

AT Command Set for Nokia 8850

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Introduction

This document describes the AT commands supported by Nokia 8850. A short description, the syntax, the possible setting values and responses of the AT commands are presented.

Computers use AT commands to communicate with modems. Most communications applications, however, have a user friendly interface that hides these AT command from the user. You issue AT commands via your communications application. When the software in the Nokia product has received an AT command, it responds with a message that is displayed on the screen of the device you are using. Some command parameters may not be supported by the phone, and using those parameters causes an error response.

Note that the **"AT"** or **"at"** prefix must be included at the beginning of each command line.

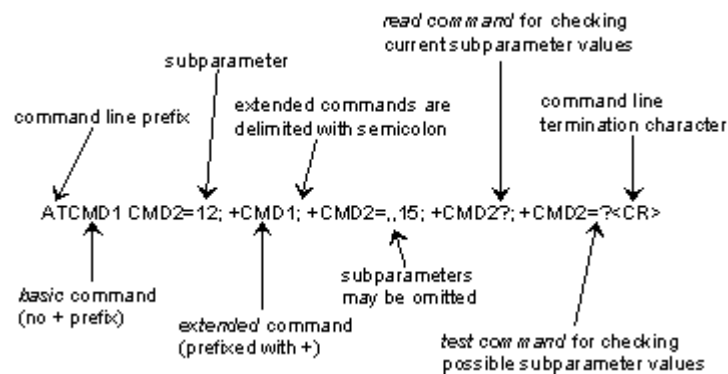
AT Command Syntax

Note that the "AT" or "at" prefix must be included at the beginning of each command line. You may type several AT commands on the same line, and in such cases you need to type the "AT" or "at" prefix only at the beginning of the command line. The marking <n> used in a command syntax is the setting value typed in as a part of the command. If the value is optional it is enclosed into square brackets. When you select a setting value with an AT command, the setting is valid until you change it.

Some AT commands are not supported by all Nokia's products. Giving a command which is not supported causes an error response. Also, some parameters may not be supported by all products, and in this case those parameters are just ignored in commands or left blank in responses.

Command Line

See figure below for general structure of a command line.



Basic structure of a command line

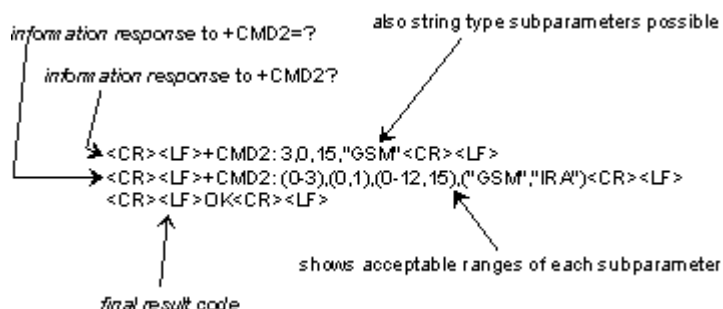
(ETSI, GSM 07.07 version 5.4.0, chapter 4.1.)

Standardized basic commands are found only in V.25ter. GSM commands use syntax rules of extended commands. Every extended command has a test command (=?) to test the existence of the command and to give information about the type of its subparameters. Parameter type commands also have a read command (?) to check the current values of subparameters. Action type commands do not store the values of any of their possible subparameters, and therefore do not have a read command.

If verbose responses are enabled with command V1 (see page 52) and all commands in a command line has been performed successfully, result code <CR><LF>OK<CR><LF> is sent from the TA to the TE. If numeric responses are enabled with command V0 (see page 52), result code 0<CR> is sent instead. If verbose responses are enabled with command V1 and subparameter values of a command are not accepted by the TA (or command itself is invalid, or command cannot be performed for some reason), result code <CR><LF>ERROR<CR><LF> is sent to the TE and no subsequent commands in the command line are processed. If numeric responses are enabled with command V0, result code 4<CR> is sent instead. ERROR (or 4) response may be replaced by +CME ERROR: <err> or +CMS ERROR: <err> when the command was not processed due to an error related to ME or network operation.

Information Responses and Result Codes

The TA response for the example command line in the figure above could be as shown below. Here, the verbose response format is enabled with command V1 (see page 52). If numeric format V0 would have been used, <CR><LF> headers of information responses would have been left out and final result code changed to 0<CR>.



Response to a command line

(ETSI, GSM 07.07 version 5.4.0, chapter 4.2.)

So called intermediate result codes inform about progress of TA operation (e.g. connection establishment *CONNECT*), and so called unsolicited result codes indicate occurrence of an event not directly associated with issuance of a command from TE (e.g. ring indication *RING*).

Command Line and Response Formatting Commands

The table below summarizes the commands relating to command line and response formatting. All are applicable to GSM terminals.

Command	See page	Description
S3=<value>	50	command line termination character
S4=<value>	50	response formatting character
S5=<value>	50	command line editing character
E<value>	48	command echo
Q<value>	49	result code suppression
V<value>	52	TA response format
X<value>	52	defines CONNECT result code format; values manufacturer specific
+CMEE=<n>	20	ME error reporting control

Sources:

GSM 07.07: Digital cellular telecommunications system (Phase 2+); AT command set for GSM Mobile Equipment (ME); version 5.40; Oct 1997.

ITU-T Recommendation V.25ter - Serial asynchronous automatic dialling and control; Aug 1995, section 5.

AT Commands for Nokia 8850

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A/ Repeat Last Command Line

A/ can be used as the first characters in a command line replacing normal AT. Also lowercase (a/) accepted. (V.25ter section 5.2.4.)

? Help

Returns information about implemented AT commands. Responses are product specific.

Syntax:

AT? [<n>]	Must be given right after AT.
-----------	-------------------------------

&C Define DCD Usage [circuit 109 (RLSD) behaviour]

This command determines how the state of the DCD V.24 signal relates to the detection on received line signal from the distant end. (V.25ter section 6.2.8.)

Syntax:

AT&C[0]	Keep DCD always ON.
AT&C1	Enable normal DCD usage. This is the default option.

&D Define DTR Usage [circuit 108 (DTR) behaviour]

This command defines how the DTR V.24 signal from the DTE is handled. Command &Q effect is present only when &Q is implemented. (V.25ter section 6.2.9.)

Syntax:

AT&D[0]	DTR is ignored if &Q0 is selected. DTR ON-OFF hangs up call if &Q2 is selected. (&Q effect is a de facto feature.)
AT&D1	DTR ON-OFF causes a transition to on-line command state, if there is call in progress.
AT&D2	DTR ON-OFF hangs up the call. This is the default option.
AT&D3	DTR ON-OFF hangs up the call and resets the data parameters to the start-up values (like command Z). This is a de facto feature.

&F Restore Factory Settings

This command restores all the factory settings including all the S-register settings but does not save them. Command parameters (if implemented) that are reset to their factory defaults are: S3, S4, S5, E, Q, V, X, &C, &D, +IFC, +ILRR, S25, &S, &Q, +CSCS, S0, S7, S8, S10, +DS, +DR, +ES, +EB, +ESR, +EFCS, +ER, +ETBM, S2, S12, +CSTA, +CMOD, +CBST, +CRLP, +CR, +CRC, +CSNS, +CHST, +CHSN, +CVHU, +CREG, +COPS (only <format>), +CLIP, +CLIR, +COLP, +CCUG, +CCWA (only <n>), +CUSD (only <n>), +CSSN, +CMEC, +CMER, +CPBS, +CMEE, +CSMS, +CPMS, +CMGF, +CSCA, +CSMP, +CSDH, +CSCB, +CNMI, +VGT, +VLS. (V.25ter section 6.1.2.)

Syntax:

AT&F[0]	Restore factory settings.
---------	---------------------------

&K Select Flow Control

This command selects the local flow control mode. This command changes the same setting as +IFC. Use of +IFC is recommended. (De facto.)

Syntax:

AT&K[0]	Disable flow control.
AT&K3	Set hardware flow control (CTS/RTS). This is the default option.
AT&K4	Set software flow control (XON/XOFF)

&S Define DSR Option

This command defines how the DSR V.24 signal is handled. For some products this command is a dummy. In these cases, either the DSR is always ON, or the DSR follows the DTR. (De facto.)

Syntax:

AT&S[0]	Keep DSR always ON.
AT&S1	Enable normal DSR usage. This is the default option.

&V View Active Configuration

This command displays the current values of the S-registers. Values 1 and 2 shall be present only when stored profiles are supported. Response format is product specific, but it must fit in a 80x24 character display and all command parameters stored in a profile must be shown as 'command name'-values of parameters' pairs (e.g. S7:80). (V.25ter section 6.1.2.)

Syntax:

AT&V[0]	View active configuration. (All command parameter values defined under &F and &Y settings).
AT&V1	Show settings in stored profile 0. (All command parameter values defined under &W).
AT&V2	Show settings in stored profile 1. (All command parameter values defined under &W).

&W Store Configuration

This command stores the current settings to one of two user profiles. Command parameters (if implemented) that are stored to a profile are the same as listed under the command &F (see page 9) except the parameters of the following commands which are not stored: +CMOD, +CSCA, +CSMP. (De facto.)

Syntax:

AT&W[0]	Store settings to user profile 0.
AT&W1	Store settings to user profile 1.

&Y Select Power-Up Configuration

This command defines from which user profile (0 or 1) parameters are loaded when the product is activated. This setting is not included in the settings that are stored in a user profile. The command &F does not affect this setting. (De facto.)

Syntax:

AT&Y[0]	Parameters are loaded from user profile 0.
AT&Y1	Parameters are loaded from user profile 1.

+++ Escape

During on-line data state, the online command state can be entered by giving three same characters in a sequence. The character is defined by S-register S2. The default character is '+'. Before and after the sequence there must be a pause of at least the time defined by S-register S12. By setting S12 to zero, escape sequence detection can be disabled. (De facto.)

Syntax:

+++	Enter on-line command state. '+' is default character.
------------	---

+CBST Select Bearer Service Type

Set command selects the bearer service <name> with data rate <speed>, and the connection element <ce> to be used when data calls are originated (GSM 02.02). Values may also be used during mobile terminated data call setup, especially in case of single numbering scheme calls (see the command +CSNS, page 38). Test command returns values supported by the TA as compound values. (GSM 07.07 section 6.7.)

Syntax:

AT+CBST=<speed>, <name>, <ce>	Select bearer service type. The default option is 0, 0, 1.
AT+CBST?	Query current setting. Response is +CBST: <speed>, <name>, <ce>
AT+CBST=?	Show supported values. Response is +CBST: (list of supported <speed>'s), (list of supported <name>'s), (list of supported <ce>'s)

Parameters:**<speed>:**

0	autobauding (automatic selection of the speed; this setting is possible in case of 3.1 kHz modem and non-transparent service)
1	300 bps (V.21)
2	1200 bps (V.22)
3	1200/75 bps (V.23)
4	2400 bps (V.22bis)
5	2400 bps (V.26ter)
6	4800 bps (V.32)
7	9600 bps (V.32)
12	9600 bps (V.34)
14	14400 bps (V.34)
15	19200 bps (V.34)
16	28800 bps (V.34)
34	1200 bps (V.120)
36	2400 bps (V.120)
38	4800 bps (V.120)
39	9600 bps (V.120)
43	14400 bps (V.120)
47	19200 bps (V.120)
48	28800 bps (V.120)
49	38400 bps (V.120)
50	48000 bps (V.120)
51	56000 bps (V.120)
65	300 bps (V.110)
66	1200 bps (V.110)
68	2400 bps (V.110 or X.31 flag stuffing)
70	4800 bps (V.110 or X.31 flag stuffing)
71	9600 bps (V.110 or X.31 flag stuffing)
75	14400 bps (V.110 or X.31 flag stuffing)
79	19200 bps (V.110 or X.31 flag stuffing)
80	28800 bps (V.110 or X.31 flag stuffing)
81	38400 bps (V.110 or X.31 flag stuffing)
82	48000 bps (V.110 or X.31 flag stuffing)
83	56000 bps (V.110 or X.31 flag stuffing)
115	56000 bps (bit transparent)
116	64000 bps (bit transparent)

also all other values below 128 are reserved

<name>:	
0	data circuit asynchronous (UDI or 3.1 kHz modem)
1	data circuit synchronous (UDI or 3.1 kHz modem)
2	PAD Access (asynchronous) (UDI)
3	Packet Access (synchronous) (UDI)
4	data circuit asynchronous (RDI)
5	data circuit synchronous (RDI)
6	PAD Access (asynchronous) (RDI)
7	Packet Access (synchronous) (RDI)
also all other values below 128 are reserved	
<ce>:	
0	transparent
1	non-transparent
2	both, transparent preferred
3	both, non-transparent preferred

+CCFC Call Forwarding Number and Conditions

Controls call forwarding supplementary services. <reason> values 4 and 5 are only applicable for <mode>=0. When status request response from network indicates that SS is active for specific data bearer services (e.g. 'circuit async'), AT interface shall only indicate 'data' (<class>=2) ('not active' case is displayed only when SS is not active to any service; i.e. +CCFC: 0,7). (GSM 07.07 section 7.10.)

Syntax:

AT+CCFC=<reason>, <mode>,<number>, <type>,<class>, <subaddr>, <satype>,<time>	When <mode>=2 the response is +CCFC: <status>,<class1>[,<number>,<type> [,<subaddr>,<satype>[,<time>]]] [<CR><LF>+CCFC: <status>,<class2>[,<number> ,<type>[,<subaddr>,<satype>[,<time>]]] [...]]. The default option is [,,, 129/145,7 ,,128,20]
AT+CCFC=?	Show supported values.

Parameters:

<reason>:	
0	unconditional
1	mobile busy
2	no reply
3	not reachable
4	all call forwarding (GSM 02.30)
5	all conditional call forwarding (GSM 02.30)
<mode>:	
0	disable
1	enable
2	query status
3	registration
4	erasure

<number>: string type phone number of forwarding address in format specified by <type>

<type>: type of address octet in integer format (GSM 04.08, subclause 10.5.4.7); default 145 when dialling string includes international access code character "+", otherwise 129

<subaddr>: string type subaddress of format specified by <satype>

<satype>: type of subaddress octet in integer format (GSM 04.08, subclause 10.5.4.8); default 128

<classx> is a sum of integers each representing a class of information (default 7 equals to all classes):

1	voice
2	data
4	fax

also all other values below 128 are reserved

<time>: 1...30 when "no reply" is enabled or queried, this gives the time in seconds to wait before call is forwarded, default value 20

<status>:

0	not active
1	active

+CCWA Call Waiting

Controls call waiting supplementary service and presentation of +CCWA unsolicited result code. When status request response from network indicates that SS is active for specific data bearer services (e.g. 'circuit async'), AT interface shall only indicate 'data' (=2) ('not active' case is displayed only when SS is not active to any service; i.e. +CCWA: 0,7). (GSM 07.07 section 7.11.)

Syntax:

AT+CCWA=<n>, <mode>,<class>	When <mode>=2: the response is +CCWA: <status>,<class1> [<CR><LF>+CCWA: <status>,<class2> ...] The default option is 0[,7].
AT+CCWA?	Query current setting. Response is +CCWA:<n>
AT+CCWA=?	Show supported values. Response is +CCWA:(list of supported <n>'s).

Parameters:

<n>	(sets/shows the result code presentation status in the TA):
0	disable
1	enable
<mode>	(when <mode> parameter is not given, network is not interrogated):
0	disable
1	enable
2	query status
<classx>	is a sum of integers each representing a class of information (default 7 equals to all classes):
1	voice
2	data
4	fax

also all other values below 128 are reserved

<status>:

0	not active
1	active

<number>: string type phone number of calling address in format specified by <type>

<type>: type of address octet in integer format (GSM 04.08, subclause 10.5.4.7)

<alpha>: optional string type alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command Select TE Character Set +CSCS

+CEER Extended Error Report

This command causes the product to return one or more lines of information text, which should offer the user an extended report of the reason for failure in the last unsuccessful call setup (originating or answering). Typically, the text will consist of a single line containing the failure information given by the GSM network in a textual format. **<report>** is the textual representation of network cause value as listed in GSM 04.08 annex H. (GSM 07.07 section 6.10.)

Syntax:

AT+CEER	Display error report. Response is +CEER: <report>
AT+CEER=?	Shows whether command has been implemented.

<report>: the total number of characters, including line terminators, in the information text shall not exceed 2041 characters. Text shall not contain the sequence 0<CR> or OK<CR>.

+CESP Enter SMS Block Mode Protocol

Sets the data software in the SMS Block mode. The final result code OK (or 0) shall not be returned until block mode is exited. (GSM 07.05 section 3.2.4.)

Syntax:

AT+CESP	Enter block mode protocol
AT+CESP=?	Shows whether command has been implemented.

+CFUN Set Phone Functionality

Sets ME power on/off. Resetting not supported by NMP products. If TA and ME are in one physical entity, <fun>=1 is a dummy. In the case of new Data Suite versions: When phone is off, it can be powered on only if it is charging. (GSM 07.07 section 8.2.)

Syntax:

AT+CFUN=<fun>[,0]	The default option is [0,0].
AT+CFUN?	Query current setting. Response is +CFUN: <fun>
AT+CFUN=?	Show supported values. Response is +CFUN: (list of supported <fun>'s), (0)

+CGMI Request ME Manufacturer Identification

This command displays the ME manufacturer identification. (GSM 07.07 section 5.1.)

Syntax:

AT+CGMI	Display manufacturer identification.
AT+CGMI=?	Shows whether command has been implemented.

+CGMM Request ME Model Identification

This command displays the ME model identification. Response must include product type. Note that in the case of a product with TA and ME in the same physical entity, the response of the command +GMM is identical. (GSM 07.07 section 5.2.)

Syntax:

AT+CGMM	Display model identification.
AT+CGMM=?	Shows whether command has been implemented.

+CGMR Request ME Revision Identification

This command displays the ME revision identification. Response must include product SW version, HW version is optional. Note that in the case of a product with TA and ME in the same physical entity, the response of the command +GMR is identical. (GSM 07.07 section 5.3.)

Syntax:

AT+CGMR	Display revision identification.
AT+CGMR=?	Shows whether command has been implemented.

+CGSN Request ME Serial Number Identification

This command displays the ME serial number, or the IMEI. Note that in the case of a product with TA and ME in the same physical entity, the response of the command +GSN is identical. (07.07 section 5.4.)

Syntax:

AT+CGSN	Display serial number.
AT+CGSN=?	Shows whether command has been implemented.

+CHLD Call Related Supplementary Services

Controls call hold, multiparty and explicit call transfer supplementary service operations similarly as defined in GSM 02.30 section 4.5.5.1. Supported parameter values depend on which data services the product implements. (GSM 07.07 section 7.12.)

Syntax:

AT+CHLD=<n>	
AT+CHLD=?	Show supported values. Response is +CHLD: (list of supported <n>'s).

<n> values:

0	release waiting call or held calls;
1	release active calls and accept other (waiting or held) call;
1x	release active call x; 2 = active calls on hold and accept other (waiting or held) call;
2x	active multiparty call on hold except call x;
3	add held call to multiparty call;
4	connect held and active (or MO alerting) call with each other (locally both calls are disconnected).

+CHSN HSCSD Non-Transparent Call Configuration

For this command the <maxAiur> and <modify> values depend on the product. (GSM 07.07 section 6.14.)

Syntax:

AT+CHSN= <wAiur>, <wRx>, <topRx>, <codings>	Non-transparent call configuration. The default option is 0, 0, 0, 0.
AT+CHSN?	Query current setting. Response is +CHSN: <wAiur>, <wRx>, <topRx>, <codings>
AT+CHSN=?	Show supported values. Response is +CHSN: <wAiur>, <modify>

Parameters

<wAiur>: integer type; wanted air interface user rate. Default value 0 indicates that TA shall calculate a proper value from currently selected fixed network user rate (<speed> subparameter from +CBST command), <codings>, and <wRx> (or <maxRx> from +CHSD command if <wRx>=0).

Other values:

1	9600 bps
2	14400 bps
3	19200 bps
4	28800 bps
5	38400 bps

<wRx>: integer type; wanted amount of receive timeslots. Default value 0 indicates that TA shall calculate a proper value from currently selected <wAiur> and <codings>

<topRx>: integer type; top value for <wRx> that user is going to request during the next established non-transparent HSCSD call. Default value 0 indicates that user is not going to change <wAiur>/<wRx> during the next call

<codings>: a sum of integers each representing a channel coding that is accepted for non-transparent HSCSD calls. Default value 0 indicates that all supported codings are accepted (refer +CHSD command for other values)

<maxAiur>: integer type; maximum value for <wAiur> (assuming that all supported channel codings are accepted and maximum number of timeslots are used)

<modify>

0	<wAiur>/<wRx> modification during call is not supported by ME/TA (<topRx> accepts only 0)
1	<wAiur>/<wRx> modification during call is supported by ME/TA

+CHUP Hang Up Call

This command hangs up the call, also when an alternating mode call is active. This is an assured procedure to terminate an alternating mode call. (GSM 07.07 sections 6.5, 6.6, and annexes E, F).

Syntax:

AT+CHUP	Hang up call. Response is OK.
AT+CHUP=?	Shows whether command has been implemented.

+CIND Indicator Control

Queries the current status of ME physical indicators. Number of supported <ind>s depend on the product. Indicator writing not supported by NMP products ('set' command returns always ERROR, or +CME ERROR when allowed by +CMEE). Note that all indicators that can be read with +CIND? must also be available as unsolicited +CIEV result codes (if +CMER=? indicates that +CIEV codes are supported). (GSM 07.07 section 8.9.)

Syntax:

AT+CIND=

AT+CIND?

Query current setting.

Response is +CIND: <ind>[,<ind>[,...]]

AT+CIND=?

Show supported values.

Response is +CIND:(list of supported <ind>'s)

Parameters:

<ind>: integer type value, which shall be in range of corresponding <descr>

<descr> values reserved and their <ind> ranges:

"battchg"	battery charge level (0-5)
"signal"	signal quality (0-5)
"service"	service availability (0-1)
"sounder"	sounder activity (0-1)
"message"	message received (0-1)
"call"	call in progress (0-1)
"vox"	transmit activated by voice activity (0-1)
"roam"	roaming indicator (0-1)
"smsfull"	a short message memory storage in the MT has become full (1), or memory locations are available (0); i.e. the range is (0-1)

+CLCC List Current Calls

Returns list of currently available calls in ME. (GSM 07.07 section 7.17.)

Syntax:

AT+CLCC	Response is [+CLCC: <id1>, <dir>, <stat>, <mode>, <empty>[,,<alpha>] [<CR><LF>+CLCC: <id2>, <dir>, <stat>, <mode>, <empty> [,,<alpha>] [...]]]
AT+CLCC=?	Shows whether command has been implemented.

Parameters:

<idx>: integer type; call identification number as described in GSM 02.30, subclause 4.5.5.1; this number can be used in +CHLD command operations

<dir>:

0	mobile originated (MO) call
1	mobile terminated (MT) call

<stat> (state of call):

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

<mode> (bearer/teleservice):

0	voice
1	data
2	fax
3	voice followed by data, voice mode
4	alternating voice/data, voice mode
5	alternating voice/fax, voice mode
6	voice followed by data, data mode
7	alternating voice/data, data mode
8	alternating voice/fax, fax mode
9	unknown

<empty>:

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

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

<type>: type of address octet in integer format (GSM 04.08, subclause 10.5.4.7)

<alpha>: string type alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command Select TE Character Set +CSCS

+CLCK Facility Lock

Enables/disables or queries the state of SIM/ME security features (PIN/security code query or fixed dialling feature) or call barring supplementary services. <fac> values "AB", "AG" and "AC" are only applicable for <mode>=0. Only security code levels 'phone' and 'none' can be handled with this command. If 'memory' level is set and status is queried (+CLCK="PS",2), AT interface shall indicate 'not active' (+CLCK: 0). When SS status request response from network indicates that SS is active for specific data bearer services (e.g. 'circuit async'), AT interface shall only indicate 'data' (<class>=2) ('not active' case is displayed only when SS is not active to any service; i.e. +CLCK: 0,7). (GSM 07.07 section 7.4.)

For some products <fac>="NT" is only applicable with Nokia 8110 and compatible phones.

Syntax:

AT+CLCK=<fac>, <mode>, <passwd>, <class>	When <mode>=2: the response is +CLCK: <status>[,<class1> [<CR><LF>+CLCK: <status>,<class2> [...]]]. The default option is [,,,7].
AT+CLCK=?	Show supported values. Response is +CLCK:(list of supported <fac>'s).

Parameters:

<fac>:

"CS"	CNTRL (lock CoNTRoL surface (e.g. phone keyboard))
"PS"	PH-SIM (lock PHOne to SIM card) (ME asks password when other than current SIM card inserted)
"SC"	SIM (lock SIM card) (SIM asks password in ME power-up and when this lock command issued)
"AO"	BAOC (Barr All Outgoing Calls) (GSM 02.88, clause 1)
"OI"	BOIC (Barr Outgoing International Calls) (GSM 02.88, clause 1)
"OX"	BOIC-exHC (Barr Outgoing International Calls except to Home Country) (GSM 02.88, clause 1)
"AI"	BAIC (Barr All Incoming Calls) (GSM 02.88, clause 2)
"IR"	BIC-Roam (Barr Incoming Calls when Roaming outside the home country) (GSM 02.88, clause 2)
"NT"	barr incoming calls from numbers Not stored to TA memory
"NM"	barr incoming calls from numbers Not stored to ME memory
"NS"	barr incoming calls from numbers Not stored to SIM memory
"NA"	barr incoming calls from numbers Not stored in Any memory
"AB"	All Barring services (GSM 02.30)
"AG"	All outGoing barring services (GSM 02.30)
"AC"	All inComing barring services (GSM 02.30)
"FD"	SIM fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>)

<mode>:

0	unlock
1	lock
2	query status

<status>:

0	not active
1	active

<passwd>: string type; shall be the same as password specified for the facility from the ME user interface or with command Change Password +CPWD

<classx>:	is a sum of integers each representing a class of information (default 7 equals to all classes):
1	voice
2	data
4	fax
also all other values below 128 are reserved	

+CLIP Calling Line Identification Presentation

Controls presentation of +CLIP unsolicited result code or returns CLIP subscription status from network. If product does not support network status query, <m> shall always equal 2. (GSM 07.07 section 7.6.)

Syntax:

AT+CLIP=<n>	The default option is 0.
AT+CLIP?	Query current setting. Response is +CLIP: <n>,<m>
AT+CLIP=?	Show supported values. Response is +CLIP:(list of supported <n>'s).

+CLIR Calling Line Identification Restriction

Enables/disables own number sending to network or returns CLIR subscription status from network. If product does not support network status query, <m> shall always equal 2. (GSM 07.07 section 7.7.)

Syntax:

AT+CLIR=<n>	The default option is 0.
AT+CLIR?	Query current setting. Response is +CLIR: <n>,<m>
AT+CLIR=?	Show supported values. Response is +CLIR: (list of supported <n>'s).

+CMEE Report Mobile Equipment Error

This command controls the presentation of extended error information result code. See also result code +CME ERROR. (07.07 section 9.1.)

Syntax:

AT+CMEE=<n>	Default option is 0.
AT+CMEE?	+CMEE: <n>
AT+CMEE=?	Response is +CMEE: (list of supported <n>'s).

Parameters:

<n>:	
0	disable +CME ERROR: <err> result code and use ERROR instead
1	enable +CME ERROR: <err> result code and use numeric <err> values
2	enable +CME ERROR: <err> result code and use verbose <err> values

+CMER ME Event Reporting

Enables/disables the presentation of keypad, display and indicator unsolicited result codes. <mode>=0 and =1, and <bfr>=1 are not supported by NMP products. <mode>=2 is implemented so that only last change of each <ind> is buffered (see Result codes section). (GSM 07.07 section 8.10.)

Syntax:

AT+CMER=<mode>,<keyp>,<disp>,<ind>[,0]	The default option is 2, 0, 0, 0 [,0].
AT+CMER?	Query current setting. Response is +CMER: <mode>,<keyp>,<disp>,<ind>, 0
AT+CMER=?	Show supported values. Response is +CMER: (list of supported <mode>'s), (list of supported <keyp>'s), (list of supported <disp>'s), (list of supported <ind>'s), (0)

Parameters:**<mode>:**

0	buffer unsolicited result codes in the TA; if TA result code buffer is full, codes can be buffered in some other place or the oldest ones can be discarded
1	discard unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode); otherwise forward them directly to the TE
2	buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation; otherwise forward them directly to the TE
3	forward unsolicited result codes directly to the TE; TA-TE link specific inband technique used to embed result codes and data when TA is in on-line data mode

<keyp>:

0	no keypad event reporting
1	keypad event reporting using result code +CKEV: <key>,<press>. <key> indicates the key (refer IRA values defined in table in subclause "Keypad control +CKPD") and <press> if the key is pressed or released (1 for pressing and 0 for releasing). Only those key pressings, which are not caused by +CKPD shall be indicated by the TA to the TE. NOTE: When this mode is enabled, corresponding result codes of all keys currently pressed should be flushed to the TA regardless of <bfr> setting.
2	keypad event reporting using result code +CKEV: <key>,<press>. All key pressings shall be directed from TA to TE. NOTE: When this mode is enabled, corresponding result codes of all keys currently pressed should be flushed to the TA regardless of <bfr> setting.

<disp>:

0	no display event reporting
1	display event reporting using result code +CDEV: <elem>,<text>. <elem> indicates the element order number and <text> is the new value of text element. Only those

	display events, which are not caused by +CDIS shall be indicated by the TA to the TE. Character set used in <text> is as specified by command Select TE Character Set +CSCS
2	display event reporting using result code +CDEV: <elem>,<text>. All display events shall be directed from TA to TE. Character set used in <text> is as specified by command Select TE Character Set +CSCS
<ind>:	
0	no indicator event reporting
1	indicator event reporting using result code +CIEV: <ind>,<value>. <ind> indicates the indicator order number (as specified for +CIND) and <value> is the new value of indicator. Only those indicator events, which are not caused by +CIND shall be indicated by the TA to the TE
2	indicator event reporting using result code +CIEV: <ind>,<value>. All indicator events shall be directed from TA to TE

+CMGC Send Command

Text/PDU entering as specified in 07.05. If SMSC address is not set/restored during the current session (i.e. +CSCA? returns +CSCA: "",129) it must be automatically read from SIM/ME (location 1). In PDU mode, all kind of GSM 03.40 MO TPDPUs can be sent with this command (operation equals to +CMGS). (GSM 07.05 section 3.5.5.)

Syntax:

text mode (+CMGF=1): AT+CMGC=<fo>,<ct>,<pid>,<mn>,<da>,<tda><CR> text is entered <ctrl-Z/ESC>	Response is (+CMGF=1) and sending ok: +CMGC: <mr>[,<scts>] Default option is text mode [2,0,0,0,"",129/145]
PDU mode (+CMGF=0): AT+CMGC=<length><CR> PDU is given <ctrl-Z/ESC>	Response is (+CMGF=0) and sending ok: +CMGC: <mr>[,<ackpdu>]
AT+CMGC=?	Shows whether command has been implemented.

+CMGD Delete Message

Execution command deletes message from preferred message storage <mem1> location <index>. If deleting fails, final result code +CMS ERROR: <err> is returned. (GSM 07.05 section 3.5.4.)

Syntax:

AT+CMGD=<index>	
AT+CMGD=?	Shows whether command has been implemented.

+CMGF Message Format

This command tells the TA, which input and output format of messages to use. <mode> indicates the format of messages used with send, list, read and write commands and unsolicited result codes resulting from received messages. Mode can be either PDU mode (entire TP data units used) or text mode (headers and body of the messages given as separate parameters). Text mode uses the value of parameter <chset> specified by command Select TE Character Set +CSCS to inform the character set to be used in the message body in the TA-TE interface. (GSM 07.05 section 3.2.3.).

Syntax:

AT+CMGF=<mode>	Default option is 0.
AT+CMGF?	Query current setting. Response is +CMGF: <mode>
AT+CMGF=?	Show supported values. Response is +CMGF:(list of supported <mode>'s)

Parameters:**<mode>:**

0	PDU mode (default when implemented). Default option.
1	text mode

+CMGL List Messages

This command returns messages with a status value from a preferred message storage selected with the `AT+CPMS` command (see page 32). <alpha> and CBM memory not supported by NMP products. (GSM 07.05 section 3.4.2.) In the case of some products, only <stat>=0 and 4 are applicable with older Nokia phone models. (GSM 07.05 section 3.4.2.)

Syntax:

AT+CMGL=<stat>	Responses: text mode (+CMGF=1), SMS-DELIVER or SMS-SUBMIT:
	+CMGL: <index>,<stat>,<oa/da>,<[alpha]>,<[scts]> <[tooa/toda>,<length><CR><LF>
	text mode (+CMGF=1), SMS-STATUS-REPORT:
	+CMGL: <index>,<stat>,<fo>,<mr>,<[ra]>,<[tora]>,<[scts]>,<dt>,<st><CR><LF>
	+CMGL: <index>,<stat>,<fo>,<mr>,<[ra]>,<[tora]>,<[scts]>,<dt>,<st>[...]]
	text mode (+CMGF=1), SMS-COMMAND:
	+CMGL: <index>,<stat>,<fo>,<ct><CR><LF>
	+CMGL: <index>,<stat>,<fo>,<ct>[...]]
	PDU mode (+CMGF=0):
	+CMGL: <index>,<stat>,<[alpha]>,<length><CR><LF><pdu><CR><LF>
	+CMGL:<index>,<stat>,<[alpha]>,<length><CR><LF><pdu>[...]].
Default option	is ["REC UNREAD"/0].
AT+CMGL=?	Show supported values. Response in text mode (+CMGF=1):
	+CMGL: ("REC UNREAD","REC READ","STO UNSENT","STO SENT","ALL")
	Response in PDU mode (+CMGF=0): +CMGL: (0-4)

+CMGR Read Message

This command returns a message with a location value <index> from a preferred message storage selected with the AT+CPMS command. If status of the message is 'received unread', status in the storage changes to 'received read'. If reading fails, final result code +CMS ERROR: <err> is returned. <alpha> and CBM memory are not supported by NMP products. (GSM 07.05 section 3.4.3.)

Syntax:

AT+CMGR=<index>	Responses:
	text mode (+CMGF=1), SMS-DELIVER:
	+CMGR: <stat>,<oa>,<[alpha]>,<scts>,<[tooa>,<fo>,<pid>,<dc>,<sca>,<tosca>,<length> > <CR><LF><data>
	text mode (+CMGF=1), SMS-SUBMIT:
	+CMGR: <stat>,<da>,<[alpha]>,<[toda>,<fo>,<pid>,<dc>,<[vp>,<sca>,<tosca>,<length> > <CR><LF><data>
	text mode (+CMGF=1), SMS-STATUS-REPORT:
	+CMGR: <stat>,<fo>,<mr>,<[ra>,<[tora>,<scts>,<dt>,<st>
	text mode (+CMGF=1), SMS-COMMAND:
	+CMGR: <stat>,<fo>,<ct>,<[pid>,<[mn>,<[da>,<[toda>,<length><CR><LF><cdata>
	PDU mode (+CMGF=0):
	+CMGR: <stat>,<[alpha>,<length><CR><LF><pdu>
AT+CMGR=?	Shows whether command has been implemented.

+CMGS Send Message

This command sends a message to the network. A message reference value <mr> is returned to the DTE on successful message delivery. Sending can be cancelled by using the <ESC> character. <ctrl-Z> must be used to indicate the ending of the message body. Values can be used to identify message upon unsolicited delivery status report result code. If sending fails in a network or an ME error, final result code +CMS ERROR: <err> is returned. (GSM 07.05 section 3.5.1.)

Syntax:

text mode (+CMGF=1): AT+CMGS=<da>,<toda><CR> text is entered<ctrl-Z/ESC>	Response when text mode (+CMGF=1) and sending ok: +CMGS: <mr>,<[scts>]
PDU mode (+CMGF=0): AT+CMGS=<length><CR> PDU is given<ctrl-Z/ESC>	Response when PDU mode (+CMGF=0) and sending ok: +CMGS: <mr>,<[ackpdu>

Default option for text mode: [,129/145]

AT+CMGS=?	Shows whether command has been implemented.
Parameters:	
<length>	length of the actual PDU in octets
<pdu>	service centre address followed by GSM 03.40 Protocol Data Unit in hexadecimal format
<mr>	message reference number

+CMGW Write Message to Memory

This command stores a message in a preferred memory storage selected with AT+CPMS command. Memory location of a stored message is returned. By default, message status will be set to "STO UNSENT", but parameter also allows other status values to be given. Entering of text is done similarly as specified in command +CMGS Send Message (see page 24). If writing fails, final result code +CMS ERROR: <err> is returned.

Syntax:

<i>text mode (+CMGF=1):</i>		Response for successful storing:
AT+CMGW=<oa/da>, <tooa/toda>, <stat><CR>		+CMGW: <index>
text is entered <ctrl-Z/ESC>		
Default option: [,129/145, "STO UNSENT"]		
<i>PDU mode (+CMGF=0):</i>		Response for successful storing:
AT+CMGW=<length>, <stat><CR>		+CMGW: <index>
PDU is given <ctrl-Z/ESC>		
Default option: [,2]		
AT+CMGW=?		Shows whether command has been implemented.
Parameters:		
<addr>	origin or destination address	
<type>	type of origin or destination address, 129 for normal and 145 for international access (number contains '+' character)	
<stat>		
	"REC UNREAD"	received unread message
	"REC READ"	received read message
	"STO UNSENT"	stored unsent message (default)
	"STO SENT"	stored sent message
<index>	location number	

+CMMS More Messages to Send

This command controls the continuity of SMS relay protocol link. If enabled (and supported by network), several consecutive messages can be sent (+CMGS etc.) much faster as link is kept open. <n> values: 0=disable, 1=keep enabled until time between message send commands exceeds five seconds (then switch <n> back to 0), 2=enable (this affects also 07.05 block mode). (Not in GSM 07.05 version 5.2.0.)

Syntax:

AT+CMMS=<n>	Default option is 0.
AT+CMMS?	Query current setting. Response is +CMMS: <n>
AT+CMMS=?	Show supported values. Response is +CMMS: (list of supported <n>'s)

+CMOD Call Mode

This command sets the call mode for further dialling command ATD or for next answering command ATA . To prevent the possibility that alternating mode calls are originated or answered accidentally, <mode> is automatically reset to value 0 after each call. Note that alternating call answering operations from an external UI may change +CMOD values. (GSM 07.07 sections 6.4, 6.6, and annexes E, F).

Syntax:

AT+CMOD=<mode>	Set call mode. The default option is 0.
AT+CMOD?	Query current setting. Response is +CMOD:<mode>.
AT+CMOD=?	Show supported modes. Response is +CMOD: (list of supported <mode>'s).

Values for <mode>:

0	single mode (default)
1	alternating voice/fax (teleservice 61)
2	alternating voice/data (bearer service 61)
3	voice followed by data (bearer service 81)

+CMSS Send Message from Storage

This command sends a message with the location value <index> from a preferred message storage selected with AT+CPMS command (see page 32). If a new recipient address <da> is given, it shall be used instead of the one stored with the message. Reference value <mr> is returned to DTE on successful message delivery. (GSM 07.05 section 3.5.2.)

Syntax:

AT+CMSS=<index>,<da>,<toda>	Responses: text mode (+CMGF=1) and sending ok: +CMSS: <mr>[,<scts>] PDU mode (+CMGF=0) and sending ok: +CMSS: <mr>[,<ackpdu>]
Default option: [,"",129/145]	
AT+CMSS=?	Shows whether command has been implemented.

Parameters:

<index>	location number
<mr>	message reference number
<da>	destination address
<toda>	type of destination address, 129 for normal and 145 for international access ('+' character automatically added to address)

+CNMA New Message Acknowledgement to ME/TA

This command confirms correct reception of a new message (SMS-DELIVER or SMS-STATUS-REPORT) which is routed directly to the TE. This acknowledgement command (causing ME to send RP-ACK to the network) shall be used when +CSMS (see page 38) parameter <service> equals 1. TA shall not send another +CMT or +CDS result code to TE before previous one is acknowledged. If ME does not get acknowledgement within required time (network timeout), ME should send RP-ERROR to the network. ME/TA shall automatically disable routing to TE by setting both <mt> and <ds> values of +CNMI to zero. (GSM 07.05 section 3.4.4. PDU entering as specified in GSM 07.05. Command is available only when +CSMS=1 is supported.)

For some products only <n>=0 is applicable with some phone models.

Syntax:*text mode (+CMGF=1):***AT+CNMA***PDU mode (+CMGF=0):***AT+CNMA=<n>,<length><CR>**

PDU is given<ctrl-Z/ESC>

AT+CNMA=?

Show supported values.

Response for PDU mode (+CMGF=0) is:
+CNMA: (0-2)**+CNMI New Message Indications to TE**

This command selects the procedure how the receiving of new messages from the network is indicated to the DTE. For a detailed description of the syntax of indication responses, see Result Codes at page 65. (GSM 07.05 section 3.4.1)

Syntax:**AT+CNMI=[<mode> [<mt> [<bm> [<ds> [<bfr>]]]]]**

Select indication procedure.

AT+CNMI?

Query current setting.

AT+CNMI=?

Response is +CNMI: <mode>, <mt>,<bm>, <ds>, <bfr>.

Show valid values. Response is +CNMI: lists of supported (<mode>'s), (<mt>'s), (<bm>'s), (<ds>'s), (<bfr>'s).

Parameters:**<mode>**

- 0** buffer all indications
- 1** no indications when the DTE-DCE link is reserved (on-line data mode)
- 2** buffer indications when the DTE-DCE link is reserved, (e.g. in on-line data mode), and flush them to the DTE after reservation has ended

<mt>

- 0** no received message indications are routed to the DTE
- 1** indication of received message is routed to the DTE using a result code +CMTI
- 2** received messages (except class 2 messages which result only +CMTI indication) are routed directly to the DTE using a result code +CMT
- 3** class 3 received messages are routed directly to the DTE using a result code +CMT and messages of other classes using a result indication +CMTI

<bm>

- 0** no cell broadcast indications are routed to the DTE
- 2** new cell broadcast messages are routed directly to the DTE using a result code +CBM

<ds>

- 0** no status reports are routed to the DTE
- 1** status reports are routed to the DTE using a result code +CDS

<bfr>

- 0** buffer of indications is flushed to the DTE when <mode> 1 or 2 is entered
- 1** buffer of indications is cleared when <mode> 1 or 2 is entered

+CNUM Subscriber Number

Returns MSISDNs from SIM. <speed>, <service> and <itc> are not supported by NMP products. (GSM 07.07 section 7.1.)

Syntax:

AT+CNUM	Response is +CNUM: [<alpha1>], <number1>, <type1>[, <speed>, <service> [,<itc>]] [<CR> <LF>+CNUM: [<alpha2>], <number2>,<type2>[,<speed>, <service>[,<itc>]] [...]]
AT+CNUM=?	Shows whether command has been implemented.

Parameters:

<alphax>: optional alphanumeric string associated with <numberx>; used character set should be the one selected with command Select TE Character Set +CSCS

<numberx>: string type phone number of format specified by <typex>

<typex>: type of address octet in integer format (GSM 04.08, subclause 10.5.4.7)

<speed>: as defined in subclause 6.7

<service> :	service related to the phone number:
0	asynchronous modem
1	synchronous modem
2	PAD Access (asynchronous)
3	Packet Access (synchronous)
4	voice
5	fax
also all other values below 128 are reserved	
<itc> :	information transfer capability:
0	3.1 kHz
1	UDI

+COLP Connected Line Identification Presentation

Controls presentation of +COLP intermediate result code or returns COLP subscription status from network. If product does not support network status query, <m> shall always equal 2. (GSM 07.07 section 7.8.)

Syntax:

AT+COLP=	Select bearer service type. The default option is 0.
AT+COLP?	Query current setting. Response is +COLP: <n>,<m>
AT+COLP=?	Show supported values. Response is +COLP: (list of supported <n>'s).

Parameters:

<n> :	parameter sets/shows the result code presentation status in the TA:
0	disable
1	enable
<m> :	parameter shows the subscriber COLP service status in the network:
0	COLP not provisioned
1	COLP provisioned
2	unknown (e.g. no network, etc.)

+COPS Operator Selection

'Set' command selects network or sets automatic network selection. 'Read' command returns current network. 'Test' command returns available networks. Short alphanumeric operator name format (<format>=1) and selection <mode>=2 and =4 not supported by NMP products. (GSM 07.07 section 7.3.)

Syntax:

AT+COPS=<mode>,<format>,<oper>	The default option is [0],0.
AT+COPS?	Query current setting. Response is +COPS: <mode>[,<format>,<oper>]
AT+COPS=?	Show supported values. Response is +COPS: [list of supported (<stat>,long alphanumeric <oper> ,short alphanumeric <oper>,numeric <oper>)s] [, (list of supported <mode>s),(list of supported <format>s)]

Parameters:**<mode>:**

0	automatic (<oper> field is ignored)
1	manual (<oper> field shall be present)
2	deregister from network
3	set only <format> (for read command +COPS?), do not attempt registration/deregistration (<oper> field is ignored); this value is not applicable in read command response
4	manual/automatic (<oper> field shall be present); if manual selection fails, automatic mode (<mode>=0) is entered

<format>:

0	long format alphanumeric <oper>
1	short format alphanumeric <oper>
2	numeric <oper>

<format>: string type; returned <oper> shall not be in BCD format, but in IRA characters converted from BCD; hence the number has structure: (country code digit 3)(country code digit 2)(country code digit 1)(network code digit 2)(network code digit 1).

<oper>: indicates if the format is alphanumeric or numeric; long alphanumeric format can be upto 16 characters long and short format up to 8 characters (GSM MoU SE.13); numeric format is the GSM Location Area Identification number (GSM 04.08, subclause 10.5.1.3) which consists of a three BCD digit country code coded as in ITU-T E.212 Annex A, plus a two BCD digit network code, which is administration specific.

<stat>:

0	unknown
1	available
2	current
3	forbidden

+CPAS Phone Activity Status

Returns the general status of ME. Supported <pas> values are product specific. If TA and ME are disconnected from each other <pas>=1 (ME unavailable) shall be reported. If TA and ME are in one physical entity, test command shall still report that <pas>=1 is available although it could not be reported ever. (GSM 07.07 section 8.1.)

Syntax:

AT+CPAS	Response is +CPAS:<pas>.
AT+CPAS=?	Show supported values. Response is +CPAS: (list of supported <pas>'s)

Parameters:**<pas>:**

0	ready (ME allows commands from TA/TE)
1	unavailable (ME does not allow commands from TA/TE)
2	unknown (ME is not guaranteed to respond to instructions)
3	ringing (ME is ready for commands from TA/TE, but the ringer is active)
4	call in progress (ME is ready for commands from TA/TE, but a call is in progress)
5	asleep (ME is unable to process commands from TA/TE because it is in a low functionality state). Also all other values below 128 are reserved.

+CPBF Find Phone Book Entries

If searched text is not found from entries in current memory, response is empty. <nlength> and <tlength> parameters of test command may be figured out from ME model or (in case of SIM) left empty. (GSM 07.07 section 8.13.)

Syntax:

AT+CPBF=<findtext>	Response is [+CPBF: <index1>,<number>,<type>,<text>[[...] +CPBF: <index2>,<number>,<type>,<text>]]
AT+CPBF=?	Show supported values. Response is +CPBF: [<nlength>],[<tlength>]

Parameters:

<index1>, <index2>: integer type values in the range of location numbers of phonebook memory

<number>: string type phone number of format <type>

<type>: type of address octet in integer format (GSM 04.08, subclause 10.5.4.7)

<findtext>, <text>: string type field of maximum length <tlength>; character set as specified by command Select TE Character Set +CSCS

<nlength>: integer type value indicating the maximum length of field <number>

<tlength>: integer type value indicating the maximum length of field <text>

+CPBR Read Phone Book Entries

If given index range is valid but all entries in it are empty, response is empty.
 <nlength> and <tlength> parameters of test command may be figured out from ME model or (in case of SIM) left empty. (GSM 07.07 section 8.12.)

Syntax:

AT+CPBR=<index1>, <index2>	Response is [+CPBR: <index1>, <number>, <type>, <text>[[...]] +CPBR: <index2>, <number>, <type>, <text>]]
AT+CPBR=?	Show supported values. Response is +CPBR: (<index>-list),[<nlength>],[<tlength>]

Parameters:

<index1>, <index2>, <index>: integer type values in the range of location numbers of phonebook memory

<number>: string type phone number of format <type>

<type>: type of address octet in integer format (GSM 04.08, subclause 10.5.4.7)

<text>: string type field of maximum length <tlength>; character set as specified by command Select TE Character Set +CSCS

<nlength>: integer type value indicating the maximum length of field <number>

<tlength>: integer type value indicating the maximum length of field <text>

+CPBS Select Phone Book Memory Storage

Selects memory where phonebook commands operate. Supported <storage> values depend on the product. Storages not defined in 07.07: "ON" = own numbers (MSISDNs), "EN" = emergency number, "MC" = missed calls, "DC" = dialled calls, "RC" = received calls. (GSM 07.07 section 8.11.)

Syntax:

AT+CPBS=<storage>	The default option is "SM".
AT+CPBS?	Query current setting. Response is +CPBS: <storage>,<used>,<total>.
AT+CPBS=?	Show supported values. Response is +CPBS: (list of supported <storage>'s)

Parameters:

<storage>:

"FD"	SIM fixdialling-phonebook
"LD"	SIM last-dialling-phonebook
"ME"	ME phonebook
"MT"	combined ME and SIM phonebook
"SM"	SIM phonebook
"TA"	TA phonebook

<used>: integer type value indicating the number of used locations in selected memory

<total>: integer type value indicating the total number of locations in selected memory

+CPBW Write Phone Book Entry

<index> must always be given in NMP products. <nlength> and <tlength> parameters of test command may be figured out from ME model or (in case of SIM) left empty. (07.07 section 8.14.)

Syntax:

AT+CPBW=<index>,<number>,<type>,<text>	The default option is [,,129/145].
AT+CPBW=?	Show supported values. Response is +CPBW: (<index>-list),[<nlength>], (129,145),[<tlength>]

Parameters:

<index>: integer type values in the range of location numbers of phonebook memory

<number>: string type phone number of format <type>

<type>: type of address octet in integer format (GSM 04.08, subclause 10.5.4.7) ; default 145 when dialling string includes international access code character "+", otherwise 129

<text>: string type field of maximum length <tlength>; character set as specified by command Select TE Character Set +CSCS

<nlength>: integer type value indicating the maximum length of field <number>

<tlength>: integer type value indicating the maximum length of field <text>

+CPIN Enter PIN

Used to enter device passwords that ME is querying, or to query whether ME is currently querying a password. When last executed AT command failed in PIN2/PUK2 authentication error (or security code error in case of memory updating), read command shall return PIN2/PUK2 (or security code) <code> although the operation of ME is not blocked. (GSM 07.07 section 8.3.)

Syntax:

AT+CPIN=<pin>,<newpin>	
AT+CPIN?	Query current setting. Response is +CPIN: <code>
AT+CPIN=?	Shows whether command has been implemented.

Parameters:

<pin>,<newpin>: string type values

+CPMS Preferred Message Storage

This command selects memory storages to be used for reading/deleting <mem1>, writing/sending <mem2>, and receiving <mem3> short messages. Amount of used and available message locations in each memory is returned as response. (GSM 07.05 section 3.2.2.)

Syntax:

AT+CPMS=<mem1>, < mem2>, <mem3>	Select preferred storage. Response is +CPMS: <used1>, <total1>, <used2>, <total2>, <used3>, <total3> Default option is "MT","ME","MT" or "SM","SM","MT"
AT+CPMS?	Current setting query. Response is +CPMS: <mem1>, <used1>, <total1>, <mem2>, <used2>, <total2>, <mem3>, <used3>, <total3>
AT+CPMS=?	Show supported values. Response is +CPMS: (list of <mem1> locations), (list of <mem2> locations), (list of <mem3> locations)

Parameters:

<mem1>	"ME" "SM"
<mem2>	"ME" "SM"
<mem3>	"MT"

+CPWD Change Password

Changes passwords of SIM/ME/network features. "AB" = network/barring password.
(GSM 07.07 section 7.5.)

Syntax:

AT+CPWD=<fac>,<oldpwd>,<newpwd>	
AT+CPWD=?	Show supported values.

<fac>:

"P2"	SIM PIN2 refer to command +CLCK (see page 18) Facility Lock for other values
-------------	---

<oldpwd>, <newpwd>: string type; <oldpwd> shall be the same as password
specified for the facility from the ME user interface or with command Change
Password +CPWD and <newpwd> is the new password; maximum length of
password can be determined with <pwdlength>

<pwdlength>: integer type maximum length of the password for the facility

+CR Service Reporting Control

This command controls the presentation of the +CR intermediate result code. If
enabled, the result code is transmitted at the point during the connect negotiation
during which the speed and quality of service to be used have been determined,
before any error control or data compression reports are transmitted, and before any
final result code (e.g., *CONNECT*) is transmitted. (GSM 07.07 section 6.9.)

Syntax:

AT+CR=<mode>	Set service reporting control mode. The default option is 0.
AT+CR?	Query current setting. Response is +CR:<mode>.
AT+CR=?	Show supported values. Response is +CR:(list of supported <mode>'s).

Parameters for <mode>:

0	Disable reporting.
1	Enable reporting.

+CRC Cellular Result Codes

This command controls whether or not the extended format incoming call indication is used. When enabled, an incoming call is indicated to the DTE with the result code **+CRING:<type>** instead of the normal **RING**. See also section Result Codes. (GSM 07.07 section 6.11.)

Syntax:

AT+CRC=<mode>	Set incoming call indication mode. The default option is 0.
AT+CRC?	Query current setting Response is +CRC:<mode>
AT+CRC=?	Show supported modes. Response is +CRC:(list of supported <mode>'s).

Values for <mode>:

0	Disable extended format call indication.
1	Enable extended format call indication.

+CREG Network Registration

Controls presentation of +CREG unsolicited result code or returns current registration status. (GSM 07.07 section 7.2.)

Syntax:

AT+CREG=<n>	The default option is 0.
AT+CREG?	Query current setting. Response is +CREG: <n>,<stat>[,<lac>,<ci>]
AT+CREG=?	Show supported values.

Parameters:

<n>:

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

<stat>:

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

<lac>: string type; two byte location area code in hexadecimal format (e.g. "00C3" equals 193 in decimal)

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

+CRES Restore Settings

This command restores short message service (SMS) settings (+CSMP and +CSCA parameters) from a non-volatile memory (usually SIM) to active memory. A TA can contain several profiles of settings. All settings specified in commands Service Centre Address +CSCA, Set Message Parameters +CSMP and Select Cell Broadcast Message Types +CSCB (if implemented) are restored. (GSM 07.05 section 3.3.6.)

First <profile> location is 1. Values restored shall be those that are available in SIM database (GSM 11.11). If any of protocol id, data coding scheme or validity period is returned from SIM/ME, +CSMP parameter <fo> is forced to be SMS-SUBMIT (i.e. bits 1-0 are set to '01'). In addition, if validity period is returned, <fo> is forced to indicate relative validity period format (i.e. bits 4-3 are set to '10'). Rest of the <fo> bits are set to zero.

Syntax:

AT+CRES=<profile>	Restore settings.
AT+CRES=?	Display the supported profile numbers for reading and writing of settings. Response is +CRES: (list of supported <profile>'s).

Values for <profile>:

0...255 manufacturer specific profile number from where settings are to be restored

+CRLP Radio Link Protocol

This command selects the Radio Link Protocol parameters. (GSM 07.07 section 6.8.)

Syntax:

AT+CRLP=<iws>,<mws>,<T1>,<N2>[,<ver>,<T4>]	Set RLP parameters.
AT+CRLP?	Query current setting. Response is +CRLP: <iws>,<mws>,<T1>,<N2> [<CR> <LF> +CRLP: <iws>,<mws>,<T1>,<N2>, 2,<T4>]
AT+CRLP=?	Show valid values. Response is +CRLP: (list of supported <iws>'s), (list of supported <mws>'s), (list of supported <T1>'s), (list of supported <N2>'s) [<CR> <LF> +CRLP: (list of supported <iws>'s), (list of supported <mws>'s), (list of supported <T1>'s), (list of supported <N2>'s), 2, (list of supported <T4>'s)] .

Parameters:

<iws>	IWF to MS window size
<mws>	MS to IWF window size
<T1>	acknowledgement timer T1
<N2>	retransmission attempts N2
<ver>,<verx>:	RLP version number in integer format; when version indication is not present it shall equal 0. NOTE: Versions 0 and 1 share the same parameter set. Read and test commands shall return only one line for this set (where <verx> is not present).
<T4>:	re-sequencing period T4

+CSAS Save Settings

This command saves active message service settings to a non-volatile memory. A TA can contain several profiles of settings. All settings specified in commands Service Centre Address +CSCA and Set Message Parameters +CSMP are saved. (GSM 07.05 section 3.3.5.)

First <profile> location is 1. Values stored shall be those that are available in SIM database (GSM 11.11). SMSC address is not stored if +CSCA is not set/restored during current session (i.e. +CSCA? returns +CSCA: "",129). Protocol id (<pid>), data coding scheme (<dcsc>) and validity period (<vp>) are not stored if +CSMP parameter <fo> does not indicate SMS-SUBMIT (i.e. bits 1-0 are not '01'). In addition, validity period is not stored if <fo> does not indicate relative validity period format (i.e. bits 4-3 are not '10'). Destination address or alpha tag cannot be stored through AT interface. NOTE: The values that are not stored shall remain intact in the <profile>.

Syntax:

AT+CSAS=<profile>	Save settings.
AT+CSAS=?	Display the supported profile numbers for reading and writing of settings. Response is +CSAS: (list of supported <profiles>'s).

Values for <profile>:

0...255 manufacturer specific profile number where settings are to be stored

+CSCA Service Centre Address

This command updates the short message service centre (SMSC) address, through which mobile originated short messages are transmitted (local TA SMSC address). SMSC address may also change when +CRES is actioned. If this value is not set (i.e. not restored from ME or set with this command during the current session) before using +CMGS, +CMGW (in case of SMS-SUBMIT or SMS-COMMAND) or +CMGC command, it must be automatically read from SIM/ME. (GSM 07.05 section 3.3.1.)

Syntax:

AT+CSCA=<sca>,<tosca>	Set service centre address. Default setting is "",129.
AT+CSCA?	Current setting query. Response is +CSCA: <sca>,<tosca>.
AT+CSCA=?	Shows whether command has been implemented.

Parameters:

<sca>	service centre address
<tosca>	type of address, 129 for normal and 145 for international access (number contains '+' character)

+CSCB Select Cell Broadcast Message Types

This command selects which types of cell broadcast messages are to be received. TA (not ME) shall check that given and are valid. (GSM 07.05 section 3.3.4.)

Syntax:

AT+CSCB=<mode>,<mids>,<dcss>	Select message types. Default setting is 0,"", "".
AT+CSCB?	Query current setting. Response is +CSCB: <mode>,<mids>,<dcss>.
AT+CSCB=?	Show valid values. Response is +CSCB: (0,1).

Parameters:

<mode>:	
0	message types specified in <mids> and <dcss> are accepted
1	message types specified in <mids> and <dcss> are not accepted
<mids>:	all different possible combinations of message identifiers, example: "0,1,5,10-20,22"
<dcss>:	all different possible combinations of data coding schemes, example: "0-3,5"

+CSCS Select TE Character Set

This command informs the product which character set is used by the DTE. The product is then able to convert character strings correctly between DTE and mobile equipment character sets. (GSM 07.07 section 5.5.)

Syntax:

AT+CSCS=<chset><chset>	Select character set.
AT+CSCS?	Query current setting. Response is +CSCS:<chset>
AT+CSCS=?	Show supported character sets. Response is +CSCS: (list of supported <chset>'s). All products do not support "HEX".

Values for <chset>:

"GSM"	GSM default alphabet; this setting easily causes software flow control (XON/XOFF) problems.
"HEX"	Character strings consist only of hexadecimal numbers from 00 to FF; e.g., "032FE6" equals three characters with the decimal values 3, 47 and 230.
"IRA"	International Reference Alphabet (ITU-T T.50)
"PCCP437"	PC character set Code Page 437.
"PCDN"	PC Danish/Norwegian character set.
"8859-1"	ISO 8859 Latin 1 character set. This is the default option.

+CSDH Show Text Mode Parameters

This command controls whether detailed header information is shown in text mode short message result codes. (GSM 07.05 section 3.3.3.)

Syntax:

AT+CSDH=<show>	Enable or disable showing of detailed header information. Default setting is 0.
AT+CSDH?	Query current setting. Response is +CSDH: <show>.
AT+CSDH=?	Show supported values. Response is +CSDH:(list of supported <show>'s).

Values for <show>:

0	do not show header values defined in commands +CSCA and +CSMP (<sca>, <tosca>, <fo>, <vp>, <pid> and <dc>) nor <length>, <toda> or <tooa> in +CMT, +CMGL, +CMGR result codes for SMS-DELIVERs and SMS-SUBMITs in text mode; for SMS-COMMANDs in +CMGR result code, do not show <pid>, <mn>, <da>, <toda>, <length> or <cdata>
1	show all the values in result codes

+CSMS Select Message Service

This commands selects the messaging service and returns the type of messages supported. Supported service is specified by GSM 03.40 and 03.41 (service value 0). If chosen service is not supported by the ME (but is supported by the TA), final result code +CMS ERROR: shall be returned. Main difference between 0 and 1 is that when =1 +CNMA acknowledgement is required to most MT short messages routed directly TE. (GSM 07.05 section 3.2.1.)

Syntax:

AT+CSMS=<service>	Select message service. Response is +CSMS: 1,1,1 or 1,1, 0. Default setting is 0.
AT+CSMS?	Query current setting. Response is +CSMS: <service>,1,1,1 or +CSMS: <service>,1,1,0.
AT+CSMS=?	Show supported services. Response is +CSMS: (0,1) or (0).

Parameters:

<mt>, <mo>, <bm>:

0 type not supported

1 type supported

<mt>: mobile terminated messages supported (value 1) or not (value 0)

<mo>: mobile originated messages supported (value 1) or not (value 0)

<bm>: broadcast type messages supported (value 1) or not (value 0)

+CSNS Single Numbering Scheme

This command is used to select the bearer service to be used when a call without bearer service capability element is received. The command must be given before the call comes. Parameter values set with the command +CBST are used when <mode> equals to a data service. (GSM 07.07 section 6.16.)

Syntax:

AT+CSNS=<mode>	Set single numbering scheme mode. The default option is 0.
AT+CSNS?	Query current setting. Response is +CSNS: <mode>
AT+CSNS=?	Show supported modes. Response is +CSNS: (list of supported <mode>'s).

Values for <mode>:

0	voice (default)
1	alternating voice/fax, voice first (teleservice 61)
2	fax (teleservice 62)
3	alternating voice/data, voice first (teleservice 61)
4	data
5	alternating voice/fax, fax first (teleservice 61)
6	alternating voice/data, data first (bearer service 61)
7	voice followed by data (bearer service 81)

+CSQ Signal Quality

Returns signal strength as calculated by ME. Bit error rate reporting not supported by NMP products. (GSM 07.07 section 8.5.)

Syntax:

AT+CSQ	Response is +CSQ: <rss>, 99
AT+CSQ=?	Show supported values. Response is +CSQ: (list of supported <rss>'s), (99)

Parameters:**<rss>:**

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

+CSSN Supplementary Service Notifications

Controls presentation of +CSSI intermediate result code and +CSSU unsolicited result code. (GSM 07.07 section 7.16.)

Syntax:

AT+CSSN=<n>,<m>	The default option is 0, 0.
AT+CSSN?	Query current setting. Response is +CSSN: <n>,<m>
AT+CSSN=?	Show supported values. Response is +CSSN: (list of supported <n>'s), (list of supported <m>'s)

Parameters:

<n>:	parameter sets/shows the +CSSI result code presentation status in the TA:
0	disable
1	enable
<m>:	parameter sets/shows the +CSSU result code presentation status in the TA:
0	disable
1	enable
<code1>:	it is manufacturer specific, which of these codes are supported:
0	unconditional call forwarding is active
1	some of the conditional call forwardings are active
2	call has been forwarded
3	call is waiting
4	this is a CUG call (also <index> present)
5	outgoing calls are barred
6	incoming calls are barred
7	CLIR suppression rejected
8	call has been deflected

<index>: refer "Closed user group +CCUG"

<code2>:	it is manufacturer specific, which of these codes are supported:
0	this is a forwarded call (MT call setup)
1	this is a CUG call (also <index> present) (MT call setup)
2	call has been put on hold (during a voice call)
3	call has been retrieved (during a voice call)
4	multiparty call entered (during a voice call)
5	call on hold has been released (this is not a SS notification) (during a voice call)
6	forward check SS message received (can be received whenever)
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 (also number and subaddress parameters may be present) (during a voice call or MT call setup)
9	this is a deflected call (MT call setup)

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

<type>: type of address octet in integer format (GSM 04.08, subclause 10.5.4.7)

<subaddr>: string type subaddress of format specified by <satype>

<satype>: type of subaddress octet in integer format (GSM 04.08, subclause 10.5.4.8)

+CSTA Select Type of Address

Dial command D uses always this setting except when dial string includes international access code character (+). In this case type of address sent to the network defaults to 145 (international/telephony). (GSM 07.07 section 6.1.)

Syntax:

AT+CSTA=<type>	Select type. The default option is 129.
AT+CSTA?	Query current setting. Response is +CSTA: <type>
AT+CSTA=?	Show supported types. Response is +CSTA:(list of supported <type>'s).

+CUSD Unstructured Supplementary Service Data

Used to send MO USSD and set the presentation of +CUSD unsolicited result code (MT USSD). Used also to reply to a network initiated USSD (see Result codes section). (GSM 07.07 section 7.14.)

Syntax:

AT+CUSD=<n>,<str>,<dc>	Response is +CUSD: <m>[,<str>,<dc>]. The default option is 0[,0].
AT+CUSD?	Query current setting. Response is +CUSD: <n>
AT+CUSD=?	Show supported values. Response is +CUSD:(list of supported <n>'s).

Parameters:

<n>:	sets/shows the result code presentation status in the TA:
0	disable
1	enable
<str>:	string type USSD-string (when <str> parameter is not given, network is not interrogated):
- if <dc> indicates that GSM 03.38 default alphabet is used:	
- if TE character set other than "HEX" (refer command Select TE Character Set +CSCS):	ME/TA converts GSM alphabet into current TE character set according to rules of GSM 07.05, Annex A
- if TE character set is "HEX":	ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number (e.g. character P (GSM 23) is presented as 17 (IRA 49 and 55))
- if <dc> indicates that 8-bit data coding scheme is used:	ME/TA converts each 8-bit octet into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65))
<dc>:	GSM 03.38, Cell Broadcast Data Coding Scheme in integer format (default 0)
<m>:	
0	no further user action required (network initiated USSD-Notify, or no further information needed after mobile initiated operation)
1	further user action required (network initiated USSD-Request, or further information needed after mobile initiated operation)

+DR Data Compression Reporting

This command controls the presentation of +DR:<compr> intermediate result code. (V.25ter section 6.6.2.)

Syntax:

AT+DR=<mode>	Set reporting mode. The default option is 0.
AT+DR?	Query current setting. Response is +DR: <mode>
AT+DR=?	Show supported modes. Response is +DR:(list of supported <mode>'s).

Parameters:

<mode>	
0	data compression reporting disabled
1	data compression reporting enabled
<compr>	
NONE	data compression not in use
V42B	V.42bis in use in both directions
V42B RD	V.42bis in use in receive direction only
V42B TD	V.42bis in use in transmit direction only
MNP5	MNP5 in use

+DS Data Compression

This command controls the V.42bis and MNP5 data compression functions. V.42bis can be used with transparent and non-transparent data services and MNP5 can be used only with transparent data service. The data service is selected with the command AT+CBST. (V.25ter section 6.6.1.)

Syntax:

AT+DS=[<dir>[,<neg> [,<P1>[,<P2>]]]]	Set compression parameters.
AT+DS?	Query current setting. Response is +DS: <dir>,<neg>,<P1>,<P2>.
AT+DS=?	Show supported values. Response is +DS: (list of supported <dir>'s), (list of supported <neg>'s), (list of supported <P1>'s), (list of supported <P2>'s).

Parameters:

<dir>	
0	no compression (V.42bis P0=0)
1	V.42bis transmit only or MNP5
2	V.42bis receive only or MNP5
3	V.42bis both directions or MNP5
<neg>	
0	do not disconnect if compression is not negotiated by the remote DCE as specified in <direction>
1	disconnect if compression is not negotiated by the re-mote DCE as specified in <direction>
<P1>	maximum number of dictionary entries which should be negotiated, 512 to 2048
<P2>	maximum string length to be negotiated, 6 to 32, de-fault 20 (V.42bis P2).

+GCAP Request Complete Capabilities List

This command displays product information on the overall capabilities of the product. Response may differ depending on the implemented features in a product. (V.25ter section 6.1.9.)

Syntax:

AT+GCAP	Display product capabilities.
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+GMI Request TA Manufacturer Identification

This command displays the TA manufacturer identification.(V.25ter section 6.1.4.)

Syntax:

AT+GMI	Display manufacturer identification.
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+GMM Request TA Model Identification

This command displays the TA model identification. Note that in the case of a product with TA and ME in the same physical entity, the response of the command +CGMM is identical. (V.25ter section 6.1.5.)

Syntax:

AT+GMM	Display model identification.
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+GMR Request TA Revision Identification

This command displays the TA revision identification. Response must include product SW version, HW version is optional. Note that in the case of a product with TA and ME in the same physical entity, the response of the command +CGMR is identical. (V.25ter section 6.1.6.)

Syntax:

AT+GMR	Display revision identification.
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+GSN Request TA Serial Number Identification

This command displays the TA serial number. Note that in the case of a product with TA and ME in the same physical entity, the response of the command +CGSN is identical (i.e. the IMEI number). (V.25ter section 6.1.7.)

Syntax:

AT+GSN	Display serial number.
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+ICF DTE-DCE Character Framing

This command is used to determine the character framing that the product uses while accepting commands and while transmitting information text and a result code to/from a DTE. Command must be in products that do not support autobauding in all configurations and have more than one <format>-<parity> pair to be set. Note that reset commands Z and &F do not change this setting. (V.25ter section 6.2.11.)

Syntax:

AT+ICF=<format>, <parity>	Default is [0].
AT+ICF?	Query current setting. Response is +ICF: <format>,<parity>.
AT+ICF=?	Show valid range of parameters. Response is +ICF:(list of supported <format>'s), (list of supported <parity>'s).

Parameters:

<format>	
0	auto detect (default)
1	8 data, no parity, 2 stop
2	8 data, parity, 1 stop
3	8 data, no parity, 1 stop
4	7 data, no parity, 2 stop
5	7 data, parity, 1 stop
6	7 data, no parity, 1 stop
<parity>	
0	odd
1	even
2	mark
3	space

+IFC DTE-DCE Local Flow Control

This command is used to control the operation of local flow control between the DTE and the product. <DCE_by_DTE> specifies the flow control used by the DTE to control the flow of received data from the product. <DTE_by_DCE> specifies the flow control used by a product to control the flow of transmitted data from the DTE.

Syntax:

AT+IFC=<DCE_by_DTE>,<DTE_by_DCE>	Set flow control. Default is 2,2.
AT+IFC?	Query current setting. Response is +IFC: <DCE_by_DTE>,<DTE_by_DCE>.
AT+IFC=?	Show valid range of parameters. Response is +IFC:(list of supported <DCE_by_DTE>'s), (list of supported <DTE_by_DCE>'s)

Parameters:

<DCE_by_DTE>	
0	no flow control
1	XON/XOFF (software) flow control
2	CTS/RTS (hardware) flow control
3	both XON/XOFF and CTS/RTS flow control
<DTE_by_DCE>	
0	no flow control
1	XON/XOFF (software) flow control
2	CTS/RTS (hardware) flow control

+ILRR DTE-DCE Local Rate Reporting

This command controls whether or not the +ILRR:<rate> information text is transmitted to the DTE. If enabled, the result code is transmitted after any modification, error control or data compression reports are transmitted, and before any final result code (e.g., CONNECT) is transmitted. The <rate> is applied after the final result code is transmitted. (V.25ter section 6.2.13.)

Syntax:

AT+ILRR=<mode>	Set reporting mode. Default is 0.
AT+ILRR?	Query current setting. Response is +ILRR: <mode>.
AT+ILRR=?	Show supported values. Response is +ILRR:(list of supported <mode>'s)

Values for <mode>:

0	local port rate reporting disabled
1	local port rate reporting enabled

+IPR Fixed DTE Rate

This command specifies the data rate at which the product will accept commands. Command must be in products that do not support autobauding in all configurations and have more the one <rate> to be set (either 1200 or 9600 is mandatory according to V.25ter). Note that reset commands Z and &F do not change this setting.

Syntax:

AT+IPR=<rate>	Set DTE rate. Default is [0].
AT+IPR?	Query current setting. Response is +IPR: <rate>.
AT+IPR=?	Show valid range of rate. Response is +IPR:(list of supported <rate>'s).

Values for <rate>:

0	automatic rate detection, autobauding (default)
300	
1200	
2400	
4800	
9600	
19200	
38400	
57600	
115200	

+VTS DTMF Generation

This command is used to send DTMFs. Also the dialling command can be used to send DTMFs (see command D Dial, page 46). (PN-3131 section 10.1.4.)

Syntax:

AT+VTS=<dtmf>,<dtmf>,...

AT+VTS=? Show supported values.
Response is (),(,)**+WS46 Select Wireless Network**

Currently there are no values for DCS1800 or PCS1900 but the option '12' could also be used for them. (GSM 07.07 section 5.7, TIA-678 section 5.2.4.3.)

Syntax:

AT+WS46=[12] Select wireless network.

AT+WS46? Query current setting. Response is 12.

AT+WS46=? Show options. Response is (12).**A Answer**

This command answers an incoming call. The call is indicated by the RING or +CRING message on the terminal equipment or by the number 2 if numeric mode has been selected. This command can also be used to switch call mode from voice to data when an alternating call is active. (V.25ter section 6.3.5.)

Syntax:

ATA Answer incoming call.

All the result codes below are not in V.25ter. Before one of the codes may be returned some of the following: +CR (or CARRIER), +ER, +DR, or +ILRR (in that order). Available connection rates depend on the product. Answer command is also used to control alternating mode calls (see GSM 07.07 section 6.6 and annexes E and F).

Result Codes

possible verbose result codes (V1)	numeric (V0)	description
CONNECT	1	data/fax call established; rate 300 bps (or X forbids rate display)
CONNECT 1200	5	data/fax call established; rate 1200 bps
CONNECT 2400	10	data/fax call established; rate 2400 bps
CONNECT 4800	11	data/fax call established; rate 4800 bps
CONNECT 9600	12	data/fax call established; rate 9600 bps
CONNECT 14400	17	HSCSD (or 14.4 tch) data/fax call established; rate 14400 bps
CONNECT 19200	18	HSCSD data/fax call established; rate 19200 bps
CONNECT 28800	19	HSCSD data/fax call established; rate 28800 bps
ERROR	4	command cannot be actioned
NO CARRIER	3	call could not be established
OK	0	command aborted

B Communications Standard Option (CCITT/Bell mode)

This command has no effect on the data software. It is included for compatibility reasons. (De facto.)

Syntax:

ATB[<n>] Values for <n> [0]...1.

D Dial

This command initiates a call. (V.25ter section 6.3.1.) When a call is initiated, the command must contain the called party's number or a directory entry which contains the stored number. The ATD command can also be used for sending DTMF tones and for switching call mode from voice to data when an alternating call is active. (GSM 07.07 section 6.6 and annexes E and F)

When the product tries to reach a number and fails to establish a connection, further attempts will be delayed, i.e., successive attempts to dial the same number will be rejected for a short period of time, and the response DELAYED will be displayed. The delay period only lasts for a few seconds at first, however, if you continue to try to get the call through and fail, the delay will be prolonged for a few minutes. Finally, the called number will be included on a list of so-called blacklisted numbers. The response BLACKLISTED will be seen on the screen. The data software will not accept any new attempts to that number before you press any key on the cellular phone keypad. This user action erases the number from the list and enables you to call the number again. The purpose of blacklisting numbers is to conserve the network's resources.

NOTE: +VTS command or comma modifier (e.g. "ATD,1234"; in this case the first comma do not cause a pause) can be used to send DTMF digits.

Syntax:

A semicolon character needs be added when a voice call is originated.

ATD[<dial_string>[:]]	Dials the number in a dial_string.
ATD> mem<n> [:]	Originate call to phone number found from location in a specific memory mem, which is one of the two letter memory abbreviations as returned by +CPBS=? (without double quotes); location range can be queried with +CPBR=?; note that in case of SIM ADN memory (SM) also D>SIM shall be accepted (due to inconsistency in 07.07).
ATD><n> [:]	Dials a stored number from a data software memory location <n>.
ATD[:]	Dials a stored number from a data software memory location 0.
ATD> <string>	Dial a number assigned to name <string>.
ATDL	Redials the last number that has been dialled during the current session.

<dial-string> Characters

<dial-string> characters	values	description
V.25ter dialling digits	0123456789+	accepted as valid digits
	*#ABCD	cause ERROR
V.25ter modifiers	,	in case of voice call: originate call to the number preceding comma, wait for remote answer, pause for length specified with S8 register, and send numbers after comma as DTMF digits; further commas cause pause for length specified with S8 register (all commas are ignored in case of data call)
	T P ! W @	accepted but ignored
V.25ter semicolon	;	voice call originating (must be last character in command line)
GSM 07.07 modifiers	>	direct dialling from phonebook (must be first char after D) (see next table)
	i	allow calling line id presentation for this call
	l	restrict calling line id presentation for this call
	G	control CUG information for this call; use +CCUG values
de facto	L	redial to the number last dialled

See also 07.07 section 6.2 and V.25ter sections 6.3.1.1-6.3.1.7. For voice call example refer 07.07 annex G. Note that l is the only case-sensitive dial-string character.

Result Codes

All result codes are not in V.25ter. Before one of the above codes may be returned some of the following: +CSSI, +COLP, +CR (or CARRIER), +ER, +DR, or +ILRR (in that order). Available connection rates depend on the product.

possible verbose result codes (V1)	numeric (V0)	description
BLACKLISTED	14	call to the number is forbidden until manual reset
BUSY	7	called party is busy
CONNECT	1	data/fax call established; rate 300 bps (or X forbids rate display)
CONNECT 1200	5	data/fax call established; rate 1200 bps
CONNECT 2400	10	data/fax call established; rate 2400 bps
CONNECT 4800	11	data/fax call established; rate 4800 bps
CONNECT 9600	12	data/fax call established; rate 9600 bps
CONNECT 14400	17	HSCSD (or 14.4 tch) data/fax call established; rate 14400 bps
CONNECT 19200	18	HSCSD data/fax call established; rate 19200 bps
CONNECT 28800	19	HSCSD data/fax call established; rate 28800 bps
DELAYED	13	call to the number is temporarily (5 sec - 3 min) forbidden
ERROR	4	command cannot be actioned
NO ANSWER	8	called party does not answer
NO CARRIER	3	call could not be established
OK	0	command aborted or voice call started with semicolon character

E Command Echo

This command determines whether characters that are received from the DTE are echoed or not in the command mode. (V.25ter section 6.2.4.)

Syntax:

ATE[0]	Disable echoing
ATE1	Enable echoing. This is the default option.

H Hang Up Call

This command normally hangs up the call. If the alternating call data mode is currently active, ATH does not hang up the call but call mode is switched from data to voice. If you want to disconnect the alternating call, you must use the AT+CHUP command instead. (V.25ter section 6.3.6.)

Syntax:

ATH[<n>]	Hang up call. <n>=0
-----------------------	---------------------

I Request Identification Information

This command displays information on the TA. (V.25ter section 6.1.3.)

Syntax:

ATI[0]	Displays the TA manufacturer identification (same as for +GMI).
ATI1	Displays the product serial number (same as for +GSN).
ATI2	Displays the product version (same as for +GMR).
ATI3	Displays the product name (same as for +GMM).
ATI4...ATI13	Dummy values that are just accepted.

L Monitor Speaker Loudness

This setting is ignored. It is included for compatibility reasons. (V.25ter section 6.3.13.)

Syntax:

ATL[<n>]	L[0]...L3
----------	-----------

M Monitor Speaker Mode

This setting is ignored. It is included for compatibility reasons. (V.25ter section 6.3.14.)

Syntax:

ATM[<n>]	M[0]...M2
----------	-----------

O Return to On-Line Data State

This command is used when you have made a connection with the remote device and have escaped (with the +++ command) to the command mode. Give the command to return from the (on-line) command mode to normal on-line operation. (V.25ter section 6.1.2.)

Syntax:

ATO[<n>]	Go to on-line state. Response is CONNECT [<speed>].
----------	---

P Select Pulse Dialling

This setting is ignored. It is included for compatibility reasons. (V.25ter section 6.3.3.)

Syntax:

ATP

Q Result Code Suppression

This command determines whether responses are sent to the DTE or not. Affects only result codes, not information responses. (V.25ter section 6.2.5.)

Syntax:

ATQ[0]	Enable sending of responses to DTE. This is the default option.
ATQ1	Disable sending of responses to DTE

S0 Automatic Answer

Value indicates number of rings (RING or +CRING result codes) to wait before answering automatically. Value 0 disables auto-answer. (V.25ter section 6.3.8.)

Syntax:

ATS0=<n>	Values for <n> are 0..255 (default 0).
ATS0?	Query current setting. Response is <n>.

S1 Ring Count

Returns number of rings (RING or +CRING result codes) counted after last MT call setup. (De facto.)

Syntax:

ATS1?	Query current setting. Response is <n>. Values for <n> are 000..255.
-------	---

S2 Escape Code Character

The default character is a plus sign. See also the command +++ Escape at page 10. (De facto.)

Syntax:

ATS2=<n>	Values for <n> are 0..127 (default 43)
ATS2?	Query current setting. Response is <n>.

S3 Command Line Termination Character

Default character is carriage return. The setting is also used in result code and information response formatting. See also command V, page 52. (V.25ter section 6.2.1.)

Syntax:

ATS3=<n>	Set termination character. Default is 13.
ATS3?	Show valid values. Response is <n>.

Values for <n>:

000

...

127

S4 Response Formatting Character

Default character is line feed. See also command V, page 52. (V.25ter section 6.2.2.)

Syntax:

ATS4=<n>	Set response formatting character. Default is 10.
ATS4?	Show valid values. Response is <n>.

Values for <n>:

000

...

127

S5 Command Line Editing Character

Default character is backspace. (V.25ter section 6.2.3.)

Syntax:

ATS5=<n>	Set response formatting character. Default is 8.
ATS5?	Show valid values. Response is <n>.

Values for <n>:

000

...

127

S6 Pause Before Blind Dialling

This setting is ignored. (V.25ter section 6.3.9.)

Syntax:

ATS6=<n>	Values for <n> are 2..10.
ATS6?	Query current setting. Response is <n>.

S7 Connection Completion Timeout

Also known as 'no answer timeout'. Value is given in seconds. Value 0 (unlimited time) is not in V.25ter. (V.25ter section 6.3.10).

Syntax:

ATS7=<n>	Values for <n> are 0..255 (default 60).
ATS7?	Query current setting. Response is <n>.

S8 Comma Dial Modifier Time

Value is given in seconds. See also command D, page 46. (V.25ter section 6.3.11.)

Syntax:

ATS8=<n>	Values for <n> are 0..255 (default 2).
ATS8?	Query current setting. Response is <n>.

S10 Automatic Disconnect Delay

Value is given in tenths of a second. Values 0 and 255 (do not disconnect) are not in V.25ter. (V.25ter section 6.3.12.)

Syntax:

ATS10=<n>	Values for <n> are 0..255 (default 100).
ATS10?	Query current setting. Response is <n>.

S12 Escape Guard Time

Value is in fiftieths of a second (default is one second). See also the command +++ Escape at page 10. (De facto.)

Syntax:

ATS12=<n>	Values for <n> are 0..255 (default 50).
ATS12?	Query current setting. Response is <n>.

S25 Detect DTR Change Time

Time (in seconds) to react on DTR signal change. See also command &D, page 9. (De facto.)

Syntax:

ATS25=<n>	Set DTR change time. Default is 0.
ATS25?	Show valid values. Response is <n>.

Values for <n>:

000
...
255

S47 Force Fax Class 2/2.0 Error Correction Mode

Error Correction Mode can be enabled using this register. 0=disabled, 1=enabled with 64 byte frames, 2=enabled with 256 byte frames.

Syntax:

ATS47=<n>	Values for <n>: 0..2 (default 0)
ATS47?	Response is <n>. Values for <n>: 000..002

T Select Tone Dialling

This setting is ignored. It is included for compatibility reasons. (V.25ter section 6.3.2.)

Syntax:

ATT

V Define DCE Response Format

This command determines whether result codes are transmitted in a numeric format or an alphabetic (or verbose) format. (V.25ter section 6.2.4.)

Syntax:

ATV[0]	Select numeric (short form) responses. (Numeric V.25ter basic syntax result codes with limited headers and trailers.)
ATV1	Select textual (long) responses. (Verbose V.25ter basic syntax result codes with full headers and trailers.) This is the default option.

X Result Code Selection

This command selectively enables or disables the response codes sent to the DTE. When BUSY, NO ANSWER, DELAYED or BLACKLISTED is not enabled, NO CARRIER is used instead. When CONNECT <rate> with a correct data <rate> is not enabled, a plain CONNECT is used instead. This command does not affect the presentation of other result codes than the ones mentioned below. (V.25ter section 6.2.7.)

Syntax:

ATX[0]	OK, CONNECT, RING, NO CARRIER, ERROR codes enabled.
ATX1	also CONNECT 1200, CONNECT 2400 enabled.
ATX2	same as value 1
ATX3	also BUSY enabled
ATX4	also NO ANSWER enabled
ATX5	also CONNECT 4800 (or higher data rates), CARRIER, DELAYED, BLACKLISTED enabled. This is the default option.

Z Reset to Default Configuration

This command restores the parameter values of one of the user profiles by recalling the respective settings from the memory. Settings that are not stored in a profile (see command &W, page 10) will be reset to their factory defaults (see command &F, page 9). If the product does not have memory profiles (or has only one of them) it shall accept both the command Z0 and Z1 (and reset to factory defaults). (V.25ter section 6.1.1.)

Syntax:

ATZ[0]	Disconnect, reset to stored profile 0.
ATZ1	Disconnect, reset to stored profile 1.

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Error Values

Below is the maximum set of error cases supported by NMP products (a specific product may not generate some of these values).

+CME ERROR Values

The following table indicates which AT commands can return a numeric **<err> value**.

The **kinds of errors** that can generate <err> values are listed in numbers. The meanings of the numbers are given under the table (see +CME ERROR Values: Kinds of Errors at page 60).

AT Command	+CME <err> Value	Kinds of Errors
+CGMM	1	21
+CGMR	1	21
+CGSN	1	21
+CIMI	1	21
D><str>	1	21
	3	9
	5	1
	10	2
	11	3
	12	4
	22	7
	23	8
D>mem<n>	1	21
	3	9
	5	1
	10	2
	11	3
	12	4
	21	5, 6
	23	8
D><n>	1	21
	3	9
	5	1
	10	2
	11	3
	12	4
	21	5, 6
	23	8
+CHSD	1	21
+CNUM	1	21
	5	1
	10	2
	11	3
	12	4
	23	8
+CREG?	1	21
+COPS=	1	21
	3	10
	5	1
	10	2
	11	3
	12	4

AT Command	+CME <err> Value	Kinds of Errors
+COPS?	1	21
	5	1
	10	2
	11	3
	12	4
+COPS=?	1	21
	5	1
	10	2
	11	3
	12	4
+CLCK=	1	21
	4	15
	5	1
	10	2
	11	3
	12	4
	16	11
	18	12
	23	8
	30	13
	31	23
	100	14
+CPWD=	1	21
	5	1
	10	2
	11	3
	12	4
	16	11
	18	12
	23	8
	30	13
	31	23
+CCFC=	100	14
	1	21
	5	1
	10	2
	11	3
	12	4
	30	13
	31	23
+CCWA=	100	14
	1	21
	5	1
	10	2
	11	3
	12	4
	30	13
	31	23
+CHLD=	100	14
	1	21
	3	9
+CTFR=	1	21
	3	9

AT Command	+CME <err> Value	Kinds of Errors
+CUSD=	1	21
	5	1
	10	2
	11	3
	12	4
	30	13
	31	23
	100	14
+CAOC	1	21
	5	1
	10	2
	11	3
	12	4
	23	8
+CLCC	1	21
+CFUN=	1	21
+CFUN?	1	21
+CPIN=	1	21
	5	1
	10	2
	11	3
	12	4
	16	11
	23	8
+CPIN?	1	21
	10	2
+CBC	1	21
+CSQ	1	21
+CMEC=	1	21
	3	22
+CKPD=	1	21
+CIND=	4	15
+CIND?	1	21
+CIND=?	1	21
+CMER=	1	21
	3	22
+CPBS?	1	21
	5	1
	10	2
	11	3
	12	4
	23	8
+CPBR=	1	21
	5	1
	10	2
	11	3
	12	4
	21	5
	23	8
	26	18

AT Command	+CME <err> Value	Kinds of Errors
+CPBR=?	1	21
	5	1
	10	2
	11	3
	12	4
	23	8
+CPBF=	1	21
	5	1
	10	2
	11	3
	12	4
	23	8
+CPBF=?	1	21
	5	1
	10	2
	11	3
	12	4
	23	8
+CPBW=	1	21
	3	24
	4	15
	5	1
	10	2
	11	3
	12	4
	17	16
	18	12
	21	5
	23	8
	24	17
	26	18
	27	19
+CPBW=?	1	21
	5	1
	10	2
	11	3
	12	4
+CCLK=	1	21
	5	1
	10	2
	11	3
	12	4
+CCLK?	1	21
+CALA=	1	21
	5	1
	10	2
	11	3
	12	4
+CALA?	1	21

+CME ERROR Values: Kinds of Errors

1	phone security code required to execute the AT command
2	ME does not have a SIM connected to it
3	SIM PIN required to execute the AT command
4	SIM PUK required to execute the AT command
5	phonebook memory location does not exist
6	phonebook memory location is empty
7	match in searched string is not found from any of the memory locations
8	general memory error; e.g. problems in SIM database communication
9	call hold/retrieve/swap/build/split/transfer/deflection failed or cannot be actioned
10	manual network selection is not possible because unavailable or forbidden network name was given, or call is active
11	invalid password was given
12	SIM PUK2 required to execute the AT command
13	there is no network service to complete the request
14	supplementary service command failed due to an unknown error; i.e. an error that is not covered by other <err> values
15	AT interpreter does not support the operation (in case of +CLCK= when <fac>="AB" or ="AG" or ="AC" but <mode>≠0; in case of +CPBW= when <index> is not given but <number> is)
16	SIM PIN2 required to execute the AT command
17	alpha entry to be stored is too long
18	number to be read/stored is too long
19	number to be stored contains characters that are not available in that memory
21	external ME is not connected to TA; this is not applicable to products that have ME and TA in one entity
22	external ME UI cannot be accessed
23	network timeout
24	entries cannot be stored in currently selected phone book memory (e.g. in missed calls list)
25	there is no active voice call

+CMS ERROR Values

The following table indicates which SMS AT commands can return a numeric **<err> value**.

The **kinds of errors** that can generate <err> values are listed in numbers. The meanings of the numbers are given under the table (see +CMS ERROR Values: Kinds of Errors at page 64).

AT Command	+CMS <err> Value	Kinds of Errors
+CPMS=	300	15
	301	5
	310	2
	311	3
	312	1
	316	4
	320	6
+CPMS?	300	15
	301	5
	310	2
	311	3
	312	1
	316	4
	320	6
+CSCB=	300	15
	301	5
	320	6
+CSAS=	300	15
	301	5
	310	2
	311	3
	312	1
	316	4
	320	6
	321	8
+CSAS=?	300	15
	301	5
	310	2
	311	3
	312	1
	316	4
	320	6
+CRES=	300	15
	301	5
	310	2
	311	3
	312	1
	316	4
	320	6
	321	8
+CRES=?	300	15
	301	5
	310	2
	311	3
	312	1
	316	4
	320	6

AT Command	+CMS <err> Value	Kinds of Errors
+CNMI=	300	15
	301	5
	310	2
	320	6
+CMGL=	300	15
	301	5
	310	2
	311	3
	312	1
	316	4
	320	6
+CMGR=	300	15
	301	5
	310	2
	311	3
	312	1
	316	4
	320	6
	321	8
+CNMA=	300	15
	304	11
+CMGS=	0-127	9
	128-255	10
	300	15
	301	5
	304	11
	305	12
	310	2
	311	3
	312	1
	316	4
	330	7
	331	16
	332	17
	333	18
+CMSS=	0-127	9
	128-255	10
	300	15
	301	5
	302	14
	304	11
	305	12
	310	2
	311	3
	312	1
	316	4
	320	6
	321	8
	330	7
+CMGW=	331	16
	300	15
	301	5
	304	11
	305	12
	310	2
	311	3
	312	1
	316	4
	320	6
	322	13

AT Command	+CMS <err> Value	Kinds of Errors
+CMGL=	300	15
	301	5
	310	2
	311	3
	312	1
	316	4
	320	6
+CMGR=	300	15
	301	5
	310	2
	311	3
	312	1
	316	4
	320	6
	321	8
+CNMA=	300	15
	304	11
+CMGS=	0-127	9
	128-255	10
	300	15
	301	5
	304	11
	305	12
	310	2
	311	3
	312	1
	316	4
	330	7
	331	16
	332	17
	333	18
	334	19
+CMSS=	0-127	9
	128-255	10
	300	15
	301	5
	302	14
	304	11
	305	12
	310	2
	311	3
	312	1
	316	4
	320	6
	321	8
	330	7
	331	16
+CMGW=	300	15
	301	5
	304	11
	305	12
	310	2
	311	3
	312	1
	316	4
	320	6
	322	13

AT Command	+CMS <err> Value	Kinds of Errors
+CMGD=	300	15
	301	5
	310	2
	311	3
	312	1
	316	4
	320	6
	321	8
+CMGC=	0-127	9
	128-255	10
	300	15
	301	5
	304	11
	305	12
	310	2
	311	3
	312	1
	316	4
	330	7
	331	16

+CMS ERROR Values: Kinds of Errors

1	phone security code required to execute the AT command
2	ME does not have a SIM connected to it
3	SIM PIN required to execute the AT command
4	SIM PUK required to execute the AT command
5	SMS interface is reserved by some other application
6	general memory error; e.g. problems in SIM database communication
7	message to be sent to network does not contain SMSC address and SMSC address cannot be found from TA or ME
8	memory location does not exist
9	RP layer cause value from network
10	TP layer cause value from network
11	PDU mode is enabled: length of the given PDU is not equivalent with the given <length>, or ME/TA detects that PDU is of invalid format
12	text mode is enabled: too long message is tried to be sent/stored, or +CSMP does not contain valid SMS-SUBMIT (in case of +CMGS=), or ME/TA detects that PDU is of invalid format
13	SMS memory is full
14	<index> given in +CMSS does not contain SMS-SUBMIT or SMS-COMMAND, or <index> given in +CMSS contains SMS-COMMAND and <da> is given
15	external ME is not connected to TA; this is not applicable to products that have ME and TA in one entity
16	no network service

Result Codes

V.25ter Result Codes

Basic Syntax Result Codes

OK, ERROR, BUSY, CONNECT, CONNECT <rate>, NO ANSWER, NO CARRIER

See command X (page 52), command D (page 46), command A (Page 45) and command O (page 49). Available <rate>'s depend on the product. (V.25ter, section 5.7.1).

Notes:

OK may be a result of successful remote initiated in-call modification from data to speech mode. No OK shall be returned when a voice call is originated/answered through external ME UI.

CONNECT[<rate>] a result of successful remote initiated in-call modification from speech to data mode (when alternating calls supported by the product).

NO CARRIER can also indicate a remote hangup of a speech call.

RING: see +CRC command, page 34. MT voice calls or alternating voice/data calls starting with voice shall not result to this indication unless +FCLASS=8 has been set. When RING result code is enabled (+CRC=0), alternating MT voice/fax calls starting with voice shall be automatically switched into fax mode by TA (if call is answered through TA with +CMOD=0). Note that RING result code is not given for waiting calls. (V.25ter, section 6.3.4).

+DR Data Compression Report

+DR: <type>

is given when +DR=1; informs about the presence of V.42bis data compression in the established connection

This intermediate result code is given after (possible) +ER result code. (V.25ter section 6.6.2).

+ER Error control report

+ER: <type>

is given when +ER=1 and a transparent data call is established; informs about the presence of V.42 LAPM or alternative error control protocol in the established connection.

This intermediate result code is given after (possible) +CR result code. (V.25ter section 6.5.5).

+ILRR DTE-DCE Local Rate Report

+ILRR: <rate>[,<rxRate>]

is given when +ILRR=1; informs about the local port rate after connection establishment.

The <rxRate> parameter is not needed by NMP products. This intermediate result code is given after (possible) +DR result code. (V.25ter section 6.2.13).

De Facto Result Codes

Call Repeat Restriction Result Codes

BLACKLISTED and DELAYED. See dialling command D, page 46.

This mechanism is mandatory. (GSM 02.07 Annex A).

CARRIER Error Control Negotiation Start

Some products may choose to send CARRIER (numeric V0 value 16) intermediate result code when data call is originated (or answered) and error control (RLP, V.42, MNP) negotiation starts (code is also sent when there is no negotiation).

This code is given after (possible) +COLP result code during MO data call setup. During MT data call setup this is the first intermediate result code. Note that if +CR result code sending is active, it shall replace this code. See also command X, page 52.

GSM 07.07 Result Codes

+CCWA Call Waiting

+CCWA: <number>,<type>,<class>[,<alpha>]

is given when +CCWA=1 and incoming MT call is received when there is active or held calls in ME (discarded if in on-line data state and V.80 in-band mode is disabled or not supported).

Note that this result code is not repeated similarly as RING, but given only once. Alpha not supported by NMP products. (GSM 07.07 section 7.11).

+CDEV Display Event

+CDEV: <elem>,<text>

- when +CMER=2:
only last indication of each value is buffered if in on-line data state

- when +CMER=3 and V.80 in-band mode is enabled:
all events are forwarded directly to TE

- when +CMER=3 and V.80 in-band mode is disabled or not supported:
behaves like +CMER=2 case

See also command +CMER, page 21. (GSM 07.07 section 8.10).

+CIEV Indicator Event

+CIEV: <ind>,<value>

- when +CMER=2:
only last indication of each <ind> value is buffered if in on-line data state

- when +CMER=3 and V.80 in-band mode is enabled:
all events are forwarded directly to TE

- when +CMER=3 and V.80 in-band mode is disabled or not supported:
behave like +CMER=2 case

See also command +CMER, page 21. (GSM 07.07 section 8.10).

+CKEV Keypad Event

+CKEV: <key>,<press>

- when +CMER=2:
only last indication of each <key> value is buffered if in on-line data state

- when +CMER=3 and V.80 in-band mode is enabled:
all events are forwarded directly to TE

- when +CMER=3 and V.80 in-band mode is disabled or not supported:
behaves like +CMER=2 case

See also command +CMER, page 21. (GSM 07.07 section 8.10).

+CLIP Calling Line Identification Report

+CLIP: <number>,<type>[, <subaddr>,<satype>[,<alpha>]]

is given when +CLIP=1 and number received from network when MT call received (no active or held calls in ME).

This result code is sent to TE after every RING (or +CRING) result code. Subaddress and alpha not supported by NMP products. (GSM 07.07 section 7.6).

+CME ERROR Mobile Equipment Error

+CME ERROR: <err>

is given instead of ERROR when +CMEE=1 or =2 and error is related to ME or network operation.

See also the Error Values section, page 56. (GSM 07.07 section 9.2).

+COLP Connected Line Identification Report

+COLP: <number>,<type>[, <subaddr>,<satype>[,<alpha>]]

is given when +COLP=1 and number received from network when MO call established.

This intermediate result code is given after (possible) +CSSI result code. Subaddress and alpha not supported by NMP products. (GSM 07.07 section 7.8).

+CR Data service report

+CR: <type>

is given when +CR=1 and data call established; informs about the type of data call being established.

This intermediate result code is given after (possible) +COLP result code during MO data call setup. During MT data call setup this is the first intermediate result code. Note that this result code shall replace CARRIER result code (when X5 is set). (GSM 07.07 section 6.9).

+CREG Network Registration

+CREG: <stat>[,<lac>,<cid>]

- when +CREG=1:
given when <stat> value changes; given after NO CARRIER if network lost when on-line

- when +CREG=2:
given when <stat> value changes and when network cell (<lac> and <cid>) of ME changes; given after NO CARRIER if network lost when on-line; if V.80 is enabled, result code is sent in-band during on-line data mode

(GSM 07.07 section 7.2).

+CRING Distinctive Ring

+CRING: <type>

is given when +CRC=1 and incoming MT call (no active or held calls in ME).

Note that this code replaces the V.25ter RING result code. (GSM 07.07 section 6.11).

+CSSI Intermediate Supplementary Service Notification

+CSSI: <code1>[,<index>]

is given when +CSSN=1 and some supplementary service notification is given by network during MO call establishment.

This is the first intermediate result code after dial command D. Supported <code1>'s depend on the supplementary services implemented in a product. (GSM 07.07 section 7.2).

+CSSU Unsolicited Supplementary Service Notification

+CSSU: <code2>[,<index>[,<number>, <type>[,<saddr>,<satype>]]]

is given when +CSSN=,1 and some supplementary service notification is given by network during MT call setup or during a voice call; note that also remote release of a held call is informed with this result code.

In MT call setup case, this result code is sent to TE after every (possible) +CLIP result code. In case of a waiting call, this is given after +CCWA result code (but discarded if TA is in on-line data state and V.80 in-band mode is disabled or not supported). Supported <code2>'s depend on the supplementary services implemented in a product. (GSM 07.07 section 7.16).

+CUSD Network Initiated Unstructured Supplementary Service Data

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

is given when +CUSD=1 and network initiated 'notify' or 'request' USSD message received; discarded if in on-line data state (also when V.80 in-band mode is enabled).

Note that only the first 'request' message during a network initiated USSD session yields to this unsolicited result code. Rest are information responses of +CUSD command. (GSM 07.07 section 7.14).

GSM 07.05 Result Codes

+CBM New CBM

text mode:

+CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data>

PDU mode:

+CBM: <length><CR><LF><pdu>

- when +CNMI=0:
messages are discarded

- when +CNMI=1-3:
messages are forwarded directly to TE (CBMs cannot be received during a call)

See also command +CNMI, page 27. (GSM 07.05 section 3.4.1).

+CDS New SMS-STATUS-REPORT

text mode:

+CDS: *<fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st>*

PDU mode:

+CDS: *<length><CR><LF><pdu>*

- when +CNMI=0:

routed messages are buffered into TA/ME (if buffer is full, 'memory capacity exceeded' should be sent to network)

- when +CNMI=1:

in on-line data state routed messages are rejected (e.g. 'memory capacity exceeded' is sent to network and when command mode is entered 'memory available' is sent to network); in command mode forwarded directly to TE

- when +CNMI=2:

in on-line data state routed messages are buffered into TA/ME (if buffer is full, 'memory capacity exceeded' should be sent to network and when command mode is entered 'memory available' should be sent to network); in command mode forwarded directly to TE

- when +CNMI=3 and V.80 in-band mode enabled:

routed messages forwarded directly to TE

- when +CNMI=3 and V.80 in-band mode is disabled or not supported:

behaves like +CNMI=2 case

See also command +CNMI, page 27. (GSM 07.05 section 3.4.1).

+CDSI New SMS-STATUS-REPORT Indication

+CDSI: *<mem>,<index>*

- when +CNMI=0:

indications are buffered into TA/ME

- when +CNMI=1:

in on-line data state indications are discarded; in command mode forwarded directly to TE

- when +CNMI=2:

in on-line data state indications are buffered into TA/ME; in command mode forwarded directly to TE

- when +CNMI=3 and V.80 in-band mode enabled:

forwarded directly to TE

- when +CNMI=3 and V.80 in-band mode is disabled or not supported:

behaves like in the case of +CNMI=2

See also command +CNMI, page 27. (GSM 07.05 section 3.4.1).

+CMS ERROR Message Service Failure

+CMS ERROR: *<err>*

given instead of ERROR when error is related to ME or network operation

See also the Error Values section, page 56. (GSM 07.05 section 3.2.5).

+CMT New SMS-DELIVER*text mode:*

+CMT: <oa>,[<alpha>],<scts> [,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data>

PDU mode:

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

- when +CNMI=0:

routed messages are buffered into TA/ME (if buffer is full, 'memory capacity exceeded' should be sent to network)

- when +CNMI=1:

in on-line data state routed messages are rejected (e.g. 'memory capacity exceeded' is sent to network and when command mode is entered 'memory available' is sent to network); in command mode forwarded directly to TE

- when +CNMI=2:

in on-line data state routed messages are buffered into TA/ME (if buffer is full, 'memory capacity exceeded' should be sent to network and when command mode is entered 'memory available' should be sent to network); in command mode forwarded directly to TE

- when +CNMI=3:

behaves like +CNMI=2 case (V.80 does not support this long result codes).

<alpha> not supported by NMP products. See also command +CNMI, page 27. (GSM 07.05 section 3.4.1).

+CMTI New SMS-DELIVER Indication

+CMTI: <mem>,<index>

- when +CNMI=0:

indications are buffered into TA/ME

- when +CNMI=1:

in on-line data state indications are discarded; in command mode forwarded directly to TE

- when +CNMI=2:

in on-line data state indications are buffered into TA/ME; in command mode forwarded directly to TE

- when +CNMI=3 and V.80 in-band mode enabled:

forwarded directly to TE

- when +CNMI=3 and V.80 in-band mode is disabled or not supported:

behaves like +CNMI=2 case

See also command +CNMI, page 27.

In the case of the Card Phone: Class 0 and message waiting indication group (discard) SMs shall cause this result code when +CNMI <mt> equals 1 or 3. (GSM 07.05 section 3.4.1).

PN-3131 Result Codes

In-Band Events From DCE to DTE

The following <dle> shielded codes can be sent by DCE when in class 8 mode (+FCLASS=8). At least some of these events are required if binary voice data is transferred through AT command interface. Other events of PN-3131 are not applicable to GSM.

event	code	description	state	FBUS interaction
3	R	ring	command	call coming(mode)
6	c	facsimile calling	command	call coming(bc)
7	e	data calling	command	call coming(bc)
9	s	presumed hang-up	receive	call clear indication
10	q	presumed end of message	receive	call clear indication
18	r	ringback	command	call remote alerting
19	b	busy	command	call clear indication(cause)
-	<dle>	single <dle> in data	receive	-
-	<sub>	<dle><dle>	in data receive	-
-	<etx>	end data state	receive	-

(PN-3131 sections 5.2 and 7.3).

Supported Standards

All **ITU-T V.25ter**, **ETSI GSM 07.07**, and **ETSI GSM 07.05** commands that are mandatory and those optional ones that are applicable to GSM products are included in this document. Also those de facto commands that are used widely among modems, and commands specific to Nokia products are presented. Note that V.25ter is a combination of three TIA standards (TIA-602, TIA-615, IS-131).

Some voice commands from TIA-695 (formerly known as PN-3131 and IS-101) are supported by Nokia GSM products.

Three different fax command sets are supported. These are class 1 (TIA-578-A), class 2 (TIA SP-2388) and class 2.0 (TIA-592 or ITU-T T.32).

NOTE: This document does not give very detailed descriptions of each command. For all the details, refer to the source where the commands are taken from.

Web sites of the standardization organizations:

ETSI:	http://www.etsi.fr
ITU:	http://www.itu.ch
TIA:	http://www.industry.net/tia/

Abbreviations

AT	ATtention
CBM	Cell Broadcast Message
CTS	Clear To Send
DCD	Data Carrier Detect
DCE	Data Circuit-Terminating Equipment, i.e., here the data card (see also TA below)
DSR	Data Set Ready
DTE	Data Terminal Equipment (see also TE below)
DTR	Data Terminal Ready
FBUS	Fast asynchronous serial bus
HSCSD	High Speed Circuit Switched Data
IMEI	International Mobile Equipment Identity (ME serial number)
IMSI	International Mobile Subscriber Identity
ME	Mobile Equipment, e.g. a mobile phone
MO	Mobile Originated
MT	Mobile Terminated
PDU	Protocol Data Unit
RLSD	Received Line Signal Detector
RTS	Request To Send
SIM	Subscriber Identity Module
SM	Short Message
SMSC	Short Message Service Centre
TA	Terminal Adapter, the physical equipment where AT command interpreter resides (may be combined with ME)
TE	Terminal Equipment, the physical equipment from where applications communicate with TA using AT commands, e.g. a computer
UI	User Interface