AT Command Set For Nokia GSM And WCDMA Products

Version 1.1; April 2, 2004

Messaging

NOKIA

Contents

Tables

Change History

May 8, 2002	Version 1.0	Initial document release
April 2, 2004	Version 1.1	Replaces the document *AT Command Set for Nokia GSM Products*. The document has been updated to cover both GSM and WCDMA products. The chapter "Unsupported Commands" has been removed. The following commands have been added: +CIMI, +CHST, +CLCC, +CPAS, +CFUN, +CPIN, +CGSMS, +CGEQREQ, +CGEQMIN, +CGEQNEG, +CGDSCONT, +CGTFT, +BRSF, +S47, +S48, and +NAUTODISC.

1 Introduction

This document describes the attention (AT) commands that can be used with Nokia GSM (including also DCS1800 and PCS1900) and Wideband CDMA (WCDMA) products available after autumn 2001, including, for example, the following products: Nokia 8310, Nokia 6310, Nokia 7650, Nokia 8910, and Nokia D211. A short description, the syntax, the possible setting values, and responses of the AT commands are presented.

Figure 1.1: Nokia 8310, Nokia 6650, and Nokia 6600

Some AT commands are not supported by all Nokia products or by all operators. Giving a command that is not supported by the product causes an error response. Some Nokia products do not necessarily support all command parameters and using the unsupported parameters causes an error response.

Figure 1.2: Nokia 6310

Figure 1.3: Nokia D211

Computers use AT commands to communicate with modems. Most communications applications, however, have a user interface that hides the AT commands from the user. AT commands can be issued via a 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 used device, which can also be the mobile phone.

1.1 AT Command Syntax

The **"AT"** or **"at "** prefix must be added to the beginning of each command line. Several AT commands can be typed on the same line, and in such cases the "**AT**" or "**at**" prefix is needed only once, at the beginning of the command line.

The marking **<n>** used in the 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 a setting value is set with an AT command, the setting is valid until you change it or reboot the device.

1.1.1 S-register commands

The S-register command factory default value (**&F**) is given in parenthesis under the column '**<n>** values'. The existence of an S-register command can be queried by giving the command without an equals sign or a question mark (for example, **ATS3** returns OK, but does not change the **<n>** setting). **<n>** can not be omitted when its value is set (for example, **ATS3**= returns ERROR).

The following format is used in the command description sections:

Command	Response	<n> values
Sn=<n>		x..y (default z)
Sn?	<n>	xxx..yyy

1.1.2 Basic commands

The commands **D** (dial), **A** (answer), and **O** (return to online data state) also include columns for possible result codes.

A basic command has no '+' prefix. If there is no default value, the setting of that command is not stored in the non-volatile memory (the command **&Y** is an exception). If the command parameter is in brackets (usually zero), the parameter can be omitted.

The following format is used in the command description sections:

Command	Description
CMD[x]	For value x.
CMDy	For value y.

1.1.3　Extended commands

Extended command (with the prefix '**+**') subparameter default values are given in a separate column. If the default value is not in brackets, it is the **&F** default value of the corresponding subparameter. If this kind of a subparameter is omitted when the command is given, its value remains the same. If the default value is in brackets, this value shall be used when the subparameter is omitted from the command line. The setting of this kind of a subparameter is not stored in the memory. If the subparameter does not have a default value, a value must always be given.

Note:	Voice (**+V**) and fax (**+F**) commands do not follow this format exactly.

GSM commands can also return the `+CME ERROR` or the `+CMS ERROR` final result code, when the error is related to the functionality of the mobile equipment (ME) or the network. The presentation of the `+CME ERROR` can be controlled with the **+CMEE** command.

The following table format is used in command description sections:

Command	Response	Default
+CMD[=<x>,...]	[+CMD: <y>,...]	[x,...]
+CMD?	+CMD: <z>[,...]	
+CMD=?	[+CMD: ...]	

1.1.4　Command line

See Figure 1.4 for a general structure of a command line.

subparameter

read command for checking
current subparameter values

command line prefix

extended commands are
delimited with semicolon

command line termination

ATCMD1 CMD2=12; +CMD1; +CMD2=„15; +CMD2?; +CMD2=?<CR>

basic command
(no + prefix)

subparameters may be
omitted

extended command
(prefixed with +)

best command for checking possible
subparameter values
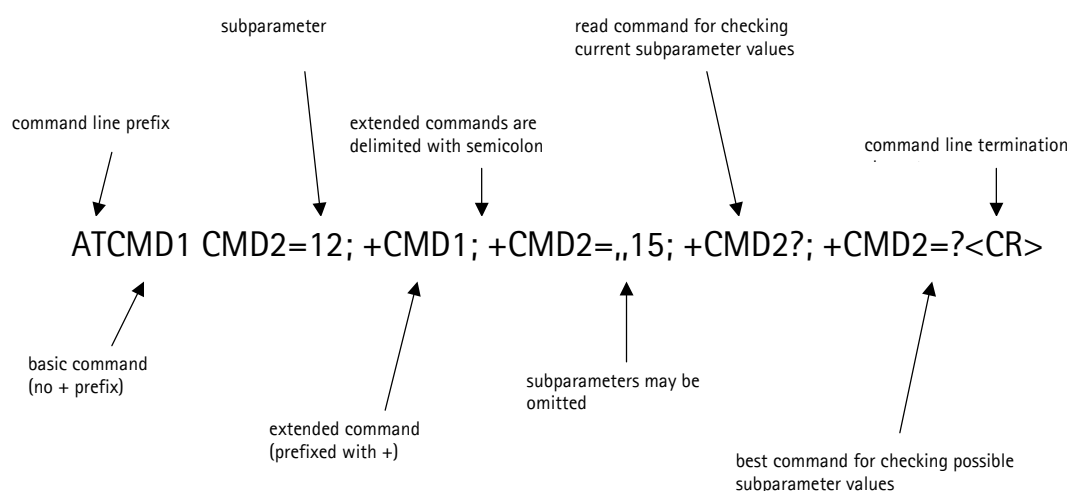
Figure 1.4: Basic structure of a command line

GSM 3GPP TS 27.007 /2/.

Standardized basic commands are presented only in *V.250 /1/*. GSM commands follow the syntax rules of extended commands. Every extended command has a test command (**=?**) for testing 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 they do not have a read command.

If verbose responses are enabled with the command **V1** and all commands in a command line have been successfully performed, the result code `<CR><LF>OK<CR><LF>` is sent from the terminal adaptor (TA) to the terminal equipment (TE). If numeric responses are enabled with command **V0**, the result code `0<CR>` is sent instead.

If verbose responses are enabled with the command **V1** and the subparameter values of a command are not accepted by the TA (or the command itself is invalid, or the command cannot be performed for some reason), the 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 the command **V0**, the result code `4<CR>` is sent instead. `ERROR` (or `4`) response can be replaced with `+CME ERROR: <err>` or `+CMS ERROR: <err>` if the command was not processed due to an error related to the ME or network operation.

1.1.5   Information responses and result codes

The TA response for the example command line in Figure 1.4 could be as shown in Figure 1.5. Here, the verbose response format is enabled with the command **V1**. If the numeric format **V0** would have been used, `<CR><LF>` headers of information responses would have been left out and the final result code changed to `0<CR>`.

also string type subparameters possible

information response to +CMD2=?

information response to +CMD2=?

<CR><LF> +CMD2:3,0,15,"GSM"<CR><LF>

<CR><LF> +CMD2:(0-3),(0,1),(0-12,15),("GSM","IRA")<CR><LF>

<CR><LF> OK<CR><LF>

final result code

shows acceptable ranges of each subparameter
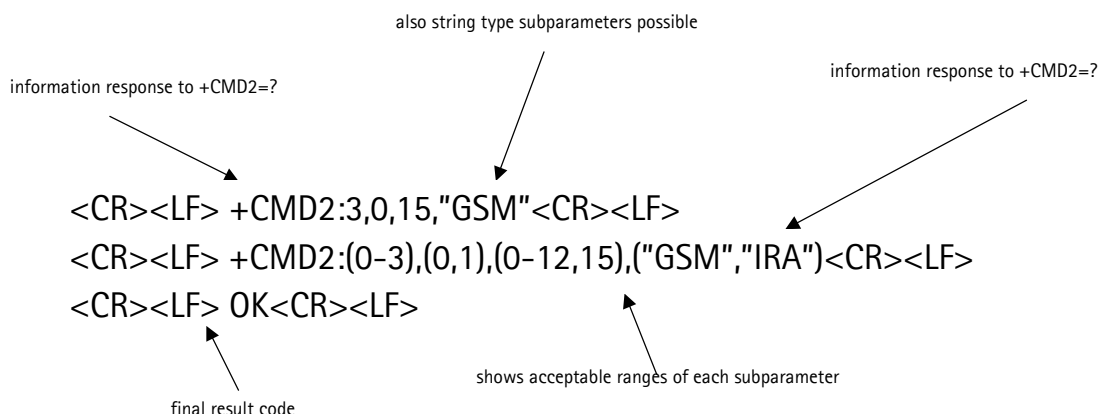
Figure 1.5: Response to a command line

GSM 3GPP TS 27.007 /2/.

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

2 Product Support

2.1 S-Registers

Table 2.1 lists the S-registers whose values can be changed with AT commands. Unless otherwise specified, the value range is 0 – 255.

S register	Definition	S-register value
0	Auto answer ring count (0 = disabled).	0 – 255
1	Ring counter (read only).	-
2	Escape code character.	0 - 127
3	Carriage return.	0 - 127
4	Line feed.	0 - 127
5	Backspace.	0 - 127
7	Wait for connection completion (in seconds).	0 – 255
8	Interval of dual tone multi-frequency (DTMF) characters (in seconds).	0 – 255
10	DCD OFF to hang-up delay (sec/10).	0 – 255
12	Escape guard time (sec/50).	0 – 255
25	Detect DTR change (sec).	0 – 255
47	Fax ECM.	
	ECM not used.	0
	In Fax class 2 ECM frame size = 64 and in Fax class 2.0 ECM frame size = 256.	1
	In Fax classes 2 and 2.0 ECM frame size = 256.	2
48	14400 fax	
	FAX 14400 OFF	0
	FAX 14400 ON	1

Table 2.1: S-registers

2.2 V.250

2.2.1 ATS3 Command line termination character

V.250, Section 6.2.1 /1/. The default character is carriage return. The setting is also used in result code and information response formatting. See also command **V** in Section 3.2.2, "AT&V View configuration."

Command	Response	<n> values
S3=<n>		0..127 (default 13)
S3?	<n>	000.. 127

Table 2.2: ATS3

2.2.2 ATS4 Response formatting character

V.250, Section 6.2.2 /1/. The default character is line feed See also command **V** in Section 3.2.2, "AT&V View configuration."

Command	Response	<n> values
S4=<n>		0..127 (default 10)
S4?	<n>	000.. 127

Table 2.3: ATS4

2.2.3 ATS5 Command line editing character

V.250, Section 6.2.3 /1/. The default character is backspace.

Command	Response	<n> values
S5=<n>		0..127 (default 8)
S5?	<n>	000.. 127

Table 2.4: ATS5

2.2.4 ATE Command echo

V.250, Section 6.2.4 /1/. Controls the command character echo in online/offline command state.

Command	Description
E[0]	No echo.
E1	Echo, default.

Table 2.5: ATE

2.2.5 ATQ Result code suppression

V.250, Section 6.2.5 /1/. Affects only result codes, not information responses.

Command	Description
Q[0]	Transmit codes, default.
Q1	Suppress codes.

Table 2.6: ATQ

2.2.6   ATV DCE response format

V.25, Section 6.2.6 /1/. For numeric result code values, refer to *V.250, Section 5.7.1* and the **D** (Section 4.1.1, "ATD Dial"), **A** (Section 4.1.4, "ATA Answer"), and **O** (Section 4.1.6, "ATO Return to online data state") commands. The settings of the commands **S3** and **S4** affect header/trailer formatting. Note that the result codes defined in *GSM 3GPP TS 27.007* /2/ and *3GPP TS 27.005* /3/ have only verbose values.

Command	Description
V[0]	Numeric V.250 basic syntax result codes, limited headers and trailers.
V1	Verbose V.250 basic syntax result codes, full headers and trailers, default.

Table 2.7: ATQ

2.2.7   ATX Result code selection and call progress monitoring control

V.250, Section 6.2.7 /1/. 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. Also General Packet Radio Service (GPRS) context activation is indicated by CONNECT. This command does not affect the presentation of other result codes than the ones mentioned in Table 2.8.

Command	Description
X[0]	OK, CONNECT, RING, NO CARRIER, and ERROR codes enabled.
X1	CONNECT 1200 and CONNECT 2400 also enabled.
X2	Same as value 1.
X3	BUSY also enabled.
X4	NO ANSWER also enabled.
X5	CONNECT 4800 (or higher data rates), DELAYED, and BLACKLISTED also enabled, default.

Table 2.8: ATX

2.2.8   AT&C Circuit 109 (received line signal detector) behavior

V.250, Section 6.2.8 /1/. Also known as DCD or carrier signal.

Command	Description
&C[0]	Always on.
&C1	Normal operation, default.

Table 2.9: AT&C

2.2.9   AT&D Circuit 108 (data terminal ready) behavior

V.250, Section 6.2.9 /1/. Determines how the data circuit-terminating equipment (DCE) responds when circuit 108 is changed from ON to OFF during online data state. Circuit 108 is also known as the DTR signal.

Command	Description
&D[0]	Ignored.
&D1	On->off causes transition to on-line command state if call in progress.
&D2	On->off causes hangup, default.
&D3	On->off causes hangup and performs reset (as Z). 'De facto' feature.

Table 2.10: AT&D

2.2.10   AT+IPR Fixed data terminal equipment (DTE) rate

V.250, Section 6.2.10 /1/. This command must be in products that do not support autobauding in all configurations and have more than one <rate> to be set (according to V.250, either 1200 or 9600 is mandatory). Note that the reset commands **Z** and **&F** do not change this setting.

The response to the **+IPR** test command includes a list of supported autodetectable <rate> values and a list of fixed-only <rate> values.

Command	Response	Default
+IPR=<rate>		[0]
+IPR?	+IPR: <rate>	
+IPR=?	+IPR: (0,300,600,1200,2400,4800,9600,19200,38400, 57600,115200),()	

Table 2.11: AT+IPR

2.2.11   AT+ICF Character framing

V.250, Section 6.2.11 /1/. This 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 the reset commands **Z** and **&F** do not change this setting.

Command	Response	Default
+ICF=<format>,<parity>		[0]
+ICF?	+ICF: <format>,<parity>	
+ICF=?	+ICF: (0,1,2,3,4,5,6),(0,1,2,3)	

Table 2.12: AT+ICF

2.2.12   AT+IFC DTE-DCE local flow control

V.250, Section 6.2.12 /1/. Controls the operation of local flow control.

Command	Response	Default
+IFC=<dce-by-dte>,<dte-by-dce>		2,2
+IFC?	+IFC: <dce-by-dte>,<dte-by-dce>	
+IFC=?	+IFC: (0-3),(0-2)	

Table 2.13: AT+IFC DTE-DCE local flow control

2.2.13   AT+ILRR DTE-DCE local rate reporting

V.250, Section 6.2.13 /1/. Controls the presentation of the +ILRR intermediate result code.

Command	Response	Default
+ILRR=<n>		0
+ILRR?	+ILRR: <n>	
+ILRR=?	+ILRR: (0,1)	

Table 2.14: AT+ILRR

2.3   De Facto

2.3.1   ATS25 Detect DTR change time

Time (in seconds) to react to the DTR signal change. See also command **&D** in Section 2.2.9, "AT&D Circuit 108 (data terminal ready) behavior."

Command	Response	<n> values
S25=<n>		0..255 (default 0)
S25?	<n>	000..255

Table 2.15: ATS25

2.3.2   AT&S DSR signal behavior

This command defines how the DSR V.24 signal is handled.

Command	Description
&S[0]	Always on.
&S1	Normal operation, default.

Table 2.16: AT&S

2.3.3   AT&K Select flow control

This command changes the same setting as **+IFC**. However, using the **+IFC** command is recommended.

Command	Description
&K[0]	No flow control.
&K3	Hardware flow control (RTS/CTS), default.
&K4	Software flow control (XON/XOFF).

Table 2.17: AT&K

3   Generic Commands

3.1   V.250

3.1.1   ATZ Reset to default configuration

V.250, Section 6.1.1 /1/. Settings that are not stored in a profile (see command **&W** in Section 3.2.3,"AT&W Store configuration") will be reset to their factory defaults (see command **&F** in Section 3.1.2, "AT&F Set to factory-defined configuration." Note that **Z** resets also all Fax commands). Although a product would not have memory profiles (or only one of them) it shall accept both **Z0** and **Z1** (and reset to factory defaults). Additional commands on the same command line after the **Z** command will be ignored.

Command	Description
Z[0]	Disconnect, reset to stored profile 0.
Z1	Disconnect, reset to stored profile 1.

Table 3.1: ATZ

3.1.2   AT&F Set to factory-defined configuration

V.250, Section 6.1.2 /1/. Command parameters (if implemented) that are reset to their factory defaults are: all S-registers, E, Q, V, X, &C, &D, +IFC, +ILRR, &S, +CSCS, +DS, +DR, +ES, +ER, +CSTA, +CMOD, +CBST, +CRLP, **+CR, +CRC, +CSNS, +CHST, +CHSN, +CV120** (only <mfm>), **+CVHU, +CREG, +COPS** (only <format>), **+CLIP, +CLIR, +COLP, +CCWA** (only <n>), **+CUSD** (only <n>), **+CSSN, +CPBS, +CMEE**, SMS commands, GPRS commands, and Fax commands (except **+FCLASS** and Class 2.0 specific parameters when **+FCLASS = 2.0**).

Command	Description
&F[0]	Reset to factory defaults.

Table 3.2: AT&F

3.1.3   ATI Request identification information

V.250, Section 6.1.3 /1/. This command displays information about the product.

Command	Response	Description
I[0]	Nokia	Same as **+GMI.**
I1	(product serial number)	Same as **+GSN.**
I2	(product version)	Same as **+GMR.**
I3	(product name)	Same as **+GMM**
I4	(minor SW version)	
I9	(plug and play info)	
I5-I8 and I10-I255		Dummies that are just accepted.

Table 3.3: ATI

3.1.4 AT+GMI Request TA manufacturer identification

V.250, Section 6.1.4 /1/. This command displays the product manufacturer information.

Command	Response
+GMI	Nokia

Table 3.4: AT+GMI

3.1.5 AT+GMM Request TA model identification

V.250, Section 6.1.5 /1/. This command displays the product model identification.

Command	Response
+GMM	Model information.

Table 3.5: AT+GMM

3.1.6 AT+GMR Request TA revision identification

V.250, Section 6.1.6 /1/. This command displays the product revision identification.

The response must include the product software version.

Command	Response
+GMR	SWxx.xx

Table 3.6: AT+GMR

3.1.7 AT+GSN Request TA serial number identification

V.250, Section 6.1.7 /1/. This command displays the product serial number.

Command	Response
+GSN	xxxxxxxxxxxx...

Table 3.7: AT+GSN

3.1.8 AT+GCAP Request complete capabilities list

V.250, Section 6.1.9 /1/. The response is returned when GSM 3GPP TS 27.007 commands, some fax classes, and V.42bis compression are supported. The response may differ depending on the features that have been implemented in the product.

Command	Response
+GCAP	+GCAP: +CGSM, +FCLASS, +DS, +W

Table 3.8: AT+GCAP

3.2 De Facto

3.2.1 A/ Repeat last command line

V.250, Section 5.2.4 /1/. Replacing normal AT as the first characters in a command line. Lowercase (**a/**) is also accepted.

3.2.2 AT&V View configuration

The response format is product specific, but it must fit in one 80x24 character display and all command parameters stored in a profile (or current settings) must be shown as 'command name'-'values of parameters' pairs (for example, **+CSSN=0,1, E0 or S7=80, +COPS=,2, or +CSCS="HEX"**).

Command	Response
&V[0]	Show current settings (all command parameter values under **&F** and **&Y** settings).
&V1	Show settings in stored profile 0 (all command parameter values defined under **&W**).
&V2	Show settings in stored profile 1 (all command parameter values defined under **&W**).

Table 3.9:AT&V

3.2.3 AT&W Store configuration

Command parameters (if implemented) that are stored to a profile are the same as listed under the **&F** command, except the parameters of the following commands which are not stored: **+CMOD, +CSCA**, and **+CSMP**.

Command	Response
&W[0]	Store to profile 0.
&W1	Store to profile 1.

Table 3.10: AT&W

3.2.4 AT&Y Select power-up configuration

This setting is not part of the settings that are stored in a profile. The **&F** command does not affect this setting.

Command	Response
&Y[0]	Power-up uses profile 0.
&Y1	Power-up uses profile 1.

Table 3.11: AT&Y

3.3 3GPP TS 27.007

3.3.1 AT+CGMI Request ME manufacturer identification

3GPP TS 27.007, Section 5.1 /2/. This command displays the product manufacturer identification.

Command	Response
+CGMI	Nokia
+CGMI=?	

Table 3.12: AT+CGMM

3.3.2 AT+CGMM Request ME model identification

3GPP TS 27.007, Section 5.2 /2/. Note that in case of a product with the TA and the ME in a single physical entity, the response of **+GMM** is identical for both units..

Command	Response
+CGMM	Model information.
+CGMM=?	

Table 3.13: AT+CGMM

3.3.3 AT+CGMR Request ME revision identification

3GPP TS 27.007, Section 5.3 /2/. The response must include the product software version. Note that in case of a product with the TA and the ME in a single physical entity, the response of **+GMR** is identical for both units.

Command	Response
+CGMR	Software version.
+CGMR=?	

Table 3.14: AT+CGMR

3.3.4 AT+CGSN Request ME serial number identification

3GPP TS 27.007, Section 5.4 /2/. Returns international mobile equipment identity (IMEI). Note that in case of a product with the TA and the ME in a single physical entity, the response of **+GSN** is identical for both units.

Command	Response
+CGSN	Xxxxxxxxxxxxxxxxxxxx
+CGSN=?	

3.3.5 AT+CSCS Select TE character set

3GPP TS 27.007, Section 5.5 /2/. This command informs the data card of which character set is used by the TE. The data card is then able to convert character strings correctly between TE and ME character sets. When the data card-TE interface is set to 8-bit operation and the TE uses a 7-bit alphabet, the highest bit shall be set to zero. This setting affects text mode SMS data and alpha fields in the phone book memory. If the ME is using the GSM default alphabet, its characters shall be padded with the 8th bit (zero) before converting them to hexadecimal numbers (that is, a 7-bit alphabet is not packed in the SMS-style packing).

Command	Response	Default
+CSCS=<chest>		"PCCP437"
+CSCS?	+CSCS: <chset>	
+CSCS=?	+CSCS:("UCS2","GSM","PCCP437","PCDN","IRA","8859-1","HEX")	

Table 3.15: AT+CSCS

3.3.6   AT+CIMI Request international mobile subscriber identity

27.007, Section 5.6. The execution command causes the TA to return <IMSI>, which is intended to permit the TE to identify the individual active application in the Universal Mobile Telecommunications System (UMTS) IC Card (UICC) (GSM or USIM) or the Subscriber Identity Module (SIM) which is attached to the mobile terminal (MT).

<IMSI>: International Mobile Subscriber Identity (string without double quotes).

Command	Response
+CIMI	<imsi>
+CIMI=?	

Table 3.16: AT+CIMI

3.3.7   AT+WS46 Select wireless network

3GPP TS 27.007, Section 5.9 /2/. TIA-678, Section 5.2.4.3. Currently there are no values for GSM1800 or GSM1900 but '12' could be used for them as well.

Command	Response	<n> values
+WS46=[<n>]		GSM, UMTS, and GSM/UMTS dual mode phones: 12 US-TDMA only phones: 14 GSM/US-TDMA dual mode phones: 12, 14, 15
+WS46?	<n>	GSM phones: 12 UMTS phones: 22 GSM/UMTS dual mode phones: 25 US-TDMA and GSM/US-TDMA phones: 12, 14 or 15
+WS46=?	(n)	GSM Digital Cellular Systems (GERAN only): 12 US-TDMA: 14 GSM/US-TDMA multimode: 12, 14, 15 UTRAN only: 22 3GPP Systems (both GERAN and UTRAN): 25

Mandatory in PCCA STD-101, but optional for GSM/UMTS. *27.007, Section 5.9.* It should be noted that in GSM/UMTS this command cannot be used to select the wireless network.

4 Call Control Commands

4.1 V.250

4.1.1 ATD Dial

V.250, Section 6.3.1 /2/. All result codes are not defined in V.250. Before one of the result codes can be returned, some of the following commands have to be given: **+CSSI**, **+COLP**, **+CR**, **+ER**, **+DR**, or **+ILRR** (in that order). Available connection rates depend on the product. DELAYED/BLACKLISTED mechanism, that is, the blacklist is cleared by pressing the ME key or by resetting the ME. The dial command is also used to control alternating mode calls (see *GSM 3GPP TS 27.007, Section 6.6, and Annexes E and F* /2/). In GPRS connections the data rate can actually be higher than the desired value because it is a minimum desired value. The only verbose code returned in case of a GPRS call is the word CONNECT.

> **Note:** The **+VTS** command or the comma modifier (for example, "ATD,1234"; in this case the first comma does not cause a pause) can be used to send DTMF digits.

Command	Possible verbose / numeric result codes	Description
D<dial-string>	BLACKLISTED / 14	Calling 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) or GPRS context activation.
	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	High-Speed Circuit Switched Data (HSCSD) (or 14.4 tch) data/fax call established; rate 14400 bps.
	CONNECT 19200 / 18	HSCSD data call established; rate 19200 bps.
	CONNECT 28800 / 19	HSCSD data call established; rate 28800 bps.
	CONNECT 38400 / 20	HSCSD data call established; rate 38400 bps.
	CONNECT 43200 / 21	HSCSD data call established; rate 43200 bps.
	DELAYED / 13	Calling the number is temporarily (5 seconds - 3 minutes) forbidden.
	ERROR / 4	Command cannot be executed.
	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.

Table 4.1: ATD

See also *3GPP TS 27.007, Section 6.2 /2/* and *V.250, Sections 6.3.1.1-6.3.1.7 /1/*. For a voice call example, refer to *3GPP TS 27.007, Annex G /2/*. Note that I is the only case-sensitive dial string character.

<dial-string> characters	Values	Description
V.250 dialling digits	0123456789+*	Accepted as valid digits.
	#ABCD	Accepted but ignored.
V.250 modifiers	,	In case of a voice call: originate call to the number preceding the comma, wait for the remote answer, pause for the length specified with the S8 register, and send numbers after comma as DTMF digits. Further commas cause a pause for a length specified with the S8 register (all commas are ignored in case of data call).
	T P ! W @	Accepted but ignored.
V.250 semicolon	;	Voice call originating (must be the last character in the command line).
GSM 3GPP TS 27.007 modifiers	>	Direct dialing from the phone book (must be the first character after D). See Table 4.3.
	i	Allow calling line ID presentation for this call.
	I	Restrict calling line ID presentation for this call.
	G	Control CUG information for this call; use **+CCUG** values.
De facto	L	Redial the number that was last dialed with **ATD**.
Any other character	Any character that has not been listed above.	Accepted and ignored from the command line for compatibility reasons.

Table 4.2: <dial-string> characters

GSM 3GPP TS 27.007, Section 6.3 /2/.

Direct dialing command	Description
D><str>[i/I][G][;]	Originate the call to a phone number whose corresponding alphanumeric field is <str>. Search all ME, SIM (abbreviated number (and)), and TA memories (if available) for the entry. The used character set should be the one specified by **+CSCS**.

D>mem<n>[i/I][G][;]	Originate the call to a phone number found from the location <n> in a specific memory mem, which is one of the two letter memory abbreviations as returned by **+CPBS=?** (without double quotes);. The location range can be queried with **+CPBR=?**. Note that in case of SIM ADN memory (Short Message (SM)) D>SIM<n> shall also be accepted (due to inconsistency in GSM 3GPP TS 27.007).
D><n>[i/I][G][;]	Originate the call to a phone number in the memory location <n>; the memory selected with **+CPBS** is used.

Table 4.3: Direct dialing command

GSM 3GPP TS 27.007, Section 10.2.1.1.

Request GPRS service 'D'	Description
D*99[*[<called_address>][*[<L2P>][*[<cid>]]]]#	Causes the mobile terminal (MT) to enter the V.250 online data state and, with the TE, to start the specified layer 2 protocol. Value 99 identifies a request to use the Packet Domain service.

Table 4.4: Request GPRS service 'D'

GSM 3GPP TS 27.007, Section 10.2.1.2.

Request GPRS service 'D'	Description
D*98[*[<cid>]]#	Causes the MT to enter the V.250 online data state and, with the TE, to start the specified layer 2 protocol. Value 98 identifies a request to use GPRS with IP.

Table 4.5: Request GPRS service 'D'

4.1.2   ATT Select tone dialling

V.250, Section 6.3.2 /1/. This setting is ignored.

Command
T

Table 4.6: ATT

4.1.3   ATP Select pulse dialling

V.250, Section 6.3.3 /1/. This setting is ignored.

Command
P

Table 4.7: ATP

4.1.4 ATA Answer

V.250, Section 6.3.5 /1/. All result codes are not included in V.250. Before one of the result codes can be returned some of the following commands must be executed: +CR, +ER, +DR, or +ILRR (in that order). Available connection rates depend on the product. The **Answer** command is also used to control alternating mode calls (see *GSM 3GPP TS 27.007, Section 6.6 and Annexes E and F* /2/). In GPRS connections the data rate can actually be higher than the value that is returned because it is the minimum desired value. The only verbose code returned in the case of GPRS call is the word CONNECT.

Command	Possible verbose / numeric (V0) result codes (V1)	Description
A	CONNECT / 1	Data/fax call established; rate 300 bps (or X forbids rate display) or GPRS context activation.
	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 call established; rate 19200 bps.
	CONNECT 28800 / 19	HSCSD data call established; rate 28800 bps.
	CONNECT 38400 / 20	HSCSD data call established; rate 38400 bps.
	CONNECT 43200 / 21	HSCSD data call established; rate 43200 bps.
	ERROR / 4	The command cannot be executed.
	NO CARRIER / 3	The call could not be established.
	OK / 0	The command is aborted.

Table 4.8: ATA

4.1.5 ATH Hook control

V.250, Section 6.3.6 /1/. This command ends the call.

Command	Description
H[0]	End all calls (except a possible waiting call) if only single mode calls are in progress, or switch to voice mode if a call of an alternate mode is active.

Table 4.9: ATH

4.1.6 ATO Return to online data state

V.250, Section 6.3.7 /1/. Available connection rates depend on the product. In GPRS connections, the data rate can actually be higher than the value that is returned because it is the minimum desired value. The only verbose code returned in case of a GPRS call is CONNECT.

Command	Possible verbose (V1) / numeric (V0) result codes	Description
O[0]	CONNECT / 1	Data/fax call continued; rate 300 bps (or X forbids rate display).
	CONNECT 1200 / 5	Data call continued; rate 1200 bps.
	CONNECT 2400 / 10	Data call continued; rate 2400 bps.
	CONNECT 4800 / 11	Data call continued; rate 4800 bps.
	CONNECT 9600 / 12	Data call continued; rate 9600 bps.
	CONNECT 14400 / 17	HSCSD data call continued; rate 14400 bps.
	CONNECT 19200 / 18	HSCSD data call continued; rate 19200 bps.
	CONNECT 28800 / 19	HSCSD data call continued; rate 28800 bps.
	CONNECT 38400 / 20	HSCSD data call continued; rate 38400 bps.
	CONNECT 43200 / 21	HSCSD data call continued; rate 43200 bps.
	ERROR / 4	Command cannot be executed.
	NO CARRIER / 3	Call could not be continued.

Table 4.10: ATO

4.1.7 ATS0 Automatic answer

V.250, Section 6.3.8 /1/. The value indicates the number of rings (RING or +CRING result codes) to wait before answering automatically. Value 0 disables the automatic answer.

Command	Response	Description
S0=<n>		0...255(default 0)
S0?	<n>	000...255

Table 4.11: ATS0

4.1.8 ATS6 Pause before blind dialling

V.250, Section 6.3.9 /1/. This setting is ignored.

Command	Response	Description
S6=<n>		0...255
S6?	002	002

Table 4.12: ATS6

4.1.9 ATS7 Connection completion timeout

V.250, Section 6.3.10 /1/. Also known as 'no answer timeout'. The value is given in seconds. Value 0 (unlimited time) is not included in V.250.

Command	Response	Description
S7=<n>		0...255(default 60)
S7?	<n>	000...255

Table 4.13: ATS7

4.1.10 ATS8 Comma dial modifier time

V.250, Section 6.3.11 /1/. The value is given in seconds. See also **D** in Section 4.1.1, "ATD Dial."

Command	Response	Description
S8=<n>		0...255(default 2)
S8?	<n>	000...255

4.1.11 ATS10 Automatic disconnect delay

V.250, Section 6.3.12 /1/. The value is given in tenths of a second. Values 0 and 255 (do not disconnect) are not included in V.250.

Command	Response	Description
S10=<n>		0...255(default 100)
S10?	<n>	000...255

Table 4.14: ATS10

4.1.12 ATL Monitor speaker loudness

V.250, Section 6.3.13 /1/. This setting is ignored.

Command
L[0]..L3

Table 4.15: ATL

4.1.13 ATM Monitor speaker mode

V.250, Section 6.3.14 /1/. This setting is ignored.

Command
M[0]..M3

Table 4.16: ATM

4.1.14 AT+DS Data compression

V.250, Section 6.6.1 /1/. Controls the V.42bis data compression.

Command	Response	Default
+DS=<dir>,<neg>,<P1>,<P2>		0,0,2048,20

+DS?	+DS: <dir>,<neg>,<P1>,<P2>	
+DS?	+DS: (0-3),(0,1),(512-2048),(6-32)	

Table 4.17: AT+DS

4.1.15   AT+DR Data compression reporting

V.250, Section 6.6.2 /1/. Controls the presentation of the `+DR` intermediate result code.

Command	Response	Default
+DR=<mode>		0
+DR?	+DR: <mode>	
+DR=?	+DR: (0,1)	

4.2   De Facto

4.2.1   ATB CCITT/Bell mode

This setting is ignored.

Command
B[0]..B1

Table 4.18: ATB CCITT

4.2.2   ATS1 Ring count

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

Command	Response	<n> values
S1?	<n>	000..255

Table 4.19: ATS1

4.2.3   ATS2 Escape code character

The default character is the plus sign. See also Section 4.2.5, "Escape sequence."

Command	Response	<n> values
S2=<n>		0..127 (default 43)
S2?	<n>	000..127

Table 4.20: ATS2

4.2.4   ATS12 Escape guard time

The value is in fiftieths of a second (the default is one second). Section 4.2.5, "Escape sequence."

Command	Response	\<n> values
S12=\<n>		0..255 (default 50)
S12?	\<n>	000..255

Table 4.21: ATS12

4.2.5 Escape sequence

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

During GPRS online data state, the escape sequence is handled similarly as of DTR OFF would have been seen. This enhancement implements an alternative way to terminate a GPRS DUN connection.

4.3 3GPP TS 27.007

4.3.1 AT+CSTA Select type of address

3GPP TS 27.007, Section 6.1 /2/. The dial command **D** uses always this setting except when the dial string includes the international access code character (+). In this case the type of the address sent to the network defaults to 145 (international/telephony).

Command	Response	Default
+CSTA=\<type>		129
+CSTA?	+CSTA: \<type>	
+CSTA=?	+CSTA: (128-255)	

Table 4.22: AT+CSTA

4.3.2 AT+CMOD Call mode

GSM 3GPP TS 27.007 Sections 6.4 and 6.6, and Annexes E and F /2/. Note that alternating call answering operations from an external UI may change the `+CMOD` values.

Command	Response	Default
+CMOD=\<mode>		0
+CMOD?	+CMOD: \<mode>	
+CMOD=?	+CMOD: (0-3)	

Table 4.23: AT+CMOD

4.3.3 AT+CHUP Hangup call

GSM 3GPP TS 27.007, Sections 6.5 and 6.6, and Annexes E and F /2/. This is an assured procedure to terminate an alternating mode call.

Command
+CHUP
+CHUP=?

Table 4.24: AT+CHUP

4.3.4   AT+CBST Select bearer service type

GSM 3GPP TS 27.007, Section 6.7 /2/. Supported parameter values depend on the data services implemented by the product.

Command	Response	Default
+CBST=<speed>,<name>,<ce>		0,0,1
+CBST?	+CBST: <speed>,<name>,<ce>	
+CBST=?		

4.3.5   AT+CRLP Radio link protocol

GSM 3GPP TS 27.007, Section 6.8 /2/. The command/response parameters in brackets are present when the product implements radio link protocol (RLP) version 2 (multislot RLP). Note that 0 is the default for `<ver>` and each RLP version has its own parameter set stored in the TA memory (except versions 0 and 1, which use the same set). The range of version 2 window size parameters depends on the **+CHSN** selection (selected HSCSD speed).

Command	Response	Default
+CRLP=<iws>,<mws>,<T1>,<N2>[,<ver>,<T4>]		RLP version 0 or 1 set: 61,61,48,6 RLP version 2 defaults depend on +CHSN selection
+CRLP?	+CRLP: <iws>,<mws>,<T1>,<N2>[<CR><LF>+CRLP: <iws>,<mws>,<T1>,<N2>,2,<T4>]	
+CRLP=?	+CRLP: (0-61),(0-61),(39-255),(1-255) [<CR><LF>+CRLP: (0-n),(0-n),(39-255), (1-255),2,(3-255)]	

Table 4.25: AT+CRLP

4.3.6   AT+CR Service reporting control

GSM 3GPP TS 27.007, Section 6.9 /2/. Controls the presentation of `+CR` intermediate result code.

Command	Response	Default
+CR=<mode>		0

+CR?	+CR: <mode>	
+CR=?	+CR: (0,1)	

Table 4.26: AT+CR

4.3.7   AT+CEER Extended error report

GSM 3GPP TS 27.007, Section 6.10 /2/. Returns the reason of the last call setup or in-call modification failure, or the reason for the last call release. `<report>` is the textual representation of the network cause value as listed in *GSM 3GPP TS 24.008, Annex H.*

Command	Response
+CEER	+CEER: <report>
+CEER=?	

Table 4.27: AT+CEER

4.3.8   AT+CRC Cellular result codes

GSM 3GPP TS 27.007, Section 6.11 /2/. Controls the presentation of the `+CRING` unsolicited result code, which can be returned instead of a regular `RING`. See also Chapter 14, "Result Codes."

Command	Response	Default
+CRC=<mode>		0
+CRC?	+CRC: <mode>	
+CRC=?	+CRC: (0,1)	

Table 4.28: AT+CRC

4.3.9   AT+CSNS Single numbering scheme

GSM 3GPP TS 27.007, Section 6.19 /2/. Used to select the bearer service that will be used when a call without the bearer capability element is received.

Command	Response	Default
+CSNS=<mode>		0
+CSNS?	+CSNS: <mode>	
+CSNS=?	+CSNS: (0-7)	

Table 4.29:AT+CSNS

4.3.10   AT+CHSR HSCSD parameters report

GSM 3GPP TS 27.007, Section 6.16 /2/. The current HSCSD configuration report.

Command	Response	Default
+CHSR=<mode>		0
+CHSR?	+CHSR: <mode>	

+CHSR=?	+CHSR: (0-1)	

Table 4.30: AT+CHSR

4.3.11 AT+CHSD HSCSD device parameters

GSM 3GPP TS 27.007, Section 6.12 /2/. The execution command returns information about the HSCSD features supported by the product.

Command	Response
+CHSD	+CHSD: <mclass>,<maxRx>,<maxTx>,<sum>,<codings>
+CHSD=?	

Table 4.31: AT+CHSD

4.3.12 AT+CHST HSCSD transparent call configuration

GSM 3GPP TS 27.007, Section 6.13 /2/. In UTRAN, values set with this command are not needed.

Command	Response	Default
+CHST=[<wRx>[,<codings>]]		0,0
+CHST?	+CHST: <wRx> ,<codings>	
+CHST=?		

Table 4.32: AT+CHST

4.3.13 AT+CHSN HSCSD non-transparent call configuration

GSM 3GPP TS 27.007, Section 6.14 /2/. The **Set** command controls parameters for non-transparent HSCSD calls.

Command	Response	Default
+CHSN=<wAiur>,<wRx>, <topRx>,<codings>		0,0,0,0
+CHSN?	+CHSN: <wAiur>,<wRx>,<topRx>,<codings>	
+CHSN=?	+CHSN: (list of supported <wAiur>s), (list of supported <wRx>s), (list of supported <topRx>s, (list of supported <codings>s)	

Table 4.33: AT+CHSN

4.3.14 AT+CHSC HSCSD current call parameters

GSM 3GPP TS 27.007, Section 6.15 /2/. The **Execution** command returns information about the current HSCSD call. When no call is in progress (or an external ME is not connected), all values are zero.

Column heading	Column heading
+CHSC	+CHSC: <rx>,<tx>,<aiur>,<coding>
+CHSC=?	

Table 4.34: AT+CHSC

4.3.15 AT+CV120 V.120 rate adaption protocol

GSM 3GPP TS 27.007, Section 6.21 /2/. The **Set** command sets the values of the V.120 protocol parameters (defined in CCITT V.120) that are carried in the GSM Bearer Capability (BC) and/or Low Layer Compatibility (LLC) information elements.

Command	Response	Default
+CV120=<rah>,<mfm>,<mode>, <llineg>,<assign>,<negtype>		,1
+CV120?	+CV120: <rah>,<mfm>,<mode>,<llineg>,<assign>,<negtype>	
+CV120=?	+CV120: (1),(0,1),(1),(0),(0),(0)	

Table 4.35: AT+CV120

4.3.16 AT+CVHU Voice hangup control

GSM 3GPP TS 27.007, Section 6.20 /2/. By default, Nokia products should ignore DTR drop, but disconnect on **ATH** during the voice mode of a call.

Command	Response	Default
+CVHU=<mode>		0
+CVHU?	+CVHU: <mode>	
+CVHU=?	+CVHU: (0-2)	

Table 4.36: AT+CVHU

5 Network Service Commands (3GPP TS 27.007)

5.1 AT+CNUM Subscriber Number

3GPP TS 27.007, Section 7.1 /2/. Returns the Mobile Subscriber Integrated Services Digital Networks (MSISDNs) from the SIM. `<speed>,<service>,` and `<itc>` are not supported by Nokia products.

Command	Response
+CNUM	+CNUM: [<alpha1>],<number1>,<type1>[<CR><LF>+CNUM: [<alpha2>],<number2>,<type2>[...]]
+CNUM=?	

Table 5.1: AT+CNUM

5.2 AT+CREG Network Registration

3GPP TS 27.007, Section 7.2 /2/. Controls the presentation of **+CREG** unsolicited result code or returns the current registration status.

Command	Response	Default
+CREG=<n>		0
+CREG?	+CREG: <n>,<stat>[,<lac>,<ci>]	
+CREG=?	+CREG: (0-2)	

Table 5.2: AT+CREG

5.3 AT+COPS Operator Selection

3GPP TS 27.007, Section 7.3 /2/. The **Set** command selects the network or sets automatic network selection. The **Read** command returns the current network. The **Test** command returns the available networks. The short alphanumeric operator name format (<format>=1) and the selection <mode>=2 and =4 are not supported by Nokia products.

Command	Response	Default
+COPS=<mode>,<format>,<oper>		[0],0
+COPS?	+COPS: <mode>[,<format>,<oper>]	
+COPS=?	+COPS: [(<stat>,<long>,,<numeric>)[,...]],,(0,1),(2)	

Table 5.3: AT+COPS

5.4 AT+CLCK Facility Lock

3GPP TS 27.007, Section 7.4 /2/. Enables/disables or queries the state of the 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 the 'memory' level is set and the status is queried (**+CLCK="PS",2**), the AT interface shall indicate 'not active' (**+CLCK: 0**). When the supplementary services status request response from the network indicates that the SS is active for specific data bearer services (for example, 'circuit async'), the AT interface shall only indicate 'data' (<class>=32) ('not active' case is displayed only when SS is not active for any service; that is, +CLCK: 0,7). Supported <class> values are 1, 2, 4, 5, 7, 8, 12, 13, 15, 16, 32, 64, 128, 144, 160, 240, 242, and 255.

Class values:

1	Voice (telephony).
2	Data (refers to all bearer services; with $<mode>$=2 this may refer only to a specific bearer service if TA does not support values 16, 32, 64, and 128).
4	Fax (facsimile services).
8	Short message service.
16	Data circuit synchronized.
32	Data circuit asynchronized.
64	Dedicated packet access.
128	Dedicated packet assembler/disassembler (PAD) access.

Command	Response	Default
+CLCK=<fac>,<mode>, <passwd>,<class>	When <mode>=2: +CLCK: <status>[,<class1>[<CR><LF>+CLCK: <status>,<class2>[...]]]	[,,,7]
+CLCK=?	+CLCK: ("PS","SC","AO","OI","OX","AI","IR","AB","AG","AC")	

Table 5.4: AT+CLCK

5.5 AT+CPWD Change Password

3GPP TS 27.007, Section 7.5 /2/. Changes the passwords of SIM/ME/network features. "AB" = network/barring password.

Command	Response
+CPWD=<fac>,<oldpwd>,<newpwd>	
+CPWD=?	+CPWD: ("PS",10),("SC",8),("AB",4),("P2",8)

5.6 AT+CLIP Calling Line Identification Presentation

3GPP TS 27.007, Section 7.6 /2/. Controls the presentation of +CLIP unsolicited result code or returns the CLIP subscription status from network. If the product does not support network status query, <m> shall always be 2.

Command	Response	Default
+CLIP=<n>		0
+CLIP?	+CLIP: <n>,<m>	

+CLIP=?	+CLIP: (0,1)	

Table 5.5: AT+CLIP

5.7 AT+CLIR Calling Line Identification Restriction

3GPP TS 27.007, Section 7.7 /2/. Enables/disables sending the own number to the network or returns CLIR subscription status from the network. If the product does not support network status query, `<m>` shall always be 2.

Command	Response	Default
+CLIR=<n>		0
+CLIR?	+CLIR: <n>,<m>	
+CLIR=?	+CLIR: (0-2)	

Table 5.6: AT+CLIR

5.8 AT+COLP Connected Line Identification Presentation

3GPP TS 27.007, Section 7.8 /2/. Controls the presentation of `+COLP` intermediate result code or returns COLP subscription status from the network. If the product does not support network status query, `<m>` shall always be 2.

Command	Response	Default
+COLP=<n>		0
+COLP?	+COLP: <n>,<m>	
+COLP=?	+COLP: (0,1)	

Table 5.7: AT+COLP

5.9 AT+CCFC Call Forwarding Number and Conditions

3GPP TS 27.007, Section 7.11 /2/. Controls call forwarding supplementary services. The <reason> values 4 and 5 are only applicable for <mode>=0. When the status request response from the network indicates that SS is active for specific data bearer services (for example, 'circuit async'), the AT interface shall indicate 'data circuit async' (<class>=32) ('not active' case is displayed only when SS is not active for any service; that is, **+CCFC: 0,7**). Supported <class> values are: 1, 2, 4, 5, 7, 8, 12, 13, 15, 16, 32, 64, 128, 144, 160, 240, 242, and 255.

Class values:

1	Voice (telephony).
2	Data (refers to all bearer services; with `<mode>`=2 this may refer only to a specific bearer service if TA does not support values 16, 32, 64, and 128).
4	Fax (facsimile services).
8	Short message service.
16	Data circuit synchronized.
32	Data circuit asynchronized.

64	Dedicated packet access.
128	Dedicated PAD access.

Command	Response	Default
+CCFC=<reason>, <mode>,<number>, <type>,<class>, <subaddr>, <satype>, <time>	When <mode>=2: +CCFC: <status>,<class1>[,<number>,<type> [,<subaddr>,<satype>[,<time>]]] [<CR><LF>+CCFC: <status>,<class2>[,<number> ,<type>[,<subaddr>,<satype>[,< time>]]] [...]]	[,,,,7,,20]
+CCFC=?	+CCFC: (0-5)	

Table 5.8: AT+CCFC

5.10 AT+CCWA Call Waiting

3GPP TS 27.007, Section 7.12 /2/. Controls call waiting supplementary service and presentation of **+CCWA** unsolicited result code. When the status request response from the network indicates that SS is active for specific data bearer services (for example, 'circuit async'), the AT interface shall only indicate 'data' (<class>=2) ('not active' case is displayed only when SS is not active for any service; that is, **+CCWA: 0,7**). Supported <class> values are 1, 2, 4, 5, and 7.

Command	Response	Default
+CCWA=<n>,<mode>,<class>	When <mode>=2: +CCWA: <status>,<class1> [<CR><LF>+CCWA: <status>,<class2> [...]]	0[,,7]
+CCWA?	+CCWA: <n>	
+CCWA=?	+CCWA: (0,1)	

Table 5.9: At+CCWA

5.11 AT+CHLD Call Related Supplementary Services

3GPP TS 27.007, Section 7.13 /2/. Controls call hold, multiparty, and explicit call transfer supplementary service operations similarly as defined in *3GPP TS 22.030, Section 6.5.5.1.*

The <n> values are described in the following list:

- 0 = Release all held calls or send 'busy' cause to the network for a waiting call.

- 1 = Release all active calls and accept another (waiting or held) call.

- 1x = Release a specific active call x.

- 2 = Active calls on hold and accept another (waiting or held) call.

- 2x = All active multiparty calls on hold except for call x.

- 3 = Add held call to a multiparty call.

- 4 = Connect held and active (or mobile originated (MO) alerting) call with each other (locally both calls are disconnected).

If both a held and a waiting call exist, the above procedures shall apply to the waiting call (that is, not to the held call) in a conflicting situation.

Command	Response
+CHLD=<n>	
+CHLD=?	+CHLD: (0,1,1x,2,2x,3,4)

Table 5.10: AT+CHLD

5.12   AT+CUSD Unstructured Supplementary Service Data

3GPP TS 27.007, Section 7.15 /2/. Used to send MO USSD and to set the presentation of `+CUSD` unsolicited result code (mobile terminated (MT) USSD). Also used to reply to a network initiated USSD (see Chapter14, "Result Codes").

Command	Response	Default
+CUSD=<n>,<str>,<dcs>	+CUSD: <m>[,<str>,<dcs>]	0[,,0]
+CUSD?	+CUSD: <n>	
+CUSD=?	+CUSD: (0,1)	

Table 5.11: AT+CUSD

5.13   AT+CAOC Advice of Charge

3GPP TS 27.007, Section 7.16 /2/. Returns the current call parameter value (in home units) from the ME. The unsolicited result code `+CCCM: <ccm>` is sent when the CCM value changes, but not more often than every 10 seconds. The unsolicited event reporting is deactivated with the same command.

Command	Response
+CAOC=[<mode>]	[+CAOC: <ccm>]
+CAOC?	+CAOC: <mode>
+CAOC=?	+CAOC: (0-2)

Table 5.12: AT+CAOC

5.14   AT+CSSN Supplementary Service Notifications

3GPP TS 27.007, Section 7.17 /2/. Controls the presentation of +CSSI intermediate result code and +CSSU unsolicited result code.

Command	Response	Default
+CSSN=<n>,<m>		0,0
+CSSN?	+CSSN: <n>,<m>	

| +CSSN=? | +CSSN: (0,1),(0,1) | |

Table 5.13: AT+CSSN

5.15 AT+CLCC List Current Calls

3GPP TS 27.007, Section 7.18. Returns the list of current calls in the ME.

Command	Response
+CLCC	[+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[„,<alpha>] [<CR><LF>+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[„,<alpha>][…]]]
+CLCC=?	

Table 5.14: AT+CLCC

6 ME Control and Status Commands (3GPP TS 27.007)

6.1 AT+CPAS Phone Activity Status

27.007, Section 8.1. Returns the general status of the ME. The 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, the test command shall still report that `<pas>`=1 is available although it could never be reported.

Command	Response
+CPAS	+CPAS: <pas>
+CPAS=?	+CPAS: (0,2,3,4)

Table 6.1: AT+CPAS

6.2 AT+CFUN Set Phone Functionality

Optional. *27.007, Section 8.2.* The **Set** command selects the level of functionality `<fun>` in the MT. Supported values are <fun>=1 (full functionality, that is, the phone is up and running) and <fun>=0 (minimum functionality, that is, the phone is off, but in charging). Intermediate values are not supported. MT resetting with the <rst> parameter can be utilized. <rst> values are 0 = do not reset and 1 = reset the MT before setting it to the <fun> power level.

Command	Response	Default
+CFUN=[<fun>[,<rst>]		0,0
+CFUN?	+CFUN: <fun>	
+CFUN=?	+CFUN: (0,1),(0,1)	

Table 6.2: AT+CFUN

6.3 AT+CPIN Enter PIN

3GPP TS 27.007, Section 8.3 /2/. Used to enter device passwords that the ME is querying, or to query whether the ME is currently querying a password. If the *last* executed AT command returned a PIN2/PUK2 authentication error (or a security code error in case of memory updating), the read command shall return a PIN2/PUK2 (or security code) <code> although the operation of ME is not blocked.

Command	Response
+CPIN=<pin>,<newpin>	
+CPIN?	+CPIN: <code>
+CPIN=?	

Table 6.3: AT+CPIN

6.4 AT+CBC Battery Charge

3GPP TS 27.007, Section 8.4 /2/. Returns the ME battery charging status and charge level. In Nokia products <bcs>=1 shall mean that the battery is being charged.

Command	Response
+CBC	+CBC: <bcs>,<bcl>
+CBC=?	+CBC: (0,1),(0-100)

Table 6.4: AT+CBC

6.5   AT+CSQ Signal Quality

3GPP TS 27.007, Section 8.5 /2/. Returns signal strength as calculated by the ME. Bit error rate reporting is not supported by Nokia products.

Command	Response
+CSQ	+CSQ: <rssi>,99
+CSQ=?	+CSQ: (0-31,99),(99)

Table 6.5: AT+CSQ

6.6   AT+CPBS Select Phonebook Memory Storage

3GPP TS 27.007, Section 8.11 /2/. Selects the memory where the phonebook commands operate. Supported <storage> values depend on the product. Supported <storage> values are "DC," "MC," "RC," "ME," "FD," "SM," "ON," and "EN."

The read command returns the currently selected memory, the number of used locations, and the total number of locations in the memory.

Command	Response	Default
+CPBS=<storage>		"SM"
+CPBS?	+CPBS: <storage>,<used>,<total>	
+CPBS=?	+CBPS: (list of supported <storage>s)	

Table 6.6: AT+CPBS

6.7   AT+CPBR Read Phonebook Entries

3GPP TS 27.007, Section 8.12 /2/. If the given index range is valid but all entries in it are empty, the response is empty. The test command returns the location range supported by the current storage as a compound value and the maximum lengths of <number> and <text> fields.

Command	Response
+CPBR=<index1>,<index2>	[+CPBR: <index1>,<number>,<type>,<text>[[...]<CR><LF>+CPBR: <index2>,<number>,<type>,<text>]]
+CPBR=?	+CPBR: (<index>-list),[<nlength>],[<tlength>]

Table 6.7: AT+CPBR

6.8 AT+CPBF Find Phonebook Entries

3GPP TS 27.007, Section 8.13 /2/. If the searched text is not found from the entries in the current memory, the response is empty. The test command returns the maximum lengths of <number> and <text> fields.

Command	Response
+CPBF=<findtext>	[+CPBF: <index1>,<number>,<type>,<text>[[...]<CR><LF>+ CPBF: <index2>,<number>,<type>,<text>]]
+CPBF=?	+CPBF: [<nlength>],[<tlength>]

Table 6.8: AT+CPBF

6.9 AT+CPBW Write Phonebook Entry

3GPP TS 27.007, Section 8.14 /2/. The execution command writes the phonebook entry in the location number <index> in the current phonebook memory storage selected with **+CPBS**. The entry fields written are phone number <number> (in the format <type>) and text <text> associated with the number. If those fields are omitted, the phonebook entry is deleted. If <index> is left out, but <number> is given, the entry is written to the first free location in the phonebook.

The test command returns the location range supported by the current storage as a compound value, the maximum length of the <number> field, supported number formats of the storage, and the maximum length of the <text> field.

Command	Response	Default
+CPBW=[<index>][, <number>[,<type> [,<text>]]]		[„129/145]
+CPBW=?	+CPBW: (<index>-list), <nlength>],(129,145), [<tlength>]	

Table 6.9: AT+CPBW

6.10 AT+CPROT Enter Protocol Mode

3G TS 27.007, Section 8.41 /2/.

The **Set** command informs the TA that the TE wants to establish a peer-to-peer protocol <proto> with the ME on the link from which the command was received. This command can be used in case the link between TE and ME does not provide such a mechanism itself. This command is only supported with RS232.

If the ME has succeeded in establishing a logical link between application protocols and the external interface, it will send a CONNECT message to the TE. Otherwise, the NO CARRIER response will be returned.

If the CONNECT response is received, the TE can start sending <proto> or upper layer frames.

The connection shall always return to the <proto> mode when the protocol session is ended. When the ME receives a disconnect request from its peer entity, it will process it and send an OK response to the TE indicating its capability to receive new AT commands. Since <proto> can be accessed in other ways, the TA must have pre-knowledge of the fact that the connection is initiated with the **AT+CPROT**

command. This means that the switch to the <proto> mode must include some sort of notification to the protocol entity.

The test command returns values supported by the TA as a compound value.

Command	Response
+CPROT=<proto>	CONNECT NO CARRIER OK ERROR
+CPROT=?	+CPROT: <proto1>

Table 6.10: AT+CPROT

7 ME Error Command (3GPP TS 27.007)

7.1 AT+CMEE Report Mobile Equipment Error

3GPP TS 27.007, Section 9.1 /2/. Controls the presentation of the extended error information result code. See also the result code +CME ERROR in Section 14.3.10, "+CME ERROR Mobile equipment error". Textual error code presentation (parameter value 2) is not supported.

Command	Response	Default
+CMEE=<n>		0
+CMEE?	+CMEE: <n>	
+CMEE=?	+CMEE: (0-1)	

Table 7.1:AT+CMEE

8 SMS Commands (3GPP TS 27.005)

8.1 AT+CSMS Select Message Service

3GPP TS 27.005, Section 3.2.1 /3/. Selects the messaging service <service>. The main difference between <service> 0 and 1 is that when <service>=1, the **+CNMA** acknowledgement is required for most MT short messages routed directly to the TE.

Command	Response	Default
+CSMS=<service>	+CSMS: 1,1,1	0
+CSMS?	+CSMS: <service>,1,1,1	
+CSMS=?	+CSMS: (0,1)	

Table 8.1: +CSMS

8.2 AT+CPMS Preferred Message Storage

3GPP TS 27.005, Section 3.2.2 /3/. Selects memory storages. `<mem1>` is for read/delete procedures, `<mem2>` for writing/sending, and `<mem3>` is the preferred memory for received messages (when they are not routed directly to the TE).

Command	Response	Default
+CPMS=<mem1> [,<mem2>[,<mem3>]]	+CPMS: <used1>,<total1>,<used2>, <total2>,<used3>,<total3>	"SM","SM","MT"
+CPMS?	+CPMS: <mem1>,<used1>,<total1>,<mem2>, <used2>,<total2>,<mem3>,<used3>,<total3>	
+CPMS=?	+CPMS: ("ME","SM"),("ME","SM"),("MT")	

Table 8.2: AT+CPMS

8.3 AT+CMGF Message Format

3GPP TS 27.005, Section 3.2.3 /3/. This command is used to select SMS protocol data unit (PDU) mode or SMS Text mode.

Command	Response	Default
+CMGF=[<mode>]		0
+CMGF?	+CMGF: <mode>	
+CMGF=?	+CMGF: (0,1)	

Table 8.3: +CMGF

8.4 AT+CSCA Service Centre Address

3GPP TS 27.005, Section 3.3.1 /3/. Controls the local (TA) Short Message Service Center (SMSC) address. The SMSC address is fetched from the SMS server at the beginning of the DTE session. The SMSC address may change also when **+CRES** is executed.

Command	Response
+CSCA=<sca>[,<tosca>]	
+CSCA?	+CSCA: <sca>,<tosca>
+CSCA=?	

Table 8.4:AT+CSCA

8.5 AT+CSMP Set Text Mode Parameters

3GPP TS 27.005, Section 3.3.2 /3/. This command is used to select values for additional parameters needed when SMS messages are sent to the network, or placed in a storage when the text format message mode is selected. The values of these parameters may change also when **+CRES** is actioned.

Command	Response	Default
+CSMP=[<fo>[,<vp>[,<pid>[,<dcs>]]]]		17,167,0,0
+CSMP?	+CSMP: <fo>,<vp>,<pid>,<dcs>	
+CSMP=?		

Table 8.5: AT+CSMP

8.6 AT+CSDH Show Text Mode Parameters

3GPP TS 27.005, Section 3.3.3 /3/. Controls whether detailed header information is shown in text mode result codes.

Command	Response	Default
+CSDH=[<show>]		0
+CSDH?	+CSDH: <show>	
+CSDH=?	+CSDH: (0,1)	

Table 8.6: +CSDH

8.7 AT+CSCB Select Cell Broadcast Message Types

3GPP TS 27.005, Section 3.3.4 /3/. Selects which types of Cell Broadcast Messages (CBMs) are to be received by the ME.

Command	Response	Default
+CSCB=[<mode>[,<mids>[,<dcss>]]]		0,"",""
+CSCB?	+CSCB: <mode>,<mids>,<dccs>	

+CSCB=?	+CSCB: (0,1)	

Table 8.7: AT+CSCB

8.8 AT+CSAS Save Settings

3GPP TS 27.005, Section 3.3.5 /3/. Saves SMS settings (**+CSMP** and **+CSCA** parameters) to the non-volatile memory (usually SIM). The first `<profile>` location is 1. The SMSC address is not stored if **+CSCA** is not set/restored during the current session (that is, **+CSCA?** returns `+CSCA: "",129`). The validity period is not stored if `<fo>` does not indicate the relative validity period format (that is, bits 4-3 are not '10').

Note: The values that are not stored shall remain intact in the `<profile>`.

Command	Response	Default
+CSAS[=<profile>]		[1]
+CSAS=?	+CSAS: (<profile>-list)	

Table 8.8: +CSAS

8.9 AT+CRES Restore Settings

3GPP TS 27.005, Section 3.3.6 /3/. Restores SMS settings (`+CSMP` and `+CSCA` parameters) from the non-volatile memory (usually SIM). The first `<profile>` location is 1. In addition, if the validity period is returned, `<fo>` is forced to indicate the relative validity period format (that is, bits 4-3 are set to '10').

Command	Response	Default
+CRES[=<profile>]		[1]
+CRES=?	+CRES: (<profile>-list)	

Table 8.9: AT+CRES

8.10 AT+CNMI New Message Indications to TE

3GPP TS 27.005, Section 3.4.1 /3/. Selects the procedure for indicating the active TE when new messages are received from the network. `<bm>`=1 is not implemented in Nokia products (requires CBM memory in ME).

Command	Response	Default
+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]]		0,0,0,0,0
+CNMI?	+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>	
+CNMI=?	+CNMI: (0-2),(0-3),(0,2,3),(0-2),(0,1)	

Table 8.10: AT+CNMI

8.11 AT+CMGL List Messages

3GPP TS 27.005, Section 3.4.2 /3/. Returns messages with a status value <stat> from a preferred message storage <mem1> to the TE. <alpha> is not supported by Nokia products.

Command	Response	Default
+CMGL[= <stat>]	Text mode (+CMGF=1), SMS-DELIVER or SMS-SUBMIT: +CMGL: <index>,<stat>,<oa/da>,[<alpha>],[<scts>] [,<tooa/toda>,<length>]<CR><LF><data>[<CR><LF> +CMGL: <index>,<stat>,<oa/da>,[<alpha>],[<scts>] [,<tooa/toda>,<length>]<CR><LF><data>[...]] 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>[...]] 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>[...]]	["REC UNREAD"/0]
+CMGL=?	Text mode (+CMGF=1): +CMGL: ("REC UNREAD","REC READ","STO UNSENT", "STO SENT","ALL") PDU mode (+CMGF=0): +CMGL: (0-4)	

Table 8.11:AT+CMGL

8.12 AT+CMGR Read Message

3GPP TS 27.005, Section 3.4.3 /3/. Returns a message with the location value <index> from the preferred message storage <mem1> to the TE. `<alpha>` is not supported by Nokia products.

Command	Response
+CMGR= <index>	Text mode (+CMGF=1), SMS-DELIVER: +CMGR: <stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>, <sca>,<tosca>,<length>]<CR><LF><data> SMS-SUBMIT: +CMGR: <stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcs>,[<vp>], <sca>,<tosca>,<length>]<CR><LF><data> SMS-STATUS-REPORT: +CMGR: <stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> 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>
+CMGR=?	

Table 8.12: AT+CMGR

8.13 AT+CNMA New Message Acknowledgement to ME/TA

3GPP TS 27.005, Section 3.4.4 /3/. PDU is entered as specified in 27.005. This command is available only when **+CSMS=1** is supported.

> **Note:** It depends on the **+CSMS** settings and the AT interface state (data/command mode) whether the acknowledgement is automatically handled or the **+CNMA** command is waited from the terminal before sending an acknowledgement.

Command	Response
Text mode **(+CMGF=1):** **+CNMA** PDU mode **(+CMGF=0):** **+CNMA=[<n>[,<length>[<CR>** **PDU is given<ctrl-Z/ESC>]]]**	
+CNMA?	PDU mode (+CMGF=0): +CNMA: (0-2)

Table 8.13: AT+CNMA

8.14 AT+CMGS Send Message

3GPP TS 27.005, Section 3.5.1 /3/. Sends a message from a TE to the network (SMS-SUBMIT). The message reference value <mr> is returned to the TE on successful message delivery. Sending can be cancelled with the <ESC> character. <ctrl-Z> must be used to indicate the ending of the message body. Text/PDU is entered as specified in 27.005.

Command	Response	Default
Text mode **(+CMGF=1):** **+CMGS=<da>[,<toda>]<CR>** **text is entered<ctrl-Z/ESC>** PDU mode **(+CMGF=0):** **+CMGS=<length><CR>** **PDU is given<ctrl-Z/ESC>**	Text mode and sending OK: +CMGS: <mr>[,<scts>] PDU mode and sending OK: +CMGS: <mr>[,<ackpdu>]	Text mode: [,129/145]
+CMGS=?		

Table 8.14: AT+CMGS

8.15 AT+CMSS Send Message from Storage

3GPP TS 27.005, Section 3.5.2 /3/. Sends a message with the location value <index> from the preferred message storage <mem2> to the network (SMSSUBMIT). If a new recipient address <da> is given, it shall be used instead of the one stored with the message. The reference value <mr> is returned to the TE on successful message delivery. Also SMS-COMMANDs can be sent, but if <index> contains SMS-COMMAND and <da> is given, `+CMS ERROR` is returned.

Command	Response	Default
+CMSS=<index>[, <da>[,<toda>]]	Text mode (+CMGF=1) and sending OK: +CMSS: <mr>[,<scts>] PDU mode (+CMGF=0) and sending OK: +CMSS: <mr>[,<ackpdu>]	[,"",129/145]
+CMSS=?		

Table 8.15: AT+CMSS

8.16 AT+CMGW Write Message to Memory

3GPP TS 27.005, Section 3.5.3 /3/. Stores a message (either SMS-DELIVER or SMS-SUBMIT) in the preferred memory storage <mem2>. The memory location <index> of the stored message is returned. By default, the message status will be set to "stored unsent," but the parameter <stat> also allows other status values to be given. Text/PDU is entered as specified in 27.005.

Command	Response	Default
Text mode (+CMGF=1): +CMGW[=<oa/da>[,<tooa/toda>[,<stat>]]]<CR>text is entered<ctrl-Z/ESC> PDU mode (+CMGF=0): +CMGW=<length>[,<stat>]<CR>PDU is given<ctrl-Z/ESC>	Storing successful: +CMGW: <index>	Text mode: [,129/145, "STO UNSENT"] PDU mode: [,2]
+CMGW=?		

Table 8.16: AT+CMGW

8.17   AT+CMGD Delete Message

3GPP TS 27.005, Section 3.5.4 /3/. Deletes a message from the preferred message storage <mem1> location <index>.

Command	Response
+CMGD=<index>[,<delflag>]	
+CMGD=?	+CMGD: (list of supported <index>s) [,(list of supported <delflag>s)]

Table 8.17: AT+CMGD

8.18   AT+CMGC Send Command

3GPP TS 27.005, Section 3.5.5 /3/. Text/PDU is entered as specified in 07.05.

Command	Response	Default
Text mode (+CMGF=1): +CMGC=<fo>,<ct>[,<pid>[,<mn>[,<da>,[<toda>]]]]<CR>text is entered <ctrl-Z/ESC> PDU mode (+CMGF=0): +CMGC=<length><CR> PDU is given<ctrl-Z/ESC>	Text mode and sending OK: +CMGC: <mr>[,<scts>] PDU mode and sending OK: +CMGC: <mr>[,<ackpdu>]	Text mode: [2,0,0, 0,"", 129/145]
+CMGC=?		

Table 8.18: AT+CMGC

8.19   AT+CMMS More Messages to Send

3GPP TS 27.005, Section 3.5.6 /3/. Controls the continuity of the SMS relay protocol link. If enabled (and supported by the network), several consecutive messages can be sent much faster as the link is kept open.

Command	Response	Default
+CMMS=[<n>]		0
+CMMS?	+CMMS: <n>	

Table 8.19: AT+CMMS

8.20 AT+CGSMS Select Service for MO SMS Messages

27.007, Section 10.1.20. This command is used to specify the service or service preference that will be uses to send MO SMS messages.

Command	Response	Default
+CGSMS=[<service>]		3
+CGSMS?	+CGSMS: <service>	
+CGSMS=?	+CGSMS: (list of supported <service>s)	

Table 8.20: AT+CGSMS

9 Fax Commands

The following fax (**+F**) command sets are available for products supporting the 3GPP TS 23.046 facsimile group 3 transparent. Which of these command sets are supported, as well as whether the error correction mode (ECM) and quality checking in Class 2/2.0 are supported, depends on the product.

9.1 All Classes

9.1.1 AT+FCLASS DCE mode select

This command selects a DCE mode, either data (0) or facsimile (class 1, 2, or 2.0).

Command	Response	Default
+FCLASS=<mode>		0
+FCLASS?	<mode>	
+FCLASS=?	0,1,2,2.0	

Table 9.1: AT+FCLASS

9.1.2 AT+FLO Select flow control

TIA/EIA-578-A, Section 8.5.1 /6/ and *TIA/EIA-592-A, Section 8.5.3.1 /7/.*

Command	Response	Default
+FLO=<n>		2
+FLO?	<n>	
+FLO=?	(0-2)	

Table 9.2: AT+FLO

9.1.3 AT+FPR Serial port rate control

TIA/EIA-578-A, Section 8.5.2 /6/ and *TIA/EIA-592-A, Section 8.5.3.2 /7/.*

+FPR value	0	1	2	4	8	10	18	30
DTE speed	autobauding	2400	4800	9600	19200	38400	57600	115200

Command	Response	Default
+FPR=<n>		0
+FPR?	<n>	
+FPR=?	+FPR: (0,1,2,4,8,10,18,30)	

Table 9.3: AT+FPR

9.2 Class 1

All Class 1 facsimile commands are defined in *ITU-T T.31* /10/ and *TIA-578-A* /6/.

9.2.1 AT+FDD Double escape character replacement

TIA/EIA-578-A, Section 8.5.3 /6/.

Command	Response	Default
+FDD=0		0
+FDD?	0	
+FDD=?	0	

Table 9.4: AT+FDD

9.2.2 AT+FMI Request manufacturer ID

TIA/EIA-578-A, Section 8.2.4 /6/.

Command	Response
+FMI?	For example, Nokia

Table 9.5: AT+FMI

9.2.3 AT+FMM Request model ID

TIA/EIA-578-A, Section 8.2.4 /6/.

Command	Response
+FMM?	For example, Datacom

Table 9.6: AT+FMM

9.2.4 AT+FMR Request revision ID

TIA/EIA-578-A, Section 8.2.4 /6/.

Command	Response
+FMR?	For example, V 5.792 10-01-01 NHM-7 (c) Nokia

Table 9.7: AT+FMR

9.2.5 AT+FRH Receive HDLC data with a supported carrier

TIA/EIA-578-A, Section 8.3.6 /6/. Can only be set when online.

Command	Response
+FRH=3	
+FRH=?	3

Table 9.8: AT+FRH

9.2.6 AT+FRM Receive data with a supported carrier

TIA/EIA-578-A, Section 8.3.4 /6/. Can only be set when online.

Command
+FRM=3
+FRM=?

Table 9.9: AT+FRH

9.2.7 AT+FRS Receive silence

TIA/EIA-578-A, Section 8.3.2 /6/. Can only be used when online.

Command	Response
+FRS=<n>	
+FRS=?	(0-255)

Table 9.10: AT+FRS

9.2.8 AT+FTH Transmit High-level Data Link Protocol (HDLC) data with a supported carrier

TIA/EIA-578-A, Section 8.3.5 /6/. Can only be set when online.

Command	Response
+FTH=3	
+FTH=?	3

Table 9.11: AT+FTH

9.2.9 AT+FTM Transmit data with a supported carrier

TIA/EIA-578-A, Section 8.3.3 /6/. Can only be set when online.

Command
+FTM=<n>
+FTM=?

Table 9.12: AT+FTM

9.2.10 AT+FTS Transmit silence

TIA/EIA-578-A, Section 8.3.1 /6/. Can only be used when online.

Command	Response
+FTS=<n>	
+FTS=?	(0-255)

Table 9.13: AT+FTS

9.3 Class 2

All Class 2 facsimile commands are defined in *SP-2388* /9/.

9.3.1 AT+FAA Adaptive answer

SP-2388, Section 8.5.4.1 /9/.

Command	Response	Default
+FAA=<n>		0
+FAA?	<n>	
+FAA=?	(0-1)	

Table 9.14: AT+FAA

9.3.2 AT+FAXERR Fax error value parameter

SP-2388, Section 8.5.2.7 /9/.

Command	Response	Default
+FAXERR?	<n>	0
+FAXERR=?	(0-103)	

Table 9.15: AT+FAXERR

9.3.3 AT+FBADLIN RTN threshold number of consecutive bad lines for FCQ

SP-2388, Section 8.5.2.5 /9/.

Command	Response	Default
+FBADLIN=<n>		0
+FBADLIN?	<n>	
+FBADLIN=?	(0-255)	

Table 9.16: AT+FBADLIN

9.3.4 AT+FBADMUL RTN threshold error rate multiplier for FCQ

SP-2388, Section 8.5.2.4 /9/.

Command	Response	Default
+FBADMUL=<n>		20
+FBADMUL?	<n>	
+FBADMUL=?	(0-255)	

Table 9.17: AT+FBADMUL

9.3.5 AT+FBOR Data bit order

SP-2388, Section 8.5.3.3 /9/.

Command	Response	Default
+FBOR=<n>		0
+FBOR?	<n>	
+FBOR=?	(0-3)	

Table 9.18: AT+FBOR

9.3.6 AT+FBUF DCE's data buffer characteristics

SP-2388, Section 8.5.4.2 /9/.

Command	Response
+FBUF?	For example, 5400,0,0,0

Table 9.19: AT+FBUF

9.3.7 AT+FBUG Session message reporting

SP-2388, Section 8.5.1.10 /9/.

Command	Response	Default
+FBUG=<n>		0
+FBUG?	<n>	
+FBUG=?	(0-1)	

Table 9.20: AT+FBUG

9.3.8 AT+FCIG Local polling ID string

SP-2388, Section 8.5.1.6 /9/.

Command	Response	Default
+FCIG="<string>"		""
+FCIG?	"<string>"	
+FCIG=?	(20)(32-126)	

Table 9.21: AT+FCIG

9.3.9 AT+FCQ Quality checking

SP-2388, Section 8.5.2.3 /9/.

Command	Response	Default
+FCQ=<n>		0

+FCQ?	<n>	
+FCQ=?	(0,2)	

Table 9.22: AT+FCQ

9.3.10 AT+FCR Capability to receive

SP-2388, Section 8.5.1.9 /9/.

Command	Response	Default
+FCR=<n>		1
+FCR?	<n>	
+FCR=?	(0-1)	

Table 9.23: AT+FCR

9.3.11 AT+FCTCRTY Event counter measurement (ECM) retry count

SP-2388, Section 8.5.2.8 /9/.

Command	Response	Default
+FCTCRTY=<n>		0
+FCTCRTY?	<n>	
+FCTCRTY=?	(0-255)	

Table 9.24: AT+FCTCRTY

9.3.12 AT+FDCC Capabilities parameters

SP-2388, Section 8.5.1.1 /9/.

Command	Response
+FDCC=<a>, <b>,<c>, <d>,<e>, <f>,<g>,<h>	
+FDCC?	<a>,<b>,<c>,<d>,<e>,<f>,<g>,<h>
+FDCC=?	

Table 9.25: AT+FDCC

9.3.13 AT+FDCS Negotiated current session parameters

SP-2388, Section 8.5.1.3 /9/.

Command	Response	Default
+FDCS?	<a>,<b>,<c>,<d>,<e>,<f>,<g>,<h>	0,0,0,0,0,0,0,0

Table 9.26: AT+FDCS

9.3.14 AT+FDFFC Data encoding format conversion parameter

SP-2388, Section 8.5.3.6 /9/.

Command	Response	Default
+FDFFC=0		0
+FDFFC?	0	
+FDFFC=?	0	

Table 9.27: AT+FDFFC

9.3.15 AT+FDIS Current session parameters

SP-2388, Section 8.5.1.2 /9/.

Command	Response
+FDIS=<a>, <b>,<c>, <d>,<e>, <f>,<g>,<h>	
+FDIS?	<a>,<b>,<c>,<d>,<e>,<f>,<g>,<h>
+FDIS=?	

Table 9.28: AT+FDIS

9.3.16 AT+FDR Receive phase C data

SP-2388, Section 8.3.5 /9/. Can be used only when on-line.

Command
+FDR

Table 9.29: AT+FDR

9.3.17 AT+FDT Transmit phase C data

SP-2388, Section 8.3.3 /9/. Can be used only when on-line.

Command
+FDT

Table 9.30: AT+FDT

9.3.18 AT+FECM ECM control parameter

SP-2388, Section 8.5.2.1 /9/.

Command	Response	Default
+FECM=<n>		2
+FECM?	<n>	
+FECM=?	(0,2)	

Table 9.31: AT+FECM

9.3.19 AT+FET Transmit page punctuation

SP-2388, Section 8.3.4 /9/.

Command	Response	Default
+FET=<n>		0
+FET?	<n>	
+FET=?	(0-2)	

Table 9.32: AT+FET

9.3.20 AT+FK Terminate session

SP-2388, Section 8.3.6 /9/.

Command
+FK

Table 9.33: AT+FK

9.3.21 AT+FLID Local ID string

SP-2388, Section 8.5.1.5 /9/.

Command	Response	Default
+FLID="<string>"		""
+FLID?	"<string>"	
+FLID=?	(20)(32-126)	

Table 9.34: AT+FLID

9.3.22 AT+FLNFC Page length format conversion parameter

SP-2388, Section 8.5.3.7 /9/.

Command	Response	Default
+FLNFC=0		0
+FLNFC?	0	
+FLNFC=?	0	

Table 9.35: AT+FLNFC

9.3.23 AT+FLPL Indicate a document to poll

SP-2388, Section 8.5.1.7 /9/.

Command	Response	Default
+FLPL=<n>		0
+FLPL?	<n>	
+FLPL=?	(0-1)	

Table 9.36: AT+FLPL

9.3.24 AT+FMDL Request model ID

SP-2388, Section 8.2.5 /9/.

Command	Response
+FMDL?	For example, Datacom.

Table 9.37: AT+FMDL

9.3.25 AT+FMFR Request manufacturer ID

SP-2388, Section 8.2.4 /9/.

Command	Response
+FMFR?	For example, Nokia.

Table 9.38: AT+FMFR

9.3.26 AT+FMINSP Minimum acceptable Phase C speed

SP-2388, Section 8.5.2.9 /9/.

Command	Response	Default
+FMINSP=<n>		0
+FMINSP?	<n>	
+FMINSP=?	(0-3)	

Table 9.39: AT+FMINSP

9.3.27 AT+FPHCTO Phase C response timeout

SP-2388, Section 8.5.2.6 /9/.

Command	Response	Default
+FPHCTO=<n>		30
+FPHCTO?	<n>	
+FPHCTO=?	(0-255)	

Table 9.40: AT+FPHCTO

9.3.28 AT+FPTS Page transmission status parameter

SP-2388, Section 8.5.2.2 /9/.

Command	Response	Default
+FPTS=<n>		1
+FPTS?	<n>	
+FPTS=?	(1-3)	

Table 9.41: AT+FPTS

9.3.29 AT+FRBC Phase C receive data block size

SP-2388, Section 8.5.3.2 /9/.

Command	Response	Default
+FRBC=0		0
+FRBC?	0	
+FRBC=?	0	

Table 9.42: AT+FRBC

9.3.30 AT+FREL Phase C received EOL alignment control parameter

SP-2388, Section 8.5.3.4 /9/.

Command	Response	Default
+FREL=0		0
+FREL?	0	
+FREL=?	0	

Table 9.43: AT+FREL

9.3.31 AT+FREV Request revision ID

SP-2388, Section 8.2.6 /9/.

Command	Response
+FREV?	For example, V 5.792 10-01-01 NHM-7 (c) Nokia.

Table 9.44: AT+FREV

9.3.32 AT+FSPL Request to poll

SP-2388, Section 8.5.1.8 /9/.

Command	Response	Default
+FSPL=<n>		0
+FSPL?	<n>	
+FSPL=?	(0-1)	

Table 9.45: AT+FSPL

9.3.33 AT+FTBC Phase C transmit data block size

SP-2388, Section 8.5.3.1 /9/.

Command	Response	Default
+FTBC=0		0
+FTBC?	0	
+FTBC=?	0	

Table 9.46: AT+FTBC

9.3.34 AT+FVRFC Vertical resolution format conversion

SP-2388, Section 8.5.3.5 /9/.

Command	Response	Default
+FVRFC=0		0
+FVRFC?	0	
+FVRFC=?	0	

Table 9.47: AT+FVRFC

9.3.35 AT+FWDFC Page width format conversion

SP-2388, Section 8.5.3.8 /9/.

Command	Response	Default
+FWDFC=0		0
+FWDFC?	0	
+FWDFC=?	0	

Table 9.48: AT+FWDFC

9.4 Class 2.0

All Class 2.0 facsimile commands are defined in *ITU-T T.32 /8/* and *TIA/EIA-592-A /7/*.

9.4.1 AT+FAA Adaptive answer

TIA/EIA-592-A, Section 8.5.2.5 /7/.

Command	Response	Default
+FAA=<n>		0
+FAA?	<n>	
+FAA=?	(0-1)	

Table 9.49: AT+FAA

9.4.2   AT+FBO Data bit order

TIA/EIA-592-A, Section 8.5.3.4 /7/.

Command	Response	Default
+FBO=<n>		0
+FBO?	<n>	
+FBO=?	(0-3)	

Table 9.50: AT+FBO

9.4.3   AT+FBS Buffer size

TIA/EIA-592-A, Section 8.5.3.2 /7/.

Command	Response
+FBS?	For example, 100,1518

Table 9.51: AT+FBS

9.4.4   AT+FBU HDLC frame reporting

TIA/EIA-592-A, Section 8.5.1.10 /7/.

Command	Response	Default
+FBU=<n>		0
+FBU?	<n>	
+FBU=?	(0-1)	

Table 9.52: AT+FBU

9.4.5   AT+FCC Capabilities parameters

TIA/EIA-592-A, Section 8.5.1.1 /7/.

Command	Response
+FCC=<a>,<b>,<c>,<d>,<e>,<f>,<g>,<h>	
+FCC?	<a>,<b>,<c>,<d>,<e>,<f>,<g>,<h>
+FCC=?	

Table 9.53: AT+FCC

9.4.6 AT+FCQ Copy quality checking

TIA/EIA-592-A, Section 8.5.2.3 /7/.

Command	Response	Default
+FCQ=<n>,0		1,0
+FCQ?	<n>,0	
+FCQ=<n>,0	(0,1),0	

Table 9.54: AT+FCQ

9.4.7 AT+FCR Capability to receive

TIA/EIA-592-A, Section 8.5.1.9 /7/.

Command	Response	Default
+FCR=<n>		1
+FCR?	<n>	
+FCR=?	(0-1)	

Table 9.55: AT+FCR

9.4.8 AT+FCS Current session results

TIA/EIA-592-A, Section 8.5.1.3 /7/.

Command	Response	Default
+FCS?	<a>,<b>,<c>,<d>,<e>,<f>,<g>,<h>	0,0,0,0,0,0,0,0

Table 9.56: AT+FCS

9.4.9 AT+FCT Phase C response timeout

TIA/EIA-592-A, Section 8.5.2.6 /7/.

Command	Response	Default
+FCT=<n>		1E
+FCT?	<n>	
+FCT=?	(0-FF)	

Table 9.57: AT+FCT

9.4.10 AT+FDR Receive phase C data

TIA/EIA-592-A, Section 8.3.4 /7/. Can be used only when online.

Command
+FDR

Table 9.58: AT+FDR

9.4.11 AT+FDT Transmit phase C data

TIA/EIA-592-A, Section 8.3.3 /7/. Can be used only when online.

Command
+FDT

Table 9.59: AT+FDT

9.4.12 AT+FEA Phase C receive EOL alignment

TIA/EIA-592-A, Section 8.5.3.5 /7/.

Command	Response	Default
+FEA=0		0
+FEA?	0	
+FEA=?	0	

Table 9.60: AT+FEA

9.4.13 AT+FFC Data encoding format conversion

TIA/EIA-592-A, Section 8.5.3.6 /7/.

Command	Response	Default
+FFC=<a>,<b>,<c>,<d>		0,0,0,0
+FFC?	0,0,0,0	
+FFC=?	(0),(0),(0),(0)	

Table 9.61: AT+FFC

9.4.14 AT+FHS Call termination status

TIA/EIA-592-A, Section 8.5.2.7 /7/.

Command	Response	Default
+FHS?	<n>	00

Table 9.62: AT+FHS

9.4.15 AT+FIE Procedure interrupt enable

TIA/EIA-592-A, Section 8.5.2.1 /7/.

Command	Response	Default
+FIE=<n>		0
+FIE?	<n>	

+FIE=?	(0-1)	

Table 9.63: AT+FIE

9.4.16 AT+FIP Initialize facsimile parameters

TIA/EIA-592-A, Section 8.3.6 /7/.

Command	Response	Default
+FIP		
+FIP=0		0
+FIP?	0	
+FIP=?	0	

Table 9.64: AT+FIP

9.4.17 AT+FIS Current session parameters

TIA/EIA-592-A, Section 8.5.1.2 /7/.

Command	Response
+FIS=<a>,<b>,<c>,<d>,<e>,<f>,<g>,<h>	
+FIS?	<a>,<b>,<c>,<d>,<e>,<f>,<g>,<h>
+FIS=?	

Table 9.65: AT+FIS

9.4.18 AT+FKS Terminate session

TIA/EIA-592-A, Section 8.3.5 /7/.

Command
+FKS

Table 9.66: AT+FKS

9.4.19 AT+FLI Local ID string

TIA/EIA-592-A, Section 8.5.1.5 /7/.

Command	Response	Default
+FLI="<string>"		""
+FLI?	"<string>"	
+FLI=?	(20-7E)	

Table 9.67: AT+FLI

9.4.20 AT+FLP Indicate a document to poll

TIA/EIA-592-A, Section 8.5.1.7 /7/.

Command	Response	Default
+FLP=<n>		0
+FLP?	<n>	
+FLP=?	(0-1)	

Table 9.68: AT+FLP

9.4.21 AT+FMI Request manufacturer ID

TIA/EIA-592-A, Section 8.2.4 /7/.

Command	Response
+FMI?	For example, Nokia.

Table 9.69: AT+FMI

9.4.22 AT+FMM Request model ID

TIA/EIA-592-A, Section 8.2.4 /7/.

Command	Response
+FMM?	For example, Datacom.

Table 9.70: AT+FMM

9.4.23 AT+FMR Request revision ID

TIA/EIA-592-A, Section 8.2.4 /7/.

Command	Response
+FMR?	For example, V 5.792 10-01-01 NHM-7 (c) Nokia.

Table 9.71: AT+FMR

9.4.24 AT+FMS Minimum phase C speed

TIA/EIA-592-A, Section 8.5.2.9 /7/.

Command	Response	Default
+FMS=<n>		0
+FMS?	<n>	
+FMS=?		

Table 9.72: AT+FMS

9.4.25 AT+FNR Negotiation message reporting

TIA/EIA-592-A, Section 8.5.1.11 /7/.

Command	Response	Default
+FNR=<a>,<b>,<c>,<d>		0,0,0,0
+FNR?	<a>,<b>,<c>,<d>	
+FNR=?	(0-1),(0-1),(0-1),(0-1)	

Table 9.73: AT+FNR

9.4.26 AT+FNS Non-standard frame FIF octet string

TIA/EIA-592-A, Section 8.5.1.6 /7/. A new string is added to the already stored string. The string consists of hexadecimal numbers.

Command	Response	Default
+FNS="<string>"		""
+FNS?	"<string>"	
+FNS=?	5A	

Table 9.74: AT+FNS

9.4.27 AT+FPI Local polling ID string

TIA/EIA-592-A, Section 8.5.1.5 /7/.

Command	Response	Default
+FPI="<string>"		""
+FPI?	"<string>"	
+FPI=?	(20-7E)	

Table 9.75: AT+FPI

9.4.28 AT+FPP Packet protocol command

TIA/EIA-592-A, Section 8.5.3.3 /7/.

Command	Response	Default
+FPP=0		0
+FPP?	0	
+FPP=?	0	

Table 9.76: AT+FPP

9.4.29 AT+FPS Page status

TIA/EIA-592-A, Section 8.5.2.2 /7/.

Command	Response	Default
+FPS=<n>		1
+FPS?	<n>	
+FPS=?	(1-5)	

Table 9.77: AT+FPS

9.4.30 AT+FRQ Receive quality threshold

TIA/EIA-592-A, Section 8.5.2.4 /7/.

Command	Response	Default
+FRQ=<a>,<b>		5F,0
+FRQ?	<a>,<b>	
+FRQ=?	(0-64),(0-FF)	

Table 9.78: AT+FRQ

9.4.31 AT+FRY ECM Retry Count

TIA/EIA-592-A, Section 8.5.2.8 /7/.

Command	Response	Default
+FRY=<n>		0
+FRY?	<n>	
+FRY=?	(0-FF)	

Table 9.79: AT+FRY

9.4.32 AT+FSP Request to poll

TIA/EIA-592-A, Section 8.5.1.8 /7/.

Command	Response	Default
+FSP=<n>		0
+FSP?	<n>	
+FSP=?	(0-1)	

Table 9.80: AT+FSP

10 Voice Commands (PN-3131)

10.1   AT+FCLASS DCE Mode

3GPP 27.007, Section C.2.1. /2/. This command selects the DCE mode—data, facsimile, or voice. The DCE shall recognize the value 8 as the Voice Mode.

Command	Response	Default
+FCLASS=<mode>		0
+FCLASS?	<mode>	
+FCLASS=?	0,1,2,2.0	

Table 10.1: AT+FCLASS

10.2   AT+VTS DTMF Generation

3GPP 27.007, Section C.2.11. /2/. The dialling command can also be used to send DTMFs. The parameter <str> is <DTMF> or {<DTMF>,<duration>}, where <DTMF> is a single ASCII character in the set 0-9,#,*,A-D. If the duration is not given, the command uses 100 ms as the "manufacturer specific" value.

Sends dtmf 1 (100ms), Sends dtmf 2 (100ms), Sends dtmf A (100ms):

AT+VTS=1,2,A

Sends dtmf 1 (100ms), Sends dtmf 2 (1000ms), Sends dtmf A (100ms):

AT+VTS=1,{2,1000},A

Sends dtmf 1 (1000ms), Sends dtmf 2 (100ms), Sends dtmf A (500ms):

AT+VTS=,{1,1000},2,{A,500},

Command	Response
+VTS=<str>,<str>,...	
+VTS=?	+VTS: (),(),()

Table 10.2: AT+VTS

11 GPRS Commands (3GPP TS 27.007)

11.1   AT+CGDCONT Define Packet Data Protocol (PDP) Context

3GPP 27.007, Section 10.1.1 /2/. Specifies the PDP context parameter values for a PDP context. This command is used in conjunction with the **+CGDATA** command.

Command	Response	Default
+CGDCONT=<cid>,<PDP_type>, <APN>, <PDP_addr>,<d_comp>,<h_comp>, <pd1>[,...[,<pdN>]]		1,"IP",,,0,0
+CGDCONT?	+CGDCONT: <cid>,<PDP_type>, <APN>,<PDP_addr>,<data_comp>, <head_comp>,<pd1>[,...[,pdN]] [<CR><LF>+CGDCONT: <cid>, <PDP_type>,<APN>,<PDP_addr>, <data_comp>,<head_comp>,<pd1> [,...[,pdN]] [...]]	
+CGDCONT=?	+CGDCONT: (1),"IP",,,(0,1), (0,1)	

Table 11.1: AT+CGDCONT

11.2   AT+CGQREQ Quality of Service Profile (Requested)

3GPP TS 27.007, Section 10.1.4 /2/. Used to specify a Quality of Service Profile that is used when the MT sends an Activate PDP Context Request message to the network. This command is used in conjunction with the **+CGDATA, ATD*99#** command. Supported only in 3GPP Release 1997.

Command	Response
+CGQREQ=<cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>	
+CGQREQ?	+CGQREQ: <cid>,<precedence>,<delay>, <reliability>,<peak>,<mean> [<CR><LF>+CGQREQ: <cid>,<precedence>, <delay>,<reliability>,<peak>,<mean> [...]]
+CGQREQ=?	+CGQREQ: (1),(1-3),(1-4), (1-5), (1-9),(1-18,31)

Table 11.2: AT+CGQREQ

11.3   AT+CGEQREQ 3G Quality of Service Profile (Requested)

3GPP TS 27.007, Section 10.1.6. Used to specify a Quality of Service Profile that is used when the MT sends an Activate PDP Context Request message to the network. Supported from 3GPP Release 99 onwards.

Command	Response
+CGEQREQ=[<cid>[,<Traffic class>[,<Max bitrate UL> [,<Max bitrate DL>[,<Guaranteed bitrate UL>[,Guaranteed bitrate DL>[,<Delivery order>[,Max SDU size> [,<SDU error ratio>[,<Residual bit error ratio>[,Delivery of erroneous SDUs>[,<Transfer delay>[,<Traffic handling priority>]]]]]]]]]]]]]	
+CGEQREQ?	+CGEQREQ: one or more values separated with [<CR><LF>]
+CGEQREQ=?	+CGEQREQ: "IP",(0-4),(0-64),(0-384),(0-64),(0-384), (0-2),(0,10-1500), ("0E0","E","E2","E3","E4","E5","E6","7E3"), ("0E0","E2","E3","E4","E5","E6","4E3","5E2","5E3","6E 8"),(0-3),(0-4100),(0-3)

Table 11.3: AT+CGEQREQ

11.4   AT+CGQMIN Quality of Service Profile (Minimum Acceptable)

3GPP 27.007, Section 10.1.5 /2/. Used to specify a minimum acceptable profile that is checked by the MT against the negotiated profile returned in the Activate PDP Context Accept message. This command is used in conjunction with the **+CGDATA** command.

Command	Response
+CGQMIN=<cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>	
+CGQMIN?	+CGQMIN: <cid>,<precedence>,<delay>, <reliability>,<peak>,<mean> [<CR><LF>+CGQMIN: <cid>,<precedence>, <delay>,<reliability>,<peak>,<mean> [...]]
+CGQMIN=?	+CGQMIN: (1),(1-3),(1-4),(1-5), (1-9),(1-18,31)

Table 11.4: AT+CGQMIN

11.5   AT+CGEQMIN 3G Quality of Service Profile (Minimum Acceptable)

3GPP TS 27.007, Section 10.1.7. Used to specify a minimum acceptable profile, which is checked by the MT against the negotiated profile returned in the Activate PDP Context Accept message. Supported from 3GPP Release 99 onwards.

Command	Response
+CGEQMIN=[<cid>[,<Traffic class>[,<Max bitrate UL>[,<Max bitrate DL>[,<Guaranteed bitrate UL>[,Guaranteed bitrate DL>[,<Delivery order>[,Max SDU size>[,<SDU error ratio>[,<Residual bit error ratio>[,Delivery of erroneous SDUs>[,<Transfer delay>[,<Traffic handling priority>]]]]]]]]]]]]]	
+CGEQMIN?	+CGEQMIN: one or more values separated with [<CR><LF>]
+CGEQMIN=?	+CGEQMIN: "IP",(0-3),(1-64),(1-384),(1-64),(1-384),(0,1),(10-1500), ("0E0","E","E2","E3","E4","E5","E6","7E3"), ("0E0","E2","E3","E4","E5","E6","4E3","5E2","5E3","6E8"),(0-2),(1-4100),(1-3)

Table 11.5: AT+CGEQMIN

11.6   AT+CGEQNEG 3G Quality of Service Profile (Negotiated)

3GPP TS 27.007, Section 10.1.8. This command allows the TE to retrieve the negotiated QoS profiles returned in the Activate PDP Context Accept message. Supported from 3GPP Release 99 onwards.

Command	Response
+CGEQNEG =[<cid>[,<cid>[,...]]]	+CGEQNEG: <cid>, <Traffic class> ,<Maximum bitrate UL>, <Maximum bitrate DL> ,<Guaranteed bitrate UL>, <Guaranteed bitrate DL> ,<Delivery order> ,<Maximum SDU size> ,<SDU error ratio> ,<Residual bit error ratio> ,<Delivery of erroneous SDUs> ,<Transfer delay> ,<Traffic handling priority> [<CR><LF>+CGEQNEG: <cid>, <Traffic class> ,<Maximum bitrate UL>, <Maximum bitrate DL> ,<Guaranteed bitrate UL>, <Guaranteed bitrate DL> ,<Delivery order> ,<Maximum SDU size> ,<SDU error ratio> ,<Residual bit error ratio> ,<Delivery of erroneous SDUs> ,<Transfer delay> ,<Traffic handling priority> [...]]
+CGEQNEG=?	+CGEQNEG: 1

Table 11.6: AT+CGEQNEG

11.7   AT+CGATT GPRS Attach or Detach

3GPP 27.007 Section 10.1.9 /2/. The execution command is used to attach the MT to, or detach the MT from, the GPRS service. Any active PDP contexts will be automatically deactivated when the attachment state changes to detached.

Command	Response
+CGATT= <state>	
+CGATT?	+CGATT: <state>

| +CGATT=? | +CGATT: (0-1) |

Table 11.7: AT+CGATT

11.8 AT+CGACT PDP Context Activate or Deactivate

3GPP 27.007, Section 10.1.10 /2/. The execution command is used to activate or deactivate the specified PDP context(s). <cid>: is a numeric parameter which specifies a particular PDP context definition.

Command	Response
+CGACT= [,<state> [,<cid>[,<cid>[,...]]]	
+CGACT?	+CGACT: <cid>, <state>[<CR><LF>+CGACT: <cid>, <state>[...]]
+CGACT=?	+CGACT: (0-1)

Table 11.8: AT+CGAT

11.9 AT+CGDATA Enter Data State

3GPP 27.007, Section 10.1.12 /2/. Causes the MT to perform whatever actions are necessary to establish the communication between the TE and the network using one or more GPRS PDP types. Nokia products support only $<L2P>$="PPP". Valid <cid> values are 1 and 2 for current GSM products. However, if the user uses a non-existing <cid> value, even if within the valid range, DCE shall issue an ERROR result code. See Section 11.1, "AT+CGDCONT Define Packet Data Protocol (PDP) Context."

Note: GPRS Phase 1 does not support mobile originated context modification.

Command	Response	Possible description
+CGDATA=<L2P>[,<cid>]	CONNECT	Enter data state.
	NO CARRIER	Data state cannot be entered.
+CGDATA=?	+CGDATA: ("PPP")	

Table 11.9: AT+CGDATA

11.10 AT+CGREG GPRS Network Registration Status

27.007, Section 10.1.19 /2/. This command sets whether or not to return the network registration status for the ME by an unsolicited result.

Note: <n> values 0, 1, and 2 are supported.

Command	Response
+CGREG=[<n>]	
+CGREG?	+CGREG: <n>, <stat>[,<lac>,<ci>]
+CGREG=?	+CGREG: (0-2)

Table 11.10: AT+CGREG

11.11 AT+CGDSCONT Define Secondary PDP Context

27.007, Section 10.1.2 /2/. Specifies PDP context parameter values for a secondary PDP context. Supported from 3GPP Release 99 onwards.

Command	Response	Default
+CGDSCONT=[<cid> ,<p_cid> [,<d_comp> [,<h_comp>]]]		2,1,0,0
+CGDSCONT?	+CGDSCONT: <cid>, <p_cid>, <d_comp>, <h_comp> [<CR><LF>+CGDSCONT: <cid>, <p_cid>, <d_comp>, <h_comp> [...]]	
+CGDSCONT=?	+CGDSCONT: (2),(1),(0,1),(0,1)	

Table 11.11: AT+CGDSCONT

11.12 AT+CGTFT Traffic Flow Template

27.007, Section 10.1.3. This command allows the TE to specify a packet filter (PF) for a Traffic Flow Template. Supported from 3GPP Release 99 onwards.

Command	Response	Default
+CGTFT=[<cid>, [<packet filter identifier>, <evaluation precedence index> [,<source address and subnet mask> [,<protocol number (ipv4) / next header (ipv6)> [,<destination port range> [,<source port range> [,<ipsec security parameter index (spi)> [,<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask> [,<flow label (ipv6)>]]]]]]]]]		2,1,,,,,,,,

+CGTFT?	+CGTFT: <cid>, <packet filter identifier>, <evaluation precedence index>, <source address and subnet mask>, <protocol number (ipv4) / next header (ipv6)>, <destination port range>, <source port range>, <ipsec security parameter index (spi)>, <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>, <flow label (ipv6)> [<CR><LF>+CGTFT: <cid>, <packet filter identifier>, <evaluation precedence index>, <source address and subnet mask>, <protocol number (ipv4) / next header (ipv6)>, <destination port range>, <source port range>, <ipsec security parameter index (spi)>, <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>, <flow label (ipv6)> [...]]	
+CGTFT=?	+CGTFT: "PPP",(1-8),(0-255),,(0-255),,,("00000000"-"FFFFFFFF"),,("00000"-"FFFFF")	

Table 11.12: AT+CGTFT

12 Commands for Bluetooth Audio Accessories (HFP & HSP)

This chapter specifies commands are to be used only by Bluetooth audio accessories. There are two different kind of profiles defined for Bluetooth audio accessories: Head-Set (HSP) and Hands-Free profiles (HFP) (/11/ and /12/). These profiles are specified by the Bluetooth SIG. Hands-Free type of accessories use AT commands specified in HFP, whereas Head-Set type of accessories use AT commands described in HSP. For futher information, see the specification reference for each command.

12.1 AT+CIND Indicator Control

HFP, Section 4.24.2 /11/. The read command returns the status of the ME indicators. If the ME cannot be reached, `+CME ERROR: <err>` is returned.

The test command returns pairs, where the string value <descr> is a maximum 16 character description of the indicator and the compound value is the allowed value for the indicator.

<ind> value 0 means that the indicator is off (or in a state which can be identified as the "off"" state), 1 means that the indicator is on (or in a state which is more substantial than the "off" state), 2 is more substantial than 1, and so on. If the indicator is a simple on/off style element, it has values 0 and 1.

Command	Response
+CIND?	+CIND: <ind>[,<ind>[,...]]
	+CME ERROR: <err>
+CIND=?	+CIND: (<descr>,(list of supported <ind>s)) [,(<descr>,(list of supported <ind>s))[,...]]
	+CME ERROR: <err>

Table 12.1: AT+CIND

12.2 AT+CMER Mobile Equipment Event Reporting

HFP, Section 4.24.2 /11/. The **Set** command enables or disables sending of unsolicited result codes from TA to TE in the case of key pressings, display changes, and indicator state changes. <mode> controls the processing of unsolicited result codes specified within this command. <bfr> controls the effect on buffered codes when <mode> 1, 2, or 3 is entered. The test command returns the modes supported by the TA as compound values.

Command	Response
+CMER=[<mode>[,<keyp>[,<disp>[,<ind>[,<bfr>]]]]]	
+CMER?	+CMER: <mode>,<keyp>,<disp>,<ind>,<bfr>
+CMER=?	+CMER: (list of supported <mode>s),(list of supported <keyp>s),(list of supported <disp>s),(list of supported <ind>s),(list of supported <bfr>s)

Table 12.2: AT+CMER

12.3 AT+BRSF Bluetooth Retrieve Supported Features

Notifies the audio gateway (AG) of the supported features available in the HF, and requests information about the supported features in the AG. The supported features shall be represented as a decimal value.

The response to the **AT+BRSF** command is used to notify the HF what features are supported in the AG. The supported features shall be represented as a decimal value.

<HF supported features bitmap>: a 32-bit unsigned integer representing a bitmap of the supported features in the HF as follows:

Bit	Feature
0	Echo canceling (EC) and/or noise reduction (NR) function.
1	Call waiting and 3-way calling.
2	Caller Line Identification (CLI) presentation capability.
3	Voice recognition activation.
4	Remote volume control.
5-31	Not used (available for Push Access Protocol (PAP) and other extensibility).

The unused bits (5-31) shall be initialized to zero.

<AG supported features bitmap>: a 32-bit unsigned integer representing a bitmap of the supported features in the AG as follows:

Bit	Feature
0	Three-way calling.
1	EC and/or NR function.
2	Voice recognition function.
3	In-band ring tone capability.
4	Attach a number to a voice tag.
5	Ability to reject a call.
6-31	Unused (available for PAP and other extensibility).

The unused bits (6-31) shall be initialized to zero.

Command	Response
+BRSF=<HF supported features bitmap>	+BRSF: <AG supported features bitmap>

Table 12.3: AT+BRSF

12.4 AT+BLDN Last Number Redial

HFP, Section 4.24.3 /11/. The command used for calling the last phone number dialed. When this command is received, the AG will set up a voice call to the last phone number dialed.

Command
+BLDN

Table 12.4: AT+BLDN

12.5 AT+BVRA Voice Recognition

HFP, Section 4.24.3 /11/. Enables/disables the voice recognition function in the AG.

Command
+BVRA=<vrec>

Table 12.5: AT+BVRA

12.6 AT+NREC Echo Canceling/Noice Reduction

HFP, Section 4.24.3 /11/. This command disables any EC and NR functions embedded in the AG.

Command
+NREC=<nrec>

Table 12.6: AT+NREC

12.7 AT+VGM Microphone Gain

HFP, Section 4.24.3 /11/. This command is issued by the HF to report the current microphone gain level setting to the AG. <gain> is a decimal numeric constant, relating to a particular (implementation dependent) volume level controlled by the HF.

Command
+VGM=<gain>

Table 12.7: AT+VGM

12.8 AT+VGS Speaker Gain

HFP, Section 4.24.3 /11/. The command is issued by the HF to report the current speaker gain level setting to the AG. <gain> is a decimal numeric constant, relating to a particular (implementation dependent) volume level controlled by the HF.

Command
+VGS=<gain>

Table 12.8: AT+VGS

12.9 AT+CKPD=200 Head-Set Button Press

HSP, Section 4.7.3 /11/. The command is issued by the HS to indicate that the button has been pressed.

If incoming call but no active call: Answer the call.

If active call: Terminate the active call.

Otherwise: No action specified.

Command
+CKPD=200

Table 12.9: AT+CKPD

13 Nokia Specific

13.1   AT+S47 Force Fax Class 2/2.0 Error Correction Mode

Recommended when fax error correction mode (ECM) is implemented. Used to force ECM on, as most fax software do not understand enabling it. In fax class 2.0, only 256-byte frames are possible.

Class 2:0=disabled, 1=enabled with 64 byte frames, 2=enabled with 256 byte frames.

Class 2.0:0=disabled, 1=enabled with 256 byte frames, 2=enabled with 256 byte frames.

Command	Response	Default
S47=[<n>]		0..2 (default 0)
S47?	<n>	000..002

Table 13.1: AT+S47

13.2   AT+S48 Force Fax 14.4kB

The command is mandatory when the 14.4kB fax service is implemented. It is used to force fax 14.4kB service on. Value 0 is recommended if the network or the phone does not support the 14.4kB service. 0=disabled, 1=enabled.

Command	Response	Default
S48=[<n>]		0..1 (default 0)
S48?	<n>	000..001

Table 13.2: AT+S48

13.3   AT+*NAUTODISC Automatic Disconnect

The command can be used to set the maximum time limit for 'silent time' in non-transparent data transfer, that is, if there is no data traffic in either direction for the defined period of time, the call is automatically disconnected. The time parameter given to the command is in minutes. Value 0 means that the automatic disconnection is not used.

Command	Response	<n> values
*NAUTODISC=<n>		0..255 (default 0)
*NAUTODISC?	<n>	current value (0-255)
*NAUTODISC=?		

Table 13.3: AT+*NAUTODISC

14 Result Codes

14.1   V.250

14.1.1   Basic syntax result codes

OK, ERROR, BUSY, CONNECT, CONNECT <rate>, NO ANSWER, and NO CARRIER: see *V.250 /1/, Section 5.7.1* and command **X** in Section 2.2.7 "ATX Result code selection and call progress monitoring control," command **D** in Section 2.2.9 "AT&D Circuit 108 (data terminal ready) behavior," command **A** in Section 4.1.4, "ATA Answer," and command **O** in Section 4.1.6, "ATO Return to online data state." The available <rate>s depend on the product. Note that OK may be a result of a successful remote initiated in-call modification from data to speech mode, and CONNECT[<rate>] a result of a successful remote initiated in-call modification from speech to data mode (when alternating calls are supported by the product). NO CARRIER can also indicate a remote hangup of a speech call. OK shall not be returned when a voice call is originated/answered through an external ME UI.

RING: see *V.250, Section 6.3.4 /1/* and Section 4.3.8, "AT+CRC Cellular result codes." MT voice calls or alternating voice/data calls starting with voice shall not result to this indication unless +FCLASS=8 has been set. When the RING result code is enabled (+CRC=0), alternating MT voice/fax calls starting with voice shall be automatically switched into the fax mode by TA (if the call is answered through TA with +CMOD=0). Note that the RING result code is not given for waiting calls.

14.1.2   +DR Data compression report

V.250, Section 6.6.2 /1/. This intermediate result code is given after a (possible) `+ER` result code.

Format	Description
+DR: <type>	Given when +DR=1; informs that V.42bis data compression is used in the established connection.

Table 14.1: **+DR**

14.1.3   +ILRR DTE-DCE local rate report

V.250, Section 6.2.13 /1/. The `<rxRate>` parameter is not needed by Nokia products. This intermediate result code is given after a (possible) `+DR` result code.

Format	Description
+ILRR: <rate>[,<rxRate>]	Given when +ILRR=1; informs about the local port rate after connection establishment.

Table 14.2: **+ILRR**

14.2   De Facto

14.2.1   Call repeat restriction result codes

BLACKLISTED and DELAYED. See Section 4.1.1, "ATD Dial" and *GSM 02.07 Annex A*.

14.3   3GPP TS 27.007

14.3.1   +CSSI Intermediate supplementary service notification

3GPP TS 27.007, Section 7.17 /2/. This is the first intermediate result code after the dial command **D**. Supported <code1>s depend on the supplementary services implemented in a product.

Format	Description
+CSSI: <code1>[,<index>]	Given when +CSSN=1 and some supplementary service notification is given by network during MO call establishment.

Table 14.3: +CSSI

14.3.2   +COLP Connected line identification report

3GPP TS 27.007, Section 7.8 /2/. This intermediate result code is given after the (possible) +CSSI result code. Subaddress and alpha are not supported by Nokia products.

Format	Description
+COLP: <number>,<type>	Given when +COLP=1 and the number is received from the network when the mobile originated call is established.

Table 14.4: +COLP

14.3.3   +CR Data service report

3GPP TS 27.007, Section 6.9 /2/. This intermediate result code is given after the (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 the CARRIER result code (when X5 is set).

Format	Description
+CR: <type>	Given when +CR=1 and a data call established; informs about the type of data call being established.

Table 14.5: +CR

14.3.4   +CRING Distinctive ring

3GPP TS 27.007, Section 6.11 /2/. Note that this replaces the V.250 RING result code.

Format	Description
+CRING: <type>	Given when +CRC=1 and there is an incoming MT call (no active or held calls in ME).

Table 14.6: +CRING

14.3.5 +CLIP Calling line identification report

3GPP TS 27.007, Section 7.6 /2/. This result code is sent to TE after every RING (or +CRING) result code. Subaddress and alpha are not supported by Nokia products.

Format	Description
+CLIP: <number>,<type>	Given when +CLIP=1 and a number is received from the network when a MT call is received (no active or held calls in ME).

Table 14.7: +CLIP

14.3.6 +CSSU Unsolicited supplementary service notification

3GPP TS 27.007, Section 7.17 /2/. In a MT call setup case, this result code is sent to the 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 disabled or not supported). Supported <code2>s depend on the supplementary services implemented in a product.

Format	Description
+CSSU: <code2>[,<index>[,<number>,<type>[,<saddr>,<satype>]]]	Given when +CSSN=,1 and a supplementary service notification is given by the network during MT call setup, during a voice call, or whenever in case of forward check SS notification. Note that also remote release of a held call is informed with this result code.

Table 14.8: +CSSU

14.3.7 +CCWA Call waiting

3GPP TS 27.007, Section 7.11 /2/. Note that this result code is not repeated similarly as RING, but given only once. Alpha is not supported by Nokia products.

Format	Description
+CCWA: <number>,<type>,<class>	Given when +CCWA=1 and an incoming MT call is received when there are active or held calls in the ME (discarded if in on-line data state).

Table 14.9: +CCWA

14.3.8 +CREG Network registration

3GPP TS 27.007, Section 7.2 /2/.

Format	Description
+CREG: <stat>[,<lac>,<cid>]	+CREG=1: given when <stat> value changes or after NO CARRIER if the network is lost when on-line. +CREG=2: given when <stat> value changes and when the network cell (<lac> and <cid>) of the ME changes, or after NO CARRIER if the network is lost when on-line, or if V.80 is enabled.

14.3.9 +CUSD Network initiated unstructured supplementary service data

3GPP TS 27.007, Section 7.15 /2/. Note that only the first 'request' message during a network initiated USSD session gives this unsolicited result code. The other result codes are information responses of the **+CUSD** command.

Format	Description
+CUSD: <m>,<str>,<dcs>	Given when +CUSD=1 and network initiated 'notify' or 'request' USSD message is received; discarded if in on-line data.

Table 14.10: +CUSD

14.3.10 +CME ERROR Mobile equipment error

3GPP TS 27.007, Section 9.2 /2/. See also Chapter 15, "Error Values."

Format	Description
+CME ERROR: <err>	Given instead of ERROR when +CMEE=1 or =2 and the error is related to the ME or network operation.

Table 14.11: +CME

14.3.11 +CHSR HSCSD parameters report

3GPP TS 27.007, Section 6.16 /2/.

Format	Description
+CHSR: <rx>, <tx>, <aiur>,<coding>	Given when +CHSR=1. Result code transmission is done after possible service (+CR), error control (+ER), and/or compression (+DR) reporting but before possible TE-TA rate (+ILRR) reporting and before the intermediate result code CONNECT is transmitted.

Table 14.12: +CHSR

14.4 3GPP TS 27.005

14.4.1 +CMTI New SMS-DELIVER indication

3GPP TS 27.005, Section 3.4. /3/. See also Section 8.10, "AT+CNMI New Message Indications to TE."

Format	Description
+CMTI: <mem>,<index>	+CNMI=0: indications are buffered into TA/ME.
	+CNMI=1: in on-line data state indications are discarded; in command mode forwarded directly to TE.
	+CNMI=2: in on-line data state indications are buffered into TA/ME; in command mode forwarded directly to TE.

14.4.2 +CMT New SMS-DELIVER

3GPP TS 27.005, Section 3.4. /3/. <alpha> is not supported by Nokia products. See also Section 8.10, "AT+CNMI New Message Indications to TE."

Format	Description
Text mode: +CMT: <oa>,,<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data> PDU mode: +CMT: ,<length><CR><LF><pdu>	+CNMI=0: routed messages are buffered into TA/ME. +CNMI=1: in on-line data state routed messages are rejected and in command mode they are forwarded directly to TE. +CNMI=2: in on-line data state routed messages are buffered into TA/ME and in command mode they are forwarded directly to TE.

Table 14.13: +CMT

14.4.3 +CBM New CBM

3GPP TS 27.005, Section 3.4. /3/. See also Section 8.10, "AT+CNMI New Message Indications to TE."

Format	Description
Text mode: +CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> PDU mode: +CBM: <length><CR><LF><pdu>	+CNMI=0: messages are discarded. +CNMI=1-2: messages are forwarded directly to TE (CBMs cannot be received during a call).

Table 14.14: +CBM

14.4.4 +CDSI New SMS-STATUS-REPORT indication

3GPP TS 27.005, Section 3.4.1 /3/. See also Section 8.10, "AT+CNMI New Message Indications to TE."

Format	Description
+CDSI: <mem>,<index>	+CNMI=0: indications are buffered into TA/ME. +CNMI=1: in on-line data state indications are discarded; in command mode they are forwarded directly to TE. +CNMI=2: in on-line data state indications are buffered into TA/ME; in command mode they are forwarded directly to TE.

Table 14.15: +CDSI

14.4.5   +CDS New SMS-STATUS-REPORT

3GPP TS 27.005, Section 3.4.1 /3/. See also Section 8.10, "AT+CNMI New Message Indications to TE."

Format	Description
Text mode: +CDS: <fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> PDU mode: +CDS: <length><CR><LF><pdu>	+CNMI=0: routed messages are buffered into TA/ME. +CNMI=1: in on-line data state routed messages are rejected and in command mode they are forwarded directly to TE. +CNMI=2: in on-line data state routed messages are buffered into TA/ME and in command mode they are forwarded directly to TE.

Table 14.16: +CDS

14.4.6   +CMS ERROR Message service failure

3GPP TS 27.005, Section 3.2.5 /3/. See also Chapter 15, "Error Values."

Format	Description
+CMS ERROR: <err>	Given instead of ERROR when the error is related to the ME or network operation.

Table 14.17: +CMS

14.5   Fax Class 2

The following table lists possible responses that a fax can give the DTE during a fax Class 2 call. The responses are defined in *SP-2388 /9/.*

Response	Description
+FCIG:	A CIG frame is received from the remote device, for example: +FCIG:"+358105056888."
+FCFR	A (confirmation to receive) CFR frame has been received.
+FCON	Facsimile connection. Issued in the beginning of Phase B.
+FCSI:	A CSI frame is received from the remote device, for example: +FCSI:"+358105056888."
+FDCS:	DCS frame (sent or received), for example: +FDCS:0,3,0,2,0,0,0,1.
+FDIS:	A DIS frame is received from the remote device, for example: +FDIS:1,3,0,2,3,1,0,3.
+FDTC:	A DTC frame is received from the remote device, for example: +FDTC:1,3,0,2,3,1,0,3.
+FET:	Post message command in a receiving session, for example (EOP): +FET:2.
+FHNG:	Call termination status response, for example (normal termination): +FHNG:0.
+FHR:	Received HDLC frame, used only when the +FBUG parameter is set to 1.
+FHT:	Transmitted HDLC frame, used only when the +FBUG parameter is set to 1.
+FNSC:	An NSC frame is received from the remote device.
+FNSF:	An NSF frame is received from the remote device.
+FNSS:	An NSS frame is received from the remote device.
+FPOLL	The remote device has indicated that it has a document for polling.

+FPTS:	Page transfer status response as indicated by the receiver.
+FTSI:	A TSI frame is received from the remote device, for example: +FTSI:"+358105056888."
+FVOICE	The session has been suspended through a procedure interruption.

Table 14.18: Responses during fax class 2 calls

14.6 Fax Class 2.0

The following table lists possible responses that a fax can give the DTE during a fax Class 2.0 call. The responses are defined in *ITU-T T.32* /8/.

Response	Description
+FCI:	CIG frame received from the remote device, for example: +FCI:"+358105056888."
+FCO	Facsimile connection. Issued in the beginning of Phase B.
+FCS:	DCS frame (sent or received), for example: +FCS:0,3,0,2,0,0,0,1.
+FDM	Transition to data modem operation.
+FET:	Post message command in a receiving session, for example (EOP): +FET:2.
+FHS:	Call termination status.
+FHR:	Received HDLC frame (reported only when +fbu has been set to 1).
+FHT:	Transmitted HDLC frame (reported only when +fbu has been set to 1).
+FIS:	Capabilities of the remote station (from received DIS frame).
+FNC:	Received NSC frame.
+FNF:	Received NSF frame.
+FNS:	Received NSS frame.
+FPI:	Remote ID, CIG.
+FPO	The remote device has indicated that it has a document for polling.
+FPS:	Phase C page reception response.
+FTC:	Remote capabilities, DTC.
+FTI:	Remote ID, TSI.
+FVO	Transition to voice, an indication that a procedure was interrupted and the session suspended.

Table 14.19: Responses during fax class 2.0 calls

14.7 Bluetooth Audio Accessories (HFP & HSP)

14.7.1 +CIEV indications

HFP, Section 4.24.2 /11/.

Format	Description
+CIEV: <ind>,<value>	The indicator status has changed. See Section 12.1, "AT+CIND Indicator Control," and Section 12.2, "AT+CMER Mobile Equipment Event Reporting."

14.7.2   +VGM microphone gain changed

HFP, Section 4.24.3 /11/. Unsolicited result code issued by the AG to set the microphone gain of the HF. <gain> is a decimal numeric constant, relating to a particular (implementation dependent) volume level controlled by the HF. Note that in HSP the separator is '=' instead of ':'.

Format	Description
+VGM: <gain>	Change in microphone gain.

Table 14.20: +VGM

14.7.3   +VGS speaker gain changed

HFP, Section 4.24.3 /11/. Unsolicited result code issued by the AG to set the speaker gain of the HF. <gain> is a decimal numeric constant, relating to a particular (implementation dependent) volume level controlled by the HF. Note that in HSP the separator is '=' instead of ':'.

Format	Description
+VGS: <gain>	Change in speaker gain.

Table 14.21: VGS

14.7.4   +BVRA voice recognition

HFP, Section 4.24.3 /11/. Unsolicited result code used to notify the HF when the voice recognition function in the AG has been terminated autonomously, as would be the case when voice recognition in the AG is only activated for a predefined period of time. Only autonomous activation/de-activation of voice recognition is reported asynchronously to the HF.

Format	Description
+BVRA: <vrect>	Voice recognition termination.

Table 14.22: +BVRA

15 Error Values

15.1 +CME ERROR Values

The final result code +CME ERROR: <err> indicates an error related to the mobile equipment or the network.

15.1.1 General errors

3GPP TS 27.007 /2/.

Numeric	Text
0	Phone failure.
1	No connection to phone.
2	Phone-adaptor link reserved.
3	Operation not allowed.
4	Operation not supported.
5	PH-SIM PIN required.
6	PH-FSIM PIN required.
7	PH-FSIM PUK required.
10	SIM not inserted.
11	SIM PIN required.
12	SIM PUK required.
13	SIM failure.
14	SIM busy.
15	SIM wrong.
16	Incorrect password.
17	SIM PIN2 required.
18	SIM PUK2 required.
20	Memory full.
21	Invalid index.
22	Not found.
23	Memory failure.
24	Text string too long.
25	Invalid characters in text string.
26	Dial string too long.
27	Invalid characters in dial string.
30	No network service.
31	Network timeout.

32	Network not allowed - emergency calls only.
40	Network personalization PIN required.
41	Network personalization PUK required.
42	Network subset personalization PIN required.
43	Network subset personalization PUK required.
44	Service provider personalization PIN required.
45	Service provider personalization PUK required.
46	Corporate personalization PIN required.
47	Corporate personalization PUK required.
100	Unknown.

15.1.2 GPRS-related errors

Errors related to a failure in Performing an Attach, *3GPP TS 27.007 /2/*.

Numeric	Text
103	Illegal MS (#3).
106	Illegal ME (#6).
107	GPRS services not allowed (#7).
111	Public Land Mobile Network (PLMN) not allowed (#11).
112	Location area not allowed (#12).
113	Roaming not allowed in this location area (#13).

(The values in parentheses are GSM 04.08 cause codes.)

Errors related to a failure in Activating a Context, *3GPP TS 27.007 /2/*.

Numeric	Text
132	Service option not supported (#32).
133	Requested service option not subscribed (#33).
134	Service option temporarily out of order (#34).
149	PDP authentication failure.

(The values in parentheses are GSM 04.08 cause codes.)

Other GPRS errors, *3GPP TS 27.007 /2/*.

Numeric	Text
150	Invalid mobile class.
148	Unspecified GPRS error.

15.2   +CMS ERROR Values

The final result code +CMS ERROR: <err> indicates an error related to the mobile equipment or the network.

GSM 04.11 Annex E-2 values:

Numeric	Text
1	"Unassigned (unallocated) number" The destination requested by the MS cannot be reached because it is not currently assigned (allocated), although the number is in a valid format.
8	"Operator determined barring" The MS has tried to send a mobile originating short message when the network operator or service provider of the MS has forbidden such transactions.
10	"Call barred" The outgoing call barred service applies to the short message service for the called destination.
21	"Short message transfer rejected" The equipment sending this cause does not accept this short message, although it could have accepted it since the equipment sending this cause is neither busy nor incompatible.
27	"Destination out of service" The destination indicated by the MS cannot be reached because the interface to the destination is not functioning correctly. The term "not functioning correctly" indicates that a signaling message was could not be delivered to the remote user; for example, a physical layer or data link layer failure at the remote user, or user equipment off-line.
28	"Unidentified subscriber" The subscriber is not registered in the PLMN (that is, the IMSI is not known).
29	"Facility rejected" The facility requested by the MS is not supported by the PLMN.
30	"Unknown subscriber" The subscriber is not registered in the HLR (that is, the IMSI or the directory number is not allocated to a subscriber).
38	"Network out of order" The network is not functioning correctly and the condition is likely to last for a relatively long period of time; for example, immediately reattempting the short message transfer is not likely to be successful.
41	"Temporary failure" The network is not functioning correctly and the condition is not likely to last a long period of time; for example, the MS may wish to try another short message transfer attempt almost immediately.
42	"Congestion" The short message service cannot be provided because of high traffic.
47	"Resources unavailable, unspecified" This cause is used to report a resource unavailable event (when no other cause applies).

50	"Requested facility not subscribed"
	The requested short message service could not be provided by the network because the user has not completed the necessary administrative arrangements with the supporting networks.
69	"Requested facility not implemented"
	The network is unable to provide the requested short message service.
81	"Invalid short message transfer reference value"
	That the equipment sending this cause has received a message with a short message reference that is not currently used on the MS-network interface.
95	"Invalid message, unspecified"
	This cause is used to report an invalid message event (only when no other cause in the invalid message class applies).
96	"Invalid mandatory information"
	The equipment sending this cause has received a message where a mandatory information element is missing and/or has a content error (the two cases are indistinguishable).
97	"Message type non-existent or not implemented"
	The equipment sending this cause has received a message with a message type it does not recognize either because this is a message that is not defined or defined but not implemented by the equipment.
98	"Message not compatible with short message protocol state"
	The equipment sending this cause has received a message that the procedures do not indicate if receiving this message is permitted while the equipment is in the short message transfer state.
99	"Information element non-existent or not implemented"
	The equipment sending this cause has received a message that includes information elements that are not recognized because the information element identifier is not defined or it is defined but not implemented by the equipment.
	However, the information element is not required to be present in the message in order for the equipment sending the cause to process the message.
111	"Protocol error, unspecified"
	This cause is used to report a protocol error event only when no other cause applies.
127	"Interworking, unspecified"
	There has been interworking with a network which does not provide causes for the actions it takes; thus, the precise cause for a message which is being send cannot be ascertained.

GSM 03.40 subclause 9.2.3.22 values.

Numeric	Text
0 – 127	Reserved.
128 – 143	Protocol Identifier (TP-PID) errors.
128	Telematic interworking not supported.
129	Short message Type 0 not supported.
130	Cannot replace short message.

131 – 142	Reserved.
143	Unspecified TP-PID error.
144 – 159	Data Coding Scheme (TP-DCS) errors.
144	Data coding scheme (alphabet) not supported.
145	Message class not supported.
146 - 158	Reserved.
159	Unspecified TP-DCS error.
160 – 175	TP-Command errors.
160	Command cannot be actioned.
161	Command unsupported.
162 – 174	Reserved.
175	Unspecified TP-Command error.
176	Transfer Protocol Data Unit (TPDU) not supported.
177 – 191	Reserved.
192	Service Center (SC) busy.
193	No SC subscription.
194	SC system failure.
195	Invalid Short Message Entity (SME) address.
196	Destination SME barred.
197	SM Rejected-Duplicate SM.
198	Validity Period Format (TP-VPF) not supported.
199	Validity Period (TP-VP) not supported.
200 – 207	Reserved.
208	SIM SMS storage full.
209	No SMS storage capability in SIM.
210	Error in MS.
211	Memory capacity exceeded.
212	SIM Application Toolkit busy.
213	SIM data download error.
214 – 223	Reserved.
224 – 254	Values specific to an application.
255	Unspecified error cause.

3GPP TS 27.005 subclause 3.2.5 values /3/.

Numeric	Text
300	ME failure.
301	SMS service of ME reserved.

302	Operation not allowed.
303	Iperation not supported.
304	Invalid PDU mode parameter.
305	Invalid text mode parameter.
310	(U)SIM not inserted.
311	(U)SIM PIN required.
312	PH-(U)SIM PIN required.
313	(U)SIM failure.
314	(U)SIM busy.
315	(U)SIM wrong.
316	(U)SIM PUK required.
317	(U)SIM PIN2 required.
318	(U)SIM PUK2 required.
320	Memory failure.
321	Invalid memory index.
322	Memory full.
330	SMSC address unknown.
331	No network service.
332	Network timeout.
340	No +CNMA acknowledgement expected.
500	Unknown error.
...511	Other values in range 256...511 are reserved.
512...	Manufacturer specific.

16 Terms and Abbreviations

Term or abbreviation	Meaning
3G	3rd Generation.
AG	Audio Gateway (for example, ME).
AT	Attention.
CBM	Cell Broadcast Message.
DCE	Data Circuit-terminating Equipment; see TA.
DTE	Data Terminal Equipment; see TE.
HSCSD	High Speed Circuit Switched Data.
IMEI	International Mobile Equipment Identity (ME serial number).
ME	Mobile Equipment, for example, a GSM phone.
MO	Mobile Originated.
MT	Mobile Terminated.
PDU	Protocol Data Unit.
PPP	Point-to-Point Protocol.
SIM	Subscriber Identity Module.
SM	Short Message.
SMSC	Short Message Service Centre.
TA	Terminal Adaptor, the physical equipment where the AT command interpreter resides (may be combined with ME).
TE	Terminal Equipment, the physical equipment from whereapplications communicate with the TA using AT commands.
UI	User Interface.

17 References

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/4/ ITU-T Recommendation V.80 - In-band DCE Control and Synchronous Data Modes for Asynchronous DTE; August 1996

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/11/ Bluetooth SIG; Hands-Free Profile (0.95)

/12/ Bluetooth SIG; Head-Set Profile (1.1)