outgoing call or an outgoing SMS is made and the call control facility is activated. This is also applicable to SS calls.

Syntax: **No Action, Read or Test Commands**

Unsolicited Response: +STCR: <Result>[,<Number>,<MODestAddr>,<TextInfo>]

Values:

<Result> **SIM Response to the Operation**
0 Control response not allowed
1 Control response with modification

<Number> **Called Number, Service Center Address or SS String**
String type (ASCII format)

<MODestAddr> **MO Destination Address**
String type (ASCII format)

<TextInfo> **Text Information**
String type (ASCII format)

Parameter Storage: None

Examples:

Command	Responses
	+STIN: 9 Note: "Send SMS" proactive command has been sent by the SIM
AT+STGI=9 Note: Get information about "Send SMS"	+STGI: "Send SM" +STCR: 1,"+112233445566779","+012345679" OK Note: The "Send SMS" was allowed with modifications. The SC address was changed from +012345679 to +112233445566779
	+STIN: 99 Note: End of session

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

SIM ToolKit Indication +STRIL

Description: This command allows the customer application to exchange SIM ToolKit messages directly with the SIM card using the unsolicited indication +STRIL to get the full command string. .

Syntax: **No Action, Read or Test Commands**

Unsolicited Response: +STRIL: <CmdTreated>,<Command string>

Values:

<CmdTreated>

0	The command must be treated by the application
1	The command is already treated by the modem

<Command String> **SIM Command String in Hexadecimal Format**
String type

Parameter Storage: None

Examples: None

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Chapter 20 – Supplementary Services Commands

Many of the commands in this chapter apply to supplementary services that must be purchased from your cellular service provider before you can use the commands.

List Current Calls +CLCC

Description: This command returns a list of current calls.

Syntax:

Command	Response
Action Command: AT+CLCC	[+CLCC: <id>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type> [<alpha>]]] […] OK
Read Command: AT+CLCC?	OK
Test Command: AT+CLCC=?	OK

Values:

<id> **Call Identification**
Integer type
Range 1-7

<dir> **Call Direction**
0 Mobile originated (MO) call
1 Mobile terminated (MT) call

<stat> **Call State**
0 Active
1 Held
2 Dialing (MO call)
3 Alerting (MO call)
4 Incoming call (MT call)
5 Waiting call (MT call)

<mode> **Teleservice**
0 Voice
1 Data
9 Unknown

<mpty> **Multiparty**
0 Call is **not** one of multiparty (conference) call parties
1 call is one of multiparty (conference) call parties

<number> **Phone Number in Format Specified by <type>**
String type

<type> **TON/NPI Type of Address Octet** (Integer type)
129 ISDN / telephony numbering plan, national / international unknown
145 ISDN / telephony numbering plan, international number
161 ISDN / telephony numbering plan, national number
128-255 Other values (refer GSM 04.08 section 10.5.4.7)

<alpha> **Phonebook Number Entry**
Optional string type alphanumeric representation of <number> corresponding to the entry found in phonebook. (For UCS2 format, see commands examples +CLIP, +CCWA or +COLP)
String type

Parameter Storage: None

Examples:

Command	Responses
	RING Note: Incoming call
AT+CLCC	+CLCC: 1,1,4,0,0,"0146294079",129 OK
ATA Note: Answering the call	OK

Command	Responses
AT+CLCC	+CLCC: 1,1,1,0,0,"0146294079",129 OK
ATH Note: Releasing the call	OK
ATD0123456789; Note: Outgoing Call	
AT+CLCC Note: Before the phone called is ringing	+CLCC: 1,0,2,0,0,"023456789",129 OK
AT+CLCC Note: The called party is ringing	+CLCC: 1,0,3,0,0,"023456789",129 OK
	OK Note: Response to dial command
AT+CLCC Note: The call is being answered	+CLCC: 1,0,0,0,0,"023456789",129 OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Call Related Supplementary Services +CHLD

Description: This command manages call hold and multiparty conversations (conference calls). Calls can be put on hold, recovered, released or added to a conversation.

Call hold and multiparty are only applicable to teleservice 11 (speech telephony)

Syntax:

Command	Response
Action Command: AT+CHLD=< n >	OK
Read Command: AT+CHLD?	OK
Test Command: AT+CHLD=?	+CHLD: (list of supported <n>s) OK

Values: **<n>** **Call-Related Services**

- **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 accept 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 accept the other (held or waiting) call
- **2x** Place all active calls on hold except call X with which communication is supported
- **3** Add a held call to the conversation
- **4** Connects the two calls and disconnect the subscriber from both calls (Explicit Call Transfer)

Parameter Storage: None

Examples:

Command	Responses
AT+CHLD=?	+CHLD: (0-4, 11-17, 21-27) OK
ATD0123456789;	OK
+WIND: 5,1	
AT+CLCC	+CLCC: 1,0,0,0,0,"0123456789",129 OK
+WIND: 5,2 Note: incoming call in waiting state	
AT+CLCC Note: Com id 1 is active, com id 2 is in waiting state	+CLCC: 1,0,0,0,0,"0123456789",129 +CLCC: 2,1,5,0,0 OK
AT+CHLD=2	OK
AT+CLCC	+CLCC: 1,0,1,0,0,"0123456789",129 +CLCC: 2,1,0,0,0 OK Note: Com id 1 is held, com id 2 is active

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Calling Line Identification Presentation +CLIP

Description: This command controls the Calling Line Identification Presentation supplementary service. When presentation of the CLI (Calling Line Identification) is enabled (and the calling subscriber allows the function), +CLIP unsolicited response is returned after every RING (or +CRING) result code.

Syntax:

Command	Response
Action Command: AT+CLIP=< n >	OK
Read Command: AT+CLIP?	+CLIP: <n>,<m> OK
Test Command: AT+CLIP=?	+CLIP: (list of supported <n>s) OK

Unsolicited Response: +CLIP: <number>, <type>[,<subaddr>,<satype>[, [<alpha>] [,<CLI validity>]]]

Values:

<n> **CLIP Mode in the Terminal Adapter**
- **0** Disable. **Default**
- **1** Enable

<m> **Subscriber CLIP Service Status in the Network**
- **0** CLIP not provisioned
- **1** CLIP provisioned
- **2** Unknown (no network…)

<number> **Phone Number**
String type

<type> **TON/NPI Type of Address Octet for <number>** (Integer type)
- **129** ISDN / telephony numbering plan, national / international unknown. <number> does not include the international access code character "+".
- **145** ISDN / telephony numbering plan, international number <number> includes the international access code character "+".
- **161** ISDN / telephony numbering plan, national number
- **128-255** Other values (refer GSM 04.08 section 10.5.4.7)

<subaddr> **Subaddress**
String type

<satype> **TON/NPI Type of Address Octet for <subaddr>**
- **129** ISDN / telephony numbering plan, national / international unknown. <subaddr> does not include the international access code character "+".
- **145** ISDN / telephony numbering plan, international number <subaddr> includes the international access code character "+".
- **161** ISDN / telephony numbering plan, national number
- **128-255** Other values (refer GSM 04.08 section 10.5.4.7)

<alpha> **Phonebook Name Associated with <number>**
String type

<CLI validity> **CLI Validity**
- **0** CLI valid
- **1** CLI has been withheld by the originator
- **2** CLI is **not** available due to interworking problems or limitation of originating network

Parameter Storage: The <n> parameter is stored in EEPROM using AT&W. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+CLIP=1 Note: Enable CLIP	OK
AT+CLIP? Note: Ask for current functionality	+CLIP:1,1 OK Note: CLIP is enabled and provisioned
	RING Note: Incoming call +CLIP: “0146290800”,129,1,,”FRED” Note: Incoming call with number and name presentation
	RING Note: Incoming call +CLIP: “0146290800”,129,1,, “8000204212FFFF” Note: Incoming call with number/name presentation (UCS2 format)

Continued on next page

Command	Responses
	RING Note: Incoming call +CLIP: “0146290800”,161 Note: Incoming call not found in any phonebook
AT+CLIP=?	+CLIP: (0-1) OK

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Calling Line Identification Restriction +CLIR

Description: This command controls the Calling Line Identification restriction supplementary service.

Syntax:

Command	Response
Action Command: AT+CLIR=<n>	OK
Read Command: AT+CLIR?	+CLIR: <n>,<m> OK
Test Command: AT+CLIR=?	+CLIR: (list of supported <n>s) OK

Values:

<n> CLIR Mode for Outgoing Calls

- **0** Presentation indicator is used according to the subscription of the CLIR service. **Default**
- **1** CLIR invocation
- **2** CLIR suppression

<m> 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

Parameter Storage: The <n> parameter is stored in EEPROM without using the AT&W command.

Examples:

Command	Responses
AT+CLIR=2	OK
AT+CLIR ? Note: Ask for current functionality	+CLIR: 2,4 OK
AT+CLIR=?	+CLIR: (0-2) OK

SIM, +WIND Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Connected Line Identification Presentation +COLP

Description: This command enables the Connected Line identification Presentation supplementary service. This can be useful for call forwarding of the connected line. When presentation of the connected line identification is enabled (and the calling subscriber allows the function), +COLP unsolicited response is returned in response of an ATD command.

Syntax:

Command	Response
Action Command: AT+COLP=<n>	OK
Read Command: AT+COLP?	+COLP: <n>,<m> OK
Test Command: AT+COLP=?	+COLP: (list of supported <n>s) OK

Unsolicited Response: +CLOP: <number>,<type>[,<subaddr>,<satype>[,[<alpha>]]

Values:

<n> **Parameter Sets/Shows the Result Code Presentation Status in the Terminal Adapter**
- **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)

<number> **Phone Number**
String type

<type> **TON/NPI Type of Address Octet for <number>** (Integer type)
- **129** ISDN / telephony numbering plan, national / international unknown. <number> does not include the international access code character "+".
- **145** ISDN / telephony numbering plan, international number <number> includes the international access code character "+".
- **161** ISDN / telephony numbering plan, national number
- **128-255** Other values (refer GSM 04.08 section 10.5.4.7)

<subaddr> **Subaddress**
String type

<satype> **TON/NPI Type of Address Octet for <subaddr>** (Integer type)
- **129** ISDN / telephony numbering plan, national / international unknown. <subaddr> does not include the international access code character "+".
- **145** ISDN / telephony numbering plan, international number <subaddr> includes the international access code character "+".
- **161** ISDN / telephony numbering plan, national number
- **128-255** Other values (refer GSM 04.08 section 10.5.4.7).

<alpha> **Phonebook Name Associated with <number>**
String type

Parameter Values: The <n> parameter is stored in EEPROM using the AT&W command. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+COLP=1 Note: Activate COLP	OK
AT+COLP? Note: Ask for current functionality	+COLP:1,1 OK Note: COLP is enabled and provisioned
ATD146290800; Note: Outgoing call	+COLP:"0146290800",129,,"JOE" or +COLP:"0146290800",129,1,,"8000204212FFFF" OK Note: "8000204212FFFF": UCS2 format Connected outgoing line number and name presentation
AT+COLP=?	+COLP: (0-1) OK

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Supplementary Service Notifications +CSSN

Description: This command configures the supplementary service related network initiated notifications.

Syntax:

Command	Response
Action Command: AT+CSSN= <n>, <m>	OK
Read Command: AT+CSSN?	+CSSN: <n>,<m> OK
Test Command: AT+CSSN=?	+CSSN: (list of supported <n>s) , (list of supported <m>s) OK

Intermediated Response: +CSSI: <code1>[,<index>]

Unsolicited Response: +CSSU: <code2>[,<index>[,<number>,<type>]]

Values:

<n> **MO Supplementary Service Notification**
- **0** Disable. **Default**
- **1** Enable
  When a supplementary service notification is received after a mobile originated call setup, intermediate result code +CSSI is sent before any other MO call setup result codes.

<m> **MO Supplementary Service Notification**
- **0** Disable
- **1** Enable
  When a supplementary service notification is received during a call, unsolicited result code +CSSU is sent.

<code1> **Manufacturer-Specific Service Code**
- **0** Unconditional call forwarding is active
- **1** Some of the conditional call forwardings are active
- **3** Call is waiting
- **4** Closed User Group call, with CUG <index>
- **5** Outgoing calls are barred
- **6** Incoming calls are barred
- **7** CLIR suppression rejected
- **8** Call has been deflected

<code2> **Service Code**
- **0** Forwarded call (Modem Call Setup)
- **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)
- **9** This is a deflected call (modem call setup)
- **10** Additional incoming call forwarded

<index> **Closed User Group**
String type

<number> **Phone Numbe**r
String type

<type> **TON/NPI** **Type of Address Octet of <number>** (Integer type)
- **129** ISDN / telephony numbering plan, national / international unknown.
- **145** ISDN / telephony numbering plan, international number
- **161** ISDN / telephony numbering plan, national number
- **128-255** Other values (refer GSM 04.08 section 10.5.4.7)

Parameter Storage: The <n> and <m> parameter are stored in EEPROM using the AT&W command. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+CSSN=?	+CSSN: (0-1),(0-1) OK
AT+CSSN?	+CCSN: 0,0 OK
AT+CSSN=0,1	OK
ATD0123456789;	OK
	+CCWA: "9876543210",128,1 Note: Call waiting
AT+CHLD=2 Note: Accept the waiting call and place the active one on hold	OK
	+CSSU: 5 Note: The held call was released (by the remote)

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3

Unstructured Supplementary Service Data +CUSD

Description: 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

Note:
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.

Syntax:

Command	Response
Action Command: AT+CUSD = <n> [,<str> [<dcs>]]	OK
Read Command: AT+CUSD?	+CUSD: <n> OK
Test Command: AT+CUSD=?	+CUSD: (list of supported <n>s) OK

Unsolicited Response: +CUSD: <m>[,<str>[,<dsc>]]

Values:

<n> Requested Operation

- **0** Disable the result code presentation. **Default**
- **1** Enable the result code presentation
- **2** Cancel session (not applicable to read command response)

<m> USSD Status

- **0** No further user action required (network initiated USSD-Notify, or no further information needed after mobile initiated operation)
- **1** Further user action required (network initiated USSD-Request, or further information needed after mobile initiated operation)
- **2** USSD terminated by network
- **3** Other local client has responded
- **4** Operation not supported
- **5** Network timeout

<str> USSD String
Converted in the selected character set (please refer to +CSCS)
String type

<dcs> Data Coding Scheme
Integer type

Parameter Storage: The <n> parameter is stored in EEPROM using the AT&W command. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+CUSD=?	+ CUSD: (0-2) OK
AT+CUSD=1 "#123#"	OK
	+CUSD: 1,"02/08 report:0h04mn00S",15 Note: USSD response from network
AT+CUSD?	+CUSD=1 OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3

Call Forwarding +CCFC

Description: This command allows control of the call forwarding supplementary service.

Syntax:

Command	Response
Action Command: AT+CCFC= <reason>, <mode> [,<number> [,<type> [,<class> [,<subaddr> [,<satype> [,<time>]]]]]]	[+CCFC: <status>, <class> [,<number>, <type> [,<subaddr>, <satype> [,<time>]]] [...]] OK
Test Command: AT+CCFC=?	+CCFC: (list of supported <reason>s) , OK

No Read Command

Values:

<reason> **Call Forwarding Reason**
- **0** Unconditional
- **1** Mobile busy
- **2** No reply
- **3** Not reachable
- **4** All call forwarding
- **5** All conditional call forwarding

<mode> **Requested Operation**
- **0** Disable
- **1** Enable
- **2** Interrogate
- **3** Registration
- **4** Erasure unconditional

<number> **Phone Number**
String type

<type> **TON/NPI Type of Address Octet** (Integer type)
The **default is 145** when the dialing string includes the international access code character "+"; otherwise, it is **129**.
- **129** ISDN / telephony numbering plan, national / international unknown. <number> does not include the international access code character "+"
- **145** ISDN / telephony numbering plan, international number. <number> includes the international access code character "+"
- **161** ISDN / telephony numbering plan, national number
- **128-255** Other values (refer GSM 04.08 section 10.5.4.7)

<class> **Call Class**
The combination of different classes is not supported. It will only result in the activation / deactivation / status request of all classes.
- **1** Voice
- **2** Data
- **7** Voice, data. **Default if value is omitted.**
- **8** Short messages

<time> **Time to Wait**
- **1-30** 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=20**

<status> **Call Forwarding Status**
- **0** Not active
- **1** Active

Parameter Storage: None

Examples:

Command	Responses
AT+CCFC=0,3,"0146290800" Note: Register to an unconditional call forwarding for all classes	OK
AT+CCFC=0,2 Note: Interrogate unconditional call forwarding	+CCFC:1,1,"0146290800",129 Note: Call forwarding active for voice +CCFC:1,2,"0146290800",129 Note: Call forwarding active for data
AT+CCFC=0,4 Note: Erase unconditional call forwarding	OK

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Other Note: If the FDN phonebook is activated, the registration is restricted to the phone numbers written in it.

Call Waiting +CCWA

Description: This command controls the call waiting supplementary service.
The product will send a +CCWA unsolicited result code when the call waiting service is enabled.

Syntax:

Command	Response
Action Command: AT+CCWA=<n>, [<mode> [, <class>]]	[+CCWA: <status>,<class>[…]] OK
Read Command: AT+CCWA?	+CCWA: <n> OK
Test Command: AT+CCWA=?	+CCWA: (list of supported <n>s) OK

Unsolicited Result: +CCWA: <number>, <type>[,[<class>] [,<alpha>]

Values:

<n> **Result Code Presentation Status in the Terminal Adapter**
0 Disable
1 Enable

<mode>
0 Disable
1 Enable
2 Query

<number> **Phone Number**
String type

<type> **TON/NPI Type of Address Octet for <number>** (Integer type)
129 ISDN / telephony numbering plan, national / international unknown
145 ISDN / telephony numbering plan, international number
161 ISDN / telephony numbering plan, national number
128-255 Other values (refer GSM 04.08 section 10.5.4.7)

<class> **Class Call**
The combination of different classes is **not supported**. It will only result in the activation / deactivation / status request for all classes.
1 Voice
2 Data
7 Voice, data **(this is the default if value is omitted)**
8 Short Messages

<status> **Call Waiting Status**
0 Not Active
1 Active

<alpha> **Phonebook Name Associated with <number>**
String type

Parameter Storage: The <n> parameter is stored in EEPROM using the AT&W command. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+CCWA=?	+CCWA: (0,1) OK
AT+CCWA=1,1,1 Note: Enable call waiting for voice calls	OK
AT+CCWA=1,2 Note: Interrogate call waiting	+CCWA:1,1 OK Note: Call waiting active for voice calls +CCWA:"0146290800",145,1,"FREDDY" Note: Number and name of the waiting voice call +CCWA:"0146290800",145,1,"8023459678FFFF" (UCS2 format)
AT+CCWA=1,0,7 Note: Erase call waiting	OK

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Keypad Control +CKPD

Description: This command emulates the modem keypad by sending each keystroke as a character in a <keys> string.
The supported GSM sequences are listed in the Appendix A.

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:

Command	Responses
Action Command: AT+CKPD=<keys>	Depending on <keys> OK
Test Command: AT+CKPD=?	+CKPD: (list of supported <key>s) OK

No Read Command

Values: **<keys>** **Keyboard Sequence**
String of the following characters (0-9, *, #)

Parameters Storage: None

Examples:

Command	Responses
AT+CKPD="*#21#" Note: Check every call forwarding status	OK
AT+CKPD="1234" Note: Sequence not allowed	+CME ERROR 3

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3

Advice of Charge +CAOC

Description: This command configures the Advice of Charge (AOC) supplementary service (GSM 02.24 and GSM 02.86), which enables the subscriber to obtain information on call cost.

Syntax:

Command	Response
Action Command: AT+CAOC= <mode>	[+CAOC: <ccm>] OK
Read Command: AT+CAOC?	+CAOC: <mode> OK
Test Command: AT+CAOC=?	+CAOC: (list of supported <mode>s) OK

Unsolicited Response: +CCCM: <ccm>

Values:

<mode> **Requested Operation**

0 Query CCM value

1 Deactivate the unsolicited reporting of CCM value. **Default**

2 Activate the unsolicited reporting of CCM value

<ccm> **Current Call Meter Value**

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

String type

Parameter Value: The <n> parameter is stored in EEPROM using the AT&W command. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+CAOC ? Note: Request supported modes	+CAOC: (0-2) OK Note: 0,1,2 modes supported
AT+CAOC=0 Note: Query CCM value	+CAOC: "000A08" OK Note: Display Current Call Meter value (CCM=2568)
AT+CAOC=1 Note: Deactivate unsolicited report of CCM value	OK Note: CCM report deactivated
AT+CAOC=2 Note: Activate unsolicited report of CCM value	OK Note: CCM report activated
AT+CAOC? Note: Request supported modes	+CAOC: 2 OK
	+CCCM: "000A098" Note: Unsolicited CCM value

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Accumulated Call Meter +CACM

Description: This command resets the Advice of Charge for the Accumulated Call Meter (ACM) value in SIM file EF-ACM. The ACM contains the total number of home units for both the current and preceding calls. SIM PIN2 is required to reset the value.

Syntax:

Command	Response
Action Command: AT+CACM=<pin2 passwd>	OK
Read Command: AT+CACM?	+CACM: <acm> OK
Test Command: AT+CACM=?	OK

Values:

<pin2passwd> **Personal Identification Number 2**
8 digit number

<acm> **Accumulated Call Meter**
Three bytes of the current call meter value in hexadecimal format (e.g. "00001E" corresponds to the decimal value 30). The value is in home units and bytes are coded in a similar way as the ACMmax value in the SIM.
String type

Parameter Storage: None

Examples:

Command	Responses
AT+CACM? Note: Request ACM value	+CACM: “000400” OK Note: Display ACM value (ACM=1024)
AT+CACM= 1234 Note: Request ACM reset, real PIN2 is “1234”	OK Note: ACM value is reset
AT+CACM ? Note: Request ACM value	+CACM: “000000” OK Note: Display ACM value (ACM = 0)

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Accumulated Call Meter Maximum +CAMM

Description: This command sets the Advice of Charge related to the Accumulated Call Meter maximum value in the SIM file EF-ACMmax. ACMmax contains the maximum number of home units the subscriber is allowed to spend. When the ACM (see +CACM) reaches ACMmax, calls are prohibited. SIM PIN2 is required to set the value.

Syntax:

Command	Response
Action Command: AT+CAMM=<ACMmax>,<pin2 passwd>	OK
Read Command: AT+CAMM?	+CAMM: <ACMmax> OK
Test Command: AT+CAMM=?	OK

Values:

<pin2 passwd> **Personal Identification Number 2**
String type

<ACMmax> **Accumulated Call Meter Maximum**
Three bytes of the current call meter value in hexadecimal format (e.g., "00001E" corresponds to the decimal value 30). The value is in home units and bytes are coded in a similar way as the ACMmax value in the SIM.
String type

Parameter Storage: None

Examples:

Command	Responses
AT+CAMM=”000400”,1234 Note: Request ACMmax update, PIN2 is “1234”	OK Note: ACMmax updated to 1024
AT+CAMM? Note: Request ACMmax value	+CAMM: “000400” OK Note: ACMmax = 1024

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Price Per Unit and Currency Table +CPUC

Description: This command sets the parameters for Advice of Charge related to price per unit and the currency table in the SIM file EF-PUCT.

PUCT information can be used to convert the home units (as used in +CAOC, +CACM and +CAMM) into currency units.

Syntax:

Command	Response
Action Command: AT+CPUC <currency>,<ppu>,<pin2 passwd>	OK
Read Command: AT+CPUC?	+CPUC: <currency>,<ppu> OK
Test Command: AT+CPUC=?	OK

Values:

<currency> **Currency Code**
String type

<ppu> **Price Per Unit**
String type

<pin2 passwd> **Personal Identification Number 2**
8 digit number

Parameters Storage: None

Examples:

Command	Responses
AT+CPUC=”EUR”,”0.82”,1234 Note: Set Currency and Price per unit update	OK Note: Euros at a rate of 0.82 per unit set
AT+CPUC?	+CPUC: ”EUR”,”0.82” OK

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Closed User Group +CCUG

Description: This 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/disallows 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

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.

Syntax:

Command	Response
Action Command: AT+CCUG = <n> [,<index> [<info>]]	OK
Read Command: AT+CCUG?	+CCUG: <n>,<index>,<info> OK
Test Command: AT+CCUG=?	OK

Values:

<n> **CUG Activation Mode**
- **0** Disable CUG mode. **Default**
- **1** Enable CUG mode

<index> **CUG Index**
- **0-9** Selected default value **0 = Default**
- **10** Preferred

<info> **Actions**
- **0** No information. **Default**
- **1** Suppress OA
- **2** Suppress preferential CUG
- **3** Suppress OA and preferential CUG

Parameter Storage: All parameters are stored in EEPROM without using AT&W.

Examples:

Command	Responses
AT+CCUG=0,0,0	OK
AT+CCUG?	+CCUG: 0,0,0 OK

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Chapter 21 – Audio Commands

Speaker & Microphone Selection +SPEAKER

Description: This command selects the speaker and the microphone set.

Syntax:

Command	Response
Action Command: AT+SPEAKER=<ActiveConfig>	OK
Read Command: AT+SPEAKER?	+SPEAKER: <ActiveConfig> OK
Test Command: AT+SPEAKER=?	+SPEAKER: (list of supported <ActiveConfig>s) OK

Values: **<ActiveConfig>** **Speaker Mode** (See Notes at the end of this command)

1	MIC_1 + SPK_2 at 8kHz
2	MIC_1 + SPK_1 at 8kHz
3	MIC_2 + SPK_2 at 8kHz
4	MIC_2 + SPK_1 at 8kHz
5	MIC_1 + SPK_2 + DAI at 8kHz)
6	MIC_1 + SPK_1 + DAI at 8kHz
7	MIC_2 + SPK_2 + DAI at 8kHz
8	MIC_2 + SPK_1 + DAI at 8kHz
9	SPK_USER + MIC_USER (Bluetooth)
10	No Audio
11	MIC_1 + SPK_2 at 16kHz
12	MIC_1 + SPK_1 at 16kHz
13	MIC_2 + SPK_2 at 16kHz
14	MIC_2 + SPK_1 at 16kHz

Parameter Storage: The <ActiveConfig> parameter is stored in EEPROM using the AT&W command. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+SPEAKER=?	+SPEAKER: (1,2,3,4,5,6,7,8,9,10,11,12,13,14) OK
AT+SPEAKER=1 Note: Activate config1	OK
AT+SPEAKER?	+SPEAKER: 1 OK Note: Config 1 is active

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Microphone Mute Control +CMUT

Description: This command mutes the microphone input on the product (for the active microphone set with the +SPEAKER command). This command is allowed only during a call.

Syntax:

Command	Responses
Action Command: AT+CMUT=<mode>	OK
Read Command: AT+CMUT?	+CMUT: <mode> OK
Test Command: AT+CMUT =?	+CMUT: (list of supported <mode>s) OK

Values: **<mode>** **Microphone Mute Mode**
0 Microphone mute off. **Default**
1 Microphone mute on.

Parameter Storage: None

Examples:

Command	Responses
AT+CMUT=?	+CMUT: (0,1) OK
AT+CMUT=1 Note: Mute ON (call active)	OK
AT+CMUT? Note: Ask for current value	+CMUT: 1 OK Note: Mute is active (call active)

SIM, PIN, +WIND Notes:

When Using Action Command:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- The PIN 2 / CHV 2 code must be entered to support the AT command.

When Using Test and Read Commands:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Loudspeaker Volume Level +CLVL

Description: This command is used by the application to tune the loudspeaker volume level.

Syntax:

Command	Response
Action Command: AT+CLVL=<volume>]	OK
Read Command: AT+SIDET?	+CLVL: <volume> OK
Test Command: AT+CLVL=?	+CLVL: (list of supported <volume>s) OK

Values: **<volume> Side Tone Mode Reception Volume**

There are two configuration modes:

- The gain is entered in deci dB units,
- The gain is entered in index.

By default gains are expressed in deci dB value.

All values are possible between the minimum and maximum values of the table given in the Notes section. If a value does not correspond to a table value, the nearest is kept.

Parameter Storage: All parameters are stored in EEPROM using the AT&W command.

Examples:

Command	Response
AT+CLVL=? Note: Test command	+CLVL: (-4000-800) OK
AT+CLVL=-2100	OK
AT+CLVL?	+CLVL: -2000 OK
AT+CLVL=?	+CLVL: (0-15) OK
AT+CLVL=9	OK
AT+CLVL?	+CLVL: 9 OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

SideTone Modification +SIDET

Description: This command sets the level of audio feedback in the speaker (microphone feedback in the speaker).

Syntax:

Command	Responses
Action Command: AT+SIDET=<val1>[,<val2>]	OK
Read Command: AT+SIDET?	+ SIDET: <val1>,<val2> OK
Test Command: AT+SIDET =?	+SIDET: (list of supported <val1>s), (list of supported <val2>s) OK

Values:

<val1> **Side Tone Mode**

0 SideTone is disabled

1 SideTone is enabled. **Default**

<val2> **Side Tone Level**

There are two configuration modes:

- The gain is entered in deci dB units
- The gain is entered in the index

By default, gains are expressed in deci dB values.

All values are possible between the minimum and maximum values of the table given in the Notes section. If a value does not correspond to a table value, the nearest is kept.

Parameter Storage: The <val1> and <val2> parameters are stored in EEPROM using the AT&W command. The default values can be restored using AT&F and AT+VIP=1.

Examples:

Command	Responses
AT+SIDET=?	+SIDET: (0-1),(-32768-540) OK
AT+SIDET=1,190	OK
AT+SIDET?	+SIDET: 1,188 OK
AT+SIDET=?	+SIDET: (0-1),(0-63) OK
AT+SIDET=1,0	OK
AT+SIDET? Note: Current value	+SIDET: 1,0 OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Speaker Gain Control +VGR

Description: This command is used by the application to set the speaker gain.

Syntax:

Command	Responses
Action Command: AT+VGR=<Rgain>	OK
Read Command: AT+VGR?	+VGR: <Rgain> OK
Test Command: AT+VGR=?	+VGR: (list of supported < Rgain>s) OK

Values: **<Rgain>** **Reception Gain**

There are two configuration modes:

- The gain is entered in deci dB units
- The gain is entered in the index

By default, gains are expressed in deci dB values.

All values are possible between the minimum and maximum values of the table given in the Notes section. If a value does not correspond to a table value, the nearest is kept.

Parameter Storage: All parameters are stored in EEPROM without using the AT&W command.

Examples:

Command	Responses
AT+VGR=? Note: Test command	+VGR: (-4000-800) OK
AT+VGR=-2100 Note: Get current reception gain value	+VGR: -2000 OK Note: Receive gain
AT+VGR=? Note: Test command	+VGR: (0-15) OK
AT+VGT=9	OK
AT+VGT? Note: Get current reception gain value	+VGR: 90 OK Note: Receive gain

<Rgain> Values: <Rgain> Values Table. Values are in deci dB units and index. The application sends the following:

AT+VGR=<val>	for receive gain	AT+VGT=<val> Controller 1	for transmit gain Controller 1	AT+VGT=<val> Controller 2	for transmit gain Controller 2
0 to 15	+6 db	0 to 31	+30 db	0	+0 db
16 to 31	+4 db	32 to 63	+33 db	1	+0,5 db
32 to 47	+2 db	64 to 95	+36 db	2	+1 db
48 to 63	+0 db	96 to 127	+39 db	3	+1,5 db
64 to 79	-2 db	128 to 159	+42 db	…	…
80 to 95	-4 db	160 to 191	+45 db	19	+9,5 db
96 to 111	-6 db	192 to 223	+48 db	20	+10 db
112 to 127	-8 db	224 to 255	+51 db	21	+10.5 db
128 to 143	-10 db			22	+11 db
144 to 159	-12 db			23	+11.5 db
160 to 175	-14 db			…	
176 to 191	-16 db			58	+29 db
192 to 207	-18 db			59	+29.5 db
208 to 223	-20 db			60	+30 db
224 to 255	-22 db			61	+30,5 db
				62	+31 db
				…	…
				101	+50,5 db
				102 to 127	+51 db
				128 to 243	-6,5 db
				244	-6 db
				245	-5,5 db
				246	-5 db
				…	…
				255	-0,5 db

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Microphone Gain Control +VGT

Description: This command is used by the application to set the microphone gain.

Syntax:

Command	Responses
Action Command: AT+VGT=<Tgain>	OK
Read Command: AT+VGT?	+VGT: <Tgain> OK
Test Command: AT+VGT=?	+VGT: (list of supported <Tgain>s) OK

Values: **<Tgain>** **Transmission Gain**

There are two configuration modes:

- The gain is entered in deci dB units
- The gain is entered in the index

By default, gains are expressed in deci dB values.

All values are possible between the minimum and maximum values of the table given in the Notes section. If a value does not correspond to a table value, the nearest is kept.

Parameter Storage: All parameters are stored in EEPROM using the AT&W command.

Examples:

Command	Responses
AT+VGT? Note: Get all possible transmission gain values	+VGT: (700-3500) OK
AT+VGT=900	OK
AT+VGT=? Note: Get current transmission gain value	+VGT: 700 OK
AT+VGT=?	+VGT: (0-117) OK
AT+VGT=9	OK
AT+VGT? Note: Get current transmission gain value	+VGT: 9 OK

Notes: **The following table lists the values for <Tgain>. They are in deci dB units and index:**

AT+VGR=<val>	for receive gain	AT+VGT=<val> Controller 1	for transmit gain Controller 1	AT+VGT= <val> Controller 2	for transmit gain Controller 2
0 to 15	+6 db	0 to 31	+30 db	0	+0 db
16 to 31	+4 db	32 to 63	+33 db	1	+0,5 db
32 to 47	+2 db	64 to 95	+36 db	2	+1 db
48 to 63	+0 db	96 to 127	+39 db	3	+1,5 db
64 to 79	-2 db	128 to 159	+42 db	…	…
80 to 95	-4 db	160 to 191	+45 db	19	+9,5 db
96 to 111	-6 db	192 to 223	+48 db	20	+10 db
112 to 127	-8 db	224 to 255	+51 db	21	+10.5 db
128 to 143	-10 db			22	+11 db
144 to 159	-12 db			23	+11.5 db
160 to 175	-14 db			…	
176 to 191	-16 db			58	+29 db
192 to 207	-18 db			59	+29.5 db
208 to 223	-20 db			60	+30 db
224 to 255	-22 db			61	+30,5 db
				62	+31 db
				…	…
				101	+50,5 db
				102 to 127	+51 db
				128 to 243	-6,5 db
				244	-6 db
				245	-5,5 db
				246	-5 db
				…	…
				255	-0,5 db

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Echo Cancellation +ECHO

Description: This command enables, disables and configures the Echo Cancellation functions for voice calls.

Syntax:

Command	Responses
Action Command: AT+ECHO=<mode>,<algold>[,<param_1>,…,<param_n>]	OK
Read Command: AT+ECHO?	+ECHO: <status>,<algold>,<param_1>,…,<param_n>] [+ECHO: <status>,<algold>,<param_1>,…,<param_n> […]] OK
Test Command: AT+ECHO=?	+ECHO: (list of supported <mode>s), <algold>, (list of supported <param>s) [+ECHO: (list of supported <mode>s), <algold>, (list of supported <param>s) […]] OK

Values:

<mode> Mode

0 Deactivate echo cancellation

1 Activate echo cancellation
<algold> is mandatory. The other configuration parameters are optional, so current values are taken into account.

<algold> Algorithm

0 Algorithm 1. Switch attenuation. **Default** AEC (Acoustic Echo Cancellation) algorithm if there are several algorithms.

1 Algorithm 2. Basic AEC

2 Algorithm 3. Basic AEC

3 Algorithm 6. Advanced AEC

4 Algorithm LiveVibes version 1. Philips AEC

5 Algorithm LiveVibes version 2. Philips AEC

<status> Echo Cancellation Status

0 Deactivated

1 Activated

2 Reset is needed to activate echo cancellation

<param_n> Parameter of Echo Cancellation

Depends on the chosen algorithm

<algold>	<param_n>		
0	**<Volout>**	**Maximum Attenuation of the Switch**	
		0	31 db **Default**
		1	29 db
		3	27 db
		…	…
		14	31 db
		15	1 db
0	<step>	Attenuation Step between Attenuation and No Attenuation	
		0	1 db
		1	2 db
		2	3 db
		3	4 db **Default**
0	<PcmThRel>	Attenuation Step between Attenuation and No Attenuation Relative threshold between max and min energy information Range: 0 – 31. **Default = 10**	
0	<PcmThMax>	Threshold of max energy information Range: 0 – 31. **Default = 7**	
1		TDB	
2	<AlgoParam>	High value leads to high echo attenuation but the full-duplex quality will be less efficient. Range is 0 – 63. **Default = 30**	
2	<NoiseThres>	Noise threshold Low value leads to high noise attenuation. The threshold 32767 indicates no noise attenuation. Range: 0 – 32767. **Default = 8000**	
2	<NmbTaps>	Number of Taps of the Adaptive Filter 64 taps = short Echo 256 taps = long Echo Range: 64 – 256. **Default = 256**	

<algoId>	<param_n>	
3	<AlgoParam>	High value leads to high echo attenuation but the full-duplex quality will be less efficient. Range: 0 – 63. **Default = 30**
3	<NoiseThres>	Noise threshold Low value leads to high noise attenuation. The threshold 32767 indicates no noise attenuation. Values above 512 have no effect (noise reduction will be disabled) Range: 0 – 32767. **Default = 50**
3	<NmbTaps>	Number of Taps of the Adaptive Filter 64 taps = short Echo 256 taps = long Echo Range: 2 – 256. **Default = 256**
3	<Convergence Time1>	Convergence Time in Quiet Condition This parameter expresses duration as the number of GSM speech frames (20 ms each) containing far end speech, upon which the switch only mechanism must run in quiet conditions. Range: 162 - 32767. **Default = 200**
3	<Convergence Time2>	Convergence Time in Noise Condition This parameter is the same as <ConvergenceTime1> but in *noisy* condition. Range: 162 - 32767. **Default = 550** ***Important Note: <ConvergenceTime2> must be greater than or equal to <ConvergenceTime1>***
3	<NoiseLevel MAX>	Upper Bound of the Noise Floor Estimate This parameter is expressed as an integer of 16 bits and corresponds to the rounded value of the noise floor estimate expressed in dB (log2). NOISE_LEVEL_MIN being a constant (NOISE_LEVEL_MIN=4 in the current implementation) Range: [NOISE_LEVEL_MIN+1 - 31] **Default = 15**
3	<Detection Threshold>	Far-End Speech Detection Threshold In order to detect far end speech on the loudspeaker's signal, the SNR is computed regarding the far end signal power and the far end signal noise floor level. This parameter specifies a threshold on the SNR above which the switch mechanism will be activated. This parameter is expressed as an integer of 16 bits. Range: 0 - 32767. **Default = 32767**
3	<CNGAdjust>	Comfort Noise Volume Gain Although the comfort noise volume will self adjust to the estimated ambient noise level, it is possible to artificially reduce its level. This parameter is expressed in fixed point as a signed Q15, meaning that 32767 stands for 1.0, and 0 for 0.0. Setting this value to 0 means no comfort noise. Range: 0 to 32767. **Default = 32767**
3	<CNGParam1> <CNGParam2>	16 Bits Comfort Noise AR2 Coefficients The user will set the AR2 coefficients for a specific car. Their value will be estimated on a recorded noise sequence by means of a tool provided by Wavecom (C or Matlab source code) The recorded sequence shall be made in the noisy conditions and contain noise only. Range: 0 - 65535. **Default** for **CNGParam1** = **27484** **Default** for **CNGParam2** = **38697**
3	<CNGGain>	16 Bits Comfort Noise AR2 Gain Coefficients This specifies the gain of the AR2 filter used for comfort noise generation. It will be estimated by the same tools use to estimate **<CNGParam1>** and **<CNGParam2>.** It is represented as a Q15 of 16 bits. Range: 0 - 32767. **Default = 7311**

<algoId>	<param_n>	
3	<SOMValue>	Switch Attenuation Value at the Beginning of the Call This parameter sets the depth of the attenuation of the transmit audio signal when speech is detected on the distant side. Range: 1 to 16. **Default = 4**
3	<NoiseEstimate>	Value of the Noise Floor Estimate Written by the DSP (Only in Case of Active Communication) The allowed range is [0 - 32] when a communication is active. Otherwise, the returned value is 65535. The field is present only in the response to AT+ECHO?
4-5	<echoMode>	Echo Mode. It is an 8 bits field. Range: 0 - 255 Bit 0: echo canceller Bit 1: dynamic echo suppressor Bit 2: noise suppression. Bit 3: confort noise injection. Bit 4: extra suppression of non-linear echoes Bit 5: internal use Bit 6: internal use Bit 7: non-linear preprocessing of the far-end signal
4-5	<NLMSEchoPath Delay>	Range: 160-270 Default = 254
4-5	<NLMSTaps>	Range: 12-200 Default = 200
4-5	<NLMSTwo Alpha>	Range: 0-32767 Default = 8192
4-5	<NLMSErl>	Range: 0-32767 Default = 128
4-5	<NLMSPreset Coefs>	Range: 0-2 Default = 1
4-5	<NLMSOffset>	Range: 0-32767 Default = 328
4-5	<ESSpdetFar>	Range: 0-32767 Default = 16384
4-5	<ESSpdetMic>	Range: 0-32767 Default = 29491
4-5	<NLSpdetXClip>	Range: 0-32767 Default = 7951
4-5	<ESTailAlpha>	Range: 0-32767 Default = 26214
4-5	<ESTailPortion>	Range: 0-32767 Default = 984
4-5	<ESSpdetNear>	Range: 0-32767 Default = 512
4-5	<ESGamma EHigh>	Range: 0-32767 Default = 512
4-5	<ESGammaEdt>	Range: 0-32767 Default = 256
4-5	<ESGamma ELow>	Range: 0-32767 Default = 128
4-5	<ESGammaN>	Range: 0-32767 Default = 256
4-5	<NSBlockSize>	Range: 0-32767 Default = 400
4-5	<NSLimit>	Range: 0-32767 Default = 10922
4-5	<NLAtten>	Range: 0-32767 Default = 2048
4-5	<CNILevel>	Range: 0-32767 Default = 8192
4-5	<WBEchoRatio>	Range: 0-32767 Default = 256
4-5	<NLPPGain>	Range: 0-255 Default = 2048
4-5	<NLPPLimit>	Range: 0-32767 Default = 32767
4-5	<txGain>	Range: 0-32767 Default = 64
5	<biquad>	HPF filter biquad Composed of 6 parameters: shift, b2, b1, b0, a2, a1 The allowed range for each: 0-65535 Only for LiveVibes V2

Parameter Storage: All parameters are stored in EEPROM without using the AT&W command. The default values can be restored using AT&F or AT+VIP=1.

Examples:

Command	Responses
AT+CMEE=1 Note: Enables the use of result code	OK
AT+ECHO?	+ECHO: (0-1),0,(0-15),(0-3),(0-31),(0-31) +ECHO: (0-1),2,(0-63),(0-32767),(64-256) OK Note: Algo1 and Algo3 available
AT+ECHO=?	+ECHO: (0-1),4,(0-255),(160-270),(12-200),(0-32767),(0-32767),(0-2),(0-32767),(0-32767),(0-32767),(0-32767),(0-32767),(0-32767),(0-32767),(0-32767),(0-32767),(0-32767),(0-32767),(0-32767),(0-32767),(0-32767),(0-32767),(0-255),(0-32767),(0-32767) OK Note: Only Algo LV-V1 available
AT+ECHO? Note: Read current settings	+ECHO: 0,0,0,3,10,7 +ECHO: 0,2,30,8000,256 OK
AT+ECHO=1,0 Note: Activate Algo 1 with current parameters	OK
AT+ECHO? Note: Read current settings	+ECHO: 1,0,0,3,10,7 +ECHO: 0,2,30,8000,256 OK
AT+ECHO=1,2 Note: Activate Algo3 with current parameters	+CME ERROR: 519 Note: The new algorithm will be activated after a reset of the product
AT+ECHO=? Note: Read current settings	+ECHO: 1,0,0,3,10,7 +ECHO: 2,2,30,8000,256 OK
AT+CFUN=1 Note: Reset the product	OK
AT+ECHO? Note: Read current settings	+ECHO: 0,0,0,3,10,7 +ECHO: 1,2,30,8000,256 OK
AT+ECHO=0,2 Note: Deactivate the Echo Cancellation	OK
AT+ECHO? Note: Read current settings	+ECHO: 0,0,0,3,10,7 +ECHO: 0,2,30,8000,256 OK
AT+ECHO=1,0 Note: Activate Algo1 with current parameters	+CME ERROR: 519 Note: The new algorithm will be activated after a reset of the product because the last activated AEC is different
AT+ECHO? Note: Read current settings	+ECHO: 2,0,0,3,10,7 +ECHO: 0,2,30,8000,256 OK
AT+CFUN=1 Note: Reset the product	OK
AT+ECHO? Note: Read the current settings	+ECHO: 1,0,0,3,10,7 +ECHO: 0,2,30,8000,256 OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Notes:

- When modem resets, an AEC algo is loaded. If the user wants to activate another AEC algo (even if not any is activated), a reset is needed. Then, the change will be taken into account after a reset.
- When a reset is needed to activate a new AEC algorithm, if a previous algorithm was activated, it continues to be activated as long as a reset is not performed. No automatic reset is done.
- Only one AEC algorithm can be running at a time.
- You can change parameters of an AEC algorithm X during another AEC algorithm Y running with mode 0 (AT+ECHO= 0,X). No reset is needed.
- Echo cancellation can be activated and deactivated during a call if the chosen AEC algo is the default one.
- The echo parameters can be updated without changing the activation mode using the <mode> and <algoid> current values.

Voice Rate +WVR

Description: This command allows the voice rate for bearer voice to be configured for outgoing and incoming calls.

Syntax:

Command	Responses
Action Command: AT+WVR=[<out_coding_type>] [,<in-coding_type>]	OK
Read Command: AT+WVR?	+WVR: <out_coding_type>,<in-coding_type> OK
Test Command: AT+ WVR=?	+WVR: (list of supported <out_coding_type>s), (list of supported <in-coding_type>s) OK

Values:

<out_coding_type>	Voice Outgoing Call Coding Type	
	Preferred Type	Other Supported Types
0	FR	
1	EFR	FR
2	HR	FR
3	FR	HR
4	HR	EFR
5	EFR	HR
6	AMR-FR	EFR, AMR-HR
7 Default	AMR-FR	EFR, AMR-HR, HR
8	AMR-HR	HR, AMR-FR, EFR
9	AMR-HR	AMR-FR, EFR
10	AMR-HR	AMR-FR, FR
11	AMR-HR	AMR-FR, FR
12	AMR-FR	AMR-HR
13	AMR-FR	FR, AMR-HR
14	AMR-FR	FR, AMR-HR, HR
<in_coding_type>: For voice incoming call coding type, see <out_coding_type> for possible values		

Parameter Storage: The <out_coding_type> and <in_coding_type> parameters are stored in EEPROM without using the AT&W command.

Examples:

Command	Responses
AT+WVR=?	+WVR: (0,14),(0,14) Note: HR, EFR and AMR available
AT+WVR=1 Note: Configure voice type FR and EFR for outgoing calls only	OK Note: Bearer is configured for outgoing calls
AT+WVR=1,4 Note: Configures voice type FR and EFR for outgoing calls and HR and EFR for incoming calls	OK Note: Bearer is configured for outgoing and incoming calls
AT+WVR=,4 Note: Configures voice type HR and EFR for incoming calls	OK Note: Bearer is unchanged for outgoing calls and configured for incoming calls
AT+WVR? Note: Ask for the current values	+WVR: 1,4 OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

DTMF Tone Duration +VTD

Description: The product enables the user application to send DTMF tones over the GSM network. This command is used to define tone duration.

Syntax:

Command	Responses
Action Command: AT+VTD=<n>	OK
Read Command: AT+VTD?	+VTD: <n> OK
Test Command: AT+VTD =?	+VTD: (list of supported <n>s) OK

Values: **<n>** **Length of Tones Emitted as a Result of the +VTS Command.**
Integer type
A value of zero (default) causes a tone duration of 70 ms ± 5 ms according to 3GPP 23.014.
The value is used modulo 256.

Parameter Storage: None

Examples:

Command	Responses
AT+VTD=6 Note: To define 600 ms tone duration	OK
AT+VTD? Note: Get current tone duration	+VTD: 6 OK
AT+VTD=?	+VTD: (0-255) OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

DTMF Tone to Transmit +VTS

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

Syntax:

Command	Responses
Action Command: AT+VTS=<Tone>	OK
Test Command: AT+VTS =?	+VTS: (list of supported <Tone>s) OK

No Read Command

Values: **<Tone>** **DTMF Tone to Transmit.**
Values are: {0-9, *, #, A, B, C, D}

Parameter Storage: None

Examples:

Command	Responses
AT+VTS=?	+VTS: (0-9, *, #, A, B, C, D) OK
AT+VTS="A"	OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Play Tone +WTONE

Description: This command allows a tone to be played on the current speaker or on the buzzer.

Syntax:

Command	Responses
Action Command: AT+WTONE=<mode>[,<dest>,<freq>[,[<gain>][,[<duration>] [,<freq2> [,gain2>]]]]]	OK
Test Command: AT+WTONE=?	OK

No Read Command

Values:

<mode> **Tone Activation/Deactivation**
0 Stop playing
1 Play a tone

<dest> **Destination Setting**
1 Speaker
2 Buzzer

<freq> **Tone Frequency (in Hz)**
1-3999 If <dest>=1 (speaker)
From 1 to a max value referred to in Product Technical Specification. If <dest> =2 (buzzer)

<gain> **There are two configuration modes:**
- The gain is entered in deci dB units
- The gain is entered in index

By default gains are expressed in deci dB value.
All values are possible between the minimum and maximum values of the table given in the Notes section. If a value does not correspond to a table value, the nearest is kept.

<freq2> **Sets the 2nd tone frequency (in Hz)**
Optional if <mode>=1
Available with speaker only
Range: 1-3999 Hz (speaker)

<gain2> **Tone Gain for <freq2>**

<duration> **Tone Duration (in100 ms units)**
0-50 If a value is not indicated, the default value is 0
When <duration>=0, the duration is up to 21 minutes, and the tone can be stopped by AT+WTONE=0

Parameter Storage: None

Examples:

Command	Responses
AT+WTONE=1,1,300,-1510,50 Note: Play a tone	OK Note: Done
AT+WTONE=0 Note: Stop playing	OK Note: Done
AT+WTONE=1,1,300,-1510,50,600,-1510 Note: Play a tone with 2 frequencies (allowed only with speaker)	OK Note: Done
AT+WTONE=1,1,300,45,50 Note: Play a tone	OK Note: Done
AT+WTONE=0 Note: Stop playing	OK Note: Done
AT+WTONE=1,1,300,45,50,600,45 Note: Play a tone with 2 frequencies (allowed only with speaker)	OK Note: Done

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Play DTMF Tone +WDTMF

Description: This command allows a DTMF tone to be played on the current speaker.

Syntax:

Command	Responses
Action Command: AT+WDTMF=<mode>[,<dtmf> [, [<gain>] [,<duration>]]]	OK
Test Command: AT+WDTMF=?	+WDTMF: (list of supported <mode>s),(list of supported <dtmf>s), (list of supported <gain>s), (list of supported <duration>s) OK

No Read Command

Values:

<mode> **Tone Activation/Deactivation**
0 Stop playing
1 Play a tone

<dtmf> **DTMF to be Player (mandatory if <mode>=1)**
Range: {0-9, *, #, A, B, C, D}

<gain> **There are two configuration modes:**
- The gain is entered in deci dB units
- The gain is entered in index

By default gains are expressed in deci dB value.

All values are possible between the minimum and maximum values of the table given in the Notes section. If a value does not correspond to a table value, the nearest is kept.

<duration> **Tone Duration (in100 ms units)**
0-50 If a value is not indicated, the default value is 0
When <duration>=0, the duration is infinite, and the DTMF tone can be stopped by AT+WDTMF=0

Examples:

Command	Responses
AT+WDTMF=? Note: Possible values	+WDTMF: (0-1),(0-9,*,#,A,B,C,D),(-8000-0),(0-50) OK
AT+WDTMF=1,"*",-1510,50 Note: Play a DTMF tone	OK
AT+WDTMF=0 Note: Stop playing	OK
AT+WDTMF=? Note: Possible values	+WDTMF: (0-1),(0-9,*,#,A,B,C,D),(0-255),(0-50) OK
AT+WDTMF=1,"*",9,50 Note: Play a DTMF tone	OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

DTMF Detection Mode +WDDM

Description: This command allows the starting and stopping of DTMF Detection.

Syntax:

Command	Responses
Action Command: AT+WDDM=<mode>	OK
Read Command: AT+WDDM?	+WDDM: <mode> OK
Test Command: AT+WDDM=?	+WDDM: (list of supported <mode>s) OK

Unsolicited Response: +WDDI: <char>,<duration>

Values:

<mode> **DTMF Detection Activation**
0 Stop DTMF detection. **Default**
1 Start DTMF detection

<char> **Detected DTMF character**
Possible detected DTMF characters: (0-9,*,#,A,B,C,D)

<duration> **Duration of the Incoming Character in Milliseconds**

Parameter Storage: The <mode> parameter is stored in EEPROM without using the AT&W command. The default values can be restored using AT&F.

Examples:

Command	Responses
AT+WDDM=? Note: Test command	+WDDM: (0,1)
AT+WDDM=1 Note: Start DTMF detection	OK
AT+WDDM=1 Note: Start DTMF detection	+CME ERROR: 558 Note: DTMF detection already started by another client
AT+WDDM? Note: Read current value	+WDDM: 1 OK Note: Detection started
	+ WDDI: ”*”,60 Note: '*' char was detected during 60ms
AT+WDDM=0 Note: Stop DTMF detection	OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Notes:

- The DTMF decoding will be only available for one applicative layer: ATI or Open AT®. If the DTMF decoding is requested by one part and then requested by another part, a specific error (+CME ERROR: 558) will be returned to the second part.
- The different audio filters and processes in Rx path should not be activated while DTMF decoding mode is set.
- The following AT command is partially deactivated when DTMF decoding is activated:
  - +ECHO command
- The different audio filters return in its old state when DTMF decoder is deactivated.
- When the detector is enabled (with +WDDM AT command), each time an incoming DTMF is detected, an unsolicited response will be returned by the modem with DTMF value and its duration.
- If DTMF comes with duration lower than 20ms, the unsolicited event +WDDI will not be returned.
- Decoded DTMF signals will be notified only during a voice call.
- The DTMF decoding is only suspended when the voice call is finished and when the SU does not request the DTMF decoding deactivation.

Set Standard Tone +WSST

Description: This command sets and gets the level of standard tones (outgoing call tone level, busy tone level, and congestion tone level).

Syntax:

Command	Responses
Action Command: AT+WSST=<N/A>[,<ring tone level>] AT+WSST=[<N/A>],<ring tone level>	OK
Read Command: AT+WSST?	+WSST: <N/A>,<ring tone level> OK
Test Command: AT+WSST=?	+WSST: (list of supported <N/A>s), (list of supported <ring tone level>s) OK

Values:

<N/A> **Not Applicable**

<ring tone level> **Ring Tone Level**

<level> **There are two configuration modes:**
- The gain is entered in deci dB units,
- The gain is entered in index.

By default gains are expressed in deci dB value.
All values are possible between the minimum and maximum values of the table given in the Notes section. If a value does not correspond to a table value, the nearest is kept.

Parameter Storage: The parameters are stored in EEPROM without using the AT&W command.

Examples:

Command	Responses
AT+WSST=? Note: Get supported parameters	+WSST: (-8000-0), (-8000-0) OK
AT+WSST= , -301 Note: Set ring tone level to -3.01dB	OK
AT+WSST? Note: Get current standard tones sound level	+WSST: -4214, -301 OK
AT+WSST=? Note: supported parameters	+WSST: (0-255),(0-255) OK
AT+WSST=,5 Note: Set ring tone level to 5	OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Change Default Melody +WCDM

Description: This command allows a the selection of a manufacturer-specific melody. This default melody will be played for any new incoming voice call, either on the buzzer or on the speaker.

Syntax:

Command	Responses
Action Command: AT+WCDM=<melody>[,<player>] AT+WCDM=[<melody>],<player>	OK
Read Command: AT+WCDM?	+WCDM: <melody>,<player> OK
Test Command: AT+WCDM=?	+WCDM: (list of supported <melody>s), (list of supported <player>s) OK

Values:

<melody> Melody Number

0 No melody. **Default**

1…10 Melody 1 to 10

<player> Output Used to Play the Melody

0 The melody will be played on the buzzer for any new incoming voice call. **Default = 0**.

1 The melody will be played on the speaker for any new incoming voice call.

Parameter Storage: The parameters are stored in EEPROM without using the AT&W command. The default values can be restored using AT&F.

Examples:

Command	Responses
AT+WCDM=?	+WCDM: (0-10),(0-1) OK
AT+WCDM=5 Note: Select melody #5	OK
AT+WCDM? Note: Indicate the current melody	+WCDM: 5,0 OK Note: Melody #5 is currently selected, and the buzzer is selected to play it. An incoming call occurs, and the melody #5 is played on the buzzer.
AT+WCDM=,1 Note: Select the speaker to play the melody	OK
AT+WCDM?	+WCDM: 5,1 OK Note: The speaker is selected to play the melody if an incoming call occurs.

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Change Default Melody Player +WCDP

Description: This command allows the default melody player to be selected.

Syntax:

Command	Responses
Action Command: AT+WCDP = <player>	OK
Read Command: AT+WCDP?	+WCDP: <player> OK
Test Command: AT+WCDP=?	+WCDP: (list of supported <player>s) OK

Values: **<player>** **Output Selected to Play the Melody**
0 Buzzer. **Default**
1 Speaker

Parameter Storage: The <player> parameter is stored in EEPROM without using the AT&W command. The default value can be restored using AT&F.

Examples:

Command	Responses
AT+WCDP=?	+WCDP: (0-1) OK
AT+WCDP=0 Note: Selects the buzzer	OK
AT+WCDP?	+WCDP: 0 OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Initialize Voice Parameters +VIP

Description: This command allows factory settings for voice parameters to be restored from EEPROM. These voice parameters include:

- Gain control (**+VGR** & **+VGT** commands)
- Speaker & Microphone selection (**+SPEAKER** command)
- Echo cancellation (**+ECHO** command)
- Side tone modification (**+SIDET** command)
- Loud speaker volume level (**+CLVL** command)

Syntax:

Command	Responses
Action Command: AT+VIP=<n>	OK
Read Command: AT+VIP?	+VIP: <n> OK
Test Command: AT+VIP=?	+VIP: (list of supported <n>s) OK

Values: **<n>** **Initialization String**
1 Restore all voice parameters

Parameter Storage: None

Examples:

Command	Responses
AT+VIP=?	+VIP: (1) OK
AT+VIP=1 Note: Restore the factory settings from EEPROM	OK
AT+VIP?	+VIP: 1 OK

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Auto-Tests &T

Description: This command runs various auto-tests.

Syntax:

Command	Responses
Action Command: AT&T[<n>]	OK

No Read and Test Commands

Values: **<n>** **Auto-Test Activation**

0 Perform software auto-tests
1 Execute the audio loop test (close)
2 Stop the audio loop test (open)

Parameter Storage: None

Examples:

Command	Responses
AT&T0 Note: Perform software auto-tests	OK Note: No software problem detected; all checksums are correct

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Notes:

AT&T command has to be used when the MS is registered in order to process the AUDIO test loop correctly.

Caution:

The audio loop activation (enabled with AT&T1 command, disabled with AT&T2 command) involves some restrictions on the use of other AT commands.

- Audio loop mode must not be enabled when a communication is active.
- Audio loop mode must not be enabled when a tone is under generation.
- Audio loop must be disabled (if active) before opening a communication;
- Tone generation and SideTone modification must not be possible when the audio loop is active.

Audio Diagnostic Start +WADS

Description: This command launches *Audio Diagnostic* to make a diagnostic test of the audio path using a specific DTMF with duration and gain. DTMF is played by the speaker and is analyzed by the microphone and returned by the modem.

Syntax:

Command	Responses
Action Command: AT+WADS=<DtmfCharacter>[,[<DtmfDuration>][,<Gain>]]	+WADS: <DecodedDtmf>,<DecodedDuration> OK
Test Command: AT+WADS=?	+WADS: (list of supported <DtmfCharacter>s), (list of supported <DtmfDuration>s), (list of supported <Gain>s) OK

No Read Command

Values:

<DtmfCharacter> **DTMF Used for the Diagnosis**
String type
Possible values: 0-9,A,B,C,D,*,#

<DtmfDuration> **Duration of DTMF (in ms)**
It is equal to100ms if omitted
5-250 in ms, in 20 ms unit

<Gain> **DTMF Gain**
It is equal to default value if omitted (-15.1 dB, corresponding to index 45)
There are two configuration modes:
- the gain is entered in deci dB units
- the gain is entered in index.

By default gains are expressed in deci dB value

All values are possible between the minimum and maximum values of the table given in the Notes section. If a value does not correspond to a table value, the nearest is kept.

<DecodedDtmf> **DTMF Decoded**
Possible values: 0-9,A,B,C,D,*,#

<DecodedDuration> **DTMF Decoded**
5-500 in ms, in 20ms unit

Examples:

Command	Responses
AT+WADS=?	+WADS: (0-9,*,#,A,B,C,D),(5-250),(-8000-0) OK
AT+WADS=”1”,100,-1510	+WADS: "1",100 OK
AT+WADS=?	+WADS: (0-9,*,#,A,B,C,D),(5-250),(0-255)

SIM, +WIND Notes:

- This command is supported even if the SIM card is absent.
- The +WIND indication from which this command is allowed is +WIND: 3.

Other Notes:

- This command is available when the modem is in idle mode (no active voice call).
- The played tone detection on microphone is not guaranteed if gain is either too small or too high.
- When this feature is used, we recommend to disable the echo cancellation, using the AT+ECHO command, in order not to disrupt tones detection, which could be handled as an echo by the AEC.

Chapter 22 – CPHS Commands

CPHS Command +CPHS

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

It also activates the following unsolicited responses:

- +WMVI which indicates the status of the LINE 1, LINE 2, or DATA mailboxes.
- +WDCI which provides the call forwarding flags.

Syntax:

Command	Responses

For <Mode>=0 or 1

Action Command: AT+CPHS=<Mode>,<FctId>	OK

For <Mode>=2 and <FctId>=1

Action Command: AT+CPHS=<Mode>,<FctId>	+WVMI: <LineId>,<VoiceMailStatus> [+WVMI: <LineId>,<VoiceMailStatus>[…]] OK

For <Mode>=2 and <FctId>=2

Action Command: AT+CPHS=<Mode>,<FctId>	+WMBN: <LineId>,[<number>],[<type>],[<name>],<NumberStatus> [+WMBN: <LineId>,[<number>],[<type>],[<name>],<NumberStatus>[…]] OK

For <Mode>=2 and <FctId>=3

Action Command: AT+CPHS=<Mode>,<FctId>	+WALS: <LineId> OK

For <Mode>=2 and <FctId>=4

Action Command: AT+CPHS=<Mode>,<FctId>	+WDCI: <LineId>,<DivertedStatus> [+WDCI: <LineId>,<DivertedStatus>[…]] OK

For <Mode>=2 and <FctId>=5

Action Command: AT+CPHS=<Mode>,<FctId>[,<type format>]	+WNON: <type format>,<operator name> OK

For <Mode>=2 and <FctId>=6

Action Command: AT+CPHS=<Mode>,<FctId>[,<data field>]	+WCPI: <data field>,<InfoStatus> OK

For <Mode>=2 and <FctId>=7

Action Command: AT+CPHS=<Mode>,<FctId>,<Service>	+WCSP: <Service>,<ServiceStatus> OK

Read Command: AT+CPHS?	+CPHS: <FctId>[,<Status>] [+CPHS: <FctId>[,<Status>][…]] OK

Test Command: AT+CPHS=?	OK

Unsolicited Responses: +WVMI: <LineId>,<VoiceMailStatus>
+WDCI: <LineId>,<DivertedStatus>

Values:

<mode> **Requested Operation**
This parameter has no effect on Alternate Line Service, Network Operator Name, CPHS Information, and Customer Profile Service features (<FctId>=3,5,6,7).
Default = 0 for <FctId>=1,2,4
0 Deactivate a CPHS feature
1 Activate a CPHS feature
2 Interrogate a CPHS status

<fctId> **CPHS Feature**
The Customer Profile Service and Alternate Line Service features are activated if the field is set in CPHS Information and CSP files. The Network Operator is activated if at least one of the two format names exist (Long or Short format). This is done in initialization.
1 Voice Mail Indicator
2 Mail Box Number
3 Alternate Line Service
4 Diverted Call Indicator
5 Network Operator Name
6 CPHS Information
7 Customer Service Profile

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

<LineId> **Line Identity**
1 Line 1
2 Line 2
3 Data

<VoiceMailStatus> **Voice Mail Status**
0 No message waiting
1 At least one message is waiting

<number> **Phone Number in ASCII Format** (String type)

<type> **TON/NPI Type of Address Octet** (Integer type)
129 ISDN / telephony numbering plan, national / international unknown
145 ISDN / telephony numbering plan, international number
161 ISDN / telephony numbering plan, national number
128-255 Other values (refer GSM 04.08 section 10.5.4.7)

<name> **Name of Mailbox** (String type)
The +WPCS command affects the format of the mailbox <name> entry
The maximum length is SIM dependent

<NumberStatus> **Indicates if <number> Can Be Updated or Not**
0 Update is not possible
1 Update is possible

<DivertedStatus> **Divert Call Status**
0 Disabled
1 Enabled

<type format> **<operator name> Format**
0 Long format **Default**
1 Short format

<operator name> **Operator Name**
String type

<data field> **CPHS Information Field Bit Number**
Range: 0-25. **Default = 0 if a value is omitted**
If <data field> field is equal to 0, the whole CPHS information field will be displayed in <InfoStatus> parameter. See "CPHS information field" in Appendix.

<InfoStatus> **CPHS Information Field Status**
0 Service is not customer-accessible
1 Service is customer-accessible
"xxxxxxxx" Whole CPHS information bit field; hexadecimal string (8 digits)

<Service> **CSP Field Bit Number**
Range: 1-81 (See "CPS Constants" in the Appendixes)

<ServiceStatus> **CSP Bit Status**
0 Service is not customer-accessible
1 Service is customer-accessible

Parameter Storage: The <Mode> parameter is stored in EEPROM without using the AT&W command The default value can be restored using AT&F.

Examples:

Command	Responses
AT+CPHS? Note: Request the status of CPHS functionality	+CPHS: 1,0 Note: Voice mail indicator functionality is deactivated +CPHS: 2,0 Note: Mail box number functionality is deactivated +CPHS: 3,1 Note: Alternate Line Serve functionality is activated +CPHS: 4,0 Note: Divert Call Indicator functionality is deactivated +CPHS: 5,1 Note: Network Operator functionality is activated +CPHS: 6,1 Note: CPHS Information functionality is activated +CPHS: 7,1 Note: Customer Service Profile functionality is activated OK
AT+CPHS=1,1 Note: Activate the voice mail indicator functionality	OK
AT+CPHS? Note: Interrogate the status of CPHS functionality	+CPHS: 1,1 Note: Voice mail indicator functionality is activated +CPHS: 2,0 Note: Mail box number functionality is deactivated +CPHS: 3,1 Note: Alternate Line Serve functionality is activated +CPHS: 4,0 Note: Divert Call Indicator functionality is deactivated +CPHS: 5,1 Note: Network Operator functionality is activated +CPHS: 6,1 Note: CPHS Information functionality is activated +CPHS: 7,1 Note: Customer Service Profile functionality is activated OK
	+WVMI: 1,1 Note: A message is waiting on line 1 +WVMI: 2,1 Note: A message is waiting on line 2
AT+CPHS=1,4 Note: Activate Divert Call Indicator functionality ****call forwarding is active on line 1****	OK +WDCI: 1,1 Note: Call forwarding is active on line 1
AT+CPHS=2,1 Note: Interrogate the status of voice mail indicator functionality	+WVMI: 1,1 Note: A message is waiting on line 1 +WVMI: 2,1 Note: A message is waiting on line 2 +WVMI: 3,0 Note: No data waiting OK
AT+CPHS=1,2 Note: Activate the mail box number functionality	OK
AT+WALS=1 Note: Interrogate the status of activated line	+WALS:2 OK Note: Current line is number 2
AT+CPHS=0,4 Note: Deactivate the Divert Call Indicator functionality	OK

Table continued on next page.

Command	Responses
AT+CPHS? Note: Interrogate the status of CPHS functionality	+CPHS: 1,1 Note: Voice mail indicator functionality is activated +CPHS: 2,1 Note: The mail box number functionality is activated +CPHS: 3,1 Note: Alternate Line Serve functionality is activated +CPHS: 4,0 Note: Divert Call Indicator functionality is deactivated +CPHS: 5,1 Note: Network Operator functionality is activated +CPHS: 6,1 Note: CPHS Information functionality is activated +CPHS: 7,1 Note: Customer Service Profile functionality is activated OK
AT+CPHS=2,2 Note: Get current values	+WMBN: 1,"19254871234",129,1 Note: Mail box number for line 1 +WMBN: 2,,,1 Note: Mail box number for line 2 +WMBN: 3,,,1 Note: Mail box number for data line OK Note: Only line1 can be updated
AT+CPHS=2,5 Note: Get the operator name	+WNON: 0,"Orange F" OK
AT+CPHS=2,7,9 Note: Get current status for barring of all outgoing calls	+WCSP: 9,1 OK Note: Barring or all outgoing calls is customer accessible
AT+CPHS=2,6 Note: Get current status for all CPHS Information fields	+WCPI: 0,"0033000F" OK
AT+CPHS=2,6,13 Note: Get the current status for call forward activated indicator for line 1	+WCPI: 13,1 OK

SIM, PIN, +WIND Notes:

- A SIM card must be inserted to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.
- The +WIND indication from which this command is allowed is +WIND: 4.

Other 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.

CPHS Mail Box Number +WMBN

Description: This command sets the different mailbox numbers in SIM. The +CPHS command can be used to find out which mailbox numbers can be updated.

Syntax:

Command	Responses
Action Command: AT+WMBN = <LineId>[,<number>,[<type>],[<name>]]	OK
Read Command: AT+WMBN?	OK
Test Command: AT+WMBN=?	OK

Values:

<LineId> **Line Associated with the Mailbox**
- **1** Line 1
- **2** Line 2
- **3** Data

<number> **Phone Number**
ASCII format; up to 20 digits

<type> **TON/NPI Type of Address Octet for <number>** (Integer type)
The **default is 145** when the dialing string includes the international access code character "+"; otherwise, it is **129**.
- **129** ISDN / telephony numbering plan, national / international unknown
- **145** ISDN / telephony numbering plan, international number
- **161** ISDN / telephony numbering plan, national number
- **128-255** Other values (refer GSM 04.08 section 10.5.4.7)

<name> **Name of Mailbox**
String type
The +WPCS command affects the format of the mailbox <name> entry.
The maximum length is SIM dependent

Parameter Storage: None

Examples:

Command	Responses
AT+CPHS=2,2 Note: Get the current mail box numbers in SIM	+WMBN: 1,"0123456789",129,"Home" , 1 +WMBN: 2,"9876543210",129,"Work" , 1 +WMBN: 3,,,,1 +WMBN: 4,,,,1 OK
AT+WMBN=1,"+0033122334455",145 Note: Set mailbox number for line 1.	OK Note: Mailbox number for line 1 is set.
AT+WMBN=2 Note: Erase mailbox number and name for line 2	OK
AT+CPHS=2,2 Note: Get current mail box numbers again	+WMBN: 1,"+ 33122334455",145,1 +WMBN: 2,,,,,1 +WMBN: 3,,,,,1 +WMBN: 4,,,,,1 OK

SIM, PIN Notes:
- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Alternate Line Service +WALS

Description: This command allows you to set and to get an active line. The CPHS command can be used to find out which line is active.

Syntax:

Command	Responses
Action Command: AT+WALS = <CmdType>[,<LineId>]	[+WALS: <LineId>] OK
Read Command: AT+WALS?	+WALS: <LineId> OK
Test Command: AT+WALS=?	+WALS: (list of supported <CmdType>s), (list of supported <LineId>s) OK

Values:

<CmdType> **Requested Operation**
0 Set active line
1 Get active line

<LineId> **Line Number**
Used only with <CmdType>=0
1 Line 1
2 Line 2

Parameter Storage: The <LineId> parameter is stored in EEPROM without using the AT&W command.

Examples:

Command	Responses
AT+WALS=?	+WALS: (0-1),(1-2) OK
AT+WALS = 0,1 Note: Activate Line 1	+WALS: 1 OK
AT+WALS = 1 Note: Get the current activated line	+WALS: 1 OK
AT+CPHS? Note: Get the current activated line	+WALS: 1 OK

SIM, PIN Notes:

- A SIM card must be inserted to support this command.
- The PIN 1 / CHV 1 code must be entered to support this command.
- This command is supported even if the PIN 2 / CHV 2 code is not entered.

Appendix A – Result Codes, Failure Causes, and Values

Chapter Summary

The following tables are included in Appendix A:

- ME Error Result Code: +CME ERROR: <error>
- Message Service Failure Result Code: +CMS ERROR <er>
- Specific Error Results Codes
- Failure Cause from GMS 05.08 Recommendation (+CEER)
- Specific Failure Cause for +CEER
- GSM 04.11 Annex E-2: Mobile Originating SM-transfer
- Unsolicited Result Codes
- Final Result Codes
- Intermediate Result Codes
- Parameter Storage
- GMS Sequences List
- Operator Names
- CPHS Information Field
- CSP Constraints

ME Error Result Codes: +CME ERROR: <error>

<error>	Meaning	Resulting from the following commands
3	Operation not allowed	All GSM 07.07 commands (+CME ERROR: 3)
4	Operation not supported	All GSM 07.07 commands (+CME ERROR: 4)
5	PH-SIM PIN required (SIM lock)	All GSM 07.07 commands (+CME ERROR: 5)
10	SIM not inserted	All GSM 07.07 commands (+CME ERROR: 10)
11	SIM PIN required	All GSM 07.07 commands (+CME ERROR: 11)
12	SIM PUK required	All GSM 07.07 commands (+CME ERROR: 12)
13	SIM failure	All GSM 07.07 commands (+CME ERROR: 13)
16	Incorrect password	+CACM, +CAMM, +CPUC, +CLCK, +CPWD, +CPIN, +CPIN2 (+CME ERROR: 16)
17	SIM PIN2 required	+CPBW (FDN), +CLCK (FDN),
18	SIM PUK2 required	+CACM, +CAMM, +CPUC, +CPBW (FDN), +CPIN, +CPIN2, +CLCK (FDN), +CPWD
20	Memory full	+CPBW, +WOLM, ATD
21	Invalid index	+CPBR, +CPBW, ATD>[mem]index, +WMGO, +WPGW, +WOLM
22	Not found	+CPBF, +CPBP, +CPBN, +CGSN, +WOPN, ATD>[mem]"name"
24	Text string too long	+CPBW, +CPIN, +CPIN2, +CLCK, +CPWD, +WPGW, +WCCS, +WDSS
26	Dial string too long	+CPBW, ATD, +CCFC
27	Invalid characters in dial string	+CPBW
30	No network service	+VTS, +COPS=?, +CLCK, +CCFC, +CCWA, +CUSD
32	Network not allowed – emergency calls only	+COPS
40	Network personal PIN required (Network lock)	All GSM 07.07 commands (+CME ERROR: 40)
42	Network personal PIN required (Network subset lock)	All GSM 07.07 commands (+CME ERROR: 42)
44	Network personal PIN required (Service Provider lock)	All GSM 07.07 commands (+CME ERROR: 44)
46	Network personal PIN required (Corporate lock)	All GSM 07.07 commands (+CME ERROR: 46)
103	Incorrect MS identity	+CGATT
106	ME is blacklisted by network	+CGATT
107	Mobile Station is not allowed to operate in GPRS	+CGATT
111	Mobile Station is not allowed to operate in the requested PLMN	+CGATT
112	Mobile Station is not allowed to make location updating in this area	+CGATT
113	Roaming not allowed in this area	+CGATT
132	Service option not supported (#32)	+CGACT +CGDATA ATD*99
133	Requested service option not subscribed (#33)	+CGACT +CGDATA ATD*99
134	Service option temporarily out of order (#34)	+CGACT +CGDATA ATD*99
148	Unspecified GPRS error	All GPRS commands
149	PDP authentication failure	+CGACT +CGDATA ATD*99
150	Invalid mobile class	+CGCLASS +CGATT

Message Service Failure Result Code +CMS ERROR

<er> is defined as below:

<er>	Meaning	Resulting from the following commands
1 to 127	Error cause values from the GSM recommendation 04.11 Annex E-2	+CMGS, +CMSS
301	SMS service of ME reserved	+CSMS (with +CMS: ERROR 301)
302	Operation not allowed	All SMS commands (+CMSS, +CMGL, +CPMS, +CSMP…
303	Operation not supported	All SMS commands
304	Invalid PDU mode parameter	+CMGS, +CMGW
305	Invalid text mode parameter	+CMGS, +CMGW, +CMSS
310	SIM not inserted	All SMS commands
311	SIM PIN required	All SMS commands
312	PH-SIM PIN required	All SMS commands
313	SIM failure	All SMS commands
316	SIM PUK required	All SMS commands
317	SIM PIN2 required	All SMS commands
318	SIM PUK2 required	All SMS commands
321	Invalid memory index	+CMGR, +CMSS, +CMGD
322	SIM or modem memory full	+CMGW
330	SC address unknown	+CSCA?, +CMSS, +CMGS
340	no +CNMA acknowledgement expected	+CNMA

Specific Error Result Codes

<error>	Meaning	Results 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”) except ATHO, ATH1, AT+WOIR, AT+CFUN=1, AT+CLCC, AT+WAC, AT+CPAS, AT+VGR, AT+VTS, AT+SPEAKER
517	SIM ToolKit facility not supported.	+STGI
518	SIM ToolKit indication not received.	+STGI
519	Reset product to activate or change a new echo cancellation algorithm.	+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	Embedded application is activated so objects flash are not erased	+WOPEN
533	Missing or Unknown APN	ATD*99 +GACT +CGDATA
536	Class locked: A command has been launched from a port. The effect is to lock all commands belonging to the same class. If another port launches a command of this class, this error will occur as long as the class is not released (at first command’s completion time).	All commands
537	Phonebook group full.	+CPBW
538	Not enough space to copy SMS	+WMCP
539	Invalid SMS	+CMGR
541	Open AT® application and AT software version do not match	+WOPEN
543	CMUX connection is refused by remote, after a restart of CMUX protocol by the modem, due to a 27.010 connection loss during virtual channels establishment.	+CMUX

continued on next page

Continued: Specific Error Result Codes

<error>	Meaning	Results from the following commands
544	CMUX connection Timeout (no answer from the remote); i.e., no DLCO opened response.	+CMUX
545	A CMUX session has been started on a physical UART, and the user tries to start another CMUX session on another physical UART. The error, +CME ERROR: 545 is raised on the UART where AT+CMUX command is trying to be started again.	+CMUX
546	Emergency call is not allowed without SIM	+COPS
547	Emergency call is allowed without SIM	+COPS
548	No flash objects to delete	+WOPEN
549	The phone number of the requested phonebook entry is empty	ATD><index>[;],ATD><phonebook><index>[;]
550	Unable to resize the Application & Data storage place since the new required size would overlap with the current Open AT® application storage place	+WOPEN
551	Service abort request has failed	AT+WAC
553	The PUK 1 code is burned but PIN 1/CHV 1 code is OK	+CPIN, +CKPD, D (sequence)
554	The SIM is blocked (PIN 1/CHV 1 and PUK 1 codes are burned)	All GSM 07.07 commands
555	AT command aborted by a POWER OFF (the AT command treatment should be partial)	+COPS, +CPIN, +CPIN2, +CMGL, +CMGR, +CMGD, +WDCP, +CCID, +CLCK, +CACM, +CAMM, +CPUC, +WMSC, +WMCP, +CPOL, +CSQ, +CCED
556	AT command aborted by a SIM Extract (the AT command treatment should be partial)	+COPS, +CPIN, +CPIN2, +CMGL, +CMGR, +CMGD, +WDCP, +CCID, +CLCK, +CACM, +CAMM, +CPUC, +WMSC, +WMCP, +CPOL
558	The service activation associated to the AT command is already activated by another port	+WDDM
559	Audio Diagnostic was stopped because an incoming call happens.	+WADS
562	AT command aborted by an auto answer to an incoming call (the AT command treatment should be partial)	+CPBF, +CPBR, +CGATT, +CGCLASS, +CPWD, +CLCK, +CPIN, +CPIN2, +VTS, +CPBS, +CPBW, +WDCP, +CMGR, +CMGL, +WMSC, +CMGW, +CMGS, +CMSS, +WCBM, +CSAS, +CMGD, +CCID, +CCFC, +CLIR, +CLIP, +COLP, +CCWA, +CACM, +CAMM, +CPUC, +CPOL

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
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
224	MS requested detach
225	NWK request 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

Continued on next page.

Continued: Failure Cause from GSM 04.08 Recommendation +CEER

Cause Value	Diagnostic
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
239	PDP unsuccessful activation cause Nb Max Session Reach

All Other Values in the Range	Will Be Treated as Cause
[0,31]	31
[32,47]	47
[48,63]	63
[64,79]	79
[80,95]	95
[96,111]	111
[112,127]	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

GSM 04.11 Annex E-2: Mobile Originating SM-Transfer

These error causes could appear for **SMS commands** (+CMGS, +CMSS, +CMGD…)

Error #	Error Label	Description
1	Unassigned (unallocated) number	The destination requested by the Mobile Station cannot be reached because, although the number is in a valid format, it is not currently assigned (allocated).
8	Operator determined barring	The MS 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	The outgoing call barred service applies to the short message service for the called destination.
21	Short message transfer rejected	The equipment sending this cause does not wish to accept this short message, although it could have accepted the short message. This cause is neither busy nor incompatible.
27	Destination out of service	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	The subscriber is not registered in the PLMN (e.g., IMSI not known)
29	Facility rejected	The facility requested by the Mobile Station is not supported by the PLMN.
30	Unknown subscriber	The subscriber is not registered in the HLR (e.g., IMSI or directory number is not allocated to a subscriber).
38	Network out of order	The network is not functioning correctly and the condition is likely to last a relatively long period of time; e.g., immediately reattempting the short message transfer is not likely to be successful.
41	Temporary failure	The network is not functioning correctly and 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	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.
50	Requested facility not subscribed	The requested short message service could not be provided by the network because the user has not completed the necessary administrative arrangements with its supporting network.
69	Requested facility not implemented	The network is unable to provide the requested short message service.
81	Invalid short message transfer reference value	The equipment sending this cause has received a message with a short message reference which is not currently in use on the MS-network interface.
95	Invalid message, unspecified	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	The equipment sending this cause has received a message where a mandatory information element is missing and/or has a content error (the two cases are undistinguishable).
97	Message type non-existent or not implemented	The equipment sending this cause has received a message 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.
98	Message not compatible with short message protocol state	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	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	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.

Note: All values other than specified should be treated as error #41.

Verbose Result Codes

Verbose Result Code	Numeric (V0 set)	Description
+CME ERROR: <err>	As verbose	Error from GSM 07.05 commands
+CMS ERROR: <err>	As verbose	Error from SMS commands (07.07)
BUSY	7	Busy signal detected
ERROR	4	Command not accepted
NO ANSWER	8	Connection completion timeout
NO CARRIER	3	Connection terminated
OK	0	Acknowledges correct execution of a command line
RING	2	Incoming call signal from network
+COLP:<number>,<type>	as verbose	Outgoing Call Presentation
+CR: <type>	as verbose	Outgoing Call report control
+ILRR: <rate>	as verbose	Local TA-TE data rate
CONNECT 300	10	Data connection at 300 bauds
CONNECT 1200	11	Data connection at 1200 bauds
CONNECT 1200/75	12	Data connection at 1200/75 bauds
CONNECT 2400	13	Data connection at 2400 bauds
CONNECT 4800	14	Data connection at 4800 bauds
CONNECT 9600	15	Data connection at 9600 bauds
CONNECT 14400	16	Data connection at 14400 bauds
+CSSI: <code1>[,<index>]	As verbose	Supplementary service notification during a call setup

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

Change PIN code	**04*OLDPIN*NEWPIN*NEWPIN#
Change PIN2 code	**042*OLDPIN2*NEWPIN2*NEWPIN2#
Unlock PIN code	**05*PUK*NEWPIN*NEWPIN#
Unlock PIN2 code	**052*PUK2*NEWPIN2*NEWPIN2#
Show the IMEI number	*#06#

Call Forwarding

Activate or	*SC# *SC**bs#
Register and activate *or* *or* *or* *or* *or*	**SC*PhoneNumber# or **SC*PhoneNumber*BS# or **SC*PhoneNumber*[BS]*T# or *SC*PhoneNumber# or *SC*PhoneNumber*BS# or *SC*PhoneNumber*[BS]*T#
Check status *or*	*#SC# *#SC**BS#
Deactivate *or*	#SC# #SC**BS#
Unregistered and deactivate *or*	##SC# ##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 teleservices and bearer services
10	All teleservices
11	Telephony
12	All data teleservices

16	Short Message Services
17	Voice Group Call Service
18	Voice Broadcast Service
19	All teleservices except SMS
20	All bearer services
21	All asynchronous services
22	All synchronous services
24	All data circuit synchronous
25	All data circuit asynchronous
26	All dedicated packet access
27	All dedicated PAD access

Note: The no reply condition timer (T) is only used for SC = 002, 004 or 61.

Call Barring

Note: SC values are listed below this table. BS values are covered in Call Forwarding

Activate *or*	*SC*Password# *SC*Password*BS#
Check status *or*	*#SC# *#SC**BS#
Deactivate *or*	#SC*Password# #SC*Password*BS#
Change password for call barring *or* *or* *or*	**03*330*OLDPWD*NEWPWD*NEWPWD# **03**OLDPWD*NEWPWD*NEWPWD# *03*330*OLDPWD*NEWPWD*NEWPWD# *03**OLDPWD*NEWPWD*NEWPWD#

The Service codes (SC) are:

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)

Note: Network service codes (BS) are the same the call forwarding sequences.

Call Waiting

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

Number Presentation

CLIP check status	*#30#
CLIR check status	*#31#
Suppress CLIR for a voice call	*31#PhoneNumber
Invoke CLIR for a voice call	#31#PhoneNumber
COLP check status	*#76#

Operator Names

Refer to the following documentation:

- SE13 (22nd August, 2005)
- NAPRD10 2.6.8

The country initials may vary for the same MCC (Mobile Country Code) without any impact.

CPHS Information Field

CPHS Information		
Data Field	**Bit Field**	**Description**
0	None	All information
1	0	CSP service activated and allocated
2	1	SST service activated and allocated
3	2	Mailbox Number service activated and allocated
4	3	Operator Name Shortform service activated and allocated
5	4	Information Numbers service activated and allocated
6	5	RFU
7	6	RFU
8	7	RFU
9	8	Voice Message Waiting Indicator for Line 1
10	9	Voice Message Waiting Indicator for Line 2
11	10	Data Message Waiting Indicator
13	12	Call Forward Activated Indicator for Line 1
14	13	Call Forward Activated Indicator for Line 2
15	14	Call Forward Activated Indicator for Data
17	16	Reserved
18	17	Reserved
19	18	Reserved
20	19	Reserved
21	20	Line 1 Mailbox Number Available
22	21	Line 2 Mailbox Number Available
23	22	Date Mailbox Number Available
25	24	EF Mn Updatable

CSP Constants

Service Group: Call Offering

Service	External Value
Call Forwarding Unconditional	1
Call Forwarding on User Busy	2
Call Forwarding on No Rely	3
Call Forwarding on User Not Reachable	4
Call Transfer	5

Service Group: Call Restriction

Service	External Value
Barring of All Outgoing Calls	9
Barring of Outgoing International Calls	10
Barring of Outgoing International Calls except those directed to the Home PLMN country	11
Barring of All Outgoing Calls	12
BIC Roam	13

Service Group: Other Supplementary Services

Service	External Value
Multi-Party Service	17
Closed User Group	18
Advice of Charge	19
Preferential CUG	20
CUG Outgoing Access	21

Service Group: Group Completion

Service	External Value
Call Hold	25
Call Waiting	26
Completion of Call to Busy Subscriber	27
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Service Group: Teleservices

Service	External Value
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Short Message – Mobile Originated	34
Short Message – Cell Broadcast	35
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Service Group: CPHS Teleservices

Service	External Value
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Service Group: Number Identification

Service	External Value
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Service	External Value
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Service	External Value
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Restriction of menus options for the ability to send Short Messages with type Email	76
Restriction of menus options for Data calls	78
Restriction of menus allowing the user to change language	80

Service Group: Information Numbers

Service	External Value
The ME shall only present information numbers to the user if this field is set to FF	81

Note: External values not used in these tables are reserved for future use.

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